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| **Radiocommunication Study Groups** |  |
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|  | **Document 5D/707-E** |
| **3 June 2021** |
| **English onlyTECHNOLOGY ASPECTS** |
| Director, Radiocommunication Bureau[[1]](#footnote-1) |
| Evaluation of component RIT DECT-2020 NR by TTA spg33 |
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# 1 Introduction

At the 36th meeting of ITU-R Working Party 5D (WP5D), re-evaluation of two candidate IMT-2020 radio interface technologies, DECT-2020 NR and EUHT was agreed – a.k.a. Option-2. Re-engagements of IEGs were also requested and TTA SPG33 as an IEG indicated its intention of the re-evaluation in November 2020.

# 2 Proposal

At the 38th meeting of Working Party 5D, TTA SPG33 would like to submit its evaluation report on component RIT for IMT-2020 candidate technology (DECT-2020 NR) in Document IMT-2020/17(Rev.1).

**Attachment**: 1

Attachment

Evaluation report on component RIT DECT-2020 NR in Document IMT-2020/17(rev.1)

Part I

Administrative aspects of the Independent Evaluation Group

# I.1 Name of the independent evaluation group

Telecommunications Technology Association Special Project Group 33 (TTA SPG33).

# I.2 Background of the TTA SPG33

To promote the development and early deployment of 5G technology, a special technical committee (STC3) was formed under the Telecommunications Technology Association (TTA) in July 2017. STC3 consists of five special project groups and one of them (TTA SPG33) is responsible for the evaluation of IMT-2020 candidate technology submitted in ITU-R WP 5D. TTA SPG33 was registered as an independent evaluation group right after its establishment.

Like other technical committee and project groups in TTA, TTA SPG33 consists of individual members representing mobile industry, academia, and research institute.

# I.3 Method of Work

Since the establishment of TTA SPG33 in July 2017, our meetings have been held on a regular basis – four-to-five times a year. Agenda for the meeting include, information sharing on the ITU-R WP 5D activity focused on the candidate technology submission and evaluation, review of liaison statements from ITU-R WP 5D, discussion of evaluation report development and so on. We also held open workshops in October 2017 and 2018 to share our progress and get some feedback from the audience.

We have actively participated in the evaluation discussion in ITU-R WP 5D and CJK (China-Japan-Korea) IMT Evaluation Special Interest Group. Our activity updates have been presented as contributions in both meetings.

Regarding the re-evaluation of the two candidate technologies, TTA SPG33 has indicated its intention of the re-evaluation in November 2020.

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Part II

Technical aspects of the work of the Independent Evaluation Group

# II.1 Evaluated candidate IMT-2020 RIT/SRIT

This contribution is the evaluation report on the submissions in Docs. [IMT-2020/17](https://www.itu.int/md/R15-IMT.2020-C-0017/en)(Rev.1), “component RIT DECT-2020 NR”.

# II.2 Utilization of ITU-R documents

TTA SPG33 confirms that the evaluation report in this contribution is conducted according to the evaluation guideline described in Report ITU‑R M.2412 [3] and the results are compared against the minimum technical requirements described in Report ITU‑R M.2410 [1].

# II.3 Documentation of any additional evaluation methodologies

None.

# II.4 Verification

TTA SPG33 checks that the technology submissions in Documents [IMT-2020/17](https://www.itu.int/md/R15-IMT.2020-C-0017/en)(Rev.1), “component RIT DECT-2020 NR” include complete compliance templates for service, spectrum and technical performance as specified in Chapter 4.2.4 of Report ITU-R M.2411 [2].

# II.5 Assessment

This section summarizes the evaluation by TTA SPG33. Detailed evaluation results can be found in Annex 1.

## II.5.1 Compliance template for service

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| --- | --- | --- |
|  | Service capability requirements | TTA SPG33’s comments |
| **5.2.4.1.1** | **Support for wide range of services**Is the proposal able to support a range of services across different usage scenarios (eMBB, URLLC, and mMTC)?: YES / 🗹NOSpecify which usage scenarios (eMBB, URLLC, and mMTC) the candidate RIT or candidate SRIT can support.(1) | DECT-2020 NR supports URLLC and mMTC.  |
| (1) Refer to the process requirements in IMT-2020/2. |

## II.5.2 Compliance template for spectrum

|  |  |  |
| --- | --- | --- |
|  | Spectrum capability requirements | TTA SPG33’s comments |
| **5.2.4.2.1** | **Frequency bands identified for IMT**Is the proposal able to utilize at least one frequency band identified for IMT in the ITU Radio Regulations?: 🗹YES / NOSpecify in which band(s) the candidate RIT or candidate SRIT can be deployed. | DECT-2020 NR’s operating bands from ETSI TS 103 636-2 v1.1.1

| **Band number** | **Receiving band (MHz)** | **Transmitting band (MHz)** |
| --- | --- | --- |
| 1 | 1 880 to 1 900 | 1 880 to 1 900 |
| 2 | 1 900 to 1 920 | 1 900 to 1 920 |
| 3 | 2 400 to 2 483,5 | 2 400 to 2 483,5 |
| 4 | 902 to 928 | 902 to 928 |
| 5 | 450 to 470 | 450 to 470 |
| 6 | 698 to 806 | 698 to 806 |
| 7 | 716 to 728 | 716 to 728 |
| 8 | 1 432 to 1 517 | 1 432 to 1 517 |
| 9 | 1 910 to 1 930 | 1 910 to 1 930 |
| 10 | 2 010 to 2 025 | 2 010 to 2 025 |
| 11 | 2 300 to 2 400 | 2 300 to 2 400 |
| 12 | 2 500 to 2 620 | 2 500 to 2 620 |
| 13 | 3 300 to 3 400 | 3 300 to 3 400 |
| 14 | 3 400 to 3 600 | 3 400 to 3 600 |
| 15 | 3 600 to 3 700 | 3 600 to 3 700 |
| 16 | 4 800 to 4 990 | 4 800 to 4 990 |
| 17 | 5 725 to 5 875 | 5 725 to 5 875 |

