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| Cluj-Napoca, Romania, 4th - 7th July 2017 |
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| Summary:  |
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| Proposal:  |
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1. The following pages are intended to be compiled in one CEPT Brief on AI 9

DRAFT CEPT BRIEF ON AGENDA ITEM 9.1. – ISSUE 9.1.5

9.1.5 Resolution 764 (WRC‑15) – Consideration of the technical and regulatory impacts of referencing Recommendations ITU-R M.1638-1 and M.1849-1 in Nos 5.447F and 5.450A of the Radio Regulations;

# ISSUE

This Agenda item comes under Agenda item 9: to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention

Agenda item 9.1.5 addresses possible changes to the footnotes referenced in the allocations in 5 250-5 350 MHz and 5 470-5 725 MHz which gives protection to radiolocation service from RLANs.

# Preliminary CEPT position

CEPT is of the view that Recommendation ITU-R M.1849-1 (on Met based radars) can be referenced in No 5.450A without changes to the allocation conditions of the frequency band 5 470-5 725 MHz for the incumbent radio services.

CEPT is still investigating the potential technical and regulatory impacts of referencing Recommendation ITU-R M.1638-1 (on radars except Met radars) in Nos 5.447F and 5.450A, in particular in the light of DFS specifications, noting that studies have shown that, if the reference to Recommendation ITU-R M.1638 is updated, there may be undue constraints placed on the existing mobile service (WAS including RLAN), since the mobile service (WAS including RLAN) cannot ensure the required protection of some types of radars in Recommendation ITU-R M.1638-1.

# Background

Recommendation ITU-R М.1638-0 is incorporated in Radio Regulations by reference in Nos. 5.447F and 5.450А. In accordance with these RR provisions for protection of radiodetermination services in the frequency bands 5 250-5 350 MHz and 5 470-5 725 MHz more stringent protection criteria shall not be imposed based on system characteristics and interference criteria, than those stated in Recommendation ITU‑R M.1638-0. However, since the allocation for WAS/RLAN was made in WRC-03 this Recommendation has been revised. As a result of this revision of Recommendation ITU‑R M.1638-1 the list of radiolocation radars operating in the frequency range 5 GHz contained in the Recommendation has increased. In addition, the information with respect to the ground based meteorological radars has been moved to a separate Recommendation ITU-R М.1849-1. Both of these new Recommendations are not currently incorporated into the Radio Regulations. Therefore, for Nos 5.447F and 5.450А currently there is no clarification with respect to the latest version of Recommendation incorporated by reference in Radio Regulations. The work is to investigate the technical and regulatory impacts on the allocations referred to in Nos 5.447F and 5.450A that would result from referencing Recommendations ITU-R M.1638-1 M.1849-1 in place of the original Recommendation ITU‑R M.1638-0.

Recommendation ITU‑R M.1638-1 gives the Characteristics of and protection criteria for sharing studies for radiolocation (except ground based meteorological radars) and aeronautical radionavigation radars operating in the frequency bands between 5 250 and 5 850 MHz.

Recommendation ITU-R M.1849-1 gives the technical and operational aspects of ground-based meteorological radars.

[CEPT has carried out a significant amount of work to study coexistence between RLANs and new radar systems (not included in Recommendation ITU-R M.1638-0), in particular bi-static radars and fast frequency-hopping radars which operate in 5250-5850 MHz range.[[1]](#footnote-1) Neither CEPT Report 57 nor Report 64, however, provide recommendation on appropriate mitigation techniques necessary to protect these radars. In fact, as noted in the brief for agenda item 1.16, “Currently, the only realistic mitigation technique identified to protect radars from RLAN interference is the DFS (Dynamic Frequency Selection). However, the existing DFS techniques at 5 GHz have not been designed to protect radars that employ advanced and fast frequency hopping techniques as well as bi-static radars.”

The absence of any identified viable mitigation techniques confirms that a requirement to protect new radar systems in Recommendation ITU-R M.1638-1 can be achieved only by precluding RLAN operations in the 5 GHz band.]

or

[It should also be noted that there is already a significant roll out of WAS/RLAN devices in the band that have been designed to share with and recognise the radio determination systems contained in the original Recommendation ITU‑R M.1638‑0. There is no guarantee that these WAS/RLAN devices will be able to share with and recognise any new radio determination systems contained in the new Recommendations ITU‑R M.1638‑1 and Recommendation ITU‑R M.1849‑1.]

