ORGANIZACION DE LOS ESTADOS AMERICANOS
ORGANIZATION OF AMERICAN STATES

Comisión Interamericana de Telecomunicaciones
Inter-American Telecommunication Commission

30 MEETING OF PERMANENT CONSULTATIVE COMMITTEE II: RADIOCOMMUNICATIONS
November 27 to December 1, 2017
Barranquilla, Colombia

OEA/Ser.L/XVII.4.2.30
CCP.II-RADIO-30/doc. 4356-1-11/17 rev.1
30 November 2017
Original: English

PRELIMINARY VIEWS FOR WRC-19

AGENDA ITEM 1.11

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITEL Member States)

SGT-1

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Agenda Item 1.11: *to consider the results of ITU-R studies, 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)*

BACKGROUND

For many years the railway industry has been integrating a multitude of wireless systems for operational applications to improve railway traffic control, passenger safety and improve security for train operations and to meet the needs of a high-speed railway environment. As the railway transportation systems are evolving, the infrastructure investment and the 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 becomes even more essential. Timely studies have been requested on technologies providing for railway radiocommunication and international standards and harmonized spectrum would facilitate worldwide deployment of radiocommunication systems between train and trackside. The ITU Radiocommunication Sector (ITU-R) Study Group 5 is studying relevant technical and operational characteristics for railway radiocommuncation systems.

Some of the regional railway communities are considering a successor to GSM-R (GSM for Railway), as the forecast obsolescence of the 2G-based GSM-R technology is envisaged around 2030. In order to meet future demands of train control and operation including passenger services, some national and international railway organizations have begun investigations on new technologies for next generation radiocommunication systems between train and tracksides with required technology lifespans of multiple decades.

The 3GPP is considering standardization of the next evolution of train-to-trackside communications technologies which is supported by the International Union of Railways (UIC). According to the Motorola Solutions contribution[1] to the Asia-Pacific Telecommunity (APT), September 2016 meeting, TETRA, 4G LTE and 5G technologies with low latency are candidates for future train-to-trackside communications. In addition, IP based RAN will replace the existing circuit Radio based GSM-R network for train-to-trackside communications.

In Mexico, the project called “Inter-urban passenger train from Toluca to Valley of Mexico,” which will be connecting the metropolitan area of the Valley of Toluca to the western side of Mexico City, is currently being built to improve mobility in the Valley of Mexico Metropolitan Area.

In the context of said project and as part of the criteria for its design and operation, use of the technological solution provided by the GSM-R standard in the frequency band 876-880/921-925 MHz was proposed for the purpose of meeting connectivity requirements. GSM-R systems have traditionally operated in this frequency band, because it is partially covered by the GSM 900 standard for mobile phones, mainly used in Europe in the 880-915/925-960 MHz range.

Likewise, the frequency band of interest has the allocation in the National Frequency Allocation Table to Mobile and Aeronautical Mobile, both as a primary service, where the frequency segment 849-851/894-896 MHz is allocated for national aeronautical mobile radiocommunication service.

[1] The Motorola Solutions contribution to the Asia-Pacific Telecommunity (APT) will be available as an information document at the CITEL November 2016 meeting.

Despite the above, this alternative entailed various implications for Mexico, namely:

a) The frequency band 824-849/869-894 MHz is granted in concession for the provision of national mobile broadband telephony. As a result, if this frequency band is used, geographical restrictions would have to be imposed on the base stations of the mobile broadband telephony service along the entire railroad line, a mechanism that would not necessarily guarantee protection of the railway systems.
b) Segment 896-901/935-940 MHz has been viewed as one of the viable alternatives for operating business narrowband systems, because this segment benefits from the standards for trunking service.
c) Aeronautical mobile service applications operate in the frequency bands 849-851/894-896 MHz, as a result of which, if additional spectrum is required for high-speed trains, there might be difficulties because of the coexistence of train operations on the basis of the GSM-R standard and aeronautical mobile services.
d) To not give continuity to the operation of aeronautical mobile services, if it is eventually decided that it is not feasible to have aeronautical mobile services and operations of the GSM-R standard coexist.
e) Depending on the railway network's communication needs, only minimum needs can be met, as a result of which, in the event that said network is diversified or enlarged, it would be impossible to grant additional spectrum. In that respect, even when the band 896-901/935-940 MHz is considered apt for operating the GSM-R systems, it was determined that, in Mexico, in the ranges of 896-901 MHz and 941-946 MHz, only the operation of two blocks of 2.6 MHz for the uplink and downlink, respectively, would be feasible.

ISSUES

- To determine spectrum needs for the implementation of railway radiocommunication systems between train and trackside.
- To identify global or regional harmonized frequency bands, if needed, for the implementation of railway radiocommunication systems between train and trackside, within existing mobile service allocations. Determine how this "identification" would be done.
- To determine potential technical and operational characteristics and implementation of railway radiocommunication systems between train and trackside in the mobile service to assess compatibility with other services.
- To determine mitigation techniques to protect the existing primary systems of the other services within frequency bands with existing mobile service allocations.

PRELIMINARY VIEWS:

Brazil, Canada, Ecuador
Agenda item 1.11 is restricted to examining spectrum for railway radiocommunication systems between train and trackside in spectrum already allocated to the mobile service; therefore, it can be satisfied through ITU-R Recommendations and Reports without the need of changes to the Radio Regulations.

MEX

The process of identifying possible radio spectrum segments for railway radiocommunication systems should be based on the premise that they should not be located in the bands currently allocated or authorized by administrations for mobile broadband telephony applications, so as to prevent possible harmful interferences or incompatibility with each administration's spectrum allocation plans.

Although it is true that Mexico is at an advantage with respect to identifying spectrum for high-speed railway systems in frequency bands identified for IMT, because of the experience gained from the difficulty of allocating spectrum for this type of system, the Administration of Mexico believes that frequency ranges where the administrations do not have allocations for mobile broadband telephony applications should be taken into account.

The Administration of Mexico is willing to share experiences with respect to the allocation of frequencies to high-speed railways in the sessions where this subject will be discussed.

Furthermore, the Administration of Mexico is of the opinion that harmonized frequency bands should be identified for the implementation of high-speed railways in Region 2 and that ITU-R Recommendations and Reports are the best mechanisms to address item 1.11 on the WRC-19 agenda, without the need to make any amendments to the Radio Regulations.

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