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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 | **Document 133-E** |
|  | **29 October 2023** |
|  | **Original: English** |
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| Korea (Republic of)/United States of America |
| PROPOSALS FOR THE WORK OF THE CONFERENCE |
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| Agenda item 1.15 |

1.15 to harmonize the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service globally, in accordance with Resolution **172 (WRC‑19)**;

# Introduction:

WRC‑23 agenda item 1.15 calls for studies on the possible operation of A-ESIM and M-ESIM communicating with geostationary space stations in the fixed-satellite service (FSS) in the frequency band 12.75-13.25 GHz (Earth-to-space). The use of the frequency band 12.75-13.25 GHz by geostationary-satellite networks in the FSS is subject to RR Appendix **30B**, which contains a worldwide fixed-satellite service allotment Plan and assignments in the List and has its own regulatory procedures and technical criteria. The frequency band 12.75-13.25 GHz is also allocated globally to the fixed and mobile service on a primary basis. The CPM Report provides two methods to satisfy the agenda item:

– Method A: This method proposes no changes to the RR and suppression of Resolution **172 (WRC‑19)** due to the existence of various uncertainties in the implementation of several courses of action referred to in the potential Resolution associated with Method B.

– Method B: This method proposes to add a new footnote No. **5.A115** in RR Article **5** and a reference to a new WRC Resolution providing the conditions for the operation of ESIM and protection of the services to which the frequency bands are allocated, and consequential suppression of Resolution **172 (WRC‑19)**.

ITU-R studies were conducted to consider the protection of stations operating in the terrestrial services from a possible new application of the FSS ESIM operations. These studies include significant deficiencies such that it is impossible to conclude that protection of the current and planned systems of incumbent terrestrial services is ensured. The studies narrowly consider a single latitude of 51° N for operations of the terrestrial services, which combined with the satellite spacing and spot beam satellite coverage example, downwardly skews the number of visible GSO satellites and by association, the number of possible A-ESIM interference sources. Further decreasing this underestimation, the deployment density of A-ESIM is downwardly skewed by assuming the aircraft will be uniformly distributed across the satellite receive beam coverage and that the visible area of the terrestrial station will only marginally intersect with the satellite footprint at a ratio of approximately 1 to 8. Comparing to other frequency bands used for ESIMs (e.g. 29 GHz), at 12.75 GHz the path loss the interfering signal goes through is 6 dB less and therefore the range of its harmful impact on terrestrial increases accordingly. As seen in other ITU-R studies (e.g. WRC‑19 agenda item 1.5 and WRC-23 agenda item 1.16), the case of airports and taxi/take off/landing is the limiting case which means the uniform distribution of ESIMs through the beam is not valid. The combination of these assumptions vastly underestimates the interference potential into terrestrial services. By way of comparison, these assumptions are inconsistent with studies conducted with other incumbent services under this agenda item, like the aeronautical radionavigation service, which models the real-world behaviour of the aircraft these A-ESIM seek to serve. For these reasons, the sharing studies have failed to demonstrate that protection is ensured for the current and planned systems of incumbent terrestrial services. Given the concerns noted above with the studies, the Republic of Korea and the United States of America support Method A.

NOC KOR/USA/133/1#1871

ARTICLES

**Reasons:** In order to ensure the protection of incumbent terrestrial services and harmonize the frequency band 12.75-13.25 GHz for mobile broadband operations.

NOC KOR/USA/133/2#1872

APPENDICES

**Reasons:** In order to ensure the protection of incumbent terrestrial services and harmonize the frequency band 12.75-13.25 GHz for mobile broadband operations.

SUP KOR/USA/133/3

RESOLUTION 172 (WRC‑19)

Operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space)

**Reasons:** Consequential action.

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