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| APTlogogreen3 | ASIA-PACIFIC TELECOMMUNITY | **Document No:**  |
| **The 3rd Meeting of the APT Conference Preparatory Group for WRC-19 (APG19-3)** | **APG19-3/OUT-40** |
| 12 – 16 March 2018, Perth, Australia | **16 March 2018** |

Working Party 5

**PRELIMINARY VIEWs on WRC-19 agenda item 1.9.2[[1]](#footnote-1)**

**Agenda Item 1.9.2:**

*1.9 to consider, based on the results of ITU‑R studies:*

*1.9.2 modifications of the Radio Regulations, including new spectrum allocations to the maritime mobile-satellite service (Earth‑to‑space and space-to-Earth), preferably within the frequency bands 156.0125-157.4375 MHz and 160.6125-162.0375 MHz of Appendix****18****, to enable a new VHF data exchange system (VDES) satellite component, while ensuring that this component will not degrade the current terrestrial VDES components, applications specific messages (ASM) and AIS operations and not impose any additional constraints on existing services in these and adjacent frequency bands as stated in recognizing d) and e) of Resolution****360*** *(****Rev.WRC‑15****);*

**1. Background**

The studies associated with WRC-15 AI 1.16 resulted in elaboration of a concept for the VHF data exchange system (VDES) reflected in Recommendation ITU-R M.2092-0. The system combines the current Automatic Identification System (AIS), applications specific messages (ASM) as well as data exchange terrestrial and satellite components.

During WRC-15 no allocations were made to VDES satellite component since the compatibility studies with the incumbent services in the frequency bands assumed for operation of VDES satellite component and in the adjacent frequency bands were incomplete.

To this effect, Resolution **360** **(WRC-12)** was revised and updated to invite the WRC-19 to consider, based on the results of ITU-R studies, modifications of the Radio Regulations, including new spectrum allocations to the maritime mobile-satellite service (MMSS) (Earth-to-space and space‑to‑Earth), preferably within the frequency bands 156.0125-157.4375 MHz and 160.6125‑162.0375 MHz of RR Appendix **18**, to enable a new VHF data exchange system (VDES) satellite component, while ensuring that this component will not degrade the current terrestrial VDES components, application specific message (ASM) and automatic identification system (AIS) operations and not impose any additional constraints on existing services in these and adjacent frequency bands as stated in *recognizing d)* and *e)* of Resolution **360 (Rev. WRC-15)**.

At the WP 5B meeting in November 2017, the following three methods (Method A, Method B and Method C) were proposed to allocate VDES satellite component frequencies.

Divergent views were expressed and no consensus reached during the discussion on the compatibility sharing studies related to VDES satellite component and land mobile service. The proponents of VDES satellite component proposed to apply the pfd mask listed in the Recommendation ITU-R M.2092-0 as protection criteria. And the proponents to land mobile service draw a conclusion that the pfd mask in M.2092-0 will cause unacceptable interference to the systems in the mobile service, and suggested to develop a pfd mask based on the technical parameters and protection criteria contained in the Recommendation ITU-R M.1808-0, which has been used by different ITU-R Study Groups in numerous compatibility studies between land mobile service and other service in the VHF band.

**Method A**

The Method proposes a new primary allocation for the maritime mobile-satellite service (Earth to-space), for frequency band 157.1875-157.3375 MHz (channels 1024, 1084, 1025, 1085, 1026 and 1086) and frequency band 161.8875-161.9375 MHz (channels 2026 and 2086). The channels 1026, 1086, 2026 and 2086 are exclusively reserved for ship to satellite (VDE-SAT uplink) services. The channels 1024, 1084, 1025 and 1085 are reserved for ship-to-shore services, but ship-to-satellite (VDE-SAT uplink) services are possible without imposing constraints on ship-to-shore services.

The Method proposes a new primary allocation for the maritime mobile-satellite service (space to-Earth) for frequency band 160.9625-161.4875 MHz, for improved VDE communication capacity and coverage.

**Method B**

Due to the sharing difficulties of the VDES satellite component uplink and downlink with the systems in the land mobile service it is proposed to make no changes in the Radio Regulations.

**Method C**

The Method proposes a new primary allocation for the maritime mobile-satellite service (Earth to-space) for the frequency band 157.1875-157.3375 MHz (channels 1024, 1084, 1025, 1085, 1026 and 1086 of RR Appendix **18**).

