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| APTlogogreen3 | ASIA-PACIFIC TELECOMMUNITY | **Document No:** |
| **The 3rd Meeting of the APT Conference Preparatory Group for WRC-19 (APG19-3)** | **APG19-3/OUT-04** |
| 12 – 16 March 2018, Perth, Australia | **16 March 2018** |

Working Party 1

**PRELIMINARY VIEWs on WRC-19 agenda item 1.11**

# Agenda Item 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

Resolution **236 (WRC-15)** invites the WRC-19, based on the results of ITU-R studies, to take necessary actions, as appropriate, to facilitate global or regional harmonized frequency bands, to the extent possible, for the implementation of railway radiocommunication systems between train and trackside, within existing mobile-service allocations.

As the responsible group, ITU-R WP5A, in November 2017, had concluded the study on Description of RSTT and Report ITU-R M.2418 had been approved by SG 5. WP 5A is developing 1 ITU-R Reports and 1 ITU-R Recommendation. WP5A is also developing the Draft CPM text of agenda item 1.11, within which currently two possible methods were raised (see below). The global or regional harmonized frequency bands for RSTT is still under discussion, and WP5A is to complete the draft CPM text in May 2018.

* Method A: NOC to Vol.1, 2 of RR and suppress **Resolution 236 (WRC 15)**;
* Method B: Propose a new Resolution XYZ (WRC-19) and consequently suppress the **Resolution 236 (WRC-15)**.

In APT, APG-19 has established a Drafting Group to prepare preliminary views of APT on WRC-19 agenda item 1.11. A questionnaire had been sent to APT members for collecting the information on current and future usage of RSTT. Seven responses[[1]](#footnote-1) were received by APG 19-3. AWG is carrying on relevant technical and operational study progress associated with agenda item 1.11. A [workshop](http://www.apt.int/sites/default/files/2017/04/AWG-21-OUT-13_AWG_Workshop_Railway.docx) for exchanging information on RSTT was held during AWG-22.

Relevant ITU-R and APT Reports/Recommendations and ongoing studies are as follows,

* Report ITU-R M.2418: Description of Railway Radiocommunication Systems between Train and Trackside (RSTT)
* APT/AWG/REP-78:APT Report on System Description, Technologies and Implementation of RSTT
* Working document toward a PDN Report ITU-R M. [RSTT.USAGE ] - Current and future usage of railway radiocommunication systems between train and trackside (RSTT) (5A/650 Annex 17)
* Working document towards a preliminary draft new Recommendation ITU-R M.[RSTT\_FRQ] - Harmonization of frequencies and related frequency arrangements, for railway radiocommunication systems between train and trackside ([5A/650 Annex 18](https://www.itu.int/dms_pub/itu-r/md/15/wp5a/c/R15-WP5A-C-0469!N18!MSW-E.docx))
* Working Document towards Draft CPM Text for WRC-19 Agenda Item 1.11(5A/650 Annex 6)
* Working Document towards an APT Report on System Deployment and Relevant Testing Studies of Railway Radiocmmunication System between Train and Trackside (RSTT) in APT Countries. (AWG-22/TMP 02).

# 2. Documents

## 2.1 Input Documents

APG19-3/INP-08(AWG), APG19-3/INP-09(THA), APG19-3/INP-10(MLA), APG19-3/INP-12(INS), APG19-3/INP-14(IND), APG19-3/INP-21(KOR), APG19-3/INP-27(J), APG19-3/INP-41(AUS), APG19-3/INP-49(J), APG19-3/INP-59(THA), APG19-3/INP-65(SNG), APG19-3/INP-78(INS), APG19-3/IN0-81(VTN), APG19-3/INP-82(VTN), APG19-3/INP-86(CHN), APG19-3/INP-92(CHN), APG19-3/INP-93(CHN), APG19-3/INP-94(CHN), APG19-3/INP-95(CHN), APG19-3/INP-98(KOR)

## 2.2 Information Documents

APG19-3/INF-06(CEPT), APG19-3/INF-08(CITEL), APG19-3/INF-09(IARU)

# 3. Summary of discussions

## 3.1 Summary of APT Members’ views

### 3.1.1 India - Document APG19-3/INP-14

Rail transport is recognized as an energy-efficient means of transporting goods and passengers on land. In Region 3, like many other countries, India is developing high speed rail to connect major cities for inter-city and intra-city links. As such, regional and global harmonization of spectrum for RSTT can facilitate the development of rail transport in this region.

