

Standard Radio System Plan

REQUIREMENTS FOR
INTERNATIONAL MOBILE
TELECOMMUNICATIONS (IMT) SYSTEMS
OPERATING IN THE FREQUENCY BAND
2500 MHz TO 2690 MHz



Malaysian Communications and Multimedia Commission

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1.0 GLOSSARY

- 1.1 The terms used in this document may be found in the document SRSP Glossary which can be downloaded from the Commission's website.
(<http://www.mcmc.gov.my/skmmgovmy/files/attachments/SRSPGlossary.pdf>)

**REQUIREMENTS FOR INTERNATIONAL MOBILE
TELECOMMUNICATIONS (IMT) SYSTEMS OPERATING IN THE
FREQUENCY BAND 2500 MHz TO 2690 MHz**

2.0 INTENT

- 2.1 This Standard Radio System Plan ('SRSP') states the requirements for the utilization of the frequency band between 2500 MHz to 2690 MHz ('the said band') for International Mobile Telecommunications (IMT) systems in Malaysia.
- 2.2 The term IMT in this document is referred to IMT-Advanced system.
- 2.3 IMT-2000 systems are third generation mobile systems which provide access to a wide range of telecommunication services, supported by the fixed telecommunication networks (e.g. PSTN / ISDN / IP) and other services which are specific to mobile users.
- 2.4 IMT-Advanced systems are mobile systems that include capabilities of IMT-2000 and go beyond those of IMT-2000. Such systems provide access to a wide range of telecommunications services including advanced mobile services supported by mobile and fixed networks.
- 2.5 IMT services are intended for providing wireless broadband connectivity to subscribers and can include applications such as voice, video, images, interactive multimedia, high-speed data and mobile TV.
- 2.6 In general, this SRSP is designed to provide information on the minimum requirements in the use of the said band as described in the Spectrum Plan (see **Appendix A**). It provides information on technical characteristics of radio systems, frequency channelling, coordination initiatives in order to maximise the utilisation, minimise interference and optimise the usage of the band. It is intended to regulate the usage of spectrum and does not attempt to establish any detailed equipment standards.

3.0 GENERAL

- 3.1 Technical characteristics of equipment used in IMT systems shall conform to all applicable Malaysian standards, international standards, International Telecommunication Union ('ITU') and its radio regulations as agreed and adopted by Malaysia.
- 3.2 Additional frequency bands for IMT were identified at the ITU-R World Radiocommunication Conference 2000 (WRC-00) and WRC-07. The said band has been identified as one of the bands for the use of IMT systems.
- 3.3 The equipment installation of all IMT systems shall comply with safety rules as specified in the applicable standards.
- 3.4 The equipment used shall be certified under the Communications and Multimedia (Technical Standards) Regulations 2000.
- 3.5 The allocation and allotment of this frequency band and the information in this SRSP are subject to review from time to time to reflect new developments in the communications and multimedia industry.

4.0 CHANNELLING PLAN

- 4.1 This SRSP defines the frequency band 2500 MHz to 2690 MHz providing a total bandwidth of 190 MHz for the IMT system.
- 4.2 The channelling plan is developed based on 5 MHz channel spacing. However, the use of multiple channels of 5 MHz is allowed to support future technologies that require larger channel bandwidth.
- 4.3 Both Frequency Division Duplex ('FDD') and Time Division Duplex ('TDD') can be accommodated in the channelling plan. The duplex channel spacing for FDD operation shall be 120 MHz with terminal station transmission (uplink) located in the frequency band 2500 MHz to 2570 MHz and base station transmission (downlink) located in the frequency band 2620 MHz to 2690 MHz.
- 4.4 The frequency band 2570 MHz to 2620 MHz may be used for TDD operation.
- 4.5 The channel arrangements are shown in **Appendix B**.
- 4.6 It is to note that Channel 15 and Channel 24 shall not be assigned.

5.0 REQUIREMENTS FOR USAGE OF SPECTRUM

- 5.1 This SRSP covers the minimum key characteristics considered necessary in order to make the best use of the available frequencies.
- 5.2 The use of the said band is only allowed for deployment of up to IMT-Advanced system.
- 5.3 The said band is not limited in its use for direct radio connection between a radio base station and subscribers in a point-to-point or point-to-multipoint configurations.
- 5.4 Only systems using digital technologies that promote spectral efficiency will be issued with an assignment. Capacity enhancing digital techniques is being developed rapidly and such techniques that promote efficient use of spectrum, without reducing quality of service are encouraged.
- 5.5 Maximum radiated power:
 - 5.5.1 IMT Base Station in-block transmissions should not exceed +61dBm/5MHz Effective Isotropic Radiated Power (EIRP).
 - 5.5.2 On a case-to-case basis, higher EIRP value may be permitted if acceptable technical justification is provided.
 - 5.5.3 IMT mobile station transmissions should not exceed +31dBm/5MHz total radiated power for mobile/nomadic terminal station and not exceed +35dBm/5MHz EIRP for fixed terminal stations. Subscriber terminal station should comply with the technical specification set under "*Technical Specification For Broadband Wireless Access (BWA) Equipment*" and Class Assignment ('CA').
- 5.6 In some cases, a radio system conforming to the requirements of this SRSP may require

modifications if harmful interference is caused to other radio stations or systems.

