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| **The 5th Meeting of the APT Conference Preparatory**  **Group for WRC-23 (APG23-5)** | **APG23-5/OUT-40** |
| 20 – 25 February 2023, Busan, Republic of Korea | 25 February 2023 |

Working Party 5

**PRELIMINARY VIEWs on WRC-23 agenda item 10 (Preliminary agenda item 2.6 of wrc-27)**

**Agenda Item 10:**

*to recommend to the ITU Council items for inclusion in the agenda for the next world radiocommunication conference, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the ITU Convention and Resolution* ***804 (Rev.WRC-19)***

# 1. Background

WRC-19 has established the preliminary agenda for WRC-27 which includes, *inter alia*, item 2.6 regarding space weather sensors as a follow-up of WRC-23 agenda item 9.1, topic a).

**2. Documents**

* Input Documents APG23-5/ INP-[21Rev1](https://www.apt.int/sites/default/files/2023/02/APG23-5-INP-21_Japan-WP5-Preliminary_View_on_WRC-23_Agenda_Item_10.docx) (J) (Annex 1), [38](https://www.apt.int/sites/default/files/2023/02/APG23-5-INP-38_Iran-WP3-Preliminary_Views_on_WRC_23_Agenda_Items_1.12_1.13_1.14_and_9.1Topic_a.docx) (IRN) (part related to item 2.6 of Res 812 under Agenda Item 9.1, Topic A)
* Information Documents APG23-5/ INF-[11](https://www.apt.int/sites/default/files/2023/02/APG23-5-INF-11_Brief_on_AI10.docx) (Co-Chairs), [39](https://www.apt.int/sites/default/files/2023/02/APG23-5-INF-39_Status_of_CEPT_preparation_for_WRC-23_and_RA-23.pdf) (CEPT), [43](https://www.apt.int/sites/default/files/2023/02/APG23-5-INF-43_CITEL_preparation_for_WRC-23.pdf) (CITEL)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 Iran (Islamic Republic of)** - **Document APG23-5/INP-**[38](https://www.apt.int/sites/default/files/2023/02/APG23-5-INP-38_Iran-WP3-Preliminary_Views_on_WRC_23_Agenda_Items_1.12_1.13_1.14_and_9.1Topic_a.docx)

The Administration of Iran (Islamic Republic of) proposes that the following views be adopted as APT Preliminary Views:

2.1. APT Members support the ITU-R studies so far carried out relating to space weather sensors and appropriate radio service designations to which the space weather should be associated with a view to agree on a possible definition for space weather in Article **1** of the Radio Regulations.

2.2. APT Members are of the view that any changes to the Radio Regulations apart from those mentioned in paragraph 2.1 above are outside of the scope of Agenda item 9.1, Topic a). Therefore, any changes to the Radio Regulations such as identification of frequency bands used for providing data critical for space weather forecasting/warnings and necessary protection to be provided to the incumbent services need to be well studied through a possible new agenda item for WRC-27 in line with the preliminary agenda as decided by WRC-19 (item 2.6 of Resolution **812 (WRC-19)**). In this case, all sharing studies and possible identification of new allocations to the MetAids (*space weather*) could be studied in time for WRC‑27. Should the preliminary agenda of WRC-27 be approved as an agenda item for that Conference, it is necessary that studiesinclude, inter alia, protection of incumbent services to which the bands are allocated as well as services in the adjacent bands.

**3.1.2 Japan** - **Document APG23-5/INP-**[21Rev1](https://www.apt.int/sites/default/files/2023/02/APG23-5-INP-21_Japan-WP5-Preliminary_View_on_WRC-23_Agenda_Item_10.docx)

Japan has the following views on the WRC-27 preliminary agenda items:

* In support of the preliminary agenda item 2.6 (space weather sensor), Japan proposes updating and modifying the scope of this preliminary agenda item to follow up and progress the work under the WRC-23 agenda item 9.1, topic a) (See Annex 1 to Document APG23-5/INP-21Rev.1).

**3.2 Summary of issues raised during the meeting**

None.

**4. APT Preliminary View(s)**

APG23-5 considered proposals to modify item 2.6 of the preliminary agenda of WRC-27 as included in Resolution **812 (WRC-19)** and it was agreed that the modified text of item 2.6 and its supporting Resolution **657 (Rev. WRC-19)** as given in Attachment 1 to this document be forwarded to the next APG meeting for further consideration with a view to be included in the PACPs.

**5. Other View(s) from APT Members**

None.