The Method proposes a new primary allocation for the maritime mobile-satellite service (space to-Earth) for the frequency band 161.7875-161.9375 MHz (channels 2024, 2084, 2025, 2085, 2026 and 2086 of RR Appendix **18**), for improved VDE communication capacity and coverage.

**List of relevant ITU-R Reports/Recommendations**

- Recommendation ITU-R M.2092-0: Technical characteristics for a VHF data exchange system in the VHF maritime mobile band

- Working document towards a preliminary draft new Report ITU-R M.[VDES-SAT]
 (Document [5B/](https://www.itu.int/md/R15-WP5B-C-0305/en)411/Annex 27)

**2. Documents**

Input Documents APG19-3/INP-25 (KOR), APG19-3/INP-32 (IRN), APG19-3/INP-38 (NZL), APG19-3/INP-45 (AUS), APG19-3/INP-53 (J), APG19-3/INP-63 (THA), APG19-3/INP-80 (INA), APG19-3/INP-85 (VTN), APG19-3/INP-90 (CHN)

Information Documents APG19-3/INF-06 (CEPT), APG19-3/INF-08 (CITEL) (Rev.1)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 Korea (Rep. of)** - **Document APG19-3/INP-25**

The Republic of Korea proposes modifications to the APT Preliminary View adopted at the APG19-2, as stated below:

APT Members support the ITU-R studies undertaken in accordance with Resolution **360 (Rev. WRC-15)** to identify possible new allocations to the maritime mobile-satellite service for VDES satellite component.

In regards to the possible modification of the Radio Regulations under WRC-19 Agenda Item 1.9.2, APT Members are of the view that:

- Existing allocations and systems in the same and adjacent bands, especially the AIS, must be protected from harmful interference or any constraints, which include but are not limited to, any modification requested to existing AIS equipment;

- Search and rescue aircraft system operating in maritime frequencies must be protected;

- VDES satellite components downlink transmission should not degrade the terrestrial VDES components, ASM and AIS operations;

- VDES satellite components should not claim protection from harmful interference caused by stations of a land mobile service to which frequencies are already assigned; and

- If the spectrum needs were appropriately justified, new spectrum allocations could be identified to the maritime mobile-satellite service (MMSS) (Earth-to-space and space-to-Earth) with the provisions ensuring not to cause harmful interference and no claim of protection from incumbent service on a primary basis in the same and adjacent frequency bands.

**3.1.2 Iran (Islamic Republic of)** - **Document APG19-3/INP-32**

I.R. of Iran supports sharing and compatibility studies between the proposed VDES satellite component and the systems in the radiocommunication services allocated in the same and in adjacent frequency bands.

I.R. of Iran is also of the view that:

* existing allocations and systems in the same and adjacent bands, especially the AIS, must be protected from harmful interference or any constraints, which include but are not limited to, any modification requested to existing AIS equipment;
* search and rescue aircraft system operating in maritime frequencies must be protected;
* VDES satellite components downlink transmission should not degrade the terrestrial VDES components, ASM and AIS operations;
* VDES satellite components should not claim protection from harmful interference caused by stations of a land mobile service to which frequencies are already assigned; and
* if the spectrum needs were appropriately justified, new spectrum allocations could be identified to the maritime mobile-satellite service (MMSS) (Earth-to-space and space-to-Earth) with the provisions ensuring not to cause harmful interference and no claim of protection from incumbent service on a primary basis in the same and adjacent frequency bands.
* if studies show difficulties of sharing VDES satellite component uplink and downlink with the systems in the land mobile service, no changes in the Radio Regulations will be proposed to satisfy the agenda item. In this case, using the current allocations for enabling VDES satellite component could be considered.

**3.1.3 New Zealand** - **Document APG19-3/INP-38**

New Zealand supports the studies undertaken in accordance with Resolution **360 (Rev. WRC-15)** to identify possible new allocations to the maritime mobile-satellite service for VDES satellite component.

New Zealand is of the view that the candidate band for this possible new allocation to the maritime mobile-satellite service should be within the existing frequency range already assigned to VHF maritime mobile channels in accordance with RR Appendix **18**. If a candidate band to be considered is outside of, or immediately adjacent to, the frequency range of RR Appendix **18**, this consideration should be carefully studied due to the heavy use of these adjacent frequency ranges by existing terrestrial services.

**3.1.4 Australia** - **Document APG19-3/INP-45**

Australia supports facilitating the introduction of a new VHF data exchange system (VDES) satellite component consistent with Resolution **360 (Rev.WRC-15)**.