Rail networks require large capital investments to develop and long periods to build out. The economies of scale that is enabled by harmonized spectrum will be beneficial to the development of RSTT networks, especially in developing countries.

A new resolution specifying frequency ranges for narrowband and broadband radiocommunication systems can provide regulatory certainty to provide guidance and focus to the harmonization process. At the same time a Recommendation can provide the flexibility to include regional and/or global harmonization measures for RSTT, as well as frequency arrangements of individual administrations.

India proposes that a resolution containing references to a recommendation be considered as a method to satisfy agenda item 1.11. As an example, Annex 1 to APG19-3/INP-14 contains the new Resolution XYZ (WRC-19) proposed in Method B of the current PRELIMINARY DRAFT CPM TEXT FOR WRC-19 AGENDA ITEM 1.11, with additional text to make reference to PRELIMINARY DRAFT NEW RECOMMENDATION ITU-R M.[RSTT\_FRQ]

### 3.1.2 Korea (Republic of) - Document APG19-3/INP-21

The Administration of Korea (Republic of) proposes modifications to the APT Preliminary View adopted as at the last APG19-2 meeting:

“APT Members support studies towards global or regional harmonized frequency bands to support RSTT within existing mobile service allocations, in accordance with **Resolution 236 (WRC-15)**, and are of the view that international standards and global/regional harmonized spectrum would facilitate the current and future deployment of RSTT.

APT Members are also of the view that:

* The implementation of harmonized frequency arrangements of RSTT shall not impose additional constraints on other primary services to which these frequency bands are already allocated, and shall not cause harmful interference to the existing mobile service applications/systems already identified/deployed in these frequency bands.
* ITU-R studies on RSTT should not be restricted to, or preclude, any particular relevant technology.
* Global/regional frequency harmonization can be achieved through ITU-R Recommendations/Reports and there is no need to change the Radio Regulations (RR).”

### 3.1.3 Australia - Document APG19-3/INP-41

Australia supports potential harmonisation of frequency bands in existing land mobile service allocations for railway radiocommunication systems between train and trackside (RSTT) in accordance with **Resolution 236 (WRC-15)**.

Australia is of the view that no change to the Radio Regulations is required under this agenda item and supports development of a new ITU-R Recommendation [RSTT\_FREQ] through Study Group 5 listing relevant global and regional harmonised frequency ranges for use by future train and trackside systems (supporting train operations only) for consideration by administrations (Method A of the draft CPM Report text).

Australia encourages further ITU-R studies on technical and operational characteristics for RSTT to be accommodated through ITU-R Recommendations and Reports. A new WRC Resolution that explicitly list the global and regional harmonised frequency ranges for use by future train and trackside systems is not supported, as harmonisation of radiocommunication applications should not be a mandatory requirement via the Radio Regulations.

Australia is also of the view that current and future ITU R studies on RSTT should not be restricted to, or preclude, any particular relevant technology or delivery model.

### 3.1.4 Japan - Document APG19-3/INP-49

Japan supports ITU-R studies to consider the global or regional harmonized frequency ranges, based on comprehensive harmonized frequency ranges approach by using logical OR function, by which every frequency used for the current and future deployment of RSTT could be included.

### 3.1.5 Thailand - Document APG19-3/INP-59

Thailand supports studies towards global or regional harmonized frequency bands to support Railway Radiocommunication Systems between Train and Trackside (RSTT) within existing mobile service allocations, in accordance with **Resolution 236 (WRC-15)**. Harmonized spectrum would facilitate efficient and safe cross-border railway transportation, reducing the railway infrastructure investment and providing for economies of scale.