- 5.7 The allocation of spectrum and shared services within the said band are found in the Spectrum Plan and an extract of it is shown in **Appendix A**.
- 5.8 It is noted that potential interference may occur when two (2) different operators operate in adjacent channel blocks, either both in TDD mode or in one using TDD and another operator is using FDD mode. However, this potential interference could be mitigated via several methods such as network synchronization between the TDD operators (if both are on TDD) or geographical separation (if between TDD and FDD usage). If there is a need to introduce guard band spectrum (for either case), it is inclusive within the designated spectrum blocks allocated to the operators.
- 5.9 It should be further noted that the operation of the IMT systems in the said band is allowed without causing any interference to other adjacent services and its coexistence and the mitigation of interference may require adopting a number of engineering solutions based on industry best practise guidelines and recommendations described in this document. The operating recommendations as stated below are to be fully observed and complied at all times, unless subsequently modified and updated in this document:
- 5.9.1 For IMT base stations, the unwanted emissions in out-of-band and spurious domain outside an assignment holder's assigned frequency blocks shall comply with ITU-R Recommendation M.1580.
- 5.9.2 The IMT base station maximum permitted level of spurious domain emissions outside an assignment holder's assigned frequency blocks shall be as follows:
- 5.9.2.1 -49dBm for IMT systems operating in the band 2500 MHz – 2570 MHz;
- 5.9.2.2 -52dBm for IMT systems operating in the band 2570 MHz – 2620 MHz; and
- 5.9.2.3 -52dBm for IMT system operating in the band 2620 MHz – 2690 MHz.
- 5.9.3 For IMT mobile stations, the unwanted emissions in out-of-band and spurious domain outside an assignment holder's assigned frequency blocks shall comply with ITU-R Recommendation M.1581.
- 5.9.4 When an unwanted emission outside of an assigned frequency block causes major interference, the Commission may impose greater attenuation than specified in this section.

6.0 PRINCIPLES OF ASSIGNMENT

- 6.1 Authorisations to use the said band for the IMT base station apparatus and IMT mobile station are as follows:
 - 6.1.1 Apparatus Assignment ('AA') for IMT base station apparatus; and
 - 6.1.2 Class Assignment ('CA') for IMT mobile station. The applicants are required to comply with any notification of CA issued pursuant to section 169 of the Communications and Multimedia Act 1998 ('the Act') which confers rights on any person to use any frequency band for the specified devices.
- 6.2 Eligible persons who may apply for the AA are the holders of the Network Facilities Provider Individual ('NFP(I)') licence which provides radiocommunication transmitters and links.
- 6.3 Applicants are required to:
 - 6.3.1 Submit AA application for the apparatus on the prescribed AA forms in accordance with the Act, the Communications and Multimedia (Spectrum) Regulations 2000 ('the Regulations') and any relevant instrument issued by the Commission from time to time; and
 - 6.3.2 Submit any other documents and/or information that may be requested by the Commission.
- 6.4 In facilitating the planning and efficiency in spectrum management, upon successful application, the applicants shall be allocated with specific spectrum block(s) of a minimum of 5 MHz. Such arrangements are only for administrative or spectrum management purposes in order to facilitate the applicants in their rollout planning. Spectrum in any areas not utilised or underutilised, may be offered to other NFP(I) licensees.
- 6.5 The maximum validity period of an AA for all systems in the said band is five (5) years and the AA holder may make fresh application for the AA in accordance with the procedure set out in the Regulations.
- 6.6 Issuance of AA is subject to successful coordination with the Malaysia's neighbouring country(ies) for stations that are to be located along the border areas.
- 6.7 The conditions that may be imposed by the Commission are the standard conditions for an assignment as specified in the Regulations and any special conditions as may be imposed by the Commission for the allocation and assignment of the said band.

7.0 IMPLEMENTATION

- 7.1 This SRSP shall be effective on the date of its issuance.

