

# **Recommendation ITU-R M.2177-0**

## **(02/2026)**

M Series: Mobile, radiodetermination, amateur and related satellite services

**Detailed specifications of the satellite radio interfaces of International Mobile Telecommunications-2020 (IMT-2020)**



## Foreword

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### Series of ITU-R Recommendations

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Series	Title
BO	Satellite delivery
BR	Recording for production, archival and play-out; film for television
BS	Broadcasting service (sound)
BT	Broadcasting service (television)
F	Fixed service
<b>M</b>	<b>Mobile, radiodetermination, amateur and related satellite services</b>
P	Radio-wave propagation
RA	Radio astronomy
RS	Remote sensing systems
S	Fixed-satellite service
SA	Space applications and meteorology
SF	Frequency sharing and coordination between fixed-satellite and fixed service systems
SM	Spectrum management
SNG	Satellite news gathering
TF	Time signals and frequency standards emissions
V	Vocabulary and related subjects

*Note: This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.*

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## RECOMMENDATION ITU-R M.2177-0

**Detailed specifications of the satellite radio interfaces of International Mobile Telecommunications-2020 (IMT-2020)**

(2026)

**Scope**

This Recommendation identifies the satellite radio interface technologies of International Mobile Telecommunications-2020 (IMT-2020) and provides the detailed radio interface specifications.

These radio interface specifications detail the features and parameters of the satellite component of IMT-2020. This Recommendation includes the capability to ensure worldwide compatibility, international roaming of the satellite communication services provided.

**Keywords**

IMT, IMT-2020, radio interface, satellite

**Abbreviations/Glossary**

3GPP	Third Generation Partnership Project
5GC	5G core
AMF	Access and mobility management function
ARQ	Automatic repeat request
AS	Access stratum
BL UE	Bandwidth reduced low complexity user equipment
CHO	Conditional hand-over
CN	Core network
eMBB-s	enhanced mobile broadband – satellite
eNB	evolved node B
E-UTRA	Evolved universal terrestrial radio access
FDD	Frequency division duplexing
FR	Frequency range
GCS	Global core specifications
GEO	Geostationary earth orbit
gNB	5G node B
GNSS	Global navigation satellite system
GSO	Geostationary-satellite orbit
G/T	Antenna gain-to-noise temperature
HARQ	Hybrid-ARQ
HRC-s	High reliability communications – satellite
IMT	International Mobile Telecommunications

IoT	Internet of Things
LEO	Low earth orbit
MAC	Medium access control
MEO	Medium Earth Orbit
MME	Mobility management entity
mMTC-s	massive machine type communications – satellite
NR	New radio
NTN	Non-terrestrial networks
OAM	Operation and maintenance
PLMN	Public land mobile network
RACH	Random access channel
RAN	Radio access network
RAT	Radio access technology
RIT	Radio interface technologies
RLC	Radio link control
RP	Reference point
RRC	Radio resource control
RRM	Radio resource management
RTT	Round trip time
SAN	Satellite access node
SIB	System information block
SRIT	Set of radio interface technologies
SS/PBCH	Synchronization signal/physical broadcast channel
SSB	Synchronization signal block
TA	Timing advance
TAI	Tracking area indicator
TAC	Tracking area codes
UE	User equipment
ULI	UE Location Information

### **Related ITU-R documents**

Resolution ITU-R 56 – Naming for International Mobile Telecommunications

Resolution ITU-R 65 – Principles for the process of future development of IMT for 2020 and IMT-2030

Recommendation ITU-R M.1224 – Vocabulary of Terms for International Mobile Telecommunications (IMT)

Recommendation ITU-R M.2083 – IMT Vision – Framework and overall objectives of the future development of IMT for 2020 and beyond

Report ITU-R M.2514 – Vision, requirements and evaluation guidelines for satellite radio interface(s) of IMT-2020

Report ITU-R M.2543 – Outcome of the evaluation, consensus building and decision of the IMT-2020 satellite process (Steps 4 to 7), including characteristics of IMT-2020 satellite radio interfaces

Document IMT-2020-SAT/2 – Submission and evaluation process and consensus building for satellite radio interface technology proposals of IMT-2020

Document IMT-2020-SAT/5 – Process and the use of Global Core Specification (GCS), references and related certifications in conjunction with Recommendation ITU-R M.[IMT-2020-SAT.SPECS]

The ITU Radiocommunication Assembly,

*considering*

- a) that International Mobile Telecommunications (IMT) systems are mobile broadband systems including both IMT-2000, IMT-Advanced and IMT-2020;
- b) that IMT-2020 systems include the new capabilities of IMT that go beyond those of IMT-2000 and IMT-Advanced;
- c) that IMT-2020 systems and beyond are envisaged to expand and support diverse usage scenarios and applications;
- d) that ITU has contributed to standardization and harmonized use of IMT, which has provided telecommunication services on a global scale and global operation and economies of scale are key requirements for the success of mobile telecommunication systems;
- e) that IMT-2020 satellite systems support low to high mobility applications and a range of data rates in accordance with user and service demands in multiple user environments;
- f) that the satellite component of IMT-2020 also has capabilities for multimedia applications within a wide range of services and platforms providing an improvement in performance and quality of service;
- g) that IMT-2020 satellite component applications can promote global connectivity to end user devices, network resilience through increased availability and reliability, connectivity for transportation, content delivery and machine-type communications;
- h) that the satellite use cases and technical requirements for the satellite radio interface for IMT-2020 will differ from that of the terrestrial interface and that these features enable IMT-2020 satellite component to address evolving user needs;
- i) that the usage scenarios for the satellite component of IMT-2020 include enhanced Mobile Broadband (eMBB-s), massive Machine Type Communications (mMTC-s) and High Reliability Communications (HRC-s). The suffix –s of the naming captures the satellite specificity in terms of expected performance;
- j) that the capabilities of IMT-2020 satellite component systems are being continuously enhanced in line with user trends and technology developments;
- k) that the satellite component of IMT-2020 is expected to be an integral part of future IMT systems;
- l) that it is desirable to achieve as much technology commonality as possible with the terrestrial component when designing and developing an IMT-2020 satellite system,

*recognizing*

- a) that Resolution ITU-R 65 on the “Principles for the process of future development of IMT for 2020 and IMT-2030” outlines the essential criteria and principles used in the process of developing the Recommendations and Reports for IMT-2020, including Recommendation(s) for the radio interface specification;

- b) that Report ITU-R M.2514 contains the vision, requirements and evaluation guidelines for the satellite component of IMT-2020;
- c) that Report ITU-R M.2543 contains the outcome and conclusion of Steps 4 through 7 of the evaluation, consensus building and decision of the IMT-2020 satellite process, including characteristics of IMT-2020 satellite radio interfaces,

*recommends*

- 1 that the satellite radio interfaces for IMT-2020 should be:
- “3GPP 5G-NTN: SRIT”<sup>1</sup>;
  - “3GPP 5G-NTN: RIT”<sup>2</sup>;
- 2 that the information provided or referenced in Annexes 1 and 2 should be used according to the satellite radio interfaces referred to in *recommends* 1 above as the complete set of standards for the detailed specifications of the satellite radio interfaces of IMT-2020.

## Annex 1

### Specification of the 3GPP 5G-NTN radio interface technology – SRIT<sup>3</sup>

#### Background

The satellite component of IMT-2020 is a system with global development activity and the IMT-2020 satellite radio interface specifications identified in this Recommendation have been developed by ITU in collaboration with the global core specifications (GCS) Proponents and the Transposing Organizations. It is noted from Document IMT-2020-SAT/5, that:

- The GCS Proponent must be one of the Radio interface technologies (RIT)/set of radio interface technologies (SRIT) Proponents for the relevant technology, and must have legal authority to grant to ITU-R the relevant legal usage rights to the relevant specifications provided within a GCS corresponding to a technology described in this Recommendation.
- A Transposing Organization must have been authorized by the relevant GCS Proponent to produce transposed standards for a particular technology and must have the relevant legal usage rights.

It is further noted that GCS Proponents and Transposing Organizations must also qualify appropriately under the auspices of Resolution ITU-R 9 and its associated guidelines.

ITU has provided the global and overall framework and requirements and has developed the Global Core Specification jointly with the GCS Proponent. The detailed standardization has been undertaken within the recognized Transposing Organizations which operate in concert with the GCS Proponent. This Recommendation therefore makes extensive use of references to externally developed specifications.

This approach was considered to be the most appropriate solution to enable completion of this Recommendation within the schedule set by ITU-R and by the needs of administrations, operators and manufacturers.

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<sup>1</sup> Developed by 3GPP as “5G-NTN, Release 17 and beyond – NR-NTN + IoT-NTN SRIT”.

<sup>2</sup> Developed by 3GPP as “5G-NTN, Release 17 and beyond – NR NTN RIT”.

<sup>3</sup> Developed by 3GPP as “5G-NTN, Release 17 and beyond – NR-NTN + IoT-NTN SRIT”.

This Recommendation has therefore been constructed to take full advantage of this method of work and to allow the global standardization timescales to be maintained. The main body of this Recommendation has been developed by ITU, with each Annex containing references pointing to the location of more detailed information.

This Annex 1 contains the detailed information developed by ITU and “3GPP” (the GCS Proponent) and ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC (the transposing organizations). In Certification C, ARIB and TTC indicated that they would not provide transposition references (hyperlinks) to the ITU-R at this stage.

Such use of referencing enables timely completion and update of the high-level elements of this Recommendation, with change control procedures, transposition, and public enquiry procedures being undertaken within the external organization. This information has generally been adopted unchanged, recognizing the need to minimize duplication of work, and the need to facilitate and support an ongoing maintenance and update process.

This general agreement, noting that the detailed information of the radio interface should to a large extent be achieved by reference to the work of external organizations, highlights not only ITU’s significant role as a catalyst in stimulating, coordinating and facilitating the development of advanced telecommunications technologies, but also its forward-looking and flexible approach to the development of this and other telecommunications standards for the 21<sup>st</sup> century.

## **1 Overview of the satellite radio interface technology**

The IMT-2020 satellite radio interface specifications, known as 5G-NTN, have been developed by 3GPP and consist of IoT-NTN based on long-term evolution (LTE) and NR-NTN based on new radio (NR) as part of its Releases 17 and beyond.

5G-NTN is a set of radio interface technologies consisting of IoT-NTN as one component RIT and NR-NTN as the other component RIT.

5G-NTN fulfils all technical performance requirements in all three selected test environments: Rural – enhanced Mobile Broadband (eMBB-s), Rural – massive Machine Type Communication (mMTC-s) and Rural – High Reliability Communications (HRC-s).

Also, 5G-NTN fulfils the service and the spectrum requirements of the IMT-2020 satellite radio interface. Both component RITs, NR-NTN and IoT-NTN, utilize the frequency bands in frequency range (FR) FR1 (410-7 125 MHz). In addition, the NR-NTN component RIT can also utilize the frequency bands in FR2-NTN (17.3-30 GHz). The frequency bands identified for the satellite component of IMT are provided in Resolutions **212 (Rev.WRC-23)** and **225 (Rev.WRC-23)**.

The complete set of standards for the satellite radio interface of IMT-2020 identified as NR-NTN and IoT-NTN is based on the key characteristics of the 3GPP “5G” IMT-2020 terrestrial radio interface see Recommendation ITU-R M.2150 and the additional NTN capabilities both of which are continuing to be enhanced.

The 3GPP 5G System (5GS) also includes specifications for its non-radio aspects, such as the core network elements (the Evolved Packet Core and 5G Core Networks), security, codecs, network management, etc. These non-radio specifications are not included in the so-called “Global Core Specifications (GCS)” of IMT-2020.

### **1.1 Overview of the component RIT: NR-NTN**

This overview provides the satellite specific enhancements to the 3GPP “5G” IMT-2020 terrestrial radio interface specified in Recommendation ITU-R M.2150.

A number of features have been introduced into the NR protocol and NG-RAN architecture enabling the support of non-terrestrial networks (NTN). NTN refers to networks, or segments of networks, using a spaceborne vehicle for transmission, defined as follows:

- Geosynchronous (GSO) and Non-Geosynchronous (non-GSO) orbiting satellites. Non-GSO includes Low Earth Orbit (LEO) at altitude approximately between 300 km and 1 500 km and Medium Earth Orbit (MEO) at altitude approximately between 7 000 km and 25 000 km.

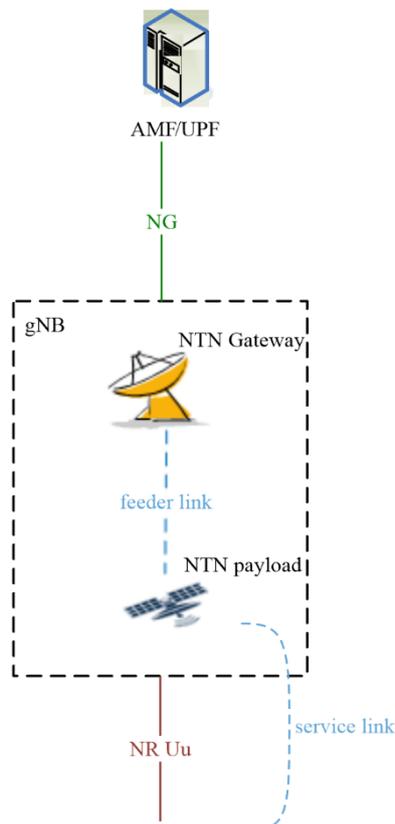
The addressed radio specifics of NTN compared to 5G terrestrial networks include:

- Delay variation, Doppler variation as well as possible Earth moving radio cells, due to the motion of spaceborne vehicles;
- Long latency due to the altitude of the spaceborne vehicles;
- Differential delay and possible multi country cell coverage due to larger radio cell size;
- Different propagation channel model;
- Different radio unit performance due to specific payload performance.

### 1.1.1 Overall architecture and general aspects

As illustrated in Fig. 1, non-terrestrial access is provided by means of an NTN payload, i.e. a network node on-board a satellite, and an NTN Gateway interconnected by a feeder link, the UE accessing NTN network services through the NTN payload via a service link.

FIGURE 1  
Overall illustration of an NR-NTN



The NTN payload transparently forwards the radio protocol received from the UE (via the service link) to the NTN Gateway (via the feeder link) and vice-versa. A gNB may serve multiple NTN payloads while an NTN payload may be served by multiple gNBs.

Three types of service links are supported:

- Earth-fixed: provisioned by beam(s) continuously covering the same geographical areas all the time (e.g. the case of GSO satellites);
- Quasi-Earth-fixed: provisioned by beam(s) covering one geographic area for a limited period and a different geographic area during another period (e.g. the case of non-GSO satellites generating steerable beams);
- Earth-moving: provisioned by beam(s) whose coverage area slides over the Earth surface (e.g. the case of non-GSO satellites generating fixed or non-steerable beams).

With non-GSO satellites, the NTN gNB can provide either quasi-Earth-fixed cell coverage or Earth-moving cell coverage, while gNB operating with GSO satellite can provide Earth fixed cell coverage.

### 1.1.2 Timing, Synchronization and HARQ enhancements

The network broadcast ephemeris information and Common Timing Advance (Common TA) parameters in each NTN cell. Since NTN capable UE are expected to be all GNSS-capable, they shall acquire a valid GNSS position as well as the satellite ephemeris and Common TA before connecting to an NTN cell.

To achieve uplink synchronization, before performing random access, the UE shall autonomously pre-compensate the Timing Advance, as well as the frequency Doppler shift by considering the Common TA (information from the gNB), the UE position, the satellite position and satellite velocity through the satellite ephemeris. In connected mode, the UE shall continuously update the Timing Advance and frequency pre-compensation. If the UE does not have a valid GNSS position and/or valid satellite ephemeris, it does not communicate with the network until both are regained. The UEs may be configured to report Timing Advance at initial access or in connected mode. In connected mode triggered reporting of the Timing Advance is supported.

While the pre-compensation of the instantaneous Doppler shift experienced on the service link is to be performed by the UE for the uplink, the management of Doppler shift experienced over the feeder link is left to the network implementation.

To accommodate the propagation delay in NTNs, several timing relationships are enhanced by a Common TA and two scheduling offsets  $K_{\text{offset}}$  and  $k_{\text{mac}}$ . Common TA is a configured offset that corresponds to the Round-Trip Time (RTT) between the Reference Point (RP) and the NTN payload.  $K_{\text{offset}}$  is a configured scheduling offset that approximately corresponds to the sum of the service link RTT and the Common TA.  $k_{\text{mac}}$  is a configured offset that approximately corresponds to the RTT between the RP and the gNB.

To mitigate the impact of HARQ stalling in NTN the HARQ feedback can be disabled in the presence of ARQ re-transmissions at the RLC layer (e.g. in GSO satellite systems) and/or the number of HARQ processes for re-transmissions at the MAC layer can be increased to 32 (e.g. in non-GSO satellite systems).

### 1.1.3 Mobility Management

To enable mobility in NTN, the network provides serving cell's and neighbouring cell's satellite ephemeris needed to access the target serving NTN cell in the handover command.

UE supports mobility between NTN and Terrestrial Network (i.e. from NTN to Terrestrial Network (hand-in) and from Terrestrial Network to NTN (hand-out)), but it is not required to connect to both

NTN and Terrestrial Network at the same time. It may also support mobility between radio access technologies based on different orbit (GSO, non-GSO at different altitude).

Triggering conditions upon which UE may execute Conditional Hand-Over (CHO) to a candidate cell, have been introduced: event A4, time-based trigger condition, location-based trigger condition. The two last conditions are configured together with one of the measurement-based trigger conditions. Location is defined by the distance between UE and a reference location. Time is defined by the time between T1 and T2, where T1 is an absolute time value and T2 is a duration started at T1.

For the measurements the network can configure multiple SS/PBCH Block Measurement Timing Configuration (SMTCs) in parallel per carrier and for a given set of cells depending on UE capabilities using propagation delay difference and ephemeris information. It can also configure measurement gaps based on multiple SMTC.

The adjustment of SMTCs is possible under network control based on UE assistance information if available for connected mode and under UE control based on UE location and satellite assistance information (e.g. ephemeris, Common TA parameters) for idle/inactive modes.

In the quasi-earth fixed cell scenario, UE can perform time-based and location-based measurement in RRC\_IDLE/RRC\_INACTIVE. The timing and location information associated to a cell are provided via system information. They refer respectively to the time when the serving cell is going to stop serving a geographical area and to the reference location of serving cell.

A Tracking Area corresponds to a fixed geographical area. Any respective mapping is configured in the RAN. The network may broadcast multiple Tracking Area Codes (TAC) per PLMN in a NR NTN cell in order to reduce the signalling load at cell edge, in particular for Earth-moving cell coverage. A TAC change in the System Information is under network control and may not be exactly synchronized with real-time illumination of beams on ground.

Regarding the UE location aspects, upon network request, after AS security is established in connected mode, a UE should report its coarse UE location information (most significant bits of the GNSS coordinates, ensuring an accuracy in the order of 2 km) to the NG-RAN if available.

#### **1.1.4 Switchover**

A service link switch refers to a change of serving satellite.

A feeder-link switchover is the procedure where the feeder link is changed from a source NTN Gateway to a target NTN Gateway for a specific NTN payload. The feeder-link switchover is a Transport Network Layer procedure. Both hard and soft feeder-link switchovers are applicable to NTN.

Service and feeder-link switchovers apply mostly for the case of non-GSO.

#### **1.1.5 NG-RAN signalling**

The Cell Identity, indicated by the gNB to the Core Network as part of the User Location Information corresponds to a Mapped Cell ID, irrespective of the orbit of the NTN payload or the types of service links supported. It is used for Paging Optimization in NG interface, Area of Interest and Public Warning Services.

The Cell Identity included within the target identification of the handover messages allows identifying the correct target radio cell as well as for RAN paging.

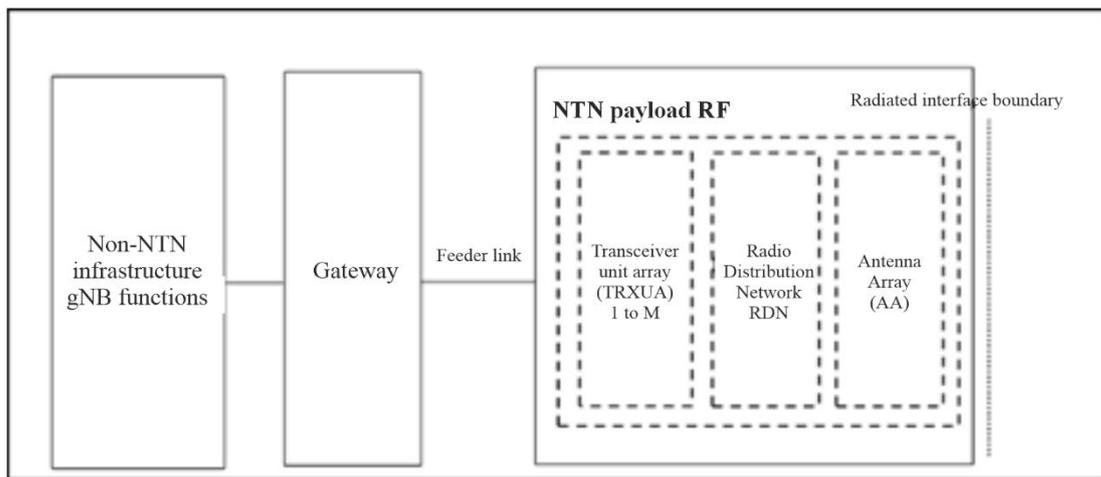
The mapping between Mapped Cell IDs and geographical areas is configured in the RAN and Core Network. The gNB is responsible for constructing the Mapped Cell ID based on the UE location info received from the UE, if available. The mapping may be pre-configured (e.g. up to operator's policy) or up to implementation.

The gNB reports the broadcasted TAC(s) of the selected Public Land Mobile Network (PLMN) to the Access and Mobility Management Function (AMF) as part of UE Location Information (ULI). In case the gNB knows the UE's location information, the gNB may determine the Tracking Area Indicator (TAI) the UE is currently located in and provide that TAI to the AMF as part of ULI.

### 1.1.6 RF performances and RRM requirements

Figure 2 illustrates the satellite access node which encompasses on ground non-NTN infrastructure gNB functions, gateway and feeder link and the RF functions of the NTN payload.

FIGURE 2  
Satellite Access Node (SAN)



M.2177-02

RF requirements of an NTN capable UE require the same RF performance as UE operating with terrestrial network.

Note that RF requirements of the SAN are lower compared to the BS RF requirements of a terrestrial network.

Specific requirements for radio resource management in NTN mostly relate to delay as well as timing and frequency errors in the different procedures.

### 1.1.7 Other enhancements

An additional set of features have been introduced into the NR and NG-RAN architecture for an optimized support of NTN with the capabilities to:

- Offer increased uplink coverage performance especially when addressing commercial smartphones with  $-5.5$  dBi antenna gain and 3 dB polarisation loss (per antenna port);
- Support of Geostationary Orbit (GSO) as well as non-Geostationary Orbit (non-GSO) deployment scenarios in the (DownLink: 17.7-20.2 GHz; UpLink: 27.5-30.0 GHz) frequency bands;
- Support the verification by the network of the location (i.e. GNSS coordinates) reported by the UE assuming a single satellite in view in order to fulfil the regulatory requirements (e.g. Lawful Intercept, emergency call, Public Warning System);

- Provide NTN-TN and NTN-NTN measurement, mobility and service continuity enhancements considering the NTN characteristics such as large propagation delay and satellite movement;
- Define 30 MHz channel bandwidth for n256 and n255 for 5G NR-NTN and introduce the corresponding SAN and UE RF core requirements, limited to Operating Bands and Channel Arrangement requirements for these specifications.

This set of enhancements are described here after.

#### 1.1.7.1 Uplink coverage enhancements

To improve NR uplink coverage in NTN, the following enhancements have been introduced:

- PUCCH repetition for Msg4 HARQ-ACK:
  - Supported number of transmissions are 1, 2, 4, 8.
    - If a single value from {2, 4, 8} is configured via SIB, the configured repetition factor is applied.
    - If multiple values from {1, 2, 4, 8} are configured via SIB, one of the multiple values is indicated in DAI field of DCI format 1\_0 with CRC scrambled by TC-RNTI.
  - The existing mechanism on repetition slot counting is applied.
  - Frequency hopping mechanism defined for PUCCH transmission for Msg4 HARQ-ACK, in every slot is applied.
  - A RSRP threshold can be configured via SIB when the number of repetitions is configured by SIB. If the RSRP threshold is configured, UE capable of PUCCH repetition for Msg4 HARQ-ACK reports the capability of PUCCH repetition for Msg4 HARQ-ACK via Msg3 PUSCH only if measured RSRP is lower than the configured RSRP threshold. If the RSRP threshold is not configured, UE capable of PUCCH repetition for Msg4 HARQ-ACK reports the capability of PUCCH repetition for Msg4 HARQ-ACK via Msg3 PUSCH.
  - The repetition factor applied to Msg4 HARQ-ACK is used also for any PUCCH transmission before dedicated PUCCH resource is provided.
- NTN-specific PUSCH DMRS bundling enhancement that enables DMRS bundling in presence of timing drift, whereby UE maintains phase continuity considering effects of transmission delay variation between UE and uplink time synchronization reference point to enable improved channel estimation.

#### 1.1.7.2 NR-NTN deployment in FR2-NTN

To support NR-NTN deployment in FR2-NTN using FDD duplexing mode, the following aspects were considered:

- For operation in FR2-NTN, the value range in ms for  $K_{\text{offset}}$  and  $K_{\text{MAC}}$  shall be the same as for FR1.
- For operation in FR2-NTN, use a reference SCS of 15 kHz for the indication of  $K_{\text{offset}}$  and  $K_{\text{MAC}}$ .
- For operation in FR2-NTN, no additional MAC CE TCI application delay is introduced to facilitate mechanical beam steering with VSAT.
- For operation in FR2-NTN, for cell search procedure, Case D and Case E are used to allow FDD operation in bands defined by FR2-NTN without any update to SSB pattern.
- From RAN1 perspective, for operation in FR2-NTN, the granularity used for TA reporting is the same as corresponding to the reference subcarrier spacing applied for  $K_{\text{offset}}$ .

Moreover, the following VSAT classes and types have been introduced:

UE class	UE type	Type description
Fixed VSAT	1	Fixed VSAT supporting GSO and LEO with mechanical steering antenna.
	2	Fixed VSAT supporting GSO and LEO with electronic steering antenna.
	3	Fixed VSAT supporting LEO only with electronic steering antenna.
Mobile VSAT	4	Mobile VSAT supporting GSO with mechanical steering antenna.
	5	Mobile VSAT supporting GSO with electronic steering antenna.

Note: Assuming that UE has single beam towards one single satellite at a given time.

### 1.1.7.3 Network verified UE location

Necessary enhancements to multi-RTT to support the network verified UE location in NTN assuming a single satellite in view have also been introduced.

For UE location verification based on multi-RTT with single satellite in NTN, at least the following UE and gNB measurements are reported: gNB receive-transmit time difference at the uplink time synchronization reference point, UE receive-transmit time difference, UE receive-transmit time difference subframe offset and DL timing drift.

The assistance information reported to the CN may include ephemeris information including accurate satellite position and velocity at the time of multi-RTT measurement, and common TA parameters (ta-Common, ta-CommonDrift, ta-CommonDriftVariant, Epoch time).

Note that network verified UE location is an optional UE feature. The verification is triggered by the CN and is up to the CN to decide when to trigger the procedure.

### 1.1.7.4 Mobility Management enhancements

Mobility management enhancements have been introduced to ensure service continuity covers inter-satellite, inter-gNB, inter-RAT.

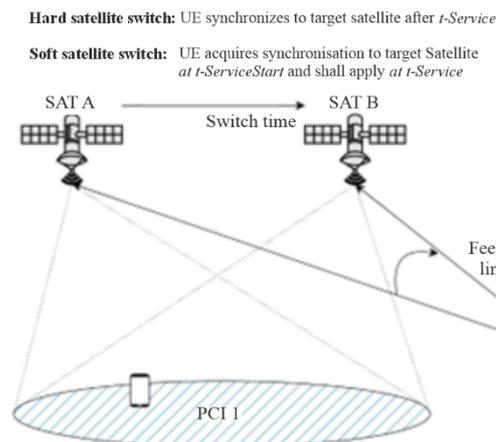
For the NTN to TN mobility, the Non-Terrestrial Network may broadcast NR and EUTRA TN cell coverage areas and cell information in the new SIB25. The coverage information consists in a list of geographical TN areas, with associated frequency information. UE can reduce its power consumption by skipping TN measurement based on the TN coverage information.

For the TN to NTN mobility, the TN cell can broadcast NTN neighbour satellites ephemeris via SIB 19. The UE can use ephemeris to connect to the NTN.

RACH-less handover is supported in NR NTN. It is a L3 mobility procedure that avoids a RACH procedure during the handover (between gNBs or during feeder/satellite switch), reducing random access congestion in the target cell.

Conditional handover associated to a time-based or a location-based trigger condition already introduced for quasi-Earth fixed cells is also supported for Earth-moving cells. For the location condition, the candidate cell's reference location re-use the cell reselection procedure as the cell moves. CondEventD2 event is introduced that includes a reference location and distance threshold for source and target cell. Moreover, for the time-based, the CHO procedure can be combined with the RACH-less HO procedure.

FIGURE 3

**Satellite switch with re-sync**

M.2177-03

Satellite switch with-resync allows the UE to synchronize with the target satellite without handover, i.e. no L3 mobility, no PCI change, upon both hard and soft satellite switchover in the quasi-Earth fixed scenario with the same SSB frequency and the same gNB. CHO can be configured simultaneously. In the soft switch case, the capable UE can start synchronizing with the target satellite before the source satellite ends to serve the cell without required to be connected to both satellites, as long as the SSBs from the source satellite and target satellite are not overlapped in time.

### 1.1.7.5 Channel bandwidth up to 30 MHz in FR1

In Release 17, the channel bandwidth was limited to 20 MHz in FR1 bands. With Release 18, the channel bandwidth can be set up to 30 MHz for n256 and n255 frequency bands. The corresponding SAN and UE RF core requirements have been introduced however, limited to Operating Bands and Channel Arrangement requirements.

## 1.2 Overview of the component RIT: IoT-NTN

This overview provides the NTN specific enhancements to the 3GPP “5G” IMT-2020 terrestrial radio interface specified in Recommendation ITU-R M.2150.

The IoT-NTN Component RIT is based on E-UTRA/LTE, encompassing FDD operation and therefore is applicable for the operation with paired spectrum with NTN. IoT-NTN consists of two technologies – NB-IoT and eMTC and they have different requirements and capabilities.

The NTN enhancements refer to enhanced features necessary for the support of Bandwidth reduced Low complexity (BL) UEs, UEs in enhanced coverage and NB-IoT UEs by Non-Terrestrial Networks (NTN).

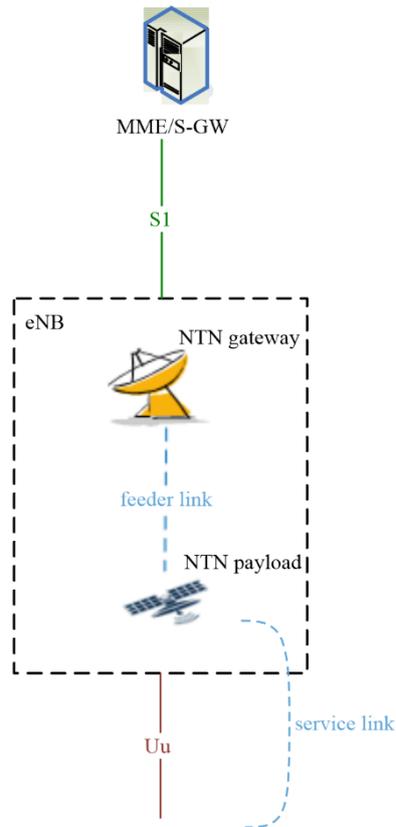
They are largely aligned with that of NR-NTN, with the exception of discontinuous coverage.

### 1.2.1 Overall architecture and general aspects

E-UTRAN supports radio access over non-terrestrial networks for BL UEs, UEs in enhanced coverage and NB-IoT UEs. Non-terrestrial networks encompass platforms that provide radio access through satellites in Geosynchronous Orbits (GSO) as well as Non-Geosynchronous Orbit (non-GSO), which includes Low-Earth Orbit (LEO) and Medium Earth Orbit (MEO).

As illustrated in Fig. 4, non-terrestrial access is provided by means of an NTN payload, i.e. a network node on-board a satellite, and an NTN Gateway interconnected by a feeder link, the UE accessing NTN network services through the NTN payload via a service link.

FIGURE 4  
Overall illustration of an IoT-NTN



M.2177-04

Three types of service links are supported:

- Earth-fixed: provisioned by beam(s) continuously covering the same geographical areas all the time (e.g. the case of GSO satellites);
- Quasi-Earth-fixed: provisioned by beam(s) covering one geographic area for a limited period of time and a different geographic area during another period of time (e.g. the case of non-GSO satellites generating steerable beams);
- Earth-moving: provisioned by beam(s) whose coverage area slides over the Earth surface (e.g. the case of non-GSO satellites generating fixed or non-steerable beams).

With non-GSO satellites, the eNB can provide either quasi-Earth-fixed cell coverage or Earth-moving cell coverage, while eNB operating with GSO satellites can provide Earth fixed cell coverage or quasi-Earth-fixed cell coverage.

Support for BL UEs, UEs in enhanced coverage and NB-IoT UEs over NTN is only applicable to E-UTRA connected to EPC.

Only BL UEs, UEs in enhanced coverage and NB-IoT UEs with GNSS capability are supported.

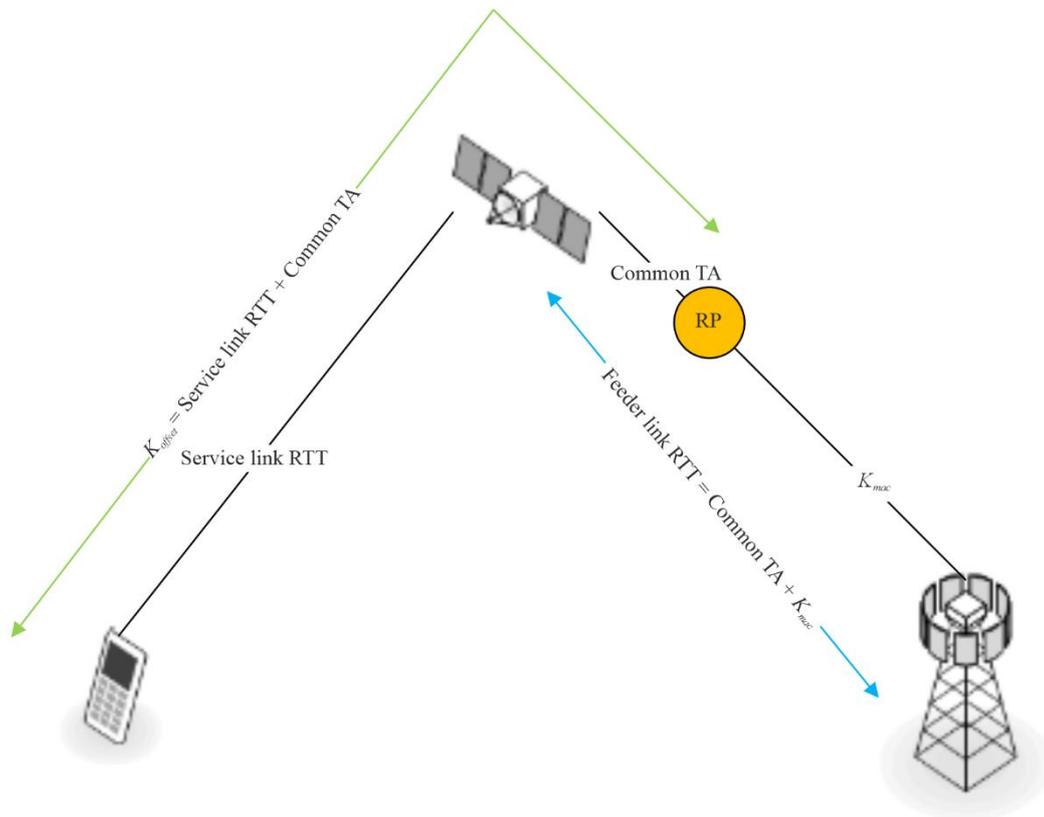
### 1.2.2 Timing and Synchronization

The network broadcasts ephemeris information and Common Timing Advance (Common TA) parameters in each NTN cell. A UE shall acquire its GNSS position as well as the satellite ephemeris and Common TA before connecting to an NTN cell. To achieve uplink synchronization, before performing random access, the UE shall autonomously pre-compensate the Timing Advance, as well as the frequency Doppler shift by considering the Common TA, the UE position and the satellite position through the satellite ephemeris. In connected mode, the UE shall continuously update the Timing Advance and frequency pre-compensation, but the UE is not expected to perform GNSS acquisition. The UE does not perform any transmissions due to outdated satellite ephemeris, Common TA or GNSS position based on timers. In connected mode, upon outdated satellite ephemeris and Common TA, the UE re-acquires the broadcasted parameters and upon outdated GNSS position the UE moves to idle mode. The UEs may be configured to report Timing Advance at initial access or in connected mode. In connected mode triggered reporting of the Timing Advance is supported.

For downlink synchronization in case of NB-IoT, the two LSBs of the ARFCN are signalled in MIB for bands for which a 200 kHz channel raster is not supported, and the legacy 100 kHz raster is used. Otherwise, for bands for which a 200 kHz channel raster is supported, there is no signalling of ARFCN information in MIB.

Downlink and uplink timings are frame aligned at the uplink time synchronization reference point (RP). To accommodate the long propagation delays in NTN, the timing relationships are enhanced by the support of two scheduling offsets:  $K_{offset}$  and  $K_{mac}$  as illustrated in Fig. 5.

FIGURE 5  
Timing relationship parameters



Uplink segmented transmission is supported for uplink transmission with repetitions. The UE shall apply UE pre-compensation per segment of UL transmission of PUSCH/PUCCH/PRACH for BL UEs and UEs in enhanced coverage and NPUSCH/NPRACH for NB-IoT from one segment to the next segment. The configuration of uplink transmission segment is indicated on SIB for initial access and can be re-configured by RRC signalling.

### 1.2.3 Discontinuous coverage and assistance information

As a satellite moves on a specified orbit, for example in case of a non-GSO satellite, the satellite beam(s) coverage area may move and cover different portions of a geographical area due to the orbital movement of the satellite. As a consequence, a UE located in the concerned geographical area may experience a situation of discontinuous coverage, due to e.g. a sparse satellite constellation deployment.

The network may broadcast assistance information relating to the serving satellite and other satellites of the constellation to enable UEs to predict upcoming satellites fly-over periods and save power during periods of no coverage. The broadcast assistance information includes SGP4 ephemeris elements based on the Two-Line Elements (TLE) sets industry standard. Additional assistance information, such as coverage footprint parameters and cell radius, may also be optionally broadcast by the network.

Predicting out of coverage and in coverage periods is up to UE implementation. When out of coverage, the UE is not required to perform Access Stratum (AS) functions.

In the Core Network, discontinuous coverage is handled by means of Tracking Area- or RAT-specific configuration of the MME such that the MME is able, via existing functionality (namely periodic TAU timer, mobile reachable timer, implicit detach timer and high latency communication), to ensure that when the UE is unreachable, a) the UE does not trigger NAS transaction or detach from the network and b) mobile-terminated data destined to the UE can be stored in the network.

### 1.2.4 Mobility Management

With this feature, the network may broadcast more than one Tracking Area Code (TAC) per PLMN in a cell in order to reduce the signalling load at cell edge in NTN, in particular for Earth-moving cell coverage. The AS layer indicates all received TACs for the selected PLMN to the NAS layer. The network may update the UEs upon TAC removal. UEs may by UE implementation also check whether a TAC has been removed from the TACs broadcast by the network.

At the NAS layer, the UE need not trigger a Tracking Area Update due to mobility reason, if any of the broadcast TAC(s) in the cell where the UE is located is part of the UE's Tracking Area List.

For quasi-Earth-fixed cells, timing information on when the cell is going to stop serving the area may be broadcast by the network. This may be used by the UE to start measurements on neighbour cells before the broadcast stop time of the serving cell, while the exact start of the measurements is up to UE implementation.

Radio link failure and RRC connection re-establishment are supported in NTN. To enable mobility in NTN, the network provides target cell satellite parameters needed to access the NTN cell in the handover command. Conditional handover is supported for BL UEs and UEs in enhanced coverage.