Thailand proposes that the frequency band 900 MHz (in the frequency ranges of 876-915 MHz/921-960 MHz) be one of the global or regional harmonized frequency bands to support RSTT within existing mobile service allocations. The implementation of harmonized frequency bands for RSTT should not impose additional constraints on any application of the primary services to which these frequency bands are already allocated.

### 3.1.6 Singapore - Document APG19-3/INP-65

Rail networks require large capital investments and are recognised as an energy-efficient means of transporting goods and passengers on land. In Region 3, some countries (e.g. China, Japan, and Republic of Korea) have developed high speed rail to connect major cities while other countries in this region are planning to or are developing rail transport for inter-city and transnational links. As such, regional and global harmonisation of spectrum for RSTT can facilitate the development of rail transport in this region.

To satisfy Agenda Item 1.11, Singapore supports the development of a new Resolution with references to the ITU-R Recommendation to facilitate global and regional harmonised frequency bands to support RSTT within existing mobile-service allocations. A new resolution specifying frequency ranges for narrowband and broadband radiocommunication systems can provide regulatory certainty to guide the harmonisation process. At the same time, a Recommendation can provide guidance on the possible harmonisation of frequency arrangements for RSTT.

### 3.1.7 Indonesia (Republic of) - Document APG19-3/INP-78

Indonesia is of the view that harmonization of frequency bands at global and/or regional level for Railway Radiocommunication Systems between Train and Trackside (RSTT) within existing mobile service allocations would be desirable for its overall development. The harmonized use of frequency bands by railway transportation systems within existing mobile service allocations shall not impose additional constraints on other primary services to which these frequency bands are already allocated and to minimize the potential interference to the existing mobile service applications/systems already identified/deployed in these frequency bands.

Indonesia supports for an appropriate regulatory approach to facilitate global or regional harmonized frequency bands to support RSTT within existing mobile service allocations with No Change to the Radio Regulations Vol.1, Vol.2 and Vol.4. Meanwhile, Indonesia still intends to follow ongoing studies i.e. AWG and ITU-R WP5A.

### 3.1.8 Viet Nam (Socialist Republic of) - Document APG19-3/INP-82

Viet Nam Administration supports studies being undertaken by ITU-R on this issue and is of the view that:

* It is reasonable to harmonize frequency bands at global or regional level for their use by RSTT within existing mobile service allocations. It is unnecessary to identify any spectrum specifically for RSTT;
* A harmonized use of frequency bands by RSTT within existing mobile service allocations does not change the allocation conditions for the mobile service so that no additional constraints will be imposed on services to which these frequency bands are already allocated;
* The development of appropriate and applicable ITU-R Recommendations can satisfy this agenda item and no change is required for the Radio Regulations.

### 3.1.9 China (People’s Republic of) - Document APG19-3/INP-86

China supports to establish a new Resolution XYZ (WRC-19) and consequently suppress the **Resolution 236 (WRC-15)**, to facilitate global or regional harmonized frequency bands to support railway radiocommunication systems between train and trackside within existing mobile service allocations, i.e. China supports Method B in current version of Chapter 1.11 to Draft CPM text for WRC-19.

China is also of the following views:

- Global or regional harmonized frequency bands of RSTT will facilitate interoperability of railway operations and provide for economies of scale in railway transportation, by reducing the cost of cross-border operations and by using commercial off the shelf equipment, regionally and internationally.

- RSTT is a core infrastructure for railway transportations which needs significant investments and development of RSTT is not balanced among different regions and countries. Therefore a stable radio regulatory environment for RSTT is vital for railway industry.

- Harmonization of frequency bands for RSTT should take into account the technical development of RSTT, especially those technologies who have already formed global technical standards and widely implemented between different railway entities, so as to realize the interoperability of railway operations and provide for economies of scale in railway transportation, and should also take into account the evolution of RSTT technologies as well.

