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|  | ASIA-PACIFIC TELECOMMUNITY | Document No: |
| **The 4th Meeting of the APT Conference Preparatory****Group for WRC-19 (APG19-4)** | **APG19-4/OUT-32** |
| 7 – 12 January 2019, Busan, Republic of Korea | 12 January 2019 |

Working Party 4

**PRELIMINARY VIEWs on WRC-19 agenda item 1.3**

**Agenda Item 1.3:**

*To consider possible upgrading of the secondary allocation to the meteorological-satellite service (space-to-Earth) to primary status and a possible primary allocation to the Earth exploration-satellite service (space-to-Earth) in the frequency band 460-470 MHz, in accordance with Resolution 766 (WRC-15).*

**1. Background**

This agenda item relates to the possibility of upgrading the secondary MetSat (space-to-Earth) allocation to primary status and adding a primary EESS (space-to-Earth) allocation in the frequency band 460-470 MHz. It is important to note, that this band is allocated for fixed and mobile services on the primary basis worldwide, as in the following table.



The frequency band 460-470 MHz is already being utilized by MetSat (on secondary allocation basis) in downlink to control and configure data collection platforms. The data collection systems (DCS) operate on geostationary and non-geostationary orbits in the MetSat and the EESS (Earth-to-space) systems in the frequency band 401-403 MHz (uplink) and 460-470 MHz (downlink). DCS are essential for monitoring and predicting climate change, monitoring ocean, and water resources, weather forecasting and assisting in protecting biodiversity, as well as improving maritime security. Thus, a primary allocation to the MetSat and EESS (space-to-Earth) in the frequency band 460‑470 MHz would provide confidence to space and meteorological agencies deeply involved in satellite data collection programs and the public sectors funding the development and operation of such systems. Furthermore, the PDN Report ITU-R SA.[460 MHZ METSAT-EESS] provides the studies and compiles elements related to background on WRC-19 agenda item 1.3.

* **Progress of ITU-R ongoing studies**

ITU-R SG7 in September 2018 has approved [Report ITU-R SA.2429. The draft CPM text](https://www.itu.int/md/R15-SG07-C-0098/en)  includes two methods for the Agenda Item 1.3 as follows:

* Method A (NOC), and
* Method B proposes an upgrade of the MetSat (space-to-Earth) allocation from secondary to primary status and a primary EESS (space- to-Earth) allocation could be added in the frequency band 460-470 MHz provided that the priority of MetSat over EESS, as currently contained in the Radio Regulations, is retained and that the protection of primary services in the frequency band and in adjacent frequency bands is ensured. In order to protect terrestrial services, pfd limits are proposed for both non-GSO and GSO MetSat/EESS satellites. In addition, RR No. 5.290 is proposed to be suppressed since MetSat and EESS are primary services in the frequency band. Finally, a new Resolution is proposed to provide the transitional measures for the existing MetSat/EESS frequency assignments.

It is noted that Report ITU-R SA.2429 states that “*The frequency bands between 450 and 470 MHz are used for conventional and trunked land mobile systems. These bands are also used by public safety agencies...*”.  However the I/N value used for the sharing studies in this report is -6 dB instead of -10dB which is prescribed in Recommendation ITU-R M.1808 where it is stated that “*For applications with greater protection requirements, such as public protection and disaster relief (PPDR), an I/N of −10 dB may be used to determine the impact of interference*”.