Different RAT types are introduced that allow distinction by the Core Network between existing terrestrial accesses and new non-terrestrial accesses as well as, among non-terrestrial accesses, between the different types of satellite constellations (LEO, MEO, GEO, OTHERSAT) and radio access type (i.e. WB-EUTRAN, NB-IoT and LTE-M). This allows the Core Network nodes and the HSS to identify the access a UE is using such that they are able to adjust their behaviour and that of the UE accordingly (e.g. setting of NAS timers, determination and enforcement of access restrictions, etc.).

### 1.2.5 Feeder-link switchover

The NTN Control function determines the point in time when a feeder-link switchover between two eNBs is performed. For BL UEs and UEs in enhanced coverage, the transfer of the affected UE(s)' context between the two eNBs at feeder-link switchover is performed by means of either S1 based or X2 based handover, and it depends on the eNBs' implementation and configuration information provided to the eNBs by the NTN Control function.

### 1.2.6 Network-interfaces signalling aspects

The Cell Identity in NTN corresponds to a fixed geographical area identified by a Mapped Cell ID, irrespective of the orbit of the NTN payload or of the type of the service link. For a BL UE or a UE in enhanced coverage, the Cell Identity included within the target identification of the handover messages allows identifying the correct target cell. The mapping between Mapped Cell IDs and geographical areas is configured in the RAN and the Core Network (e.g. pre-configured depending on operator's policy, or based on implementation). For a BL UE or a UE in enhanced coverage or a NB-IoT UE that supports S1-U data transfer or User Plane CIoT EPS optimization, the eNB is responsible for constructing the Mapped Cell ID based on the UE location information received from the UE, if available. The User Location Information may enable the MME to determine whether the UE is allowed to operate at its present location. Pre-configuration of special mapped cell identifiers may be used to indicate areas outside the serving PLMN's country.

The eNB reports the broadcasted TAC(s) of the selected PLMN to the MME. In case the eNB knows the UE's location information, the eNB may determine the TAI the UE is currently located in and provide that TAI to the MME.

### 1.2.7 MME(Re-)Selection by eNB

For an RRC\_CONNECTED UE, when the eNB is configured to ensure that the BL UE or the UE in enhanced coverage is using an MME that serves the country in which the UE is located. If the eNB detects that a BL UE or a UE in enhanced coverage is in a different country from that served by the serving MME, it should perform an S1 handover to change to an appropriate MME or initiate a UE Context Release Request procedure towards the serving MME (in which case the MME may decide to detach the UE).

For an RRC\_CONNECTED NB-IoT UE, when the eNB is configured to ensure that the NB-IoT UE is using an MME that serves the country in which the UE is located. If the eNB detects that the UE is in a different country to that served by the serving MME, it should initiate a UE Context Release Request procedure towards the serving MME (in which case the MME may decide to detach the UE).

### 1.2.8 Verification of UE location

The network may, according to regulatory requirements, need to enforce that the PLMN selected by the UE is allowed to operate in the geographical location where the UE is located. To this end, the MME may invoke the ULI (User Location Information) procedure during Mobility Management and Session Management procedures in order to determine the UE location. If the MME is able to determine with sufficient accuracy that it is not allowed to operate in the UE location, it may reject and/or detach the UE.

### 1.2.9 Support for E-UTRAN

For S1 and X2 interfaces, codepoints in the RAT Restriction Information IE (in the Handover Restriction List) allow the selection of different constellation types, i.e., "LEO", "MEO", "GEO", "OTHERSAT" for satellite access.

For S1 interface, additional codepoints are added to the RAT Type IE associated with a TAC, i.e., “NBIoT-LEO”, “NBIoT-MEO”, “NBIoT-GEO”, “NBIoT-OTHERSAT”, “EUTRAN-LEO”, “EUTRAN-MEO”, “EUTRAN-GEO”, “EUTRAN-OTHERSAT”.

For S1 interface, the UE Context Reference at Source IE (eNB UE S1AP ID) is introduced in the Source eNB to Target eNB Transparent Container.

For S1 interface, a new cause value is added signalling that a UE is not within the serving area of its current PLMN.

For TAC reporting over S1, the LTE NTN TAI Information IE and the semantics description for the TAI IE are added in the User Location Information IE; the LTE NTN TAI Information IE and the semantics description for the TAI IE are added to the eNB CP RELOCATION INDICATION, HANDOVER NOTIFY, PATH SWITCH REQUEST, INITIAL UE MESSAGE, UPLINK NAS TRANSPORT, and LOCATION REPORT messages.

### 1.2.10 Other NAS protocol Aspects

Enhancements to NAS signalling allow the UE to register to EPS core network using satellite e-UTRAN radio access technology. UICC-ME interface is extended to support network selection over satellite access and allowing to prioritize networks offering satellite access. EPS NAS retransmission timers are extended to support longer propagation delays and response times due to extended distance between peer entities when satellite access is used. The UE supporting satellite E-UTRAN access supports also GNSS and potential uplink signalling delays to be considered in UE and network NAS implementations.

### 1.2.11 Other enhancements

Some further enhancements to the NB-IoT and the eMTC radio interfaces were introduced to address some bottlenecks identified in performance, mobility, and coverage discontinuity aspects.

#### 1.2.11.1 Performance enhancements

- **HARQ feedback Enabling/Disabling:** HARQ feedback of downlink packets can be enabled or disabled per HARQ process by dedicated RRC signalling and/or DCI based indication to mitigate the impact of HARQ stalling in NB-IoT/eMTC NTN. Disabling HARQ feedback allows scheduling a HARQ process with a downlink packet before one HARQ RTT has elapsed since last scheduled, which allows lower layer latency and higher data rates per UE. Disabling HARQ feedback can be configured even for NB-IoT with single HARQ process. For HARQ process with DL HARQ feedback disabled, the UE will not start the corresponding DL HARQ RTT timer. The (re)starting of downlink drx-inactivity timers are adjusted depending on configuration of HARQ enabling/disabling status, single or multiple TB scheduling and HARQ Ack bundling.
- **In the uplink two HARQ modes:** *HARQ mode A* and *HARQ mode B* are introduced and configured per HARQ process basis. UL HARQ mode configuration is based on RRC signalling. For HARQ process in HARQ mode B, UE will not start the corresponding UL HARQ RTT timer. For NB-IoT NTN with single HARQ process in HARQ mode B, the UE will start/restart drx-inactivity timer in the subframe containing the last repetition of the corresponding PUSCH transmission. HARQ mode B is not applicable for UL transmission using PUR. For eMTC new LCP restrictions are introduced corresponding to HARQ enabling/disabling. UE (re)starts drx-InactivityTimer accordingly based on the configured UL HARQ mode.
- **Improved GNSS operations:** During long connection times and for reducing GNSS measurements impact on UE power consumption, a UE supporting improved GNSS operations can be triggered to perform or configured to autonomously perform its GNSS

acquisition If `ul-TransmissionExtensionEnabled` is configured, a time duration starts at the end of GNSS validity duration and a UE can perform autonomously GNSS acquisition using an autonomous gap starting at the end of the time duration, or the UE can be triggered to perform GNSS acquisition before the end of the time duration. This allows a UE in `RRC_CONNECTED` to apply UE pre-compensation of satellite delay and Doppler to maintain UL synchronization for UL transmission in an NTN cell. While network can trigger connected UE to perform GNSS measurement using DL MAC CE, UE autonomous GNSS-triggering measurement will be configured by RRC dedicated signalling. If there is neither network trigger nor network configuration of UE autonomously GNSS measurement, UE moves to `RRC_IDLE` after GNSS becomes invalid. UE will report the GNSS validity duration by using a UL MAC CE and assumes the GNSS location is valid upon successful GNSS measurement. Network enables this reporting of GNSS position fix duration, in SIB2 and in dedicated signalling (for handover).

### 1.2.11.2 Measurement and mobility enhancements

- New time-based and location-based triggers are introduced. UE can start intra/inter frequency measurement in connected mode before the specific time. A serving cell reference location and a distance threshold / radius for UE is introduced to detect when to trigger connected mode measurements. A new SIB is introduced for the network to broadcast the neighbour cell/satellite information. Satellite ids are introduced for serving and neighbour satellites. Location-based measurement initiation can also be optionally used in idle mode for cell re-selection purposes.
- For CHO in eMTC NTN, time and location-based trigger conditions may be configured independently (i.e., without a jointly configured measurement condition).

### 1.2.11.3 Discontinuous coverage enhancements

- An enhancement to RRC Release is introduced. UE may directly go to `RRC_IDLE` after RLF is triggered if there is not enough time for the UE to finish the procedure of RRC re-establishment due to the discontinuous coverage.
- A new cause value “Release due to discontinuous coverage” is introduced for the S1AP UE Context Release Request procedure.

Finally, for UE’s RRM core requirements the following are specified: for NB-IoT and eMTC UEs in `IDLE` mode, cell re-selection requirements for location-based measurement triggering; for NB-IoT and eMTC UEs in `CONNECTED` mode, requirements for neighbour cell measurements and the corresponding measurement triggering before RLF; for NB-IoT and eMTC UEs in `CONNECTED` mode, RRM requirements considering the GNSS reacquisition; for eMTC UEs in `CONNECTED` mode, Conditional Handover requirements for location-based and time-based events.

## 1.3 Detailed specification of the radio interface technology

Detailed specifications described in this Annex are developed around a “Global Core Specification” (GCS)<sup>4</sup>, which is related to externally developed materials incorporated by specific references for a specific technology. The process and use of the GCS, references, and related notifications and certifications are available as Document IMT-2020-SAT/5.

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<sup>4</sup> A “GCS” (Global Core Specification) is the set of specifications that defines a single RIT, an SRIT, or a component RIT within an SRIT.

The IMT-2020 Satellite standards contained in this clause are derived from the global core specification for 3GPP 5G-NTN-SRIT contained at IMT-2020 Global Core Specifications (see note in Table 1 below). The following notes apply to the clauses below:

- 1 The identified Transposing Organizations<sup>5</sup> should make their reference material available from their website.
- 2 This information was supplied by the Transposing Organizations and relates to their own deliverables of the transposed global core specification.

Clause 1.3.1 contains titles and synopses of the Global Core Specification of IMT-2020 Satellite radio interface technology entitled 3GPP 5G-NTN-SRIT and the related hyperlinks to the transposed standards. The specifications in § 1.3.1 are relevant to the 3GPP 5G-NTN-SRIT, including specifications satellite-specific and specifications with sections dedicated to satellite aspects; while a number of specifications are also relevant to the 3GPP 5G-SRIT, it is noted that Recommendation ITU-R M.2150 provides the complete set of detailed specifications for the 3GPP 5G-SRIT for the terrestrial component of IMT-2020.

The specific 3GPP specifications of the Global Core Specifications (GCS) for the IMT-2020 satellite radio interface technology entitled 3GPP 5G-NTN-SRIT that are being transposed in § 1.3.1 are summarized in Table 1.

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<sup>5</sup> The following identified Transposing Organizations have provided their transposed sets of standards information contained in this clause:

- Alliance for Telecommunications Industry Solutions (ATIS)
- China Communications Standards Association (CCSA)
- European Telecommunications Standards Institute (ETSI)
- Telecommunications Standards Development Society, India (TSDSI)
- Telecommunications Technology Association (TTA)

TABLE 1  
3GPP specifications in § 1.3.1 that are to be transposed

<b>PART A</b>								
<b>List of Specifications</b>								
<b>36.100 Series</b>	<b>36.200 Series</b>	<b>36.300 Series</b>	<b>36.400 Series</b>	<b>37.xxx Series</b>	<b>38.100 Series</b>	<b>38.200 Series</b>	<b>38.300 Series</b>	<b>38.400 Series</b>
TS 36.102	TS 36.201	TS 36.300	TS 36.401	TS 37.320	TS 38.101-5	TS 38.201	TS 38.300	TS 38.401
TS 36.108	TS 36.211	TS 36.302	TS 36.410	TS 37.324	TS 38.108	TS 38.202	TS 38.304	TS 38.410
TS 36.111	TS 36.212	TS 36.304	TS 36.411	TS 37.340	TS 38.124	TS 38.211	TS 38.305	TS 38.411
TS 36.124	TS 36.213	TS 36.305	TS 36.412	TS 37.355	TS 38.133	TS 38.212	TS 38.306	TS 38.412
TS 36.133	TS 36.214	TS 36.306	TS 36.413	TS 37.460		TS 38.213	TS 38.307	TS 38.413
		TS 36.307	TS 36.414	TS 37.461		TS 38.214	TS 38.314	TS 38.414
		TS 36.314	TS 36.420	TS 37.462		TS 38.215	TS 38.321	TS 38.415
		TS 36.321	TS 36.421	TS 37.470			TS 38.322	TS 38.420
		TS 36.322	TS 36.422	TS 37.471			TS 38.323	TS 38.421
		TS 36.323	TS 36.423	TS 37.472			TS 38.331	TS 38.422
		TS 36.331	TS 36.424	TS 37.473			TS 38.355	TS 38.423
		TS 36.355	TS 36.425	TS 37.480				TS 38.424
		TS 36.360	TS 36.440	TS 37.481				TS 38.425
		TS 36.361	TS 36.441	TS 37.482				TS 38.455
			TS 36.442	TS 37.483				TS 38.470
			TS 36.443					TS 38.471
			TS 36.444					TS 38.472
			TS 36.445					TS 38.473
			TS 36.455					TS 38.474
			TS 36.461					
			TS 36.462					
			TS 36.463					
			TS 36.464					
			TS 36.465					
<b>PART B</b>								
<b>Specification versions to be used</b>								
The specific versions of the 3GPP specifications that are to be used for the transpositions of those specifications listed in Table 1 are provided in the link below:								
<i>Note from the Secretariat: The link to the GCS material will be made available upon approval of the Recommendation.</i>								

### 1.3.1 Titles and synopses of the global core specification and the transposed standards

#### 1.3.1.1 Introduction

The standards documents for satellite use and referenced below, as transposed from the relevant 3GPP specifications, are provided by the identified *Transposing Organizations* as the transposed sets of standards for the radio interface of IMT-2020 identified as 5G and includes not only the key characteristics of IMT-2020 but also the additional capabilities of 5G both of which are continuing to be enhanced for satellite use.

#### 1.3.1.2 Radio Layer 1

##### 1.3.1.2.1 TS 36.201

#### Evolved Universal Terrestrial Radio Access (E-UTRA); LTE physical layer; General description

This document provides a general description of the physical layer of the E-UTRA radio interface. This document also describes the document structure of the 3GPP E-UTRA physical layer specifications, i.e. TS 36.200 series. The TS 36.200 series specify the Uu point for the LTE mobile system, and defines the minimum level of specifications required for basic connections in terms of mutual connectivity and compatibility.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.201.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.201.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.201.V17.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.201.V17.0.0.docx</a>
ETSI	ETSI TS 136 201 V17.0.0 (2022-04)		17.0.0	Published 20.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136200_136299/136201/17.00.00_60/ts_136201v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136200_136299/136201/17.00.00_60/ts_136201v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.201-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/oFAG4NYgpSWpf3A">https://members.tdsi.in/s/oFAG4NYgpSWpf3A</a>
TTA	TTAT.3G-36.201V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.201V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.201V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.201.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.201.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.201.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.201.V18.0.0.docx</a>
ETSI	ETSI TS 136 201 V18.0.0 (2024-05)		18.0.0	Published 02.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136200_136299/136201/18.00.00_60/ts_136201v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136200_136299/136201/18.00.00_60/ts_136201v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.201 -18.0.0 V1.0.0		18.0.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/CCGsWxcG8yWrB3p">https://members.tdsi.in/s/CCGsWxcG8yWrB3p</a>
TTA	TTAT.3G-36.201V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.201V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.201V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.2.2 TS 36.211

#### Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation

This document describes the physical channels and modulation for E-UTRA.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.211.V17.4.0		17.4.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.211.V17.4.0		17.4.0	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.211.V17.4.0.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.211.V17.4.0.zip</a>
ETSI	ETSI TS 136 211 V17.4.0 (2023-09)		17.4.0	Published	29.09.2023 <a href="https://www.etsi.org/deliver/etsi_ts/136200_136299/136211/17.04.00_60/ts_136211v170400p.pdf">https://www.etsi.org/deliver/etsi_ts/136200_136299/136211/17.04.00_60/ts_136211v170400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.211-17.4.0 V1.3.0		17.4.0	Published	23.02.2024 <a href="https://members.tdsi.in/s/LMfTkzBGfxdiYD7">https://members.tdsi.in/s/LMfTkzBGfxdiYD7</a>
TTA	TTAT.3G-36.211V17.4.0		17.4.0	Published	13.02.2024 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.211V17.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.211V17.4.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.211.V18.0.1		18.0.1	Published	13.02.2025 <a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.211.V18.0.1		18.0.1	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.211.V18.0.1.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.211.V18.0.1.zip</a>
ETSI	ETSI TS 136 211 V18.0.1 (2024-05)		18.0.1	Published	06.05.2024 <a href="https://www.etsi.org/deliver/etsi_ts/136200_136299/136211/18.00.01_60/ts_136211v180001p.pdf">https://www.etsi.org/deliver/etsi_ts/136200_136299/136211/18.00.01_60/ts_136211v180001p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.211 -18.0.1 V1.0.0		18.0.1	Published	19.11.2024 <a href="https://members.tdsi.in/s/o2PEwCd2YQwbKml">https://members.tdsi.in/s/o2PEwCd2YQwbKml</a>
TTA	TTAT.3G-36.211V18.0.1		18.0.1	Published	01.08.2025 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.211V18.0.1&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.211V18.0.1&amp;searchCate=TTAS</a>

### 1.3.1.2.3 TS 36.212

#### Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding

This document specifies the coding, multiplexing and mapping to physical channels for E-UTRA.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.212.V17.1.0		17.1.0	Published	21.02.2023 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.212.V17.1.0		17.1.0	Published	21.02.2023 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.212.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.212.V17.1.0.docx</a>
ETSI	ETSI TS 136 212 V17.1.0 (2022-04)		17.1.0	Published	25.04.2022 <a href="https://www.etsi.org/deliver/etsi_ts/136200_136299/136212/17.01.00_60/ts_136212v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/136200_136299/136212/17.01.00_60/ts_136212v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.212-17.1.0 V1.0.0		17.1.0	Published	29.07.2022 <a href="https://members.tdsi.in/s/b5peAp4oKRTQdJL">https://members.tdsi.in/s/b5peAp4oKRTQdJL</a>
TTA	TTAT.3G-36.212V17.1.0		17.1.0	Published	05.08.2022 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.212V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.212V17.1.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.212.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.212.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.212.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.212.V18.0.0.docx</a>
ETSI	ETSI TS 136 212 V18.0.0 (2024-05)		18.0.0	Published	23.05.2024 <a href="https://www.etsi.org/deliver/etsi_ts/136200_136299/136212/18.00.00_60/ts_136212v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136200_136299/136212/18.00.00_60/ts_136212v180000p.pdf</a>

TSDSI	TSDSI STD T1.3GPP 36.212 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/CaFcdB4aJaXGm7F">https://members.tdsi.in/s/CaFcdB4aJaXGm7F</a>
TTA	TTAT.3G-36.212V18.0.0	18.0.0	Published	13.02.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.212V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.212V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.2.4 TS 36.213

#### Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures

This document specifies and establishes the characteristics of the physical layer procedures for E-UTRA.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.36.213.V17.6.0		17.6.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.213.V17.6.0		17.6.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.213.V17.6.0.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.213.V17.6.0.zip</a>
ETSI	ETSI TS 136 213 V17.6.0 (2024-02)		17.6.0	Published	15.02.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136200_136299/136213/17.06.00_60/ts_136213v170600p.pdf">https://www.etsi.org/deliver/etsi_ts/136200_136299/136213/17.06.00_60/ts_136213v170600p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.213-17.6.0 V1.5.0		17.6.0	Published	29.05.2024	<a href="https://members.tdsi.in/s/dtBjqnm8FkLRLHs">https://members.tdsi.in/s/dtBjqnm8FkLRLHs</a>
TTA	TTAT.3G-36.213V17.6.0		17.6.0	Published	08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.213V17.6.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.213V17.6.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.36.213.V18.2.0		18.2.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.213.V18.2.0		18.2.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.213.V18.2.0.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.213.V18.2.0.zip</a>
ETSI	ETSI TS 136 213 V18.2.0 (2024-06)		18.2.0	Published	14.06.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136200_136299/136213/18.02.00_60/ts_136213v180200p.pdf">https://www.etsi.org/deliver/etsi_ts/136200_136299/136213/18.02.00_60/ts_136213v180200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.213 -18.2.0 V1.0.0		18.2.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/YQAW7CgScfdzASw">https://members.tdsi.in/s/YQAW7CgScfdzASw</a>
TTA	TTAT.3G-36.213V18.2.0		18.2.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.213V18.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.213V18.2.0&amp;searchCate=TTAS</a>

### 1.3.1.2.5 TS 36.214

#### Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements

This document contains the description and definition of the measurements done at the UE and network in order to support operation in idle mode and connected mode in E-UTRA.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.36.214.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.214.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.214.V17.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.214.V17.0.0.docx</a>
ETSI	ETSI TS 136 214 V17.0.0 (2022-04)		17.0.0	Published	20.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136200_136299/136214/17.00.00_60/ts_136214v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136200_136299/136214/17.00.00_60/ts_136214v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.214-17.0.0 V1.0.0		17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/ktGLRtM7YsK5Jy3">https://members.tdsi.in/s/ktGLRtM7YsK5Jy3</a>
TTA	TTAT.3G-36.214V17.0.0		17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.214V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.214V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.214.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.214.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.214.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.214.V18.0.0.docx</a>
ETSI	ETSI TS 136 214 V18.0.0 (2024-05)	18.0.0	Published	02.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136200_136299/136214/18.00.00_60/ts_136214v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136200_136299/136214/18.00.00_60/ts_136214v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.214 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/QsCJb8C8AoWJqLN">https://members.tdsi.in/s/QsCJb8C8AoWJqLN</a>
TTA	TTAT.3G-36.214V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.214V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.214V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.2.6 TS 38.201****NR; Physical layer; General description**

This document provides a general description of the physical layer of NR radio interface. This document also describes the document structure of the 3GPP physical layer specifications, i.e. TS 38.200 series.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.201.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.201.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.201.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.201.V17.0.0.doc</a>
ETSI	ETSI TS 138 201 V17.0.0 (2022-05)	17.0.0	Published	11.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138201/17.00.00_60/ts_138201v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138201/17.00.00_60/ts_138201v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.201-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/93kPQABXmpra9ec">https://members.tdsi.in/s/93kPQABXmpra9ec</a>
TTA	TTAT.3G-38.201V17.0.0	17.0.0	Published	14.03.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.201V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.201V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.201.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.201.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.201.V18.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.201.V18.0.0.doc</a>
ETSI	ETSI TS 138 201 V18.0.0 (2024-05)	18.0.0	Published	27.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138201/18.00.00_60/ts_138201v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138201/18.00.00_60/ts_138201v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.201 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/f4j8DgWSikwnkmk">https://members.tdsi.in/s/f4j8DgWSikwnkmk</a>
TTA	TTAT.3G-38.201V18.0.0	18.0.0	Published	13.02.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.201V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.201V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.2.7 TS 38.202****NR; Services provided by the physical layer**

This document is a technical specification of the services provided by the physical layer of 5G-NR to upper layers.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.202.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.202.V17.5.0	17.5.0	Published	27.08.2024	

<https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&oldFileUrl=NTN/SRIT/CCSA.3GPP.38.202.V17.5.0.docx>

ETSI	ETSI TS 138 202 V17.5.0 (2024-02)	17.5.0	Published	01.02.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138202/17.05.00_60/ts_138202v170500p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138202/17.05.00_60/ts_138202v170500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.202-17.5.0 V1.4.0	17.5.0	Published	29.05.2024	<a href="https://members.tdsi.in/s/6koBLoiixgSWXy">https://members.tdsi.in/s/6koBLoiixgSWXy</a>
TTA	TTAT.3G-38.202V17.5.0	17.5.0	Published	08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.202V17.5.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.202V17.5.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.202.V18.4.0	18.4.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.202.V18.4.0	18.4.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.202.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.202.V18.4.0.docx</a>
ETSI	ETSI TS 138 202 V18.4.0 (2024-10)	18.4.0	Published	02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138202/18.04.00_60/ts_138202v180400p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138202/18.04.00_60/ts_138202v180400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.202- 18.4.0 V1.1.0	18.4.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/pm2MeNYaNzMi9G7">https://members.tdsi.in/s/pm2MeNYaNzMi9G7</a>
TTA	TTAT.3G-38.202V18.4.0	18.4.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.202V18.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.202V18.4.0&amp;searchCate=TTAS</a>

**1.3.1.2.8 TS 38.211**

**NR; Physical channels and modulation**

This document describes the physical channels and signals for 5G-NR.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.211.V17.9.0	17.9.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.211.V17.9.0	17.9.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.211.V17.9.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.211.V17.9.0.docx</a>
ETSI	ETSI TS 138 211 V17.9.0 (2024-10)	17.9.0	Published	02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138211/17.09.00_60/ts_138211v170900p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138211/17.09.00_60/ts_138211v170900p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.211-17.9.0 V1.8.0	17.9.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/GPQQPQxrQwTiiwH">https://members.tdsi.in/s/GPQQPQxrQwTiiwH</a>
TTA	TTAT.3G-38.211V17.9.0	17.9.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.211V17.9.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.211V17.9.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.211.V18.4.0	18.4.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.211.V18.4.0	18.4.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.211.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.211.V18.4.0.docx</a>
ETSI	ETSI TS 138 211 V18.4.0 (2024-10)	18.4.0	Published	02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138211/18.04.00_60/ts_138211v180400p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138211/18.04.00_60/ts_138211v180400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.211- 18.4.0 V1.1.0	18.4.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/zrcSbAR38m4H3Yy">https://members.tdsi.in/s/zrcSbAR38m4H3Yy</a>
TTA	TTAT.3G-38.211V18.4.0	18.4.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.211V18.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.211V18.4.0&amp;searchCate=TTAS</a>

### 1.3.1.2.9 TS 38.212

#### NR; Multiplexing and channel coding

This document specifies the coding, multiplexing and mapping to physical channels for 5G NR.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.212.V17.9.0		17.9.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.212.V17.9.0		17.9.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.212.V17.9.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.212.V17.9.0.docx</a>
ETSI	ETSI TS 138 212 V17.9.0 (2024-08)		17.9.0	Published 05.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138212/17.09.00_60/ts_138212v170900p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138212/17.09.00_60/ts_138212v170900p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.212 -17.9.0 V1.8.0		17.9.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/4oZBfKJ57RbTwzt">https://members.tdsi.in/s/4oZBfKJ57RbTwzt</a>
TTA	TTAT.3G-38.212V17.9.0		17.9.0	Published 11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.212V17.9.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.212V17.9.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.212.V18.4.0		18.4.0	Published 01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.212.V18.4.0		18.4.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.212.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.212.V18.4.0.docx</a>
ETSI	ETSI TS 138 212 V18.4.0 (2024-10)		18.4.0	Published 02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138212/18.04.00_60/ts_138212v180400p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138212/18.04.00_60/ts_138212v180400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.212- 18.4.0 V1.1.0		18.4.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/di8moiMrf2PytBa">https://members.tdsi.in/s/di8moiMrf2PytBa</a>
TTA	TTAT.3G-38.212V18.4.0		18.4.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.212V18.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.212V18.4.0&amp;searchCate=TTAS</a>

### 1.3.1.2.10 TS 38.213

#### NR; Physical layer procedures for control

This document specifies and establishes the characteristics of the physical layer procedures for control operations in 5G-NR.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.213.V17.11.0		17.11.0	Published 01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.213.V17.11.0		17.11.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.213.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.213.V18.4.0.docx</a>
ETSI	ETSI TS 138 213 V17.11.0 (2024-10)		17.11.0	Published 02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138213/17.11.00_60/ts_138213v171100p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138213/17.11.00_60/ts_138213v171100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.213-17.11.0 V1.10.0		17.11.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/nEMrMFtkbAwPraZ">https://members.tdsi.in/s/nEMrMFtkbAwPraZ</a>
TTA	TTAT.3G-38.213V17.11.0		17.11.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.213V17.11.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.213V17.11.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.213.V18.4.0		18.4.0	Published 01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.213.V18.4.0		18.4.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.213.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.213.V18.4.0.docx</a>
ETSI	ETSI TS 138 213 V18.4.0 (2024-10)		18.4.0	Published 02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138213/18.04.00_60/ts_138213v180400p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138213/18.04.00_60/ts_138213v180400p.pdf</a>

TSDSI	TSDSI STD T1.3GPP 38.213- 18.4.0 V1.1.0	18.4.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/MwLmBkMGZwWZpGp">https://members.tdsi.in/s/MwLmBkMGZwWZpGp</a>
TTA	TTAT.3G-38.213V18.4.0	18.4.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.213V18.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.213V18.4.0&amp;searchCate=TTAS</a>

### 1.3.1.2.11 TS 38.214

#### NR; Physical layer procedures for data

This document specifies and establishes the characteristics of the physical layer procedures of data channels for 5G-NR.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.214.V17.11.0	17.11.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.214.V17.11.0	17.11.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.214.V17.11.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.214.V17.11.0.docx</a>
ETSI	ETSI TS 138 214 V17.11.0 (2024-10)	17.11.0	Published	02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/17.11.00_60/ts_138214v171100p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/17.11.00_60/ts_138214v171100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.214-17.11.0 V1.9.0	17.11.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/gZ4X5Lrz9TmXyfw">https://members.tdsi.in/s/gZ4X5Lrz9TmXyfw</a>
TTA	TTAT.3G-38.214V17.11.0	17.11.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.214V17.11.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.214V17.11.0&amp;searchCate=TTAS</a>

#### Release 18

ATIS	ATIS.3GPP.38.214.V18.4.0	18.4.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.214.V18.4.0	18.4.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.214.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.214.V18.4.0.docx</a>
ETSI	ETSI TS 138 214 V18.4.0 (2024-10)	18.4.0	Published	02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/18.04.00_60/ts_138214v180400p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/18.04.00_60/ts_138214v180400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.214- 18.4.0 V1.1.0	18.4.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/zADzpmzBMZkwXAd">https://members.tdsi.in/s/zADzpmzBMZkwXAd</a>
TTA	TTAT.3G-38.214V18.4.0	18.4.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.214V18.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.214V18.4.0&amp;searchCate=TTAS</a>

### 1.3.1.2.12 TS 38.215

#### NR; Physical layer measurements

This document describes the physical layer measurements for NR.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.215.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.215.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.215.V17.5.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.215.V17.5.0.docx</a>
ETSI	ETSI TS 138 215 V17.5.0 (2024-08)	17.5.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138215/17.05.00_60/ts_138215v170500p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138215/17.05.00_60/ts_138215v170500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.215 -17.5.0 V1.4.0	17.5.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/9YEB6gPeKdztmCj">https://members.tdsi.in/s/9YEB6gPeKdztmCj</a>
TTA	TTAT.3G-38.215V17.5.0	17.5.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.215V17.5.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.215V17.5.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.215.V18.3.0	18.3.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.215.V18.3.0	18.3.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.215.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.215.V18.3.0.docx</a>
ETSI	ETSI TS 138 215 V18.3.0 (2024-08)	18.3.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138215/18.03.00_60/ts_138215v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138215/18.03.00_60/ts_138215v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.215 -18.3.0 V1.0.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/rSF7CSJKCBY3Y2b">https://members.tdsi.in/s/rSF7CSJKCBY3Y2b</a>
TTA	TTAT.3G-38.215V18.3.0	18.3.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.215V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.215V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.3 Radio Layers 2 & 3****1.3.1.3.1 TS 36.300****Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2**

This document provides an overview and overall description of the E-UTRAN radio interface protocol architecture. Details of the radio interface protocols are specified in companion specifications of the 36 series.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.300.V17.9.0	17.9.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.300.V17.9.0	17.9.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.300.V17.9.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.300.V17.9.0.docx</a>
ETSI	ETSI TS 136 300 V17.9.0 (2024-10)	17.9.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136300/17.09.00_60/ts_136300v170900p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136300/17.09.00_60/ts_136300v170900p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.3-17.9.0 V1.9.0	17.9.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/tmN4Co2LgsT8zXo">https://members.tdsi.in/s/tmN4Co2LgsT8zXo</a>
TTA	TTAT.3G-36.300V17.9.0	17.9.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.300V17.9.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.300V17.9.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.300.V18.3.0	18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.300.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.300.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.300.V18.3.0.docx</a>
ETSI	ETSI TS 136 300 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136300/18.03.00_60/ts_136300v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136300/18.03.00_60/ts_136300v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.3- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/eiCpWgbNpPKHCc">https://members.tdsi.in/s/eiCpWgbNpPKHCc</a>
TTA	TTAT.3G-36.300V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.300V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.300V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.3.2 TS 36.302****Evolved Universal Terrestrial Radio Access (E-UTRA); Services provided by the physical layer**

This document is a technical specification of the services provided by the physical layer of E-UTRA to upper layers.

SDO	Document No.	Version	Status	Issued date	Location
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**Release 17**

ATIS	ATIS.3GPP.36.302.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.302.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.302.V17.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.302.V17.0.0.docx</a>
ETSI	ETSI TS 136 302 V17.0.0 (2022-05)	17.0.0	Published	06.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136302/17.00.00_60/ts_136302v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136302/17.00.00_60/ts_136302v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.302-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/fQp7mMYTBgmgQci">https://members.tdsi.in/s/fQp7mMYTBgmgQci</a>
TTA	TTAT.3G-36.302V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.302V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.302V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.302.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.302.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.302.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.302.V18.0.0.docx</a>
ETSI	ETSI TS 136 302 V18.0.0 (2024-05)	18.0.0	Published	15.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136302/18.00.00_60/ts_136302v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136302/18.00.00_60/ts_136302v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.302 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/L98HDYzDSi8MxRt">https://members.tdsi.in/s/L98HDYzDSi8MxRt</a>
TTA	TTAT.3G-36.302V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.302V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.302V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.3.3 TS 36.304****Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode**

This document specifies the Access Stratum (AS) part of the Idle Mode procedures applicable to a UE. This document specifies the model for the functional division between the NAS and AS in a UE. This document applies to all UEs that support at least E-UTRA, including multi-RAT UEs as described in 3GPP specifications, in the following cases: (i) When the UE is camped on an E-UTRA cell; (ii) When the UE is searching for a cell to camp on.

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<b>Release 17</b>					
ATIS	ATIS.3GPP.36.304.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.304.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.304.V17.5.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.304.V17.5.0.docx</a>
ETSI	ETSI TS 136 304 V17.5.0 (2024-01)	17.5.0	Published	31.01.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136304/17.05.00_60/ts_136304v170500p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136304/17.05.00_60/ts_136304v170500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.304-17.5.0 V1.5.0	17.5.0	Published	29.05.2024	<a href="https://members.tdsi.in/s/efd3yCJjHjkreY2">https://members.tdsi.in/s/efd3yCJjHjkreY2</a>
TTA	TTAT.3G-36.304V17.5.0	17.5.0	Published	08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.304V17.5.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.304V17.5.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.304.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.304.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.304.V18.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.304.V18.2.0.docx</a>
ETSI	ETSI TS 136 304 V18.2.0 (2024-08)	18.2.0	Published	08.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136304/18.02.00_60/ts_136304v180200p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136304/18.02.00_60/ts_136304v180200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.304 -18.2.0 V1.0.0	18.2.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/DTEaqOstkm3j5sX">https://members.tdsi.in/s/DTEaqOstkm3j5sX</a>
TTA	TTAT.3G-36.304V18.2.0	18.2.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.304V18.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.304V18.2.0&amp;searchCate=TTAS</a>

### 1.3.1.3.4 TS 36.305

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Stage 2 functional specification of User Equipment (UE) positioning in E-UTRAN

This document specifies the stage 2 of the UE positioning function of E-UTRAN, which provides the mechanisms to support or assist the calculation of the geographical position of a UE. The purpose of this stage 2 specification is to define the E-UTRAN UE Positioning architecture, functional entities and operations to support positioning methods. This description is confined to the E-UTRAN Access Stratum. This stage 2 specification covers the E-UTRAN positioning methods, state descriptions, and message flows to support UE positioning.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.305.V17.3.0		17.3.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.305.V17.3.0		17.3.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.305.V17.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.305.V17.3.0.docx</a>
ETSI	ETSI TS 136 305 V17.3.0 (2023-07)		17.3.0	Published 24.07.2023	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136305/17.03.00_60/ts_136305v170300p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136305/17.03.00_60/ts_136305v170300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.305-17.3.0 V1.3.0		17.3.0	Published 02.11.2023	<a href="https://members.tdsi.in/s/Z2E3icpy7cSbHDZ">https://members.tdsi.in/s/Z2E3icpy7cSbHDZ</a>
TTA	TTAT.3G-36.305V17.3.0		17.3.0	Published 27.10.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.305V17.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.305V17.3.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.305.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.305.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.305.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.305.V18.0.0.docx</a>
ETSI	ETSI TS 136 305 V18.0.0 (2024-05)		18.0.0	Published 23.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136305/18.00.00_60/ts_136305v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136305/18.00.00_60/ts_136305v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.305 -18.0.0 V1.0.0		18.0.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/r8g6idDpWi9nD8a">https://members.tdsi.in/s/r8g6idDpWi9nD8a</a>
TTA	TTAT.3G-36.305V18.0.0		18.0.0	Published 08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.305V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.305V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.3.5 TS 36.306

#### Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities

This document defines the E-UTRA UE Radio Access Capability Parameters.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.306.V17.7.0		17.7.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.306.V17.7.0		17.7.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.306.V17.7.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.306.V17.7.0.docx</a>
ETSI	ETSI TS 136 306 V17.7.0 (2024-08)		17.7.0	Published 02.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136306/17.07.00_60/ts_136306v170700p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136306/17.07.00_60/ts_136306v170700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.306 -17.7.0 V1.7.0		17.7.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/mx5y5XALCDRXCkt">https://members.tdsi.in/s/mx5y5XALCDRXCkt</a>
TTA	TTAT.3G-36.306V17.7.0		17.7.0	Published 11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.306V17.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.306V17.7.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.306.V18.3.0	18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.306.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.306.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.306.V18.3.0.docx</a>
ETSI	ETSI TS 136 306 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136306/18.03.00_60/ts_136306v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136306/18.03.00_60/ts_136306v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.306- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/mctbmki57TCxM7s">https://members.tdsi.in/s/mctbmki57TCxM7s</a>
TTA	TTAT.3G-36.306V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.306V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.306V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.3.6 TS 36.307****Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) supporting a release-independent frequency band**

This document specifies requirements on UEs supporting a frequency band that is independent of release. TSG-RAN has agreed that the standardization of new frequency bands may be independent of a release. However, in order to implement a UE that conforms to a particular release but supports a band of operation that is specified in a later release, it is necessary to specify some extra requirements. All frequency bands are fully specified in this release of the specifications. This document does not contain any requirements for UEs supporting frequency bands independent of release.

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<b>Release 17</b>					
ATIS	ATIS.3GPP.36.307.V17.7.0	17.7.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.307.V17.7.0	17.7.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.307.V17.7.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.307.V17.7.0.docx</a>
ETSI	ETSI TS 136 307 V17.7.0 (2024-05)	17.7.0	Published	14.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136307/17.07.00_60/ts_136307v170700p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136307/17.07.00_60/ts_136307v170700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.307-17.7.0 V1.7.0	17.7.0	Published	22.07.2024	<a href="https://members.tdsi.in/s/HaKkWqwwEX2N9ms">https://members.tdsi.in/s/HaKkWqwwEX2N9ms</a>
TTA	TTAT.3G-36.307V17.7.0	17.7.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.307V17.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.307V17.7.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.307.V18.5.0	18.5.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.307.V18.5.0	18.5.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.307.V18.5.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.307.V18.5.0.docx</a>
ETSI	ETSI TS 136 307 V18.5.0 (2024-08)	18.5.0	Published	02.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136307/18.05.00_60/ts_136307v180500p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136307/18.05.00_60/ts_136307v180500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.307 -18.5.0 V1.0.0	18.5.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/BFdDgKPwDFEdGdG">https://members.tdsi.in/s/BFdDgKPwDFEdGdG</a>
TTA	TTAT.3G-36.307V18.5.0	18.5.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.307V18.5.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.307V18.5.0&amp;searchCate=TTAS</a>

### 1.3.1.3.7 TS 36.314

#### Evolved Universal Terrestrial Radio Access (E-UTRA); Layer 2 – Measurements

This document contains the description and definition of the measurements performed by E-UTRAN that are transferred over the standardized interfaces in order to support E-UTRA radio link operations, radio resource management (RRM), network operations and maintenance (OAM), and self-organizing networks (SON).