- Harmonization of frequency bands for Train Radio application of RSTT may have the top priority, because it directly provide for train dispatching, train control and other important railway services which require high reliability and high QoS, ensuring passenger safety and security for train operations.

- Report ITU-R M. [RSTT.USAGE] shows that [138-174MHz, 336-475MHz, 873-915MHz/918-960MHz] bands are commonly used for train radio application of RSTT by many administrations within 3 Regions. So such frequency bands, or parts thereof, could be considered for global harmonized frequency bands for Train Radio Application of RSTT.

## 3.2 Summary of issues raised during the meeting

Two key issues had been discussed during the meeting: Issue 1 - the methods to satisfy this agenda item; and Issue 2 - possible harmonized frequency ranges for RSTT.

At this meeting, Methods to satisfy this agenda item was discussed.

Taking into account that Recommendation ITU-R M. [RSTT\_FRQ] is sufficient to provide harmonized frequency bands for RSTT, some APT Members are of the view that there is no need to develop a WRC Resolution to satisfy this Agenda Item.

Taking into account that harmonization of frequency bands for Train Radio application of RSTT may have the top priority, since it directly provide for train dispatching, train control and other important railway services which require high reliability and high QoS, ensuring passenger safety and security for train operations, some APT Members proposed to develop a new WRC-19 Resolution, encouraging administrations to consider specific global harmonized frequency bands, or parts thereof, for their Train Radio Application of RSTT.

In order to provide regulatory certainty and give certain flexibility for future development of RSTT, some APT Members proposed to develop a new WRC-19 Resolution, specifying global and regional frequency ranges for harmonization for RSTT and the Resolution is referring to an ITU-R Recommendation, containing the RSTT frequency arrangements, as well as countries’ frequency arrangements for RSTT.

While at this stage, there was no consensus on which Method better satisfy the Agenda Item 1.11. The meeting then focused on the discussion on further improvement to the Draft CPM Text developed by ITU-R WP5A, based on the proposals received at this meeting.

The meeting developed a draft contribution to ITU-R WP5A to improve the current Draft CPM Text, based on the discussion in this meeting.

The meeting also summarized the responses to the questionnaire from 7 APT Members and reviewed results of spectrum usage survey studies done by ITU-R WP5A.

However, after discussion APT Members could not reach consensus on which frequency ranges to be harmonized under the Agenda Item 1.11 because some APT Members are of the view that it is premature to decide on this issue at this stage.

# 4. APT Preliminary View(s)

APT Members support studies towards global or regional harmonized frequency bands to support RSTT within existing mobile service allocations, in accordance with Resolution 236 (WRC-15), and are of the view that international standards and global/regional harmonized spectrum would facilitate the current and future development of RSTT.

APT Members are also of the view that:

* The implementation of harmonized frequency arrangements of RSTT shall not impose additional constraints on other primary services to which these frequency bands are already allocated.
* ITU-R studies on RSTT should not be restricted to, or preclude, any particular relevant technology.
* Harmonized frequency arrangements of RSTT can support cross-border railway operations.

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# 5. Other View(s) from APT Members

* Some APT Members are of the view that there is no need to change the Radio Regulations under this agenda item, but to include the global and regional harmonized frequency bands in an ITU-R Recommendation.
* Some APT Members support a new WRC-19 Resolution to facilitate global or regional harmonized frequency bands to support Train Radio Application of RSTT within existing mobile service allocations.
* Some APT Members are considering developing a new WRC-19 Resolution specifying global and regional frequency ranges for harmonization for RSTT and this Resolution is referring to an ITU-R Recommendation containing the global and regional RSTT frequency arrangements, as well as countries’ frequency arrangements for RSTT.
* Some APT Members recognized that Method B within the Draft CPM text on WRC-19 Agenda Item 1.11 developed by ITU-R WP5A could be improved by 2 options: Option 1-to develop a new WRC-19 Resolution specifying possible harmonized frequency bands for train radio application of RSTT; Option 2-to develop a new WRC-19 Resolution referring to an ITU-R Recommendation.
* Some APT Members are considering one or more of the frequency bands: 138-174MHz, 335-475MHz, 336-470MHz, 718-728/773-783MHz, 873-915MHz/918-960MHz, 43.5GHz-45.5GHz, and 92-109.5GHz, or parts thereof, within existing mobile service allocations, to be the globally harmonized frequency bands for RSTT.
* Some APT Members are considering possible harmonized frequency ranges approach by using logical OR approach, which is described in APPENDIX of Working document towards a PDN Recommendation ITU-R M.[RSTT\_FRQ] (Annex 18 to Document 5A/650), so that every frequency used for the current and future deployment of RSTT could be included.

