MCMC SRSP MS 28000
9 JULY 2021

Standard Radio System Plan

REQUIREMENTS FOR

INTERNATIONAL MOBILE TELECOMMUNICATIONS SYSTEMS

OPERATING IN THE FREQUENCY BAND OF

26.5 GHz TO 28.1 GHz

Malaysian Communications and Multimedia Commission
MCMC HQ Tower 1, Jalan Impact, Cyber 6,
63000 Cyberjaya, Selangor Darul Ehsan, Malaysia
Tel: +60 3 8688 8000
Website: http://www.mcmc.gov.my

TABLE OF CONTENTS **PAGE**

SECTION

1. FOREWORD

1.1 This Standard Radio System Plan ("**SRSP**") is prepared by the Malaysian Communications and Multimedia Commission ("**MCMC**") pursuant to the Communications and Multimedia Act 1998 ("**Act**") and the Spectrum Plan to provide information on the minimum technical and regulatory requirements for efficient use of the **26.5 GHz to 28.1 GHz** frequency band.

1.2 This SRSP does not attempt to establish any detailed equipment standards.

1.3 In the event there are any inconsistencies between this SRSP and the Act or any subsidiary legislations made under the Act, the Act or the subsidiary legislations shall prevail.

2. ABBREVIATIONS

AA	Apparatus Assignment
CA	Class Assignment
CEPT	European Conference of Postal and Telecommunications Administrations
EIRP	Effective Isotropic Radiated Power
FACSMAB	Frequency Assignment Committee Singapore, Malaysia and Brunei Darussalam
FSS	Fixed-Satellite Service
IMT	International Mobile Telecommunications
ITU	International Telecommunication Union
ITU-R	ITU Radiocommunication Sector
JCC	Joint Committee on Communications between Indonesia and Malaysia
JTC	Joint Technical Committee on Coordination and Assignment of Frequencies along Malaysia-Thailand Common Border
SA	Spectrum Assignment
SCS	Subcarrier Spacing
SRSP	Standard Radio System Plan
TDD	Time Division Duplex
TRP	Total Radiated Power

3. INTENT

3.1 This SRSP is intended to ensure efficient provision of mobile service in Malaysia with minimal service disruption and radio frequency interference among the service providers.

3.2 This SRSP states the requirements for the utilisation of IMT systems in Malaysia in **26.5 GHz to 28.1 GHz** frequency band**.** This frequency band shall be referred to as the "**said band**".

3.3 The usage of the said band is intended for the purpose of providing wireless telecommunication connectivity and including but not limited to applications such as voice, internet, video, images, interactive multimedia, high-speed data, low latency applications and mobile television.

3.4 The term 'IMT' referred to herein, is the root name which encompasses IMT-2020 and the upgrade for the next generation of this technology as well as any other new technology that is made available in the future.

4. GENERAL

4.1 Technical characteristics of equipment used in IMT systems shall conform to all applicable Malaysian standards, international standards, ITU and its radio regulations as agreed and adopted by Malaysia.

4.2 All equipment installations shall comply with the safety rules as specified in the applicable standards.

4.3 The equipment used shall be certified under the Communications and Multimedia (Technical Standards) Regulations 2000.

4.4 The allocation and assignment of the said 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.

5. CHANNEL ARRANGEMENT

5.1 The allocation of services within the said band is as described in the Spectrum Plan.

5.2 The channel arrangement in the said band is based on the TDD arrangement with a total bandwidth of 1600 MHz.

5.3 For the deployment of IMT systems in the said band, the channelling plan may be based on the arrangement as shown in **Appendix A** of this SRSP.

6. REQUIREMENTS FOR USAGE OF SPECTRUM

6.1 This SRSP covers the minimum key characteristics considered necessary in order to make the best use of the said band.

6.2 The coexistence and mitigation of interference may require adopting a number of engineering solutions based on industry best practice, guidelines and recommendations as described in this SRSP.

6.3 Maximum radiated power and unwanted emission for IMT systems are as follows:

6.3.1 Base station

6.3.1.1 base station in-block transmission should not exceed **62 dBm EIRP**;

6.3.1.2 the unwanted emissions (i.e. out-of-band and spurious emissions) should comply with the limit as below:

i. Out-of-Band Power Limits: A limit of **-13 dBm/MHz** applies for base stations; and

ii. Spurious Emission Power Limits: A limit of **-10 dBm/MHz** applies for base stations.

6.3.2 User terminal station

6.3.2.1 IMT user terminal station transmissions should not exceed **23 dBm TRP** for mobile/nomadic terminal station

and **35 dBm TRP** for fixed terminal station; and

6.3.2.2 the unwanted emissions should comply with the limit of **-13 dBm/MHz** applies for user terminal stations.

