MCMC SRSP ARS 144
7 NOVEMBER 2022

Standard Radio System Plan

REQUIREMENTS FOR AMATEUR RADIO SERVICE

OPERATING IN THE FREQUENCY BAND OF

144 MHz TO 148 MHz

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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 **144 MHz to 148 MHz** 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 legislation made under the Act, the Act or the subsidiary legislation shall prevail.

1.4 Reference can also be made to the Guidelines for Amateur Radio Services in Malaysia[1] issued by MCMC on 1 March 2012 (including and any revision(s) made to the same thereafter) ("**Guidelines for Amateur Radio Services**"), Guidelines on the Allocation of Call Sign to the Amateur Radio Service[1] issued by MCMC on 26 March 2015 (including and any revision(s) made to the same thereafter) ("**Guidelines on Amateur Call Sign**") and SKMM WTS ARE on Technical Specification for Amateur Radio Equipment[2] issued by MCMC.

[1] https://www.mcmc.gov.my/en/spectrum/guidelines
[2] https://mcmc.gov.my/en/legal/registers/cma-registers

2. ABBREVIATION

AA	Apparatus Assignment
AROC	Amateur Radio Operator's Certificate
APRS	Automatic Packet Reporting System
ARS	Amateur Radio Service
CTCSS	Continuous Tone Coded Squelch System
CW	Continuous Wave
DTMF	Dual Tone Multi Frequency
EME	Earth-Moon-Earth
FACSMAB	Frequency Assignment Committee of Singapore, Malaysia and Brunei Darussalam
FM	Frequency Modulation
GNSS	Global Navigation Satellite System
IARU	International Amateur Radio Union
ITU	International Telecommunication Union
ITU-R	ITU Radiocommunication Sector
JCC	Joint Committee on Communication between the Republic of Indonesia and Malaysia
JTC	Joint Technical Committee on Coordination and Assignment of Frequencies along Malaysia-Thailand Common Border
kHz	Kilohertz
km	Kilometer
MHz	Megahertz
MCMC	Malaysian Communications and Multimedia Commission
NB	Narrow Band
PBT	*Pihak Berkuasa Tempatan*
ROS	Registrar of Societies
RR	Radio Regulations
Rx	Receive
SRSP	Standard Radio System Plan
SSB	Single Side Band
Tx	Transmit
Trilateral	Trilateral Coordination Meeting between the Republic of Indonesia, Malaysia and Singapore
WTS ARE	Wireless Telecommunication Standards for Amateur Radio Equipment

3. INTENT

3.1 This SRSP is intended to ensure the efficient provision of ARS[3] in Malaysia with minimal service disruption and radio frequency interference.

3.2 This SRSP states the requirement for the utilization of the **144 MHz to 148 MHz** frequency band for ARS in Malaysia which shall be referred to as the "**said band**".

3.3 ARS systems are two-way radio systems operated in simplex or duplex mode and consist of fixed and mobile terminals in the following subsystems:

3.3.1 direct radio connection between amateur stations[4];

3.3.2 radio links from amateur station to amateur repeater station;

3.3.3 radio links between amateur repeater stations;

3.3.4 amateur beacon station;

3.3.5 amateur gateway station; and

3.3.6 APRS.

3.4 The use of the ARS is for non-commercial communications (CW, voice, data, audio and video) and to further their interest in radio techniques and experimentation. It may also be used by them to set up or establish communications to support disaster-recovery operations.

[3] Amateur radio service (ARS) means a radiocommunications service in which a station is used for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorised persons who are interested in radio technique solely with a personal aim and without any pecuniary interest; *Communications and Multimedia (Spectrum) Regulations 2000*.

[4] Amateur station is referred as personal station operated by individual AA holder.

4. GENERAL

4.1 Technical characteristics of the equipment used in ARS systems shall conform to all applicable Malaysian standards, international standards, ITU and its RR[5] as agreed and adopted by Malaysia.