# 6. Issues for Consideration at Next APG Meeting

* APT Members are encouraged to consider frequency bands which could be harmonized to support railway radiocommunication systems between train and trackside within existing mobile service allocations.
* APT Members are also encouraged to consider the Draft CPM text on this agenda item, taking into account that CPM 19-2 meeting will be held after the APG 19-4.

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# 7. Views from Other Organisations

## 7.1 Regional Groups

### 7.1.1 ASMG –Document APG19-2/INF-01

Follow-up the studies about railway radio systems between the train and trackside within the current allocations of the mobile service.

Ensure protection of the existing services without imposing any new restrictions on them.

Encourage the administrations to study spectrum requirements for these applications in order to reach to harmonized frequency bands.

### 7.1.2 ATU –Document APG19-2/INF-07

APM19-1 considered that there is need to segment the proposed candidate bands according to envisaged usages.

### 7.1.3 CEPT - Document APG19-3/INF-06

#### 7.1.3.1 Preliminary CEPT position

CEPT is of the view that the harmonized use of frequencies for RSTT within existing mobile service allocations serves current and future demands of railway organisations on all operational levels.

CEPT is of the view that no change to the RR is needed in response to WRC-19 Agenda item 1.11.

CEPT is of the view that harmonisation for RSTT can be achieved by the development of an appropriate non-mandatory ITU-R Recommendation containing regional harmonisation measures. In this regard, CEPT highlights its existing framework for RSTT train radio on the basis of GSM-R, which serves interoperable cross-border railway operations. CEPT recognizes that there are other standards/technologies and frequency bands providing for RSTT.

In addition, CEPT is of the view that Agenda item 1.11 does not cover the provision of public communication services for passengers.

RSTT systems considered by CEPT: train radio, train positioning, train remote, train surveillance

#### 7.1.3.2 Preliminary European Common Proposal (PECP)

NOC

Reasons: An ITU-R Recommendation, which is not referenced in the Radio Regulations, is considered sufficient to harmonize frequency bands for future RSTT.

### 7.1.4 CITEL - Document APG19-3/INF-08 Rev.1

No Change to the regulations. Identification of spectrum for applications to be addressed via ITU reports and recommendations.

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### 7.1.5 RCC –Document APG19-2/INF-05

The RCC Administrations consider it reasonable to harmonize frequency bands at global or regional level for their use by railway radiocommunication systems between train and trackside within existing mobile service allocations, including through the development of ITU-R Recommendations and Reports.

The RCC Administrations are of the view that harmonized use of frequency bands by railway transportation systems within existing mobile service allocations shall not impose additional constraints on other services to which these frequency bands are already allocated, and shall provide the protection of existing systems for government communication.

## 7.2 International Organisations

### 7.2.1 IARU - Document APG19-3/INF-09

The IARU supports satisfying the spectrum needs for railway radiocommunication systems between train and trackside within existing mobile service allocations that are not also allocated to the amateur service.

### 7.2.2 ICAO - Document APG19-2/INF-02

To ensure, on the basis of agreed ITU-R studies, that any regulatory actions within existing mobile-service bands do not impact existing aeronautical systems operating in accordance with the Radio Regulations.

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1. Information provided had been compiled into this PDF document:  [↑](#footnote-ref-1)