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| **Radiocommunication Study Groups** |  |
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| **English only** |
| Annex 18 to Working Party 5A Chairman’s Report |
| WORKING DOCUMENT TOWARDS A PRELIMINARY DRAFT NEW RECOMMENDATION ITU-R M.[RSTT] |
| **Harmonization of frequencies and related frequency arrangements, for railway radiocommunication systems between train and trackside** |

[([Question ITU-R 37-6/5](http://www.itu.int/pub/R-QUE-SG05.37))]

(…)

**Scope**

This Recommendation provides guidance on possible harmonization of frequency arrangements for existing and future railway radiocommunication systems between train and tracksides (RSTT) on global or regional basis. The relevant frequency arrangements are addressed in the Annexes to this Recommendation.

Keywords

[Railway Radiocommunication Systems, Frequency arrangement, Train, Trackside, RSTT]

Abbreviations

RSTT Railway Radiocommunication Systems between Train and Trackside

Related ITU Recommendations and Reports

1. [Working document toward a preliminary draft new] [Report ITU-R M.](https://www.itu.int/pub/R-REP-M/en)[RSTT.DESCRIPTION] – “Description of Railway Radiocommunication Systems between Train and Trackside”.

2. [Working document toward a preliminary draft new] [Report ITU-R M.](https://www.itu.int/pub/R-REP-M/en)[RSTT.USAGE] – “Current and future usage of railway radiocommunication systems between train and trackside”.

*Editor’s note: hyper-link for the above two documents is needed.*

The ITU Radiocommunication Assembly,

considering

*a)* that railway transportation systems are growing and evolving;

*b)* that railway radiocommunications systems between train and trackside (RSTT) are vital to provide improved railway traffic control, passenger safety, and improved security for train operations;

*c)* that many administrations wish to facilitate RSTT interoperability, for both national and cross-border operations;

*d)* that some national and international railway organizations and standards bodies have begun investigations on new technologies for railway radiocommunication systems;

*e)* that, over time, traditional (analogue or narrowband) RSTT, such as operational voice and data, may be provided by advanced digital systems, where appropriate;

*f)* that there is a need to integrate different technologies 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;

*g)* that continuing development of new technologies may be able to serve, support or supplement RSTT;

*h)* that administrations may have different requirements for railway operations depending on their national needs, spectrum requirements, policy objectives, and operating environments;

*i)* that the deployment of railway radiocommunication systems between train and trackside requires significant infrastructure investment;

*j)* that national spectrum planning for RSTT may need to have regard for cooperation and bilateral consultation with other concerned administrations and railway organisations, in order to facilitate greater levels of spectrum harmonization;

*k)* that usage of harmonised frequency bands will enable administrations to benefit from harmonization while continuing to meet national planning requirements,

*l)* …,

recognizing

*a)* that radiocommunication technologies in railway radiocommunication systems between train and trackside provide improved railway traffic control, passenger safety and improved security for train operations;

*b)* that international standards and harmonized frequency spectrum would facilitate worldwide deployment of RSTT and provide for economies of scale in railway transportation for the public;

*c)* the continuing need for development of globally or regionally harmonized frequency arrangements for the purposes of implementing RSTT;

*d)* [that, in the context of this Recommendation, the term “harmonized frequency range” means a range of frequencies over which relevant radio equipment is envisaged to be capable of operating in specific frequency bands/conditions; however, the actual use may be limited according to national conditions and requirements;]

*e)* [that not all frequencies within an identified common frequency range might be available within each country of the relevant ITU Region;]

*f)* that the harmonization of those frequency bands or parts thereof for RSTT does not preclude the use of, nor establish priority over, any other frequencies for RSTT in accordance with the Radio Regulations and does not preclude the use of these bands/frequencies by any application within the services to which these bands/frequencies are allocated;

*g)* that the frequency bands harmonized by this Recommendation are allocated to a variety of services in accordance with the relevant provisions of the Radio Regulations, especially to the mobile service on primary basis;

*h)* [that other terrestrial wireless systems may effectively complement dedicated RSTT, particularly by supporting the train radio and train surveillance systems/applications or by providing certain train information to passengers,]

*i)* that information on technologies and applications that may be appropriate for use in the frequency arrangements in the Annexes is provided in Report ITU‑R M.[RSTT] - Railway radiocommunications systems between train and tracksides;

*j)* …,

noting

*a)* that the benefits of spectrum harmonization for railways are:

– ensured interoperability of railway operations, especially cross-border;