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

4.3 The equipment used shall be certified or authorised pursuant to the Communications and Multimedia (Technical Standards) Regulations 2000 ("**Technical Standards Regulations 2000**").

4.4 The information and requirements in respect of the said band as provided in this SRSP are subject to further review by MCMC from time to time to reflect new developments in the communications and multimedia industry.

[5] https://www.itu.int/pub/R-REG-RR

5. CHANNEL ARRANGEMENT

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

5.2 The channelling plan and mode of operations for ARS in the said band is based on the arrangement shown in **Appendix A** of this SRSP in order to avoid interference and congestion of the usage in the said band.

6. REQUIREMENTS FOR USAGE OF SPECTRUM

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

6.2 It should be noted that the operation of the ARS systems in the said band should not cause any interference at all times to other services in the adjacent frequency bands. The coexistence and mitigation of interference may require adopting a number of engineering solutions based on industry best practices, guidelines and recommendations as described in this SRSP.

6.3 All stations are forbidden to carry out unnecessary transmissions, or the transmission of superfluous signals, or the transmission of false or misleading signals, or the transmission of signals without identification (except as provided for in Article **19** of ITU RR).

6.4 ARS transmitting stations are to refer to the power level, class of emission and spurious emissions limits in the Guidelines for Amateur Radio Services in transmitting its radio frequency(ies).

6.5 In order to reduce interference and maximize frequency re-use and capacity, AA holders must ensure that:

6.5.1 the installation and operation requirements of ARS shall comply with the Guidelines for Amateur Radio Services;

6.5.2 location of transmitting stations shall be selected to ensure the said band is

utilised beneficially;

6.5.3 radiation in and reception from unnecessary directions shall be minimized by taking the maximum practical advantage of the properties of directional antenna whenever it operationally permits;

6.5.4 choice and use of transmitters and receivers shall be in accordance with the provisions of Article **3** of ITU RR; and

6.5.5 conditions specified under No. **22.1** of ITU RR shall be adhered.

6.6 Special considerations shall be given to avoid interference in distress and safety frequencies, those related to distress and safety identified in Article **31** and Appendix **15** of ITU RR.

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

6.8 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 AA holder.

7. PRINCIPLES OF ASSIGNMENT

7.1 Authorization to use the said band for ARS is by way of **AA**.

Requirements for Issuance of AA

7.2 Issuance of AA for amateur station is based on the following requirements:

7.2.1 individuals who have obtained the AROC in the designated skill areas as specified in the Third Schedule of the Technical Standards Regulations 2000;

7.2.2 amateur club(s) or society(ies) with at least one resident member who has obtained the AROC in the designated skill areas as specified in the Third Schedule of the Technical Standards Regulations 2000 and the Amateur club(s) or society(ies) have been duly registered with the ROS; and

7.2.3 the AA shall be valid for a period as specified in the AA.

7.3 Issuance of AA for amateur repeater station is based on the following requirements:

7.3.1 amateur club(s) or society(ies) with at least one (1) resident member who has obtained the AROC in the designated skill areas as specified in the Third Schedule of the Technical Standards Regulations 2000 and the Amateur club(s) or society(ies) have been duly registered with the ROS;

7.3.2 new amateur repeater station for the existing coverage area is not allowed and shall be assigned on first-come-first served basis;

7.3.3 the AA shall be valid for a period as specified in the AA;

7.3.4 for transportable amateur repeater station, the issuance of AA is only for the purposes of special event or disaster communication and the validity period of the AA shall not exceed twelve (12) months only; and

7.3.5 issuance of AA for repeater station 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.