8.0 COORDINATION REQUIREMENT

- 8.1 Use of the said band shall require coordination with Malaysia's neighbouring countries within the coordination zones of 50 kilometres from the respective neighbouring countries ('the said zone'). It is to be noted that the said zone is continuously being reviewed with the neighbouring countries and may be updated from time to time.
- 8.2 To date, coordination with Singapore and Brunei Darussalam for the said band has been carried out. The agreed band plan between Malaysia and these countries is stipulated in **Appendix C** and subject to further review if deemed necessary. The agreed band plan only applies for operation of the system within the said zone.
- 8.3 It is to be noted that the coordination between Malaysia and other neighbouring countries is currently on-going and hence, no agreement for the use of the said band has been reached with the aforesaid countries yet. Agreement on the band plan from one neighbouring country to another may differ subject to the requirement of the respective country. The coordination parameters and band plans are continuously being reviewed with the regulatory authorities of the neighbouring countries. As such, the Commission reserves the right to reassign the affected frequency channels at border coordination areas.
- 8.4 It should be noted that IMT systems share the said band on equal basis of primary status with other services as shown in **Appendix A**. IMT systems should avoid radio interference to space stations services and shall comply with Recommendations ITU-R SF.765 and Article 21 of the Radio Regulations. Assignment holders shall take all steps to avoid causing any interference to other services.
- 8.5 In the event of any interference, the Commission will require affected users to carry out an operator-to-operator coordination including operators in the neighbouring countries. In the event that the interference remained unresolved by the operators after twenty four (24) hours, the affected parties may escalate the matter to the Commission for a resolution. The Commission will decide the necessary modifications to the system and schedule of modifications to resolve the interference dispute. The Commission will be guided by the interference resolution process as shown in **Appendix D**.
- 8.6 Assignment holders shall take full advantage of interference mitigation techniques such as antenna discrimination, tilt, polarization, frequency discrimination, shielding/blocking (introduce diffraction loss), site selection, and/or power control to facilitate the coordination of systems.

9.0 REVOCATION

- 9.1 SKMM SRSP-523, dated 28 November 2012 is hereby revoked.

10.0 REFERENCES

- [1] Spectrum Plan
- [2] Radio Regulations Article 21 – Terrestrial and space services sharing frequency bands above 1 GHz
- [3] Radio Regulations Resolution 223 (Rev. WRC-19) – Additional frequency bands identified for International Mobile Telecommunications
- [4] Recommendation ITU-R M.1457 – Detailed specifications of the terrestrial radio interfaces of International Mobile Telecommunications-2000 (IMT-2000)
- [5] ECC Report 45 – Sharing And Adjacent Band Compatibility Between UMTS/IMT-2000 In The Band 2500-2690 MHz And Other Services.
- [6] Recommendation ITU-R SF.765 – Intersection of radio-relay antenna beams with orbits used by space stations in the fixed-satellite service
- [7] Recommendation ITU-R M.1580 – Generic unwanted emission characteristics of base stations using the terrestrial radio interfaces of IMT-2000
- [8] Recommendation ITU-R M.1581 – Generic unwanted emission characteristics of mobile stations using the terrestrial radio interfaces of IMT-2000
- [9] Recommendation ITU-R M.1036 – Frequency arrangements for implementation of the terrestrial component of International Mobile Telecommunications (IMT) in the bands identified for IMT in the Radio Regulations (RR)

Issued by:



Malaysian Communications and Multimedia Commission

APPENDIX A: SPECTRUM PLAN 2500 MHz TO 2690 MHz

(This Appendix forms an integral part of the SRSP document)

Frequency Band (MHz)	ITU Allocations			Malaysian Allocations
	Region 1	Region 2	Region 3	
2 500- 2 520	FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.412	FIXED 5.410 FIXED SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A	FIXED 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to-Earth) 5.351A 5.407 5.414 5.414A 5.404 5.415A	FIXED 5.410 FIXED SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A MLA55 MOBILE-SATELLITE (space-to-Earth) 5.351A 5.414 MLA3 MLA89 MLA102
2 520- 2 535	2520-2655 FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416	2520-2655 FIXED 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416	FIXED 5.410 FIXED SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416 5.403 5.414A 5.415A	FIXED 5.410 FIXED SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A MLA55 BROADCASTING- SATELLITE 5.413 5.416 5.403 MLA3 MLA89 MLA102
2 535- 2 655	5.339 5.412 5.418B 5.418C	5.339 5.418B 5.418C	FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416 5.339 5.418 5.418A 5.418B 5.418C	FIXED 5.410 MOBILE except aeronautical mobile 5.384A MLA55 BROADCASTING- SATELLITE 5.413 5.416 5.339 5.418A 5.418B 5.418C MLA3 MLA89 MLA102

Frequency Band (MHz)	ITU Allocations			Malaysian Allocations
	Region 1	Region 2	Region 3	
2 655-2 670	FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.208B 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	FIXED 5.410 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.208B	FIXED 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.420	FIXED 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A MLA55 BROADCASTING-SATELLITE 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.420 MLA3 MLA89 MLA102
2 670-2 690	FIXED 5.410 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	FIXED 5.410 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.208B 5.415 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149	FIXED 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A 5.419 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149	FIXED 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A MLA55 MOBILE-SATELLITE (Earth-to-space) 5.351A 5.419 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 MLA3 MLA89 MLA102