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| **5.2.4.2.2** | **Higher Frequency range/band(s)**Is the proposal able to utilize the higher frequency range/band(s) above 24.25 GHz?: 🗹YES / NOSpecify in which band(s) the candidate RIT or candidate SRIT can be deployed.NOTE 1 – In the case of the candidate SRIT, at least one of the component RITs need to fulfil this requirement. | (From 5D/412 ETSI eval report)The component RIT DECT-2020 NR is currently not utilizing the higher frequency range/band(s) above 24.25GHz. However, the component RIT 3GPP 5G NR is concluded by ITU-R WP5D to be able to utilize the higher frequency range/band(s) above 24.25GHz |

## II.5.3 Compliance template for technical performance

| Minimum technical performance requirements item (5.2.4.3.x), units, and ReportITU-R M.2410-0 section reference(1) | Category | Required value | Value(2) | Requirement met? | Comments(3) |
| --- | --- | --- | --- | --- | --- |
| Usage scenario | Test environment | Downlink or uplink |
| **5.2.4.3.7**User plane latency (ms)*(4.7.1)* | eMBB | Not applicable | Uplink and Downlink | 4 |  |  Yes No |  |
| URLLC | Not applicable | Uplink and Downlink | 1 | Not Clear |  Yes No | See Annex 1 |
| **5.2.4.3.8**Control plane latency (ms)*(4.7.2)* | eMBB | Not applicable | Not applicable  | 20 |  |  Yes No |  |
| URLLC | Not applicable | Not applicable | 20 | < 20 | 🗹 Yes No | See Annex 1  |
| **5.2.4.3.9**Connection density (devices/km2)*(4.8)* | mMTC | Urban Macro – mMTC | Uplink | 1 000 000  |  |  Yes No | Not evaluated |
| **5.2.4.3.11**Reliability*(4.10)* | URLLC | Urban Macro –URLLC | Uplink or Downlink |  |  |  Yes No | Not evaluated |
| **5.2.4.3.14**Mobility interruption time (ms) *(4.12)* | eMBB and URLLC | Not applicable | Not applicable | 0 | 0 ms  | 🗹 Yes No | From 5D/1299 Annex D |
| **5.2.4.3.15**Bandwidth and Scalability*(4.13)* | Not applicable | Not applicable | Not applicable | At least 100 MHz | > 100 MHz is supported | 🗹 Yes No |  |
| Up to 1 GHz | Via multiple RF carrier | 🗹 Yes No |  |
| Support of multiple different bandwidth values(4) | Scalable(1.728MHz to 221.184MHz) | 🗹 Yes No | From ETSI TS 103 636-3 v1.1.1Table 4.3-1 |
| (1) As defined in Report ITU-R M.2410-0.(2) According to the evaluation methodology specified in Report ITU-R M.2412-0.(3) Proponents should report their selected evaluation methodology of the Connection density, the channel model variant used, and evaluation configuration(s) with their exact values (e.g. antenna element number, bandwidth, etc.) per test environment, and could provide other relevant information as well. For details, refer to Report ITU-R M.2412-0, in particular, § 7.1.3 for the evaluation methodologies, § 8.4 for the evaluation configurations per each test environment, and Annex 1 on the channel model variants.(4) Refer to § 7.3.1 of Report ITU-R M.2412-0. |

# II.6 Questions and Feedback to WP 5D and/or the proponents or other Independent Evaluation Groups

TTA SPG33 will keep exchanging evaluation related information with proponents and other IEGs.

# II.7 Next Step

None

PartIII

Conclusion

Annex 1

Comments

**Regarding the evaluation of the user plane latency**, frame alignment cannot be found in Annex B of 5D/1299, the self-evaluation report. As a reference, in ETSI evaluation report (5D/412-E), TX Alignment and TDD switching time are not clear.

**Regarding the evaluation of the control plane latency**, our evaluation result refers Annex B.2 of 5D/1299, the self-evaluation report and Annex 1 of 5D/412, ETIS evaluation report 5D .

# References

[1] Report [ITU-R M.2410](https://www.itu.int/en/publications/ITU-R/pages/publications.aspx?parent=R-REP-M.2410), “Minimum requirements related to technical performance for IMT-2020 radio interface(s)”, 2017.

[2] Report [ITU-R M.2411](https://www.itu.int/en/publications/ITU-R/pages/publications.aspx?parent=R-REP-M.2411), “Requirements, evaluation criteria and submission template for the development of IMT-2020”, 2017.

[3] Report [ITU-R M.2412](https://www.itu.int/en/publications/ITU-R/pages/publications.aspx?parent=R-REP-M.2412), “Guidelines for evaluation of radio interface technologies for IMT-2020”, 2017.

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1. Submitted on behalf of TTA SPG33. [↑](#footnote-ref-1)