

REPORT OF TOPIC CHAIRPERSON SPECTRUM TOPIC AREA

Chairperson: Dr. Li Leilei (NRTA)
Period of Report: Oct. 2024 to Aug.2025
Date of Report : Aug.2025

Introduction about scope of the work:

This report is on the Topic Area Spectrum Issues which includes the related WRC-27 Agenda Items concerning broadcasting service and ABU spectrum issues.

Project Topic 1: To consider a possible new primary allocation to the fixed-satellite service (space-to-Earth) in the frequency band 17.3-17.7 GHz and a possible new primary allocation to the broadcasting-satellite service (space-to-Earth) in the frequency band 17.3-17.8 GHz in Region 3, while ensuring the protection of existing primary allocations in the same and adjacent frequency bands, and to consider equivalent power flux-density limits to be applied in Regions 1 and 3 to nongeostationary-satellite systems in the fixed-satellite service (space-to-Earth) in the frequency band 17.3-17.7 GHz, in accordance with Resolution 726 (WRC-23); (WRC-27 AI 1.4)

Project Manager:
Co- Project Manager: Mr. Rajeev Kumar
Time Period: Oct. 2024 to Aug.2025

The following tasks were considered for this project:

1. Follow developments of studies in WP 4A to identify and possible impact on Broadcasting Services.
2. Possible impact on broadcasting service in the Asia-Pacific Area.

This report was provided by Dr. Li Leilei

1 Background

Working Party 4A has been designated as a "Responsible group" for WRC-27 Agenda Item 1.4. The tasks of Working Party 4A are shown as follows:

- studies on sharing and compatibility between the FSS (space-to-Earth), the BSS (space-to-Earth) and the FSS (Earth-to-space) designated by No. 5.516 in order to consider a possible new primary allocation to the FSS (space-to-Earth) in the frequency band 17.3-17.7 GHz for Region 3 and to the BSS (space-to-Earth) in the frequency band 17.3-17.8 GHz for Region 3, while ensuring the protection of existing primary allocations in the same and adjacent frequency bands, and without adversely affecting the existing allocations to the FSS (Earth-to-space) designated by No. 5.516, including assignments to the BSS feeder links contained in Appendix 30A.
- consideration of the applicability of Region 2 non-GSO FSS epfd limits (see noting e)) pertaining to the frequency band 17.3-17.7 GHz to Regions 1 and 3, so as to ensure the protection of GSO networks.

The results of Working Party 4A's May 2025 meeting at [4A/567](#), pertaining to WRC-27 Agenda Item 1.4 are detailed in Annex 7 - Working document on WRC-27 Agenda Item 1.4, Annex 8 - Elements for a working document towards draft CPM text for WRC-27 Agenda Item 1.4, and Annex 9 - Draft work plan for WRC-27 Agenda Item 1.4. The document of Annex 7 had reflected that during the discussion at this meeting, concerns and questions were raised regarding the studies and proposals to update of the epfd value in Table 22-1D to protect the potential new Region 3 BSS in the 17 GHz band as that would impose additional limitations to the non-GSO FSS. Those concerns and the clarification received are reflected in the working document to be further considered at future meetings. In addition, in response to the request at

the October 24 WP 4A meeting, BR has provided its suggestions and comments for WP 4A's future work in order to ensure the stability and integrity of RR Appendix 30A Plan.

2 Preliminary views

If this Agenda Item can promote the new satellite broadcasting service (space-to-Earth) in the 17.3-17.8 GHz band, it would significantly enhance the directive broadcasting satellite services in the Asia-Pacific region by additional frequency resource. The new spectrum will lay the foundation for business development and also facilitate more flexible transponders for subsequent directive broadcasting satellite systems. Therefore, it is necessary to pay attention to the positions and viewpoints of relevant countries in the world, carry out relevant compatibility analysis in a timely manner, and study the strategies and positions of participating in corresponding international and regional conferences.

Project Topic 2: to consider technical and regulatory measures for fixed-satellite service satellite networks/systems in the frequency bands 37.5-42.5 GHz (space-to-Earth), 42.5-43.5 GHz (Earth-to-space), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) for equitable access to these frequency bands, in accordance with Resolution 131 (WRC-23) (WRC-27 AI 1.6)

Project Manager:

Co- Project Manager: Mr. Rajeev Kumar

Time Period: Oct. 2024 to Aug.2025

The following tasks were considered for this project:

1. Follow developments of studies in WP 4A to identify and possible impact on Broadcasting Services.
2. Possible impact on broadcasting service in the Asia-Pacific Area.