6.4 A radio system conforming to the requirements of this SRSP may require modifications if major interference is caused to other radiocommunication stations or systems.

6.5 For avoidance of doubt, MCMC shall not be responsible for any costs incurred as a result of the system modification. The cost of modification shall be fully borne by the assignment holder.

7. PRINCIPLES OF ASSIGNMENT

7.1 Authorisation to use the said band for IMT base station apparatus and user terminal station shall be subject to the followings :

7.1.1 by way of AA for IMT base station apparatus; and

7.1.2 by way of CA for IMT user terminal station and is required to comply with the latest provisions of the CA issued by MCMC pursuant to Section 169 of the Act, which confers rights on any person to use any frequency band or bands for a specified purposes.

7.2 The assignment shall be subject to all conditions as specified in regulations 9, 10 and 22 of the Communications and Multimedia (Spectrum) Regulations 2000 ("**Spectrum Regulations**"), and any additional conditions as may be imposed by MCMC from time to time.

7.3 Issuance of AA within the said band shall be subject to successful coordination with Malaysia's neighbouring countries for stations that are to be located along the common border areas.

8. COORDINATION REQUIREMENT

8.1 Operator-to-Operator Coordination in the said band and Adjacent Frequency Bands

8.1.1 Issuance of AA is subject to the technical analysis carried out by MCMC. If necessary, coordination between IMT base station and FSS station in the said band and adjacent frequency bands of the said band may be required to mitigate the interference.

8.1.2 The use of a portion of the said band, especially within the frequency range of 27.0 GHz to 28.1 GHz by IMT is on sharing basis with FSS. IMT base station operating within this frequency range may be interfered by FSS earth stations. The location of FSS earth stations shall be considered for deployment of IMT base stations. The location of existing FSS hub earth stations are as stipulated in Table 1 below:

No.	Location	Coordinate
1	Cyberjaya, Selangor	2º56’5” N, 101º39’30” E
2	Cyberjaya, Selangor	2º56’14” N, 101º39’28” E
3	Cyberjaya, Selangor	2º56’12.10” N, 101º39’28.10” E
4	Rawang, Selangor	3º18’18” N, 101º33’20.5” E
5	Bukit Jalil, Kuala Lumpur	3º3’10” N, 101º41’58” E
6	Rantau, Negeri Sembilan	2º36’36.4” N, 101º57’24.5” E
7	Rantau, Negeri Sembilan	2º36’37.50” N, 101º57’24.50” E

Table 1: Locations of FSS hub earth stations

8.1.3 The assignment holder operating in the said band shall ensure that their systems only operate within the assigned frequency band.

8.1.4 In the event of any interference, MCMC will be guided by the interference resolution process as shown in **Appendix B** of this SRSP.

8.2 Common Border Area Coordination

8.2.1 The use of the said band shall require coordination at common border area(s) with the neighbouring countries within the coordination zones. The coordination zones are based on agreement reached at border committees namely FACSMAB, JTC and JCC. Agreement on the said band plan may differ from one neighbouring country to another

subject to the requirement of the respective countries.

8.2.2 In the event there is no agreement on coordination zone, a zone within 50 km from the border of the neighbouring countries will be used.

8.2.3 It shall be noted that the coordination distance and other coordination parameters between Malaysia and the neighbouring countries may be reviewed and updated from time to time.

8.2.4 The deployment of IMT systems within the said band at the border areas shall consider the following:

8.2.4.1 there is a potential interference with operators that operate in the said band's channel blocks; and

8.2.4.2 the potential interference could be mitigated with synchronisation between the TDD operators or by geographical separation.

8.3 Assignment holders shall take full advantage of interference mitigation techniques such as antenna discrimination, tilting, polarisation, frequency discrimination, shielding/blocking (introduction of diffraction loss), site selection, power control, isolation distance and/or filter installation to facilitate the coordination of systems.

8.4 Any costs incurred as a result of the coordination process shall be fully borne by the assignment holder.

9. EFFECTIVE DATE

9.1 This SRSP shall be effective on the date of issuance of this document.

10. REVOCATION

10.1 MCMC SRSP – 509 LMCS dated 10 March 2006 is hereby revoked.

11. REFERENCES

i. **Spectrum Plan**

ii. **Report ITU-R M.2411** - Requirements, evaluation criteria and submission templates for the development of IMT-2020

iii. **Radio Regulations Resolution 750 (Rev. WRC-19)** - Compatibility between the Earth exploration-satellite service (passive) and relevant active services

iv. **3GPP TS 38.101-1** - Technical Specification Group Radio Access Network; NR; User Equipment (UE) radio transmission and reception; Part 1: Range 1 Standalone