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<b>Release 17</b>					
ATIS	ATIS.3GPP.36.314.V17.0.0		17.0.0	Published	21.02.2023 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.314.V17.0.0		17.0.0	Published	21.02.2023 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.314.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.314.V17.0.0.doc</a>
ETSI	ETSI TS 136 314 V17.0.0 (2022-05)		17.0.0	Published	06.05.2022 <a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136314/17.00.00_60/ts_136314v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136314/17.00.00_60/ts_136314v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.314-17.0.0 V1.0.0		17.0.0	Published	29.07.2022 <a href="https://members.tdsi.in/s/WwrAHxRQrJPLBD2">https://members.tdsi.in/s/WwrAHxRQrJPLBD2</a>
TTA	TTAT.3G-36.314V17.0.0		17.0.0	Published	05.08.2022 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.314V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.314V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.314.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.314.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.314.V18.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.314.V18.0.0.doc</a>
ETSI	ETSI TS 136 314 V18.0.0 (2024-05)		18.0.0	Published	15.05.2024 <a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136314/18.00.00_60/ts_136314v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136314/18.00.00_60/ts_136314v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.314 -18.0.0 V1.0.0		18.0.0	Published	19.11.2024 <a href="https://members.tdsi.in/s/AD8Rb2drawNLnNM">https://members.tdsi.in/s/AD8Rb2drawNLnNM</a>
TTA	TTAT.3G-36.314V18.0.0		18.0.0	Published	12.08.2024 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.314V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.314V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.3.8 TS 36.321

#### Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification

This document specifies the E-UTRA Medium Access Control (MAC) protocol.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.321.V17.7.0		17.7.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.321.V17.7.0		17.7.0	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.321.V17.7.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.321.V17.7.0.docx</a>
ETSI	ETSI TS 136 321 V17.7.0 (2024-01)		17.7.0	Published	31.01.2024 <a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136321/17.07.00_60/ts_136321v170700p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136321/17.07.00_60/ts_136321v170700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.321-17.7.0 V1.7.0		17.7.0	Published	29.05.2024 <a href="https://members.tdsi.in/s/AfnKGnrFxsFPRi">https://members.tdsi.in/s/AfnKGnrFxsFPRi</a>
TTA	TTAT.3G-36.321V17.7.0		17.7.0	Published	08.05.2024 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.321V17.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.321V17.7.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.321.V18.3.0		18.3.0	Published	01.03.2025 <a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>

CCSA	CCSA.3GPP.36.321.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.321.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.321.V18.3.0.docx</a>
ETSI	ETSI TS 136 321 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136321/18.03.00_60/ts_136321v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136321/18.03.00_60/ts_136321v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.321- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/ERdHxiCJ9CWibkC">https://members.tdsi.in/s/ERdHxiCJ9CWibkC</a>
TTA	TTAT.3G-36.321V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.321V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.321V18.3.0&amp;searchCate=TTAS</a>

### 1.3.1.3.9 TS 36.322

#### Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Link Control (RLC) protocol specification

This document specifies the E-UTRA Radio Link Control (RLC) protocol.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.322.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.322.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.322.V17.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.322.V17.0.0.docx</a>
ETSI	ETSI TS 136 322 V17.0.0 (2022-05)	17.0.0	Published	06.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136322/17.00.00_60/ts_136322v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136322/17.00.00_60/ts_136322v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.322-17.0.0 V1.0.0	17.0.0	Published	01.11.2022	<a href="https://members.tdsi.in/s/5PdEsQ5jxmSLKYJ">https://members.tdsi.in/s/5PdEsQ5jxmSLKYJ</a>
TTA	TTAT.3G-36.322V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.322V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.322V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.322.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.322.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.322.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.322.V18.0.0.docx</a>
ETSI	ETSI TS 136 322 V18.0.0 (2024-05)	18.0.0	Published	15.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136322/18.00.00_60/ts_136322v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136322/18.00.00_60/ts_136322v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.322 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/WEjNxqmpX9qMHx4">https://members.tdsi.in/s/WEjNxqmpX9qMHx4</a>
TTA	TTAT.3G-36.322V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.322V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.322V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.3.10 TS 36.323

#### Evolved Universal Terrestrial Radio Access (E-UTRA); Packet Data Convergence Protocol (PDCP) specification

This document specifies the E-UTRA Packet Data Convergence Protocol (PDCP).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.323.V17.2.0	17.2.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.323.V17.2.0	17.2.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.323.V17.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.323.V17.2.0.docx</a>
ETSI	ETSI TS 136 323 V17.2.0 (2023-01)	17.2.0	Published	19.01.2023	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136323/17.02.00_60/ts_136323v170200p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136323/17.02.00_60/ts_136323v170200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.323 17.2.0 V1.2.0	17.2.0	Published	02.05.2023	<a href="https://members.tdsi.in/s/nqMRwxftqRJSxN3">https://members.tdsi.in/s/nqMRwxftqRJSxN3</a>

TTA TTAT.3G-36.323V17.2.0 17.2.0 Published 16.03.2023 <https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&searchStandardNo=TTAT.3G-36.323V17.2.0&searchCate=TTAS>

**Release 18**

ATIS ATIS.3GPP.36.323.V18.0.0 18.0.0 Published 27.08.2024 <https://www.atis.org/3gpp-transpositions - Rel-18>  
 CCSA CCSA.3GPP.36.323.V18.0.0 18.0.0 Published 27.08.2024  
<https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&oldFileUrl=NTN/SRIT/CCSA.3GPP.36.323.V18.0.0.docx>  
 ETSI ETSI TS 136 323 V18.0.0 (2024-05) 18.0.0 Published 15.05.2024 [https://www.etsi.org/deliver/etsi\\_ts/136300\\_136399/136323/18.00.00\\_60/ts\\_136323v180000p.pdf](https://www.etsi.org/deliver/etsi_ts/136300_136399/136323/18.00.00_60/ts_136323v180000p.pdf)  
 TSDSI TSDSI STD T1.3GPP 36.323 -18.0.0 V1.0.0 18.0.0 Published 19.11.2024 <https://members.tdsi.in/s/Wc57E8baTJyNNc6>  
 TTA TTAT.3G-36.323V18.0.0 18.0.0 Published 12.08.2024 <https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&searchStandardNo=TTAT.3G-36.323V18.0.0&searchCate=TTAS>

**1.3.1.3.11 TS 36.331****Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification**

This document specifies the Radio Resource Control protocol for the radio interface between UE and E-UTRAN as well as for the radio interface between RN and E-UTRAN. The scope of this document also includes: (i) the radio related information transported in a transparent container between source eNodeB and target eNodeB upon inter eNodeB handover; (ii) the radio related information transported in a transparent container between a source or target eNodeB and another system upon inter RAT handover.

SDO	Document No.	Version	Status	Issued date	Location
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**Release 17**

ATIS	ATIS.3GPP.36.331.V17.10.0		17.10.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.331.V17.10.0		17.10.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.331.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.331.V17.10.0.docx</a>
ETSI	ETSI TS 136 331 V17.10.0 (2024-10)		17.10.0	Published	17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136331/17.10.00_60/ts_136331v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136331/17.10.00_60/ts_136331v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.331-17.10.0 V1.10.0		17.10.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/L4LHZzws59AcBL8">https://members.tdsi.in/s/L4LHZzws59AcBL8</a>
TTA	TTAT.3G-36.331V17.10.0		17.10.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.331V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.331V17.10.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.331.V18.3.1		18.3.1	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.331.V18.3.1		18.3.1	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.331.V18.3.1.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.331.V18.3.1.zip</a>
ETSI	ETSI TS 136 331 V18.3.1 (2024-10)		18.3.1	Published	17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136331/18.03.01_60/ts_136331v180301p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136331/18.03.01_60/ts_136331v180301p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.331- 18.3.1 V1.1.0		18.3.1	Published	03.02.2025	<a href="https://members.tdsi.in/s/QiZ339bA9gWxADP">https://members.tdsi.in/s/QiZ339bA9gWxADP</a>
TTA	TTAT.3G-36.331V18.3.1		18.3.1	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.331V18.3.1&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.331V18.3.1&amp;searchCate=TTAS</a>

**1.3.1.3.12 TS 36.355****Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol (LPP)**

This document contains the definition of the LTE Positioning Protocol (LPP).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.355.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.355.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.355.V17.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.355.V17.0.0.docx</a>
ETSI	ETSI TS 136 355 V17.0.0 (2022-05)		17.0.0	Published 06.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136355/17.00.00_60/ts_136355v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136355/17.00.00_60/ts_136355v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.355-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/xNmyXMiQN8szZwt">https://members.tdsi.in/s/xNmyXMiQN8szZwt</a>
TTA	TTAT.3G-36.355V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.355V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.355V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.355.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.355.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.355.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.355.V18.0.0.docx</a>
ETSI	ETSI TS 136 355 V18.0.0 (2024-05)		18.0.0	Published 15.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136355/18.00.00_60/ts_136355v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136355/18.00.00_60/ts_136355v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.355 -18.0.0 V1.0.0		18.0.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/LRdpGpAScWzmJTJ">https://members.tdsi.in/s/LRdpGpAScWzmJTJ</a>
TTA	TTAT.3G-36.355V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.355V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.355V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.3.13 TS 36.360**

**Evolved Universal Terrestrial Radio Access (E-UTRA); LTE-WLAN Aggregation Adaptation Protocol (LWAAP) specification**

This document specifies the E-UTRA LTE-WLAN Aggregation Adaptation Protocol (LWAAP).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.360.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.360.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.360.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.360.V17.0.0.doc</a>
ETSI	ETSI TS 136 360 V17.0.0 (2022-05)		17.0.0	Published 06.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136360/17.00.00_60/ts_136360v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136360/17.00.00_60/ts_136360v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.36-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/87RfEGLxi6RQtGB">https://members.tdsi.in/s/87RfEGLxi6RQtGB</a>
TTA	TTAT.3G-36.360V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.360V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.360V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.360.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.360.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.360.V18.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.360.V18.0.0.doc</a>
ETSI	ETSI TS 136 360 V18.0.0 (2024-05)		18.0.0	Published 15.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136360/18.00.00_60/ts_136360v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136360/18.00.00_60/ts_136360v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.36 -18.0.0 V1.0.0		18.0.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/4bYAJqf8ZjSCtKA">https://members.tdsi.in/s/4bYAJqf8ZjSCtKA</a>
TTA	TTAT.3G-36.360V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.360V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.360V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.3.14 TS 36.361

#### Evolved Universal Terrestrial Radio Access (E-UTRA); LTE/WLAN Radio Level Integration Using IPsec Tunnel (LWIP) encapsulation; Protocol specification

This document specifies the LWIP Encapsulation Protocol.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.361.V17.0.0		17.0.0	Published	21.02.2023 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.361.V17.0.0		17.0.0	Published	21.02.2023 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.361.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.361.V17.0.0.doc</a>
ETSI	ETSI TS 136 361 V17.0.0 (2022-05)		17.0.0	Published	06.05.2022 <a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136361/17.00.00_60/ts_136361v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136361/17.00.00_60/ts_136361v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.361-17.0.0 V1.0.0		17.0.0	Published	29.07.2022 <a href="https://members.tdsi.in/s/oTtwpBB32zkHZmT">https://members.tdsi.in/s/oTtwpBB32zkHZmT</a>
TTA	TTAT.3G-36.361V17.0.0		17.0.0	Published	05.08.2022 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.361V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.361V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.361.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.361.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.361.V18.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.361.V18.0.0.doc</a>
ETSI	ETSI TS 136 361 V18.0.0 (2024-05)		18.0.0	Published	15.05.2024 <a href="https://www.etsi.org/deliver/etsi_ts/136300_136399/136361/18.00.00_60/ts_136361v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136300_136399/136361/18.00.00_60/ts_136361v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.361 -18.0.0 V1.0.0		18.0.0	Published	19.11.2024 <a href="https://members.tdsi.in/s/X5SsFam3RsipsDm">https://members.tdsi.in/s/X5SsFam3RsipsDm</a>
TTA	TTAT.3G-36.361V18.0.0		18.0.0	Published	12.08.2024 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.361V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.361V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.3.15 TS 37.320

#### Universal Terrestrial Radio Access (UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRA); Radio measurement collection for Minimization of Drive Tests (MDT); Overall description; Stage 2

This document provides an overview and overall description of the minimization of drive tests functionality. The document describes functions and procedures to support collection of UE-specific measurements for MDT using Control Plane architecture, for both UTRAN and E-UTRAN. Details of the signalling procedures for single-RAT operation are specified in the appropriate radio interface protocol specification. Network operation and overall control of MDT is described in OAM specifications.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.320.V17.5.0		17.5.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.320.V17.5.0		17.5.0	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.320V17.5.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.320V17.5.0.docx</a>
ETSI	ETSI TS 137 320 V17.5.0 (2023-10)		17.5.0	Published	09.10.2023 <a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137320/17.05.00_60/ts_137320v170500p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137320/17.05.00_60/ts_137320v170500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.32-17.5.0 V1.5.0		17.5.0	Published	23.02.2024 <a href="https://members.tdsi.in/s/LGt2C4iqeEtjdGY">https://members.tdsi.in/s/LGt2C4iqeEtjdGY</a>
TTA	TTAT.3G-37.320V17.5.0		17.5.0	Published	13.02.2024 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.320V17.5.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.320V17.5.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.37.320.V18.3.0	18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.320.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.320.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.320.V18.3.0.docx</a>
ETSI	ETSI TS 137 320 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137320/18.03.00_60/ts_137320v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137320/18.03.00_60/ts_137320v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.32- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/ZFismCcJpMKNa7J">https://members.tdsi.in/s/ZFismCcJpMKNa7J</a>
TTA	TTAT.3G-37.320V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.320V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.320V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.3.16 TS 37.324****Evolved Universal Terrestrial Radio Access (E-UTRA) and NR; Service Data Adaptation Protocol (SDAP) specification**

This document specifies the Service Data Adaptation Protocol (SDAP) for a UE with connection to the 5G-CN.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.324.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.324.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.324.V17.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.324.V17.0.0.docx</a>
ETSI	ETSI TS 137 324 V17.0.0 (2022-05)	17.0.0	Published	06.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137324/17.00.00_60/ts_137324v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137324/17.00.00_60/ts_137324v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.324-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/mmFwPwzzXe3ECQt">https://members.tdsi.in/s/mmFwPwzzXe3ECQt</a>
TTA	TTAT.3G-37.324V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.324V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.324V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.37.324.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.324.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.324.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.324.V18.0.0.docx</a>
ETSI	ETSI TS 137 324 V18.0.0 (2024-05)	18.0.0	Published	15.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137324/18.00.00_60/ts_137324v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137324/18.00.00_60/ts_137324v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.324 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/gQgRAZG9G2zbgzY">https://members.tdsi.in/s/gQgRAZG9G2zbgzY</a>
TTA	TTAT.3G-37.324V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.324V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.324V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.3.17 TS 37.340****NR; Multi-connectivity; Overall description; Stage-2**

This document provides an overview of the multi-connectivity operation using E-UTRA and NR radio access technologies. Details of the network and radio interface protocols are specified in companion specifications of the 36 and 38 series.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.340.V17.7.0	17.7.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.340.V17.7.0	17.7.0	Published	27.08.2024	

<https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&oldFileUrl=NTN/SRIT/CCSA.3GPP.37.340.V17.7.0.docx>

ETSI	ETSI TS 137 340 V17.7.0 (2024-01)	17.7.0	Published	31.01.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137340/17.07.00_60/ts_137340v170700p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137340/17.07.00_60/ts_137340v170700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.34-17.7.0 V1.6.0	17.7.0	Published	29.05.2024	<a href="https://members.tdsi.in/s/NkpTmB3feS47Tqc">https://members.tdsi.in/s/NkpTmB3feS47Tqc</a>
TTA	TTAT.3G-37.340V17.7.0	17.7.0	Published	08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.340V17.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.340V17.7.0&amp;searchCate=TTAS</a>

#### Release 18

ATIS	ATIS.3GPP.37.340.V18.3.0	18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.340.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.340.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.340.V18.3.0.docx</a>

ETSI	ETSI TS 137 340 V18.3.0 (2024-10)	18.3.0	Published	17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137340/18.03.00_60/ts_137340v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137340/18.03.00_60/ts_137340v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.34- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/7Bnfa9pPydg3bo4">https://members.tdsi.in/s/7Bnfa9pPydg3bo4</a>
TTA	TTAT.3G-37.340V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.340V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.340V18.3.0&amp;searchCate=TTAS</a>

### 1.3.1.3.18 TS 37.355

#### LTE Positioning Protocol (LPP)

This document contains the definition of the LTE Positioning Protocol (LPP) for the radio access technologies E-UTRA/LTE and NR.

SDO	Document No.	Version	Status	Issued date	Location
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#### Release 17

ATIS	ATIS.3GPP.37.355.V17.8.0	17.8.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.355.V17.8.0	17.8.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.355.V17.8.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.355.V17.8.0.docx</a>
ETSI	ETSI TS 137 355 V17.8.0 (2024-05)	17.8.0	Published	07.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137355/17.08.00_60/ts_137355v170800p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137355/17.08.00_60/ts_137355v170800p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.355-17.8.0 V1.8.0	17.8.0	Published	22.07.2024	<a href="https://members.tdsi.in/s/fME9dYD3dYCoe5S">https://members.tdsi.in/s/fME9dYD3dYCoe5S</a>
TTA	TTAT.3G-37.355V17.8.0	17.8.0	Published	01.08.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.355V17.8.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.355V17.8.0&amp;searchCate=TTAS</a>

#### Release 18

ATIS	ATIS.3GPP.37.355.V18.3.0	18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.355.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.355.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.355.V18.3.0.docx</a>

ETSI	ETSI TS 137 355 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137355/18.03.00_60/ts_137355v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137355/18.03.00_60/ts_137355v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.355- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/pRFAb4xwH26sdDH">https://members.tdsi.in/s/pRFAb4xwH26sdDH</a>
TTA	TTAT.3G-37.355V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.355V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.355V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.3.19 TS 38.300****NR; NR and NG-RAN Overall description; Stage-2**

This document provides an overview and overall description of the NG-RAN and focuses on the radio interface protocol architecture of NR connected to 5GC (E-UTRA connected to 5GC is covered in the 36 series). Details of the radio interface protocols are specified in companion specifications of the 38 series.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.300.V17.10.0		17.10.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.300.V17.10.0		17.10.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.300.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.300.V17.10.0.docx</a>
ETSI	ETSI TS 138 300 V17.10.0 (2024-10)		17.10.0	Published	17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138300/17.10.00_60/ts_138300v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138300/17.10.00_60/ts_138300v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.3-17.10.0 V1.10.0		17.10.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/BdiKTKGfJEMCCCg">https://members.tdsi.in/s/BdiKTKGfJEMCCCg</a>
TTA	TTAT.3G-38.300V17.10.0		17.10.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.300V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.300V17.10.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.300.V18.3.0		18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.300.V18.3.0		18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.300.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.300.V18.3.0.docx</a>
ETSI	ETSI TS 138 300 V18.3.0 (2024-10)		18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138300/18.03.00_60/ts_138300v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138300/18.03.00_60/ts_138300v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.3- 18.3.0 V1.1.0		18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/rwkqabpK4XC4aYA">https://members.tdsi.in/s/rwkqabpK4XC4aYA</a>
TTA	TTAT.3G-38.300V18.3.0		18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.300V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.300V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.3.20 TS 38.304****NR; User Equipment (UE) procedures in idle mode and in RRC Inactive state**

This document specifies the Access Stratum (AS) part of the UE procedures in RRC\_IDLE state (also called Idle mode) and RRC\_INACTIVE state. The non-access stratum (NAS) part of Idle mode procedures and processes is specified in TS 23.122.

This document specifies the model for the functional division between the NAS and AS in a UE.

This document applies to all UEs that support at least NR Radio Access, including multi-RAT UEs as described in 3GPP specifications, in the following cases:

- When the UE is camped on a NR cell;
- When the UE is searching for a cell to camp on;

NOTE – When the UE is camped on or searching for a cell to camp on belonging to other RATs, the UE behaviour is described in the specifications of the other RATs.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.304.V17.9.0		17.9.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.304.V17.9.0		17.9.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.304.V17.9.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.304.V17.9.0.docx</a>
ETSI	ETSI TS 138 304 V17.9.0 (2024-08)		17.9.0	Published 12.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138304/17.09.00_60/ts_138304v170900p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138304/17.09.00_60/ts_138304v170900p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.304 -17.9.0 V1.8.0		17.9.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/m67LnQA5GzGxsBF">https://members.tdsi.in/s/m67LnQA5GzGxsBF</a>
TTA	TTAT.3G-38.304V17.9.0		17.9.0	Published 11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.304V17.9.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.304V17.9.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.304.V18.3.0		18.3.0	Published 01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.304.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.304.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.304.V18.3.0.docx</a>
ETSI	ETSI TS 138 304 V18.3.0 (2024-10)		18.3.0	Published 17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138304/18.03.00_60/ts_138304v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138304/18.03.00_60/ts_138304v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.304- 18.3.0 V1.1.0		18.3.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/CpQz6T4mtX29QX6">https://members.tdsi.in/s/CpQz6T4mtX29QX6</a>
TTA	TTAT.3G-38.304V18.3.0		18.3.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.304V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.304V18.3.0&amp;searchCate=TTAS</a>

### 1.3.1.3.21 TS 38.305

#### NG Radio Access Network (NG-RAN); Stage 2 functional specification of User Equipment (UE) positioning in NG-RAN

This document specifies the stage 2 of the UE Positioning function of NG-RAN which provides the mechanisms to support or assist the calculation of the geographical position of a UE. UE position knowledge can be used, for example, in support of Radio Resource Management functions, as well as location-based services for operators, subscribers, and third-party service providers. The purpose of this stage 2 specification is to define the NG-RAN UE Positioning architecture, functional entities and operations to support positioning methods. This description is confined to the NG-RAN Access Stratum. It does not define or describe how the results of the UE position calculation can be utilised in the Core Network (e.g. LCS) or in NG-RAN (e.g. RRM).

UE Positioning may be considered as a network-provided enabling technology consisting of standardised service capabilities that enable the provision of location applications. The application(s) may be service provider specific. The description of the numerous and varied possible location applications which are enabled by this technology is outside the scope of this document. However, clarifying examples of how the functionality being described may be used to provide specific location services may be included.

This stage 2 specification covers the NG-RAN positioning methods, state descriptions, and message flows to support UE Positioning.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.305.V17.7.0		17.7.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.305.V17.7.0		17.7.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.305.V17.7.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.305.V17.7.0.docx</a>
ETSI	ETSI TS 138 305 V17.7.0 (2024-02)		17.7.0	Published 02.02.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138305/17.07.00_60/ts_138305v170700p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138305/17.07.00_60/ts_138305v170700p.pdf</a>

TSDSI	TSDSI STD T1.3GPP 38.305-17.7.0 V1.7.0	17.7.0	Published	29.05.2024	<a href="https://members.tdsi.in/s/HbasPzrcWYDC9Kr">https://members.tdsi.in/s/HbasPzrcWYDC9Kr</a>
TTA	TTAT.3G-38.305V17.7.0	17.7.0	Published	08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.305V17.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.305V17.7.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.305.V18.3.0	18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.305.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.305.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.305.V18.3.0.docx</a>
ETSI	ETSI TS 138 305 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138305/18.03.00_60/ts_138305v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138305/18.03.00_60/ts_138305v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.305- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/G4zycCfDfbxN7gD">https://members.tdsi.in/s/G4zycCfDfbxN7gD</a>
TTA	TTAT.3G-38.305V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.305V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.305V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.3.22 TS 38.306**

**NR; User Equipment (UE) radio access capabilities**

This document defines the NR UE Radio Access Capability Parameters.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.306.V17.10.0	17.10.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.306.V17.10.0	17.10.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.306.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.306.V17.10.0.docx</a>
ETSI	ETSI TS 138 306 V17.10.0 (2024-10)	17.10.0	Published	17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138306/17.10.00_60/ts_138306v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138306/17.10.00_60/ts_138306v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.306-17.10.0 V1.10.0	17.10.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/HxTbET5q2zKF4Xj">https://members.tdsi.in/s/HxTbET5q2zKF4Xj</a>
TTA	TTAT.3G-38.306V17.10.0	17.10.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.306V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.306V17.10.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.306.V18.3.0	18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.306.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.306.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.306.V18.3.0.docx</a>
ETSI	ETSI TS 138 306 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138306/18.03.00_60/ts_138306v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138306/18.03.00_60/ts_138306v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.306- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/4RKTxnbtrRdiKNRP">https://members.tdsi.in/s/4RKTxnbtrRdiKNRP</a>
TTA	TTAT.3G-38.306V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.306V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.306V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.3.23 TS 38.307**

**NR; Requirements on User Equipments (UEs) supporting a release-independent frequency band**

This document specifies requirements for UEs supporting release independent features such as additional NR operating bands and power classes on top of TS 38.101 and TS 38.133.

SDO	Document No.	Version	Status	Issued date	Location
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**Release 17**

ATIS	ATIS.3GPP.38.307.V17.13.0	17.13.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.307.V17.13.0	17.13.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.307.V17.13.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.307.V17.13.0.docx</a>
ETSI	ETSI TS 138 307 V17.13.0 (2024-08)	17.13.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138307/17.13.00_60/ts_138307v171300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138307/17.13.00_60/ts_138307v171300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.307 -17.13.0 V1.8.0	17.13.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/QcAXj9KKitCJr2Y">https://members.tdsi.in/s/QcAXj9KKitCJr2Y</a>
TTA	TTAT.3G-38.307V17.13.0	17.13.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.307V17.13.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.307V17.13.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.307.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.307.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.307.V18.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.307.V18.2.0.docx</a>
ETSI	ETSI TS 138 307 V18.2.0 (2024-08)	18.2.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138307/18.02.00_60/ts_138307v180200p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138307/18.02.00_60/ts_138307v180200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.307 -18.2.0 V1.0.0	18.2.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/nJbCstnLAzdorPY">https://members.tdsi.in/s/nJbCstnLAzdorPY</a>
TTA	TTAT.3G-38.307V18.2.0	18.2.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.307V18.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.307V18.2.0&amp;searchCate=TTAS</a>

**1.3.1.3.24 TS 38.314****NR; Layer 2 measurements**

This document contains the description and definition of the measurements performed by NR or the UE that are transferred over the standardised interfaces in order to support NR radio link operations, radio resource management (RRM), network operations and maintenance (OAM), minimization of drive tests (MDT) and self-organising networks (SON).

Only the differences relative to TS 28.552 are specified in this specification.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.314.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.314.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.314.V17.5.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.314.V17.5.0.docx</a>
ETSI	ETSI TS 138 314 V17.5.0 (2024-05)	17.5.0	Published	14.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138314/17.05.00_60/ts_138314v170500p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138314/17.05.00_60/ts_138314v170500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.314-17.5.0 V1.5.0	17.5.0	Published	22.07.2024	<a href="https://members.tdsi.in/s/ce9sRRHH2tWdREK">https://members.tdsi.in/s/ce9sRRHH2tWdREK</a>
TTA	TTAT.3G-38.314V17.5.0	17.5.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.314V17.5.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.314V17.5.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.314.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.314.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.314.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.314.V18.0.0.docx</a>
ETSI	ETSI TS 138 314 V18.0.0 (2024-05)	18.0.0	Published	27.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138314/18.00.00_60/ts_138314v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138314/18.00.00_60/ts_138314v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.314 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/PATWfHRzFDMPdG4">https://members.tdsi.in/s/PATWfHRzFDMPdG4</a>
TTA	TTAT.3G-38.314V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-</a>

[38.314V18.0.0&searchCate=TTAS](https://www.3gpp.org/standards/3gpp/38.314V18.0.0&searchCate=TTAS)

### 1.3.1.3.25 TS 38.321

#### NR; Medium Access Control (MAC) protocol specification

This document specifies the NR MAC protocol.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.321.V17.10.0		17.10.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.321.V17.10.0		17.10.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.321.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.321.V17.10.0.docx</a>
ETSI	ETSI TS 138 321 V17.10.0 (2024-10)		17.10.0	Published	17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138321/17.10.00_60/ts_138321v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138321/17.10.00_60/ts_138321v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.321-17.10.0 V1.10.0		17.10.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/HpSZYRLEodRpntp">https://members.tdsi.in/s/HpSZYRLEodRpntp</a>
TTA	TTAT.3G-38.321V17.10.0		17.10.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.321V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.321V17.10.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.321.V18.3.0		18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.321.V18.3.0		18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.321.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.321.V18.3.0.docx</a>
ETSI	ETSI TS 138 321 V18.3.0 (2024-10)		18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138321/18.03.00_60/ts_138321v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138321/18.03.00_60/ts_138321v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.321- 18.3.0 V1.1.0		18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/dpPHkgmy2ErRaXd">https://members.tdsi.in/s/dpPHkgmy2ErRaXd</a>
TTA	TTAT.3G-38.321V18.3.0		18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.321V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.321V18.3.0&amp;searchCate=TTAS</a>

### 1.3.1.3.26 TS 38.322

#### NR; Radio Link Control (RLC) protocol specification

This document specifies the NR Radio Link Control (RLC) protocol for the UE – NR radio interface.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.322.V17.4.0		17.4.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.322.V17.4.0		17.4.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.322.V17.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.322.V17.4.0.docx</a>
ETSI	ETSI TS 138 322 V17.4.0 (2024-05)		17.4.0	Published	15.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138322/17.04.00_60/ts_138322v170400p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138322/17.04.00_60/ts_138322v170400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.322-17.4.0 V1.4.0		17.4.0	Published	22.07.2024	<a href="https://members.tdsi.in/s/T5Zwi8wac5ESBFX">https://members.tdsi.in/s/T5Zwi8wac5ESBFX</a>
TTA	TTAT.3G-38.322V17.4.0		17.4.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.322V17.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.322V17.4.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.322.V18.1.0		18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.322.V18.1.0		18.1.0	Published	27.08.2024	

<https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&oldFileUrl=NTN/SRIT/CCSA.3GPP.38.322.V18.1.0.docx>

ETSI	ETSI TS 138 322 V18.1.0 (2024-08)	18.1.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138322/18.01.00_60/ts_138322v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138322/18.01.00_60/ts_138322v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.322 -18.1.0 V1.0.0	18.1.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/pN2AT59JDGqQRoG">https://members.tdsi.in/s/pN2AT59JDGqQRoG</a>
TTA	TTAT.3G-38.322V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.322V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.322V18.1.0&amp;searchCate=TTAS</a>

### 1.3.1.3.27 TS 38.323

#### NR; Packet Data Convergence Protocol (PDCP) specification

This document provides the description of the Packet Data Convergence Protocol (PDCP).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.323.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.323.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.323.V17.5.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.323.V17.5.0.docx</a>
ETSI	ETSI TS 138 323 V17.5.0 (2023-07)	17.5.0	Published	26.07.2023	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138323/17.05.00_60/ts_138323v170500p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138323/17.05.00_60/ts_138323v170500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.323-17.5.0 V1.5.0	17.5.0	Published	02.11.2023	<a href="https://members.tdsi.in/s/wBdTkELNbwcfGX4">https://members.tdsi.in/s/wBdTkELNbwcfGX4</a>
TTA	TTAT.3G-38.323V17.5.0	17.5.0	Published	27.10.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.323V17.5.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.323V17.5.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.323.V18.3.0	18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.323.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.323.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.323.V18.3.0.docx</a>
ETSI	ETSI TS 138 323 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138323/18.03.00_60/ts_138323v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138323/18.03.00_60/ts_138323v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.323- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/4cwDRbeYj2ZrSfK">https://members.tdsi.in/s/4cwDRbeYj2ZrSfK</a>
TTA	TTAT.3G-38.323V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.323V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.323V18.3.0&amp;searchCate=TTAS</a>

### 1.3.1.3.28 TS 38.331

#### NR; Radio Resource Control (RRC); Protocol specification

This document specifies the Radio Resource Control protocol for the radio interface between UE and NG-RAN.

The scope of this document also includes:

- the radio related information transported in a transparent container between source gNB and target gNB upon inter gNB handover;
- the radio related information transported in a transparent container between a source or target gNB and another system upon inter RAT handover;
- the radio related information transported in a transparent container between a source eNB and target gNB during E-UTRA-NR Dual Connectivity.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.331.V17.10.0		17.10.0	Published 01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.331.V17.10.0		17.10.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.331.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.331.V17.10.0.docx</a>
ETSI	ETSI TS 138 331 V17.10.0 (2024-10)		17.10.0	Published 17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138331/17.10.00_60/ts_138331v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138331/17.10.00_60/ts_138331v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.331-17.10.0 V1.10.0		17.10.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/EX4bWYm6dZRLGbg">https://members.tdsi.in/s/EX4bWYm6dZRLGbg</a>
TTA	TTAT.3G-38.331V17.10.0		17.10.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.331V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.331V17.10.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.331.V18.3.0		18.3.0	Published 01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.331.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.331.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.331.V18.3.0.docx</a>
ETSI	ETSI TS 138 331 V18.3.0 (2024-10)		18.3.0	Published 14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138331/18.03.00_60/ts_138331v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138331/18.03.00_60/ts_138331v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.331- 18.3.0 V1.1.0		18.3.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/nDAKGfrfBEMeK7R">https://members.tdsi.in/s/nDAKGfrfBEMeK7R</a>
TTA	TTAT.3G-38.331V18.3.0		18.3.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.331V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.331V18.3.0&amp;searchCate=TTAS</a>

### 1.3.1.3.29 TS 38.355

#### NR; Sidelink Positioning Protocol (SLPP); Protocol Specification

This document specifies the Sidelink Positioning Protocol (SLPP) for the interface between UEs and between UE and LMF.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.355.V18.3.0		18.3.0	Published 01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.355.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.355.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.355.V18.3.0.docx</a>
ETSI	ETSI TS 138 355 V18.3.0 (2024-10)		18.3.0	Published 14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138355/18.03.00_60/ts_138355v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138355/18.03.00_60/ts_138355v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.355- 18.3.0 V1.1.0		18.3.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/XTWsTzfmjBZ3eHd">https://members.tdsi.in/s/XTWsTzfmjBZ3eHd</a>
TTA	TTAT.3G-38.355V18.3.0		18.3.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.355V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.355V18.3.0&amp;searchCate=TTAS</a>

### 1.3.1.4 Architecture

#### 1.3.1.4.1 TS 36.401

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Architecture description

This document describes the overall architecture of the E-UTRAN, including internal interfaces and assumptions on the radio, S1 and X2 interfaces.

SDO	Document No.	Version	Status	Issued date	Location
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**Release 17**

ATIS	ATIS.3GPP.36.401.V17.1.0	17.1.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.401.V17.1.0	17.1.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.401.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.401.V17.1.0.docx</a>
ETSI	ETSI TS 136 401 V17.1.0 (2022-07)	17.1.0	Published	18.07.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136401/17.01.00_60/ts_136401v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136401/17.01.00_60/ts_136401v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.401-17.1.0 V1.1.0	17.1.0	Published	01.11.2022	<a href="https://members.tdsi.in/s/Se5scLtLmpwP3jv">https://members.tdsi.in/s/Se5scLtLmpwP3jv</a>
TTA	TTAT.3G-36.401V17.1.0	17.1.0	Published	21.10.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.401V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.401V17.1.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.401.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.401.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.401.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.401.V18.1.0.docx</a>
ETSI	ETSI TS 136 401 V18.1.0 (2024-08)	18.1.0	Published	02.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136401/18.01.00_60/ts_136401v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136401/18.01.00_60/ts_136401v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.401 -18.1.0 V1.0.0	18.1.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/EJWWjFjKPBa97mx">https://members.tdsi.in/s/EJWWjFjKPBa97mx</a>
TTA	TTAT.3G-36.401V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.401V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.401V18.1.0&amp;searchCate=TTAS</a>

**1.3.1.4.2 TS 36.410****Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 general aspects and principles**

This document is an introduction to the 3GPP TS 36.41x series of technical specifications that define the S1 interface for the interconnection of the eNodeB component of the Evolved Universal Terrestrial Radio Access Network (E UTRAN) to the Core Network of the EPS system.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.410.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.410.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.410.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.410.V17.0.0.doc</a>
ETSI	ETSI TS 136 410 V17.0.0 (2022-05)	17.0.0	Published	02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136410/17.00.00_60/ts_136410v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136410/17.00.00_60/ts_136410v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.41-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/NqFA6jnE7EBY43o">https://members.tdsi.in/s/NqFA6jnE7EBY43o</a>
TTA	TTAT.3G-36.410V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.410V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.410V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.410.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.410.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.410.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.410.V18.0.0.docx</a>
ETSI	ETSI TS 136 410 V18.0.0 (2024-05)	18.0.0	Published	02.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136410/18.00.00_60/ts_136410v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136410/18.00.00_60/ts_136410v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.41 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/eBinF4pTp6yXRZW">https://members.tdsi.in/s/eBinF4pTp6yXRZW</a>
TTA	TTAT.3G-36.410V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.410V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.410V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.3 TS 36.411

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 layer 1

This document specifies the standards allowed to implement layer 1 on the S1 interface. The specification of transmission delay requirements and O&M requirements are not in the scope of this document. In the following, “layer 1” and “physical layer” are assumed to be synonymous.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.411.V17.0.0		17.0.0	Published	21.02.2023 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.411.V17.0.0		17.0.0	Published	21.02.2023 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.411.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.411.V17.0.0.doc</a>
ETSI	ETSI TS 136 411 V17.0.0 (2022-05)		17.0.0	Published	02.05.2022 <a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136411/17.00.00_60/ts_136411v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136411/17.00.00_60/ts_136411v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.411-17.0.0 V1.0.0		17.0.0	Published	29.07.2022 <a href="https://members.tdsi.in/s/Ky565mPKGTMCiSr">https://members.tdsi.in/s/Ky565mPKGTMCiSr</a>
TTA	TTAT.3G-36.411V17.0.0		17.0.0	Published	05.08.2022 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.411V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.411V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.411.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.411.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.411.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.411.V18.0.0.docx</a>
ETSI	ETSI TS 136 411 V18.0.0 (2024-05)		18.0.0	Published	02.05.2024 <a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136411/18.00.00_60/ts_136411v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136411/18.00.00_60/ts_136411v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.411 -18.0.0 V1.0.0		18.0.0	Published	19.11.2024 <a href="https://members.tdsi.in/s/gWBDfyJitwMkZLK">https://members.tdsi.in/s/gWBDfyJitwMkZLK</a>
TTA	TTAT.3G-36.411V18.0.0		18.0.0	Published	12.08.2024 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.411V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.411V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.4 TS 36.412

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 signalling transport

This document specifies the standards for signalling transport to be used across S1 interface. S1 interface is a logical interface between the eNodeB and the E-UTRAN core network. This document describes how the S1-AP signalling messages are transported over S1.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.412.V17.0.0		17.0.0	Published	21.02.2023 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.412.V17.0.0		17.0.0	Published	21.02.2023 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.412.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.412.V17.0.0.doc</a>
ETSI	ETSI TS 136 412 V17.0.0 (2022-05)		17.0.0	Published	02.05.2022 <a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136412/17.00.00_60/ts_136412v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136412/17.00.00_60/ts_136412v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.412-17.0.0 V1.0.0		17.0.0	Published	29.07.2022 <a href="https://members.tdsi.in/s/5XWtFk7jRHmFeFD">https://members.tdsi.in/s/5XWtFk7jRHmFeFD</a>
TTA	TTAT.3G-36.412V17.0.0		17.0.0	Published	05.08.2022 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.412V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.412V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.412.V18.1.0		18.1.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>

CCSA	CCSA.3GPP.36.412.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.412.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.412.V18.1.0.docx</a>
ETSI	ETSI TS 136 412 V18.1.0 (2024-08)	18.1.0	Published	02.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136412/18.01.00_60/ts_136412v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136412/18.01.00_60/ts_136412v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.412 -18.1.0 V1.0.0	18.1.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/CKn85KqeYMoeTEZ">https://members.tdsi.in/s/CKn85KqeYMoeTEZ</a>
TTA	TTAT.3G-36.412V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.412V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.412V18.1.0&amp;searchCate=TTAS</a>

### 1.3.1.4.5 TS 36.413

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)

This document specifies the E-UTRAN radio network layer signalling protocol for the S1 interface. The S1 Application Protocol (S1AP) supports the functions of S1 interface by signalling procedures defined in this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.413.V17.6.0	17.6.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.413.V17.6.0	17.6.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.413.V17.6.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.413.V17.6.0.docx</a>
ETSI	ETSI TS 136 413 V17.6.0 (2024-04)	17.6.0	Published	22.04.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136413/17.06.00_60/ts_136413v170600p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136413/17.06.00_60/ts_136413v170600p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.413-17.6.0 V1.6.0	17.6.0	Published	22.07.2024	<a href="https://members.tdsi.in/s/oDoG4EnorbJcJoNx">https://members.tdsi.in/s/oDoG4EnorbJcJoNx</a>
TTA	TTAT.3G-36.413V17.6.0	17.6.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.413V17.6.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.413V17.6.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.413.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.413.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.413.V18.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.413.V18.2.0.docx</a>
ETSI	ETSI TS 136 413 V18.2.0 (2024-08)	18.2.0	Published	02.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136413/18.02.00_60/ts_136413v180200p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136413/18.02.00_60/ts_136413v180200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.413 -18.2.0 V1.0.0	18.2.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/wNfAnyYdYGjXide">https://members.tdsi.in/s/wNfAnyYdYGjXide</a>
TTA	TTAT.3G-36.413V18.2.0	18.2.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.413V18.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.413V18.2.0&amp;searchCate=TTAS</a>

