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| 1. **Agenda item**
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| **Agenda Item**1.12 | New secondary allocation to the Earth exploration-satellite (active) service for spaceborne radar sounders around 45 MHz |
| **Working Group** | 3 | **Sub-Working Group**  | 3-A |
| **Coordinator** | Kevin Knights | **Email** | Kevin.Knights@csiro.au |
| **WP Chair** | Dr. Wahyudi Hasbi | **Email** | wahyudi.hasbi@ieee.org |
| **Report Date** |  **5th April 2023** |
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| 1. **APT**
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| **APT Preliminary Views**CPM23-2/xxxx | APT Members are of the view that a new secondary allocation could be supported for the Earth exploration-satellite service (active) for spaceborne radar sounders in the 40-50 MHz frequency band if the current ITU-R studies, to be completed before WRC-23, show that appropriate protection of in-band and adjacent band incumbent services would be ensured while not adversely affecting those services. APT Members support a possible solution including operational limitations and establishment of PFD limits in order that protection of in-band and adjacent band incumbent services could be ensured. |
| **APT Views for modification of CPM Report**CPM23-2/xxxx | None |
| **Outcome from earlier** **APT Coord meeting** | None  |
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| 1. **Other regional groups**
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|  | **ATU**  | **ASMG** | **CEPT** | **CITEL** | **RCC** |
| **Input(s)** | CPM23-2/133 | CPM23-2/42 | CPM23-2/xxxx | CPM23-2/xxxx | CPM23-2/xxxx |
| **Summary of views/proposals** | Proposed modifications seeks to provide a reason for Method D, and to modify the parameters of the proposed new footnote RR No. 5.A112-A2-Opt2. | propose some modifications to text under Method (A2 – opt 2). Also, emphasize that Method (D) “No Change” must be kept in the CPM text. | None | None | None |
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| 1. **Summary of discussions during CPM23-2**
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| **Working documents/TEMPs etc** | CPM23 -2 Output Document [**CPM23-2/256**](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-CPM23.2-C-0256)(approved at CPM23-2 plenary)[**TEMP Doc#18**](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-CPM23.2-230327-TD-0018) (output from SWG 3a\_ai\_1.12 chaired by Mr. Bruno Espinosa (ESA)) |
| **Status as of Wednesday 5th April 2023**· A.I. 1.12 Output Document [CPM23-2/256](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-CPM23.2-C-0256) was approved without change at the CPM23-2 plenary session 1400 Wed 5th April. |
| **Status as of Monday 3rd April 2023**· A.I. 1.12 Temp Document #18 (output from SWG\_3a\_1.12) was considered at the Final plenary of WG3 at 1400 Monday.· The SWG Chair pointed out a small number of changes to and observations on the document since the conclusion of the SWG including:      -     additional view added after the SWG meeting (from Russia) in section 3.7 related to the need to note that ionospheric attenuation can vary with time-    noted that the document has 4 options for Method A1 in the draft new Resolution-    noted the previous discussion about removal of Method C, but the SWG decided to retain-    other editorial changes· Korea (Republic of) pointed out an error in the description of Method A1 in the Executive Summary (the footnote now limits the allocation in the draft new Resolution, not in the footnote). This was corrected by the Chair/Counsellor.· A.I. 1.12 [TEMP Doc#18](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-CPM23.2-230327-TD-0018)was then approved by WG3 and the resulting output document [CPM23-2/256](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-CPM23.2-C-0256) will next go to CPM23-2 plenary for consideration. |
| **Status as of Sunday 2nd April 2023**· SWG 3a\_ai\_1.12 has completed its work on the draft CPM text with 4 meetings held in total.· The resulting draft CPM text (refer [TEMP Doc#18](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-CPM23.2-230327-TD-0018)) contains five proposed methods as follows:* **Method A1** proposes a new global secondary allocation to the ESS (active) limited by footnote to the spaceborne radar sounder systems over the frequency band 40-50 MHz. The footnote references a proposed new WRC Resolution to protect incumbent services in-band and in adjacent bands. The new WRC Resolution includes four different options under *resolves*, noting that these different options are not necessarily mutually exclusive.