This report was provided by Dr. Li Leilei

1 Background

Working Party 4A has been designated as a "Responsible group" for WRC-27 Agenda Item 1.6. The results of Working Party 4A's May 2025 meeting can be found at [4A/567](#) and are outlined below: **Annex 12**-Elements for a working document on WRC-27 Agenda Item 1.6; **Annex 13**- Elements of working document towards draft CPM text on WRC-27 agenda item 1.6, **Annex 14**-Draft work plan for WRC-27 Agenda Item 1.6.

On November 2024, WP6A sent a Liaison Statement to WP 4A regarding AI 1.6, outlining the following three points:

- To date, Working Party 6A has no information on technical and operational characteristics and protection criteria for any Broadcasting services in these bands.
- The results from the recent ITU-R terrestrial BR IFIC indicated there are no terrestrial broadcast entries in the official MIFR between 40.5 GHz and 42.5 GHz.
- Working Party 6A would appreciate being kept informed of any requirements for additional support it can provide and of progress regarding WRC-27 Agenda Item 1.6.

The results of Working Party 4A's May 2025 meeting at [4A/567](#), pertaining to WRC-27 Agenda Item 1.6, are detailed in Annex 12-Elements for a working document on WRC-27 Agenda Item 1.6. But, there is little progress on this Agenda Item during this meeting as compared with the results of previous WP 4A's November 2024 meeting. All results are available at- [4A/567](#). This document was just still focusing on technical and regulatory measures to ensure equitable access for fixed-satellite service (FSS) networks/systems in the Q/V bands (37.5-42.5 GHz, 42.5-43.5 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz). Challenges include limited spectrum reserved under Radio Regulations (RR) Appendices 30/30A/30B, which favor "first-come, first-served" allocations, disadvantaging developing nations. Current statistics reveal dense orbital occupancy (e.g., 500+ GSO submissions with $\leq 2.1^\circ$ separations) and fast growing non-GSO systems (e.g., 10,000+ satellites), complicating equitable access. Proposed solutions include reserving orbital positions and 5 GHz bandwidth per ITU member, enabling national/regional coverage plans, and prioritizing submissions post-WRC-27. Protection of existing services (GSO/non-GSO) is emphasized, alongside technical hurdles in implementing regional plans (e.g., non-GSO global coverage conflicts). The document critiques past approaches (e.g., C/Ku-band plans) for inflexibility and suggests revising notification procedures. Final measures will be refined in following three WP 4A meetings, balancing equitable access with spectrum efficiency and existing service protection under Resolution 131 (WRC-23).

The next meeting of Working Party 4A will take place from October 27 to November 6, 2025, in Geneva, Switzerland.

2 Preliminary views

This Agenda Item pertains to the allocation of both satellite and terrestrial broadcasting services within the 40.5-42.5 GHz band, necessitating consideration of the positions and perspectives of relevant international countries.

Project Topic 3: to consider appropriate regulatory actions to update Appendix 26 to the Radio Regulations in support of aeronautical mobile (OR) high frequency modernization, in accordance with Resolution 411 (WRC-23)(WRC-27 AI 1.9)

Project Manager:

Co- Project Manager: Mr. Rajeev Kumar

Time Period: Oct. 2024 to Aug.2025

The following tasks were considered for this project:

1. Follow developments of studies in WP 5B to identify and possible impact on Broadcasting Services.
2. Possible impact on broadcasting service in the Asia-Pacific Area.

This report was provided by Dr. Li Leilei

1 Background

Working Party 5B has been designated as the "Responsible group" for WRC-27 Agenda Item 1.9. The tasks of Working Party 5B are outlined as follows:

–Conduct studies on the introduction of new technologies to enhance performance, including, but not limited to, new classes of emission, wideband systems (see recognizing c), d), and e)), for the aeronautical mobile (OR) service systems in the frequency ranges considered in Appendix 26.

