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| A close up of a sign  Description automatically generated | **World Radiocommunication Conference (WRC-23)Dubai, 20 November - 15 December 2023** |  |
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| PLENARY MEETING | **Addendum 1 toDocument 62(Add.22)-E** |
|  | **26 September 2023** |
|  | **Original: English** |
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| Asia-Pacific Telecommunity Common Proposals |
| PROPOSALS FOR THE WORK OF THE CONFERENCE |
|  |
| Agenda item 7(A) |

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

7(A) Topic A - Tolerances for certain orbital characteristics of non-GSO space stations in the FSS, BSS or MSS

Introduction

The APT Members have considered WRC-23 agenda item 7, Topic A, and developed APT Common Proposals to support Method A2 Option A to address this topic. In addition:

– APT Members support the development of the definition of tolerances of non-geostationary-satellite orbit (non-GSO) space stations in the FSS, BSS and MSS with frequency assignments subject to Resolution **35 (WRC-19)**. APT Members support the development of these tolerances in the context of ITU regulatory procedures such as bringing into use (BIU), bringing back into use (BBIU) and the milestone-based approach.

– APT Members are of the view that the development of the definition of tolerances of non-GSO space stations in the FSS, BSS and MSS, should be limited to the inclination of the orbital plane, the altitude of the apogee of the space station, the altitude of the perigee of the space station and the argument of the perigee of the orbital plane, to account for potential differences between the notified and deployed orbital characteristics.

– APT Members are also of the view that appropriate regulatory consequences/measures should be developed under RR Nos. **11.44C**, **11.49.2** and **11.51**, taking into account the operational aspects of the non-GSO space stations in the FSS, BSS and MSS with frequency assignments subject to Resolution **35 (WRC-19)**, if the operations are beyond the specified allowable tolerances. These regulatory measures should be implementable and not have any retroactive application. Moreover, necessary transitional measures for application of the decision of WRC-23 may need to be developed.

– APT Members do not support overregulation nor regulatory methods that are too stringent and inflexible, to allow the operation of existing and new satellites with the possibility to make adjustments to them, in order to comply with the established orbital tolerances.

– For frequency assignments of non-GSO systems in the FSS, BSS and MSS subject to Resolution **35 (WRC-19)** notified prior to the entry into force of the Final Acts of WRC-23, APT Members support allowing an update to the notified orbital parameters within a reasonable range, based on the conditions of the new draft Resolution, in order to align with the actual deployed characteristics, without changing the date of receipt of the associated notice.

Proposal

ARTICLE 11

Notification and recording of frequency
assignments1, 2, 3, 4, 5, 6, 7    (WRC‑19)

Section II − Examination of notices and recording of frequency assignments
in the Master Register

MOD ACP/62A22A1/1#1967

11.44C A frequency assignment to a space station in a non-geostationary-satellite orbit network or system in the fixed-satellite service, the mobile-satellite service or the broadcasting-satellite service shall be considered as having been brought into use when a space station with the capability of transmitting or receiving that frequency assignment has been deployed and maintained on one of the notified orbital plane(s)MOD 27 of the non‑geostationary satellite network or system for a continuous period of 90 days, irrespective of the notified number of orbital planes and satellites per orbital plane in the network or system. The notifying administration shall so inform the Bureau within 30 days from the end of the 90‑day period25, 28, 29. On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC subsequently.     (WRC‑23)

MOD ACP/62A22A1/2#1968

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27 11.44C.1 and **11.44D.1** For the purposes ofNo. **11.44C** or No. **11.44D**, the term “notified orbital plane” means an orbital plane of the non-geostationary-satellite system, as provided to the Bureau in the most recent notification information for the system’s frequency assignments, that corresponds to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.5.c (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4**. For the purposes of No. **11.44C**, Resolution **[ACP-A7(A)-NGSO-FSS-BSS-MSS**-**Tolerance] (WRC‑23)** also applies for space stations of a non-GSO FSS, BSS or MSS system.     (WRC‑23)

MOD ACP/62A22A1/3#1969

11.49 Wherever the use of a recorded frequency assignment to a space station of a satellite network or to all space stations of a non-geostationary-satellite system is suspended for a period exceeding six months, the notifying administration shall inform the Bureau of the date on which such use was suspended. When the recorded assignment is brought back into use, the notifying administration shall, subject to the provisions of Nos. **11.49.1**, **11.49.2**, **11.49.3** or **11.49.4**, as applicable, so inform the Bureau, as soon as possible. On receipt of the information sent under this provision, the Bureau shall make that information available as soon as possible on the ITU website and shall publish it in the BR IFIC. The date on which the recorded assignment is brought back into use32, 33, 34, 35, MOD 36shall be not later than three years from the date on which the use of the frequency assignment was suspended, provided that the notifying administration informs the Bureau of the suspension within six months from the date on which the use was suspended. If the notifying administration informs the Bureau of the suspension more than six months after the date on which the use of the frequency assignment was suspended, this three-year time period shall be reduced. In this case, the amount by which the three-year period shall be reduced shall be equal to the amount of time that has elapsed between the end of the six-month period and the date that the Bureau is informed of the suspension. If the notifying administration informs the Bureau of the suspension more than 21 months after the date on which the use of the frequency assignment was suspended, the frequency assignment shall be cancelled. Ninety days before the end of the period of suspension, the Bureau shall send a reminder to the notifying administration. If the Bureau does not receive the declaration of the commencement of the bringing back into use period within thirty days following the limit date of the period of suspension established in accordance with this provision, it shall cancel the entry in the Master Register. The Bureau shall, however, inform the administration concerned before taking such action.     (WRC‑23)