* **Method A2** proposes a new global secondary allocation to the ESS (active) limited by footnote to the spaceborne radar sounder systems over the frequency band 40-50 MHz. This footnote would also include technical conditions, such as pfd at the surface of the Earth for a percentage of time, to address the protection of incumbent service in the band 40-50 MHz. This Method also noted the possible need for case-by-case coordination with Wind Profiler Radars.
* **Method B** proposes a new global secondary allocation to the ESS (active) limited by footnote to the spaceborne radar sounder systems over the frequency band 40-50 MHz. In addition, this footnote would address the protection of the secondary radiolocation service in the frequency bands 42-42.5 MHz and 46‑68 MHz.
* **Method C** proposes a new global secondary allocation to the ESS (active) over the frequency band 40-50 MHz with no conditions specified regarding the protection of incumbent services.
* **Method D** proposes no changes to the Radio Regulations.

The draft CPM text (in [TEMP Doc#18](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-CPM23.2-230327-TD-0018)) will next be considered at the final plenary meeting of WG3 scheduled for 14:00 Monday 3rd April.A more detailed description of key issues discussed at each of the 4 SWG meetings in presented in the sections below (in reverse chronological order). |
| **SWG 3a\_ai\_1.12 3rd and 4th meetings on Thursday 30th March 2023 (Key issues discussed)**· SWG 3a\_ai\_1.12 completed its work on the draft CPM text.· Considerable time spent finalising the text on Options 1/2/3/4 presented in the Draft New Resolution in section 5 for Method A1.**·** The end result was that:* Option 1 represents the output from WP 7C that proposes pfd levels [TBD] at the surface of the Earth and percentage of time values [TBD] to protect incumbent systems
* Option 2 represents the input to CPM23-2 form the USA that proposes to allow operations in 3 geographic zones (spherical caps) covering the poles plus Greenland but also allows for operation in other areas but only with prior agreement of administrations
* Option 3 represents the input to CPM23-2 (mainly from France) that proposes a range of pfd levels that vary with latitude (less stringent at high latitudes due to atmospheric attenuation) as well as associate percentages of time.
* Option 4 was also created that is similar to Option 1 but also includes a limit on radar sounder peak transmit power (India/Egypt supported this).

· Russia was concerned with least stringent pfd value of -129 in Option 3 (where did it come from?) this triggered debate about how it was calculated (related to atmospheric attenuation).· Japan concern that Options appear exclusive of each other, so text was added to indicate that the options are not mutually exclusive to allow some flexibility.· Debate about whether it is necessary to specify a peak radar sounder transmit power when a pfd level at the Earth’s surface has already been specified.· Debate about removing Method C continued as it has no protective conditions for incumbent services. USA continues to insist to keep this Method so it was retained.· Question of whether to specify hours of operation as between 0200 and 0600 or alternatively as a few hours window around 4am local was resolved with the latter construct agreed.· Russia was keen to insert a sentence indicating that options 2 and 3 were based on studies that had not been reviewed or submitted by ITU-r study groups and do not take into account protection of existing services. Inclusion of Russian text as A view triggered other admins to indicate views will be submitted on the options offline to the SWG Chair for inclusion.· Russia raised issue of atmospheric attenuation at higher latitudes not being constant in time, others preferred to say that this conjecture should be assessed (Russia indicated may discuss at higher level, i.e. WG3)· Section 3 reviewed and finalised, including removal of large Table 3 that summarised sharing studies and sharing considerations after agreement could not be reached in the limited time available on the content. All values in the table are available elsewhere in the text.· The Executive summary was also agreed after review of some relatively minor edits and cleanup.· Admins to submit views on options (if they wish) but must be by 9am Friday· SWG Chair will finalise TD by midday Friday for review at WG3 meeting on Monday. |
| **SWG 3a\_ai\_1.12 2nd meeting on Wednesday 29th March 2023 (Key issues discussed)**· Issue of possible removal of USA Method C.* USA indicated they would like to keep Method C until the conference (as have not selected a method yet).