7.4 Issuance of AA for amateur beacon and gateway stations are based on the following requirements:

7.4.1 individuals who have obtained the AROC in the designated skill areas as specified in the Third Schedule of the Technical Standards Regulations 2000;

7.4.2 amateur club(s) or society(ies) with at least one resident member who has obtained the AROC in the designated skill areas as specified in the Third Schedule of the Technical Standards Regulations 2000 and the Amateur club(s) or society(ies) have been duly registered with the ROS; and

7.4.3 The AA shall valid for a period as specified in the AA.

Requirements for Submission of AA Application

7.5 Applicant shall submit the following application for the purpose of issuance of AA:

7.5.1 submission of the complete AA application form and its supporting document as specified in MCMC's website; and

7.5.2 for fixed location of amateur beacon and repeater stations, the applicant shall submit supporting documents as evidence that the PBT and the owner of the building, premises or land had granted permission for the installation of the apparatus and antenna set-up. Alternative supporting documentation in the form of agreement with a telecommunication company or telecommunication infrastructure provider on the use of their building, premise or land would also suffice as evidence.

Other Requirements

7.6 A call sign will be issued to each amateur station in accordance with the Guidelines on Amateur Call Sign.

7.7 The assignment shall be subject to all conditions as specified in regulations 9, 10, and 22 of the Communications and Multimedia (Spectrum) Regulation 2000, additional conditions specified in **Appendix B** of this SRSP and any further conditions as may be imposed by MCMC from time to time.

8. COORDINATION REQUIREMENT

8.1 Operator-to-Operator Coordination

8.1.1 Coordination between ARS stations operating in the said band may be required to mitigate interference;

8.1.2 The AA holders operating in the said band shall ensure that its systems only operate within the assigned frequency band(s); and

8.1.3 To facilitate the coordination, AA holders are highly recommended to make appropriate publications[6] of its operating station(s) that consist of the following parameters[7], but not limited to:

Repeater Station	Beacon Station
i. Call sign ii. Location iii. Geographical coordinate (Latitude, Longitude) iv. Output frequency v. Frequency shift vi. CTCSS tone	i. Call sign ii. Location iii. Geographical coordinate (Latitude, Longitude) iv. Frequency v. Tx Power (Watt)

8.2 Coordination for amateur repeater station(s) at the common border area

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

8.2.1.1 The use of the 146 MHz to 148 MHz frequency band for amateur repeater station(s) located within 60 km from the Malaysian border with Thailand shall require coordination with Thailand;

[6] The publication could be made via online and/or digital platform and/or any medium and publicly accessible.
[7] The AA holder is responsible to ensure the accuracy of the published information.

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; and

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.

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

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

9. IMPLEMENTATION

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

9.2 Existing installations that are currently in use and are not in line with this SRSP are allowed to operate without causing harmful or major interference to new installations until its **expiry date of AA or 31 December 2025, whichever is earlier**. The re-application of AA for the existing ARS system by AA holders shall be in accordance with this SRSP.

10. REVOCATION

10.1 MCMC SRSP 536 AS dated 15 February 2007 is hereby revoked.

11. REFERENCE

i. Spectrum Plan

ii. Guidelines for Apparatus Assignment

iii. Guidelines for Amateur Radio Services

iv. Guidelines on Amateur Call Sign

v. SKMM WTS ARE: Technical Specification for Amateur Radio Equipment

vi. ITU Radio Regulations

APPENDIX A: CHANNELING PLAN

(1/4)

CHANNEL NO.	FREQUENCY (MHz)		NOTE
	Transmit (Tx)	Receive (Rx)	
NA	144.0000 to 144.1000		• EME & Terrestrial Weak Signal (CW/SSB/NB Data) • Frequency 144.05 MHz is calling channel for CW
NA	144.1000 to 144.2500		CW/SSB/NB Data Modes
NA	144.2600 to 144.5750		• Simplex & All Modes • Frequency 144.26 MHz is for emergency communications
NA	144.6250		• Simplex & Digital Mode • Emergency Communications • Channel bandwidth=12.5 kHz
	144.6375		
	144.6500		
	144.6625		
	144.6750		
	144.6875		
	144.7000		
V1	144.7250		**Frequency band**: 144.7 MHz to 145.0 MHz • Simplex System • Channel bandwidth = 25 kHz • 144.8250 MHz & 144.8750 MHz are spot frequencies for internet voice gateway
V2	144.7500		
V3	144.7750		
V4	144.8000		
V5	144.8250		
V6	144.8500		
V7	144.8750		
V8	144.9000		
V9	144.9250		
V10	144.9500		
V11	144.9750		
V12	145.0000		**Not Assigned**

