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| **34 MEETING OF PERMANENT****CONSULTATIVE COMMITTEE II:****RADIOCOMMUNICATIONS****August 12 to 16, 2019****Ottawa, Ontario, Canada** | **OEA/Ser.L/XVII.4.2.34****CCP.II-RADIO/doc. /19****1 July 2019****Original: English** |
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|  | **PRELIMINARY PROPOSAL FOR WRC-19 ON AGENDA ITEM 10: 45 MHZ SPACEBORNE RADAR SOUNDERS** |  |
|  | **(Item on the Agenda: 3.1)** |  |
|  | **(Document submitted by the delegation of the United States of America)** |  |

**Introduction**

WRC-19 agenda item 10, recommends to Council items to include in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible items for future conferences, in accordance with Article 7 of the Convention. For this agenda item, the United States offers to CITEL PCC.II the included preliminary proposal to update item 2.2, on 45 MHz Spaceborne Radar Sounders, on the preliminary agenda for the 2023 World Radiocommunication Conference as well as updates to the associated Resolution 656 (WRC-15).

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| **World Radiocommunication Conference (WRC-19)Sharm el-Sheikh, Egypt, 28 October – 22 November 2019** |  |
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| PLENARY MEETING | **Addendum 24 toDocument 5435-E** |
|  | **13 June 2019** |
|  | **Original: English** |
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| United States of America |
| Proposals for the work of the conference |
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| Agenda item 10 |

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention.

**Background** **:**

At WRC-15 CITEL put forward Inter-American Proposals for an item to be placed on the draft agenda of WRC-23 and a Resolution calling for supporting studies. These proposals supported considering an allocation to the Earth exploration-satellite (active) service in the frequency range 40-50 MHz. These proposals were agreed at WRC-15. The draft agenda item is number 2.2 contained in Resolution 810 (WRC-15), and the supporting studies are called for in Resolution 656 (WRC-15). The United States continues to support the retention of this item on the agenda of WRC-23.

There is an interest among space agencies in using active spaceborne sensors in the 40-50 MHz frequency range for measurements of the Earth’s subsurface to provide radar maps of subsurface scattering layers with the intent to locate water/ice/deposits. Measurements at the 40-50 MHz frequency range allow the discernment of details at more than 30 meters below the surface of the Earth for favorable ground conditions. Use of frequencies below 40-50 MHz would require larger antenna, which would present difficulties to spaceborne missions implementing this application. Use of frequencies above 40-50 MHz would reduce the depth at which the spaceborne radar sounder could provide measurements. Use of a frequency range other than 40-50 MHz would require new aeronautical campaigns at the different frequency in order to assess and calibrate the measurements at that frequency for use in a spaceborne radar sounder mission.

The information obtained from a spaceborne radar sounder operating in the 40-50 MHz frequency range would be of great value to ongoing global climate change studies and administrations in their assessment of below surface water resources within their territories. Repetitive measurements of worldwide subsurface water deposits can only be practically implemented using spaceborne active sensors.

The 40-50 MHz frequency range is allocated to the fixed, mobile and broadcasting services on a primary basis. The uses of the 40.98 to 41.015 MHz frequency range by space research services are on secondary basis. Country footnotes in the Table of Frequency Allocations for the 40-50 MHz frequency range provide primary allocations for aeronautical navigation and radiolocation services in certain parts of the world. Recommendation ITU-R RS.2042-0 provides typical technical and operating characteristics for spaceborne radar sounder systems using the 40-50 MHz for use in interference and compatibility studies. Report ITU-R RS.[VHF SOUNDER] provides preliminary results of sharing studies between a 45 MHz radar sounder and incumbent fixed, mobile, broadcasting and space research services operating in the 40-50 MHz frequency range.

**Proposals :**

This future conference agenda item proposes to study the compatibility of spaceborne radar sounder operations in the 40-50 MHz frequency range with the existing allocated services. In addition, it would investigate a potential modification to the Table of Frequency Allocations to reflect an allocation to the Earth exploration-satellite service (active) on a secondary basis. This allocation would allow for the operation of spaceborne radar sounder systems in the 40-50 MHz frequency range.

ADD USA/5435A24/1

Draft New Resolution [USA-1]

Agenda for the 2023 World Radiocommunication Conference

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

...