### 1.3.1.4.6 TS 36.414

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 data transport

This document specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the S1 interface.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.414.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.414.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.414.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.414.V17.0.0.doc</a>

ETSI	ETSI TS 136 414 V17.0.0 (2022-05)	17.0.0	Published	02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136414/17.00.00_60/ts_136414v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136414/17.00.00_60/ts_136414v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.414-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/fpqTF5fxqwYacFK">https://members.tdsi.in/s/fpqTF5fxqwYacFK</a>
TTA	TTAT.3G-36.414V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.414V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.414V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.414.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.414.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.414.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.414.V18.0.0.docx</a>
ETSI	ETSI TS 136 414 V18.0.0 (2024-05)	18.0.0	Published	02.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136414/18.00.00_60/ts_136414v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136414/18.00.00_60/ts_136414v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.414 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/afycdjX3p2F7jGx">https://members.tdsi.in/s/afycdjX3p2F7jGx</a>
TTA	TTAT.3G-36.414V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.414V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.414V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.7 TS 36.420**

**Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 general aspects and principles**

This document is an introduction to the TSG RAN TS 36.42x series of UMTS technical specifications that define the X2 interface. It is an interface for the interconnection of two E-UTRAN NodeB (eNodeB) components within the Evolved Universal Terrestrial Radio Access Network (E-UTRAN) architecture.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.420.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.420.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.420.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.420.V17.0.0.doc</a>
ETSI	ETSI TS 136 420 V17.0.0 (2022-05)	17.0.0	Published	02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136420/17.00.00_60/ts_136420v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136420/17.00.00_60/ts_136420v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.42-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/WiRLJt8zDHPem2c">https://members.tdsi.in/s/WiRLJt8zDHPem2c</a>
TTA	TTAT.3G-36.420V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.420V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.420V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.420.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.420.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.420.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.420.V18.0.0.docx</a>
ETSI	ETSI TS 136 420 V18.0.0 (2024-05)	18.0.0	Published	02.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136420/18.00.00_60/ts_136420v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136420/18.00.00_60/ts_136420v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.42 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/KBEYcKMEmts2T7Y">https://members.tdsi.in/s/KBEYcKMEmts2T7Y</a>
TTA	TTAT.3G-36.420V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.420V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.420V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.8 TS 36.421

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 layer 1

This document specifies the standards allowed to implement Layer 1 on the X2 interface. The specification of transmission delay requirements and O & M requirements are not in the scope of this document. In the following “Layer 1” and “Physical Layer” are assumed to be synonymous.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.421.V17.0.0		17.0.0	Published	21.02.2023 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.421.V17.0.0		17.0.0	Published	21.02.2023 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.421.V17.0.0.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.421.V17.0.0.zip</a>
ETSI	ETSI TS 136 421 V17.0.0 (2022-05)		17.0.0	Published	02.05.2022 <a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136421/17.00.00_60/ts_136421v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136421/17.00.00_60/ts_136421v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.421-17.0.0 V1.0.0		17.0.0	Published	29.07.2022 <a href="https://members.tdsi.in/s/bjQw5fCRta8FEyq">https://members.tdsi.in/s/bjQw5fCRta8FEyq</a>
TTA	TTAT.3G-36.421V17.0.0		17.0.0	Published	05.08.2022 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.421V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.421V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.421.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.421.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.421.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.421.V18.0.0.docx</a>
ETSI	ETSI TS 136 421 V18.0.0 (2024-05)		18.0.0	Published	02.05.2024 <a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136421/18.00.00_60/ts_136421v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136421/18.00.00_60/ts_136421v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.421 -18.0.0 V1.0.0		18.0.0	Published	19.11.2024 <a href="https://members.tdsi.in/s/64HGRfiKRnffB4Z">https://members.tdsi.in/s/64HGRfiKRnffB4Z</a>
TTA	TTAT.3G-36.421V18.0.0		18.0.0	Published	12.08.2024 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.421V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.421V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.9 TS 36.422

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 signalling transport

This document specifies the standards for Signalling Transport to be used across X2 interface. X2 interface is a logical interface between eNodeBs. This document describes how the X2-AP signalling messages are transported over X2.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.422.V17.1.0		17.1.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.422.V17.1.0		17.1.0	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.422.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.422.V17.1.0.docx</a>
ETSI	ETSI TS 136 422 V17.1.0 (2023-07)		17.1.0	Published	18.07.2023 <a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136422/17.01.00_60/ts_136422v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136422/17.01.00_60/ts_136422v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.422-17.1.0 V1.1.0		17.1.0	Published	02.11.2023 <a href="https://members.tdsi.in/s/RiwpXzc3E6n57qn">https://members.tdsi.in/s/RiwpXzc3E6n57qn</a>
TTA	TTAT.3G-36.422V17.1.0		17.1.0	Published	27.10.2023 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.422V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.422V17.1.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.422.V18.1.0		18.1.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>

CCSA	CCSA.3GPP.36.422.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.422.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.422.V18.1.0.docx</a>
ETSI	ETSI TS 136 422 V18.1.0 (2024-08)	18.1.0	Published	02.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136422/18.01.00_60/ts_136422v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136422/18.01.00_60/ts_136422v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.422 -18.1.0 V1.0.0	18.1.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/s7z34BwXxctCT2z">https://members.tdsi.in/s/s7z34BwXxctCT2z</a>
TTA	TTAT.3G-36.422V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.422V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.422V18.1.0&amp;searchCate=TTAS</a>

### 1.3.1.4.10 TS 36.423

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 Application Protocol (X2AP)

This document specifies the radio network layer signalling procedures of the control plane between eNodeBs in E-UTRAN. X2AP supports the functions of X2 interface by signalling procedures defined in this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.423.V17.7.0	17.7.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.423.V17.7.0	17.7.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.423.V17.7.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.423.V17.7.0.docx</a>
ETSI	ETSI TS 136 423 V17.7.0 (2024-04)	17.7.0	Published	22.04.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136423/17.07.00_60/ts_136423v170700p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136423/17.07.00_60/ts_136423v170700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.423-17.7.0 V1.7.0	17.7.0	Published	22.07.2024	<a href="https://members.tdsi.in/s/Zexm3B9JM3YYnwD">https://members.tdsi.in/s/Zexm3B9JM3YYnwD</a>
TTA	TTAT.3G-36.423V17.7.0	17.7.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.423V17.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.423V17.7.0&amp;searchCate=TTAS</a>

#### Release 18

ATIS	ATIS.3GPP.36.423.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.423.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.423.V18.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.423.V18.2.0.docx</a>
ETSI	ETSI TS 136 423 V18.2.0 (2024-08)	18.2.0	Published	02.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136423/18.02.00_60/ts_136423v180200p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136423/18.02.00_60/ts_136423v180200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.423 -18.2.0 V1.0.0	18.2.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/q2JtR44a8rozdsW">https://members.tdsi.in/s/q2JtR44a8rozdsW</a>
TTA	TTAT.3G-36.423V18.2.0	18.2.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.423V18.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.423V18.2.0&amp;searchCate=TTAS</a>

### 1.3.1.4.11 TS 36.424

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 data transport

This document specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the X2 interface.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.424.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.424.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.424.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.424.V17.0.0.doc</a>

ETSI	ETSI TS 136 424 V17.0.0 (2022-05)	17.0.0	Published	02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136424/17.00.00_60/ts_136424v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136424/17.00.00_60/ts_136424v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.424-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/oXXYRaQiGoQBYNe">https://members.tdsi.in/s/oXXYRaQiGoQBYNe</a>
TTA	TTAT.3G-36.424V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.424V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.424V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.424.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.424.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.424.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.424.V18.0.0.docx</a>
ETSI	ETSI TS 136 424 V18.0.0 (2024-05)	18.0.0	Published	02.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136424/18.00.00_60/ts_136424v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136424/18.00.00_60/ts_136424v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.424 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/aAGsOyPmBnkKor3">https://members.tdsi.in/s/aAGsOyPmBnkKor3</a>
TTA	TTAT.3G-36.424V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.424V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.424V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.12 TS 36.425****Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 interface user plane protocol**

This document specifies the X2 user plane protocol being used over the X2 interface.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.425.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.425.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.425.V17.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.425.V17.0.doc</a>
ETSI	ETSI TS 136 425 V17.0.0 (2022-05)	17.0.0	Published	02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136425/17.00.00_60/ts_136425v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136425/17.00.00_60/ts_136425v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.425-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/oQBkSm9zJs2btOD">https://members.tdsi.in/s/oQBkSm9zJs2btOD</a>
TTA	TTAT.3G-36.425V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.425V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.425V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.425.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.425.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.425.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.425.V18.0.0.docx</a>
ETSI	ETSI TS 136 425 V18.0.0 (2024-05)	18.0.0	Published	02.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136425/18.00.00_60/ts_136425v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136425/18.00.00_60/ts_136425v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.425 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/aj4fQjDg4YnWfxP">https://members.tdsi.in/s/aj4fQjDg4YnWfxP</a>
TTA	TTAT.3G-36.425V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.425V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.425V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.13 TS 36.440

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); General aspects and principles for interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN

This document describes the overall architecture of the interface for the provision of MBMS in the E-UTRAN. This includes also a description of the general aspects, assumptions and principles guiding the architecture and interface. The MBMS functions to be provided within that architecture are summarized. It introduces the TSG RAN TS 36.44x series of UMTS technical specifications that define the different interfaces introduced for MBMS provision in E-UTRAN.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.440.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.440.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.440.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.440.V17.0.0.doc</a>
ETSI	ETSI TS 136 440 V17.0.0 (2022-05)		17.0.0	Published 02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136440/17.00.00_60/ts_136440v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136440/17.00.00_60/ts_136440v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.44-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/sSiEnGLTbX2SaYw">https://members.tdsi.in/s/sSiEnGLTbX2SaYw</a>
TTA	TTAT.3G-36.440V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.440V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.440V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.440.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.440.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.440.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.440.V18.0.0.docx</a>
ETSI	ETSI TS 136 440 V18.0.0 (2024-05)		18.0.0	Published 02.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136440/18.00.00_60/ts_136440v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136440/18.00.00_60/ts_136440v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.44 -18.0.0 V1.0.0		18.0.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/zLBYFs23ErYCKYi">https://members.tdsi.in/s/zLBYFs23ErYCKYi</a>
TTA	TTAT.3G-36.440V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.440V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.440V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.14 TS 36.441

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Layer 1 for interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN

This document specifies the standards allowed to implement layer 1 on the interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN. In the following, “layer 1” and “physical layer” are assumed to be synonymous.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.441.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.441.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.441.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.441.V17.0.0.doc</a>
ETSI	ETSI TS 136 441 V17.0.0 (2022-05)		17.0.0	Published 02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136441/17.00.00_60/ts_136441v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136441/17.00.00_60/ts_136441v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.441-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/z25kTsPPnJGcYBJ">https://members.tdsi.in/s/z25kTsPPnJGcYBJ</a>

TTA	TTAT.3G-36.441V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.441V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.441V17.0.0&amp;searchCate=TTAS</a>
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**Release 18**

ATIS	ATIS.3GPP.36.441.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.441.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.441.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.441.V18.0.0.docx</a>
ETSI	ETSI TS 136 441 V18.0.0 (2024-05)	18.0.0	Published	02.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136441/18.00.00_60/ts_136441v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136441/18.00.00_60/ts_136441v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.441 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/rTW3NB3tsSPEQr5">https://members.tdsi.in/s/rTW3NB3tsSPEQr5</a>
TTA	TTAT.3G-36.441V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.441V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.441V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.15 TS 36.442****Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Signalling Transport for interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN**

This document specifies the standards for signalling transport to be used across M2 and M3 interfaces. M2 interface is a logical interface between the eNodeB and the MCE. M3 interface is a logical interface between the MCE and the MME. This document describes how the M2-AP signalling messages are transported over M2, and how the M3-AP signalling messages are transported over M3.

SDO	Document No.	Version	Status	Issued date	Location
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**Release 17**

ATIS	ATIS.3GPP.36.442.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.442.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.442.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.442.V17.0.0.doc</a>
ETSI	ETSI TS 136 442 V17.0.0 (2022-05)	17.0.0	Published	02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136442/17.00.00_60/ts_136442v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136442/17.00.00_60/ts_136442v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.442-17.0.0 V1.0.0	17.0.0	Published	01.11.2022	<a href="https://members.tdsi.in/s/DHCoi9f3H4s4xiQ">https://members.tdsi.in/s/DHCoi9f3H4s4xiQ</a>
TTA	TTAT.3G-36.442V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.442V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.442V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.442.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.442.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.442.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.442.V18.0.0.docx</a>
ETSI	ETSI TS 136 442 V18.0.0 (2024-05)	18.0.0	Published	02.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136442/18.00.00_60/ts_136442v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136442/18.00.00_60/ts_136442v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.442 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/4XiQkpr3FAjmNjS">https://members.tdsi.in/s/4XiQkpr3FAjmNjS</a>
TTA	TTAT.3G-36.442V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.442V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.442V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.16 TS 36.443****Evolved Universal Terrestrial Radio Access Network (E-UTRAN); M2 Application Protocol (M2AP)**

This document specifies the E-UTRAN radio network layer signalling protocol for the M2 interface. The M2 Application Protocol (M2AP) supports the functions of M2 interface by signalling procedures defined in this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.443.V17.0.1		17.0.1	Published	21.02.2023 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.443.V17.0.1		17.0.1	Published	06.02.2025 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.443.V17.0.1.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.443.V17.0.1.doc</a>
ETSI	ETSI TS 136 443 V17.0.1 (2022-05)		17.0.1	Published	02.05.2022 <a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136443/17.00.01_60/ts_136443v170001p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136443/17.00.01_60/ts_136443v170001p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.443-17.0.1 V1.1.0		17.0.1	Published	01.11.2022 <a href="https://members.tdsi.in/s/YqaHXECgmacQjA">https://members.tdsi.in/s/YqaHXECgmacQjA</a>
TTA	TTAT.3G-36.443V17.0.1		17.0.1	Published	05.08.2022 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.443V17.0.1&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.443V17.0.1&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.443.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.443.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.443.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.443.V18.0.0.docx</a>
ETSI	ETSI TS 136 443 V18.0.0 (2024-05)		18.0.0	Published	02.05.2024 <a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136443/18.00.00_60/ts_136443v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136443/18.00.00_60/ts_136443v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.443 -18.0.0 V1.0.0		18.0.0	Published	19.11.2024 <a href="https://members.tdsi.in/s/tH4RkpCxQLdY85S">https://members.tdsi.in/s/tH4RkpCxQLdY85S</a>
TTA	TTAT.3G-36.443V18.0.0		18.0.0	Published	12.08.2024 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.443V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.443V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.17 TS 36.444****Evolved Universal Terrestrial Radio Access Network (E-UTRAN); M3 Application Protocol (M3AP)**

This document specifies the E-UTRAN radio network layer signalling protocol for the M3 interface. The M3 Application Protocol (M3AP) supports the functions of M3 interface by signalling procedures defined in this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.444.V17.0.0		17.0.0	Published	21.02.2023 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.444.V17.0.0		17.0.0	Published	21.02.2023 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.444.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.444.V17.0.0.doc</a>
ETSI	ETSI TS 136 444 V17.0.0 (2022-05)		17.0.0	Published	02.05.2022 <a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136444/17.00.00_60/ts_136444v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136444/17.00.00_60/ts_136444v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.444-17.0.0 V1.0.0		17.0.0	Published	29.07.2022 <a href="https://members.tdsi.in/s/8LMJBsgZdXWgtqc">https://members.tdsi.in/s/8LMJBsgZdXWgtqc</a>
TTA	TTAT.3G-36.444V17.0.0		17.0.0	Published	05.08.2022 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.444V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.444V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.444.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>

CCSA	CCSA.3GPP.36.444.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.444.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.444.V18.0.0.docx</a>
ETSI	ETSI TS 136 444 V18.0.0 (2024-05)	18.0.0	Published	02.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136444/18.00.00_60/ts_136444v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136444/18.00.00_60/ts_136444v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.444 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/sdWKKdjZAm9xgJp">https://members.tdsi.in/s/sdWKKdjZAm9xgJp</a>
TTA	TTAT.3G-36.444V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.444V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.444V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.18 TS 36.445

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN); M1 data transport

This document specifies the standards for user data transport protocols over the E-UTRAN M1 interface.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.445.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.445.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.445.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.445.V17.0.0.doc</a>
ETSI	ETSI TS 136 445 V17.0.0 (2022-05)	17.0.0	Published	02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136445/17.00.00_60/ts_136445v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136445/17.00.00_60/ts_136445v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.445-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/CPMtQE64gBDQLK4">https://members.tdsi.in/s/CPMtQE64gBDQLK4</a>
TTA	TTAT.3G-36.445V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.445V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.445V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.445.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.445.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.445.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.445.V18.0.0.docx</a>
ETSI	ETSI TS 136 445 V18.0.0 (2024-05)	18.0.0	Published	02.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136445/18.00.00_60/ts_136445v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136445/18.00.00_60/ts_136445v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.445 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/eganNzT6F4Qc2Rf">https://members.tdsi.in/s/eganNzT6F4Qc2Rf</a>
TTA	TTAT.3G-36.445V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.445V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.445V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.19 TS 36.455

#### Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol A (LPPa)

This document specifies the control plane radio network layer signalling procedures between eNodeB and E-SMLC. LPPa supports the concerned functions by signalling procedures defined in this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.455.V17.1.0	17.1.0	Published	22.05.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.455.V17.1.0	17.1.0	Published	22.05.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.455.V17.1.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.455.V17.1.0.doc</a>
ETSI	ETSI TS 136 455 V17.1.0 (2023-04)	17.1.0	Published	26.04.2023	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136455/17.01.00_60/ts_136455v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136455/17.01.00_60/ts_136455v170100p.pdf</a>

TSDSI	TSDSI STD T1.3GPP 37.113-17.1.0 V1.1.0	17.1.0	Published	14.08.2023	<a href="https://members.tdsi.in/s/cPia5pFyt3qE8Jn">https://members.tdsi.in/s/cPia5pFyt3qE8Jn</a>
TTA	TTAT.3G-36.455V17.1.0	17.1.0	Published	01.08.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.455V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.455V17.1.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.455.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.455.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.455.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.455.V18.1.0.docx</a>
ETSI	ETSI TS 136 455 V18.1.0 (2024-08)	18.1.0	Published	02.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136455/18.01.00_60/ts_136455v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136455/18.01.00_60/ts_136455v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.455 -18.1.0 V1.0.0	18.1.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/zN5qranqR7fxp">https://members.tdsi.in/s/zN5qranqR7fxp</a>
TTA	TTAT.3G-36.455V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.455V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.455V18.1.0&amp;searchCate=TTAS</a>

**1.3.1.4.20 TS 36.461**

**Evolved Universal Terrestrial Radio Access Network (E-UTRAN) and Wireless LAN (WLAN); Xw layer 1**

This document specifies the standards allowed to implement Layer 1 on the Xw interface. The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

SDO	Document No.	Version	Status	Issued date	Location
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**Release 17**

ATIS	ATIS.3GPP.36.461.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.461.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.461.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.461.V17.0.0.doc</a>
ETSI	ETSI TS 136 461 V17.0.0 (2022-05)	17.0.0	Published	02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136461/17.00.00_60/ts_136461v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136461/17.00.00_60/ts_136461v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.461-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/ra9X6ZN4iSGcb9e">https://members.tdsi.in/s/ra9X6ZN4iSGcb9e</a>
TTA	TTAT.3G-36.461V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.461V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.461V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.461.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.461.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.461.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.461.V18.0.0.docx</a>
ETSI	ETSI TS 136 461 V18.0.0 (2024-05)	18.0.0	Published	03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136461/18.00.00_60/ts_136461v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136461/18.00.00_60/ts_136461v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.461 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/WQ3WDrC5pkkfyTp">https://members.tdsi.in/s/WQ3WDrC5pkkfyTp</a>
TTA	TTAT.3G-36.461V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.461V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.461V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.21 TS 36.462

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN) and Wireless LAN (WLAN); Xw signalling transport

This document specifies the standards for Signalling Transport to be used across the Xw interface. The Xw interface is a logical interface between the eNB and the WLAN Termination (WT). This document describes how the Xw-AP signalling messages are transported over Xw.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.36.462.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.462.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.462.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.462.V17.0.0.doc</a>
ETSI	ETSI TS 136 462 V17.0.0 (2022-05)		17.0.0	Published	02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136462/17.00.00_60/ts_136462v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136462/17.00.00_60/ts_136462v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.462-17.0.0 V1.0.0		17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/aeQ2foMDXWaGgM6">https://members.tdsi.in/s/aeQ2foMDXWaGgM6</a>
TTA	TTAT.3G-36.462V17.0.0		17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.462V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.462V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.36.462.V18.0.0		18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.462.V18.0.0		18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.462.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.462.V18.0.0.docx</a>
ETSI	ETSI TS 136 462 V18.0.0 (2024-05)		18.0.0	Published	03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136462/18.00.00_60/ts_136462v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136462/18.00.00_60/ts_136462v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.462 -18.0.0 V1.0.0		18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/j26CKHL3b47RJYE">https://members.tdsi.in/s/j26CKHL3b47RJYE</a>
TTA	TTAT.3G-36.462V18.0.0		18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.462V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.462V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.22 TS 36.463

#### Evolved Universal Terrestrial Radio Access Network (E-UTRAN) and Wireless Local Area Network (WLAN); Xw application protocol (XwAP)

This document specifies the signalling procedures of the control plane between an eNB and WLAN Termination (WT). The Xw Application Protocol (XwAP) supports the functions of Xw interface by signalling procedures defined in this document.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.36.463.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.463.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.463.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.463.V17.0.0.doc</a>
ETSI	ETSI TS 136 463 V17.0.0 (2022-05)		17.0.0	Published	02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136463/17.00.00_60/ts_136463v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136463/17.00.00_60/ts_136463v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.463-17.0.0 V1.0.0		17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/JbEna9JddfRa7qj">https://members.tdsi.in/s/JbEna9JddfRa7qj</a>
TTA	TTAT.3G-36.463V17.0.0		17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.463V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.463V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.463.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.463.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.463.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.463.V18.0.0.docx</a>
ETSI	ETSI TS 136 463 V18.0.0 (2024-05)	18.0.0	Published	03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136463/18.00.00_60/ts_136463v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136463/18.00.00_60/ts_136463v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.463 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/TzWDfeJGwyKY3dc">https://members.tdsi.in/s/TzWDfeJGwyKY3dc</a>
TTA	TTAT.3G-36.463V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.463V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.463V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.23 TS 36.464****Evolved Universal Terrestrial Radio Access Network (E-UTRAN) and Wireless Local Area Network (WLAN); Xw data transport**

This document specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the Xw interface for LTE/WLAN Aggregation (LWA).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.464.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.464.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.464.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.464.V17.0.0.doc</a>
ETSI	ETSI TS 136 464 V17.0.0 (2022-05)	17.0.0	Published	02.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136464/17.00.00_60/ts_136464v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136464/17.00.00_60/ts_136464v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.464-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/qd6jGpeES4mqrSZ">https://members.tdsi.in/s/qd6jGpeES4mqrSZ</a>
TTA	TTAT.3G-36.464V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.464V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.464V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.464.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.464.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.464.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.464.V18.0.0.docx</a>
ETSI	ETSI TS 136 464 V18.0.0 (2024-05)	18.0.0	Published	03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136464/18.00.00_60/ts_136464v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136464/18.00.00_60/ts_136464v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.464 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/Rg3ZzTGCCfYWsC2">https://members.tdsi.in/s/Rg3ZzTGCCfYWsC2</a>
TTA	TTAT.3G-36.464V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.464V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.464V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.24 TS 36.465****Evolved Universal Terrestrial Radio Access Network (E-UTRAN) and Wireless Local Area Network (WLAN); Xw interface user plane protocol**

This document specifies the Xw user plane protocol being used over the Xw interface for LTE/WLAN Aggregation (LWA).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.465.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>

CCSA	CCSA.3GPP.36.465.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.465.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.465.V17.0.0.doc</a>
ETSI	ETSI TS 136 465 V17.0.0 (2022-04)	17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136465/17.00.00_60/ts_136465v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136465/17.00.00_60/ts_136465v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.465-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/KaifEzQBkTeazXf">https://members.tdsi.in/s/KaifEzQBkTeazXf</a>
TTA	TTAT.3G-36.465V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.465V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.465V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.36.465.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.465.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.465.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.465.V18.0.0.docx</a>
ETSI	ETSI TS 136 465 V18.0.0 (2024-05)	18.0.0	Published	03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136400_136499/136465/18.00.00_60/ts_136465v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136400_136499/136465/18.00.00_60/ts_136465v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.465 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/kq2kdifriXQ8roq">https://members.tdsi.in/s/kq2kdifriXQ8roq</a>
TTA	TTAT.3G-36.465V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.465V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.465V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.25 TS 37.460****Iuant interface: General aspects and principles**

This document is an introduction to the 3GPP TS 37.46x series of Technical Specifications that define the Iuant Interface. The Iuant interface is applicable for UTRAN, E-UTRAN and NG-RAN. In this specification UTRAN, E-UTRAN and NG-RAN are denoted as “RAN”, whereas the corresponding network entities Node B, eNB, en-gNB and NG-RAN node are denoted as “RAN Node”. The logical Iuant interface is an interface internal to the RAN Node and defined to reside between the implementation specific O&M function and the RET antennas and between the implementation specific O&M function and the TMA control unit function.

SDO	Document No.	Version	Status	Issued date	Location
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**Release 17**

ATIS	ATIS.3GPP.37.460.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.460.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.460.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.460.V17.0.0.doc</a>
ETSI	ETSI TS 137 460 V17.0.0 (2022-04)	17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137460/17.00.00_60/ts_137460v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137460/17.00.00_60/ts_137460v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.46-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/6jndrFL9wmEZ9S9">https://members.tdsi.in/s/6jndrFL9wmEZ9S9</a>
TTA	TTAT.3G-37.460V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.460V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.460V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.37.460.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.460.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.460.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.460.V18.0.0.docx</a>
ETSI	ETSI TS 137 460 V18.0.0 (2024-05)	18.0.0	Published	23.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137460/18.00.00_60/ts_137460v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137460/18.00.00_60/ts_137460v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.46 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/xFEDfBBcKbyWi4H">https://members.tdsi.in/s/xFEDfBBcKbyWi4H</a>
TTA	TTAT.3G-37.460V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.460V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.460V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.26 TS 37.461****Iuant interface: Layer 1**

This document specifies the standards allowed to implement layer 1 on the Iuant interface for UTRA, E-UTRA and NR. The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.37.461.V17.1.0		17.1.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.461.V17.1.0		17.1.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.461.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.461.V17.1.0.docx</a>
ETSI	ETSI TS 137 461 V17.1.0 (2022-07)		17.1.0	Published	20.07.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137461/17.01.00_60/ts_137461v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137461/17.01.00_60/ts_137461v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.461-17.1.0 V1.1.0		17.1.0	Published	01.11.2022	<a href="https://members.tdsi.in/s/TW5nmHpmaa6wrBL">https://members.tdsi.in/s/TW5nmHpmaa6wrBL</a>
TTA	TTAT.3G-37.461V17.1.0		17.1.0	Published	21.10.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.461V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.461V17.1.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.37.461.V18.0.0		18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.461.V18.0.0		18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.461.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.461.V18.0.0.docx</a>
ETSI	ETSI TS 137 461 V18.0.0 (2024-05)		18.0.0	Published	23.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137461/18.00.00_60/ts_137461v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137461/18.00.00_60/ts_137461v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.461 -18.0.0 V1.0.0		18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/T5sfZLDZxs8nGDq">https://members.tdsi.in/s/T5sfZLDZxs8nGDq</a>
TTA	TTAT.3G-37.461V18.0.0		18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.461V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.461V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.27 TS 37.462****Iuant interface: Signalling transport**

This document specifies the signalling transport related to RETAP and TMAAP signalling to be used across the Iuant interface for UTRAN, E-UTRAN and NG-RAN. In this specification UTRAN, E-UTRAN and NG-RAN are denoted as “RAN”, whereas the corresponding network entities Node B, eNB, en-gNB and NG-RAN node are denoted as “RAN Node”. The logical Iuant interface is an interface internal to the RAN Node and defined to reside between the implementation specific O&M function and the RET antennas and between the implementation specific O&M function and the TMA control unit function.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.37.462.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.462.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.462.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.462.V17.0.0.doc</a>
ETSI	ETSI TS 137 462 V17.0.0 (2022-04)		17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137462/17.00.00_60/ts_137462v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137462/17.00.00_60/ts_137462v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.462-17.0.0 V1.0.0		17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/owHrgRgWzLSKS3a">https://members.tdsi.in/s/owHrgRgWzLSKS3a</a>
TTA	TTAT.3G-37.462V17.0.0		17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-</a>

[37.462V17.0.0&searchCate=TTAS](https://www.3gpp.org/standards/3gpp/37.462V17.0.0&searchCate=TTAS)

#### Release 18

ATIS	ATIS.3GPP.37.462.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.462.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.462.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.462.V18.0.0.docx</a>
ETSI	ETSI TS 137 462 V18.0.0 (2024-05)	18.0.0	Published	23.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137462/18.00.00_60/ts_137462v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137462/18.00.00_60/ts_137462v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.462 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/LNtXJoncjYx6k9">https://members.tdsi.in/s/LNtXJoncjYx6k9</a>
TTA	TTAT.3G-37.462V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.462V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.462V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.28 TS 37.470

#### W1 interface; General aspects and principles

This document is an introduction to the 3GPP TS 37.4xx series of technical specifications that define the W1 interface. The W1 interface provides means for interconnecting a ng-eNB-CU and a ng-eNB-DU of a ng-eNB within a NG-RAN.

SDO	Document No.	Version	Status	Issued date	Location
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#### Release 17

ATIS	ATIS.3GPP.37.470.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.470.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.470.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.470.V17.0.0.doc</a>
ETSI	ETSI TS 137 470 V17.0.0 (2022-04)	17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137470/17.00.00_60/ts_137470v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137470/17.00.00_60/ts_137470v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.47 -17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/PAP6n6fkQcXgd5c">https://members.tdsi.in/s/PAP6n6fkQcXgd5c</a>
TTA	TTAT.3G-37.470V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.470V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.470V17.0.0&amp;searchCate=TTAS</a>

#### Release 18

ATIS	ATIS.3GPP.37.470.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.470.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.470.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.470.V18.0.0.docx</a>
ETSI	ETSI TS 137 470 V18.0.0 (2024-05)	18.0.0	Published	03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137470/18.00.00_60/ts_137470v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137470/18.00.00_60/ts_137470v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.47 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/dtf6FW3Y9q9YSwR">https://members.tdsi.in/s/dtf6FW3Y9q9YSwR</a>
TTA	TTAT.3G-37.470V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.470V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.470V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.29 TS 37.471

#### W1 interface; Layer 1

This document specifies the standards allowed to implement Layer 1 on the W1 interface. The W1 interface provides means for interconnecting a ng-eNB-CU and a ng-eNB-DU of a ng-eNB within a NG-RAN. The specification of transmission delay requirements and O&M requirements are not in the scope of this document. In the following ‘Layer 1’ and ‘Physical Layer’ are assumed to be synonymous.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.471.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.471.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.471.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.471.V17.0.0.doc</a>
ETSI	ETSI TS 137 471 V17.0.0 (2022-04)		17.0.0	Published 29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137471/17.00.00_60/ts_137471v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137471/17.00.00_60/ts_137471v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.471-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/sWcmKcYgJPBfk7d">https://members.tdsi.in/s/sWcmKcYgJPBfk7d</a>
TTA	TTAT.3G-37.471V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.471V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.471V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.471.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.471.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.471.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.471.V18.0.0.docx</a>
ETSI	ETSI TS 137 471 V18.0.0 (2024-05)		18.0.0	Published 03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137471/18.00.00_60/ts_137471v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137471/18.00.00_60/ts_137471v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.471 -18.0.0 V1.0.0		18.0.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/P5Nc4NGmMFipa8L">https://members.tdsi.in/s/P5Nc4NGmMFipa8L</a>
TTA	TTAT.3G-37.471V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.471V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.471V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.30 TS 37.472

#### W1 interface; Signalling transport

This document specifies the standards for Signalling Transport to be used across the W1 interface. The W1 interface provides means for interconnecting a ng-eNB-CU and a ng-eNB-DU of a ng-eNB within a NG-RAN. This document describes how the W1AP signalling messages are transported over W1.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.472.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.472.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.472.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.472.V17.0.0.doc</a>
ETSI	ETSI TS 137 472 V17.0.0 (2022-04)		17.0.0	Published 29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137472/17.00.00_60/ts_137472v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137472/17.00.00_60/ts_137472v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.472-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/d8cGE9pCSpkeJ2Q">https://members.tdsi.in/s/d8cGE9pCSpkeJ2Q</a>
TTA	TTAT.3G-37.472V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.472V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.472V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.472.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.472.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.472.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.472.V18.0.0.docx</a>
ETSI	ETSI TS 137 472 V18.0.0 (2024-05)		18.0.0	Published 03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137472/18.00.00_60/ts_137472v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137472/18.00.00_60/ts_137472v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.472 -18.0.0 V1.0.0		18.0.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/naNdRJSJ4czwHY">https://members.tdsi.in/s/naNdRJSJ4czwHY</a>
TTA	TTAT.3G-37.472V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.472V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.472V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.31 TS 37.473

#### W1 interface; Application Protocol (W1AP)

This document specifies the 5G radio network layer signalling protocol for the W1 interface. The W1 interface provides means for interconnecting an ng-eNB-CU and a ng-eNB-DU of a ng-eNB within an NG-RAN. The W1 Application Protocol (W1AP) supports the functions of W1 interface by signalling procedures defined in this document. W1AP is developed in accordance with the general principles stated in TS 38.401 and TS 37.470.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.473.V17.2.0		17.2.0	Published 22.05.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.473.V17.2.0		17.2.0	Published 22.05.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.473.V17.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.473.V17.2.0.docx</a>
ETSI	ETSI TS 137 473 V17.2.0 (2023-04)		17.2.0	Published 27.04.2023	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137473/17.02.00_60/ts_137473v170200p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137473/17.02.00_60/ts_137473v170200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.473-17.2.0 V1.2.0		17.2.0	Published 14.08.2023	<a href="https://members.tdsi.in/s/88mEqBeCWmptX88">https://members.tdsi.in/s/88mEqBeCWmptX88</a>
TTA	TTAT.3G-37.473V17.2.0		17.2.0	Published 01.08.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.473V17.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.473V17.2.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.473.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.473.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.473.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.473.V18.0.0.docx</a>
ETSI	ETSI TS 137 473 V18.0.0 (2024-05)		18.0.0	Published 03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137473/18.00.00_60/ts_137473v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137473/18.00.00_60/ts_137473v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.473 -18.0.0 V1.0.0		18.0.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/7Efsr5Et2Dfw6aZ">https://members.tdsi.in/s/7Efsr5Et2Dfw6aZ</a>
TTA	TTAT.3G-37.473V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.473V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.473V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.32 TS 37.480

#### E1 general aspects and principles

This document is an introduction to the 3GPP TS 37.48x series of technical specifications that define the E1 interface. The E1 interface provides means for interconnecting a gNB-CU-CP and a gNB-CU-UP of a gNB-CU within an NG-RAN, or for interconnecting a gNB-CU-CP and a gNB-CU-UP of an en-gNB within an E-UTRAN, or for interconnecting an eNB-CP and an eNB-UP of an eNB within an E-UTRAN, or for interconnecting an ng-eNB-CU-CP and an ng-eNB-CU-UP of an ng-eNB-CU within an NG-RAN.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.480.V17.2.0		17.2.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.480.V17.2.0		17.2.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.480.V17.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.480.V17.2.0.docx</a>
ETSI	ETSI TS 137 480 V17.2.0 (2024-02)		17.2.0	Published 02.02.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137480/17.02.00_60/ts_137480v170200p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137480/17.02.00_60/ts_137480v170200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.48-17.2.0 V1.2.0		17.2.0	Published 29.05.2024	<a href="https://members.tdsi.in/s/nXaK3CsALpPE8Bj">https://members.tdsi.in/s/nXaK3CsALpPE8Bj</a>
TTA	TTAT.3G-37.480V17.2.0		17.2.0	Published 08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.480V17.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.480V17.2.0&amp;searchCate=TTAS</a>

[37.480V17.2.0&searchCate=TTAS](https://www.etsi.org/deliver/etsi_ts/137400_137499/137480/18.01.00_60/ts_137480v180100p.pdf)

#### Release 18

ATIS	ATIS.3GPP.37.480.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.480.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.480.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.480.V18.1.0.docx</a>
ETSI	ETSI TS 137 480 V18.1.0 (2024-05)	18.1.0	Published	27.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137480/18.01.00_60/ts_137480v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137480/18.01.00_60/ts_137480v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.48 -18.1.0 V1.0.0	18.1.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/2cWM3Rx53mxqBDT">https://members.tdsi.in/s/2cWM3Rx53mxqBDT</a>
TTA	TTAT.3G-37.480V18.1.0	18.1.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.480V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.480V18.1.0&amp;searchCate=TTAS</a>

### 1.3.1.4.33 TS 37.481

#### E1 layer 1

This document specifies the standards allowed to implement layer 1 on the E1 interface. The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

SDO	Document No.	Version	Status	Issued date	Location
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#### Release 17

ATIS	ATIS.3GPP.37.481.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.481.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.481.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.481.V17.0.0.doc</a>
ETSI	ETSI TS 137 481 V17.0.0 (2022-04)	17.0.0	Published	07.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137481/17.00.00_60/ts_137481v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137481/17.00.00_60/ts_137481v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.481-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/dm65dLH8msHx3Em">https://members.tdsi.in/s/dm65dLH8msHx3Em</a>
TTA	TTAT.3G-37.481V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.481V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.481V17.0.0&amp;searchCate=TTAS</a>

#### Release 18

ATIS	ATIS.3GPP.37.481.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.481.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.481.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.481.V18.0.0.docx</a>
ETSI	ETSI TS 137 481 V18.0.0 (2024-05)	18.0.0	Published	03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137481/18.00.00_60/ts_137481v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137481/18.00.00_60/ts_137481v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.481 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/6NtNPFDEJn2dnZs">https://members.tdsi.in/s/6NtNPFDEJn2dnZs</a>
TTA	TTAT.3G-37.481V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.481V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.481V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.34 TS 37.482

#### E1 signalling transport

This document specifies the standards for Signalling Transport to be used across the E1 interface. The E1 interface provides means for the interconnection of gNB-CU-CP and gNB-CU-UP within the NG-RAN architecture (TS 38.401), or for the interconnection of ng-eNB-CU-CP and ng-eNB-CU-UP within the NG-RAN architecture (TS 38.401), or for the interconnection of eNB-CP and eNB-UP within the E-UTRAN architecture (TS 36.401).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.482.V17.4.0		17.4.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.482.V17.4.0		17.4.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.482.V17.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.482.V17.4.0.docx</a>
ETSI	ETSI TS 137 482 V17.4.0 (2024-04)		17.4.0	Published 22.04.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137482/17.04.00_60/ts_137482v170400p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137482/17.04.00_60/ts_137482v170400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.482-17.4.0 V1.4.0		17.4.0	Published 22.07.2024	<a href="https://members.tdsi.in/s/3Ge8BrRxogLyDLP">https://members.tdsi.in/s/3Ge8BrRxogLyDLP</a>
TTA	TTAT.3G-37.482V17.4.0		17.4.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.482V17.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.482V17.4.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.482.V18.1.0		18.1.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.482.V18.1.0		18.1.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.482.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.482.V18.1.0.docx</a>
ETSI	ETSI TS 137 482 V18.1.0 (2024-08)		18.1.0	Published 05.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137482/18.01.00_60/ts_137482v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137482/18.01.00_60/ts_137482v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.482 -18.1.0 V1.0.0		18.1.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/zSE2siWb22oLoL9">https://members.tdsi.in/s/zSE2siWb22oLoL9</a>
TTA	TTAT.3G-37.482V18.1.0		18.1.0	Published 11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.482V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.482V18.1.0&amp;searchCate=TTAS</a>