CHANNEL NO.	FREQUENCY (MHz)		NOTE
	Transmit (Tx)	Receive (Rx)	
RV48	145.0000	145.6000	**Frequency band**: 145.0 MHz to 145.2 MHz / 145.6 MHz to 145.8 MHz & • Channeling plan to be use by amateur stations when communicating via an amateur repeater station • Duplex System • Tx/Rx separation = 0.6 MHz • Channel bandwidth = 12.5 kHz
RV49	145.0125	145.6125	
RV50	145.0250	145.6250	
RV51	145.0375	145.6375	
RV52	145.0500	145.6500	
RV53	145.0625	145.6625	
RV54	145.0750	145.6750	
RV55	145.0875	145.6875	
RV56	145.1000	145.7000	
RV57	145.1125	145.7125	
RV58	145.1250	145.7250	
RV59	145.1375	145.7375	
RV60	145.1500	145.7500	
RV61	145.1625	145.7625	
RV62	145.1750	145.7750	
RV63	145.1875	145.7875	

(2/4)

CHANNEL NO.	FREQUENCY (MHz)		NOTE
	Transmit (Tx)	Receive (Rx)	
V16	145.2000		**Not Assigned**
V17	145.2125		**Frequency band**: 145.2 MHz to 145.6 MHz • Simplex System • Channel bandwidth = 12.5 kHz
V18	145.2250		
V19	145.2375		
V20	145.2500		
V21	145.2625		
V22	145.2750		
V23	145.2875		
V24	145.3000		
V25	145.3125		
V26	145.3250		
V27	145.3375		
V28	145.3500		
V29	145.3625		
V30	145.3750		
V31	145.3875		
V32	145.4000		
V33	145.4125		
V34	145.4250		
V35	145.4375		
V36	145.4500		
V37	145.4625		
V38	145.4750		
V39	145.4875		

CHANNEL NO.	FREQUENCY (MHz)		NOTE
	Transmit (Tx)	Receive (Rx)	
V40	145.5000		**Frequency band**: 145.2 MHz to 145.6 MHz • Simplex System & Channel bandwidth = 12.5 kHz. • Channel V40 is calling channel for FM voice - simplex
V41	145.5125		
V42	145.5250		
V43	145.5375		
V44	145.5500		
V45	145.5625		
V46	145.5750		
V47	145.5875		
V48	146.4000		**Not Assigned**
V49	146.4125		**Frequency band**: 146.4 MHz to 146.6 MHz • Simplex System • Channel bandwidth = 12.5 kHz
V50	146.4250		
V51	146.4375		
V52	146.4500		
V53	146.4625		
V54	146.4750		
V55	146.4875		
V56	146.5000		
V57	146.5125		
V58	146.5250		
V59	146.5375		
V60	146.5500		
V61	146.5625		
V62	146.5750		
V63	146.5875		

CHANNEL NO.	FREQUENCY (MHz)		NOTE
	Transmit (Tx)	Receive (Rx)	
NA	145.8000 to 146.0000		Satellite Portion
RV64	146.0125	146.6125	**Frequency Band:** 146 MHz to 146.4 MHz/146.6 MHz to 147.0 MHz & • Channeling plan to be used by amateur stations when communicating via an amateur repeater station • Duplex system • Tx/Rx separation = 0.6 MHz • Channel bandwidth = 12.5 kHz
RV65	146.0250	146.6250	
RV66	146.0375	146.6375	
RV67	146.0500	146.6500	
RV68	146.0625	146.6625	
RV69	146.0750	146.6750	
RV70	146.0875	146.6875	
RV71	146.1000	146.7000	
RV72	146.1125	146.7125	
RV73	146.1250	146.7250	
RV74	146.1375	146.7375	
RV75	146.1500	146.7500	
RV76	146.1625	146.7625	
RV77	146.1750	146.7750	
RV78	146.1875	146.7875	
RV79	146.2000	146.8000	
RV80	146.2125	146.8125	
RV81	146.2250	146.8250	
RV82	146.2375	146.8375	
RV83	146.2500	146.8500	