**6. Issues for Consideration at Next APG Meeting**

APT Members are encouraged to contribute to the next APG meeting for further consideration on the WRC-27 preliminary agenda item 2.6.

**7. Views from Other Organisations**

**7.1 Regional Groups**

**7.1.1 CEPT** - **Document APG23-5/INF-**[39](https://www.apt.int/sites/default/files/2023/02/APG23-5-INF-39_Status_of_CEPT_preparation_for_WRC-23_and_RA-23.pdf)

CEPT supports that the following definition for space weather is included in Article **1**, section VIII, of the Radio Regulations:

*space weather: natural phenomena, mainly originating from solar activity and occurring beyond the major portion of Earth´s atmosphere that impact Earth’s environment and human activities.*

CEPT also supports the:

* Designation of space weather observations (active and receive-only) as an application of the MetAids service, operated under a subset of this service called MetAids (space weather) through Article **4** as follows: Space weather sensor systems, may operate under the meteorological aids service (space weather) allocations;
* Draft New WRC Resolution on the importance of MetAids (space weather) service applications, in which the definitions of active and receive-only space weather sensors will be introduced.

In addition, CEPT supports the further processing of the related work under an agenda item of WRC-27 - see preliminary agenda item 2.6 in Resolution **812 (WRC-19)**, in order to study the appropriate protection of space weather in the priority frequency bands which will be defined for this purpose.

Finally, CEPT supports the development of ITU-R Recommendation(s) to provide the relevant protection criteria for receive-only and active space weather sensors.

**7.1.2 CITEL** - **Document APG23-5/INF-**[43](https://www.apt.int/sites/default/files/2023/02/APG23-5-INF-43_CITEL_preparation_for_WRC-23.pdf)

* An Administration is of the view that changes to the Radio Regulations are outside the scope of Agenda Item 9.1.
* Some Administrations support conducting the studies called for in Resolution **657 (Rev.WRC-19)**. An Administration support these studies to develop appropriate description of how recognition could be made in the Radio Regulations (RR) for frequency bands used by space weather sensors without placing additional/undue constraints on incumbent service and to establish through studies which frequency bands provide data critical for space weather forecasting/warnings.

**Attachment 1**

**Proposals on WRC-27 agenda item – Space Weather Sensors**

ADD ASP/PAI2.6/1

RESOLUTION [Agenda for WRC-27] (WRC-23)

Agenda for the 2027 world radiocommunication conference

The World Radiocommunication Conference (Dubai, 2027),

……

resolves

to recommend to the Council that a WRC be held in 2027 for a maximum period of four weeks, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC‑27 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the frequency bands under consideration, to consider the following items and take appropriate action:

1.x to consider, for space weather sensors, regulatory provisions, including a definition and designating of corresponding radiocommunication service, and possible new allocations to the radiocommunication service to which designated for their use, (e.g., MetAids) in the frequency ranges [around 30 MHz, 38.2 MHz, and TBD MHz] in accordance with Resolution **657 (Rev.WRC‑23)**;

**Reasons:** Requisite studies called for in Resolution **657 (Rev.WRC-19)** are not and will not be fully completed in time for WRC-23. Preliminary WRC-27 agenda item 2.6 (See Resolution **812 (WRC-19)**) seeks to propose the continuity of the studies performed under WRC-23 agenda item 9.1, topic a) to achieve the following:

– the recognition of space weather in the Radio Regulations;

– sharing studies and identification of possible new allocations to the MetAids (space weather) for space weather sensors. This could be done by:

• identifying the candidate frequency bands to be studied;

• assessing the suitability of existing MetAids allocations for space weather sensors and take any appropriate regulatory action;

• creating new MetAids (space weather) service allocations to ensure the current operation of space weather sensors, if necessary;

• finalizing relevant protection criteria in appropriate ITU-R Recommendations and/or ITU-R Reports;

• studying the possibility for administrations desiring to notify a receive-only space weather sensor station to be included in the Master Register.

MOD ASP/PAI/2

RESOLUTION 657 (REV.WRC‑23)

Studies on regulatory provisions and possible new allocations for recognition in the Radio Regulations of space weather sensors used for global prediction and warnings

The World Radiocommunication Conference (Dubai, 2023),

considering

*a)* that space weather observations are important for detecting natural phenomena, mainly originating from solar activity and occurring beyond the major portion of the Earth’s atmosphere, that impact Earth’s environment and human activities;

*b)* that these observations are made from ground-based and space-based systems;

*c)* that some of the sensors operate by receiving signals of opportunity, including, but not limited to, low-level natural emissions of the Sun, Earth’s atmosphere and other celestial bodies, and therefore may suffer harmful interference at levels which could be tolerated by other radio systems;