**2. Documents**

* Input Documents:
	+ - [APG19-4/INP-18](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C1-Input%20Documents%20AI%201.3%5CAPG19-4-INP-18_AUS4_-_Australian_Contribution_to_APG19-4_Chapter_4.docx) (Australia)
		- [APG19-4/INP-45](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C1-Input%20Documents%20AI%201.3%5CAPG19-4-INP-45_MLA_THA_WP4_AI_1.3.docx) (Malaysia and Thailand)
		- [APG19-4/INP-62](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C1-Input%20Documents%20AI%201.3%5CAPG19-4-INP-62_4_J_WP4.docx) (Japan)
		- [APG19-4/INP-78](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C1-Input%20Documents%20AI%201.3%5CAPG19-4-INP-78_WP4_kor.docx) (Korea)
		- [APG19-4/INP-93](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C1-Input%20Documents%20AI%201.3%5CWP4_APG19-4-INP-93_Singapore_1.3_1.7.docx) (Singapore)
		- [APG19-4/INP-97](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C1-Input%20Documents%20AI%201.3%5CAPG19-4-INP-97_China1_Preliminary_views_on_WRC-19_AI_1.2_1.3_1.7_rev.docx) (China)
		- [APG19-4/INP-115](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C1-Input%20Documents%20AI%201.3%5CAPG19-4-INP-115_Preliminary_India_views_on_Agenda_item_1.3.docx) (India)
		- [APG19-4/INP-121](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C1-Input%20Documents%20AI%201.3%5CAPG19-4-INP-121_INS4_Preliminary_View_-_WP4.docx) (Indonesia)
* Information Documents:
	+ - [APG19-4/INP-09](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C1-Input%20Documents%20AI%201.3%5CAPG19-4-INP-09Rev.1_Report-second_Inter-regional_Workshop_on_preparations_for_WRC-19.docx)(Rev.1) (Chairman APG in Inter-regional meeting)
		- [APG19-4/INF-02](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C2-Information%20Documents%20AI%201.3%5CAPG19-4-INF-02_WMO-Position_20181109.docx) (WMO)
		- [APG19-4/INF-03](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C2-Information%20Documents%20AI%201.3%5CAPG19-4-INF-03_IARU.DOCX) (IARU)
		- [APG19-4/INF-04](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C2-Information%20Documents%20AI%201.3%5CAPG19-4-INF-04_ICAO_01_WRC-19_ICAO-Pos_for_APG-4_for_WP5.docx) (ICAO)
		- [APG19-4/INF-22](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C2-Information%20Documents%20AI%201.3%5CAPG19-4-INF-22_CITEL_PPT.pdf) (CITEL)
		- [APG19-4/INF-23](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C2-Information%20Documents%20AI%201.3%5CAPG19-4-INF-23_CEPT_PPT.pdf) (CEPT)
		- [APG19-4/INF-24](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C2-Information%20Documents%20AI%201.3%5CAPG19-4-INF-24_RCC.pdf) (RCC)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 Australia** - **Document APG19-4/INP-18**

* Australia supports consideration of the upgrading of the secondary MetSat (space-to-Earth) allocation to primary, and adding a primary EESS (space-to-Earth) allocation in the frequency band 460‑470 MHz, while providing protection and not imposing any additional constraints on existing primary services to which the frequency band is already allocated and in the adjacent frequency bands and maintaining the conditions contained in Radio Regulations No. **5.289**, subject to appropriate ITU‑R sharing and compatibility studies.

This view is consistent with Method B in the Draft CPM Report, noting that further work is required to address pfd limits for GSO satellites.

**3.1.2 Malaysia and Thailand** - **Document APG19-4/INP-45**

* Since the studies contained in the ITU-R Report SA.2429 has determined the pfd limits for both non-GSO and GSO MetSat and EESS satellites in the frequency band 460-470 MHz which will ensure the protection of incumbent primary allocated services in this band and adjacent bands, Malaysia and Thailand support the proposal to upgrade the allocation for MetSat (space-to-Earth) from secondary to primary status and addition of primary allocation for EESS (space-to-Earth) in the frequency band 460-470 MHz, provided that the priority of MetSat over EESS is retained as currently contained in the Radio Regulations and earth stations in the MetSat (space-to-Earth) and EESS (space-to-Earth) shall not cause interference to nor claim protection from stations of the fixed and mobile services.

Therefore, Malaysia and Thailand support Method B of the draft CPM text. Moreover, the pfd limits for non-GSO and the single pfd limits for GSO satellites are preferable that would protect the incumbent in-band and adjacent channel service operations.

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**3.1.3 Japan** - **Document APG19-4/INP-62**

* Japan supports Method B from the viewpoint that in the frequency band 460 - 470 MHz the existing co-primary services should be adequately protected from the possible addition of a primary EESS (space-to-Earth) allocation and possible upgrading the MetSat (space-to-Earth) allocation to primary status, while ensuring continuous operation of the existing systems of EESS (space-to-Earth) and MetSat (space-to-Earth).

**3.1.4 Korea** - **Document APG19-4/INP-78**

* APT Members support the ITU-R studies in accordance with Resolution 766 (WRC-15) to conduct and complete, in time for WRC-19, the necessary technical, operational and regulatory studies on the possibility to upgrade the secondary allocation of the meteorological-satellite service (space-to-Earth) to primary status and a primary allocation to the Earth exploration-satellite service (space-to-Earth) in the frequency band 460-470 MHz, provided that the appropriate measures are taken to ensure the protection of existing fixed, mobile, and broadcasting services and not to constraint their future developments in the frequency band 460-470 MHz and in the adjacent bands, and stations of the EESS and MetSat services shall not claim protection from the fixed and mobile services. APT Members also note that the priority of MetSat over EESS should be maintained.