CHANNEL NO.	FREQUENCY (MHz)		NOTE
	Transmit (Tx)	Receive (Rx)	
RV84	146.2625	146.8625	**Frequency Band:** 146 MHz to 146.4 MHz/146.6 MHz to 147.0 MHz • Channeling plan to be used by amateur stations when communicating via an amateur repeater station • Duplex system • Tx/Rx separation = 0.6 MHz • Channel bandwidth = 12.5 kHz
RV85	146.2750	146.8750	
RV86	146.2875	146.8875	
RV87	146.3000	146.9000	
RV88	146.3125	146.9125	
RV89	146.3250	146.9250	
RV90	146.3375	146.9375	
RV91	146.3500	146.9500	
RV92	146.3625	146.9625	
RV93	146.3750	146.9750	
RV94	146.3875	146.9875	
RV95	147.0000	147.6000	**Frequency Band:** 147 MHz to 147.4 MHz/147.6 MHz to 148.0 MHz • Channeling plan to be used by amateur stations when communicating via an amateur repeater station • Duplex system • Tx/Rx separation = 0.6 MHz • Channel bandwidth = 12.5 kHz
RV96	147.0125	147.6125	
RV97	147.0250	147.6250	
RV98	147.0375	147.6375	
RV99	147.0500	147.6500	
RV100	147.0625	147.6625	
RV101	147.0750	147.6750	
RV102	147.0875	147.6875	
RV103	147.1000	147.7000	
RV104	147.1125	147.7125	
RV105	147.1250	147.7250	
RV106	147.1375	147.7375	

CHANNEL NO.	FREQUENCY (MHz)		NOTE
	Transmit (Tx)	Receive (Rx)	
RV107	147.1500	147.7500	**Frequency Band:** 147 MHz to 147.4 MHz/147.6 MHz to 148.0 MHz • Channeling plan to be used by amateur stations when communicating via an amateur repeater station • Duplex system • Tx/Rx separation = 0.6 MHz • Channel bandwidth = 12.5 kHz
RV108	147.1625	147.7625	
RV109	147.1750	147.7750	
RV110	147.1875	147.7875	
RV111	147.2000	147.8000	
RV112	147.2125	147.8125	
RV113	147.2250	147.8250	
RV114	147.2375	147.8375	
RV115	147.2500	147.8500	
RV116	147.2625	147.8625	
RV117	147.2750	147.8750	
RV118	147.2875	147.8875	
RV119	147.3000	147.9000	
RV120	147.3125	147.9125	
RV121	147.3250	147.9250	
RV122	147.3375	147.9375	
RV123	147.3500	147.9500	
RV124	147.3625	147.9625	
RV125	147.3750	147.9750	
RV126	147.3875	147.9875	

CHANNEL NO.	FREQUENCY (MHz)		NOTE
	Transmit (Tx)	Receive (Rx)	
V64	147.435		**Frequency Band:** 147.4 MHz to 147.6 MHz • Simplex System • Channel bandwidth = 30 kHz
V65	147.465		
V66	147.495		
V67	147.525		
V68	147.555		
V69	147.585		

Note:

1. The channelling plan conforms to the IARU Region 3 band plan and is practised by radio amateur societies and clubs worldwide.
2. Channel numbers "**Vxx**" are simplex channels used by amateur radio stations for point-to-point communication where they would transmit (Tx) and receive (Rx) on the same frequency.
3. Channel number "**RVxxx**" are repeater frequency pair channels that consist of amateur station transmit frequency (Tx) (amateur repeater station receive frequency – Rx) and amateur station receive frequency (Rx) (amateur repeater station transmit frequency – Tx).
4. Simplex point-to-point operation is not permitted on either transmit or receive frequencies of amateur repeater channels "RVxxx" as they will interfere with operation of the amateur repeater station.
5. **Figure 1** explains the network scenario described in Nos. 2 and 3 above.
6. NB Data = Narrow Band Data modes that do not exceed 2.7 kHz bandwidth.