*d)* that appropriate radio regulatory protection is needed for space weather observation systems that are used operationally in the production of forecasts and warnings of space weather events that can cause harm to important sectors of national economies, human welfare and national security;

*e)* that Relative Ionospheric Opacity Meter (riometer) is a device that measures the intensity of cosmic radio noise in the tens of MHz band and measures the absorption of radio waves that traverse the ionosphere; a riometer observes ionospheric absorption events that may cause degradation or blackout of HF radiocommunication lasting minutes to several days; this event may result in the disruption of aeronautical communications in HF through the polar region;

*f)* that [TBD: description of other space weather sensors to be considered for possible new allocations],

considering further

*a)* that ITU-R studies have developed possible solutions to describe appropriate recognition in the Radio Regulations, which include:

- an example of space weather definition in RR Article **1**,Sections VIII: “*space weather:* natural phenomena, mainly originating from solar activity and occurring beyond the major portion of the Earth’s atmosphere, that impact Earth’s environment and human activities”;

- designation of a subset of the meteorological aid (MetAids) service, represented as “MetAids service (space weather)”, for both the passive and active space weather sensors;

- introduction of a new provision in RR Article **4** to make the connection between space weather and the MetAids service, an example of which provision is “Space weather sensor systems may operate under the meteorological aids service (space weather) allocations.”;

*b)* that the inclusion of space weather sensor systems under the MetAids service should ensure that there will be no negative impact on any space weather observations currently using the radio astronomy service (RAS) allocations,

recognizing

*a)* that Report ITU‑R RS.2456‑0, on space weather sensor systems using radio spectrum, contains a summary of spectrum-reliant space weather sensors and identifies the most critical operational systems (hereafter referred to as operational systems);

*b)* that current provisions in RR Article **11** do not allow an administration to notify a frequency assignment to a passive terrestrial radio station, except for certain types of stations (see Nos. **11.2**, **11.9** and **11.12**) and that therefore no procedure for notifying passive MetAids (space weather) stations is provided;

*c*

resolves

that for the purpose of the ITU-R studies in *resolves to invite the ITU-R*, the following definition and designation of radiocommunication service should be used:

1.XXX *space weather:* natural phenomena, mainly originating from solar activity and occurring beyond the major portion of the Earth’s atmosphere, that impact Earth’s environment and human activities.

4.YYY Space weather sensor systems may operate under the meteorological aids service (*space weather*) allocations.

resolves to invite the ITU-R to conduct and complete in time for WRC‑27

1 finalization of the regulatory provisions indicated in *resolves* above with a view to possible inclusion of these provisions in the Radio Regulations for appropriate recognition of space weather sensors;

2 the sharing and compatibility studies to ensure the protection of existing services to which the frequency band is allocated on a primary basis, without imposing additional regulatory or technical constraints on those services, and also, as appropriate, on services in adjacent bands for the following frequency bands:

2.1 passive space weather sensors

- for riometer: [29.875 – 30.125 MHz and 38.075 – 38.325 MHz]

- for [TBD] sensor: [TBD – TBD MHz]

2.2 active space weather sensors

- for [TBD] sensor: [TBD – TBD MHz],

for possible new allocations to the MetAids service for use by passive and/or active space weather sensors;

3 regulatory provisions of the Radio Regulations to accommodate the possibility for an administration that desires to notify a passive space weather sensor station to be included in the Master Register,

resolves to invite

1 the first session of the Conference Preparatory Meeting for WRC‑27 to define the date by which technical and operational characteristics needed for sharing and compatibility studies are to be available to ensure that studies referred to in *resolves to invite the ITU-R* can be completed in time for consideration at WRC‑27;

2 WRC‑27 to consider and take appropriate actions, based on the results of the above studies referred to in *resolves to invite the ITU-R*, including the technical, operational and regulatory provisions for appropriate recognition and protection of passive and active space weather sensors as well as possible new allocations of frequency bands for use by space weather sensors; the frequency bands to be considered being limited to part or all of the frequency bands listed in *resolves to invite the ITU-R*,

3 WRC-27 to ensure the protection of existing services to which the frequency band is allocated on a primary basis, without imposing additional regulatory or technical constraints on those services, and also, as appropriate, on services in adjacent bands,

invites administrations

to participate actively in the ITU-R studies and provide the technical and operational characteristics of the systems involved by submitting contributions to ITU‑R,

instructs the Secretary-General

to bring this Resolution to the attention of the World Meteorological Organization and other international and regional organizations concerned.

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