[The aim of the agenda item and the associated Resolution 764 (WRC‑15), however, is to ensure that no undue constraints are imposed on the services referenced in Nos [5.447F](file:///C%3A%5C%5CUsers%5C%5CTRISTANT%5C%5CDocuments%5C%5CA-TRAVAIL%5C%5CWRC-19%5C%5CAgenda%5C%5C5.447F.docx) and [5.450A](file:///C%3A%5C%5CUsers%5C%5CTRISTANT%5C%5CDocuments%5C%5CA-TRAVAIL%5C%5CWRC-19%5C%5CCPG%5C%5CCPG-PTD%5C%5CPTD-2%20%28Helsinki%20Janv%202017%29%5C%5CContribution%20EUMETNET%5C%5C5.450A.docx)footnotes and then to take any regulatory action as appropriate.

The aim of the agenda item and the associated Resolution 764 (WRC‑15), however, is to ensure that no undue constraints are imposed on the services referenced in Nos [5.447F](file:///C%3A%5C%5CUsers%5C%5CTRISTANT%5C%5CDocuments%5C%5CA-TRAVAIL%5C%5CWRC-19%5C%5CAgenda%5C%5C5.447F.docx) and [5.450A](file:///C%3A%5C%5CUsers%5C%5CTRISTANT%5C%5CDocuments%5C%5CA-TRAVAIL%5C%5CWRC-19%5C%5CCPG%5C%5CCPG-PTD%5C%5CPTD-2%20%28Helsinki%20Janv%202017%29%5C%5CContribution%20EUMETNET%5C%5C5.450A.docx) footnotes and then to take any regulatory action as appropriate.

Considering that according to [Cisco VNI](http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.html), by the year 2020, up to 3 billion RLAN (Wi-F) devices will be shipped per year with almost all devices equipped with 802.11ac (i.e., 5 GHz band) and that functionality of all these devices is entirely dependent on access to 5 GHz, obviously, precluding RLAN operations in the 5 GHz band would be undue and unacceptable constraint.] The comparison of the technical characteristics of the meteorological radars given in Recommendations ITU-R M.1638-0 and M.1849-1, operating in the frequency band 5 470-5 725 MHz showed that both Recommendations contain the technical characteristics of the meteorological radars leading to the lowest interference protection level.

In addition, an analysis of the relevant DFS detection by WAS/RLAN comparing the meteorological radars described in Recommendations ITU-R M.1638-0 and M.1849-1 shows that that adding a new reference to Recommendation ITU‑R M.1849‑1 to Nos [5.447F](file:///C%3A%5CUsers%5CTRISTANT%5CDocuments%5CA-TRAVAIL%5CWRC-19%5CAgenda%5C5.447F.docx) and [5.450A](file:///C%3A%5CUsers%5CTRISTANT%5CDocuments%5CA-TRAVAIL%5CWRC-19%5CCPG%5CCPG-PTD%5CPTD-2%20%28Helsinki%20Janv%202017%29%5CContribution%20EUMETNET%5C5.450A.docx) will not impose more stringent protection criteria on the mobile service, in particular RLAN/WAS, and will keep unchanged the protection of meteorological radars.

Therefore, a reference to Recommendation ITU-R M.1849-1 in No 5.450A will not lead to any changes of allocation conditions of the frequency band 5 470-5 725 MHz to the incumbent radio services. Possible reference of Recommendation ITU-RM.1849-1 in No 5.447F related to the band 5 250-5 350 MHz is still under consideration.

[Additional studies are needed to assess the potential technical and regulatory impacts of referencing Recommendation ITU-R M.1638-1 in Nos 5.447F and 5.450A, taking in particular into account the current RLAN/WAS DFS specifications.]

or

[An analysis of the technical characteristics of the radars given in Recommendation ITU-R M.1638-0 and M.1638-1, operating in the frequency bands 5250-5350 MHz and 5470-5725 MHz showed that the technical characteristics of the additional radars introduced by Recommendation ITU-R M. 1638-1 will impose more stringent protection criteria on the mobile service, in particular WAS/RLAN DFS specifications.]