FIGURE 1: NETWORK SCENARIO

Scenario 1: Local Coverage (amateur station to/from amateur repeater station)

Example:

CH No. RV48			
Local Coverage			
Amateur Station		Repeater Station	
Tx (MHz)	Rx (MHz)	Tx (MHz)	Rx (MHz)
145.0000	145.6000	145.6000	145.000

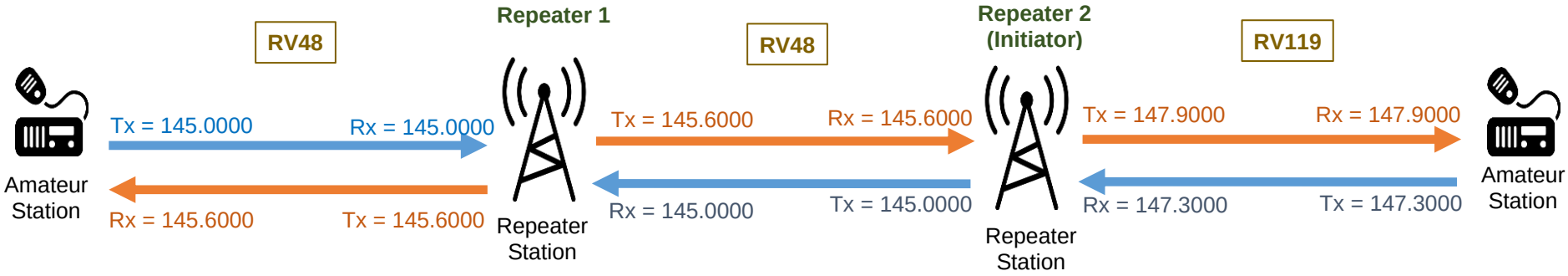
In the case of channel RV48, the amateur station transmit (Tx) on 145.0000 MHz (amateur repeater station receive (Rx) on 145.0000 MHz) and receive (Rx) on 145.6000 MHz (amateur repeater station transmit (Tx) on 145.6000 MHz). This scenario could be defined as local coverage[8].

[8] Local coverage is referred to as direct communications between amateur stations and an amateur repeater station.

Scenario 2: Linking Repeater System and Local Coverage (amateur repeater station to/from amateur repeater station & amateur repeater station to/from amateur station)

Example:

CH No. RV48				Linking System				CH No. RV119			
Local Coverage								Local Coverage			
Amateur Station		Repeater Station (Repeater 1)		Repeater Station (Repeater 1)		Repeater Station (Repeater 2)		Amateur Station		Repeater Station (Repeater 2)	
Tx (MHz)	Rx (MHz)	Tx (MHz)	Rx (MHz)	Tx (MHz)	Rx (MHz)	Tx (MHz)	Rx (MHz)	Tx (MHz)	Rx (MHz)	Tx (MHz)	Rx (MHz)
145.0000	145.6000	145.6000	145.0000	145.6000	145.0000	145.0000	145.6000	147.3000	147.9000	147.9000	147.3000



i. Linking between channel RV48 (Repeater 1) and channel RV119 (Repeater 2), repeater 1 transmit (Tx) on 145.6000 MHz (Repeater 2 receive (Rx) on 145.6000 MHz) and receive (Rx) on 145.0000 MHz (Repeater 2 transmit (Tx) on 145.0000 MHz). To enable the linking system, Repeater 2 is considered as 'initiator'. At repeater 2 for local coverage, it should not re-use channel RM48. As such, the example of channel RV119 is selected. The amateur station transmits (Tx) on 147.3000 MHz (amateur repeater station receives (Rx) on 147.3000 MHz) and receive (Rx) on 147.9000 MHz (amateur repeater station transmit (Tx) on 147.9000 MHz)

ii. The AA of the amateur repeater station that initiates a link to and from the next amateur repeater station should also include the frequency pair of the next amateur repeater station. The amateur repeater station that initiates a link will be treated just like an amateur station that is accessing the next amateur repeater station.