5.149 In making assignments to stations of other services to which the bands:

13 360-13 410 kHz,
 25 550-25 670 kHz,
 37.5-38.25 MHz,
 73-74.6 MHz in Regions 1 and 3,
 150.05-153 MHz in Region 1,
 322-328.6 MHz,
 406.1-410 MHz,
 608-614 MHz in Regions 1 and 3,
 1 330-1 400 MHz,
 1 610.6-1 613.8 MHz,
 1 660-1 670 MHz,
 1 718.8-1 722.2 MHz,
 2 655-2 690 MHz,
 3 260-3 267 MHz,
 3 332-3 339 MHz,
 3 345.8-3 352.5 MHz,
 4 825-4 835 MHz,
 4 950-4 990 MHz,

13 360-13 410 kHz,
 25 550-25 670 kHz,
 37.5-38.25 MHz,
 73-74.6 MHz in Regions 1 and 3,
 150.05-153 MHz in Region 1,
 322-328.6 MHz,
 406.1-410 MHz,
 608-614 MHz in Regions 1 and 3,
 1 330-1 400 MHz,
 1 610.6-1 613.8 MHz,
 1 660-1 670 MHz,
 1 718.8-1 722.2 MHz,
 2 655-2 690 MHz,
 3 260-3 267 MHz,
 3 332-3 339 MHz,
 3 345.8-3 352.5 MHz,
 4 825-4 835 MHz,
 4 950-4 990 MHz,

13 360-13 410 kHz,
 25 550-25 670 kHz,
 37.5-38.25 MHz,
 73-74.6 MHz in Regions 1 and 3,
 150.05-153 MHz in Region 1,
 322-328.6 MHz,
 406.1-410 MHz,
 608-614 MHz in Regions 1 and 3,
 1 330-1 400 MHz,
 1 610.6-1 613.8 MHz,
 1 660-1 670 MHz,
 1 718.8-1 722.2 MHz,
 2 655-2 690 MHz,
 3 260-3 267 MHz,
 3 332-3 339 MHz,
 3 345.8-3 352.5 MHz,
 4 825-4 835 MHz,
 4 950-4 990 MHz,

are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 4.5 and 4.6 and Article 29). (WRC-07)

5.208B* In the frequency bands:

137-138 MHz,
387-390 MHz,
400.15-401 MHz,
1 452-1 492 MHz,
1 525-1 610 MHz,
1 613.8-1 626.5 MHz,
2 655-2 690 MHz,
21.4-22 GHz,

Resolution **739 (Rev.WRC-15)** applies. (WRC-15)

5.339 The bands 1 370-1 400 MHz, 2 640-2 655 MHz, 4 950-4 990 MHz and 15.20-15.35 GHz are also allocated to the space research (passive) and Earth exploration-satellite (passive) services on a secondary basis.

5.351A For the use of the bands 1 518-1 544 MHz, 1 545-1 559 MHz, 1 610-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 668-1 675 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz, 2 483.5-2 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212 (Rev.WRC-07)** and **225 (Rev.WRC-07)***. (WRC-07)

5.384A The frequency bands 1 710-1 885 MHz, 2 300-2 400 MHz and 2 500-2 690 MHz, or portion thereof, are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)

5.403 Subject to agreement obtained under No. **9.21**, the band 2 520-2 535 MHz may also be used for the mobile-satellite (space-to-Earth), except aeronautical mobile-satellite, service for operation limited to within national boundaries. The provisions of No. **9.11A** apply. (WRC-07)

5.404 *Additional allocation:* in India and Iran (Islamic Republic of), the band 2 500-2 516.5 MHz may also be used for the radiodetermination-satellite service (space-to-Earth) for operation limited to within national boundaries, subject to agreement obtained under No. **9.21**.

5.407 In the band 2 500-2 520 MHz, the power flux-density at the surface of the Earth from space stations operating in the mobile-satellite (space-to-Earth) service shall not exceed $-152 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$ in Argentina, unless otherwise agreed by the administrations concerned.

5.410 The band 2 500-2 690 MHz may be used for tropospheric scatter systems in Region 1, subject to agreement obtained under No. **9.21**. No. **9.21** does not apply to tropospheric scatter links situated entirely outside Region 1. Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in this band. When planning new tropospheric scatter radio-relay links in this band, all possible measures shall be taken to avoid directing the antennas of these links towards the geostationary-satellite orbit. (WRC-12)

5.412 *Alternative allocation:* in Kyrgyzstan and Turkmenistan, the band 2 500-2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

5.413 In the design of systems in the broadcasting-satellite service in the bands between 2 500 MHz and 2 690 MHz, administrations are urged to take all necessary steps to protect the radio astronomy service in the band 2 690-2 700 MHz.

5.414 The allocation of the frequency band 2 500-2 520 MHz to the mobile-satellite service (space-to-Earth) is subject to coordination under No. **9.11A**. (WRC-07)

5.414A In Japan and India, the use of the bands 2 500-2 520 MHz and 2 520-2 535 MHz, under No. **5.403**, by a satellite network in the mobile-satellite service (space-to-Earth) is limited to operation within national boundaries and subject to the application of No. **9.11A**. The following pfd values shall be used as a threshold for coordination under No. **9.11A**, for all conditions and for all methods of modulation, in an area of 1 000 km around the territory of the administration notifying the mobile-satellite service network:

* *Note by the Secretariat:* Resolution 212 was revised by WRC-15 and Resolution 225 was revised by WRC-12.