–In order to fulfill the resolve to invite the ITU Radiocommunication Sector to complete the relevant work in time for the 2027 World Radiocommunication Conference, define the relevant technical and operational characteristics and conduct sharing and compatibility studies with existing aeronautical mobile (OR) service systems and other incumbent services allocated on a primary basis in the same or adjacent frequency bands.

–Based on ITU Radiocommunication Sector (ITU-R) studies, identify any potential modifications to Appendix 26 without altering the existing area allotments in recognizing f), and ensure that the current use of narrowband systems remains unchanged and is neither impacted nor precluded by the revision of Appendix 26.

The results of Working Party 5B's May 2025 meeting, pertaining to WRC-27 Agenda Item 1.9, can be found at [5B/315](#). With regard to AI 1.9, WP 5B agreed to develop one new Rec. ITU-R M. [AMRS_VDL] and one new [Recommendation/Report] ITU-R M. [Modernization of HF AM(OR)S].

In this meeting, Working Party (WP) 5B received a reply liaison statement from WP 5C. WG 5B had considered 2 contributions proposing modifications to the working document towards a preliminary draft new Report ITU-R M.[MODERNIZATION OF HF AM(OR)S]. The proposals were discussed and included in the working document when agreed. The main topics for discussion included the appropriate terminology for existing AM(OR)S systems, further explanation of how 4G ALE is expected to work for these systems, and review of the technical characteristics provided by other Working Parties. For the terminology discussion, the term "legacy" to describe AM(OR)S was not agreeable and the meeting was invited to consider alternative wording such as "analog" or "narrowband" or some other alternative. For the discussion on 4G ALE, there was a request to further expand on the usage of 4G ALE and to provide an explanation of how 4G ALE properly functions for AM(OR)S usage. Finally, regarding the review of technical characteristics, it was highlighted by the meeting that Appendix 27 was updated at the previous WRC-23 and AM(R)S could have channel bandwidths larger than 2.8 kHz, but no upper limit is specified. Due to this information, future should review all parameters in the relevant tables and confirm the information is documented properly.

The next meeting of Working Party 5B will take place from November 18 to 27, 2025, in Geneva, Switzerland.

2 Preliminary views

WP 5B was still engaged in this Agenda Item for developing the new Rec. ITU-R M. [AMRS_VDL] and the new [Recommendation/Report] ITU-R M. [Modernization of HF AM(OR)S], and currently, there is not the study from WP 5B on sharing and compatibility with broadcasting service.

Project Topic 4: to consider developing power flux-density and equivalent isotropically radiated power limits for inclusion in Article 21 of the Radio Regulations for the fixed-satellite, mobile-satellite and broadcasting-satellite services to protect the fixed and mobile services in the frequency bands 71-76 GHz and 81-86 GHz, in accordance with Resolution 775 (Rev.WRC-23)(WRC-27 AI 1.10).

Project Manager: Dr. Li Leilei

Co- Project Manager:

Time Period: Oct. 2024 to Aug.2025

The following tasks were considered for this project:

1. Follow developments of studies in WP 5C to identify and possible impact on Broadcasting Services.
2. Possible impact on broadcasting services.

This report was provided by Dr. Li Leilei

1 Background

Working Party 5C has been designated as a "Responsible group" for WRC-27 Agenda Item 1.10. The task of Working Party 5C is to complete the appropriate studies to determine power flux-density (pfd) and equivalent isotropically radiated power (e.i.r.p.) limits to be included in Article 21 for satellite services (fixed-satellite service (FSS), mobile-satellite service (MSS) and broadcasting-satellite service (BSS)) to protect the current and planned fixed and mobile services in the frequency bands 71-76 GHz and 81-86 GHz.

On November 2024, WP 6A sent the following liaison statement to WP 5C on AI 1.10, outlining the following three points:

- To date, Working Party 6A has no information on technical and operational characteristics and protection criteria for the Broadcasting services in these bands.
- The results from the recent ITU-R terrestrial BR IFIC indicated there are no terrestrial broadcast entries in the official MIFR between 74 GHz and 76 GHz.
- Working Party 6A would appreciate being kept informed of any requirements for additional support it can provide and of progress regarding WRC-27 Agenda Item 1.10.

