

Standard Radio System Plan

**REQUIREMENTS FOR WIRELESS
CLOSED CIRCUIT TELEVISION (CCTV)
SYSTEMS**

**OPERATING IN THE FREQUENCY
BAND**

5650 MHz TO 5725 MHz



Suruhanjaya Komunikasi dan Multimedia Malaysia
Malaysian Communications and Multimedia Commission

Off Persiaran Multimedia,
63000 Cyberjaya, Selangor Darul Ehsan, Malaysia
Tel: +60 3 8688 8000 Fax: +60 3 8688 1005
Website: <http://www.skmm.gov.my>

TABLE OF CONTENTS

	PAGE
1.0 GLOSSARY	3
2.0 INTENT	4
3.0 GENERAL	4
4.0 CHANNELLING PLAN	5
5.0 REQUIREMENTS FOR USAGE OF SPECTRUM	5
6.0 PRINCIPLES OF ASSIGNMENT	7
7.0 IMPLEMENTATION	8
8.0 COORDINATION REQUIREMENT	8
9.0 REVOCATION	9
10.0 REFERENCES	9
APPENDICES	
APPENDIX A: SPECTRUM PLAN 5650 MHz TO 5725 MHz	10
APPENDIX B: CHANNELLING PLAN	11
APPENDIX C: BLOCK EMISSION MASK	12
APPENDIX D: INTERFERENCE RESOLUTION PROCESS	13

1.0 GLOSSARY

- 1.1 The terms used in this document may be found in the document SRSP Glossary which can be downloaded from SKMM website.
([http://www.skmm.gov.my/what we do/spectrum/srsp.asp](http://www.skmm.gov.my/what_we_do/spectrum/srsp.asp))

REQUIREMENTS FOR WIRELESS CCTV SYSTEMS OPERATING IN THE FREQUENCY BAND 5650 MHz TO 5725 MHz

2.0 INTENT

- 2.1 This Standard Radio System Plan (SRSP) states the requirements for the utilisation of the frequency band from 5650 MHz to 5725 MHz for wireless Closed Circuit Television (CCTV) systems in Malaysia.
- 2.2 Wireless CCTV systems may operate on a two-way point-to-point or two-way point-to-multipoint configuration of CCTV distribution hub stations and their associated wireless CCTV cameras.
- 2.3 Wireless CCTV systems are intended for providing wireless connectivity for applications such as live streaming video, images and high-speed data. Thus it may be also be used for broadband wireless access in areas where CCTV will not be deployed.
- 2.4 It is to be noted that there are other spectrum bands that may support the usage of wireless CCTV systems such as the 2400 MHz to 2500 MHz and 5725 MHz to 5875 MHz bands. Requirements in using the spectrum for CCTV systems in other frequency bands may differ from the requirements in this SRSP.
- 2.5 In general, a SRSP is a document designed to provide information on the minimum requirements in the use of a frequency 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 This SRSP is formulated to facilitate the deployment of wireless CCTV systems for video surveillance services in particular to enhance public security.
- 3.2 Technical characteristics of equipment used in wireless CCTV systems shall conform to all applicable Malaysian standards, international standards, International Telecommunications Union (ITU) and its radio regulations as agreed and adopted by Malaysia.
- 3.3 All wireless CCTV equipment installations must comply with installation requirements and safety rules as defined by 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 a frequency band 5650 MHz to 5725 MHz providing a total bandwidth of 75 MHz for wireless CCTV systems employing time-division duplex (TDD).
- 4.2 The channelling plan for the wireless CCTV system, either for point-to-point or point-to-multipoint configuration, is based on 5 MHz of channel bandwidth which resulted in subdividing the frequency band of 5650 MHz- 5725 MHz into 15 sub-blocks.
- 4.3 Assignment holders may apply to use a single sub-block of 5 MHz or multiple contiguous sub-blocks of 5 MHz per assignment as specified in the channelling plan shown in **Appendix B**.

