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| **World Radiocommunication Conference (WRC-19) Sharm el-Sheikh, Egypt, 28 October – 22 November 2019** |  |
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| PLENARY MEETING | **Addendum 11 to Document 28-E** |
|  | **27 September 2019** |
|  | **Original: Chinese** |
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| China (People's Republic of) | |
| Proposals for the work of the conference | |
|  | |
| Agenda item 1.11 | |

1.11 to take necessary actions, as appropriate, to facilitate global or regional harmonized frequency bands to support railway radiocommunication systems between train and trackside within existing mobile service allocations, in accordance with Resolution **236 (WRC-15)**;

# 1 Background

Railway transportation systems are evolving and contributing to global economic and social development, especially for developing countries. Information and radiocommunication technologies in railway radiocommunication systems between train and trackside (RSTT) provide improved railway traffic control, passenger safety and improved security for train operations. International standards and harmonized spectrum would facilitate worldwide deployment of RSTTs and provide for economies of scale in railway transportation for the public.

In view of these, a new WRC Resolution specifying some frequency ranges for RSTT can provide a regulatory framework to guide the harmonization process. At the same time, the new Resolution referring to relevant ITU-R Recommendation(s) can provide flexibility to administrations when further considering possible frequency bands for global/regional harmonization for RSTT.

# 2 Proposal

China supports to establish a new WRC-19 Resolution to satisfy the WRC-19 agenda item 1.11, for achieving global/regional spectrum harmonization for RSTT, in particular for train radio application. Consequently, Resolution **236 (WRC-15)** could be suppressed. Detailed proposals are presented as follows.

ADD CHN/28A11/1#49721

Draft new RESOLUTION [CHN-Method A111] (WRC-19)

Harmonization of frequency bands for railway radiocommunication systems between train and trackside (RSTT)

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

considering

*a)* that railway transportation contributes to global economic and social development, especially for developing countries;

*b)* that the term “railway radiocommunication systems between train and trackside (RSTT)” refers to radiocommunication systems providing improved railway traffic control, passenger safety and improved security for train operations;

*c)* that the main categories of applications of RSTT are train radio, train positioning information, train remote and train surveillance;

*d)* that spectrum harmonization of train radio applications of RSTT may have priority among the four categories of RSTT applications, because train radio applications provide for train dispatching, train control and other important railway services which is used to ensure the safety for train operations and passenger, and require high reliability and high quality of services;

*e)* that there may be a need to integrate different technologies across multiple bands in order to facilitate various functions, for instance dispatching commands, operating control and data transmission, into railway train and trackside systems to also meet the needs of a high-speed railway environment;

*f)* that the technologies for RSTT are evolving and international or regional organizations such as the 3rd Generation Partnership Project (3GPP), the International Union of Railways (UIC), the European Telecommunications Standards Institute (ETSI), the European Union Agency for Railways (ERA) etc. are developing specifications for technologies and new functions to evolve RSTT;

*g)* that the implementation of future RSTT needs to take account of the development of the railway industry;

*h)* that the evolving safety-related applications of railway transportation may require more spectrum;

*i)* that many administrations wish to facilitate RSTT interoperability in particular for cross-border operations, for effectively using spectrum resources and for minimizing the risk of interference;

*j)* that deployment of RSTT requires significant long-term investment and a stable radio regulatory environment;

*k)* that international standards and global/regional harmonized spectrum facilitate deployment of RSTT based on readily available cost-effective technologies that would help to provide economies-of-scale for the railway industry;

*l)* that the harmonization of frequency bands for RSTT does not preclude the use of these bands by any applications of the primary services to which they are allocated;

*m)* that in Region 3, the frequency bands within following frequency ranges[[1]](#footnote-1) (or parts thereof) are being considered for spectrum harmonization for RSTT, in particular for train radio application:70-74.8 MHz, 75.2-88 MHz, 142-144 MHz, 146-149.9 MHz, 150.05-156.4875 MHz, 156.5625-156.7625 MHz, 156.8375-161.9625 MHz, 161.9875-162.0125 MHz, 162.0375-174 MHz, 335.4-399.9 MHz, 406.1-430 MHz, 440-470 MHz, 470-520 MHz[[2]](#footnote-2), 703-748 MHz, 758-803 MHz, 873-915 MHz, 918-960 MHz, 1 770-1 880 MHz, 43.5-45.5 GHz, 92-94 GHz, 94.1-100 GHz and 102-109.5 GHz,

recognizing

*a)* thatReport ITU‑R M.2418 provides the generic architecture, main applications, current technologies and generic operating scenarios of RSTT;