### 1.3.1.4.35 TS 37.483

#### E1 Application Protocol (E1AP)

This document specifies the 5G radio network layer signalling protocol for the E1 interface. The E1 interface provides means for interconnecting a gNB-CU-CP and a gNB-CU-UP of a gNB within an NG-RAN, or for interconnecting a gNB-CU-CP and a gNB-CU-UP of an en-gNB within an E-UTRAN, or for interconnecting an eNB-CP and an eNB-UP of an eNB within an E-UTRAN, or for interconnecting an ng-eNB-CU-CP and an ng-eNB-CU-UP of an ng-eNB within an NG-RAN. The E1 Application Protocol (E1AP) supports the functions of E1 interface by signalling procedures defined in this document. E1AP is developed in accordance to the general principles stated in TS 38.401 and TS 37.480.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.483.V17.8.0		17.8.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.483.V17.8.0		17.8.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.483.V17.8.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.483.V17.8.0.docx</a>
ETSI	ETSI TS 137 483 V17.8.0 (2024-04)		17.8.0	Published 22.04.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137483/17.08.00_60/ts_137483v170800p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137483/17.08.00_60/ts_137483v170800p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.483-17.8.0 V1.8.0		17.8.0	Published 22.07.2024	<a href="https://members.tdsi.in/s/fzWmctZfSSJxRkt">https://members.tdsi.in/s/fzWmctZfSSJxRkt</a>
TTA	TTAT.3G-37.483V17.8.0		17.8.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.483V17.8.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.483V17.8.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.483.V18.2.0		18.2.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.483.V18.2.0		18.2.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.483.V18.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.37.483.V18.2.0.docx</a>
ETSI	ETSI TS 137 483 V18.2.0 (2024-08)		18.2.0	Published 05.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137483/18.02.00_60/ts_137483v180200p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137483/18.02.00_60/ts_137483v180200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.483 -18.2.0 V1.0.0		18.2.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/JoZN8dpatryLQXL">https://members.tdsi.in/s/JoZN8dpatryLQXL</a>

TTA TTAT.3G-37.483V18.2.0 18.2.0 Published 11.11.2024 <https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&searchStandardNo=TTAT.3G-37.483V18.2.0&searchCate=TTAS>

### 1.3.1.4.36 TS 38.401

#### NG-RAN; Architecture description

This document describes the overall architecture of the NG-RAN, including interfaces NG, Xn and F1 interfaces and their interaction with the radio interface.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.401.V17.10.0		17.10.0	Published 01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.401.V17.10.0		17.10.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.401.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.401.V17.10.0.docx</a>
ETSI	ETSI TS 138 401 V17.10.0 (2024-09)		17.10.0	Published 26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138401/17.10.00_60/ts_138401v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138401/17.10.00_60/ts_138401v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.401-17.10.0 V1.10.0		17.10.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/wBsXCCWRxfFSdXD">https://members.tdsi.in/s/wBsXCCWRxfFSdXD</a>
TTA	TTAT.3G-38.401V17.10.0		17.10.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.401V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.401V17.10.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.401.V18.3.0		18.3.0	Published 01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.401.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.401.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.401.V18.3.0.docx</a>
ETSI	ETSI TS 138 401 V18.3.0 (2024-09)		18.3.0	Published 26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138401/18.03.00_60/ts_138401v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138401/18.03.00_60/ts_138401v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.401- 18.3.0 V1.1.0		18.3.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/isjoRPXxcFF2gbM">https://members.tdsi.in/s/isjoRPXxcFF2gbM</a>
TTA	TTAT.3G-38.401V18.3.0		18.3.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.401V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.401V18.3.0&amp;searchCate=TTAS</a>

### 1.3.1.4.37 TS 38.410

#### NG-RAN; NG general aspects and principles

This document is an introduction to the 3GPP TS 38.41x series of technical specifications that define the NG interface for the interconnection of an NG-RAN node to the 5GC (5G Core Network).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.410.V17.1.0		17.1.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.410.V17.1.0		17.1.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.410.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.410.V17.1.0.docx</a>
ETSI	ETSI TS 138 410 V17.1.0 (2022-07)		17.1.0	Published 20.07.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138410/17.01.00_60/ts_138410v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138410/17.01.00_60/ts_138410v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.41-17.1.0 V1.1.0		17.1.0	Published 01.11.2022	<a href="https://members.tdsi.in/s/8GbrF4SL388TY7D">https://members.tdsi.in/s/8GbrF4SL388TY7D</a>
TTA	TTAT.3G-38.410V17.1.0		17.1.0	Published 21.10.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.410V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.410V17.1.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.410.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.410.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.410.V18.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.410.V18.2.0.docx</a>
ETSI	ETSI TS 138 410 V18.2.0 (2024-08)	18.2.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138410/18.02.00_60/ts_138410v180200p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138410/18.02.00_60/ts_138410v180200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.41 -18.2.0 V1.0.0	18.2.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/EgwtBJQPJ56SnPR">https://members.tdsi.in/s/EgwtBJQPJ56SnPR</a>
TTA	TTAT.3G-38.410V18.2.0	18.2.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.410V18.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.410V18.2.0&amp;searchCate=TTAS</a>

**1.3.1.4.38 TS 38.411****NG-RAN; NG layer 1**

This document specifies the standards allowed to implement layer 1 on the NG interface. The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.411.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.411.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.411.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.411.V17.0.0.doc</a>
ETSI	ETSI TS 138 411 V17.0.0 (2022-04)	17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138411/17.00.00_60/ts_138411v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138411/17.00.00_60/ts_138411v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.411-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/x8y6qQYyRMMLtoE">https://members.tdsi.in/s/x8y6qQYyRMMLtoE</a>
TTA	TTAT.3G-38.411V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.411V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.411V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.411.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.411.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.411.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.411.V18.0.0.docx</a>
ETSI	ETSI TS 138 411 V18.0.0 (2024-05)	18.0.0	Published	03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138411/18.00.00_60/ts_138411v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138411/18.00.00_60/ts_138411v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.411 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/gXR47fd3goayffT">https://members.tdsi.in/s/gXR47fd3goayffT</a>
TTA	TTAT.3G-38.411V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.411V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.411V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.39 TS 38.412****NG-RAN; NG signalling transport**

This document specifies the standards for signalling transport to be used across NG interface. NG interface is a logical interface between the NG-RAN and the 5GC. This document describes how the NGAP signalling messages are transported over NG.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.412.V17.1.0	17.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>

CCSA	CCSA.3GPP.38.412.V17.1.0	17.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.412.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.412.V17.1.0.docx</a>
ETSI	ETSI TS 138 412 V17.1.0 (2023-07)	17.1.0	Published	28.07.2023	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138412/17.01.00_60/ts_138412v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138412/17.01.00_60/ts_138412v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.412-17.1.0 V1.1.0	17.1.0	Published	02.11.2023	<a href="https://members.tdsi.in/s/SE3nb7cRieriqyR">https://members.tdsi.in/s/SE3nb7cRieriqyR</a>
TTA	TTAT.3G-38.412V17.1.0	17.1.0	Published	27.10.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.412V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.412V17.1.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.412.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.412.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.412.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.412.V18.1.0.docx</a>
ETSI	ETSI TS 138 412 V18.1.0 (2024-08)	18.1.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138412/18.01.00_60/ts_138412v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138412/18.01.00_60/ts_138412v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.412 -18.1.0 V1.0.0	18.1.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/MX4xctn7PnBDtgA">https://members.tdsi.in/s/MX4xctn7PnBDtgA</a>
TTA	TTAT.3G-38.412V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.412V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.412V18.1.0&amp;searchCate=TTAS</a>

**1.3.1.4.40 TS 38.413**

**NG-RAN; NG Application Protocol (NGAP)**

This document specifies the radio network layer signalling protocol for the NG interface. The NG Application Protocol (NGAP) supports the functions of the NG interface by signalling procedures defined in this document. NGAP is developed in accordance with the general principles stated in TS 38.401 and TS 38.410.

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<b>Release 17</b>					
ATIS	ATIS.3GPP.38.413.V17.10.0	17.10.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.413.V17.10.0	17.10.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.413.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.413.V17.10.0.docx</a>
ETSI	ETSI TS 138 413 V17.10.0 (2024-09)	17.10.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138413/17.10.00_60/ts_138413v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138413/17.10.00_60/ts_138413v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.413-17.10.0 V1.10.0	17.10.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/ByqymZ2JemoKttY">https://members.tdsi.in/s/ByqymZ2JemoKttY</a>
TTA	TTAT.3G-38.413V17.10.0	17.10.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.413V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.413V17.10.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.413.V18.3.0	18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.413.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.413.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.413.V18.3.0.docx</a>
ETSI	ETSI TS 138 413 V18.3.0 (2024-09)	18.3.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138413/18.03.00_60/ts_138413v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138413/18.03.00_60/ts_138413v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.413- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/qmdWQXjYfgHqYQA">https://members.tdsi.in/s/qmdWQXjYfgHqYQA</a>
TTA	TTAT.3G-38.413V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.413V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.413V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.4.41 TS 38.414****NG-RAN; NG data transport**

This document specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the NG interface.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.414.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.414.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.414.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.414.V17.0.0.doc</a>
ETSI	ETSI TS 138 414 V17.0.0 (2022-04)		17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138414/17.00.00_60/ts_138414v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138414/17.00.00_60/ts_138414v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.414-17.0.0 V1.0.0		17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/rwbyq4XZNF5WDXQ">https://members.tdsi.in/s/rwbyq4XZNF5WDXQ</a>
TTA	TTAT.3G-38.414V17.0.0		17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.414V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.414V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.414.V18.0.0		18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.414.V18.0.0		18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.414.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.414.V18.0.0.docx</a>
ETSI	ETSI TS 138 414 V18.0.0 (2024-05)		18.0.0	Published	06.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138414/18.00.00_60/ts_138414v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138414/18.00.00_60/ts_138414v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.414 -18.0.0 V1.0.0		18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/Sb68SfpMSAj8e28">https://members.tdsi.in/s/Sb68SfpMSAj8e28</a>
TTA	TTAT.3G-38.414V18.0.0		18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.414V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.414V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.42 TS 38.415****NG-RAN; PDU session user plane protocol**

This document specifies the PDU Session user plane protocol being used over the NG-U, Xn-U and N9 interfaces. Applicability to other interfaces is not precluded.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.415.V17.1.0		17.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.415.V17.1.0		17.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.415.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.415.V17.1.0.docx</a>
ETSI	ETSI TS 138 415 V17.1.0 (2024-02)		17.1.0	Published	02.02.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138415/17.01.00_60/ts_138415v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138415/17.01.00_60/ts_138415v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.415-17.1.0 V1.1.0		17.1.0	Published	29.05.2024	<a href="https://members.tdsi.in/s/ypJLQ4YysTBDn4F">https://members.tdsi.in/s/ypJLQ4YysTBDn4F</a>
TTA	TTAT.3G-38.415V17.1.0		17.1.0	Published	08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.415V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.415V17.1.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.415.V18.1.0		18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>

CCSA	CCSA.3GPP.38.415.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.415.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.415.V18.1.0.docx</a>
ETSI	ETSI TS 138 415 V18.1.0 (2024-05)	18.1.0	Published	27.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138415/18.01.00_60/ts_138415v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138415/18.01.00_60/ts_138415v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.415 -18.1.0 V1.0.0	18.1.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/jExztpRi6zzPQrM">https://members.tdsi.in/s/jExztpRi6zzPQrM</a>
TTA	TTAT.3G-38.415V18.1.0	18.1.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.415V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.415V18.1.0&amp;searchCate=TTAS</a>

### 1.3.1.4.43 TS 38.420

#### NG-RAN; Xn general aspects and principles

This document is an introduction to the TSG RAN TS 38.42x series of Technical Specifications that define the Xn interface. It is an interface for the interconnection of two NG-RAN nodes within the NG-RAN architecture (TS 38.401).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.420.V17.2.0	17.2.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.420.V17.2.0	17.2.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.420.V17.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.420.V17.2.0.docx</a>
ETSI	ETSI TS 138 420 V17.2.0 (2022-10)	17.2.0	Published	14.10.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138420/17.02.00_60/ts_138420v170200p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138420/17.02.00_60/ts_138420v170200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.42-17.2.0 V1.2.0	17.2.0	Published	17.01.2023	<a href="https://members.tdsi.in/s/aKKLCMZaZSwxgeA">https://members.tdsi.in/s/aKKLCMZaZSwxgeA</a>
TTA	TTAT.3G-38.420V17.2.0	17.2.0	Published	11.01.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.420V17.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.420V17.2.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.420.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.420.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.420.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.420.V18.1.0.docx</a>
ETSI	ETSI TS 138 420 V18.1.0 (2024-05)	18.1.0	Published	27.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138420/18.01.00_60/ts_138420v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138420/18.01.00_60/ts_138420v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.42 -18.1.0 V1.0.0	18.1.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/8xqc5EdrpmmH4w9">https://members.tdsi.in/s/8xqc5EdrpmmH4w9</a>
TTA	TTAT.3G-38.420V18.1.0	18.1.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.420V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.420V18.1.0&amp;searchCate=TTAS</a>

### 1.3.1.4.44 TS 38.421

#### NG-RAN; Xn layer 1

This document specifies the standards allowed to implement layer 1 on the Xn interface. The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.421.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.421.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.421.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.421.V17.0.0.doc</a>

ETSI	ETSI TS 138 421 V17.0.0 (2022-04)	17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138421/17.00.00_60/ts_138421v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138421/17.00.00_60/ts_138421v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.421-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/fPjjPeC3qE3fLHi">https://members.tdsi.in/s/fPjjPeC3qE3fLHi</a>
TTA	TTAT.3G-38.421V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.421V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.421V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.421.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.421.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.421.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.421.V18.0.0.docx</a>
ETSI	ETSI TS 138 421 V18.0.0 (2024-05)	18.0.0	Published	06.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138421/18.00.00_60/ts_138421v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138421/18.00.00_60/ts_138421v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.421 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/6Hws3zGSk8TAGHA">https://members.tdsi.in/s/6Hws3zGSk8TAGHA</a>
TTA	TTAT.3G-38.421V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.421V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.421V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.45 TS 38.422****NG-RAN; Xn signalling transport**

This document specifies the standards for signalling transport to be used across Xn interface. The Xn interface provides means for interconnecting two NG-RAN nodes. The Xn interface is a logical interface between two nodes of the NG-RAN. This document describes how the XnAP signalling messages are transported over Xn.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.422.V17.1.0	17.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.422.V17.1.0	17.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.422.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.422.V17.1.0.docx</a>
ETSI	ETSI TS 138 422 V17.1.0 (2023-07)	17.1.0	Published	28.07.2023	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138422/17.01.00_60/ts_138422v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138422/17.01.00_60/ts_138422v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.422-17.1.0 V1.1.0	17.1.0	Published	02.11.2023	<a href="https://members.tdsi.in/s/dfBCH326EjQNw6C">https://members.tdsi.in/s/dfBCH326EjQNw6C</a>
TTA	TTAT.3G-38.422V17.1.0	17.1.0	Published	27.10.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.422V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.422V17.1.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.422.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.422.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.422.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.422.V18.1.0.docx</a>
ETSI	ETSI TS 138 422 V18.1.0 (2024-08)	18.1.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138422/18.01.00_60/ts_138422v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138422/18.01.00_60/ts_138422v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.422 -18.1.0 V1.0.0	18.1.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/nZxTcjDCJ8RyS5x">https://members.tdsi.in/s/nZxTcjDCJ8RyS5x</a>
TTA	TTAT.3G-38.422V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.422V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.422V18.1.0&amp;searchCate=TTAS</a>

**1.3.1.4.46 TS 38.423****NG-RAN; Xn Application Protocol (XnAP)**

This document specifies the radio network layer signalling procedures of the control plane between NG-RAN nodes in NG-RAN. XnAP supports the functions of the Xn interface by signalling procedures defined in this document. XnAP is developed in accordance with the general principles stated in TS 38.401 and TS 38.420.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.423.V17.10.0		17.10.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.423.V17.10.0		17.10.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.423.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.423.V17.10.0.docx</a>
ETSI	ETSI TS 138 423 V17.10.0 (2024-09)		17.10.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138423/17.10.00_60/ts_138423v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138423/17.10.00_60/ts_138423v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.423-17.10.0 V1.10.0		17.10.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/rA5RC9ooSy7FZbH">https://members.tdsi.in/s/rA5RC9ooSy7FZbH</a>
TTA	TTAT.3G-38.423V17.10.0		17.10.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.423V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.423V17.10.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.423.V18.3.0		18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.423.V18.3.0		18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.423.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.423.V18.3.0.docx</a>
ETSI	ETSI TS 138 423 V18.3.0 (2024-09)		18.3.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138423/18.03.00_60/ts_138423v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138423/18.03.00_60/ts_138423v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.423- 18.3.0 V1.1.0		18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/LNw42AFCqTteLSZ">https://members.tdsi.in/s/LNw42AFCqTteLSZ</a>
TTA	TTAT.3G-38.423V18.3.0		18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.423V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.423V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.4.47 TS 38.424****NG-RAN; Xn data transport**

This document specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the Xn interface.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.424.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.424.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.424.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.424.V17.0.0.doc</a>
ETSI	ETSI TS 138 424 V17.0.0 (2022-04)		17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138424/17.00.00_60/ts_138424v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138424/17.00.00_60/ts_138424v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.424-17.0.0 V1.0.0		17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/brsLdQ6Cz85aQZm">https://members.tdsi.in/s/brsLdQ6Cz85aQZm</a>
TTA	TTAT.3G-38.424V17.0.0		17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.424V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.424V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.424.V18.0.0		18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>

CCSA	CCSA.3GPP.38.424.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.424.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.424.V18.0.0.docx</a>
ETSI	ETSI TS 138 424 V18.0.0 (2024-05)	18.0.0	Published	06.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138424/18.00.00_60/ts_138424v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138424/18.00.00_60/ts_138424v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.424 -18.0.0 V1.0.0	18.0.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/6iaQMPT2kef46mS">https://members.tdsi.in/s/6iaQMPT2kef46mS</a>
TTA	TTAT.3G-38.424V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.424V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.424V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.4.48 TS 38.425

#### NG-RAN; NR user plane protocol

This document specifies the NR user plane protocol functions used within NG-RAN and, for EN-DC, within E-UTRAN. NR user plane protocol functions may reside in nodes terminating either the X2-U (for EN-DC) or the Xn-U or the F1-U interface.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.425.V17.3.0	17.3.0	Published	22.05.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.425.V17.3.0	17.3.0	Published	22.05.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.425.V17.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.425.V17.3.0.docx</a>
ETSI	ETSI TS 138 425 V17.3.0 (2023-05)	17.3.0	Published	05.05.2023	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138425/17.03.00_60/ts_138425v170300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138425/17.03.00_60/ts_138425v170300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.101-5-17.3.0 V1.3.0	17.3.0	Published	14.08.2023	<a href="https://members.tdsi.in/s/zBdzk2rWopHRWk7">https://members.tdsi.in/s/zBdzk2rWopHRWk7</a>
TTA	TTAT.3G-38.425V17.3.0	17.3.0	Published	01.08.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.425V17.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.425V17.3.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.425.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.425.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.425.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.425.V18.1.0.docx</a>
ETSI	ETSI TS 138 425 V18.1.0 (2024-08)	18.1.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138425/18.01.00_60/ts_138425v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138425/18.01.00_60/ts_138425v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.425 -18.1.0 V1.0.0	18.1.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/EnpqWk8cq8DwCDL">https://members.tdsi.in/s/EnpqWk8cq8DwCDL</a>
TTA	TTAT.3G-38.425V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.425V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.425V18.1.0&amp;searchCate=TTAS</a>

### 1.3.1.4.49 TS 38.455

#### NG-RAN; NR Positioning Protocol A (NRPPa)

This document specifies the control plane radio network layer signalling procedures between a NG-RAN node and the LMF. NRPPa supports the concerned functions by signalling procedures defined in this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.455.V17.8.0	17.8.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.455.V17.8.0	17.8.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.455.V17.8.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.455.V17.8.0.docx</a>

ETSI	ETSI TS 138 455 V17.8.0 (2024-08)	17.8.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138455/17.08.00_60/ts_138455v170800p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138455/17.08.00_60/ts_138455v170800p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.455-17.8.0 V1.8.0	17.8.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/RTCiNDkNwCixKmR">https://members.tdsi.in/s/RTCiNDkNwCixKmR</a>
TTA	TTAT.3G-38.455V17.8.0	17.8.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.455V17.8.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.455V17.8.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.455.V18.3.0	18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.455.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.455.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.455.V18.3.0.docx</a>
ETSI	ETSI TS 138 455 V18.3.0 (2024-09)	18.3.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138455/18.03.00_60/ts_138455v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138455/18.03.00_60/ts_138455v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.455- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/kGZDGBaNGKL6pnt">https://members.tdsi.in/s/kGZDGBaNGKL6pnt</a>
TTA	TTAT.3G-38.455V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.455V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.455V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.4.50 TS 38.470**

**NG-RAN; F1 general aspects and principles**

This document is an introduction to the 3GPP TS 38.47x series of technical specifications that define the F1 interface. The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnecting a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.470.V17.6.0	17.6.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.470.V17.6.0	17.6.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.470.V17.6.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.470.V17.6.0.docx</a>
ETSI	ETSI TS 138 470 V17.6.0 (2023-10)	17.6.0	Published	06.10.2023	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138470/17.06.00_60/ts_138470v170600p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138470/17.06.00_60/ts_138470v170600p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.47- 17.6.0 V1.6.0	17.6.0	Published	23.02.2024	<a href="https://members.tdsi.in/s/9nb7b3b9poYGk7J">https://members.tdsi.in/s/9nb7b3b9poYGk7J</a>
TTA	TTAT.3G-38.470V17.6.0	17.6.0	Published	13.02.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.470V17.6.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.470V17.6.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.470.V18.3.0	18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.470.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.470.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.470.V18.3.0.docx</a>
ETSI	ETSI TS 138 470 V18.3.0 (2024-09)	18.3.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138470/18.03.00_60/ts_138470v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138470/18.03.00_60/ts_138470v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.47- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/wiQewKCqdbRDBes">https://members.tdsi.in/s/wiQewKCqdbRDBes</a>
TTA	TTAT.3G-38.470V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.470V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.470V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.4.51 TS 38.471****NG-RAN; F1 layer 1**

This document specifies the standards allowed to implement Layer 1 on the F1 interface. The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnecting a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN. The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.471.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.471.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.471.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.471.V17.0.0.doc</a>
ETSI	ETSI TS 138 471 V17.0.0 (2022-04)		17.0.0	Published 29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138471/17.00.00_60/ts_138471v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138471/17.00.00_60/ts_138471v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.471-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/WCMqQ8sqLz28qfN">https://members.tdsi.in/s/WCMqQ8sqLz28qfN</a>
TTA	TTAT.3G-38.471V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.471V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.471V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.471.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.471.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.471.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.471.V18.0.0.docx</a>
ETSI	ETSI TS 138 471 V18.0.0 (2024-05)		18.0.0	Published 06.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138471/18.00.00_60/ts_138471v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138471/18.00.00_60/ts_138471v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.471 -18.0.0 V1.0.0		18.0.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/oE47yE8dam8sswQ">https://members.tdsi.in/s/oE47yE8dam8sswQ</a>
TTA	TTAT.3G-38.471V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.471V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.471V18.0.0&amp;searchCate=TTAS</a>

**1.3.1.4.52 TS 38.472****NG-RAN; F1 signalling transport**

This document specifies the standards for Signalling Transport to be used across the F1 interface. The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnecting a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN. This document describes how the F1AP signalling messages are transported over F1.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.472.V17.2.0		17.2.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.472.V17.2.0		17.2.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.472.V17.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.472.V17.2.0.docx</a>
ETSI	ETSI TS 138 472 V17.2.0 (2023-07)		17.2.0	Published 19.07.2023	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138472/17.02.00_60/ts_138472v170200p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138472/17.02.00_60/ts_138472v170200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.472-17.2.0 V1.2.0		17.2.0	Published 02.11.2023	<a href="https://members.tdsi.in/s/gZLS9AC32LdPMYM">https://members.tdsi.in/s/gZLS9AC32LdPMYM</a>
TTA	TTAT.3G-38.472V17.2.0		17.2.0	Published 27.10.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.472V17.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.472V17.2.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.472.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.472.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.472.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.472.V18.1.0.docx</a>
ETSI	ETSI TS 138 472 V18.1.0 (2024-08)	18.1.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138472/18.01.00_60/ts_138472v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138472/18.01.00_60/ts_138472v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.472 -18.1.0 V1.0.0	18.1.0	Published	19.11.2024	<a href="https://members.tdsi.in/s/X79fCWCWe6iL7CC">https://members.tdsi.in/s/X79fCWCWe6iL7CC</a>
TTA	TTAT.3G-38.472V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.472V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.472V18.1.0&amp;searchCate=TTAS</a>

**1.3.1.4.53 TS 38.473****NG-RAN; F1 Application Protocol (F1AP)**

This document specifies the 5G radio network layer signalling protocol for the F1 interface. The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnecting a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN. The F1 Application Protocol (F1AP) supports the functions of F1 interface by signalling procedures defined in this document. F1AP is developed in accordance with the general principles stated in TS 38.401 and TS 38.470.

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<b>Release 17</b>					
ATIS	ATIS.3GPP.38.473.V17.10.0	17.10.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.473.V17.10.0	17.10.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.473.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.473.V17.10.0.docx</a>
ETSI	ETSI TS 138 473 V17.10.0 (2024-09)	17.10.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138473/17.10.00_60/ts_138473v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138473/17.10.00_60/ts_138473v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.473-17.10.0 V1.10.0	17.10.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/B4fYxtHKrZmC4bE">https://members.tdsi.in/s/B4fYxtHKrZmC4bE</a>
TTA	TTAT.3G-38.473V17.10.0	17.10.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.473V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.473V17.10.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.473.V18.3.0	18.3.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.473.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.473.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.473.V18.3.0.docx</a>
ETSI	ETSI TS 138 473 V18.3.0 (2024-09)	18.3.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138473/18.03.00_60/ts_138473v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138473/18.03.00_60/ts_138473v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.473- 18.3.0 V1.1.0	18.3.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/QNJLHGC7Yr5w8wk">https://members.tdsi.in/s/QNJLHGC7Yr5w8wk</a>
TTA	TTAT.3G-38.473V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.473V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.473V18.3.0&amp;searchCate=TTAS</a>

**1.3.1.4.54 TS 38.474****NG-RAN; F1 data transport**

This document specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the F1 interface. The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnection a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN.

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<b>Release 17</b>					
ATIS	ATIS.3GPP.38.474.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.474.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.474.V17.0.0.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.474.V17.0.0.zip</a>
ETSI	ETSI TS 138 474 V17.0.0 (2022-04)		17.0.0	Published 29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138474/17.00.00_60/ts_138474v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138474/17.00.00_60/ts_138474v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.474-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/cjZABLoGzGwkyo3">https://members.tdsi.in/s/cjZABLoGzGwkyo3</a>
TTA	TTAT.3G-38.474V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.474V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.474V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.474.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.474.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.474.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.474.V18.0.0.docx</a>
ETSI	ETSI TS 138 474 V18.0.0 (2024-05)		18.0.0	Published 06.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138474/18.00.00_60/ts_138474v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138474/18.00.00_60/ts_138474v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.474 -18.0.0 V1.0.0		18.0.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/4aTjdFqsidx6ay7">https://members.tdsi.in/s/4aTjdFqsidx6ay7</a>
TTA	TTAT.3G-38.474V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.474V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.474V18.0.0&amp;searchCate=TTAS</a>
TTA	TTAT.3G-38.474V18.0.0		18.0.0	Published 12.08.2024	<a href="https://committee.tta.or.kr/data/standard_view.jsp?pk_num=TTAT.3G-38.474V18.0.0&amp;commit_code=PG1102">https://committee.tta.or.kr/data/standard_view.jsp?pk_num=TTAT.3G-38.474V18.0.0&amp;commit_code=PG1102</a>

### 1.3.1.5 Radio-frequency aspects

#### 1.3.1.5.1 TS 36.102

#### Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception for satellite access

This document establishes the minimum RF characteristics and minimum performance requirements for E-UTRA User Equipment (UE) operating satellite access.

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<b>Release 18</b>					
ATIS	ATIS.3GPP.36.102.V18.6.0		18.6.0	Published 01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.102.V18.6.0		18.6.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.102.V18.6.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.102.V18.6.0.docx</a>
ETSI	ETSI TS 136 102 V18.6.0 (2024-10)		18.6.0	Published 03.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136100_136199/136102/18.06.00_60/ts_136102v180600p.pdf">https://www.etsi.org/deliver/etsi_ts/136100_136199/136102/18.06.00_60/ts_136102v180600p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.102- 18.6.0 V1.1.0		18.6.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/EKwYanY29ofHxNB">https://members.tdsi.in/s/EKwYanY29ofHxNB</a>
TTA	TTAT.3G-36.102V18.6.0		18.6.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.102V18.6.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.102V18.6.0&amp;searchCate=TTAS</a>

### 1.3.1.5.2 TS 36.108

#### Evolved Universal Terrestrial Radio Access (E-UTRA); Satellite Access Node radio transmission and reception

This document establishes the minimum RF characteristics and minimum performance requirements of Satellite Access Node (SAN) supporting standalone NB-IoT operation or E-UTRA.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.108.V18.7.0		18.7.0	Published 01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.108.V18.7.0		18.7.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.108.V18.7.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.108.V18.7.0.docx</a>
ETSI	ETSI TS 136 108 V18.7.0 (2024-10)		18.7.0	Published 03.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136100_136199/136108/18.07.00_60/ts_136108v180700p.pdf">https://www.etsi.org/deliver/etsi_ts/136100_136199/136108/18.07.00_60/ts_136108v180700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.108- 18.7.0 V1.1.0		18.7.0	Published 03.02.2025	<a href="https://members.tdsi.in/s/RPteZKLgPCDpA8T">https://members.tdsi.in/s/RPteZKLgPCDpA8T</a>
TTA	TTAT.3G-36.108V18.7.0		18.7.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.108V18.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.108V18.7.0&amp;searchCate=TTAS</a>

### 1.3.1.5.3 TS 36.111

#### Location Measurement Unit (LMU) performance specification; Network based positioning systems in Evolved Universal Terrestrial Radio Access Network (E-UTRAN)

This document establishes the Location Measurement Unit (LMU) minimum UTDOA positioning requirement for the FDD and TDD mode of E-UTRAN.

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<b>Release 17</b>					
ATIS	ATIS.3GPP.36.111.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.111.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.111.V17.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.111.V17.0.0.docx</a>
ETSI	ETSI TS 136 111 V17.0.0 (2022-04)		17.0.0	Published 27.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136100_136199/136111/17.00.00_60/ts_136111v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/136100_136199/136111/17.00.00_60/ts_136111v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.111-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/XS6MwzYddx8K38p">https://members.tdsi.in/s/XS6MwzYddx8K38p</a>
TTA	TTAT.3G-36.111V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.111V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.111V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.111.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.111.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.111.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.111.V18.0.0.docx</a>
ETSI	ETSI TS 136 111 V18.0.0 (2024-05)		18.0.0	Published 07.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136100_136199/136111/18.00.00_60/ts_136111v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136100_136199/136111/18.00.00_60/ts_136111v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.111 -18.0.0 V1.0.0		18.0.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/pJDYsjXNnXxk4DH">https://members.tdsi.in/s/pJDYsjXNnXxk4DH</a>
TTA	TTAT.3G-36.111V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.111V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.111V18.0.0&amp;searchCate=TTAS</a>

#### 1.3.1.5.4 TS 36.124

### Evolved Universal Terrestrial Radio Access (E-UTRA); Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment

This document establishes the essential EMC requirements for “3<sup>rd</sup> generation” digital cellular mobile terminal equipment and ancillary accessories in combination with a 3GPP E-UTRA user equipment (UE). This document specifies the applicable EMC tests, the methods of measurement, the frequency range, the limits and the minimum performance criteria for all types of E-UTRA UEs and their accessories. Requirements for the radiated emission from the enclosure port of integral antenna equipment and ancillaries have been included. The immunity requirements have been selected to ensure an adequate level of compatibility for apparatus in residential, commercial, light industrial and vehicular environments. The levels, however, do not cover extreme cases, which may occur in any location but with low probability of occurrence. Compliance of radio equipment to the requirements of this document does not signify compliance to any requirement related to the use of the equipment (i.e. licensing requirements). Compliance to the requirements of this document does not signify compliance to any safety requirement. However, any temporary or permanent unsafe condition caused by EMC is considered as non-compliance.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.36.124.V17.1.0		17.1.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.124.V17.1.0		17.1.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.124.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.124.V17.1.0.docx</a>
ETSI	ETSI TS 136 124 V17.1.0 (2022-07)		17.1.0	Published 21.07.2022	<a href="https://www.etsi.org/deliver/etsi_ts/136100_136199/136124/17.01.00_60/ts_136124v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/136100_136199/136124/17.01.00_60/ts_136124v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.124-17.1.0 V1.1.0		17.1.0	Published 01.11.2022	<a href="https://members.tdsi.in/s/5qLJSTLBHZ888F8">https://members.tdsi.in/s/5qLJSTLBHZ888F8</a>
TTA	TTAT.3G-36.124V17.1.0		17.1.0	Published 21.10.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.124V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.124V17.1.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.36.124.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.124.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.124.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.124.V18.0.0.docx</a>
ETSI	ETSI TS 136 124 V18.0.0 (2024-05)		18.0.0	Published 23.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136100_136199/136124/18.00.00_60/ts_136124v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/136100_136199/136124/18.00.00_60/ts_136124v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.124 -18.0.0 V1.0.0		18.0.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/TGnwKOKSq6aSBER">https://members.tdsi.in/s/TGnwKOKSq6aSBER</a>
TTA	TTAT.3G-36.124V18.0.0		18.0.0	Published 08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.124V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.124V18.0.0&amp;searchCate=TTAS</a>

### 1.3.1.5.5 TS 36.133

#### Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for support of radio resource management

This document specifies requirements for support of Radio Resource Management for the FDD and TDD modes of E-UTRA. These requirements include requirements on measurements in UTRAN and the UE as well as requirements on node dynamical behaviour and interaction, in terms of delay and response characteristics.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.36.133.V17.14.0		17.14.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.36.133.V17.15.0		17.15.0	Published	12.02.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.133.V17.15.0.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.133.V17.15.0.zip</a>
ETSI	ETSI TS 136 133 V17.14.0 (2024-10)		17.14.0	Published	15.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136100_136199/136133/17.14.00_60/ts_136133v171400p.pdf">https://www.etsi.org/deliver/etsi_ts/136100_136199/136133/17.14.00_60/ts_136133v171400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.133-17.14.0 V1.9.0		17.14.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/dcy2cNbK4XkLqsw">https://members.tdsi.in/s/dcy2cNbK4XkLqsw</a>
TTA	TTAT.3G-36.133V17.14.0		17.14.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.133V17.14.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.133V17.14.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.36.133.V18.7.0		18.7.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.36.133.V18.7.0		18.7.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.133.V18.7.0.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.36.133.V18.7.0.zip</a>
ETSI	ETSI TS 136 133 V18.7.0 (2024-10)		18.7.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/136100_136199/136133/18.07.00_60/ts_136133v180700p.pdf">https://www.etsi.org/deliver/etsi_ts/136100_136199/136133/18.07.00_60/ts_136133v180700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 36.133- 18.7.0 V1.1.0		18.7.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/yfzRcTegoeRwP5n">https://members.tdsi.in/s/yfzRcTegoeRwP5n</a>
TTA	TTAT.3G-36.133V18.7.0		18.7.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.133V18.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-36.133V18.7.0&amp;searchCate=TTAS</a>

### 1.3.1.5.6 TS 38.101-5

#### NR; User Equipment (UE) radio transmission and reception; Part 5: Satellite access Radio Frequency (RF) and performance requirements

This document establishes the minimum RF and performance requirements for NR User Equipment (UE) supporting satellite access operation.

The Mobile VSAT communicating with non-GSO is not considered in this release.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.101-5.V17.9.0		17.9.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.101-5.V17.9.0		17.9.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.101-5.V17.9.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.101-5.V17.9.0.docx</a>
ETSI	ETSI TS 138 101-5 V17.9.0 (2024-10)		17.9.0	Published	03.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/13810105/17.09.00_60/ts_13810105v170900p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/13810105/17.09.00_60/ts_13810105v170900p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.101-5-17.9.0 V1.9.0		17.9.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/SZ9i4piddBSa8Dc">https://members.tdsi.in/s/SZ9i4piddBSa8Dc</a>
TTA	TTAT.3G-38.101-5V17.9.0		17.9.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.101-5V17.9.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.101-5V17.9.0&amp;searchCate=TTAS</a>

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ATIS	ATIS.3GPP.38.101-5.V18.7.0	18.7.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.101-5.V18.7.0	18.7.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.101-5.V18.7.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.101-5.V18.7.0.docx</a>
ETSI	ETSI TS 138 101-5 V18.7.0 (2024-10)	18.7.0	Published	03.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/13810105/18.07.00_60/ts_13810105v180700p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/13810105/18.07.00_60/ts_13810105v180700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.101-5- 18.7.0 V1.1.0	18.7.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/Nkk9DjiPdW6rcTc">https://members.tdsi.in/s/Nkk9DjiPdW6rcTc</a>
TTA	TTAT.3G-38.101-5V18.7.0	18.7.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.101-5V18.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.101-5V18.7.0&amp;searchCate=TTAS</a>

**1.3.1.5.7 TS 38.108****NR; Satellite Access Node radio transmission and reception**

This document establishes the minimum RF characteristics and minimum performance requirements of NR Satellite Access Node (SAN).

SDO	Document No.	Version	Status	Issued date	Location
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**Release 17**

ATIS	ATIS.3GPP.38.108.V17.9.0	17.9.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.108.V17.9.0	17.9.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.108.V17.9.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.108.V17.9.0.docx</a>
ETSI	ETSI TS 138 108 V17.9.0 (2024-10)	17.9.0	Published	03.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/138108/17.09.00_60/ts_138108v170900p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/138108/17.09.00_60/ts_138108v170900p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.108-17.9.0 V1.8.0	17.9.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/PJtbaWf9Y4ndQ4e">https://members.tdsi.in/s/PJtbaWf9Y4ndQ4e</a>
TTA	TTAT.3G-38.108V17.9.0	17.9.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.108V17.9.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.108V17.9.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.108.V18.4.0	18.4.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.108.V18.4.0	18.4.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.108.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.108.V18.4.0.docx</a>
ETSI	ETSI TS 138 108 V18.4.0 (2024-10)	18.4.0	Published	03.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/138108/18.04.00_60/ts_138108v180400p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/138108/18.04.00_60/ts_138108v180400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.108- 18.4.0 V1.1.0	18.4.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/g9z2SM8qEnW63is">https://members.tdsi.in/s/g9z2SM8qEnW63is</a>
TTA	TTAT.3G-38.108V18.4.0	18.4.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.108V18.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.108V18.4.0&amp;searchCate=TTAS</a>

**1.3.1.5.8 TS 38.124****NR; Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment**

This document establishes the essential EMC requirements for “3<sup>rd</sup> generation” digital cellular mobile terminal equipment and ancillary accessories in combination with a 3GPP NR user equipment (UE).

The equipment conforming to the requirements laid out in this document and used in its intended electromagnetic environment in accordance with the manufacturer’s instructions

- shall not generate electromagnetic disturbances at a level which may interfere with the intended operation of other equipment;

- has an adequate level of intrinsic immunity to electromagnetic disturbances to operate as intended.

This document specifies the applicable EMC tests, methods of measurement, frequency ranges, applicable limits and minimum performance criteria for all types of NR UE(s) and their accessories. NR base station equipment operating within network infrastructure is outside the scope of this document. However, this document does cover mobile and portable equipment that is intended to be operated in a fixed location while connected to the AC mains. NR base station equipment operating within network infrastructure is covered by the technical specification TS 38.113.

Requirements for the radiated emission from the enclosure port of integral antenna equipment and ancillaries are included in this document. Technical specifications for conducted emissions from the antenna connector are found in the 3GPP specifications for the radio interface, e.g. TS 38.xyz, for the effective use of the radio spectrum.

Requirements for the radiated emissions from the enclosure port and ancillaries cover two cases:

- UE equipment supporting operations in a frequency range for which antenna connectors are available (i.e. for operations in Frequency Range 1 as defined in e.g. TS 38.101-1 for the radio interface)
- UE equipment supporting operations in a frequency range for which only integral antennas may be available (i.e. for operations in Frequency Range 2 as defined in e.g. TS 38.101-2 for the radio interface)

The immunity requirements are selected to ensure an adequate level of compatibility for apparatus in residential, commercial, light industrial and vehicular environments. The levels, however, do not cover extreme cases, which may occur in any location but with low probability of occurrence. Compliance of radio equipment to the requirements of this document does not signify compliance to any requirement related to the use of the equipment (i.e. licensing requirements).