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 This band is provided to facilitate the deployment of wireless CCTV in providing wireless connections between distribution hub stations and their associated wireless CCTV cameras in a point-to-point and/or point-to-multipoint configuration.
- 5.3 Only systems using digital technologies that promote spectral efficiency will be issued with an assignment. Capacity enhanced digital techniques are being developed rapidly and such techniques that promote efficient use of spectrum, without reducing quality of service are encouraged.
- 5.4 Maximum Radiated Power:
 - 5.4.1 For Point-to-Multipoint station:
 - 5.4.1.1 The radiated power of distribution hub station and associated wireless CCTV cameras transmissions shall not exceed 1 Watt EIRP per RF channel; and

- 5.4.1.2 The RF signal level at 1 km from the edge of the proposed service area shall be not more than -123dBm / 5MHz.
- 5.4.2 For Point-to-Point station:
 - 5.4.2.1 The radiated power of transmissions shall not exceed 10 Watts EIRP per RF channel.
- 5.4.3 Higher EIRP transmissions may be permitted on a case by case basis, if acceptable technical justification is provided.
- 5.5 Unwanted Emissions:
 - 5.5.1 Within the range 5470 MHz to 5725 MHz:
 - 5.5.1.1 The average level of unwanted emission outside of an assigned block shall not exceed the limit of the mask provided in **Appendix C**.
 - 5.5.2 Outside of the band 5650 MHz to 5725 MHz:
 - 5.5.2.1 The level of unwanted emission shall not exceed -30dBm ERP per 1 MHz in the range 5350 MHz to 5470 MHz and 5725 MHz to 26 GHz.
- 5.6 Although a radio system conforms to the requirements of this SRSP, modifications may be required to the system or installation whenever any interference (see **Table 1 of Appendix D**) is caused to other radio stations or systems.
- 5.7 It should be noted that Mobile and Radiolocation Services (RLS) shared the band 5650 MHz to 5725 MHz on the basis of primary status in Region 1, 2 and 3. However some countries as listed in the footnote 5.453 have also allocated the band for Mobile, Radiolocation and Fixed Services on primary status which includes Malaysia and its neighbouring countries.
- 5.8 Priority is accorded to RLS over other primary services in the band. Wireless CCTV service shall not cause any interference to RLS and shall not claim any protection from RLS.
- 5.9 Special care must be taken by the wireless CCTV systems operator during installation of their equipment to avoid any interference. Implementation of mitigation techniques to avoid interference shall be borne by the wireless CCTV providers.

- 5.10 Mitigation techniques that can be deployed include antenna discrimination, tilt, polarisation, frequency discrimination, shielding/blocking (introduce diffraction loss), site selection, and/or power control.
- 5.11 The allocation of spectrum and shared services within these bands are found in the Spectrum Plan and an extract of it is shown in **Appendix A**.

6.0 PRINCIPLES OF ASSIGNMENT

- 6.1 Authorisation to use the spectrum for the point-to-point and **hub station** apparatus is by way of Apparatus Assignment (AA) and the associated terminal station or **Wireless CCTV camera** is by way of Class Assignment (CA). Please refer to www.skmm.gov.my for the conditions of use under a Class Assignment for the terminal station.
- 6.2 Eligible persons who may apply for assignments are:
 - 6.2.1 Network Facilities Provider Individual (NFP (I)) license holder, who provide radio communication transmitters and links.
 - 6.2.2 Private network facility (Government and private corporations/companies) for own **inland and offshore** private use only.
- 6.3 Applicants are required to:
 - 6.3.1 Submit AA application for the apparatus on the prescribed AA forms.
 - 6.3.2 Submit a roll out plan showing the sites or locations and implementation timelines (at least for the period of one (1) year) for each site or location in the proposed service area.
 - 6.3.3 Submit topographical maps (preferably in electronic format) which clearly show the RF/cell planning for coverage boundary of each proposed service area.
- 6.4 The AA for these bands shall be valid for a period of five (5) years or such lesser period as specified in the AA. AA holders may apply for a new assignment at least sixty (60) days before the expiry date.
- 6.5 Assignment holders are encouraged to replace its wireless CCTV systems to a wired solution within the first 5 years of the CCTV systems' deployment so as to release the spectrum to facilitate further deployment.