Any new allocation for the satellite component of VDES should coexist and be compatible with the systems in the radiocommunication services allocated in the same and adjacent frequency bands without imposing any additional constraints on those services.

**3.1.5 Japan** - **Document APG19-3/INP-53**

Japan is of the view that only the frequencies in RR Appendix **18** should be considered for the satellite component of the VDES. The frequencies, considered in ITU-R, not in RR Appendix **18** are used for terrestrial services other than maritime mobile service, and existing stations in these services need to be protected. Therefore, Japan supports Method C in the methods currently raised to allocate VDES satellite component frequencies at the WP5B, in the view that the satellite component of the VDES in the frequency bands should be channelized in RR Appendix **18**.

**3.1.6 Thailand** - **Document APG19-3/INP-63**

Thailand supports modification of the Radio Regulations to add a new primary allocation to the maritime mobile-satellite service (Earth-to-space) in the frequency band 157.1875-157.3375 MHz and to the maritime mobile-satellite service (space-to-Earth) in the frequency band 161.7875-161.9375 MHz.

**3.1.7 Indonesia, Republic of** - **Document APG19-3/INP-80**

Indonesia supports that activities of WP 5B to consider regulatory provisions and spectrum allocations to the maritime mobile-satellite service to enable the satellite component of the VHF Data Exchange System and enhanced maritime radiocommunication. Indonesia also raises a concern that any modifications of VDES components should not impact the existing AIS equipment on-board which is already installed on the vessel.

**3.1.8 Socialist Republic of Viet Nam** - **Document APG19-3/INP-85**

Viet Nam Administration supports the activities of ITU-R which are related to the satellite component of VDES.

In regarding the modification of the Radio Regulations under WRC-19 Agenda Item 1.9.2, this Administration is of the view that:

* Existing allocations and systems in the same and adjacent bands, especially the AIS, must be protected from harmful interference or any constraints, which include but are not limited to, any modification requested to existing AIS equipment;
* Search and rescue aircraft system operating in maritime frequencies must be protected;
* VDES satellite components downlink transmission should not degrade the terrestrial VDES components, ASM and AIS operations;
* If the spectrum needs were appropriately justified, new spectrum allocations could be identified to the maritime mobile-satellite service (MMSS) (Earth-to-space and space-to-Earth) with the provisions ensuring not to cause harmful interference and no claim of protection from incumbent service on a primary basis in the same and adjacent frequency bands.

**3.1.9 China (People’s Republic of)** - **Document APG19-3/INP-90**

**Preliminary Views**

This administration actively participated in the compatibility studies undertaken in ITU-R WP 5B, and supported to develop a pfd mask for VDES downlink transmission to fully protect the incumbent service in the same and adjacent frequency bands based on appropriate parameters and assumptions contained in ITU-R Recommendations and had been wildly used in sharing studies conducted by ITU-R Study Groups.

**Proposals on APT Preliminary views**

This administration proposed to modify the APT Preliminary Views drafted in APG 19-2 meeting as following:

* Existing allocations and systems in the same and adjacent bands should be protected from harmful interference and no any additional constraints were imposed;
* The VDES downlink pfd mask should be developed with appropriate parameters and assumptions contained in ITU-R Recommendations and had been wildly used in sharing studies conducted by ITU-R Study Groups.
* Search and rescue aircraft system operating in maritime frequencies must be protected;
* The AIS integrity should be protected, and avoid any modification requested to existing AIS equipment on board existing vessels;
* VDES satellite components downlink transmission should not degrade the terrestrial VDES components, ASM and AIS operations;
* VDES satellite components should not claim protection from harmful interference caused by stations of a land mobile service to which frequencies are already assigned; and
* If the spectrum needs were appropriately justified, new spectrum allocations could be identified to the maritime mobile-satellite service (MMSS) (Earth-to-space and space-to-Earth) with the provisions ensuring not to cause harmful interference and no claim of protection from incumbent service on a primary basis in the same and adjacent frequency bands.
	1. **Summary of issues raised during the meeting**
* Existing services need to be protected from the VDES satellite component.
* Some APT Members expressed views of preference on VDES satellite component frequencies.

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

APT Members support the ITU-R studies undertaken in accordance with Resolution **360 (Rev. WRC-15)** to identify possible new allocations to the maritime mobile-satellite service for VDES satellite component.