Compliance to the requirements of this document does not signify compliance to any safety requirement. However, any temporary or permanent unsafe condition caused by EMC is considered as non-compliance.

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<b>Release 17</b>					
ATIS	ATIS.3GPP.38.124.V17.2.0		17.2.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.124.V17.2.0		17.2.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.124.V17.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.124.V17.2.0.docx</a>
ETSI	ETSI TS 138 124 V17.2.0 (2022-10)		17.2.0	Published 19.10.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/138124/17.02.00_60/ts_138124v170200p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/138124/17.02.00_60/ts_138124v170200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.124-17.2.0 V1.1.0		17.2.0	Published 17.01.2023	<a href="https://members.tdsi.in/s/pB6CQFDfSf2JtSG">https://members.tdsi.in/s/pB6CQFDfSf2JtSG</a>
TTA	TTAT.3G-38.124V17.2.0		17.2.0	Published 11.01.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.124V17.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.124V17.2.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.124.V18.1.0		18.1.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.124.V18.1.0		18.1.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.124.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.124.V18.1.0.docx</a>
ETSI	ETSI TS 138 124 V18.1.0 (2024-05)		18.1.0	Published 27.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/138124/18.01.00_60/ts_138124v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/138124/18.01.00_60/ts_138124v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.124 -18.1.0 V1.0.0		18.1.0	Published 19.11.2024	<a href="https://members.tdsi.in/s/LQPGzpDLHPfKCYS">https://members.tdsi.in/s/LQPGzpDLHPfKCYS</a>
TTA	TTAT.3G-38.124V18.1.0		18.1.0	Published 08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-</a>

[38.124V18.1.0&searchCate=TTAS](https://www.itu.int/ITU-T/3gpp/index.php?searchCate=TTAS)

### 1.3.1.5.9 TS 38.133

#### NR; Requirements for support of radio resource management

This document specifies requirements for support of Radio Resource Management for the FDD and TDD modes of New Radio (NR). These requirements include requirements on measurements in NR and the UE as well as requirements on node dynamical behaviour and interaction, in terms of delay and response characteristics.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.133.V17.15.0		17.15.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.133.V17.15.0		17.15.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.133.V17.15.0.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.133.V17.15.0.zip</a>
ETSI	ETSI TS 138 133 V17.15.0 (2024-11)		17.15.0	Published	15.11.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/138133/17.15.00_60/ts_138133v171500p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/138133/17.15.00_60/ts_138133v171500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.133-17.15.0 V1.10.0		17.15.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/PrPaQGsTSMtH5yQ">https://members.tdsi.in/s/PrPaQGsTSMtH5yQ</a>
TTA	TTAT.3G-38.133V17.15.0		17.15.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.133V17.15.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.133V17.15.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.133.V18.7.0		18.7.0	Published	01.03.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.133.V18.7.0		18.7.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.133.V18.7.0.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/SRIT/CCSA.3GPP.38.133.V18.7.0.zip</a>
ETSI	ETSI TS 138 133 V18.7.0 (2024-11)		18.7.0	Published	15.11.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/138133/18.07.00_60/ts_138133v180700p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/138133/18.07.00_60/ts_138133v180700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.133- 18.7.0 V1.1.0		18.7.0	Published	03.02.2025	<a href="https://members.tdsi.in/s/MqkyapEs4F6yG3G">https://members.tdsi.in/s/MqkyapEs4F6yG3G</a>
TTA	TTAT.3G-38.133V18.7.0		18.7.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.133V18.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.133V18.7.0&amp;searchCate=TTAS</a>

### 1.3.2 Other specifications

Other specifications addressing 5G-NTN-SRIT radio and device testing, but not part of the GCS, are listed in this clause.

Information on other specifications addressing 3GPP 5G radio and device testing (but not part of the GCS), system and core network specifications can be found in the 3GPP web site for a complete system perspective. These system and core network specifications address the network, terminal, and service aspects required to provide an integrated mobility solution including aspects such as user services, connectivity, interoperability, mobility and roaming, security, codecs and media, operations and maintenance, charging, etc.

All the 3GPP specifications can be found at the following link: <https://www.3gpp.org/specifications/specification-numbering>. 3GPP specifications are reviewed and updated after each Technical Specification Group Plenary meeting (held every year in March, June, September and December).

#### 1.3.2.1 TS 36.181

##### **Evolved Universal Terrestrial Radio Access (E-UTRA); Satellite Access Node conformance testing**

This document specifies the Radio Frequency (RF) test methods and conformance requirements for Satellite Access Node (SAN) type 1-H and SAN type 1-O, supporting standalone NB-IoT operation or E-UTRA. These have been derived from and are consistent with the conducted requirements for SAN type 1-H, and radiated requirement for SAN type 1-H and SAN type 1-O in SAN specification defined in TS 36.108.

#### 1.3.2.2 TS 36.521-4

##### **Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 4: Satellite access Radio Frequency (RF) and performance Conformance Testing**

This document specifies the measurement procedures for the conformance test of E-UTRA User Equipment (UE) supporting satellite access operation that contains RF and Performance requirements. Conformance test for the support of RRM (Radio Resource Management) are specified in TS 36.521-3.

The requirements are listed in different clauses only if the corresponding parameters deviate. More generally, tests are only applicable to those UEs that are intended to support the appropriate functionality. To indicate the circumstances in which tests apply, this is noted in the “definition” and “applicability” part of the test.

#### 1.3.2.3 TS 38.181

##### **NR; Satellite Access Node conformance testing**

This document specifies the Radio Frequency (RF) test methods and conformance requirements for NR Satellite Access Node (SAN) type 1-H, SAN type 1-O and SAN type 2-O. These have been derived from and are consistent with the conducted requirements for SAN type 1-H and radiated requirement for SAN type 1-H, SAN type 1-O and SAN type 2-O in NR SAN specification defined in TS 38.108.

### 1.3.2.4 TS 38.521-5

#### **NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 5: Satellite access Radio Frequency (RF) and performance**

This document specifies the measurement procedures for the conformance test of the NR User Equipment (UE) supporting satellite access operation that contains RF and Performance requirements.

## **Annex 2**

### **Specification of the 3GPP 5G-NTN radio interface technology – RIT<sup>6</sup>**

#### **1 Background**

The satellite component of IMT-2020 is a system with global development activity and the IMT-2020 satellite radio interface specifications identified in this Recommendation have been developed by ITU in collaboration with the global core specifications (GCS) Proponents and the Transposing Organizations. It is noted from Document IMT-2020-SAT/5, that:

- The GCS Proponent must be one of the Radio interface technologies (RIT)/set of radio interface technologies (SRIT) Proponents for the relevant technology, and must have legal authority to grant to ITU-R the relevant legal usage rights to the relevant specifications provided within a GCS corresponding to a technology described in this Recommendation.
- A Transposing Organization must have been authorized by the relevant GCS Proponent to produce transposed standards for a particular technology, and must have the relevant legal usage rights.

It is further noted that GCS Proponents and Transposing Organizations must also qualify appropriately under the auspices of Resolution ITU-R 9 and its associated guidelines.

ITU has provided the global and overall framework and requirements and has developed the Global Core Specification jointly with the GCS Proponent. The detailed standardization has been undertaken within the recognized Transposing Organizations which operate in concert with the GCS Proponent. This Recommendation therefore makes extensive use of references to externally developed specifications.

This approach was considered to be the most appropriate solution to enable completion of this Recommendation within the schedule set by ITU-R and by the needs of administrations, operators and manufacturers.

This Recommendation has therefore been constructed to take full advantage of this method of work and to allow the global standardization timescales to be maintained. The main body of this Recommendation has been developed by ITU, with each Annex containing references pointing to the location of more detailed information.

This Annex 2 contains the detailed information developed by ITU and “3GPP” (the GCS Proponent) and ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC (the transposing organizations). In

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<sup>6</sup> Developed by 3GPP as “5G-NTN, Release 17 and beyond – NR-NTN RIT”.

Certification C, ARIB and TTC indicated that they would not provide transposition references (hyperlinks) to the ITU-R at this stage.

Such use of referencing enables timely completion and update of the high-level elements of this Recommendation, with change control procedures, transposition, and public enquiry procedures being undertaken within the external organization. This information has generally been adopted unchanged, recognizing the need to minimize duplication of work, and the need to facilitate and support an ongoing maintenance and update process.

This general agreement, noting that the detailed information of the radio interface should to a large extent be achieved by reference to the work of external organizations, highlights not only ITU's significant role as a catalyst in stimulating, coordinating and facilitating the development of advanced telecommunications technologies, but also its forward-looking and flexible approach to the development of this and other telecommunications standards for the 21<sup>st</sup> century.

## 2 Overview of the satellite radio interface technology

The IMT-2020 satellite radio interface specifications, known as 5G-NTN, have been developed by 3GPP and encompass of NR-NTN based on new radio (NR) as part of its Releases 17 and beyond.

5G-NTN fulfils all technical performance requirements in all three selected test environments: Rural – enhanced Mobile Broadband (eMBB-s), Rural – massive Machine Type Communication (mMTC-s) and Rural – High Reliability Communications (HRC-s).

Also, 5G-NTN fulfils the service and the spectrum requirements of the IMT-2020 satellite radio interface. 5G-NTN utilizes frequency bands both in FR1 (410-7 125 MHz) and in FR2-NTN (17.3-30 GHz). The frequency bands identified for the satellite component of IMT are provided in Resolutions **212 (Rev.WRC-23)** and **225 (Rev.WRC-23)**.

The complete set of standards for the satellite radio interface of IMT-2020 identified as 5G-NTN is based on the key characteristics of the 3GPP “5G” IMT-2020 terrestrial radio interface (see Recommendation ITU-R M.2150) and the additional NTN capabilities both of which are continuing to be enhanced.

The 3GPP 5G System (5GS) also includes specifications for its non-radio aspects, such as the core network elements (the Evolved Packet Core and 5G Core Networks), security, codecs, network management, etc. These non-radio specifications are not included in the so-called “Global Core Specifications (GCS)” of IMT-2020.

### 2.1 Overview of the 5G-NTN RIT

This overview provides the satellite specific enhancements to the 3GPP “5G” IMT-2020 terrestrial radio interface in Recommendation ITU-R M.2150.

A number of features have been introduced into the NR protocol and NG-RAN architecture enabling the support of non-terrestrial networks (NTN). NTN refers to networks, or segments of networks, using a spaceborne vehicle for transmission, defined as follows:

- Geosynchronous (GSO) and Non-Geosynchronous (non-GSO) orbiting satellites. Non-GSO includes Low Earth Orbit (LEO) at altitude approximately between 300 km and 1 500 km and Medium Earth Orbit (MEO) at altitude approximately between 7 000 km and 25 000 km.

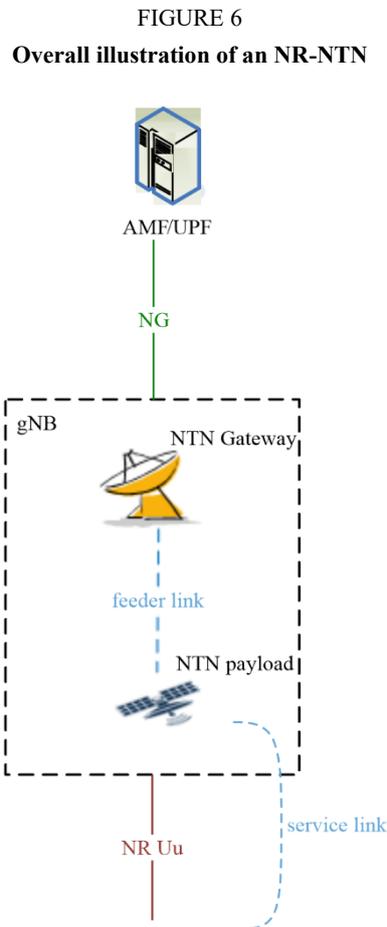
The addressed radio specifics of NTN compared to 5G terrestrial networks include:

- Delay variation, Doppler variation as well as possible Earth moving radio cells, due to the motion of spaceborne vehicles;
- Long latency due to the altitude of the spaceborne vehicles;

- Differential delay and possible multi country cell coverage due to larger radio cell size;
- Different propagation channel model;
- Different radio unit performance due to specific payload performance.

### 2.1.1 Overall architecture and general aspects

As illustrated in Fig. 6, non-terrestrial access is provided by means of an NTN payload, i.e. a network node on-board a satellite, and an NTN Gateway interconnected by a feeder link, the UE accessing NTN network services through the NTN payload via a service link.



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The NTN payload transparently forwards the radio protocol received from the UE (via the service link) to the NTN Gateway (via the feeder link) and vice-versa. A gNB may serve multiple NTN payloads while an NTN payload may be served by multiple gNBs.

Three types of service links are supported:

- Earth-fixed: provisioned by beam(s) continuously covering the same geographical areas all the time (e.g. the case of GSO satellites);
- Quasi-Earth-fixed: provisioned by beam(s) covering one geographic area for a limited period and a different geographic area during another period (e.g. the case of non-GSO satellites generating steerable beams);

- Earth-moving: provisioned by beam(s) whose coverage area slides over the Earth surface (e.g. the case of non-GSO satellites generating fixed or non-steerable beams).

With non-GSO satellites, the NTN gNB can provide either quasi-Earth-fixed cell coverage or Earth-moving cell coverage, while gNB operating with GSO satellite can provide Earth fixed cell coverage.

### 2.1.2 Timing, Synchronization and HARQ enhancements

The network broadcast ephemeris information and common Timing Advance (common TA) parameters in each NTN cell. Since NTN capable UE are expected to be all GNSS-capable, they shall acquire a valid GNSS position as well as the satellite ephemeris and common TA before connecting to an NTN cell.

To achieve uplink synchronization, before performing random access, the UE shall autonomously pre-compensate the Timing Advance, as well as the frequency Doppler shift by considering the common TA (information from the gNB), the UE position, the satellite position and satellite velocity through the satellite ephemeris. In connected mode, the UE shall continuously update the Timing Advance and frequency pre-compensation. If the UE does not have a valid GNSS position and/or valid satellite ephemeris, it does not communicate with the network until both are regained. The UEs may be configured to report Timing Advance at initial access or in connected mode. In connected mode triggered reporting of the Timing Advance is supported.

While the pre-compensation of the instantaneous Doppler shift experienced on the service link is to be performed by the UE for the uplink, the management of Doppler shift experienced over the feeder link is left to the network implementation.

To accommodate the propagation delay in NTN, several timing relationships are enhanced by a Common Timing Advance (Common TA) and two scheduling offsets  $K_{\text{offset}}$  and  $k_{\text{mac}}$ . Common TA is a configured offset that corresponds to the Round Trip Time (RTT) between the Reference Point (RP) and the NTN payload.  $K_{\text{offset}}$  is a configured scheduling offset that approximately corresponds to the sum of the service link RTT and the common TA.  $k_{\text{mac}}$  is a configured offset that approximately corresponds to the RTT between the RP and the gNB.

To mitigate the impact of HARQ stalling in NTN the HARQ feedback can be disabled in the presence of ARQ re-transmissions at the RLC layer (e.g. in GSO satellite systems) and/or the number of HARQ processes for re-transmissions at the MAC layer can be increased to 32 (e.g. in non-GSO satellite systems).

### 2.1.3 Mobility management

To enable mobility in NTN, the network provides serving cell's and neighbouring cell's satellite ephemeris needed to access the target serving NTN cell in the handover command.

UE supports mobility between NTN and Terrestrial Network (i.e. from NTN to Terrestrial Network (hand-in) and from Terrestrial Network to NTN (hand-out)), but is not required to connect to both NTN and Terrestrial Network at the same time. It may also support mobility between radio access technologies based on different orbit (GSO, non-GSO at different altitude).

Triggering conditions upon which UE may execute Conditional Hand-Over (CHO) to a candidate cell, have been introduced: event A4, time-based trigger condition, location-based trigger condition. The two last conditions are configured together with one of the measurement-based trigger conditions. Location is defined by the distance between UE and a reference location. Time is defined by the time between T1 and T2, where T1 is an absolute time value and T2 is a duration started at T1.

For the measurements the network can configure multiple SS/PBCH Block Measurement Timing Configuration (SMTCs) in parallel per carrier and for a given set of cells depending on UE capabilities

using propagation delay difference and ephemeris information. It can also configure measurement gaps based on multiple SMTC.

The adjustment of SMTCs is possible under network control based on UE assistance information if available for connected mode and under UE control based on UE location and satellite assistance information (e.g. ephemeris, common TA parameters) for idle/inactive modes.

In the quasi-earth fixed cell scenario, UE can perform time-based and location-based measurement in RRC\_IDLE/RRC\_INACTIVE. The timing and location information associated to a cell are provided via system information. They refer respectively to the time when the serving cell is going to stop serving a geographical area and to the reference location of serving cell.

A Tracking Area corresponds to a fixed geographical area. Any respective mapping is configured in the RAN. The network may broadcast multiple Tracking Area Codes (TAC) per PLMN in a NR NTN cell in order to reduce the signalling load at cell edge, in particular for Earth-moving cell coverage. A TAC change in the System Information is under network control and may not be exactly synchronized with real-time illumination of beams on ground.

Regarding the UE location aspects, upon network request, after AS security is established in connected mode, a UE should report its coarse UE location information (most significant bits of the GNSS coordinates, ensuring an accuracy in the order of 2 km) to the NG-RAN if available.

#### **2.1.4 Switchover**

A service link switch refers to a change of serving satellite.

A feeder-link switchover is the procedure where the feeder link is changed from a source NTN Gateway to a target NTN Gateway for a specific NTN payload. The feeder-link switchover is a Transport Network Layer procedure. Both hard and soft feeder-link switchovers are applicable to NTN.

Service and feeder-link switchovers apply mostly for the case of non-GSO.

#### **2.1.5 NG-RAN signalling**

The Cell Identity, indicated by the gNB to the Core Network as part of the User Location Information corresponds to a Mapped Cell ID, irrespective of the orbit of the NTN payload or the types of service links supported. It is used for Paging Optimization in NG interface, Area of Interest and Public Warning Services.

The Cell Identity included within the target identification of the handover messages allows identifying the correct target radio cell as well as for RAN paging.

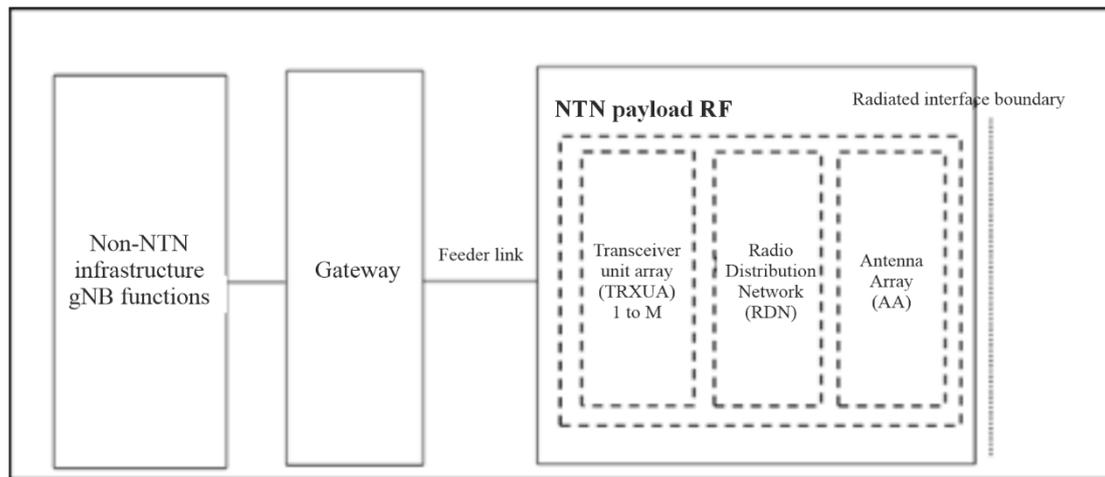
The mapping between Mapped Cell IDs and geographical areas is configured in the RAN and Core Network. The gNB is responsible for constructing the Mapped Cell ID based on the UE location info received from the UE, if available. The mapping may be pre-configured (e.g. up to operator's policy) or up to implementation.

The gNB reports the broadcasted TAC(s) of the selected Public Land Mobile Network (PLMN) to the Access and Mobility Management Function (AMF) as part of UE Location Information (ULI). In case the gNB knows the UE's location information, the gNB may determine the Tracking Area Indicator (TAI) the UE is currently located in and provide that TAI to the AMF as part of ULI.

#### **2.1.6 RF performances and RRM requirements**

Figure 7 illustrates the satellite access node which encompass on ground non-NTN infrastructure gNB functions, gateway and feeder link and the RF functions of the NTN payload.

FIGURE 7  
Satellite Access Node (SAN)



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RF requirements of an NTN capable UE require the same RF performance as UE operating with terrestrial network.

Note that RF requirements of the SAN are lower compared to the BS RF requirements of a terrestrial network.

Specific requirements for radio resource management in NTN mostly relate to delay as well as timing and frequency errors in the different procedures.

### 2.1.7 Other enhancements

An additional set of features have been introduced into the NR and NG-RAN architecture for an optimized support of NTN with the capabilities to:

- Offer increased uplink coverage performance especially when addressing commercial smartphones with  $-5.5$  dBi antenna gain and 3 dB polarisation loss (per antenna port);
- Support of Geostationary Orbit (GSO) as well as non-Geostationary Orbit (non-GSO) deployment scenarios in the (DownLink: 17.7-20.2 GHz; UpLink: 27.5-30.0 GHz) frequency bands;
- Support the verification by the network of the location (i.e. GNSS coordinates) reported by the UE assuming a single satellite in view in order to fulfil the regulatory requirements (e.g. Lawful Intercept, emergency call, Public Warning System);
- Provide NTN-TN and NTN-NTN measurement, mobility and service continuity enhancements considering the NTN characteristics such as large propagation delay and satellite movement;
- Define 30 MHz channel bandwidth for n256 and n255 for 5G NR-NTN and introduce the corresponding SAN and UE RF core requirements, limited to Operating Bands and Channel Arrangement requirements for these specifications.

This set of enhancements are described here after.

#### 2.1.7.1 Uplink coverage enhancements

To improve NR uplink coverage in NTN, the following enhancements have been introduced:

- PUCCH repetition for Msg4 HARQ-ACK:

- Supported number of transmissions are 1, 2, 4, 8.
  - If a single value from {2, 4, 8} is configured via SIB, the configured repetition factor is applied.
  - If multiple values from {1, 2, 4, 8} are configured via SIB, one of the multiple values is indicated in DAI field of DCI format 1\_0 with CRC scrambled by TC-RNTI.
- The existing mechanism on repetition slot counting is applied.
- Frequency hopping mechanism defined for PUCCH transmission for Msg4 HARQ-ACK, in every slot is applied.
- A RSRP threshold can be configured via SIB when the number of repetitions is configured by SIB. If the RSRP threshold is configured, UE capable of PUCCH repetition for Msg4 HARQ-ACK reports the capability of PUCCH repetition for Msg4 HARQ-ACK via Msg3 PUSCH only if measured RSRP is lower than the configured RSRP threshold. If the RSRP threshold is not configured, UE capable of PUCCH repetition for Msg4 HARQ-ACK reports the capability of PUCCH repetition for Msg4 HARQ-ACK via Msg3 PUSCH.
- The repetition factor applied to Msg4 HARQ-ACK is used also for any PUCCH transmission before dedicated PUCCH resource is provided.
- NTN-specific PUSCH DMRS bundling enhancement that enables DMRS bundling in presence of timing drift, whereby UE maintains phase continuity considering effects of transmission delay variation between UE and uplink time synchronization reference point to enable improved channel estimation.

### 2.1.7.2 NR-NTN deployment in FR2-NTN

To support NR NTN deployment in FR2-NTN using FDD duplexing mode, the following aspects were considered:

- For operation in FR2-NTN, the value range in ms for  $K_{\text{offset}}$  and  $K_{\text{MAC}}$  shall be the same as for FR1.
- For operation in FR2-NTN, use a reference SCS of 15 kHz for the indication of  $K_{\text{offset}}$  and  $K_{\text{MAC}}$ .
- For operation in FR2-NTN, no additional MAC CE TCI application delay is introduced to facilitate mechanical beam steering with VSAT.
- For operation in FR2-NTN, for cell search procedure, Case D and Case E are used to allow FDD operation in bands defined by FR2-NTN without any update to SSB pattern.
- From the physical layer perspective, for operation in FR2-NTN, the granularity used for TA reporting is the same as corresponding to the reference subcarrier spacing applied for  $K_{\text{offset}}$ .

Moreover, the following VSAT classes and types have been introduced:

UE class	UE type	Type description
<b>Fixed VSAT</b>	1	Fixed VSAT supporting GSO and LEO with mechanical steering antenna.
	2	Fixed VSAT supporting GSO and LEO with electronic steering antenna.
	3	Fixed VSAT supporting LEO only with electronic steering antenna.
<b>Mobile VSAT</b>	4	Mobile VSAT supporting GSO with mechanical steering antenna.
	5	Mobile VSAT supporting GSO with electronic steering antenna.

Note: Assuming that UE has single beam towards one single satellite at a given time.

### 2.1.7.3 Network verified UE location

Necessary enhancements to multi-RTT to support the network verified UE location in NTN assuming a single satellite in view have also been introduced.

For UE location verification based on multi-RTT with single satellite in NTN, at least the following UE and gNB measurements are reported: gNB receive-transmit time difference at the uplink time synchronization reference point, UE receive-transmit time difference, UE receive-transmit time difference subframe offset and DL timing drift.

The assistance information reported to the CN may include ephemeris information including accurate satellite position and velocity at the time of multi-RTT measurement, and common TA parameters (ta-Common, ta-CommonDrift, ta-CommonDriftVariant, Epoch time).

Note that network verified UE location is an optional UE feature. The verification is triggered by the CN and is up to the CN to decide when to trigger the procedure.

### 2.1.7.4 Mobility Management enhancements

Mobility management enhancements have been introduced to ensure service continuity covers inter-satellite, inter-gNB, inter-RAT.

For the NTN to TN mobility, the Non-Terrestrial Network may broadcast NR and EUTRA TN cell coverage areas and cell information in the new SIB25. The coverage information consists in a list of geographical TN areas, with associated frequency information. UE can reduce its power consumption by skipping TN measurement based on the TN coverage information.

For the TN to NTN mobility, the TN cell can broadcast NTN neighbour satellites ephemeris via SIB 19. The UE can use ephemeris to connect to the NTN.

RACH-less handover is supported in NR NTN. It is a L3 mobility procedure that avoids a RACH procedure during the handover (between gNBs or during feeder/satellite switch), reducing random access congestion in the target cell.

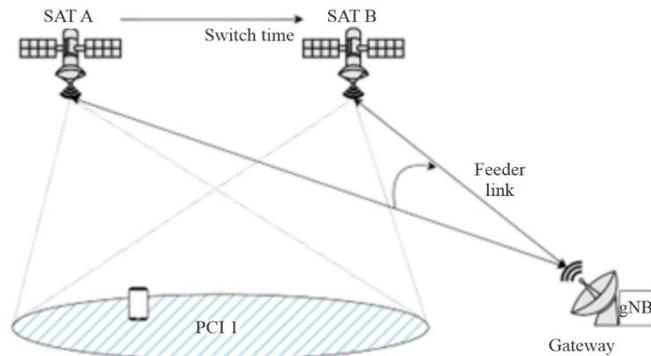
Conditional handover associated to a time-based or a location-based trigger condition already introduced for quasi-Earth fixed cells is also supported for Earth-moving cells. For the location condition, the candidate cell's reference location re-use the cell reselection procedure as the cell moves. CondEventD2 event is introduced that includes a reference location and distance threshold for source and target cell. Moreover, for the time-based, the CHO procedure can be combined with the RACH-less HO procedure.

FIGURE 8

**Satellite switch with re-sync**

**Hard satellite switch:** UE synchronizes to target satellite after  $t\text{-Service}$

**Soft satellite switch:** UE acquires synchronisation to target Satellite at  $t\text{-ServiceStart}$  and shall apply at  $t\text{-Service}$



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Satellite switch with-resync allows the UE to synchronize with the target satellite without handover, i.e. no L3 mobility, no PCI change, upon both hard and soft satellite switchover in the quasi-Earth fixed scenario with the same SSB frequency and the same gNB. CHO can be configured simultaneously. In the soft switch case, the capable UE can start synchronizing with the target satellite before the source satellite ends to serve the cell without required to be connected to both satellites, as long as the SSBs from the source satellite and target satellite are not overlapped in time.

### 2.1.7.5 Channel bandwidth up to 30 MHz in FR1

In Release 17, the channel bandwidth was limited to 20 MHz in FR1 bands. With Release 18, channel bandwidth can be set up to 30 MHz for n256 and n255 frequency bands. The corresponding SAN and UE RF core requirements have been introduced however, limited to Operating Bands and Channel Arrangement requirements.

## 2.2 Detailed specification of the radio interface technology

Detailed specifications described in this Annex are developed around a “Global Core Specification” (GCS)<sup>7</sup>, which is related to externally developed materials incorporated by specific references for a specific technology. The process and use of the GCS, references, and related notifications and certifications are available as Document IMT-2020-SAT/5.

The IMT-2020 Satellite standards contained in this clause are derived from the global core specification for 3GPP 5G-NTN-RIT contained at IMT-2020 Global Core Specifications (see note in Table 2 below). The following notes apply to the clauses below:

<sup>7</sup> A “GCS” (Global Core Specification) is the set of specifications that defines a single RIT, an SRIT, or a component RIT within an SRIT.

- 1 The identified Transposing Organizations<sup>8</sup> should make their reference material available from their website.
- 2 This information was supplied by the Transposing Organizations and relates to their own deliverables of the transposed global core specification.

Clause 2.2.1 contains titles and synopses of the Global Core Specification of IMT-2020 Satellite radio interface technology entitled 3GPP 5G-NTN-RIT and the related hyperlinks to the transposed standards. The specifications in clause 2.2.1 are relevant to the 3GPP 5G-NTN-RIT, including specifications satellite-specific and specifications with sections dedicated to satellite aspects; while a number of specifications are also relevant to the 3GPP 5G-RIT, it is noted that Recommendation ITU-R M.2150 provides the complete set of detailed specifications for the 3GPP 5G-RIT for the terrestrial component of IMT-2020.

The specific 3GPP specifications of the Global Core Specifications (GCS) for the IMT-2020 satellite radio interface technology entitled 3GPP 5G-NTN-RIT that are being transposed in § 2.2.1 are summarized in Table 2.

TABLE 2  
3GPP specifications in § 2.2.1 that are to be transposed

<b>PART A</b>				
<b>List of Specifications</b>				
<b>37.xxx Series</b>	<b>38.100 Series</b>	<b>38.200 Series</b>	<b>38.300 Series</b>	<b>38.400 Series</b>
TS 37.320	TS 38.101-5	TS 38.201	TS 38.300	TS 38.401
TS 37.324	TS 38.108	TS 38.202	TS 38.304	TS 38.410
TS 37.340	TS 38.124	TS 38.211	TS 38.305	TS 38.411
TS 37.355	TS 38.133	TS 38.212	TS 38.306	TS 38.412
TS 37.460		TS 38.213	TS 38.307	TS 38.413
TS 37.461		TS 38.214	TS 38.314	TS 38.414
TS 37.462		TS 38.215	TS 38.321	TS 38.415
TS 37.470			TS 38.322	TS 38.420
TS 37.471			TS 38.323	TS 38.421
TS 37.472			TS 38.331	TS 38.422
TS 37.473			TS 38.355	TS 38.423
TS 37.480				TS 38.424
TS 37.481				TS 38.425
TS 37.482				TS 38.455
TS 37.483				TS 38.470
				TS 38.471
				TS 38.472
				TS 38.473
				TS 38.474

<sup>8</sup> The following identified Transposing Organizations have provided their transposed sets of standards information contained in this clause:

- Alliance for Telecommunications Industry Solutions (ATIS)
- China Communications Standards Association (CCSA)
- European Telecommunications Standards Institute (ETSI)
- Telecommunications Standards Development Society, India (TSDSI)
- Telecommunications Technology Association (TTA)

TABLE 2 (*end*)

<b>PART B</b> <b>Specification versions to be used</b>
The specific versions of the 3GPP specifications that are to be used for the transpositions of those specifications listed in Table 2 are provided in the link below: <a href="https://extranet.itu.int/rsg-meetings/sg4/wp4b/GCS/Documents/IMT-2020.SAT">https://extranet.itu.int/rsg-meetings/sg4/wp4b/GCS/Documents/IMT-2020.SAT</a>

## 2.2.1 Titles and synopses of the global core specification and the transposed standards

### 2.2.1.1 Introduction

The standards documents for satellite use and referenced below, as transposed from the relevant 3GPP specifications, are provided by the identified *Transposing Organizations* as the transposed sets of standards for the radio interface of IMT-2020 identified as 5G-NTN and includes not only the key characteristics of IMT-2020 but also the additional capabilities of 5G-NTN both of which are continuing to be enhanced for satellite use.

### 2.2.1.2 Radio Layer 1

#### 2.2.1.2.1 TS 38.201

##### NR; Physical layer; General description

This document provides a general description of the physical layer of NR radio interface. This document also describes the document structure of the 3GPP physical layer specifications, i.e. TS 38.200 series.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.201.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.201.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.201.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.201.V17.0.0.doc</a>
ETSI	ETSI TS 138 201 V17.0.0 (2022-05)		17.0.0	Published 11.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138201/17.00.00_60/ts_138201v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138201/17.00.00_60/ts_138201v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.201-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/93kPQABXmpr9ec">https://members.tdsi.in/s/93kPQABXmpr9ec</a>
TTA	TTAT.3G-38.201V17.0.0		17.0.0	Published 14.03.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.201V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.201V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.201.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.201.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.201.V18.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.201.V18.0.0.doc</a>
ETSI	ETSI TS 138 201 V18.0.0 (2024-05)		18.0.0	Published 27.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138201/18.00.00_60/ts_138201v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138201/18.00.00_60/ts_138201v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.201 -18.0.0 V1.0.0		18.0.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/f4j8DgWSikwnkkmk">https://members.tdsi.in/s/f4j8DgWSikwnkkmk</a>
TTA	TTAT.3G-38.201V18.0.0		18.0.0	Published 13.02.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.201V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.201V18.0.0&amp;searchCate=TTAS</a>

#### 2.2.1.2.2 TS 38.202

##### NR; Services provided by the physical layer

This document is a technical specification of the services provided by the physical layer of 5G-NR to upper layers.

SDO	Document No.	Version	Status	Issued date	Location
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**Release 17**

ATIS	ATIS.3GPP.38.202.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.202.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.202.V17.5.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.202.V17.5.0.docx</a>
ETSI	ETSI TS 138 202 V17.5.0 (2024-02)	17.5.0	Published	01.02.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138202/17.05.00_60/ts_138202v170500p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138202/17.05.00_60/ts_138202v170500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.202-17.5.0 V1.4.0	17.5.0	Published	29.05.2024	<a href="https://members.tdsi.in/s/6koBLoiigxgSWXy">https://members.tdsi.in/s/6koBLoiigxgSWXy</a>
TTA	TTAT.3G-38.202V17.5.0	17.5.0	Published	08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.202V17.5.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.202V17.5.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.202.V18.4.0	18.4.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.202.V18.4.0	18.4.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.202.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.202.V18.4.0.docx</a>
ETSI	ETSI TS 138 202 V18.4.0 (2024-10)	18.4.0	Published	02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138202/18.04.00_60/ts_138202v180400p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138202/18.04.00_60/ts_138202v180400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.202- 18.4.0 V1.1.0	18.4.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/pm2MeNYaNzMi9G7">https://members.tdsi.in/s/pm2MeNYaNzMi9G7</a>
TTA	TTAT.3G-38.202V18.4.0	18.4.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.202V18.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.202V18.4.0&amp;searchCate=TTAS</a>

**2.2.1.2.3 TS 38.211****NR; Physical channels and modulation**

This document describes the physical channels and signals for 5G-NR.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.211.V17.9.0	17.9.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.211.V17.9.0	17.9.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.211.V17.9.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.211.V17.9.0.docx</a>
ETSI	ETSI TS 138 211 V17.9.0 (2024-10)	17.9.0	Published	02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138211/17.09.00_60/ts_138211v170900p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138211/17.09.00_60/ts_138211v170900p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.211-17.9.0 V1.8.0	17.9.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/GPQQPQxrQwTiiwH">https://members.tdsi.in/s/GPQQPQxrQwTiiwH</a>
TTA	TTAT.3G-38.211V17.9.0	17.9.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.211V17.9.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.211V17.9.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.211.V18.4.0	18.4.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.211.V18.4.0	18.4.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.211.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.211.V18.4.0.docx</a>
ETSI	ETSI TS 138 211 V18.4.0 (2024-10)	18.4.0	Published	02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138211/18.04.00_60/ts_138211v180400p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138211/18.04.00_60/ts_138211v180400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.211- 18.4.0 V1.1.0	18.4.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/zrcSbAR38m4H3Yy">https://members.tdsi.in/s/zrcSbAR38m4H3Yy</a>
TTA	TTAT.3G-38.211V18.4.0	18.4.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.211V18.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.211V18.4.0&amp;searchCate=TTAS</a>

### 2.2.1.2.4 TS 38.212

#### NR; Multiplexing and channel coding

This document specifies the coding, multiplexing and mapping to physical channels for 5G NR.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.212.V17.9.0		17.9.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.212.V17.9.0		17.9.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.212.V17.9.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.212.V17.9.0.docx</a>
ETSI	ETSI TS 138 212 V17.9.0 (2024-08)		17.9.0	Published 05.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138212/17.09.00_60/ts_138212v170900p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138212/17.09.00_60/ts_138212v170900p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.212 -17.9.0 V1.8.0		17.9.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/4oZBfKJ57RbTwzt">https://members.tdsi.in/s/4oZBfKJ57RbTwzt</a>
TTA	TTAT.3G-38.212V17.9.0		17.9.0	Published 11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.212V17.9.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.212V17.9.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.212.V18.4.0		18.4.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.212.V18.4.0		18.4.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.212.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.212.V18.4.0.docx</a>
ETSI	ETSI TS 138 212 V18.4.0 (2024-10)		18.4.0	Published 02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138212/18.04.00_60/ts_138212v180400p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138212/18.04.00_60/ts_138212v180400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.212- 18.4.0 V1.1.0		18.4.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/di8moiMrf2PytBa">https://members.tdsi.in/s/di8moiMrf2PytBa</a>
TTA	TTAT.3G-38.212V18.4.0		18.4.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.212V18.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.212V18.4.0&amp;searchCate=TTAS</a>

### 2.2.1.2.5 TS 38.213

#### NR; Physical layer procedures for control

This document specifies and establishes the characteristics of the physical layer procedures for control operations in 5G-NR.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.213.V17.11.0		17.11.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.213.V17.11.0		17.11.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.213.V17.11.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.213.V17.11.0.docx</a>
ETSI	ETSI TS 138 213 V17.11.0 (2024-10)		17.11.0	Published 02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138213/17.11.00_60/ts_138213v171100p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138213/17.11.00_60/ts_138213v171100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.213-17.11.0 V1.10.0		17.11.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/nEMrMFtkbAwPraZ">https://members.tdsi.in/s/nEMrMFtkbAwPraZ</a>
TTA	TTAT.3G-38.213V17.11.0		17.11.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.213V17.11.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.213V17.11.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.213.V18.4.0		18.4.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.213.V18.4.0		18.4.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.213.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.213.V18.4.0.docx</a>
ETSI	ETSI TS 138 213 V18.4.0 (2024-10)		18.4.0	Published 02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138213/18.04.00_60/ts_138213v180400p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138213/18.04.00_60/ts_138213v180400p.pdf</a>

TSDSI	TSDSI STD T1.3GPP 38.213- 18.4.0 V1.1.0	18.4.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/MwLmBkMGZwWZpGp">https://members.tdsi.in/s/MwLmBkMGZwWZpGp</a>
TTA	TTAT.3G-38.213V18.4.0	18.4.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.213V18.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.213V18.4.0&amp;searchCate=TTAS</a>

### 2.2.1.2.6 TS 38.214

#### NR; Physical layer procedures for data

This document specifies and establishes the characteristics of the physical layer procedures of data channels for 5G-NR.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.214.V17.11.0		17.11.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.214.V17.11.0		17.11.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.214.V17.11.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.214.V17.11.0.docx</a>
ETSI	ETSI TS 138 214 V17.11.0 (2024-10)		17.11.0	Published	02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/17.11.00_60/ts_138214v171100p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/17.11.00_60/ts_138214v171100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.214-17.11.0 V1.9.0		17.11.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/gZ4X5Lrz9TmXyfw">https://members.tdsi.in/s/gZ4X5Lrz9TmXyfw</a>
TTA	TTAT.3G-38.214V17.11.0		17.11.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.214V17.11.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.214V17.11.0&amp;searchCate=TTAS</a>