- 6.6 Issuance of an AA is subject to successful coordination among assigned stations and with neighbouring countries where it applies.
- 6.7 To further facilitate planning and efficiency in spectrum management, upon successful application the NFP(I) licence holder shall be allocated with the specific spectrum sub-block/s with a minimum of one 5 MHz sub-block (**Appendix B**) per proposed service area. Spectrum in any areas not utilised or underutilized, shall be opened to other NFP (I) licensees in the queue.
- 6.8 Interested applicants are invited to apply when the SKMM issues the relevant notice for application.
- 6.9 Application for available blocks after the initial offer period shall be considered on a first-come-first-served basis.

7.0 IMPLEMENTATION

- 7.1 This SRSP shall be effective immediately on the date of issuance of this document.

8.0 COORDINATION REQUIREMENT

- 8.1 Use of these frequency bands shall require coordination with the neighbouring countries within the following coordination zones of 50 kilometres from our neighbouring countries. Note that the above coordination distance is continuously being reviewed with our neighbouring countries and may be updated from time to time.
- 8.2 Technical analysis is carried out by SKMM before an assignment is issued. Assignments for wireless CCTV systems are issued based on proposed service areas. Operator-to-operator coordination at the boundaries of the coverage areas may be required to avoid interference.
- 8.3 In the event of any interference, SKMM will be guided by the interference resolution process as shown in **Appendix D**.
- 8.4 Due to coordination requirements for special events, wireless CCTV systems operators are not allowed to operate in the specific band within 20km radius from the centre point of the location of the special events being held.

9.0 REVOCATION

9.1 Not applicable.

10.0 REFERENCES

For further information kindly refer to the following:

- [1] **ETSI EN 301 893 v1.4.1** Broadband Radio Access Networks (BRAN); 5GHz High Performance RLAN; Harmonized EN Covering Essential Requirements of Article 3.2 of the R&TTE Directive.
- [2] **ITU-R Radio Regulations footnote 5.453**
- [3] **ITU-R Resolution 229 (WRC-03)** Use of the Band 5150 MHz – 5250 MHz, 5250 MHz – 5350 MHz, 5470 MHz – 5725 MHz by the Mobile Service for the implementation of Wireless Access Systems Including Radio Local Area Networks.

Issued by:



Suruhanjaya Komunikasi dan Multimedia Malaysia
Malaysian Communications and Multimedia Commission

23 October 2009

APPENDIX A: SPECTRUM PLAN 5650 MHz TO 5725 MHz

5 650MHz to 5 725MHz

Frequency Band (MHz)	ITU Allocation			Malaysian Allocation
	Region 1	Region 2	Region 3	
5650 - 5725	RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur Space research (deep space) 5.282 5.451 5.453 5.454 5.455			RADIOLOCATION FIXED MOBILE 5.446A 5.450A Amateur Space research (deep space) 5.282 5.453 MLA56

5.282 In the bands 435-438 MHz, 1 260-1 270 MHz, 2 400-2 450 MHz, 3 400-3 410 MHz (in Regions 2 and 3 only) and 5 650-5 670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No. 5.43). Administrations authorizing such use shall ensure that any harmful interference caused by emissions from a station in the amateur-satellite service is immediately eliminated in accordance with the provisions of No. 25.11. The use of the bands 1 260-1 270 MHz and 5 650-5 670 MHz by the amateur-satellite service is limited to the Earth-to-space direction.

5.446A The use of the bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile service shall be in accordance with Resolution 229 (WRC-03). (WRC-03)

5.450A In the band 5 470-5 725 MHz, stations in the mobile service shall not claim protection from radiodetermination services. Radiodetermination services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendation ITU-R M.1638. (WRC-03)

5.451 Additional allocation: in the United Kingdom, the band 5 470-5 850 MHz is also allocated to the land mobile service on a secondary basis. The power limits specified in Nos. 21.2, 21.3, 21.4 and 21.5 shall apply in the band 5 725-5 850 MHz.

