



Thailand

PRELIMINARY VIEWS ON WRC-15 AGENDA ITEMS 7 (ISSUES B, C, AND H) AND 9.1 (ISSUE 9.1.3)

Agenda Item 7: *to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution 86 (Rev.WRC-07) to facilitate rational, efficient, and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;*

Resolution 86 (Rev.WRC-07) – Implementation of Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference

Introduction

According to the Resolution 86 of the Plenipotentiary Conference (Rev.WRC-07), WRC-19 is invited to consider the matters which deal with regulatory deficiencies and improvements in current procedures/related appendices of the Radio Regulations for frequency assignments pertaining to the space services in order to reflect the latest technologies, as far as possible.

In response to the resolution, the scope of this Agenda Item 7 is determined to study possible changes and other options in the advance publication, coordination, notification and recording procedures of the Radio Regulations for frequency assignments to the satellite systems. Any proposals under this Agenda Item which have been identified by the Administrations and the concerned organization are requested to consider and discuss for finding the final appropriation.

This proposal specifically provides the preliminary views on Issues B, C and H.

Issue B: Application of coordination arc in the Ka-band, to determine coordination requirements between the FSS and other satellite services

1. Background

WRC-19 agenda item 7, Issue B, proposes the introduction of the coordination arc with a value of 8 degrees as coordination criteria between FSS and MSS systems and MSS systems, in the frequency bands 29.5-30 GHz (Earth-to-space)/19.7-20.2 GHz (space-to-Earth) in all 3 Regions, as substitution of the existing trigger of coordination $\Delta T/T > 6\%$. The reasons to make such proposal are:

- According to the current Radio Regulations, to determine whether coordination under RR No. 9.7 is required between FSS vs FSS satellite networks, coordination arc of 8° is the coordination criteria applied.

- Results of studies show that earth station terminals used in the MSS and FSS in the Ka-band are quite similar. Therefore, it can be considered that the coordination arc that currently trigger coordination between FSS systems in an effective and efficient manner, can be applied to trigger coordination between MSS and FSS systems and MSS systems.
- Introduction of the coordination arc will reduce the number of Administrations identified for coordination, reducing the number of coordination processes and resulting in a reduction of required resources in Administrations, operators, Bureau, etc.
- Administration will always have the possibility to request application of RR No. **9.41** to include additional satellite networks affected, taking into account the $\Delta T/T > 6\%$ criteria.

Currently in the Radio Regulations, to determine whether coordination under RR No. **9.7** is required, in the frequency bands 29.5-30 GHz (Earth-to-space)/19.7-20.2 GHz (space-to-Earth) in all 3 Regions the following criteria is applied:

- FSS vs FSS: Coordination arc of 8°
- FSS vs MSS: $\Delta T/T > 6\%$
- MSS vs MSS: $\Delta T/T > 6\%$

Taking into account that coordination arc criteria is used to determine coordination between FSS systems and that it works effectively and efficiently, the Issue studies the possibility to apply this same coordination criteria between MSS systems and between MSS and FSS systems.

2. Preliminary View

With the aim of reducing the unnecessary coordination procedure, Thailand supports the ITU-R studies on the possibility of application of the coordination arc mechanism to determine the coordination requirements between FSS and MSS systems and between MSS systems in the frequency bands 29.5-30 GHz (Earth-to-space) and 19.7-20.2 GHz (space-to-Earth) in all 3 Regions, replacing with the existing coordination criteria $\Delta T/T > 6\%$.

a) Issue C: Issues for which consensus was achieved in the ITU-R

1. Background

Issue C is a collection of several different topics that are viewed as being straightforward and for which consensus was readily achieved within ITU-R. The issues address such things as resolving inconsistencies in regulatory provisions, clarifying certain existing practices, or increasing transparency in the regulatory process.

The last ITU-R WP4A meeting (17 - 27 October 2017) agreed to identify the 7 sub-issues (C1 - C7) under Issue C.

2. Preliminary View

To resolve inconsistencies in regulatory provisions and to increase transparency in the regulatory process, Thailand supports the seven sub-issues under Issue C which are:

- C1: to address the regulatory inconsistency identified in this issue is to align the text of paragraph 8.13 of Article 8 of RR Appendix **30B** with that of RR No. **11.43A** of RR Article **11**.
- C2: to add another footnote to paragraph 6.1 of Article 6 of RR Appendix **30B** to allow administration as the follows:

- a) to submit under paragraph 6.1 an additional use for the two blocks/sub-bands in 10-11 GHz but only bring into use one of the blocks/one sub-band or,
 - b) to submit under paragraph 6.1 an application of an additional use for only one of the two blocks/ sub-bands in 10-11 GHz and notify and bring into use that block/sub-band only;
 - c) to allow/authorize the Bureau, in applying Article 6, to act according to the nature of submission and further process them accordingly, i.e. to process the two blocks/sub bands or process one of the two block/sub-bands and further process the submission as received;
 - d) to allow/authorize the Bureau, in applying Article 8, to maintain one of the two blocks/sub-bands as notified even though the entire two blocks/sub-bands were submitted under Article 6 and successfully coordinated under that Article but only one of the block/sub-bands is notified or brought into use. (4A/425)
- C3: to add a new provision in Article 6 of RR Appendix **30B** to clearly state that § 6.13 to 6.15 of RR Appendix **30B** do not apply in the context of requirements associated with § 6.6 of RR Appendix **30B**.
- C4: to solidify the information required for submission for entry into the List under § 4.1.12 and for Notification under §§ 5.1.1 and 5.1.2 of RR Appendices **30** and **30A** which seem to be identical.
- C5: to be considered advantageous to Notifying Administrations if the Bureau sends a reminder of the option to resubmit returned frequency assignments under RR No. **11.37** or **11.38**. Modification of RR No. **11.46** requiring the Bureau to remind the Notifying Administration of the 6 month deadline would aid Administrations who may have had difficulties in receiving the communication of returned frequency assignments.
- C6: to modify § 6.17 to allow one submission to be treated in respect of both provisions and modify RR Appendix **4** to enable this.
- C7: to add a new provision 6.15*bis* to Article 6 of RR Appendix **30B** in order to recognize the possibility of obtaining agreement from affected administrations for a specified period.

b) Issue H: Modifications to RR Appendix 4 data elements to be provided for non-GSO satellite networks/systems

1. Background

The RR Appendix **4** items provided in the Advance Publication Information (API) or the Coordination Request (CR/C) for satellite networks or systems are used initially by administrations to identify potential interference scenarios to their existing and planned systems and to formulate their comments under RR No. **9.3** or RR No. **9.52** as appropriate. The capability of these administrations to identify such potential scenarios depends, amongst other things, on whether the satellite orbits can be modelled properly based on the information provided in the API or in the CR/C, as appropriate. For a satellite in a geostationary (GSO) network, the only information required is the nominal orbital location of the satellite. However, the modelling of the orbit of satellites in non-geostationary (NGSO) systems requires significantly more information than a GSO satellite network. Recent analysis performed for NGSO satellite networks or systems (API or CR/C) as published in the Radiocommunication Bureau International Frequency Information Circular (also known as BR IFIC) have shown that, in some instances, there is need for additional information in order to model properly the satellite orbits.

The last ITU-R WP4A meeting (17 - 27 October 2017) agreed to address and studies the need for additional data elements for non-GSO systems not subject to Section II of RR Article 9 under the Issue H.

2. Preliminary View

To enhance the capability of administrations to identify potential interference a scenario, Thailand agrees to the modifications to RR Appendix 4 data elements to be additionally provided for non-GSO satellite networks/systems not subject to Section II of RR Article 9.

Agenda Item 9.1 Issue 9.1.3:

“Resolution 157 (WRC-15) - Study of technical and operational issues and regulatory provisions for new non-geostationary-satellite orbit systems in the 3 700-4 200 MHz, 4 500-4 800 MHz, 5 925-6 425 MHz and 6 725 7 025 MHz frequency bands allocated to the fixed-satellite service.”

Background

Working Party 4A is currently undertaking studies in response to Resolution 157 (WRC-15) which examines technical and operational issues and regulatory provisions for new non-geostationary-satellite orbit systems in the 3 700-4 200 MHz, 4 500-4 800 MHz, 5 925-6 425 MHz and 6 725-7 025 MHz frequency bands allocated to the fixed-satellite service, while ensuring that existing services are protected.

Specifically, in the frequency band 6 725-7 025 MHz, *resolves to invite d)* requests that the studies address protection of feeder links for mobile satellite service (MSS) systems operating in the space-to-Earth direction from unacceptable interference, pursuant to existing criteria, from co-frequency, non-GSO fixed-satellite service (FSS) system earth stations operating in the Earth-to-space direction.

Relevant Working Parties have been conducting several sharing and compatibility studies regarding sharing between circular-orbit non-GSO systems and GSO systems under WRC-19 agenda item 9.1.3. In the 6/4 GHz band, there is minimal degradation due to propagation losses and thus the margin for protection is almost entirely dominated by the interference statistics. These studies considered the operation of a representative circular-orbit non-GSO system intended to provide global broadband services. The study shows that the operation of the circular-orbit non-GSO system considered in the 6/4 GHz bands results in which FSS GSO systems are not protected (the exceedance of interference level as much as 40 dB). The application of mitigation techniques considered in the study does little to prevent the exceedance of the protection requirements.

Preliminary View

Thailand supports ITU-R studies of technical and operational issues and regulatory provisions for the new non-geostationary-satellite orbit systems in the 3 700-4 200 MHz, 4 500-4 800 MHz, 5 925-6 425 MHz and 6 725 7 025 MHz frequency bands allocated to the fixed-satellite service. Also, the new non-geostationary-satellite systems shall not cause any harmful interference to nor claim protection from geostationary satellite networks in fixed satellite services.