APPENDIX B: ADDITIONAL CONDITIONS OF AA

This issuance of the AA in the frequency band of 144 MHz to 148 MHz shall be subject to the following conditions:

(a) An amateur repeater station may be erected on site belonging to telecommunication companies, on the rooftop of high-rise buildings or on hilltops, with proper approval from PBT i.e. Planning Permission (*Kebenaran Merancang*) and Temporary Permit (*Permit Sementara*). In the case of rooftops of the buildings/premises or hilltops, it is the responsibility of the AA holder to ensure the safety of the towers, antenna set-up and equipment from lighting strikes, harmful and major interferences and possible damage to properties or threatening the life of humans and animals.

(b) It is also the responsibility of the AA holder to ensure that under the agreement with the telecommunication company, relevant government authority or owner of the building/premises for the usage of the site, to include a clause for the rights of MCMC to inspect the sites at any time deem appropriate by MCMC.

(c) Amateur repeater stations are required to be capable of input and output encoding/ decoding in CTCSS. The equipment should also be capable of remote start-up and shut- down such as by using DTMF or other suitable remote control methods.

(d) The frequency separation for the amateur repeater is 600 kHz as indicated in **Appendix A**. MCMC encourages the use of duplexers for frequency separation.

(e) Any AA holder is allowed to send messages through an amateur repeater station or a network of a network of amateur repeaters linked together. Amateur repeater station AA holders cannot restrict the use of their repeaters to their amateur clubs or societies' members only. In the spirit of amateur goodwill, MCMC encourages the use of Bahasa Malaysia and English as the medium of language for transmitting messages over an amateur repeater frequency. It is considered best to practice limiting messages in other languages on simplex frequencies.

(f) Amateur beacons are permitted to transmit a one-minute message every 5 minutes, 24 hours a day. Each amateur beacon is permitted to transmit in CW, or other emerging modes meant for amateur beacon operation.

(g) Equipment capable of multiple frequency bands operation is permitted for amateur beacon operations, provided that each assigned frequency, complied with the conditions specified in the AA.

(h) When beacons are part of an international frequency-sharing beacon network, the amateur beacon AA holder is required to adhere with IARU's procedure in order to coordinate and determine the exact time when the beacon is to start transmitting its message sequence. For more information on this procedure, kindly liaise with the IARU Region 3 beacon coordinator[9].

(i) Three seconds "guard time" is required to be maintained between one beacon's transmission and the next on the same frequency to avoid overlapping with the transmission of a neighbouring amateur beacon in another country.

(j) Where crystals are used for timing control, it is necessary to reset and resynchronise each beacon's internal clock every four to six weeks to avoid overlap with another beacon's transmission. In this respect, MCMC encourages the use of GNSS timing solutions.

Note: The inclusion of the additional conditions of the AA in this **Appendix B** of the SRSP shall be treated as reference only. The complete and final AA conditions shall be referred to in the AA certificate(s) issued accordingly.