5.453 Additional allocation: in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Egypt, the United Arab Emirates, Gabon, Guinea, Equatorial Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, the Libyan Arab Jamahiriya, Japan, Jordan, Kenya, Kuwait, Lebanon, Madagascar, Malaysia, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Sri Lanka, Swaziland, Tanzania, Chad, Thailand, Togo, Viet Nam and Yemen, the band 5 650-5 850 MHz is also allocated to the fixed and mobile services on a primary basis. In this case, the provisions of Resolution 229 (WRC-03) do not apply. (WRC-03)

5.454 Different category of service: in Azerbaijan, the Russian Federation, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 5 670-5 725 MHz to the space research service is on a primary basis (see No. 5.33). (WRC-03)

5.455 Additional allocation: in Armenia, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 5 670-5 850 MHz is also allocated to the fixed service on a primary basis. (WRC-03)

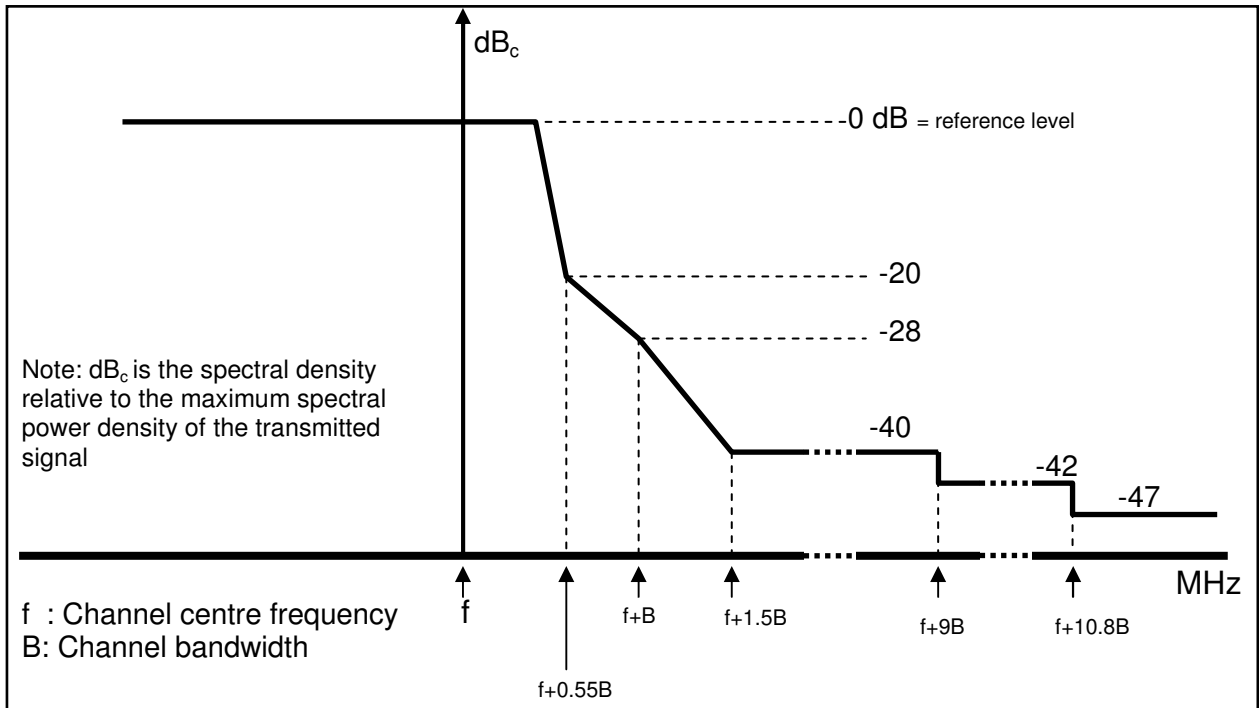
5.456 Additional allocation: in Cameroon, the band 5 755-5 850 MHz is also allocated to the fixed service on a primary basis. (WRC-03)

MLA56 The band can be used for special events

APPENDIX B: CHANNELING PLAN

Frequency Range		Bandwidth(MHz)	Block Number
5650	5655	5	B1
5655	5660	5	B2
5660	5665	5	B3
5665	5670	5	B4
5670	5675	5	B5
5675	5680	5	B6
5680	5685	5	B7
5685	5690	5	B8
5690	5695	5	B9
5695	5700	5	B10
5700	5705	5	B11
5705	5710	5	B12
5710	5715	5	B13
5715	5720	5	B14
5720	5725	5	B15
		75	