$-136 \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for $0^\circ \leq \theta \leq 5^\circ$
$-136 + 0.55 (\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for $5^\circ < \theta \leq 25^\circ$
$-125 \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for $25^\circ < \theta \leq 90^\circ$

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. Outside this area Table 21-4 of Article 21 shall apply. Furthermore, the coordination thresholds in Table 5-2 of Annex 1 to Appendix 5 of the Radio Regulations (Edition of 2004), in conjunction with the applicable provisions of Articles 9 and 11 associated with No. 9.11A, shall apply to systems for which complete notification information has been received by the Radiocommunication Bureau by 14 November 2007 and that have been brought into use by that date. (WRC-07)

5.415 The use of the bands 2 500-2 690 MHz in Region 2 and 2 500-2 535 MHz and 2 655-2 690 MHz in Region 3 by the fixed-satellite service is limited to national and regional systems, subject to agreement obtained under No. 9.21, giving particular attention to the broadcasting-satellite service in Region 1. (WRC-07)

5.415A *Additional allocation:* in India and Japan, subject to agreement obtained under No. 9.21, the band 2 515-2 535 MHz may also be used for the aeronautical mobile-satellite service (space-to-Earth) for operation limited to within their national boundaries. (WRC-2000)

5.416 The use of the band 2 520-2 670 MHz by the broadcasting-satellite service is limited to national and regional systems for community reception, subject to agreement obtained under No. 9.21. The provisions of No. 9.19 shall be applied by administrations in this band in their bilateral and multilateral negotiations. (WRC-07)

5.418 *Additional allocation:* in India, the frequency band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution 528 (Rev.WRC-15). The provisions of No. 5.416 and Table 21-4 of Article 21, do not apply to this additional allocation. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to Resolution 539 (Rev.WRC-15). Geostationary broadcasting-satellite service (sound) systems for which complete Appendix 4 coordination information has been received after 1 June 2005 are limited to systems intended for national coverage. The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting satellite service (sound) space station operating in the frequency band 2 630-2 655 MHz, and for which complete Appendix 4 coordination information has been received after 1 June 2005, shall not exceed the following limits, for all conditions and for all methods of modulation:

$-130 \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for $0^\circ \leq \theta \leq 5^\circ$
$-130 + 0.4 (\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for $5^\circ < \theta \leq 25^\circ$
$-122 \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for $25^\circ < \theta \leq 90^\circ$

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. As an exception to the limits above, the pfd value of $-122 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ shall be used as a threshold for coordination under No. 9.11 in an area of 1 500 km around the territory of the administration notifying the broadcasting-satellite service (sound) system.

In addition, an administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. 5.416 for systems for which complete Appendix 4 coordination information has been received after 1 June 2005. (WRC-15)

5.418A In certain Region 3 countries listed in No. 5.418, use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound) for which complete Appendix 4 coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. 9.12A, in respect of geostationary-satellite networks for which complete Appendix 4 coordination information, or notification information, is considered to have been received after 2 June 2000, and No. 22.2 does not apply. No. 22.2 shall continue to apply with respect to geostationary-satellite networks for which complete Appendix 4 coordination information, or notification information, is considered to have been received before 3 June 2000. (WRC-03)

5.418B Use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. 5.418, for which complete Appendix 4 coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. 9.12. (WRC-03)

5.418C Use of the band 2 630-2 655 MHz by geostationary-satellite networks for which complete Appendix 4 coordination information, or notification information, has been received after 2 June 2000 is subject to the application of the provisions of No. 9.13 with respect to non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. 5.418 and No. 22.2 does not apply. (WRC-03)

5.419 When introducing systems of the mobile-satellite service in the band 2 670-2 690 MHz, administrations shall take all necessary steps to protect the satellite systems operating in this band prior to 3 March 1992. The coordination of mobile-satellite systems in the band shall be in accordance with No. **9.11A**. (WRC-07)

5.420 The band 2 655-2 670 MHz may also be used for the mobile-satellite (Earth-to-space), except aeronautical mobile-satellite, service for operation limited to within national boundaries, subject to agreement obtained under No. **9.21**. The coordination under No. **9.11A** applies. (WRC-07)

MLA3 Notification of Issuance of Class Assignment.

MLA55 Standard Radio System Plan 523: Requirements for International Mobile Telecommunications (IMT) Systems Operating in the Frequency Band from 2500 MHz to 2690 MHz.