MOD ACP/62A22A1/4#1970

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36 11.49.5 For the purposes of Nos. **11.49.2** and **11.49.3**, the term “notified orbital plane” means an orbital plane of the non-geostationary-satellite system, as provided to the Bureau in the most recent notification information for the system’s frequency assignments, that corresponds to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.5.c (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4**.For the purposes of No. **11.49.2**, Resolution **[ACP-A7(A)-NGSO-FSS-BSS-MSS**-**Tolerance] (WRC‑23)** also applies for space stations of a non-GSO FSS, BSS or MSS system.     (WRC‑23)

Section III – Maintenance of the recording of frequency assignments to non-geostationary-satellite systems in the Master Register     (WRC‑19)

MOD ACP/62A22A1/5#1971

11.51 For frequency assignments to some non-geostationary-satellite systems in specific frequency bands and services, Resolution **35 (WRC‑19)** andResolution **[ACP-A7(A)-NGSO-FSS-BSS-MSS**-**Tolerance] (WRC‑23)** shall apply.     (WRC‑23)

ADD ACP/62A22A1/6#1972

Draft New Resolution
[ACP-A7(A)-NGSO-FSS-BSS-MSS-Tolerance] (WRC‑23)

Tolerances for certain orbital characteristics of space stations
deployed as part of non-GSO FSS, BSS or MSS systems

The World Radiocommunication Conference (Dubai, 2023),

considering

that WRC‑19 invited ITU‑R to study, as a matter of urgency, tolerances for certain orbital characteristics of the non-geostationary-satellite orbit (non-GSO) space stations of the fixed-satellite service (FSS), the broadcasting-satellite service (BSS) and the mobile-satellite service (MSS) to account for the potential differences between the notified and deployed orbital characteristics for the inclination of the orbital plane, the altitude of the apogee of the space station, the altitude of the perigee of the space station and the argument of the perigee of the orbital plane,

noting

that, for the purposes of this Resolution, tolerances refer to the maximum variations allowed between the value notified and/or recorded for the orbital characteristics referred to in the *considering* above and those associated with the actual deployment of satellites of the non-GSO FSS, BSS or MSS under consideration,

recognizing

*a)* that the use of frequency assignments to non-GSO FSS, BSS and MSS are subject to the regulatory and operational limits stipulated in the Radio Regulations;

*b)* that Nos. **11.44C**, **11.49.2** and **11.51** require the deployment of satellites on notified orbital planes;

*c)* that orbital tolerances for a non-GSO system should take into account design considerations including the atmospheric drag characteristics of the altitude chosen and solar cycle predictions, which could have an impact on the lifetime of the satellites / that orbital tolerances for a non-GSO system should take into account coexistence of non-GSO systems at similar orbit;

*d)* that there are legitimate reasons for a satellite operating at a variance from its notified orbital characteristics, such as maintaining separation between satellites in the same system or with satellites in another satellite system, in order to minimize the risk of collision;

*e)* that satellites on highly elliptical orbits and high inclined orbits have significant orbital precession rates and, consequently, restrictive orbital-keeping requirements and correction of orbit parameters may lead to a reduction of such satellites lifetime and to a frequent replacement;

*f)* that this Resolution defines the maximum acceptable variation of certain orbital characteristics of a non-GSO system to be considered as operating within its notified orbital plane and does not preclude other coordination requests or notification filings under Articles **9** and **11** of the Radio Regulations for other non-GSO systems at the same altitude and tolerance;

*g)* that administrations and their operators may establish separate operational arrangements regarding coexistence of the physical orbits of satellite systems and networks, including satellites in geostationary-satellite orbits and non-GSO, and that such arrangements are not addressed by the ITU Radio Regulations which deal with avoidance of harmful interference due to radio frequency usage,

resolves

1 that, as of *the entry into force of the Final Acts of WRC-23* for space stations with an orbital eccentricity[[1]](#footnote-1)1 less than 0.5 notified as part of a non-GSO FSS, BSS or MSS system subject to Resolution **35 (WRC‑19)** with an apogee altitude less than 15 000 km:

*a)* the observed variation for the altitude (Δ*altObserved*) of both perigee and apogee, with regard to the altitude notified shall not exceed allowed variation for the altitude (Δ*altAllowed* ) (see the Annex);

*b)* the observed variation for the inclination (Δ*iObserved*) with regard to the inclination shall not exceed allowed variation (Δ*iAllowed*) for the inclination (see the Annex);

2 that, as of the entry into force of the Final Acts of WRC‑23, any space station deployed as part of a non-GSO FSS, BSS or MSS system subject to Resolution **35** **(WRC‑19)** that has received unfavourable finding under *resolves* 1:

*a)* shall not cause unacceptable interference to and shall not claim protection from the other systems/networks;

*b)* shall not be considered in the deployment information submitted under *resolves*7 and 8 of Resolution **35 (WRC‑19)** except if the tolerances referred to in *resolves*1 is not exceeded for a maximum of 30/45 consecutive days;

3 that, for non-GSO systems to which *resolves*1 apply and for which the latest notification information was received prior to 16 December 2023, the notifying administration could communicate to BR no later than [1 July 2024] a new notification according to its operational parameters;

4 that, upon receipt of the modifications to the characteristics of the non-GSO system as referred to in *resolves* 3:

*a)* BR shall promptly make this information available “as received” on the ITU website;

*b)* BR shall conduct an examination for compliance with Nos. **11.43A**/**11.43B**, as appropriate;

*c)* BR, for the purpose of No. **11.43B**, shall retain the original dates of entry of the frequency assignments in the Master Register if:

i) BR reaches a favourable finding under No. **11.31**; and

ii) the altitude differences of the perigee and apogee of each plane between the new parameters submitted as referred to in *resolves*3 and the latest notification information received by the BR prior to 16 December 2023, are respectively lower than [100] km; and

iii) the inclination differences of each plane between the new parameters submitted as referred to in *resolves*3 and the latest notification information received by the BR prior to 16 December 2023, are respectively lower than [3] degree; and

iv) the modifications are limited to the angle of inclination (Appendix **4** data item A.4.b.4.a), the period (Appendix **4** data item A.4.b.4.c), the altitude of the apogee (Appendix **4** data item A.4.b.4.d) and the altitude of the perigee (Appendix **4** data item A.4.b.4.e); and

v) the notifying administration provides a commitment stating that the characteristics as modified/non-GSO system will not cause more interference nor require more protection nor impose additional constraints to other systems than if the space station was deployed according to the characteristics provided in the latest notification information published in Part I‑S of the BR IFIC for the frequency assignments (see Appendix **4** data item A.23.a);

*d)* BR shall publish the information provided and its findings in the BR IFIC,

instructs the Radiocommunication Bureau

1 to take the necessary actions to implement this Resolution, including providing assistance to administrations when requested, to address the difficulties they may encounter in the implementation of this Resolution without any regulatory impact on the administrations; and

2 to report to future world radiocommunication conferences any difficulties or inconsistencies encountered in the implementation of this Resolution.

Annex to Draft New Resolution
[ACP-A7(A)-NGSO-FSS-BSS-MSS-Tolerance] (WRC‑23)

Variation for the altitude and the inclination

1 The observed variation for the altitude (Δ*altObserved*) of a non-GSO satellite is equal to:

      in kilometres

where:

 *altd*: is the observed altitude in kilometres of the deployed satellite at the perigee or apogee

 *altn*: is the altitude of the perigee or apogee in kilometres of the associated notified orbital plane of the non-GSO system.

2 The allowed variation for the altitude (Δ*altAllowed*) of a non-GSO satellite is equal to:

***Option 1***

 ∆*altAllowed =* X      in kilometres

Where X is a fixed value equal to TBD

Alternative 1: TBD e.g. 20/50

Alternative 2: TBD

***End of Option 1***

***Option 2***

 ∆*altAllowed = Y* × *altn*     in kilometres

Where Y is *a fixed percentage value* equal to TBD

***End of Option 2***

3 The observed variationfor the inclination (Δ*iObserved*) of a non-GSO satellite is equal to:

      in degrees

where:

 *id* is the observed inclination in degrees of the deployed satellite

 *in* is the inclination in degree of the associated notified orbital plane of the non-GSO system.

4 The allowed variation for the inclination (Δ*iAllowed*) of a non-GSO satellite is equal to:

***Option 1***

 ∆i*Allowed =* Z       in degrees

Where Z is a fixed value equal to TBD e.g. 2/3

***End of Option 1***

***Option 2***

  in degrees (1)

with:

 

where:

 *Re*: is the radius of the Earth (i.e. 6 378 km).

***End of Option 2***

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1. 1 The eccentricity “*e*” is equal to: ,

where:

*Ra*: distance between the centre of the Earth and the space station at apogee

*Rp*: distance between the centre of the Earth and the space station at perigee. [↑](#footnote-ref-1)