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ITUWORKSHOPS

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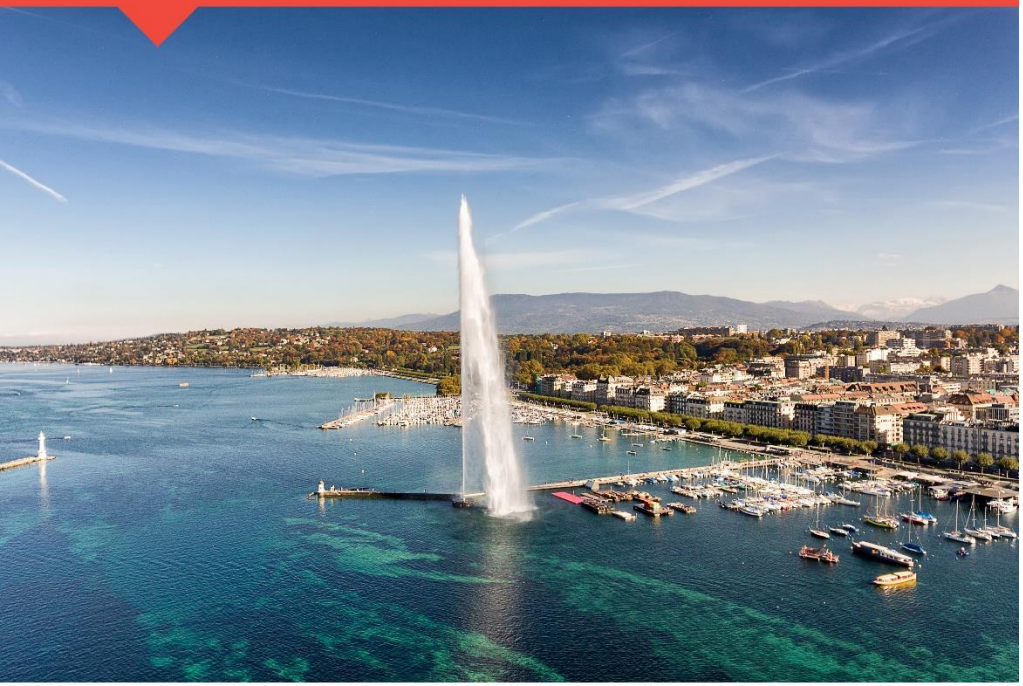

ITUWRC WORLD RADIOCOMMUNICATION CONFERENCE

Organized by:

90th Anniversary CCIR - ITU-R Study Groups (1927-2017)

ITU

1st ITU INTER-REGIONAL WORKSHOP ON WRC-19 PREPARATION (Geneva, 21-22 November 2017)

Session 2 – Terrestrial

WRC-19 agenda item 1.12

Intelligent Transport Systems (ITS)

José Costa
Chairman, ITU-R WP 5A

Outline

- WRC-19 agenda item 1.12
- Resolution 237 (WRC-15)
- Background and motivation
- Organization of the work in WP 5A
- Status of studies
- Methods (work in progress)
- References

WRC-19 agenda item 1.12

- to consider possible global or regional harmonized frequency bands, to the maximum extent possible, for the implementation of evolving Intelligent Transport Systems (ITS) under existing mobile-service allocations, in accordance with Resolution 237 (WRC-15);
  - Resolution 237 (WRC 15) – Intelligent Transport Systems applications
- Responsible Group: **WP 5A**
- Contributing Groups: **WP 4A, WP 4B, WP 4C, WP 5B, WP 5C, WP 5D, WP 7C, WP 7B, WP 7D**
- Interested Groups: (WP 3K), (WP 6A).

Resolution 237 (WRC-15)

Intelligent Transport Systems applications

resolves to invite WRC-19

taking into account the results of ITU Radiocommunication Sector (ITU-R) studies, to consider possible global or regional harmonized frequency bands for the implementation of evolving ITS under existing mobile-service allocations,

invites ITU-R

to carry out studies on technical and operational aspects of evolving ITS implementation using existing mobile-service allocations.