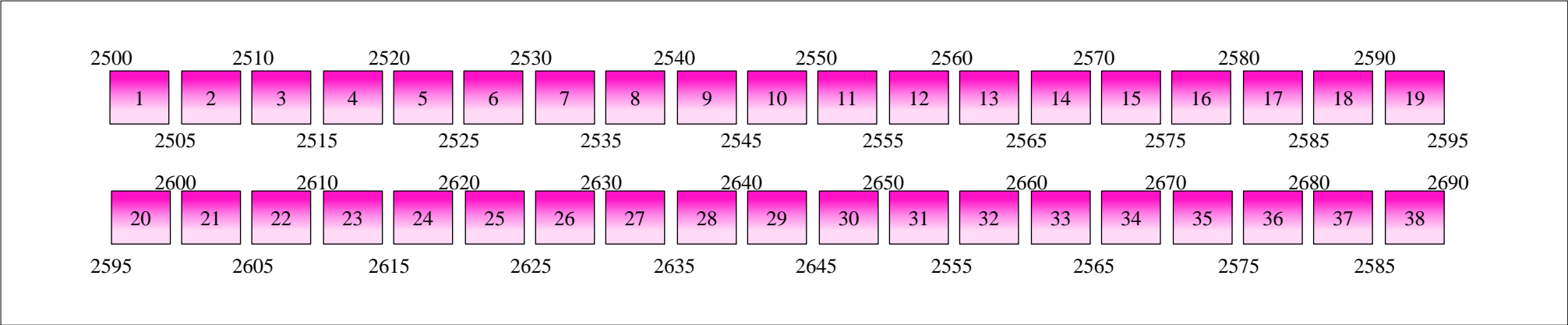
MLA89 Technical Specification for Broadband Wireless Access (SKMM WTS BWA).

MLA102 Standard Radio System Plan 549: Requirements for Devices using Ultra-Wideband (UWB) Technology Operating in the Frequency Bands from 30 MHz to 960 MHz, 2.17 GHz to 10.6 GHz, 21.65 GHz to 29.5 GHz and 77 GHz to 81 GHz.

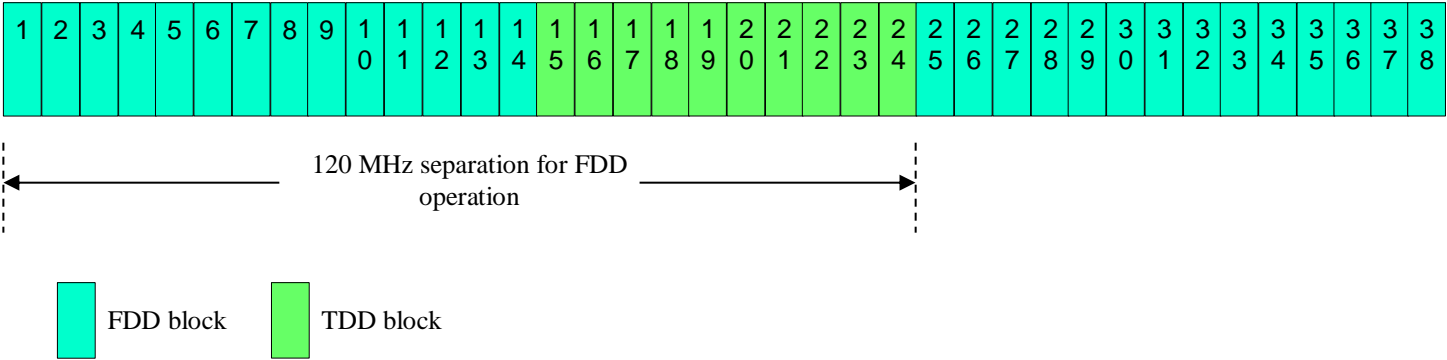
APPENDIX B: CHANNELING PLAN AND BAND PLAN FOR 2500 MHz TO 2690 MHz IMT SYSTEM

(This Appendix forms an integral part of the SRSP document)