The results of WP 5C's May 2025 meeting at [5C/206](#), pertaining to WRC-27 Agenda Item 1.10, was the Chairman Report's Annex 2.1-Working document on sharing studies under Agenda Item 1.10. In this document, WP 5C had updated the working document on sharing studies and the work plan on WRC 27 agenda item 1.10. The methodology aspects for sharing studies under this agenda item have yet to be fully discussed. Some initial discussions have taken place, and a comparative table of key assumptions and a list of questions and answers on the different input documents have been compiled to facilitate discussions at the next WP 5C meeting.

The next meeting of WP 5C will take place from November 17 to November 28, 2025, in Geneva, Switzerland.

2 Preliminary views

On the one hand, this Agenda Item will directly study and determine the power flux density and equivalent omnidirectional radiated power of satellite broadcasting services, and at the same time consider the protection of terrestrial broadcasting services. Therefore, it is necessary to pay attention to the positions and viewpoints of relevant countries in the world.

Project Topic 5:	to consider studies on possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage, in accordance with Resolution 253 (WRC-23)(WRC-27 AI 1.13).
Project Manager:	Dr. Li Leilei
Co- Project Manager:	
Time Period:	Oct. 2024 to Aug.2025

The following tasks were considered for this project:

1. Follow developments of studies in WP 4C to identify and possible impact on Broadcasting Services.
2. Possible impact on broadcasting services.

This report was provided by Dr. Li Leilei

1 Background

Working Party 4C has been designated as the "Responsible group" for WRC-27 Agenda Item 1.13. The tasks of Working Party 4C are shown as follows:

- studies on possible allocations to the MSS in the frequency range between 694/698 MHz and 2.7 GHz, taking into account the IMT frequency arrangements addressed in the most recent version of Recommendation ITU-R M.1036.

–studies on spectrum requirements and on technical, operational and regulatory matters related to the implementation of the mobile-satellite service for direct connectivity to the IMT user equipment to complement the terrestrial IMT network coverage.

On October 22, 2024, WP 6A received a liaison statement WP 4C. In this letter, WP 4C agreed on the list of frequency bands to be used for sharing and compatibility studies in accordance with Resolution 253 (WRC-23) as contained in Table 1.

TABLE 1
List of the possible IMT frequency arrangements for MSS direct communication with IMT UE

Directionality	
Uplink (MHz)	Downlink (MHz)
807-849	852-894
880-915	925-960
832-862	791-821
698-716 776-798	716-746 746-768
698-748	753-803
1 427-1 470	1 475-1 518
1 920-1 980	2 110-2 170
1 710-1 785	1 805-1 880
1 850-1 920	1 930-2 000
1 710-1 780	2 110-2 180
2 000-2 020	2 180-2 200
2 010-2 025	1 880-1 920
2 305-2 320	2 345-2 360
2 500-2 570	2 620-2 690

For some of the bands in the table above, the directionality may not fully necessarily be in line with Recommendation ITU-R M.1036. Working Party 4C invites Working Parties (WPs) 3L, 3M, 4A, 4B, 5A, 5B, 5C, 6A, 7B, 7C and 7D to provide any additional information on technical and operational characteristics, protection criteria (which includes any methodology on how to apply it and performance objectives), with respect to systems operating in, or adjacent to, the frequency bands in Table 1, based on the terms of reference of each Working Party.

The results of Working Party 4C's May 2025 meeting at [4C/356](#), pertaining to WRC-27 Agenda Item 1.13, are detailed in Annex 6 - Working document on the possible description and functionality of MSS systems for direct connectivity between space stations and IMT user equipment, Annex 7 - Working document on sharing and compatibility studies under WRC-27 agenda item 1.13, Annex 8 - Work plan for WRC-27 agenda item 1.13, and Annex 9 - Terms of Reference for Working Party 4C Correspondence Group on WRC-27 agenda item 1.13.