# List of relevant documents

ITU-Documentation (Recommendations, Reports, other)

* Recommendation ITU-R M.1638-0 “Characteristics of and protection criteria for sharing studies for radiolocation, aeronautical radionavigation and meteorological radars operating in the frequency bands between 5 250 and 5 850 MHz”
* Recommendation ITU-R M.1638-1 Characteristics of and protection criteria for sharing studies for radiolocation (except ground based meteorological radars) and aeronautical radionavigation radars operating in the frequency bands between 5 250 and 5 850 MHz
* Recommendation ITU-R M.1849-1 “Technical and operational aspects of ground-based meteorological radars”

CEPT and/or ECC Documentation (Decisions, Recommendations, Reports)

EU Documentation (Directives, Decisions, Recommendations, other), if applicable

# Actions to be taken

To investigate the technical and regulatory impacts on the services referred to in Nos 5.447F and 5.450A that would result from referencing Recommendation ITU-R M.1638-1 in place of Recommendation ITU-R M.1638-0;

To investigate the technical impacts on the services referred to in Nos 5.447F and 5.450A that would result from adding a new reference to Recommendation ITU-R M.1849-1;

To develop a methodology with proposals to change the provisions of Radio Regulations as required.

# Relevant information from outside CEPT (examples of these are below)

## European Union (date of proposal)

## Regional telecommunication organisations

APT (date of proposal)

ATU (date of proposal)

Arab Group (15-20 April 2017)

Follow up the studies and ensure protection of the existing services without adding new restrictions on them.

CITEL (date of proposal)

RCC (version of 14 April, 2017)

The RCC Administrations consider that additional studies on compatibility between WAS/RLAN systems and radiolocation systems might be required, in addition to those which have been already conducted in preparation to WRC-15 and which have been identified in WRC-19 agenda item 1.16, and they should take into account parameters of new radiolocation systems, described in Recommendations ITU-R M.1638-1 and M.1849-1.

The RCC Administrations are in favour of maintaining the conditions for use of the allocation of the frequency bands 5250–5350 MHz and 5470–5725 MHz by radiodetermination services.

The RSS Administrations consider that reference to Recommendations ITU-R М.1638-1 and М.1849-1 in the RR No. 5.450А would not result in changing the conditions for use of the frequency band 5470–5725 MHz allocations to services.

## International organisations

IATA (date of proposal)

ICAO (date of proposal)

IMO (date of proposal)

SFCG (date of proposal)

Although this agenda item does not appear to involve space science services, SFCG members will continue to monitor the developments of this agenda item in WP 5A for any potential outcomes identified that could impact space science service operations.

WMO and EUMETNET (21/11/2016)

Support referencing Recommendation ITU-R M.1849-1 in No 5.450A of the Radio Regulations

## Regional organisations

ESA/SFCG(June 2016)

Although this agenda item does not appear to involve space science services, SFCG members will continue to monitor the developments of this agenda item in WP 5A for any potential outcomes identified that could impact space science service operations.

Eurocontrol (date of proposal)

## OTHER INTERNATIONAL AND REGIONAL ORGANISATIONS

NATO Military Assessment (27 June 2017)

This NATO military assessment summary is a common military assessment of the NATO Nations on the potential impacts and benefits of Agenda Item 9.1 issue 9.15. It does not constitute a common position of the NATO Nations

Modifications made in Recommendation ITU-R M. 1638-1 provide relevant information on currently deployed military radars (information previously missing in Rec. ITU-R M. 1638-0). The characteristics of radars included in ITU-R M.1638-1 are required within ITU-R and/or CEPT in order to ensure currently deployed radar characteristics are considered in the sharing studies. These air, land and naval radars are indispensable for the NATO-wide operation of tactical and weapon systems and include frequency hopping radars, e.g. Air Defence High Power Radars accomplishing a variety of missions in particular as part of the NATO Integrated Air and Missile Defence System (NATINAMDS).

EBU (date of proposal)

GSMA (date of proposal)

CRAF (date of proposal)

1. Also see ITU-R Doc. 5A/298, Annex 24 and Annex 27 and Report of CPM to WRC-15, section 1/1.1/4.1.11.2 [↑](#footnote-ref-1)