#### Release 18

ATIS	ATIS.3GPP.38.214.V18.4.0		18.4.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.214.V18.4.0		18.4.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.214.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.214.V18.4.0.docx</a>
ETSI	ETSI TS 138 214 V18.4.0 (2024-10)		18.4.0	Published	02.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/18.04.00_60/ts_138214v180400p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/18.04.00_60/ts_138214v180400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.214- 18.4.0 V1.1.0		18.4.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/zADzpmzBMZkwXAd">https://members.tdsi.in/s/zADzpmzBMZkwXAd</a>
TTA	TTAT.3G-38.214V18.4.0		18.4.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.214V18.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.214V18.4.0&amp;searchCate=TTAS</a>

### 2.2.1.2.7 TS 38.215

#### NR; Physical layer measurements

This document describes the physical layer measurements for NR.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.215.V17.5.0		17.5.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.215.V17.5.0		17.5.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.215.V17.5.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.215.V17.5.0.docx</a>
ETSI	ETSI TS 138 215 V17.5.0 (2024-08)		17.5.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138215/17.05.00_60/ts_138215v170500p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138215/17.05.00_60/ts_138215v170500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.215 -17.5.0 V1.4.0		17.5.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/9YEB6gPeKdztmCj">https://members.tdsi.in/s/9YEB6gPeKdztmCj</a>
TTA	TTAT.3G-38.215V17.5.0		17.5.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.215V17.5.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.215V17.5.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.215.V18.3.0	18.3.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.215.V18.3.0	18.3.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.215.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.215.V18.3.0.docx</a>
ETSI	ETSI TS 138 215 V18.3.0 (2024-08)	18.3.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138200_138299/138215/18.03.00_60/ts_138215v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138200_138299/138215/18.03.00_60/ts_138215v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.215 -18.3.0 V1.0.0	18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/rSF7CSJKCBY3Y2b">https://members.tdsi.in/s/rSF7CSJKCBY3Y2b</a>
TTA	TTAT.3G-38.215V18.3.0	18.3.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.215V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.215V18.3.0&amp;searchCate=TTAS</a>

**2.2.1.3 Radio Layers 2 & 3****2.2.1.3.1 TS 37.320****Universal Terrestrial Radio Access (UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRA); Radio measurement collection for Minimization of Drive Tests (MDT); Overall description; Stage 2**

This document provides an overview and overall description of the minimization of drive tests functionality. The document describes functions and procedures to support collection of UE-specific measurements for MDT using Control Plane architecture, for both UTRAN and E-UTRAN. Details of the signalling procedures for single-RAT operation are specified in the appropriate radio interface protocol specification. Network operation and overall control of MDT is described in OAM specifications.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.320.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.320.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.320.V17.5.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.320.V17.5.0.docx</a>
ETSI	ETSI TS 137 320 V17.5.0 (2023-10)	17.5.0	Published	09.10.2023	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137320/17.05.00_60/ts_137320v170500p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137320/17.05.00_60/ts_137320v170500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.32-17.5.0 V1.5.0	17.5.0	Published	23.02.2024	<a href="https://members.tdsi.in/s/LGt2C4iqeEtjdGY">https://members.tdsi.in/s/LGt2C4iqeEtjdGY</a>
TTA	TTAT.3G-37.320V17.5.0	17.5.0	Published	13.02.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.320V17.5.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.320V17.5.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.320.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.320.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.320.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.320.V18.3.0.docx</a>
ETSI	ETSI TS 137 320 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137320/18.03.00_60/ts_137320v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137320/18.03.00_60/ts_137320v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.320- 18.3.0 V1.1.0	18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/ZFismCcJpMKNa7J">https://members.tdsi.in/s/ZFismCcJpMKNa7J</a>
TTA	TTAT.3G-37.320V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.320V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.320V18.3.0&amp;searchCate=TTAS</a>

**2.2.1.3.2 TS 37.324****Evolved Universal Terrestrial Radio Access (E-UTRA) and NR; Service Data Adaptation Protocol (SDAP) specification**

This document specifies the Service Data Adaptation Protocol (SDAP) for a UE with connection to the 5G-CN.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.324.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.324.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.324.V17.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.324.V17.0.0.docx</a>
ETSI	ETSI TS 137 324 V17.0.0 (2022-05)		17.0.0	Published 06.05.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137324/17.00.00_60/ts_137324v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137324/17.00.00_60/ts_137324v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.324-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/mmFwPwzzXe3ECQt">https://members.tdsi.in/s/mmFwPwzzXe3ECQt</a>
TTA	TTAT.3G-37.324V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.324V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.324V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.324.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.324.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.324.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.324.V18.0.0.docx</a>
ETSI	ETSI TS 137 324 V18.0.0 (2024-05)		18.0.0	Published 15.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137324/18.00.00_60/ts_137324v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137324/18.00.00_60/ts_137324v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.324 -18.0.0 V1.0.0		18.0.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/gQgRAZG9G2zbgzY">https://members.tdsi.in/s/gQgRAZG9G2zbgzY</a>
TTA	TTAT.3G-37.324V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.324V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.324V18.0.0&amp;searchCate=TTAS</a>

### 2.2.1.3.3 TS 37.340

#### NR; Multi-connectivity; Overall description; Stage-2

This document provides an overview of the multi-connectivity operation using E-UTRA and NR radio access technologies. Details of the network and radio interface protocols are specified in companion specifications of the 36 and 38 series.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.340.V17.7.0		17.7.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.340.V17.7.0		17.7.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.340.V17.7.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.340.V17.7.0.docx</a>
ETSI	ETSI TS 137 340 V17.7.0 (2024-01)		17.7.0	Published 31.01.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137340/17.07.00_60/ts_137340v170700p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137340/17.07.00_60/ts_137340v170700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.34-17.7.0 V1.6.0		17.7.0	Published 29.05.2024	<a href="https://members.tdsi.in/s/NkpTmB3fcS47Tqc">https://members.tdsi.in/s/NkpTmB3fcS47Tqc</a>
TTA	TTAT.3G-37.340V17.7.0		17.7.0	Published 08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.340V17.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.340V17.7.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.340.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.340.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.340.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.340.V18.3.0.docx</a>
ETSI	ETSI TS 137 340 V18.3.0 (2024-10)		18.3.0	Published 17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137340/18.03.00_60/ts_137340v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137340/18.03.00_60/ts_137340v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.340- 18.3.0 V1.1.0		18.3.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/7Bnfa9pPydg3bo4">https://members.tdsi.in/s/7Bnfa9pPydg3bo4</a>
TTA	TTAT.3G-37.340V18.3.0		18.3.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.340V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.340V18.3.0&amp;searchCate=TTAS</a>

### 2.2.1.3.4 TS 37.355

#### LTE Positioning Protocol (LPP)

This document contains the definition of the LTE Positioning Protocol (LPP) for the radio access technologies E-UTRA/LTE and NR.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.355.V17.8.0		17.8.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.355.V17.8.0		17.8.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.355.V17.8.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.355.V17.8.0.docx</a>
ETSI	ETSI TS 137 355 V17.8.0 (2024-05)		17.8.0	Published 07.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137355/17.08.00_60/ts_137355v170800p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137355/17.08.00_60/ts_137355v170800p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.355-17.8.0 V1.8.0		17.8.0	Published 22.07.2024	<a href="https://members.tdsi.in/s/fME9dYD3dYCoe5S">https://members.tdsi.in/s/fME9dYD3dYCoe5S</a>
TTA	TTAT.3G-37.355V17.8.0		17.8.0	Published 01.08.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.355V17.8.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.355V17.8.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.355.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.355.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.355.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.355.V18.3.0.docx</a>
ETSI	ETSI TS 137 355 V18.3.0 (2024-10)		18.3.0	Published 14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137300_137399/137355/18.03.00_60/ts_137355v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/137300_137399/137355/18.03.00_60/ts_137355v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.355- 18.3.0 V1.1.0		18.3.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/pRFAb4xwH26sdDH">https://members.tdsi.in/s/pRFAb4xwH26sdDH</a>
TTA	TTAT.3G-37.355V18.3.0		18.3.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.355V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.355V18.3.0&amp;searchCate=TTAS</a>

### 2.2.1.3.5 TS 38.300

#### NR; NR and NG-RAN Overall description; Stage-2

This document provides an overview and overall description of the NG-RAN and focuses on the radio interface protocol architecture of NR connected to 5GC (E-UTRA connected to 5GC is covered in the 36 series). Details of the radio interface protocols are specified in companion specifications of the 38 series.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.300.V17.10.0		17.10.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.300.V17.10.0		17.10.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.300.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.300.V17.10.0.docx</a>
ETSI	ETSI TS 138 300 V17.10.0 (2024-10)		17.10.0	Published 17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138300/17.10.00_60/ts_138300v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138300/17.10.00_60/ts_138300v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.300-17.10.0 V1.10.0		17.10.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/BdiKTKGfJEMCCCg">https://members.tdsi.in/s/BdiKTKGfJEMCCCg</a>
TTA	TTAT.3G-38.300V17.10.0		17.10.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.300V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.300V17.10.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.300.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>

CCSA	CCSA.3GPP.38.300.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.300.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.300.V18.3.0.docx</a>
ETSI	ETSI TS 138 300 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138300/18.03.00_60/ts_138300v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138300/18.03.00_60/ts_138300v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.300- 18.3.0 V1.1.0	18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/rwkqabpK4XC4aYA">https://members.tdsi.in/s/rwkqabpK4XC4aYA</a>
TTA	TTAT.3G-38.300V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.300V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.300V18.3.0&amp;searchCate=TTAS</a>

### 2.2.1.3.6 TS 38.304

#### NR; User Equipment (UE) procedures in idle mode and in RRC Inactive state

This document specifies the Access Stratum (AS) part of the UE procedures in RRC\_IDLE state (also called Idle mode) and RRC\_INACTIVE state. The non-access stratum (NAS) part of Idle mode procedures and processes is specified in TS 23.122.

This document specifies the model for the functional division between the NAS and AS in a UE.

This document applies to all UEs that support at least NR Radio Access, including multi-RAT UEs as described in 3GPP specifications, in the following cases:

- When the UE is camped on a NR cell;
- When the UE is searching for a cell to camp on;

NOTE: When the UE is camped on or searching for a cell to camp on belonging to other RATs, the UE behaviour is described in the specifications of the other RATs.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.304.V17.9.0	17.9.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.304.V17.9.0	17.9.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.304.V17.9.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.304.V17.9.0.docx</a>
ETSI	ETSI TS 138 304 V17.9.0 (2024-08)	17.9.0	Published	12.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138304/17.09.00_60/ts_138304v170900p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138304/17.09.00_60/ts_138304v170900p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.304 -17.9.0 V1.8.0	17.9.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/m67LnQA5GzGxsBF">https://members.tdsi.in/s/m67LnQA5GzGxsBF</a>
TTA	TTAT.3G-38.304V17.9.0	17.9.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.304V17.9.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.304V17.9.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.304.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.304.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.304.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.304.V18.3.0.docx</a>
ETSI	ETSI TS 138 304 V18.3.0 (2024-10)	18.3.0	Published	17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138304/18.03.00_60/ts_138304v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138304/18.03.00_60/ts_138304v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.304- 18.3.0 V1.1.0	18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/CpQz6T4mtX29QX6">https://members.tdsi.in/s/CpQz6T4mtX29QX6</a>
TTA	TTAT.3G-38.304V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.304V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.304V18.3.0&amp;searchCate=TTAS</a>

### 2.2.1.3.7 TS 38.305

#### NG Radio Access Network (NG-RAN); Stage 2 functional specification of User Equipment (UE) positioning in NG-RAN

This document specifies the stage 2 of the UE Positioning function of NG-RAN which provides the mechanisms to support or assist the calculation of the geographical position of a UE. UE position knowledge can be used, for example, in support of Radio Resource Management functions, as well as location-based services for operators, subscribers, and third-party service providers. The purpose of this stage 2 specification is to define the NG-RAN UE Positioning architecture, functional entities and operations to support positioning methods. This description is confined to the NG-RAN Access Stratum. It does not define or describe how the results of the UE position calculation can be utilised in the Core Network (e.g. LCS) or in NG-RAN (e.g. RRM).

UE Positioning may be considered as a network-provided enabling technology consisting of standardised service capabilities that enable the provision of location applications. The application(s) may be service provider specific. The description of the numerous and varied possible location applications which are enabled by this technology is outside the scope of this document. However, clarifying examples of how the functionality being described may be used to provide specific location services may be included.

This stage 2 specification covers the NG-RAN positioning methods, state descriptions, and message flows to support UE Positioning.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.305.V17.7.0		17.7.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.305.V17.7.0		17.7.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.305.V17.7.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.305.V17.7.0.docx</a>
ETSI	ETSI TS 138 305 V17.7.0 (2024-02)		17.7.0	Published 02.02.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138305/17.07.00_60/ts_138305v170700p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138305/17.07.00_60/ts_138305v170700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.305-17.7.0 V1.7.0		17.7.0	Published 29.05.2024	<a href="https://members.tdsi.in/s/HbasPzrcWYDC9Kr">https://members.tdsi.in/s/HbasPzrcWYDC9Kr</a>
TTA	TTAT.3G-38.305V17.7.0		17.7.0	Published 08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.305V17.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.305V17.7.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.305.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.305.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.305.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.305.V18.3.0.docx</a>
ETSI	ETSI TS 138 305 V18.3.0 (2024-10)		18.3.0	Published 14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138305/18.03.00_60/ts_138305v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138305/18.03.00_60/ts_138305v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.305- 18.3.0 V1.1.0		18.3.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/G4zycCfDfbxN7gD">https://members.tdsi.in/s/G4zycCfDfbxN7gD</a>
TTA	TTAT.3G-38.305V18.3.0		18.3.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.305V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.305V18.3.0&amp;searchCate=TTAS</a>

### 2.2.1.3.8 TS 38.306

#### NR; User Equipment (UE) radio access capabilities

This document defines the NR UE Radio Access Capability Parameters.

SDO	Document No.	Version	Status	Issued date	Location
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**Release 17**

ATIS	ATIS.3GPP.38.306.V17.10.0	17.10.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.306.V17.10.0	17.10.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.306.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.306.V17.10.0.docx</a>
ETSI	ETSI TS 138 306 V17.10.0 (2024-10)	17.10.0	Published	17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138306/17.10.00_60/ts_138306v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138306/17.10.00_60/ts_138306v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.306-17.10.0 V1.10.0	17.10.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/HxTbET5q2zKF4Xj">https://members.tdsi.in/s/HxTbET5q2zKF4Xj</a>
TTA	TTAT.3G-38.306V17.10.0	17.10.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.306V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.306V17.10.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.306.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.306.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.306.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.306.V18.3.0.docx</a>
ETSI	ETSI TS 138 306 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138306/18.03.00_60/ts_138306v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138306/18.03.00_60/ts_138306v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.306- 18.3.0 V1.1.0	18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/4RKTxnbtRdiKNRP">https://members.tdsi.in/s/4RKTxnbtRdiKNRP</a>
TTA	TTAT.3G-38.306V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.306V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.306V18.3.0&amp;searchCate=TTAS</a>

**2.2.1.3.9 TS 38.307****NR; Requirements on User Equipments (UEs) supporting a release-independent frequency band**

This document specifies requirements for UEs supporting release independent features such as additional NR operating bands and power classes on top of TS 38.101 and TS 38.133.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.307.V17.13.0	17.13.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.307.V17.13.0	17.13.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.307.V17.13.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.307.V17.13.0.docx</a>
ETSI	ETSI TS 138 307 V17.13.0 (2024-08)	17.13.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138307/17.13.00_60/ts_138307v171300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138307/17.13.00_60/ts_138307v171300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.307 -17.13.0 V1.8.0	17.13.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/QcAXj9KKitCJr2Y">https://members.tdsi.in/s/QcAXj9KKitCJr2Y</a>
TTA	TTAT.3G-38.307V17.13.0	17.13.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.307V17.13.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.307V17.13.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.307.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.307.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.307.V18.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.307.V18.2.0.docx</a>
ETSI	ETSI TS 138 307 V18.2.0 (2024-08)	18.2.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138307/18.02.00_60/ts_138307v180200p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138307/18.02.00_60/ts_138307v180200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.307 -18.2.0 V1.0.0	18.2.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/nJbCstnLAzdorPY">https://members.tdsi.in/s/nJbCstnLAzdorPY</a>
TTA	TTAT.3G-38.307V18.2.0	18.2.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.307V18.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.307V18.2.0&amp;searchCate=TTAS</a>

### 2.2.1.3.10 TS 38.314

#### NR; Layer 2 measurements

This document contains the description and definition of the measurements performed by NR or the UE that are transferred over the standardised interfaces in order to support NR radio link operations, radio resource management (RRM), network operations and maintenance (OAM), minimization of drive tests (MDT) and self-organising networks (SON).

Only the differences relative to TS 28.552 are specified in this specification.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.314.V17.5.0		17.5.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.314.V17.5.0		17.5.0	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.314.V17.5.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.314.V17.5.0.docx</a>
ETSI	ETSI TS 138 314 V17.5.0 (2024-05)		17.5.0	Published	14.05.2024 <a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138314/17.05.00_60/ts_138314v170500p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138314/17.05.00_60/ts_138314v170500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.314-17.5.0 V1.5.0		17.5.0	Published	22.07.2024 <a href="https://members.tdsi.in/s/ce9sRRHH2tWdREK">https://members.tdsi.in/s/ce9sRRHH2tWdREK</a>
TTA	TTAT.3G-38.314V17.5.0		17.5.0	Published	12.08.2024 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.314V17.5.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.314V17.5.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.314.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.314.V18.0.0		18.0.0	Published	27.08.2024 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.314.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.314.V18.0.0.docx</a>
ETSI	ETSI TS 138 314 V18.0.0 (2024-05)		18.0.0	Published	27.05.2024 <a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138314/18.00.00_60/ts_138314v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138314/18.00.00_60/ts_138314v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.314 -18.0.0 V1.0.0		18.0.0	Published	02.03.2025 <a href="https://members.tdsi.in/s/PATWfHRzFDMPdG4">https://members.tdsi.in/s/PATWfHRzFDMPdG4</a>
TTA	TTAT.3G-38.314V18.0.0		18.0.0	Published	12.08.2024 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.314V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.314V18.0.0&amp;searchCate=TTAS</a>

### 2.2.1.3.11 TS 38.321

#### NR; Medium Access Control (MAC) protocol specification

This document specifies the NR MAC protocol.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.321.V17.10.0		17.10.0	Published	03.01.2025 <a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.321.V17.10.0		17.10.0	Published	03.01.2025 <a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.321.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.321.V17.10.0.docx</a>
ETSI	ETSI TS 138 321 V17.10.0 (2024-10)		17.10.0	Published	17.10.2024 <a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138321/17.10.00_60/ts_138321v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138321/17.10.00_60/ts_138321v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.321-17.10.0 V1.10.0		17.10.0	Published	02.03.2025 <a href="https://members.tdsi.in/s/HpSZYRLEodRpntp">https://members.tdsi.in/s/HpSZYRLEodRpntp</a>
TTA	TTAT.3G-38.321V17.10.0		17.10.0	Published	31.01.2025 <a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.321V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.321V17.10.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.321.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.321.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.321.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.321.V18.3.0.docx</a>
ETSI	ETSI TS 138 321 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138321/18.03.00_60/ts_138321v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138321/18.03.00_60/ts_138321v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.321- 18.3.0 V1.1.0	18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/dpPHkgmy2ErRaXd">https://members.tdsi.in/s/dpPHkgmy2ErRaXd</a>
TTA	TTAT.3G-38.321V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.321V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.321V18.3.0&amp;searchCate=TTAS</a>

**2.2.1.3.12 TS 38.322****NR; Radio Link Control (RLC) protocol specification**

This document specifies the NR Radio Link Control (RLC) protocol for the UE – NR radio interface.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.322.V17.4.0	17.4.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.322.V17.4.0	17.4.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.322.V17.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.322.V17.4.0.docx</a>
ETSI	ETSI TS 138 322 V17.4.0 (2024-05)	17.4.0	Published	15.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138322/17.04.00_60/ts_138322v170400p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138322/17.04.00_60/ts_138322v170400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.322-17.4.0 V1.4.0	17.4.0	Published	22.07.2024	<a href="https://members.tdsi.in/s/T5Zwi8wae5ESBFX">https://members.tdsi.in/s/T5Zwi8wae5ESBFX</a>
TTA	TTAT.3G-38.322V17.4.0	17.4.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.322V17.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.322V17.4.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.322.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.322.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.322.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.322.V18.1.0.docx</a>
ETSI	ETSI TS 138 322 V18.1.0 (2024-08)	18.1.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138322/18.01.00_60/ts_138322v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138322/18.01.00_60/ts_138322v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.322 -18.1.0 V1.0.0	18.1.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/pN2AT59JDGqQRoG">https://members.tdsi.in/s/pN2AT59JDGqQRoG</a>
TTA	TTAT.3G-38.322V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.322V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.322V18.1.0&amp;searchCate=TTAS</a>

**2.2.1.3.13 TS 38.323****NR; Packet Data Convergence Protocol (PDCP) specification**

This document provides the description of the Packet Data Convergence Protocol (PDCP).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.323.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.323.V17.5.0	17.5.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.323.V17.5.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.323.V17.5.0.docx</a>
ETSI	ETSI TS 138 323 V17.5.0 (2023-07)	17.5.0	Published	26.07.2023	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138323/17.05.00_60/ts_138323v170500p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138323/17.05.00_60/ts_138323v170500p.pdf</a>

TSDSI	TSDSI STD T1.3GPP 38.323-17.5.0 V1.5.0	17.5.0	Published	11.02.2023	<a href="https://members.tdsi.in/s/wBdTkELNbwcfGX4">https://members.tdsi.in/s/wBdTkELNbwcfGX4</a>
TTA	TTAT.3G-38.323V17.5.0	17.5.0	Published	27.10.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.323V17.5.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.323V17.5.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.323.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.323.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.323.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.323.V18.3.0.docx</a>
ETSI	ETSI TS 138 323 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138323/18.03.00_60/ts_138323v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138323/18.03.00_60/ts_138323v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.323- 18.3.0 V1.1.0	18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/4cwDRbeYj2ZrSfK">https://members.tdsi.in/s/4cwDRbeYj2ZrSfK</a>
TTA	TTAT.3G-38.323V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.323V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.323V18.3.0&amp;searchCate=TTAS</a>

**2.2.1.3.14 TS 38.331**

**NR; Radio Resource Control (RRC); Protocol specification**

This document specifies the Radio Resource Control protocol for the radio interface between UE and NG-RAN.

The scope of this document also includes:

- the radio related information transported in a transparent container between source gNB and target gNB upon inter gNB handover;
- the radio related information transported in a transparent container between a source or target gNB and another system upon inter RAT handover.
- the radio related information transported in a transparent container between a source eNB and target gNB during E-UTRA-NR Dual Connectivity.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.331.V17.10.0	17.10.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.331.V17.10.0	17.10.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.331.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.331.V17.10.0.docx</a>
ETSI	ETSI TS 138 331 V17.10.0 (2024-10)	17.10.0	Published	17.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138331/17.10.00_60/ts_138331v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138331/17.10.00_60/ts_138331v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.331-17.10.0 V1.10.0	17.10.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/EX4bWYm6dZRLGbg">https://members.tdsi.in/s/EX4bWYm6dZRLGbg</a>
TTA	TTAT.3G-38.331V17.10.0	17.10.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.331V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.331V17.10.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.331.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.331.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.331.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.331.V18.3.0.docx</a>
ETSI	ETSI TS 138 331 V18.3.0 (2024-10)	18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138331/18.03.00_60/ts_138331v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138331/18.03.00_60/ts_138331v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.331- 18.3.0 V1.1.0	18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/nDAKGfrfBEMeK7R">https://members.tdsi.in/s/nDAKGfrfBEMeK7R</a>
TTA	TTAT.3G-38.331V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.331V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.331V18.3.0&amp;searchCate=TTAS</a>

### 2.2.1.3.15 TS 38.355

#### NR; Sidelink Positioning Protocol (SLPP); Protocol Specification

This document specifies the Sidelink Positioning Protocol (SLPP) for the interface between UEs and between UE and LMF.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.355.V18.3.0		18.3.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
ETSI	ETSI TS 138 355 V18.3.0 (2024-10)		18.3.0	Published	14.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138355/18.03.00_60/ts_138355v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138300_138399/138355/18.03.00_60/ts_138355v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.355- 18.3.0 V1.1.0		18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/XTWsTzfmjBZ3eHd">https://members.tdsi.in/s/XTWsTzfmjBZ3eHd</a>
TTA	TTAT.3G-38.355V18.3.0		18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.355V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.355V18.3.0&amp;searchCate=TTAS</a>

### 2.2.1.4 Architecture

#### 2.2.1.4.1 TS 37.460

##### Iuant interface: General aspects and principles

This document is an introduction to the 3GPP TS 37.46x series of Technical Specifications that define the Iuant Interface. The Iuant interface is applicable for UTRAN, E-UTRAN and NG-RAN. In this specification UTRAN, E-UTRAN and NG-RAN are denoted as “RAN”, whereas the corresponding network entities Node B, eNB, en-gNB and NG-RAN node are denoted as “RAN Node”. The logical Iuant interface is an interface internal to the RAN Node and defined to reside between the implementation specific O&M function and the RET antennas and between the implementation specific O&M function and the TMA control unit function.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.37.460.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.460.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.460.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.460.V17.0.0.doc</a>
ETSI	ETSI TS 137 460 V17.0.0 (2022-04)		17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137460/17.00.00_60/ts_137460v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137460/17.00.00_60/ts_137460v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.460-17.0.0 V1.0.0		17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/6jndrFL9wmEZ9S9">https://members.tdsi.in/s/6jndrFL9wmEZ9S9</a>
TTA	TTAT.3G-37.460V17.0.0		17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.460V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.460V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.37.460.V18.0.0		18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.460.V18.0.0		18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.460.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.460.V18.0.0.docx</a>
ETSI	ETSI TS 137 460 V18.0.0 (2024-05)		18.0.0	Published	23.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137460/18.00.00_60/ts_137460v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137460/18.00.00_60/ts_137460v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.46 -18.0.0 V1.0.0		18.0.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/xfEDfBBcKbyWi4H">https://members.tdsi.in/s/xfEDfBBcKbyWi4H</a>
TTA	TTAT.3G-37.460V18.0.0		18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.460V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.460V18.0.0&amp;searchCate=TTAS</a>

### 2.2.1.4.2 TS 37.461

#### Iuant interface: Layer 1

This document specifies the standards allowed to implement layer 1 on the Iuant interface for UTRA, E-UTRA and NR.

The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.461.V17.1.0		17.1.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.461.V17.1.0		17.1.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.461.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.461.V17.1.0.docx</a>
ETSI	ETSI TS 137 461 V17.1.0 (2022-07)		17.1.0	Published 20.07.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137461/17.01.00_60/ts_137461v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137461/17.01.00_60/ts_137461v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.461-17.1.0 V1.1.0		17.1.0	Published 11.01.2022	<a href="https://members.tdsi.in/s/TW5nmHpmaa6wrBL">https://members.tdsi.in/s/TW5nmHpmaa6wrBL</a>
TTA	TTAT.3G-37.461V17.1.0		17.1.0	Published 21.10.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.461V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.461V17.1.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.461.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.461.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.461.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.461.V18.0.0.docx</a>
ETSI	ETSI TS 137 461 V18.0.0 (2024-05)		18.0.0	Published 23.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137461/18.00.00_60/ts_137461v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137461/18.00.00_60/ts_137461v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.461 -18.0.0 V1.0.0		18.0.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/T5sfZLDZxs8nGDq">https://members.tdsi.in/s/T5sfZLDZxs8nGDq</a>
TTA	TTAT.3G-37.461V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.461V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.461V18.0.0&amp;searchCate=TTAS</a>

### 2.2.1.4.3 TS 37.462

#### Iuant interface: Signalling transport

This document specifies the signalling transport related to RETAP and TMAAP signalling to be used across the Iuant interface for UTRAN, E-UTRAN and NG-RAN. In this specification UTRAN, E-UTRAN and NG-RAN are denoted as “RAN”, whereas the corresponding network entities Node B, eNB, en-gNB and NG-RAN node are denoted as “RAN Node”. The logical Iuant interface is an interface internal to the RAN Node and defined to reside between the implementation specific O&M function and the RET antennas and between the implementation specific O&M function and the TMA control unit function.

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<b>Release 17</b>					
ATIS	ATIS.3GPP.37.462.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.462.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.462.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.462.V17.0.0.doc</a>
ETSI	ETSI TS 137 462 V17.0.0 (2022-04)		17.0.0	Published 29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137462/17.00.00_60/ts_137462v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137462/17.00.00_60/ts_137462v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.462-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/owHrgRgWzLSKS3a">https://members.tdsi.in/s/owHrgRgWzLSKS3a</a>
TTA	TTAT.3G-37.462V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-</a>

[37.462V17.0.0&searchCate=TTAS](https://www.3gpp.org/standards/3gpp/37.462V17.0.0&searchCate=TTAS)

#### Release 18

ATIS	ATIS.3GPP.37.462.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.462.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.462.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.462.V18.0.0.docx</a>
ETSI	ETSI TS 137 462 V18.0.0 (2024-05)	18.0.0	Published	23.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137462/18.00.00_60/ts_137462v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137462/18.00.00_60/ts_137462v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.462 -18.0.0 V1.0.0	18.0.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/LNtXJoncpJyx6k9">https://members.tdsi.in/s/LNtXJoncpJyx6k9</a>
TTA	TTAT.3G-37.462V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.462V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.462V18.0.0&amp;searchCate=TTAS</a>

### 2.2.1.4.4 TS 37.470

#### W1 interface; General aspects and principles

This document is an introduction to the 3GPP TS 37.4xx series of technical specifications that define the W1 interface. The W1 interface provides means for interconnecting a ng-eNB-CU and a ng-eNB-DU of a ng-eNB within a NG-RAN.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.470.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.470.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.470.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.470.V17.0.0.doc</a>
ETSI	ETSI TS 137 470 V17.0.0 (2022-04)	17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137470/17.00.00_60/ts_137470v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137470/17.00.00_60/ts_137470v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.470-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/PAP6n6fkQcXgd5c">https://members.tdsi.in/s/PAP6n6fkQcXgd5c</a>
TTA	TTAT.3G-37.470V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.470V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.470V17.0.0&amp;searchCate=TTAS</a>

#### Release 18

ATIS	ATIS.3GPP.37.470.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.470.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.470.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.470.V18.0.0.docx</a>
ETSI	ETSI TS 137 470 V18.0.0 (2024-05)	18.0.0	Published	03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137470/18.00.00_60/ts_137470v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137470/18.00.00_60/ts_137470v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.47 -18.0.0 V1.0.0	18.0.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/dtf6FW3Y9q9YSwR">https://members.tdsi.in/s/dtf6FW3Y9q9YSwR</a>
TTA	TTAT.3G-37.470V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.470V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.470V18.0.0&amp;searchCate=TTAS</a>

### 2.2.1.4.5 TS 37.471

#### W1 interface; Layer 1

This document specifies the standards allowed to implement Layer 1 on the W1 interface. The W1 interface provides means for interconnecting a ng-eNB-CU and a ng-eNB-DU of a ng-eNB within a NG-RAN.

The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.471.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.471.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.471.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.471.V17.0.0.doc</a>
ETSI	ETSI TS 137 471 V17.0.0 (2022-04)		17.0.0	Published 29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137471/17.00.00_60/ts_137471v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137471/17.00.00_60/ts_137471v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.471-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/sWcmKcYgJPBfk7d">https://members.tdsi.in/s/sWcmKcYgJPBfk7d</a>
TTA	TTAT.3G-37.471V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.471V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.471V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.471.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.471.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.471.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.471.V18.0.0.docx</a>
ETSI	ETSI TS 137 471 V18.0.0 (2024-05)		18.0.0	Published 03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137471/18.00.00_60/ts_137471v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137471/18.00.00_60/ts_137471v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.471 -18.0.0 V1.0.0		18.0.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/P5Nc4NGmMFipa8L">https://members.tdsi.in/s/P5Nc4NGmMFipa8L</a>
TTA	TTAT.3G-37.471V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.471V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.471V18.0.0&amp;searchCate=TTAS</a>

### 2.2.1.4.6 TS 37.472

#### W1 interface; Signalling transport

This document specifies the standards for Signalling Transport to be used across the W1 interface. The W1 interface provides means for interconnecting a ng-eNB-CU and a ng-eNB-DU of a ng-eNB within a NG-RAN. This document describes how the W1AP signalling messages are transported over W1.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.472.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.472.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.472.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.472.V17.0.0.doc</a>
ETSI	ETSI TS 137 472 V17.0.0 (2022-04)		17.0.0	Published 29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137472/17.00.00_60/ts_137472v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137472/17.00.00_60/ts_137472v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.472-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/d8cGE9pCSpeJ2Q">https://members.tdsi.in/s/d8cGE9pCSpeJ2Q</a>
TTA	TTAT.3G-37.472V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.472V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.472V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.472.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.472.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.472.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.472.V18.0.0.docx</a>
ETSI	ETSI TS 137 472 V18.0.0 (2024-05)		18.0.0	Published 03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137472/18.00.00_60/ts_137472v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137472/18.00.00_60/ts_137472v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.472 -18.0.0 V1.0.0		18.0.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/naNdRJSJj4czwHY">https://members.tdsi.in/s/naNdRJSJj4czwHY</a>
TTA	TTAT.3G-37.472V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.472V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.472V18.0.0&amp;searchCate=TTAS</a>

### 2.2.1.4.7 TS 37.473

#### W1 interface; Application Protocol (W1AP)

This document specifies the 5G radio network layer signalling protocol for the W1 interface. The W1 interface provides means for interconnecting a ng-eNB-CU and a ng-eNB-DU of a ng-eNB within an NG-RAN. The W1 Application Protocol (W1AP) supports the functions of W1 interface by signalling procedures defined in this document. W1AP is developed in accordance with the general principles stated in TS 38.401 and TS 37.470.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.473.V17.2.0		17.2.0	Published 22.05.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.473.V17.2.0		17.2.0	Published 22.05.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.473.V17.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.473.V17.2.0.docx</a>
ETSI	ETSI TS 137 473 V17.2.0 (2023-04)		17.2.0	Published 27.04.2023	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137473/17.02.00_60/ts_137473v170200p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137473/17.02.00_60/ts_137473v170200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.473-17.2.0 V1.2.0		17.2.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/eozzGWrb2ExBjBq">https://members.tdsi.in/s/eozzGWrb2ExBjBq</a>
TTA	TTAT.3G-37.473V17.2.0		17.2.0	Published 01.08.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.473V17.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.473V17.2.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.473.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.473.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.473.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.473.V18.0.0.docx</a>
ETSI	ETSI TS 137 473 V18.0.0 (2024-05)		18.0.0	Published 03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137473/18.00.00_60/ts_137473v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137473/18.00.00_60/ts_137473v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.473 -18.0.0 V1.0.0		18.0.0	Published 14.08.2023	<a href="https://members.tdsi.in/s/7Efsr5Et2Dfw6aZ">https://members.tdsi.in/s/7Efsr5Et2Dfw6aZ</a>
TTA	TTAT.3G-37.473V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.473V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.473V18.0.0&amp;searchCate=TTAS</a>

### 2.2.1.4.8 TS 37.480

#### E1 general aspects and principles

This document is an introduction to the 3GPP TS 37.48x series of technical specifications that define the E1 interface. The E1 interface provides means for interconnecting a gNB-CU-CP and a gNB-CU-UP of a gNB-CU within an NG-RAN, or for interconnecting a gNB-CU-CP and a gNB-CU-UP of an en-gNB within an E-UTRAN, or for interconnecting an eNB-CP and an eNB-UP of an eNB within an E-UTRAN, or for interconnecting an ng-eNB-CU-CP and an ng-eNB-CU-UP of an ng-eNB-CU within an NG-RAN.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.480.V17.2.0		17.2.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.480.V17.2.0		17.2.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.480.V17.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.480.V17.2.0.docx</a>
ETSI	ETSI TS 137 480 V17.2.0 (2024-02)		17.2.0	Published 02.02.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137480/17.02.00_60/ts_137480v170200p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137480/17.02.00_60/ts_137480v170200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.480-17.2.0 V1.2.0		17.2.0	Published 29.05.2024	<a href="https://members.tdsi.in/s/nXaK3CsALpPE8Bj">https://members.tdsi.in/s/nXaK3CsALpPE8Bj</a>
TTA	TTAT.3G-37.480V17.2.0		17.2.0	Published 08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-</a>

[37.480V17.2.0&searchCate=TTAS](https://www.etsi.org/deliver/etsi_ts/137400_137499/137480/18.01.00_60/ts_137480v180100p.pdf)

#### Release 18

ATIS	ATIS.3GPP.37.480.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.480.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.480.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.480.V18.1.0.docx</a>
ETSI	ETSI TS 137 480 V18.1.0 (2024-05)	18.1.0	Published	27.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137480/18.01.00_60/ts_137480v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137480/18.01.00_60/ts_137480v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.48 -18.1.0 V1.0.0	18.1.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/2cWM3Rx53mxqBDT">https://members.tdsi.in/s/2cWM3Rx53mxqBDT</a>
TTA	TTAT.3G-37.480V18.1.0	18.1.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.480V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.480V18.1.0&amp;searchCate=TTAS</a>

### 2.2.1.4.9 TS 37.481

#### E1 layer 1

This document specifies the standards allowed to implement layer 1 on the E1 interface.