Background and Motivation

- ITS, including ETC (Electronic Toll Collection) have been globally deployed. Evolving ITS, including vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I) communications, vehicle-to-network (V2N) and vehicle-to-pedestrian (V2P) have been regionally deployed to assist safe driving. Communicating with moving vehicles is one of the typical use cases for radiocommunication, and a variety of ITS applications greatly depend on functionality of radiocommunication. Radiocommunication technology is essential to the next generation of ITS applications, especially to assist safe driving and potentially supports automated driving, etc.
- Evolving ITS also becomes important in resolving road traffic problems such as congestion and accidents. To resolve such road safety and efficiency related matters, the ITS systems with vehicle-to-everything communication (e.g., WAVE, ETSI ITS-G5, LTE based V2X) are studied in ITU-R.
- Recognizing that harmonized spectrum and international standards would facilitate deployment of ITS radiocommunication, agenda item 1.12 was approved by WRC-15 to study the possible global or regional harmonized frequency bands for the implementation of evolving ITS under existing mobile-service allocations. The mobile service bands being used by the evolving ITS may also be utilized by other applications and services and some of the frequency bands are also being considered under other agenda items.

Work in WP 5A

- Work being conducted in WG5A-5 chaired by Dr. YOSHINO Hitoshi, Japan
- The main activities are:
  - Development of draft CPM text for agenda item 1.12:
    - Draft CPM text: Annex 8 to Doc. 5A/650
    - Work plan: Annex 9 to Doc. 5A/650
  - Development of a draft new Recommendation:
    - Working document towards a preliminary draft new Recommendation ITU-R M.[ITS_FRQ] – "Harmonization of frequency arrangements for Intelligent Transport Systems in the mobile service": Annex 31 to Doc. 5A/650

Status of studies

- Sharing studies have been undertaken regarding use of ITS in the bands 5 725 - 5 850 MHz (in Region 1) and 5 850 - 5 925 MHz (globally), where FSS systems have been deployed. This regional result show that there is a potential for harmful interference from FSS earth stations to ITS receivers. Preliminary studies also concluded that the probability of interference from ITS devices to FSS space receivers would be negligible (although this conclusion should be revisited once the full characterization of ITS systems is completed; i.e.: when the report on ITS.USAGE would provide sufficient information on the technical characteristics of ITS systems).
- International standardization activities for ITS have been conducted by ITU-R and ISO at the global level, by ETSI, CEN, ARIB and others at the regional level, and by IEEE, SAE and other organizations in the private sector. In ITU-R, several recommendations and reports have been published (see References).

Methods (work in progress)

- **Method A:** No change to the Radio Regulations. Suppress Resolution **237 (WRC-15)**
- **Method B:** Add a new Resolution **XXX (WRC-19).** Suppress Resolution **237 (WRC-15).**
  - **Method B1:** Establish a new Resolution XXX (WRC-19) to include technical and operational aspects of evolving ITS, the globally and regionally harmonized frequency bands/ranges for evolving ITS application should refer to Recommendation ITU-R [ITS_FRQ].
  - **Method B2:** Establish a new Resolution XXX (WRC-19) to include technical and operational aspects of evolving ITS, this Resolution includes globally and regionally harmonized frequency bands/ranges for evolving ITS application.
- **Method C: Add** footnotes to the relevant parts of Radio Regulations which refer to most recent version of Recommendation ITU-R M.[ITS_FRQ]. Suppress Resolution **237 (WRC-15).**
- **Method D: Add** footnotes to the relevant parts of Article 5 in the Radio Regulations. [Add a new WRC Resolution **[B112 ITS] (WRC-19)**]**.** Suppress Resolution **237 (WRC-15).**

References (1 of 2)

- Recommendation ITU-R M.1890, “Intelligent Transport Systems – Guidelines and Objectives”, 2011.
- Recommendation ITU-R M.1453, “Intelligent Transport Systems – Dedicated Short Range Communications at 5.8 GHz”, 2005.
- Recommendation ITU-R M.1452, “Millimetre wave radiocommunication systems for ITS applications”, 2012.
- Report ITU-R M.2228, “Advanced Intelligent Transport Systems (ITS) radiocommunications”, 2012.
- Recommendation ITU-R M.2084, “Radio interface standards of vehicle-to-vehicle and vehicle-to-infrastructure communications for intelligent transport systems applications”, 2015.

References (2 of 2)

- Work in progress within WP 5A:
  - Preliminary draft revision of Recommendation ITU-R M.2084 – "Radio interface standards of vehicle-to-vehicle and vehicle-to-infrastructure communications for Intelligent Transport System applications": Annex 30 to Doc. 5A/650
  - Working document towards a preliminary draft revision of Recommendation ITU-R M.1890 – "Operational radiocommunication objectives and requirements for advanced intelligent transport systems": Annex 32 to Doc. 5A/650
  - Working document toward a preliminary draft new Report ITU-R M.[ITS USAGE] – "Intelligent transport systems (ITS) usage in ITU Member States": Annex 29 to Doc. 5A/650