2500 MHz to 2690 MHz Channelling Plan

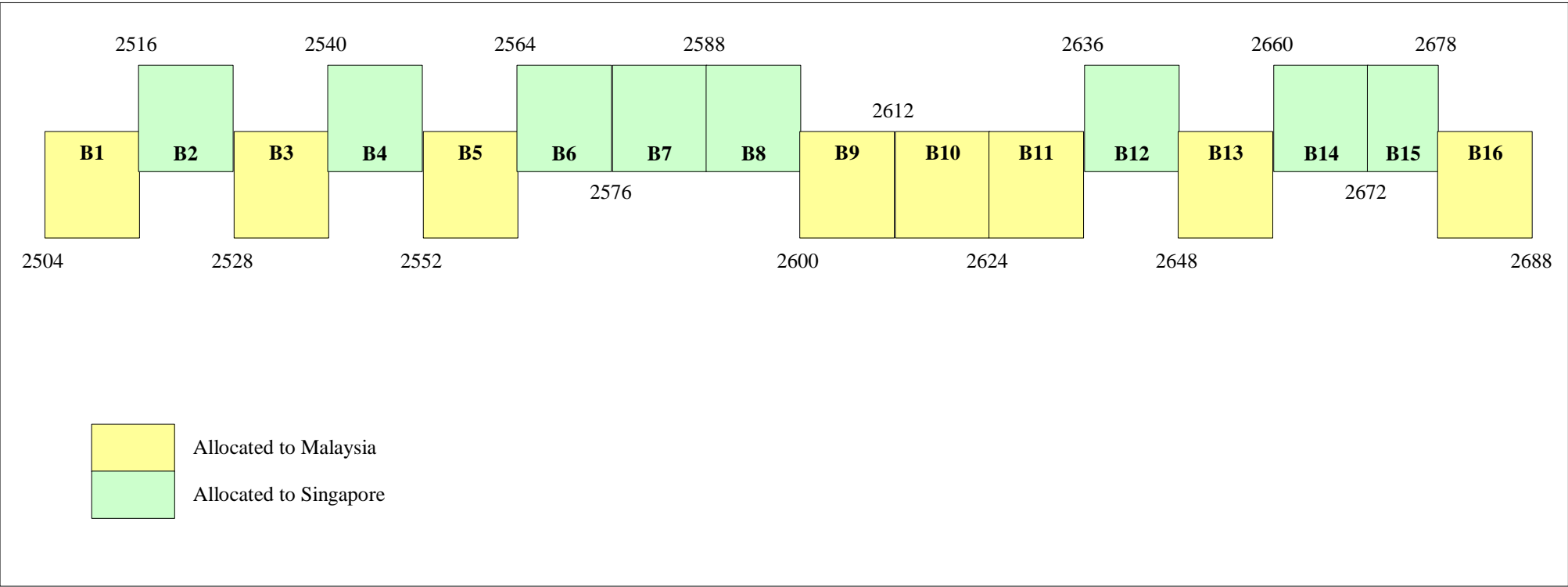


2500 MHz to 2690 MHz band plan: FDD and TDD

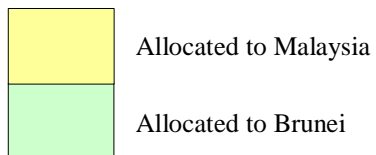
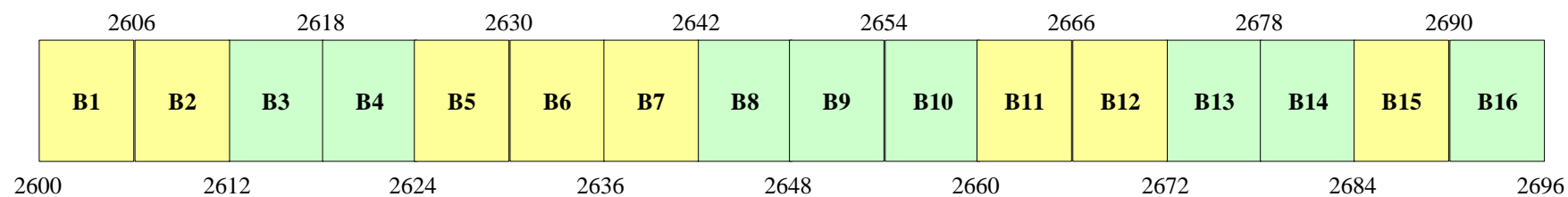
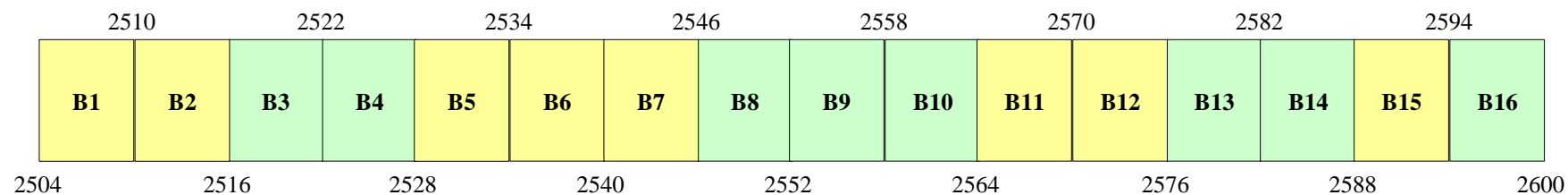