**3.1.5 Singapore** - **Document APG19-4/INP-93**

* Based on Table 10 of [Report ITU-R SA.[460 MHZ METSAT-EESS]](https://www.itu.int/md/R15-SG07-C-0098/en), it is noted that the I/N value used had not taken into consideration applications with greater protection requirements, such as Public Protection and Disaster Relief (PPDR). As such, even if the pfd limits proposed in Method B can protect mobile applications in the band 460-470 MHz it is not certain that the limits can protect PPDR mobile applications that require an I/N of -10 dB.

As such, given that there is no certainty that pfd limits proposed in Method B can ensure the protection of existing mobile service and not constraint the future development of the service in the frequency band 460-470 MHz, Singapore is of the view that Method A is the alternative.

**3.1.6 China** - **Document APG19-4/INP-97**

* China supports the studies on this agenda item carried out in ITU-R WP 7B and does not oppose the possible upgrading of MetSat (space-to-Earth) allocation from secondary to primary status and a primary EESS (space-to-Earth) allocation, providing that the priority of MetSat over EESS is retained, and the protection of current primary services in this frequency band and in the adjacent frequency bands is ensured.

**3.1.7 India** - **Document APG19-4/INP-115**

* Consistent with the preliminary view of the previous APG meeting, and noting that Method B can’t ensure the protection of existing mobile service and that it will constraint the future development of the mobile service in the frequency band 460-470 MHz, India supports Method A with NO CHANGE to this band.

**3.1.8 Indonesia** - **Document APG19-4/INP-121**

* Indonesia support further ITU-R sharing and compatibility study for a possible upgrading of MetSat (space-to-earth) from secondary to primary allocation, and possible addition of EESS (space-to-earth) to a primary allocation in accordance with Resolution 766 (WRC-15), provided that the priority of MetSat over EESS is maintained.

The protection of the existing and future fixed and mobile services in the frequency band 460-470 MHz are ensured, and no additional constraints to the existing and future fixed and mobile services in that frequency band are imposed.

The MetSat and EESS stations shall not claim protection from fixed and mobile services.

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

* Consideration to include I/N protection criteria into the background of this document, as advised by India and Singapore.
* It should be taken into account that the upgrading decision will be taken after the further ITU-R study w.r.t this issue come out.
* It is a matter of urgency to consider the appropriate I/N protection criteria related to PPDR in the next CPM meeting, and APT members are encouraged to submit to WP7B and SG7 their studies with regard to this issue.

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

* APT members support further ITU-R sharing and compatibility studies in accordance with Resolution **766 (WRC-15)**, to conduct and complete in time for WRC-19, the necessary technical, operational and regulatory studies on the possibility to upgrade the secondary allocation of the meteorological-satellite service (space-to-Earth) to primary status and a primary allocation to the Earth exploration-satellite service (space-to-Earth) in the frequency band 460-470 MHz.
* The appropriate measures are necessary to be taken to ensure the protection of existing fixed, mobile, and broadcasting services and not to constraint their future developments in the frequency band 460-470 MHz and in the adjacent bands, and stations of the EESS and MetSat services shall not claim protection from the fixed, mobile, and broadcasting services. APT members also note that the priority of MetSat over EESS should be maintained.
* APT members note that further studies are required to address appropriate I/N protection criteria with regard to the PPDR systems. The decision on which Method to adopt will depend on the outcome of those studies.
* Stations of the EESS and MetSat services shall not cause harmful interference to fixed, mobile, and broadcasting services in 460-470 MHz and adjacent bands. APT members note that further studies are required to address appropriate pfd limits for GSO and non-GSO satellites to ensure this.

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

* Some administrations noted that continuous operation of the existing systems of EESS (space-to-Earth) and MetSat (space-to-Earth) is also necessary to be ensured.

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

* + APT members are encouraged to participate in and contribute to the next APG19-5 meeting and to consider the output of the APG19-4, the outcome of CPM19-2 meeting and the ITU-R studies regarding the agenda item 1.3.