**X.X1** to conduct, and complete in time for WRC-23, studies for a possible new secondary allocation to the Earth exploration-satellite (active) service for spaceborne radar sounders within the range of frequencies around 45 MHz, taking into account the protection of incumbent services, in accordance with Resolution **656 (WRC-19)**;

**Reasons:** To conduct studies to examine the compatibility of spaceborne radar sounder operations in the 40-50 MHz frequency range with existing allocated services and to potentially modify the Table of Frequency Allocations to reflect a secondary allocation to the Earth exploration-satellite service (active) allowing for the operation of spaceborne radar sounder systems in the 40-50 MHz frequency range.

MOD USA/5435A24/2

RESOLUTION 656 (WRC‑19)

Possible secondary allocation to the Earth exploration-satellite service (active) for spaceborne radar sounders in the range of frequencies around 45 MHz

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

considering

;

*f)* that spaceborne radars are intended to be operated only in either uninhabited or sparsely populated areas of the globe, with particular focus on deserts and polar ice fields, and only at night-time from 3 a.m. to 6 a.m. locally,

recognizing

*d)* that Recommendation ITU‑R RS.2042‑0 provides typical technical and operating characteristics for spaceborne radar sounder systems using the 40-50 MHz frequency range that should be used for interference and compatibility studies;

e) that Report ITU-R RS.[VHF SOUNDER] provides preliminary results of sharing studies between a 45 MHz radar sounder and incumbent fixed, mobile, broadcasting and space research services operating in the 40-50 MHz frequency range,

resolves to invite the 2023 World Radiocommunication Conference

to consider the results of studies on spectrum needs for a possible new secondary allocation to the Earth exploration-satellite (active) service for spaceborne radar sounders within the range of frequencies around 45 MHz, taking into account the protection of incumbent services, and take appropriate action,

invites ITU-R

1 to conduct studies on spectrum needs and sharing studies between the Earth exploration-satellite (active) service and the radiolocation, fixed, mobile, broadcasting and space research services in the 40-50 MHz frequency range;

,

invites administrations

to participate actively in the studies by submitting contributions to the ITU Radiocommunication Sector,

instructs the Secretary-General

to bring this Resolution to the attention of international and regional organizations concerned.

**Reasons:** To correct the use of text contained in *considering* and *recognizing*. Also, to recognize a new Report which contains preliminary sharing studies applicable to this proposed agenda item.

SUP USA/5435A24/3

RESOLUTION 810 (WRC‑15)

Preliminary agenda for the 2023 World Radiocommunication Conference

**Reasons:** This Resolution must be suppressed, as WRC-19 will create a new Resolution that will include the agenda for WRC-23.

**ATTACHMENT**

**Subject:** Consideration of a new secondary allocation to the Earth exploration-satellite service (active) in the frequency range 40-50 MHz.

**Origin:** United States of America

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| ***Proposal*:** To place on the agenda for WRC-23 an agenda item to conduct, and complete in time for WRC-23, studies for a possible new secondary allocation to the Earth exploration-satellite (active) service for spaceborne radar sounders within the range of frequencies around 45 MHz, taking into account the protection of incumbent services, and take appropriate action. |
| ***Background/reason*:** To allow space-based missions to operate which will: 1) understand the global thickness, inner structure, and the thermal stability of the Earth’s ice sheets such as in Greenland and Antarctica as an observable parameter of earth climate evolution, and 2) understand the occurrence, distribution and dynamics of the earth fossil aquifers in desertic environments such as northern Africa and the Arabian peninsula as key elements in understanding recent paleoclimatic changes; |
| ***Radiocommunication services concerned*:** Broadcasting service, Earth exploration-satellite service, fixed service, and mobile service |
| ***Indication of possible difficulties*:** None envisioned.  |
| ***Previous/ongoing studies on the issue*:** Studies already conducted in Working Party 7C have resulted in Recommendation ITU-R RS.2042 (Typical technical and operating characteristics for spaceborne radar sounder systems using the 40-50 MHz band) and Report ITU-R RS.[VHF Sounders] (Preliminary results of sharing studies between a 45 MHz radar sounder and incumbent fixed, mobile, broadcasting and space research services operating in the 40-50 MHz frequency range) |
| ***Studies to be carried out by*:** Working Party 7C | ***with the participation of*:** Working Parties 5A, 5C, and 6A |
| ***ITU‑R Study Groups concerned*:** Study Group 7 |
| ***ITU resource implications, including financial implications (refer to CV126)*:** Minimal. Studies of technical and operational characteristics have been completed and preliminary sharing studies have resulted in one Report. Completion of final sharing/compatibility studies may be conducted within the normal work of the Working Parties. |
| ***Common regional proposal*:** Yes/No | ***Multicountry proposal*:** Yes/No***Number of countries*:** |
| ***Remarks*** |