– enabled usage of commercial off the shelf equipment;

– increased volume of equipment resulting in economies of scale and expanded equipment availability; and

– improved spectrum management and planning;

*b)* that the following frequency ranges are currently widely used by RSTT:

|  |  |  |  |
| --- | --- | --- | --- |
| System/Application | Region1 | Region 2 | Region 3 |
| for train radio  |  |  |  |
| for train positioning  |  |  |  |
| for train remote  |  |  |  |
| for train surveillance |  |  |  |

*c)* that spectrum planning for RSTT is performed at the national level, taking into account the need for interoperability and benefits of neighbouring administrations using harmonized frequency bands;

*d)* that the benefits of cooperation between countries provides effective railway operations;

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

*f)* that railway transportation contributes to the goal of reducing carbon emissions;

*g)* the needs of countries, particularly the developing countries, for cost-efficient communication equipment;

*h)* that flexibility must be afforded to administrations:

– to determine, at national level, how much spectrum to be made available for RSTT in order to meet their particular national requirements;

– to have the ability for the bands harmonised to be used by all services having allocations according to the provisions of the Radio Regulations, taking into account the existing applications and their evolution; and

– to determine the need and timing of availability, as well as the use conditions of the bands harmonised in order to meet specific operational priorities and operating environments;

*i)* [that some of the RSTT systems under current usage may be considered for replacement in the near future;]

*j)* that RSTT as a whole consists of subcategories of systems and applications, which operate in various frequency bands under varying restrictions/limitations mostly under mobile service allocations;

*k) …*

recommends

1 that administrations use the following harmonized frequency ranges/bands for RSTT to the maximum extent possible, taking into account the national and regional requirements and also having regard to any needed consultation and cooperation with other concerned countries;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *System/Application* | *Region 1* | *Region 2* | *Region 3* | *[Global]* |
| for train radio  |  |  |  |  |
| for train positioning  |  |  |  |  |
| for train remote  |  |  |  |  |
| for train surveillance |  |  |  |  |

2that the frequency arrangements in the Annexes should be considered by administrations as guidance when making spectrum available for RSTT applications;

3that administrations implementing the frequency arrangements in the Annexes should make all necessary efforts to ensure compatibility between RSTT and stations of other services in neighbouring countries;

4that administrations follow the development of standards applicable to railway radiocommunications.

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Annex 1

Frequency arrangements for train radio applications

Region 1

# 1 Frequency arrangement in Band [xxx, yyy]…

## 1.1 [Centre] frequencies

*a) For systems with a channel bandwidth of up to xx kHz*

*b) For systems with a channel bandwidth of xx kHz*

*c) For systems with a channel bandwidth of more than xx kHz*

# 2 Frequency arrangement in Band [yyy,zzz]

## 2.1 [Centre] frequencies

*a) For systems with a channel bandwidth of up to xx kHz*

*b) For systems with a channel bandwidth of xx kHz*

*c) For systems with a channel bandwidth of more than xx kHz*

# …

Region 2

# 1 Frequency arrangement in Band [xxx, yyy]…

## 1.1 [Centre] frequencies

*a) For systems with a channel bandwidth of up to xx kHz*

*b) For systems with a channel bandwidth of xx kHz*

*c) For systems with a channel bandwidth of more than xx kHz*

# 2 Frequency arrangement in Band [yyy,zzz]

## 2.1 [Centre] frequencies

*a) For systems with a channel bandwidth of up to xx kHz*

*b) For systems with a channel bandwidth of xx kHz*

*c) For systems with a channel bandwidth of more than xx kHz*

# …

Region 3

# 1 Frequency arrangement in Band [xxx, yyy]…

## 1.1 [Centre] frequencies

*a) For systems with a channel bandwidth of up to xx kHz*

*b) For systems with a channel bandwidth of xx kHz*

*c) For systems with a channel bandwidth of more than xx kHz*

# 2 Frequency arrangement in Band [yyy,zzz]

## 2.1 [Centre] frequencies

*a) For systems with a channel bandwidth of up to xx kHz*

*b) For systems with a channel bandwidth of xx kHz*

*c) For systems with a channel bandwidth of more than xx kHz*

# …

Annex 2

Frequency arrangements for train positioning applications

Region 1

Region 2

Region 3

Annex 3

Frequency arrangements for train remote applications

Region 1

Region 2

Region 3

Annex 4

Frequency arrangements for train surveillance applications

Region 1

Region 2

Region 3

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