* Egypt, India, Russia, China, UK, all supported removal of Method C.
* It was noted that Method C would allow a secondary allocation with no measures to protect incumbent services and it was felt by many that such a Method would not succeed. Agreement not reached on removal of Method C.

· Lengthy debate about need for text to limit allocation to EESS (active) to radar sounders (but radar sounders are not defined anywhere in the radio regulations). An alternate idea noted was that the limitation to radar sounders could be made in the text of the new Resolution. Another idea was to indicate that use of allocation would be limited to those systems described in ITU-R Rec RS.2042 but should be done in Resolution (not in tables as that would incorporate the Recommendation in the RRs by reference).· Debate about the new text from the USA which identifies some geographic areas for use (poles and Greenland) but separately recognises that there might be some other areas were sub-surface water measurements might be desired (e.g. Sahara) but that this would require prior agreement with administrations in those areas (and how would that coordination work).· It was noted by a few participants that the current US text could be interpreted to imply that all existing EESS (active) applications would need to seek special agreement for operations in areas outside those identified (not the intent and very dangerous). USA conceded that they will need to review and revise this area of the text offline to prevent unintended consequences.· SWG Chair noted that there were 2 basic options presented. The first (from USA) identifies specific geographic regions of operations with pfd limit (poles and Greenland) and allows for operations in other areas (e.g. Sahara) but requires specific agreement from affected administrations. The second option (France et al) proposing a set of pfd limits at different latitudes (but have several versions of the pfd numbers).· The SWG chair proposed to restructure the draft Resolution offline before the next session to clearly indicate these as Options (1 and 2). Agreed.· It was noted that we still need to resolve (in future session) how to allow for radar sounder operation (coordination) in Antarctic region given the information about the Japanese WPR system operating in-band. |
| **SWG 3a\_ai\_1.12 1st meeting on Tuesday 28th March 2023 (Key issues discussed)**· During introduction the SWG Chair “tested the temperature of the room” reading deleting Method C. USA indicated at this stage they preferred to retain their Method C as option and discuss later.· Debate regarding why new secondary allocation for radar sounders would require limit on peak power transmitted (as well as limit on pfd received on ground). General consensus seemed to be that only pfd limit would be required, not both.· ESA Doc#149 deleted reference to critical elevation angles in CPM text as they believe no intent to limit elevation angels (and no way to do this).· ESA indicated worked with France on analysis and proposal for pfd limits to protect incumbent services. Two alternative sets of pfd limit values, first based on peak power and 100% of time, and the second allows for a percentage of time approach and takes into account different attenuation characteristics at higher latitudes.· USA Doc#158 also proposed deleting critical angle references in text.· USA proposal for draft resolution has regions a), b) and c) for operation covering the poles and Greenland, but then also allows for operation in other areas but must obtain prior agreement of “directly overlapped and neighbouring administrations”.· Japan Doc#173 introduced information on their PANSY Wind Profile Radar that operates at 47 MHz in Antarctic region. It was noted that interference would result from radar sounder spacecraft. Japan did give some indication that it was willing to discuss ways to allow for radar sounder operation.· Several admins expressed view that it would be extreme to exclude radar sounder operation in pole region just because of very small number of WPRs (better to reach method of coordination, perhaps through SFCG or WMO or similar body).· SWG Chair proposed draft way forward for section 3 (doc available on SharePoint) that includes several actions (including removal of critical elevation angle references, include existing WP7C studies as Study A, include USA/158 study results as Study B which includes percentage of time, include F/188 study results as Study C which includes percentage of time and peak power but mean power for WPRs, and other changes. |
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| 1. **Issue(s) which require discussion and further guidance at APG Coordination meeting**
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| none |