**7. Views from Other Organisations**

**7.1 Regional Groups**

**7.1.1 ASMG - Document** [APG19-4/INP-09](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C1-Input%20Documents%20AI%201.3%5CAPG19-4-INP-09Rev.1_Report-second_Inter-regional_Workshop_on_preparations_for_WRC-19.docx)

* Due to the heavily used for the frequency band 460 – 470 MHz in the Arab countries for mobile and fixed services, so initially ASMG doesn’t support the possible upgrading of the secondary allocation to the meteorological satellite service (space-to-earth) to primary status and a primary allocation to the Earth exploration satellite service (space-to-earth) in the frequency band 460-470MHz.
* Follow up studies under this agenda item and ensure the protection of the existing services.

**7.1.2 ATU - Document** [APG19-4/INP-09](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C1-Input%20Documents%20AI%201.3%5CAPG19-4-INP-09Rev.1_Report-second_Inter-regional_Workshop_on_preparations_for_WRC-19.docx)

Method A (No Change)

**7.1.3 CEPT- Document** [[APG19-4/INF-23](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C2-Information%20Documents%20AI%201.3%5CAPG19-4-INF-23_CEPT_PPT.pdf)](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-3%20DG%20Chair%5CInformation%20Documents%20AI%201.3%5CAPG19-3-INF-06_CEPT_Preparation.pdf)

CEPT supports that the MetSat (space-to-Earth) allocation should be upgraded from secondary to primary status and a primary EESS (space-to-Earth) allocation should be added in the frequency band 460-470 MHz provided that

* the protection of primary services in the frequency band and in adjacent frequency bands is ensured by the introduction of relevant pfd masks for GSO and non-GSO satellites;
* MetSat and EESS earth stations will not claim protection from stations in the fixed and mobile services, as stated in recognizing f) of Res 766;
* priority of MetSat over EESS as currently expressed in the RR is retained;

**7.1.4 CITEL- Document** [APG19-4/INF-23](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C2-Information%20Documents%20AI%201.3%5CAPG19-4-INF-23_CEPT_PPT.pdf)

Proposals support Method B which upgrades the MetSat allocation to primary and adds a new EESS allocation with some preference expressed for Option 1 as the pfd mask to protect terrestrial services.

**7.1.5 RCC- Document** [APG19-4/INF-24](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C2-Information%20Documents%20AI%201.3%5CAPG19-4-INF-24_RCC.pdf)

* The RCC Administrations support upgrading the secondary allocation to the meteorological-satellite service (space-to-Earth) to a primary status as well as a primary allocation to the Earth exploration-satellite service (space-to-Earth) in the frequency band 460-470 MHz under the following conditions:
	+ upgrading the status of allocations of the frequency bands to the meteorological-satellite service and the Earth exploration-satellite service shall be applied both for future systems as well as existing systems of these radio services;
	+ for the protection of the terrestrial services to which the frequency band 460-470 MHz is allocated on a primary basis, which ensure acceptable interference level, pfd limits for the specified satellite services shall be established to ensure acceptable interference level. In case of non-compliance with these limits, satellite systems of specified services can continue to be used on the secondary basis;
	+ Maintaining priority of the meteorological-satellite service over the Earth exploration-satellite service should be ensured.
* The RCC Administrations do not support segmentation of the frequency band 460-470 MHz for geostationary and non-geostationary satellite systems.

**7.2 International Organisations**

**7.2.1 ICAO** – **Document** [APG19-4/INF-04](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C2-Information%20Documents%20AI%201.3%5CAPG19-4-INF-04_ICAO_01_WRC-19_ICAO-Pos_for_APG-4_for_WP5.docx)

No impact on aeronautical services has been identified from WRC-19 Agenda Items 1.3.

**7.2.2 WMO** - **Document** [APG19-4/INF-02](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C2-Information%20Documents%20AI%201.3%5CAPG19-4-INF-02_WMO-Position_20181109.docx)

* WMO supports the upgrade of the MetSat (space-to-Earth) allocation to primary in the frequency band 460-470 MHz with the use of appropriate PFD limits for GSO and non-GSO satellites to protect incumbent services.

WMO also supports creation of a primary allocation to the EESS (space-to-Earth) in the frequency band 460-470 MHz with the use of appropriate pfd limits for GSO and non-GSO satellites to protect incumbent services, while retaining the priority of MetSat service over EESS as currently expressed in footnote RR No. **5.289**.

**7.2.3 IARU** – **Document** [APG19-4/INF-03](file:///C%3A%5CDATA%5CTel-U%5CAPG19%5CAPG19-4%20DG%20Chair%5C2-Information%20Documents%20AI%201.3%5CAPG19-4-INF-03_IARU.DOCX)

None

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