v. **3GPP TS 38.104** - Technical Specification Group Radio Access Network; NR; Base Station (BS) radio transmission and reception

vi. **3GPP TS 38.141-2** - Technical Specification Group Radio Access Network; NR; Base Station (BS) conformance testing Part 2: Radiated conformance testing

vii. **3GPP TS 38.521** - Technical Specification Group Radio Access Network; NR; User Equipment (UE) conformance specification; Radio transmission and reception

viii. **CEPT Report 68** - Harmonised technical conditions for the 24.25-27.5 GHz (’26 GHz’) frequency band

ix. **ECC Decision (18)06** - Harmonised technical conditions for Mobile/Fixed Communications Networks (MFCN) in the band 24.25-27.5 GHz

APPENDIX A: CHANNEL ARRANGEMENT

A.1 CHANNEL BANDWIDTH WITHIN FREQUENCY BAND OF 26.5 GHz TO 28.1 GHz

Frequency band	SCS (kHz)	50 MHz	100 MHz	200 MHz	400 MHz
26.5 GHz to 28.1 GHz	60	Yes	Yes	Yes	-
	120	Yes	Yes	Yes	Yes

TABLE 2: CHANNEL BANDWIDTH

A.2 CHANNELING PLAN FOR THE FREQUENCY BAND OF 26.5 GHz TO 28.1 GHz

Channel Bandwidth							
50 MHz							
Channel No.	1	Channel No.	2	Channel No.	3	Channel No.	4
Tx/Rx	26.525	Tx/Rx	26.575	Tx/Rx	26.625	Tx/Rx	26.675
Channel No.	5	Channel No.	6	Channel No.	7	Channel No.	8
Tx/Rx	26.725	Tx/Rx	26.775	Tx/Rx	26.825	Tx/Rx	26.875
Channel No.	9	Channel No.	10	Channel No.	11	Channel No.	12
Tx/Rx	26.925	Tx/Rx	26.975	Tx/Rx	27.025	Tx/Rx	27.075
Channel No.	13	Channel No.	14	Channel No.	15	Channel No.	16
Tx/Rx	27.125	Tx/Rx	27.175	Tx/Rx	27.225	Tx/Rx	27.275
Channel No.	17	Channel No.	18	Channel No.	19	Channel No.	20
Tx/Rx	27.325	Tx/Rx	27.375	Tx/Rx	27.425	Tx/Rx	27.475
Channel No.	21	Channel No.	22	Channel No.	23	Channel No.	24
Tx/Rx	27.525	Tx/Rx	27.575	Tx/Rx	27.625	Tx/Rx	27.675
Channel No.	25	Channel No.	26	Channel No.	27	Channel No.	28
Tx/Rx	27.725	Tx/Rx	27.775	Tx/Rx	27.825	Tx/Rx	27.875
Channel No.	29	Channel No.	30	Channel No.	31	Channel No.	32
Tx/Rx	27.925	Tx/Rx	27.975	Tx/Rx	28.025	Tx/Rx	28.075
100 MHz							
Channel No.	33	Channel No.	34	Channel No.	35	Channel No.	36
Tx/Rx	26.55	Tx/Rx	26.65	Tx/Rx	26.75	Tx/Rx	26.85
Channel No.	37	Channel No.	38	Channel No.	39	Channel No.	40
Tx/Rx	26.95	Tx/Rx	27.05	Tx/Rx	27.15	Tx/Rx	27.25
Channel No.	41	Channel No.	42	Channel No.	43	Channel No.	44
Tx/Rx	27.35	Tx/Rx	27.45	Tx/Rx	27.55	Tx/Rx	27.65
Channel No.	45	Channel No.	46	Channel No.	47	Channel No.	48
Tx/Rx	27.75	Tx/Rx	27.85	Tx/Rx	27.95	Tx/Rx	28.05

200 MHz							
Channel No.	49	Channel No.	50	Channel No.	51	Channel No.	52
Tx/Rx	26.6	Tx/Rx	26.8	Tx/Rx	27.0	Tx/Rx	27.2
Channel No.	53	Channel No.	54	Channel No.	55	Channel No.	56
Tx/Rx	27.4	Tx/Rx	27.6	Tx/Rx	27.8	Tx/Rx	28
400 MHz							
Channel No.	57	Channel No.	58	Channel No.	59	Channel No.	60
Tx/Rx	26.7	Tx/Rx	27.1	Tx/Rx	27.5	Tx/Rx	27.9