Regarding the matters on sharing and compatibility studies, the discussion during this WP 4C meeting mainly focused on DC-MSS-IMT characteristics. Most of the orbital configuration, technical and operational characteristic items are agreed, and relevant proponents have provided information to most of these items to support future studies. However, views were also expressed that characteristics such as antenna patterns, especially for the adjacent band, ACLR, OOB, and cross-border interference management still need further inputs and discussion. The following issues are identified that require further discussion:

- 1 Proper in-band / out-of-band antenna pattern
- 2 Out-of-band emission density distribution within the first adjacent channel, particularly at frequency offsets near the edge of the transmitted DC-MSS-IMT channel
- 3 Antenna polarization in individual sharing and compatibility studies
- 4 Mitigation techniques to deal with cross-border interference issues
- 5 How to use these parameters in sharing and compatibility studies

Regarding the matters the development of functionality and description for DC-MSS-IMT, the discussion mainly focused on the term of direct connectivity between space stations and IMT user equipment, and finally the meeting agreed on the term as Direct Connectivity between Mobile-Satellite Service space station and IMT UEs (DC-MSS-IMT). The working document consists of 5 sections and two ANNEXES and the contents in the sections and the ANNEXES were not discussed and agreed.

- 1 Terms and definitions
- 2 Introduction
- 3 General description of DC-MSS-IMT systems
- 4 [Operational Concept of the envisaged DC-MSS-IMT system / DC-MSS-IMT Operational Model]
- 5 Responsibilities of SNO/MNO and its corresponding administration
- 6 ANNEX 1: Technical Functionality
- 7 ANNEX 2: Managing and resolving interference scenarios that may arise from satellite network transmissions

Further extensive review is required on this above-mentioned document. In this regard, it was agreed by WP 4C to establish the Correspondence Group (CG) to continue the work on the document of description and functionality by holding two virtual meetings before WP 4C meeting in October 2025. However, since there was a notable concern raised during the Plenary about the short interval between #3 and #4 indicated in the ToR, the exact schedule will be decided considering this concern and will be circulated through the CG 1.13 emailing list once it is decided. The outcome of the meeting will be an updated Working Document, which will serve as a contribution for further discussions at the WP 4C meeting in October 2025.

In response to WP 5D's inquiries regarding beam management, the aggregate factor, duty cycle and related topics, while WP 4C extensively discussed the matters, it was agreed that WP 4C is still conducting its analysis and will provide a detailed response to WP 5D in due course. WP 4C agreed to send a liaison statement accordingly.

The following issues are to be addressed in future meetings of WP 4C:

- Sharing studies principles and methodologies that will be followed by the group
- Several parameters need to be clarified, updated and additionally agreed
- Definitions and functionality concepts of DC-MSS-IMT including responsibilities, authorization, definitions and other issues
- Beam management, aggregate factor and duty cycle to be clarified and send to WP 5D once available
- Harmonization of parameters including protection criteria with other agenda items

In discussion on AI 1.13, it was requested that the proponents of DC-MSS-IMT systems provide information on the ITU filings that may be associated with the systems. This would help the members understand the regulatory status around the systems, which may be useful in future discussion on AI 1.13.

The next meeting of WP 4C is planned for 15 October – 24 October 2025, in Geneva, Switzerland.

2 Preliminary views

This Agenda Item will explore the potential new allocation of satellite mobile services in the 694/698 MHz-2.7GHz band to enable direct connectivity between space radios and IMT user equipment, thereby supplementing IMT terrestrial network coverage. This involves the allocation of terrestrial broadcasting services in the 694-702MHz band. If approved, the issue will affect several services used by Asia-Pacific countries in this frequency band. Therefore, it is necessary to pay attention to the positions and viewpoints of relevant countries in the world, study the strategies and positions of participating in corresponding international conferences, and prevent the formation of adverse international restrictions on the development of terrestrial television services in the Asia-Pacific region.

Project Topic 6: to consider regulatory provisions for receive-only space weather sensors and their protection in the Radio Regulations, taking into account the results of ITU Radiocommunication Sector studies, in accordance with Resolution 682 (WRC-23)(WRC-27 AI 1.17).

Project Manager: Dr. Li Leilei

Co- Project Manager:

Time Period: Oct. 2024 to Aug.2025

The following tasks were considered for this project:

1. Follow developments of studies in WP 7C to identify and possible impact on Broadcasting Services.
2. Possible impact on broadcasting services.

This report was provided by Dr. Li Leilei

1 Background

Working Party 7C has been identified as the "Responsible group" for WRC-27 Agenda Item 1.17. The tasks of Working Party 7C are shown as follows:

–studies on spectrum needs and appropriate protection criteria for receive-only space weather sensors, as well as system characteristics, as appropriate, taking into account noting a).