APPENDIX C: AGREED BAND PLAN WITH NEIGHBOURING COUNTRIES

Agreed Band Plan with Singapore



Agreed Band Plan with Brunei



APPENDIX D: INTERFERENCE RESOLUTION PROCESS

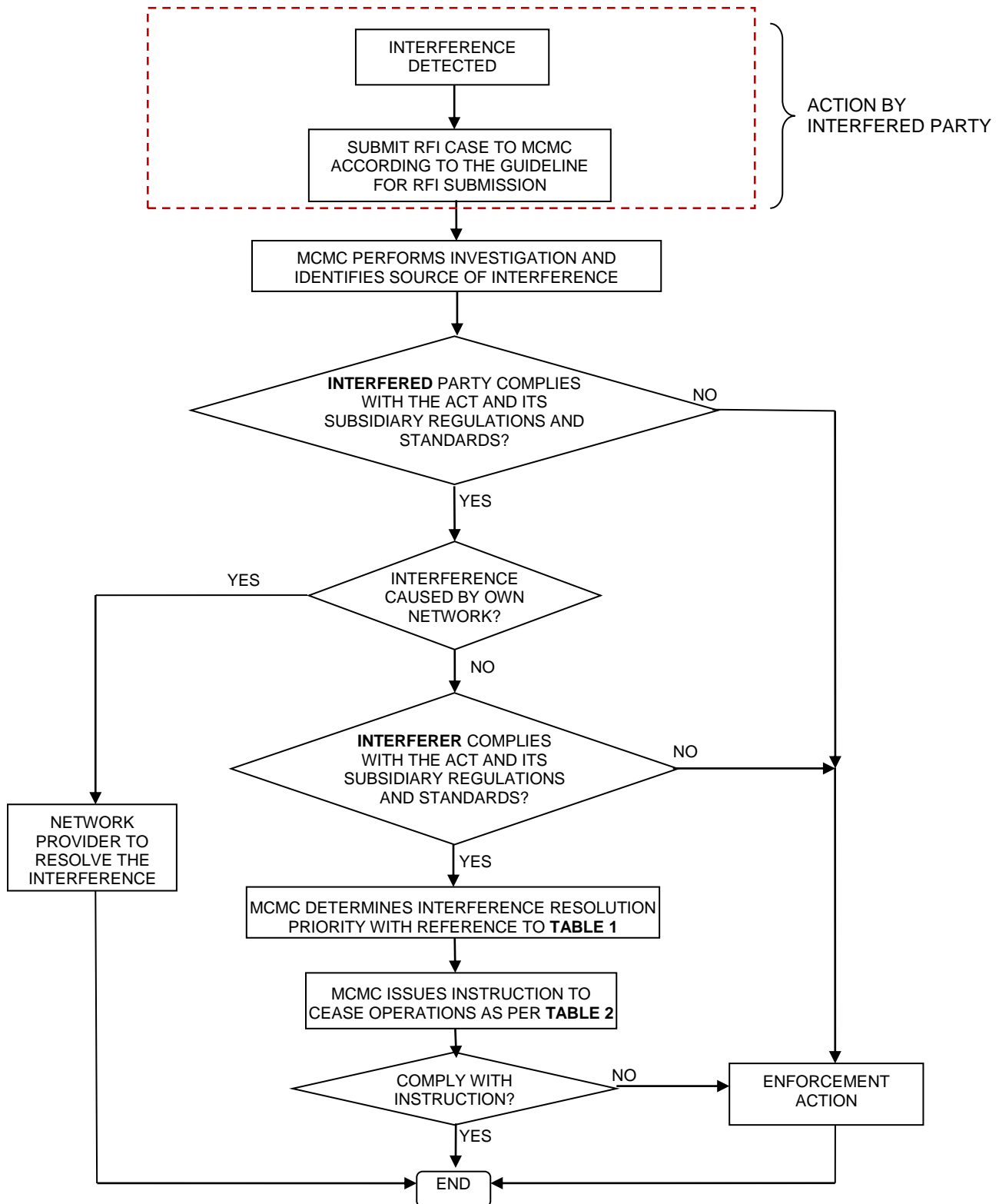


TABLE 1: INTERFERENCE RESOLUTION PRIORITY

	Resolution Type of Priority	Description
1	Service Priority	Primary services has priority over secondary services. Among co-primary or co-secondary services, the stated priority is accorded as in the Spectrum Plan
2	Assignment Type Priority	Spectrum Assignment (SA) and Apparatus Assignment (AA) have equal priority but are of higher priority than Class Assignment (CA)
3	Service Type Priority	In the event where service priority and assignment type priority are equal for affected parties, the following list will determine the priority level for the interference case (the earlier in the list is given higher priority): <ul style="list-style-type: none"> i. Safety or Radionavigation service; ii. Based on the Date of Apparatus Assignment - Priority is given to the earliest/first installation

TABLE 2: INTERFERENCE RESOLUTION TIMELINE TO PARTIES

	Types of interference	Description	Resolution Timeline
1	Harmful	Interference which endangers or seriously degrades, obstructs or repeatedly interrupts the functioning of a radionavigation service or one or more safety services operating in accordance with CMA (Spectrum) Regulations 2000	To cease* operation immediately within 24 hours or earlier as specified in the notice issued by the Commission
2	Major	Electromagnetic interference rendering any apparatus or services unsuitable for their intended purpose. For this purpose interference to public correspondence service is considered under this category	To cease* operation within 3 days or earlier as specified in notice issued by the Commission if interference cannot be resolved.
3	Minor	Electromagnetic interference which does not affect the overall operation of any radiocommunications transmission.	To cease* operation within 7 days or earlier as specified in the notice issued by the Commission if interference cannot be resolved

*Note:

Resumption of operation of the apparatus is not allowed unless the assignment holder submit interference resolution or mitigation plan and has completed implementation of the mitigation plan to the satisfaction of the Commission.