APPENDIX C: BLOCK EMISSION MASK



APPENDIX D: INTERFERENCE RESOLUTION PROCESS

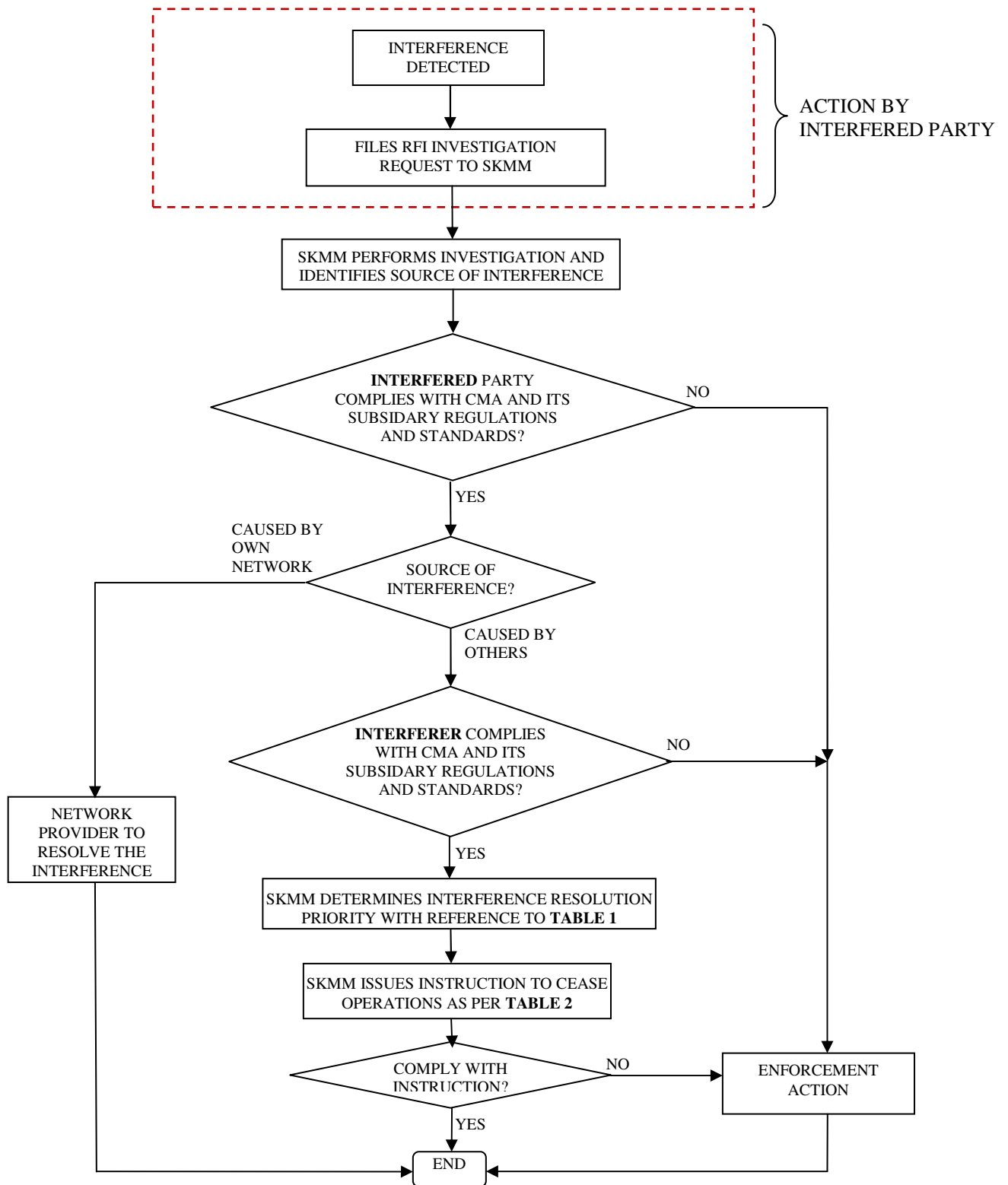


TABLE 1: INTERFERENCE RESOLUTION PRIORITY

	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): <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 SKMM
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 SKMM 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 SKMM 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 complete implementation of the mitigation plan to the satisfaction of SKMM to remove/ avoid the interference.