–sharing and compatibility studies pertaining to potential new primary allocations to MetAids (space weather) in the following frequency bands for receive-only sensors, taking into account resolves 2: 27.5-28.0 MHz, 29.7-30.2 MHz, 32.2-32.6 MHz, 37.5-38.325 MHz, 73.0-74.6 MHz, 608-614 MHz.

–studies on possible regulatory provisions of the Radio Regulations to accommodate the possibility for an administration that desires to notify a receive-only space weather sensor station to be included in the Master International Frequency Register.

On November 2024, WP 6A sent a liaison statement to WP 7C regarding AI 1.17. In this letter, WP 6A shared its views and information for WP 7C.

With respect to the frequency band 608-614 MHz, WP 6A provided in Document 7C/32 information on the system characteristics, sharing methodologies, and other applicable reference documents for the 608-614 MHz band. Working Party 6A notes the Radio Regulations of 2024 recognise a number of provisions for radio astronomy in the 608-614 MHz band in a number of countries in Region 1 - RR Nos 5.306 and 5.307, and in Region 3 RR Nos 5.306 and 5.307. Otherwise, the band is deployed by many countries for terrestrial television broadcasting. With respect to deployment scenarios of terrestrial television in the 608-614 MHz band, the Attachment in Document 7C/32 provides information on the terrestrial broadcasting service allocated on a primary basis. The terrestrial IFIC can provide additional information on actually filed broadcasting stations in the 608-614 MHz band.

With respect to the frequency band 73.0-74.6 MHz, Working Party 6A has received advice with a search query across Regions 1 and 3, encompassing both northern and southern hemispheres, for example IFIC 3030; shows 206 entries which are recorded in the MIFR for Frequency Modulation sound broadcasting, notified in accordance with RR Article 11. The Broadcasting services Division of the BR Terrestrial Services Department has confirmed there are 206 terrestrial broadcast entries in the official MIFR between 73.0 to 74.6 MHz for Region 1. Review of the entries in IFIC 3030 indicate the latest such notifications were received in 2017 and 2023, which indicates use of the 73.0-74.6 MHz band. Further individual information on these filings is available in the MIFR. These MIFR filings for these Frequency Modulation sound broadcasting stations include locations, radiated powers and antenna heights for potential use in studies by WP 7C. Please note, there may be further instances of these stations which do not have any potential to cause terrestrial cross border interference and have not therefore been entered into the MIFR. Working Party 6A advises WP 7C to consider the following ITU-R Recommendations which should provide considerable information on the Terrestrial broadcasting service allocated on a primary basis, in the 73-74.6 MHz band, for technical and operational characteristics for the Broadcasting services, noting broadcasting stations are usually operational non-stop, for 24 hours a day.

Recommendation ITU-R	Title
BS.412	Planning standards for terrestrial FM sound broadcasting at VHF
BS.450	Transmission standards for FM sound broadcasting at VHF
BS.641	Determination of radio-frequency protection ratios for frequency-modulated sound broadcasting
BS.704	Characteristics of FM sound broadcasting reference receivers for planning purposes
BS.1195	Transmitting antenna characteristics at VHF and UHF

The up-to-date results of Working Party 7C's March 2025 meeting at [7C/236](#), pertaining to WRC-27 Agenda Item 1.17, were: Annex 5 - Working document towards a preliminary draft new Recommendation ITU-R RS.[RXSW_PROTECT_CRITERIA], Annex 6 - Working document towards a preliminary draft new Report ITU-R RS.[SW_STUDIES], Annex 7 - Proposed draft CPM text for WRC-27 Agenda Item 1.17, Annex 8 - Working document towards preliminary draft revised Report ITU-R RS.2456-1.

The next meeting of WP 7C will take place from September 16 to September 25, 2025, in Geneva, Switzerland.

2 Preliminary views

This Agenda Item relates to the allocation of terrestrial broadcasting services in the frequency bands 608-614 MHz and 73.0-74.6 MHz. But, the studied service of space weather sensors on this Agenda Item is receive-only. Therefore, it is necessary to pay attention to the positions and viewpoints of relevant countries in the world, study the strategies and positions of participating in corresponding international conferences, and prevent the formation of adverse international restrictions on the development of terrestrial television services in the Asia-Pacific region.