In regards to the possible modification of the Radio Regulations under WRC-19 Agenda Item 1.9.2, APT Members are of the view that:

- Existing allocations and systems in the same and adjacent bands should be protected from harmful interference, and no any additional constraints are imposed;

- The VDES satellite component downlink pfd mask should be developed with appropriate parameters and assumptions contained in ITU-R Recommendations, that have been widely used in sharing studies conducted by ITU-R Study Groups;

- Search and rescue aircraft system operating in maritime frequencies must be protected;

- VDES satellite components downlink transmission should not degrade the terrestrial VDES components, ASM and AIS operation;

- The AIS integrity should be protected, and avoid any modification to existing AIS equipment on board vessels;

- VDES satellite components should not claim protection from harmful interference caused by stations of a land mobile service to which frequencies are already assigned; and

- If the spectrum needs were appropriately justified, new spectrum allocations could be identified to the maritime mobile-satellite service (MMSS) (Earth-to-space and space-to-Earth), with the provision they do not cause harmful interference, and have no claim of protection from incumbent service on a primary basis in the same and adjacent frequency bands.

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

* Some APT Members expressed the view that the frequency bands of the satellite component of the VDES should be selected from channelized frequencies in RR Appendix **18**.
* Some APT Members support the addition of a new primary allocation to the maritime mobile-satellite service (Earth-to-space) in the frequency band 157.1875-157.3375 MHz and to the maritime mobile-satellite service (space-to-Earth) in the frequency band 161.7875-161.9375 MHz.
* Some APT members expressed the view that if studies show difficulties of sharing VDES satellite component uplink and downlink with the systems in the land mobile service, no changes in the Radio Regulations will be proposed to satisfy the agenda item. In this case, using the current allocations for enabling VDES satellite component could be considered.

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

APT Members are encouraged to contribute their views including the supporting Method, taking into account ITU-R studies and APT preliminary views, and submit contributions to APG19-4.

**7. Views from Other Organisations**

**7.1 Regional Groups**

**7.1.1 ASMG** - **Document APG19-2/INF-01**

Support the ongoing studies in ITU-R on the development of the necessary protection criteria for the satellite receiving equipment of VDES system while ensuring the protection of services allocated to the candidate frequency bands and adjacent bands.

**7.1.2 ATU** - **Document APG19-2/INF-07**

No preliminary position on this agenda item yet.

**7.1.3 CEPT** - **Document APG19-3/INF-06**

Subject to the results of relevant studies, CEPT is considering three options:

a) the introduction of a new maritime mobile-satellite (space-to-Earth) service allocation within the frequency bands 160.9625-161.4875 MHz which is not channelized in RR Appendix **18** and the introduction of a new maritime mobile-satellite (Earth-to-space) service allocation for the channels 24, 84, 25, 85, 26 and 86 of RR Appendix **18**;

b) the introduction of a new maritime mobile satellite service for the channels 1024, 1084, 1025, 1085, 1026, 1086 (Earth-to-space) of RR Appendix **18** and for the channels 2024, 2084, 2025, 2085, 2026 and 2086 (space-to-Earth) of RR Appendix **18**;

c) frequency bands out of RR Appendix **18** (for example in the frequency range 162 MHz to 172 MHz) for introduction of VDES satellite component provided that sharing with the incumbent services is feasible.

**7.1.4 CITEL** - **Document APG19-3/INF-08(Rev.1)**

Preliminary views from a few countries support studies. These studies should also take into account the protection of existing terrestrial services which operate in these and adjacent frequency bands*.*  One country is of the view that additional frequency plans should be explored and the VDES channel plan should consider frequencies designated for AMRDs under agenda item 1.9.1.

**7.1.5 RCC** - **Document APG19-2/INF-05**

The RCC Administrations consider that introduction of the VDES satellite component shall not result in imposing constraints on existing and planned systems of services which have allocations in the common and adjacent frequency bands.

**7.2 International Organisations**

**7.2.1 IARU**

No contribution covering this Agenda Item

**7.2.2 ICAO - Document APG19-2/INF-02**

To ensure that any change to the regulatory provisions and spectrum allocations resulting from this agenda item do not adversely impact aviation systems, including the capability of search and rescue aircraft to effectively communicate with vessels during disaster relief operations.

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1. Please note that the term ‘Issues/issues’ should not be confused with Issues in WRC-19 Agenda Items 7 and 9. [↑](#footnote-ref-1)