TABLE 3: CHANNELING PLAN FOR 28 GHz BAND

APPENDIX B: INTERFERENCE RESOLUTION PROCESS

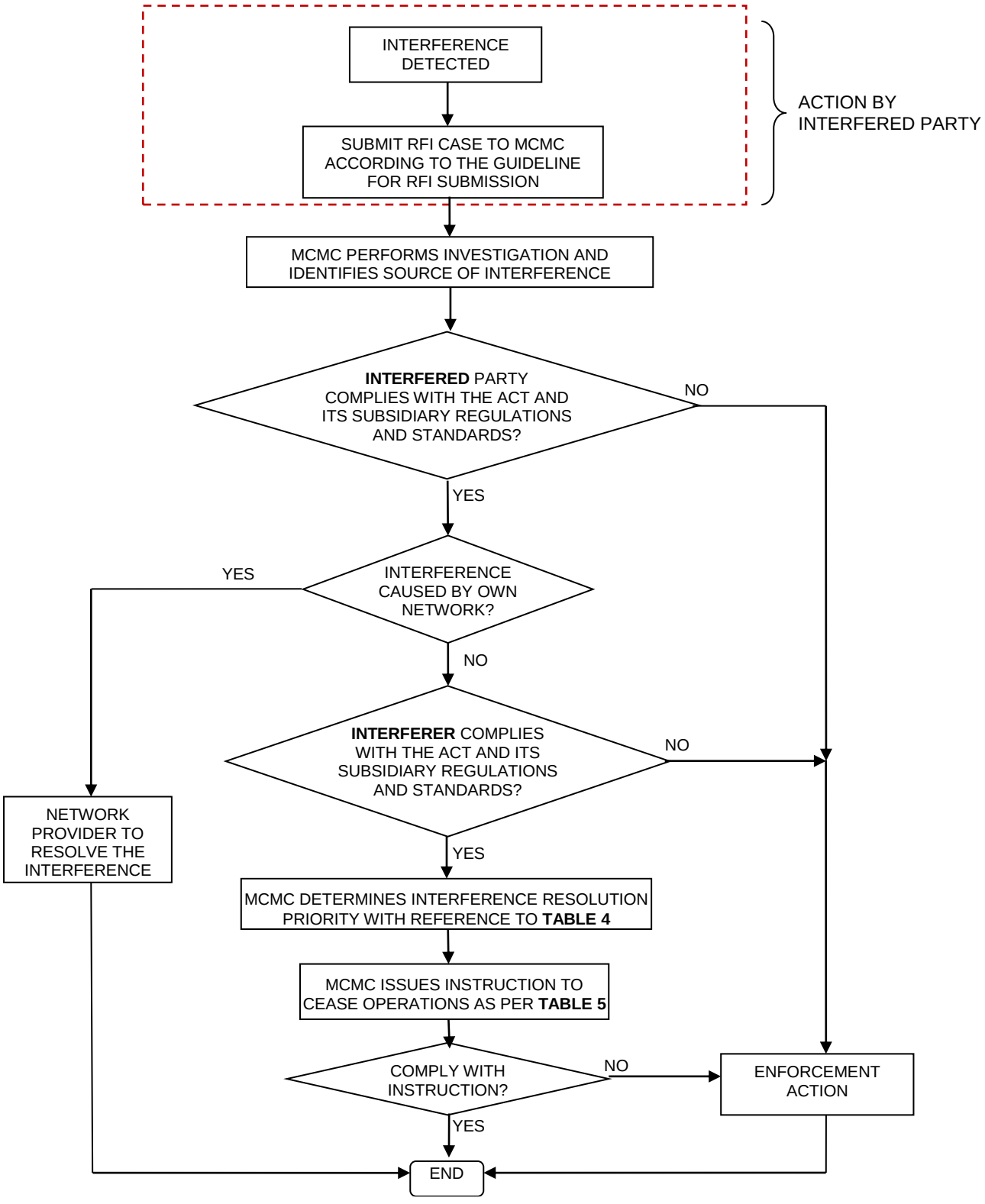

TABLE 4: INTERFERENCE RESOLUTION PRIORITY

No.	Types of Priority	Description
1	Service Priority	Primary services have priority over secondary services. Among co-primary or co-secondary services, the stated priority is accorded as provided in the Spectrum Plan.
2	Assignment Type Priority	SA and AA have equal priority but are of higher priority than 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): i. safety or radionavigation service; and ii. based on the date of AA - Priority is given to the earliest/first installation.

TABLE 5: INTERFERENCE RESOLUTION TIMELINE TO PARTIES

No.	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 Spectrum Regulations 2000.	To cease* operation immediately within 24 hours or earlier as specified in the notice issued by MCMC.
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 MCMC 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 MCMC 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 had completed the implementation of the mitigation plan to the satisfaction of MCMC.