[9] https://www.iaru-r3.org/contact

APPENDIX C: INTERFERENCE RESOLUTION PROCESS

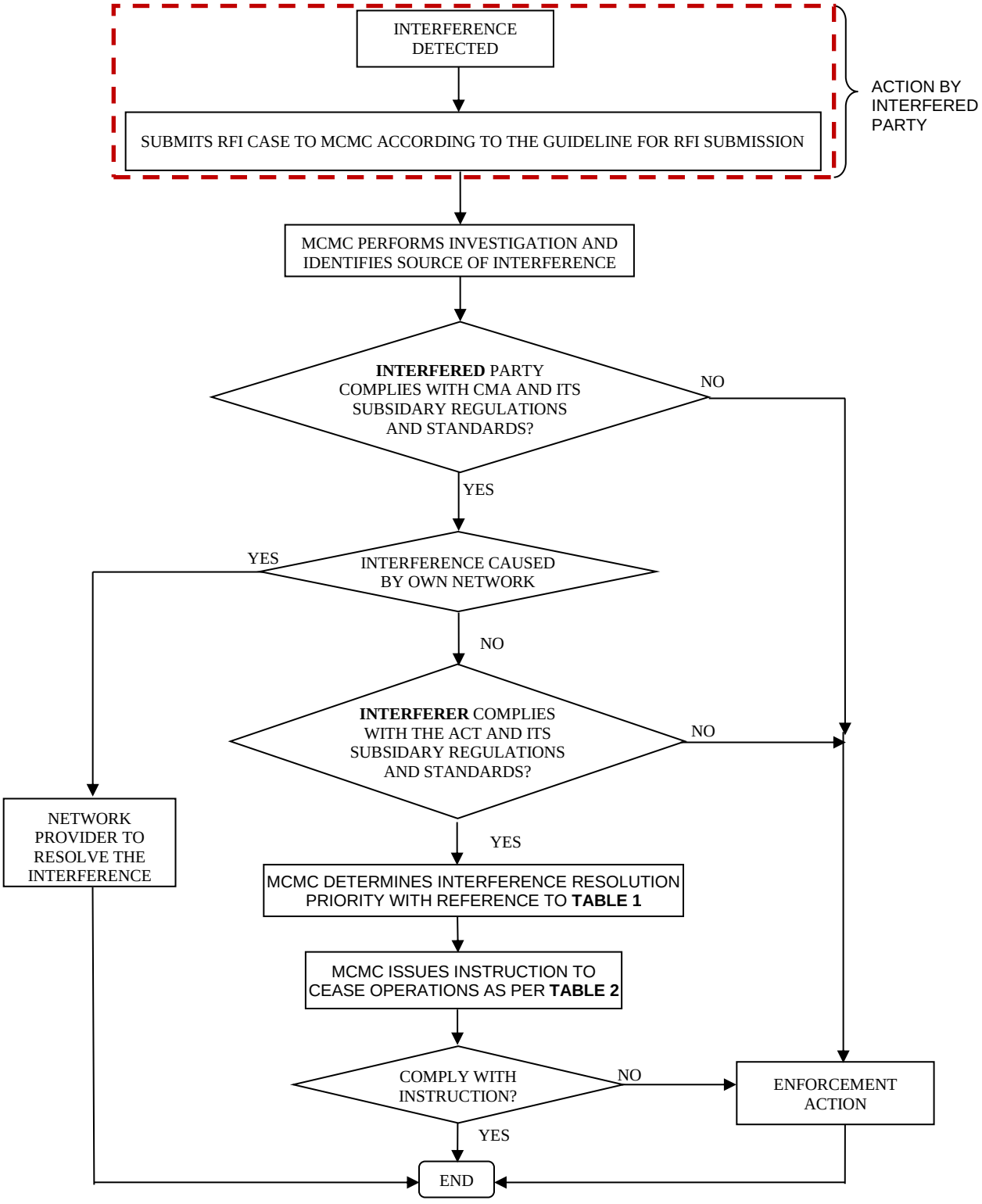


TABLE 1: INTERFERENCE RESOLUTION PRIORITY

No.	Resolution Type of Priority	Description
1	Service Priority	Primary 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): i. safety or radionavigation service; or ii. based on the date of Apparatus Assignment – Priority is given to the earliest/first installation

TABLE 2: 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 the Spectrum Regulations.	The cease* operation immediately within 24 hours or earlier as specified in the notice issued by MCMC.
2	Major	Electromagnetic interference: (a) rendering any apparatus or service unsuitable for its purpose; or (b) which degrades or obstructs, or repeatedly interrupts, a radiocommunications service operating in accordance with the Spectrum Regulations.	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 has completed the implementation of the mitigation plan to the satisfaction of MCMC to remove/avoid the interference.