The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.481.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.481.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.481.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.481.V17.0.0.doc</a>
ETSI	ETSI TS 137 481 V17.0.0 (2022-04)	17.0.0	Published	07.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137481/17.00.00_60/ts_137481v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137481/17.00.00_60/ts_137481v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.481-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/dm65dLH8msHx3Em">https://members.tdsi.in/s/dm65dLH8msHx3Em</a>
TTA	TTAT.3G-37.481V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.481V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.481V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.481.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.481.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.481.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.481.V18.0.0.docx</a>
ETSI	ETSI TS 137 481 V18.0.0 (2024-05)	18.0.0	Published	03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137481/18.00.00_60/ts_137481v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137481/18.00.00_60/ts_137481v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.481 -18.0.0 V1.0.0	18.0.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/6NtNPFDEJn2dnZs">https://members.tdsi.in/s/6NtNPFDEJn2dnZs</a>
TTA	TTAT.3G-37.481V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.481V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.481V18.0.0&amp;searchCate=TTAS</a>

### 2.2.1.4.10 TS 37.482

#### E1 signalling transport

This document specifies the standards for Signalling Transport to be used across the E1 interface. The E1 interface provides means for the interconnection of gNB-CU-CP and gNB-CU-UP within the NG-RAN architecture (TS 38.401), or for the interconnection of ng-eNB-CU-CP and ng-eNB-CU-UP within the NG-RAN architecture (TS 38.401), or for the interconnection of eNB-CP and eNB-UP within the E-UTRAN architecture (TS 36.401).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.482.V17.4.0		17.4.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.482.V17.4.0		17.4.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.482.V17.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.482.V17.4.0.docx</a>
ETSI	ETSI TS 137 482 V17.4.0 (2024-04)		17.4.0	Published 22.04.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137482/17.04.00_60/ts_137482v170400p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137482/17.04.00_60/ts_137482v170400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.482-17.4.0 V1.4.0		17.4.0	Published 22.07.2024	<a href="https://members.tdsi.in/s/3Ge8BrRxogLyDLP">https://members.tdsi.in/s/3Ge8BrRxogLyDLP</a>
TTA	TTAT.3G-37.482V17.4.0		17.4.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.482V17.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.482V17.4.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.482.V18.1.0		18.1.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.482.V18.1.0		18.1.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.482.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.482.V18.1.0.docx</a>
ETSI	ETSI TS 137 482 V18.1.0 (2024-08)		18.1.0	Published 05.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137482/18.01.00_60/ts_137482v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137482/18.01.00_60/ts_137482v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.482 -18.1.0 V1.0.0		18.1.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/zSE2siWb22oLoL9">https://members.tdsi.in/s/zSE2siWb22oLoL9</a>
TTA	TTAT.3G-37.482V18.1.0		18.1.0	Published 11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.482V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.482V18.1.0&amp;searchCate=TTAS</a>

### 2.2.1.4.11 TS 37.483

#### E1 Application Protocol (E1AP)

This document specifies the 5G radio network layer signalling protocol for the E1 interface. The E1 interface provides means for interconnecting a gNB-CU-CP and a gNB-CU-UP of a gNB within an NG-RAN, or for interconnecting a gNB-CU-CP and a gNB-CU-UP of an en-gNB within an E-UTRAN, or for interconnecting an eNB-CP and an eNB-UP of an eNB within an E-UTRAN, or for interconnecting an ng-eNB-CU-CP and an ng-eNB-CU-UP of an ng-eNB within an NG-RAN. The E1 Application Protocol (E1AP) supports the functions of E1 interface by signalling procedures defined in this document. E1AP is developed in accordance to the general principles stated in TS 38.401 and TS 37.480.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.37.483.V17.8.0		17.8.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.37.483.V17.8.0		17.8.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.483.V17.8.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.483.V17.8.0.docx</a>
ETSI	ETSI TS 137 483 V17.8.0 (2024-04)		17.8.0	Published 22.04.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137483/17.08.00_60/ts_137483v170800p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137483/17.08.00_60/ts_137483v170800p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.483-17.8.0 V1.8.0		17.8.0	Published 22.07.2024	<a href="https://members.tdsi.in/s/fzWmctZfSSJxRkt">https://members.tdsi.in/s/fzWmctZfSSJxRkt</a>
TTA	TTAT.3G-37.483V17.8.0		17.8.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.483V17.8.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-37.483V17.8.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.37.483.V18.2.0		18.2.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.37.483.V18.2.0		18.2.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.483.V18.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.37.483.V18.2.0.docx</a>
ETSI	ETSI TS 137 483 V18.2.0 (2024-08)		18.2.0	Published 05.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/137400_137499/137483/18.02.00_60/ts_137483v180200p.pdf">https://www.etsi.org/deliver/etsi_ts/137400_137499/137483/18.02.00_60/ts_137483v180200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 37.483 -18.2.0 V1.0.0		18.2.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/JoZN8dpatryLQXL">https://members.tdsi.in/s/JoZN8dpatryLQXL</a>

TTA TTAT.3G-37.483V18.2.0 18.2.0 Published 11.11.2024 <https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&searchStandardNo=TTAT.3G-37.483V18.2.0&searchCate=TTAS>

### 2.2.1.4.12 TS 38.401

#### NG-RAN; Architecture description

This document describes the overall architecture of the NG-RAN, including interfaces NG, Xn and F1 interfaces and their interaction with the radio interface.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.401.V17.10.0		17.10.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.401.V17.10.0		17.10.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.401.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.401.V17.10.0.docx</a>
ETSI	ETSI TS 138 401 V17.10.0 (2024-09)		17.10.0	Published 26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138401/17.10.00_60/ts_138401v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138401/17.10.00_60/ts_138401v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.401-17.10.0 V1.10.0		17.10.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/wBsXCCWRxfSdXD">https://members.tdsi.in/s/wBsXCCWRxfSdXD</a>
TTA	TTAT.3G-38.401V17.10.0		17.10.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.401V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.401V17.10.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.401.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.401.V18.3.0		18.3.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.401.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.401.V18.3.0.docx</a>
ETSI	ETSI TS 138 401 V18.3.0 (2024-09)		18.3.0	Published 26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138401/18.03.00_60/ts_138401v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138401/18.03.00_60/ts_138401v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.401- 18.3.0 V1.1.0		18.3.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/isjoRPXxcFF2gbM">https://members.tdsi.in/s/isjoRPXxcFF2gbM</a>
TTA	TTAT.3G-38.401V18.3.0		18.3.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.401V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.401V18.3.0&amp;searchCate=TTAS</a>

### 2.2.1.4.13 TS 38.410

#### NG-RAN; NG general aspects and principles

This document is an introduction to the 3GPP TS 38.41x series of technical specifications that define the NG interface for the interconnection of an NG-RAN node to the 5GC (5G Core Network).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.410.V17.1.0		17.1.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.410.V17.1.0		17.1.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.410.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.410.V17.1.0.docx</a>
ETSI	ETSI TS 138 410 V17.1.0 (2022-07)		17.1.0	Published 20.07.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138410/17.01.00_60/ts_138410v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138410/17.01.00_60/ts_138410v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.41-17.1.0 V1.1.0		17.1.0	Published 11.01.2022	<a href="https://members.tdsi.in/s/8GbrF4SL388TY7D">https://members.tdsi.in/s/8GbrF4SL388TY7D</a>
TTA	TTAT.3G-38.410V17.1.0		17.1.0	Published 21.10.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.410V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.410V17.1.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.410.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.410.V18.2.0	18.2.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.410.V18.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.410.V18.2.0.docx</a>
ETSI	ETSI TS 138 410 V18.2.0 (2024-08)	18.2.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138410/18.02.00_60/ts_138410v180200p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138410/18.02.00_60/ts_138410v180200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.41 -18.2.0 V1.0.0	18.2.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/EgwTBJQPJ56SnPR">https://members.tdsi.in/s/EgwTBJQPJ56SnPR</a>
TTA	TTAT.3G-38.410V18.2.0	18.2.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.410V18.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.410V18.2.0&amp;searchCate=TTAS</a>

**2.2.1.4.14 TS 38.411****NG-RAN; NG layer 1**

This document specifies the standards allowed to implement layer 1 on the NG interface.

The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.411.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.411.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.411.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.411.V17.0.0.doc</a>
ETSI	ETSI TS 138 411 V17.0.0 (2022-04)	17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138411/17.00.00_60/ts_138411v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138411/17.00.00_60/ts_138411v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.411-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/x8y6qQYyRMMLtoE">https://members.tdsi.in/s/x8y6qQYyRMMLtoE</a>
TTA	TTAT.3G-38.411V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.411V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.411V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.411.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.411.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.411.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.411.V18.0.0.docx</a>
ETSI	ETSI TS 138 411 V18.0.0 (2024-05)	18.0.0	Published	03.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138411/18.00.00_60/ts_138411v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138411/18.00.00_60/ts_138411v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.411 -18.0.0 V1.0.0	18.0.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/gXR47fd3goayffT">https://members.tdsi.in/s/gXR47fd3goayffT</a>
TTA	TTAT.3G-38.411V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.411V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.411V18.0.0&amp;searchCate=TTAS</a>

**2.2.1.4.15 TS 38.412****NG-RAN; NG signalling transport**

This document specifies the standards for signalling transport to be used across NG interface. NG interface is a logical interface between the NG-RAN and the 5GC. This document describes how the NGAP signalling messages are transported over NG.

SDO	Document No.	Version	Status	Issued date	Location
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**Release 17**

ATIS	ATIS.3GPP.38.412.V17.1.0	17.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.412.V17.1.0	17.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.412.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.412.V17.1.0.docx</a>
ETSI	ETSI TS 138 412 V17.1.0 (2023-07)	17.1.0	Published	28.07.2023	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138412/17.01.00_60/ts_138412v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138412/17.01.00_60/ts_138412v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.412-17.1.0 V1.1.0	17.1.0	Published	11.02.2023	<a href="https://members.tdsi.in/s/SE3nb7cRierjyR">https://members.tdsi.in/s/SE3nb7cRierjyR</a>
TTA	TTAT.3G-38.412V17.1.0	17.1.0	Published	27.10.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.412V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.412V17.1.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.412.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.412.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.412.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.412.V18.1.0.docx</a>
ETSI	ETSI TS 138 412 V18.1.0 (2024-08)	18.1.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138412/18.01.00_60/ts_138412v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138412/18.01.00_60/ts_138412v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.412 -18.1.0 V1.0.0	18.1.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/MX4xctn7PnBDtgA">https://members.tdsi.in/s/MX4xctn7PnBDtgA</a>
TTA	TTAT.3G-38.412V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.412V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.412V18.1.0&amp;searchCate=TTAS</a>

**2.2.1.4.16 TS 38.413****NG-RAN; NG Application Protocol (NGAP)**

This document specifies the radio network layer signalling protocol for the NG interface. The NG Application Protocol (NGAP) supports the functions of the NG interface by signalling procedures defined in this document. NGAP is developed in accordance with the general principles stated in TS 38.401 and TS 38.410.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.413.V17.10.0	17.10.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.413.V17.10.0	17.10.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.413.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.413.V17.10.0.docx</a>
ETSI	ETSI TS 138 413 V17.10.0 (2024-09)	17.10.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138413/17.10.00_60/ts_138413v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138413/17.10.00_60/ts_138413v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.413-17.10.0 V1.10.0	17.10.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/ByqymZ2JemoKttY">https://members.tdsi.in/s/ByqymZ2JemoKttY</a>
TTA	TTAT.3G-38.413V17.10.0	17.10.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.413V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.413V17.10.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.413.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.413.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.413.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.413.V18.3.0.docx</a>
ETSI	ETSI TS 138 413 V18.3.0 (2024-09)	18.3.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138413/18.03.00_60/ts_138413v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138413/18.03.00_60/ts_138413v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.413- 18.3.0 V1.1.0	18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/qmdWQXjYfgHqYQA">https://members.tdsi.in/s/qmdWQXjYfgHqYQA</a>
TTA	TTAT.3G-38.413V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.413V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.413V18.3.0&amp;searchCate=TTAS</a>

**2.2.1.4.17 TS 38.414****NG-RAN; NG data transport**

This document specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the NG interface.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.414.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.414.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.414.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.414.V17.0.0.doc</a>
ETSI	ETSI TS 138 414 V17.0.0 (2022-04)		17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138414/17.00.00_60/ts_138414v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138414/17.00.00_60/ts_138414v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.414-17.0.0 V1.0.0		17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/rwbyq4XZNF5WDXQ">https://members.tdsi.in/s/rwbyq4XZNF5WDXQ</a>
TTA	TTAT.3G-38.414V17.0.0		17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.414V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.414V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.414.V18.0.0		18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.414.V18.0.0		18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.414.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.414.V18.0.0.docx</a>
ETSI	ETSI TS 138 414 V18.0.0 (2024-05)		18.0.0	Published	06.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138414/18.00.00_60/ts_138414v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138414/18.00.00_60/ts_138414v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.414 -18.0.0 V1.0.0		18.0.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/Sb68SfpMSAj8e28">https://members.tdsi.in/s/Sb68SfpMSAj8e28</a>
TTA	TTAT.3G-38.414V18.0.0		18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.414V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.414V18.0.0&amp;searchCate=TTAS</a>

**2.2.1.4.18 TS 38.415****NG-RAN; PDU session user plane protocol**

This document specifies the PDU Session user plane protocol being used over the NG-U, Xn-U and N9 interfaces. Applicability to other interfaces is not precluded.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.415.V17.1.0		17.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.415.V17.1.0		17.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.415.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.415.V17.1.0.docx</a>
ETSI	ETSI TS 138 415 V17.1.0 (2024-02)		17.1.0	Published	02.02.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138415/17.01.00_60/ts_138415v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138415/17.01.00_60/ts_138415v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.415-17.1.0 V1.1.0		17.1.0	Published	29.05.2024	<a href="https://members.tdsi.in/s/ypJLQ4YysTBDn4F">https://members.tdsi.in/s/ypJLQ4YysTBDn4F</a>
TTA	TTAT.3G-38.415V17.1.0		17.1.0	Published	08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.415V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.415V17.1.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.415.V18.1.0		18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.415.V18.1.0		18.1.0	Published	27.08.2024	

<https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&oldFileUrl=NTN/RIT/CCSA.3GPP.38.415.V18.1.0.docx>

ETSI	ETSI TS 138 415 V18.1.0 (2024-05)	18.1.0	Published	27.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138415/18.01.00_60/ts_138415v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138415/18.01.00_60/ts_138415v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.415 -18.1.0 V1.0.0	18.1.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/iExztpRi6zzPQrM">https://members.tdsi.in/s/iExztpRi6zzPQrM</a>
TTA	TTAT.3G-38.415V18.1.0	18.1.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.415V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.415V18.1.0&amp;searchCate=TTAS</a>

### 2.2.1.4.19 TS 38.420

#### NG-RAN; Xn general aspects and principles

This document is an introduction to the TSG RAN TS 38.42x series of Technical Specifications that define the Xn interface. It is an interface for the interconnection of two NG-RAN nodes within the NG-RAN architecture (TS 38.401).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.420.V17.2.0	17.2.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.420.V17.2.0	17.2.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.420.V17.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.420.V17.2.0.docx</a>
ETSI	ETSI TS 138 420 V17.2.0 (2022-10)	17.2.0	Published	14.10.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138420/17.02.00_60/ts_138420v170200p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138420/17.02.00_60/ts_138420v170200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.420-17.2.0 V1.2.0	17.2.0	Published	17.01.2023	<a href="https://members.tdsi.in/s/aKKLCMZaZSwxgeA">https://members.tdsi.in/s/aKKLCMZaZSwxgeA</a>
TTA	TTAT.3G-38.420V17.2.0	17.2.0	Published	11.01.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.420V17.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.420V17.2.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.420.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.420.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.420.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.420.V18.1.0.docx</a>
ETSI	ETSI TS 138 420 V18.1.0 (2024-05)	18.1.0	Published	27.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138420/18.01.00_60/ts_138420v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138420/18.01.00_60/ts_138420v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.42 -18.1.0 V1.0.0	18.1.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/8xqc5EdrppmH4w9">https://members.tdsi.in/s/8xqc5EdrppmH4w9</a>
TTA	TTAT.3G-38.420V18.1.0	18.1.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.420V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.420V18.1.0&amp;searchCate=TTAS</a>

### 2.2.1.4.20 TS 38.421

#### NG-RAN; Xn layer 1

This document specifies the standards allowed to implement layer 1 on the Xn interface.

The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.421.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.421.V17.0.0	17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.421.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.421.V17.0.0.doc</a>

ETSI	ETSI TS 138 421 V17.0.0 (2022-04)	17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138421/17.00.00_60/ts_138421v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138421/17.00.00_60/ts_138421v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.421-17.0.0 V1.0.0	17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/fPjjPeC3qE3fLHi">https://members.tdsi.in/s/fPjjPeC3qE3fLHi</a>
TTA	TTAT.3G-38.421V17.0.0	17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.421V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.421V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.421.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.421.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.421.V18.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.421.V18.0.0.doc</a>
ETSI	ETSI TS 138 421 V18.0.0 (2024-05)	18.0.0	Published	06.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138421/18.00.00_60/ts_138421v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138421/18.00.00_60/ts_138421v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.421 -18.0.0 V1.0.0	18.0.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/6Hws3zGSK8TAGHA">https://members.tdsi.in/s/6Hws3zGSK8TAGHA</a>
TTA	TTAT.3G-38.421V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.421V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.421V18.0.0&amp;searchCate=TTAS</a>

**2.2.1.4.21 TS 38.422****NG-RAN; Xn signalling transport**

This document specifies the standards for signalling transport to be used across Xn interface. The Xn interface provides means for interconnecting two NG-RAN nodes. The Xn interface is a logical interface between two nodes of the NG-RAN. This document describes how the XnAP signalling messages are transported over Xn.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.422.V17.1.0	17.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.422.V17.1.0	17.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.422.V17.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.422.V17.1.0.docx</a>
ETSI	ETSI TS 138 422 V17.1.0 (2023-07)	17.1.0	Published	28.07.2023	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138422/17.01.00_60/ts_138422v170100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138422/17.01.00_60/ts_138422v170100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.422-17.1.0 V1.1.0	17.1.0	Published	11.02.2023	<a href="https://members.tdsi.in/s/dfBCH326EjQNw6C">https://members.tdsi.in/s/dfBCH326EjQNw6C</a>
TTA	TTAT.3G-38.422V17.1.0	17.1.0	Published	27.10.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.422V17.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.422V17.1.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.422.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.422.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.422.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.422.V18.1.0.docx</a>
ETSI	ETSI TS 138 422 V18.1.0 (2024-08)	18.1.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138422/18.01.00_60/ts_138422v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138422/18.01.00_60/ts_138422v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.422 -18.1.0 V1.0.0	18.1.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/nZxTcjDCJ8RyS5x">https://members.tdsi.in/s/nZxTcjDCJ8RyS5x</a>
TTA	TTAT.3G-38.422V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.422V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.422V18.1.0&amp;searchCate=TTAS</a>

**2.2.1.4.22 TS 38.423****NG-RAN; Xn Application Protocol (XnAP)**

This document specifies the radio network layer signalling procedures of the control plane between NG-RAN nodes in NG-RAN. XnAP supports the functions of the Xn interface by signalling procedures defined in this document. XnAP is developed in accordance with the general principles stated in TS 38.401 and TS 38.420.

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<b>Release 17</b>						
ATIS	ATIS.3GPP.38.423.V17.10.0		17.10.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.423.V17.10.0		17.10.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.423.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.423.V17.10.0.docx</a>
ETSI	ETSI TS 138 423 V17.10.0 (2024-09)		17.10.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138423/17.10.00_60/ts_138423v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138423/17.10.00_60/ts_138423v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.423-17.10.0 V1.10.0		17.10.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/rA5RC9ooSy7FZbH">https://members.tdsi.in/s/rA5RC9ooSy7FZbH</a>
TTA	TTAT.3G-38.423V17.10.0		17.10.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.423V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.423V17.10.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.423.V18.3.0		18.3.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.423.V18.3.0		18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.423.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.423.V18.3.0.docx</a>
ETSI	ETSI TS 138 423 V18.3.0 (2024-09)		18.3.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138423/18.03.00_60/ts_138423v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138423/18.03.00_60/ts_138423v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.423- 18.3.0 V1.1.0		18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/LNw42AFCqTteLSZ">https://members.tdsi.in/s/LNw42AFCqTteLSZ</a>
TTA	TTAT.3G-38.423V18.3.0		18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.423V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.423V18.3.0&amp;searchCate=TTAS</a>

**2.2.1.4.23 TS 38.424****NG-RAN; Xn data transport**

This document specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the Xn interface.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.424.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.424.V17.0.0		17.0.0	Published	21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.424.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.424.V17.0.0.doc</a>
ETSI	ETSI TS 138 424 V17.0.0 (2022-04)		17.0.0	Published	29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138424/17.00.00_60/ts_138424v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138424/17.00.00_60/ts_138424v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.424-17.0.0 V1.0.0		17.0.0	Published	29.07.2022	<a href="https://members.tdsi.in/s/brsLdQ6Cz85aQZm">https://members.tdsi.in/s/brsLdQ6Cz85aQZm</a>
TTA	TTAT.3G-38.424V17.0.0		17.0.0	Published	05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.424V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.424V17.0.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.424.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.424.V18.0.0	18.0.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.424.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.424.V18.0.0.docx</a>
ETSI	ETSI TS 138 424 V18.0.0 (2024-05)	18.0.0	Published	06.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138424/18.00.00_60/ts_138424v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138424/18.00.00_60/ts_138424v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.424 -18.0.0 V1.0.0	18.0.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/6iaQMpt2kef46mS">https://members.tdsi.in/s/6iaQMpt2kef46mS</a>
TTA	TTAT.3G-38.424V18.0.0	18.0.0	Published	12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.424V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.424V18.0.0&amp;searchCate=TTAS</a>

**2.2.1.4.24 TS 38.425****NG-RAN; NR user plane protocol**

This document specifies the NR user plane protocol functions used within NG-RAN and, for EN-DC, within E-UTRAN. NR user plane protocol functions may reside in nodes terminating either the X2-U (for EN-DC) or the Xn-U or the F1-U interface.

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<b>Release 17</b>					
ATIS	ATIS.3GPP.38.425.V17.3.0	17.3.0	Published	22.05.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.425.V17.3.0	17.3.0	Published	22.05.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.425.V17.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.425.V17.3.0.docx</a>
ETSI	ETSI TS 138 425 V17.3.0 (2023-05)	17.3.0	Published	05.05.2023	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138425/17.03.00_60/ts_138425v170300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138425/17.03.00_60/ts_138425v170300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.425-17.3.0 V1.3.0	17.3.0	Published	14.08.2023	<a href="https://members.tdsi.in/s/zBdzk2rWopHRWk7">https://members.tdsi.in/s/zBdzk2rWopHRWk7</a>
TTA	TTAT.3G-38.425V17.3.0	17.3.0	Published	01.08.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.425V17.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.425V17.3.0&amp;searchCate=TTAS</a>

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ATIS	ATIS.3GPP.38.425.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.425.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.425.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.425.V18.1.0.docx</a>
ETSI	ETSI TS 138 425 V18.1.0 (2024-08)	18.1.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138425/18.01.00_60/ts_138425v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138425/18.01.00_60/ts_138425v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.425 -18.1.0 V1.0.0	18.1.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/EnpqWk8cq8DwCDL">https://members.tdsi.in/s/EnpqWk8cq8DwCDL</a>
TTA	TTAT.3G-38.425V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.425V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.425V18.1.0&amp;searchCate=TTAS</a>

**2.2.1.4.25 TS 38.455****NG-RAN; NR Positioning Protocol A (NRPPa)**

This document specifies the control plane radio network layer signalling procedures between a NG-RAN node and the LMF. NRPPa supports the concerned functions by signalling procedures defined in this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.455.V17.8.0	17.8.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>

CCSA	CCSA.3GPP.38.455.V17.8.0	17.8.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.455.V17.8.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.455.V17.8.0.docx</a>
ETSI	ETSI TS 138 455 V17.8.0 (2024-08)	17.8.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138455/17.08.00_60/ts_138455v170800p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138455/17.08.00_60/ts_138455v170800p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.455-17.8.0 V1.8.0	17.8.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/RTCiNDkNwCixKmR">https://members.tdsi.in/s/RTCiNDkNwCixKmR</a>
TTA	TTAT.3G-38.455V17.8.0	17.8.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.455V17.8.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.455V17.8.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.455.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.455.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.455.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.455.V18.3.0.docx</a>
ETSI	ETSI TS 138 455 V18.3.0 (2024-09)	18.3.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138455/18.03.00_60/ts_138455v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138455/18.03.00_60/ts_138455v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.455-18.3.0 V1.1.0	18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/kGZDGBaNGKL6pnt">https://members.tdsi.in/s/kGZDGBaNGKL6pnt</a>
TTA	TTAT.3G-38.455V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.455V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.455V18.3.0&amp;searchCate=TTAS</a>

**2.2.1.4.26 TS 38.470**

**NG-RAN; F1 general aspects and principles**

This document is an introduction to the 3GPP TS 38.47x series of technical specifications that define the F1 interface. The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnecting a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.470.V17.6.0	17.6.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.470.V17.6.0	17.6.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.470.V17.6.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.470.V17.6.0.docx</a>
ETSI	ETSI TS 138 470 V17.6.0 (2023-10)	17.6.0	Published	06.10.2023	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138470/17.06.00_60/ts_138470v170600p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138470/17.06.00_60/ts_138470v170600p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.470-17.6.0 V1.6.0	17.6.0	Published	23.02.2024	<a href="https://members.tdsi.in/s/9nb7b3b9poYGk7J">https://members.tdsi.in/s/9nb7b3b9poYGk7J</a>
TTA	TTAT.3G-38.470V17.6.0	17.6.0	Published	13.02.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.470V17.6.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.470V17.6.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.470.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.470.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.470.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.470.V18.3.0.docx</a>
ETSI	ETSI TS 138 470 V18.3.0 (2024-09)	18.3.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138470/18.03.00_60/ts_138470v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138470/18.03.00_60/ts_138470v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.470-18.3.0 V1.1.0	18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/wiQewKCqdbRDBes">https://members.tdsi.in/s/wiQewKCqdbRDBes</a>
TTA	TTAT.3G-38.470V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.470V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.470V18.3.0&amp;searchCate=TTAS</a>

**2.2.1.4.27 TS 38.471****NG-RAN; F1 layer 1**

This document specifies the standards allowed to implement Layer 1 on the F1 interface. The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnecting a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN.

The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.471.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.471.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.471.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.471.V17.0.0.doc</a>
ETSI	ETSI TS 138 471 V17.0.0 (2022-04)		17.0.0	Published 29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138471/17.00.00_60/ts_138471v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138471/17.00.00_60/ts_138471v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.471-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/WCMqQ8sqLz28qfN">https://members.tdsi.in/s/WCMqQ8sqLz28qfN</a>
TTA	TTAT.3G-38.471V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.471V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.471V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.471.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.471.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.471.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.471.V18.0.0.docx</a>
ETSI	ETSI TS 138 471 V18.0.0 (2024-05)		18.0.0	Published 06.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138471/18.00.00_60/ts_138471v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138471/18.00.00_60/ts_138471v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.471 -18.0.0 V1.0.0		18.0.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/oE47yE8dam8sswQ">https://members.tdsi.in/s/oE47yE8dam8sswQ</a>
TTA	TTAT.3G-38.471V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.471V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.471V18.0.0&amp;searchCate=TTAS</a>

**2.2.1.4.28 TS 38.472****NG-RAN; F1 signalling transport**

This document specifies the standards for Signalling Transport to be used across the F1 interface. The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnecting a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN. This document describes how the F1AP signalling messages are transported over F1.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.472.V17.2.0		17.2.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.472.V17.2.0		17.2.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.472.V17.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.472.V17.2.0.docx</a>
ETSI	ETSI TS 138 472 V17.2.0 (2023-07)		17.2.0	Published 19.07.2023	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138472/17.02.00_60/ts_138472v170200p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138472/17.02.00_60/ts_138472v170200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.472-17.2.0 V1.2.0		17.2.0	Published 11.02.2023	<a href="https://members.tdsi.in/s/gZLS9AC32LdPMYM">https://members.tdsi.in/s/gZLS9AC32LdPMYM</a>
TTA	TTAT.3G-38.472V17.2.0		17.2.0	Published 27.10.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.472V17.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.472V17.2.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.472.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.472.V18.1.0	18.1.0	Published	27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.472.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.472.V18.1.0.docx</a>
ETSI	ETSI TS 138 472 V18.1.0 (2024-08)	18.1.0	Published	07.08.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138472/18.01.00_60/ts_138472v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138472/18.01.00_60/ts_138472v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.472 -18.1.0 V1.0.0	18.1.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/X79fCWCWe6iL7CC">https://members.tdsi.in/s/X79fCWCWe6iL7CC</a>
TTA	TTAT.3G-38.472V18.1.0	18.1.0	Published	11.11.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.472V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.472V18.1.0&amp;searchCate=TTAS</a>

**2.2.1.4.29 TS 38.473****NG-RAN; F1 Application Protocol (F1AP)**

This document specifies the 5G radio network layer signalling protocol for the F1 interface. The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnecting a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN. The F1 Application Protocol (F1AP) supports the functions of F1 interface by signalling procedures defined in this document. F1AP is developed in accordance with the general principles stated in TS 38.401 and TS 38.470.

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<b>Release 17</b>					
ATIS	ATIS.3GPP.38.473.V17.10.0	17.10.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.473.V17.10.0	17.10.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.473.V17.10.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.473.V17.10.0.docx</a>
ETSI	ETSI TS 138 473 V17.10.0 (2024-09)	17.10.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138473/17.10.00_60/ts_138473v171000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138473/17.10.00_60/ts_138473v171000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.473-17.10.0 V1.10.0	17.10.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/B4fYxtHKrZmC4bE">https://members.tdsi.in/s/B4fYxtHKrZmC4bE</a>
TTA	TTAT.3G-38.473V17.10.0	17.10.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.473V17.10.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.473V17.10.0&amp;searchCate=TTAS</a>

**Release 18**

ATIS	ATIS.3GPP.38.473.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.473.V18.3.0	18.3.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.473.V18.3.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.473.V18.3.0.docx</a>
ETSI	ETSI TS 138 473 V18.3.0 (2024-09)	18.3.0	Published	26.09.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138473/18.03.00_60/ts_138473v180300p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138473/18.03.00_60/ts_138473v180300p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.473- 18.3.0 V1.1.0	18.3.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/QNJLHGC7Yr5w8wk">https://members.tdsi.in/s/QNJLHGC7Yr5w8wk</a>
TTA	TTAT.3G-38.473V18.3.0	18.3.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.473V18.3.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.473V18.3.0&amp;searchCate=TTAS</a>

**2.2.1.4.30 TS 38.474****NG-RAN; F1 data transport**

This document specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the F1 interface. The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnection a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN.

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<b>Release 17</b>					
ATIS	ATIS.3GPP.38.474.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.474.V17.0.0		17.0.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.474.V17.0.0.doc">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.474.V17.0.0.doc</a>
ETSI	ETSI TS 138 474 V17.0.0 (2022-04)		17.0.0	Published 29.04.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138474/17.00.00_60/ts_138474v170000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138474/17.00.00_60/ts_138474v170000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.474-17.0.0 V1.0.0		17.0.0	Published 29.07.2022	<a href="https://members.tdsi.in/s/cjZABLoGzGwkyo3">https://members.tdsi.in/s/cjZABLoGzGwkyo3</a>
TTA	TTAT.3G-38.474V17.0.0		17.0.0	Published 05.08.2022	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.474V17.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.474V17.0.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.474.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.474.V18.0.0		18.0.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.474.V18.0.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.474.V18.0.0.docx</a>
ETSI	ETSI TS 138 474 V18.0.0 (2024-05)		18.0.0	Published 06.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138400_138499/138474/18.00.00_60/ts_138474v180000p.pdf">https://www.etsi.org/deliver/etsi_ts/138400_138499/138474/18.00.00_60/ts_138474v180000p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.474 -18.0.0 V1.0.0		18.0.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/4aTjdFqsidx6ay7">https://members.tdsi.in/s/4aTjdFqsidx6ay7</a>
TTA	TTAT.3G-38.474V18.0.0		18.0.0	Published 12.08.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.474V18.0.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.474V18.0.0&amp;searchCate=TTAS</a>

## 2.2.1.5 Radio-frequency aspects

### 2.2.1.5.1 TS 38.101-5

#### NR; User Equipment (UE) radio transmission and reception; Part 5: Satellite access Radio Frequency (RF) and performance requirements

This document establishes the minimum RF and performance requirements for NR User Equipment (UE) supporting satellite access operation.

The Mobile VSAT communicating with non-GSO is not considered in this release.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.101-5.V17.9.0		17.9.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.101-5.V17.9.0		17.9.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.101-5.V17.9.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.101-5.V17.9.0.docx</a>
ETSI	ETSI TS 138 101-5 V17.9.0 (2024-10)		17.9.0	Published 03.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/13810105/17.09.00_60/ts_13810105v170900p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/13810105/17.09.00_60/ts_13810105v170900p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.101-5-17.9.0 V1.9.0		17.9.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/SZ9i4piddBs8Dc">https://members.tdsi.in/s/SZ9i4piddBs8Dc</a>
TTA	TTAT.3G-38.101-5V17.9.0		17.9.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.101-5V17.9.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.101-5V17.9.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.101-5.V18.7.0		18.7.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.101-5.V18.7.0		18.7.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.101-5.V18.7.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.101-5.V18.7.0.docx</a>
ETSI	ETSI TS 138 101-5 V18.7.0 (2024-10)		18.7.0	Published 03.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/13810105/18.07.00_60/ts_13810105v180700p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/13810105/18.07.00_60/ts_13810105v180700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.101-5-18.7.0 V1.1.0		18.7.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/Nkk9DjiPdW6rcTc">https://members.tdsi.in/s/Nkk9DjiPdW6rcTc</a>
TTA	TTAT.3G-38.101-5V18.7.0		18.7.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.101-5V18.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.101-5V18.7.0&amp;searchCate=TTAS</a>

[5V18.7.0&searchCate=TTAS](#)

### 2.2.1.5.2 TS 38.108

#### NR; Satellite Access Node radio transmission and reception

This document establishes the minimum RF characteristics and minimum performance requirements of NR Satellite Access Node (SAN).

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.108.V17.9.0		17.9.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.108.V17.9.0		17.9.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.108.V17.9.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.108.V17.9.0.docx</a>
ETSI	ETSI TS 138 108 V17.9.0 (2024-10)		17.9.0	Published 03.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/138108/17.09.00_60/ts_138108v170900p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/138108/17.09.00_60/ts_138108v170900p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.108-17.9.0 V1.8.0		17.9.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/PJtbaWf9Y4ndQ4e">https://members.tdsi.in/s/PJtbaWf9Y4ndQ4e</a>
TTA	TTAT.3G-38.108V17.9.0		17.9.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.108V17.9.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.108V17.9.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.108.V18.4.0		18.4.0	Published 03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.108.V18.4.0		18.4.0	Published 03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.108.V18.4.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.108.V18.4.0.docx</a>
ETSI	ETSI TS 138 108 V18.4.0 (2024-10)		18.4.0	Published 03.10.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/138108/18.04.00_60/ts_138108v180400p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/138108/18.04.00_60/ts_138108v180400p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.108- 18.4.0 V1.1.0		18.4.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/g9z2SM8qEnW63is">https://members.tdsi.in/s/g9z2SM8qEnW63is</a>
TTA	TTAT.3G-38.108V18.4.0		18.4.0	Published 31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.108V18.4.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.108V18.4.0&amp;searchCate=TTAS</a>

### 2.2.1.5.3 TS 38.124

#### NR; Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment

This document establishes the essential EMC requirements for “3<sup>rd</sup> generation” digital cellular mobile terminal equipment and ancillary accessories in combination with a 3GPP NR user equipment (UE).

The equipment conforming to the requirements laid out in this document and used in its intended electromagnetic environment in accordance with the manufacturer’s instructions.

- shall not generate electromagnetic disturbances at a level which may interfere with the intended operation of other equipment;
- has an adequate level of intrinsic immunity to electromagnetic disturbances to operate as intended;

This document specifies the applicable EMC tests, methods of measurement, frequency ranges, applicable limits and minimum performance criteria for all types of NR UE(s) and their accessories. NR base station equipment operating within network infrastructure is outside the scope of this document. However, this document does cover mobile and portable equipment that is intended to be operated in a fixed location while connected to the AC mains. NR base station equipment operating within network infrastructure is covered by the technical specification TS 38.113.

Requirements for the radiated emission from the enclosure port of integral antenna equipment and ancillaries are included in this document. Technical specifications for conducted emissions from the antenna connector are found in the 3GPP specifications for the radio interface, e.g. TS 38.xyz, for the effective use of the radio spectrum.

Requirements for the radiated emissions from the enclosure port and ancillaries cover two cases:

- UE equipment supporting operations in a frequency range for which antenna connectors are available (i.e. for operations in Frequency Range 1 as defined in e.g. TS 38.101-1 for the radio interface);
- UE equipment supporting operations in a frequency range for which only integral antennas may be available (i.e. for operations in Frequency Range 2 as defined in e.g. TS 38.101-2 for the radio interface).

The immunity requirements are selected to ensure an adequate level of compatibility for apparatus in residential, commercial, light industrial and vehicular environments. The levels, however, do not cover extreme cases, which may occur in any location but with low probability of occurrence.

Compliance of radio equipment to the requirements of this document does not signify compliance to any requirement related to the use of the equipment (i.e. licensing requirements).

Compliance to the requirements of this document does not signify compliance to any safety requirement. However, any temporary or permanent unsafe condition caused by EMC is considered as non-compliance.

SDO	Document No.	Version	Status	Issued date	Location
<b>Release 17</b>					
ATIS	ATIS.3GPP.38.124.V17.2.0		17.2.0	Published 21.02.2023	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.124.V17.2.0		17.2.0	Published 21.02.2023	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.124.V17.2.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.124.V17.2.0.docx</a>
ETSI	ETSI TS 138 124 V17.2.0 (2022-10)		17.2.0	Published 19.10.2022	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/138124/17.02.00_60/ts_138124v170200p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/138124/17.02.00_60/ts_138124v170200p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.124-17.2.0 V1.1.0		17.2.0	Published 17.01.2023	<a href="https://members.tdsi.in/s/pB6CQFDfSf2JtSG">https://members.tdsi.in/s/pB6CQFDfSf2JtSG</a>
TTA	TTAT.3G-38.124V17.2.0		17.2.0	Published 11.01.2023	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.124V17.2.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.124V17.2.0&amp;searchCate=TTAS</a>
<b>Release 18</b>					
ATIS	ATIS.3GPP.38.124.V18.1.0		18.1.0	Published 27.08.2024	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.124.V18.1.0		18.1.0	Published 27.08.2024	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.124.V18.1.0.docx">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.124.V18.1.0.docx</a>
ETSI	ETSI TS 138 124 V18.1.0 (2024-05)		18.1.0	Published 27.05.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/138124/18.01.00_60/ts_138124v180100p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/138124/18.01.00_60/ts_138124v180100p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.124 -18.1.0 V1.0.0		18.1.0	Published 02.03.2025	<a href="https://members.tdsi.in/s/LQPGzpDLHPfKCYs">https://members.tdsi.in/s/LQPGzpDLHPfKCYs</a>
TTA	TTAT.3G-38.124V18.1.0		18.1.0	Published 08.05.2024	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.124V18.1.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.124V18.1.0&amp;searchCate=TTAS</a>

**2.2.1.5.4 TS 38.133****NR; Requirements for support of radio resource management**

This document specifies requirements for support of Radio Resource Management for the FDD and TDD modes of New Radio (NR). These requirements include requirements on measurements in NR and the UE as well as requirements on node dynamical behaviour and interaction, in terms of delay and response characteristics.

SDO	Document No.	Version	Status	Issued date	Location	
<b>Release 17</b>						
ATIS	ATIS.3GPP.38.133.V17.15.0		17.15.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-17">https://www.atis.org/3gpp-transpositions - Rel-17</a>
CCSA	CCSA.3GPP.38.133.V17.15.0		17.15.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.133.V17.15.0.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.133.V17.15.0.zip</a>
ETSI	ETSI TS 138 133 V17.15.0 (2024-11)		17.15.0	Published	15.11.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/138133/17.15.00_60/ts_138133v171500p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/138133/17.15.00_60/ts_138133v171500p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.133-17.15.0 V1.10.0		17.15.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/PrPaQGsTSMtH5yQ">https://members.tdsi.in/s/PrPaQGsTSMtH5yQ</a>
TTA	TTAT.3G-38.133V17.15.0		17.15.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.133V17.15.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.133V17.15.0&amp;searchCate=TTAS</a>
<b>Release 18</b>						
ATIS	ATIS.3GPP.38.133.V18.7.0		18.7.0	Published	03.01.2025	<a href="https://www.atis.org/3gpp-transpositions - Rel-18">https://www.atis.org/3gpp-transpositions - Rel-18</a>
CCSA	CCSA.3GPP.38.133.V18.7.0		18.7.0	Published	03.01.2025	<a href="https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.133.V18.7.0.zip">https://www.ccsa.org.cn/api/portalsFile/downloadOldFile?type=17&amp;oldFileUrl=NTN/RIT/CCSA.3GPP.38.133.V18.7.0.zip</a>
ETSI	ETSI TS 138 133 V18.7.0 (2024-11)		18.7.0	Published	15.11.2024	<a href="https://www.etsi.org/deliver/etsi_ts/138100_138199/138133/18.07.00_60/ts_138133v180700p.pdf">https://www.etsi.org/deliver/etsi_ts/138100_138199/138133/18.07.00_60/ts_138133v180700p.pdf</a>
TSDSI	TSDSI STD T1.3GPP 38.133- 18.7.0 V1.1.0		18.7.0	Published	02.03.2025	<a href="https://members.tdsi.in/s/MqkyapEs4F6yG3G">https://members.tdsi.in/s/MqkyapEs4F6yG3G</a>
TTA	TTAT.3G-38.133V18.7.0		18.7.0	Published	31.01.2025	<a href="https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.133V18.7.0&amp;searchCate=TTAS">https://www.tta.or.kr/eng/ttaSearchEngView.do?key=461&amp;searchStandardNo=TTAT.3G-38.133V18.7.0&amp;searchCate=TTAS</a>

### 2.2.2 Other specifications

Other specifications addressing 5G-NTN-RIT radio and device testing, but not part of the GCS, are listed in this clause.

Information on other specifications addressing 3GPP 5G radio and device testing (but not part of the GCS), system and core network specifications can be found in the 3GPP web site for a complete system perspective. These system and core network specifications address the network, terminal, and service aspects required to provide an integrated mobility solution including aspects such as user services, connectivity, interoperability, mobility and roaming, security, codecs and media, operations and maintenance, charging, etc.

All the 3GPP specifications can be found at the following link: <https://www.3gpp.org/specifications/specification-numbering>. 3GPP specifications are reviewed and updated after each Technical Specification Group Plenary meeting (held every year in March, June, September and December).

#### 2.2.2.1 TS 38.181

##### **NR; Satellite Access Node conformance testing**

This document specifies the Radio Frequency (RF) test methods and conformance requirements for NR Satellite Access Node (SAN) type 1-H, SAN type 1-O and SAN type 2-O. These have been derived from and are consistent with the conducted requirements for SAN type 1-H and radiated requirement for SAN type 1-H, SAN type 1-O and SAN type 2-O in NR SAN specification defined in TS 38.108.

#### 2.2.2.2 TS 38.521-5

##### **NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 5: Satellite access Radio Frequency (RF) and performance**

This document specifies the measurement procedures for the conformance test of the NR User Equipment (UE) supporting satellite access operation that contains RF and Performance requirements.

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