*b)* thatReport ITU‑R M.2442 provides detailed technical and operational characteristics of RSTT and also provides spectrum usage of current and planned RSTT in some countries;

*c)* that devices used for train positioning information application of RSTT may be based on short-range devices (SRDs), using some frequency bands contained in the most recent version of Recommendation ITU‑R SM.1896;

*d)* that ITU-R is studying on relevant ITU-R Recommendation to facilitate the spectrum harmonization of RSTT, which may contain relevant frequency ranges for RSTT and some countries’ specific frequency bands as information;

*e)* that RSTT are composed of categories of applications and systems which operate in various frequency bands not limited to mobile service allocations;

*f)* that radiocommunication systems for train radio and train remote applications are widely deployed in the frequency bands below 1 GHz, and higher frequency bands such as millimetric bands are used for train radio and train surveillance applications of RSTT in some countries;

*g)* that some countries use frequency bands for RSTT that are outside of the frequency ranges mentioned in *resolves* parts of this Resolution, and that these frequency bands are expected to continue to be used to support railway operations in the future,

noting

*a)* that among various technologies, two global standardized technologies, namely GSM‑R and TETRA, are currently widely used for RSTT train radio applications, and that LTE-based RSTT is being deployed for train radio and train remote applications in some countries;

*b)* that Report ITU‑R M.2442 indicates that several particular frequency bands are in common use for train radio applications of RSTT by many administrations and this may form the basis for global or regional spectrum harmonization for the train radio applications;

*c)* that some administrations in Region 1 have already implemented several harmonized frequency bands for some applications of RSTT;

*d)* that lower frequency bands are generally preferred for those RSTT applications requiring large coverage areas, while higher frequency bands could provide *inter alia* higher capacity for high data volume applications of RSTT,

emphasizing

that flexibility must be afforded to administrations to determine:

– how much spectrum to make available at national level for RSTT from the ranges in the *resolves* part of this Resolution in order to meet their particular national requirements;

and

– whether existing RSTT systems using other bands will continue in operation and require ongoing support,

resolves

1 to encourage administrations to use harmonized frequency bands for RSTT to the extent possible;

2 to encourage administrations in Region 3 to consider frequency bands within the frequency ranges (or parts thereof) listed in the *considering m)* of this Resolution, with the view to achieve regional spectrum harmonization for RSTT, within existing mobile service allocations on a primary basis, in particular for train radio application;

3 to encourage administrations to consider frequency bands within the frequency ranges (or parts thereof) specified in *resolves* 2 and other possible future frequency ranges as well as countries’ specific frequency bands for RSTT, within existing mobile service allocations on a primary basis, with the view to include them into relevant ITU-R Recommendation(s) addressing RSTT spectrum harmonization, for achieving global/regional spectrum harmonization for RSTT, in particular for train radio application,

invites ITU-R

to develop and update the relevant ITU-R Recommendation(s)/Report(s), as appropriate, taking into account the evolution of RSTT, to facilitate the implementation of this Resolution in a timely manner,

invites administrations

to encourage railway agencies and organizations to utilize relevant ITU‑R publications in implementing technologies and systems supporting RSTT,

invites Member States, Sector Members, Associates and Academia

to participate actively in the study by submitting contributions to ITU‑R,

instructs the Secretary-General

to bring this Resolution to the attention of the UIC , 3GPP and other relevant international and regional organizations.

**Reasons:** A new WRC Resolution specifying some frequency ranges for RSTT can provide a stable regulatory framework to guide spectrum harmonization process, especially for Region 3. At the same time, referring to relevant ITU-R Recommendation(s) can provide flexibility to administrations when further considering possible frequency bands for global/regional harmonization for RSTT.

SUP CHN/28A11/2#49718

RESOLUTION 236 (WRC-15)

Railway radiocommunication systems between   
train and trackside

**Reasons:** No longer required after WRC-19.

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1. In the context of this Resolution, the term “frequency range” means a range of frequencies over which radio equipment is envisaged to be capable of operating but limited to specific frequency band(s) according to national conditions and requirements. [↑](#footnote-ref-1)
2. NOTE - The frequency band 470-520 MHz is within the preliminary agenda item for WRC-23, therefore the decision of WRC-23 on this matter should not be pre-judged. [↑](#footnote-ref-2)