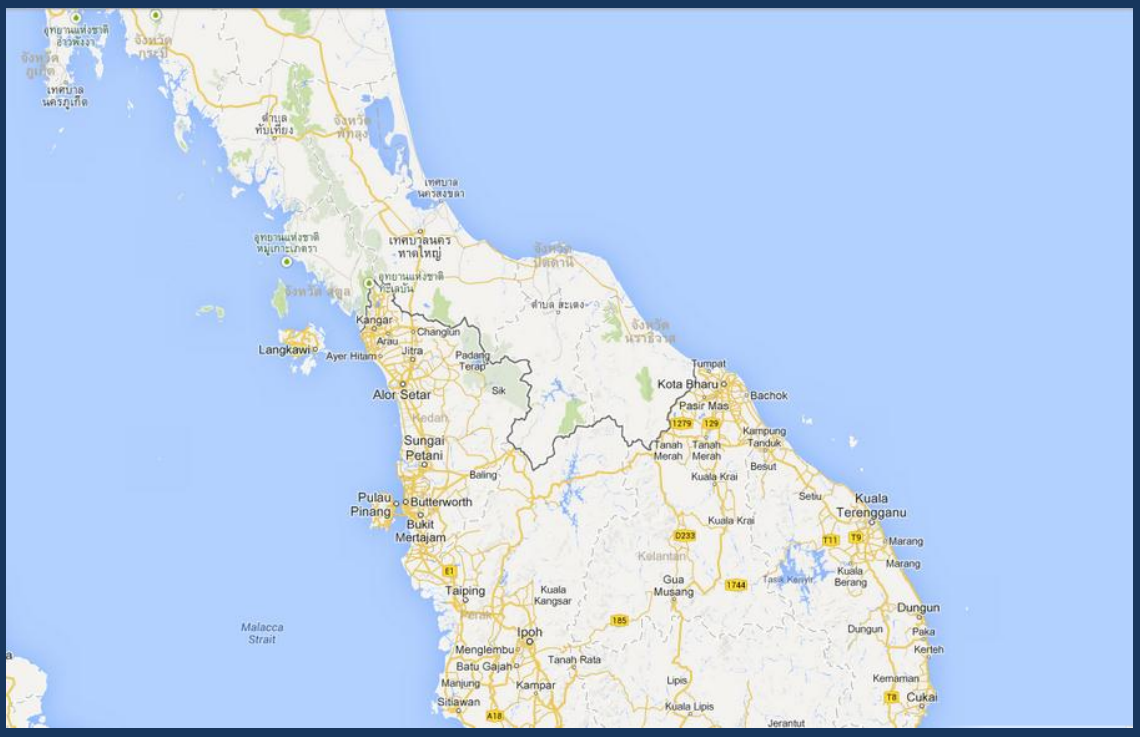
COMPILATION OF AGREED BAND PLANS, COORDINATION PARAMETERS, AND REGISTRATION PROCEDURE



JOINT TECHNICAL COMMITTEE (JTC) ON COORDINATION AND ASSIGNMENT OF FREQUENCIES ALONG MALAYSIA – THAILAND COMMON BORDER

APRIL 2015

COMPILATION OF AGREED BAND PLANS, COORDINATION PARAMETERS, AND REGISTRATION PROCEDURE

JOINT TECHNICAL COMMITTEE (JTC) ON COORDINATION AND ASSIGNMENT OF FREQUENCIES ALONG MALAYSIA – THAILAND COMMON BORDER

APRIL 2015

Abbreviations

3G	Third Generation mobile networks
AMPS	Advanced Mobile Phone System
CDMA	Code Division Multiple Access
ERP	Effective Radiated Power
FDD	Frequency Division Duplex
GSM	Global System for Mobile communication
JTC	Joint Technical Committee on Coordination and Assignment of Frequencies along Thailand - Malaysia Common Border Meeting
LTE	Long Term Evolution
MLA	Malaysia
NMT	Nordic Mobile Telephone
STF	Special Task Force Meeting for Broadcasting and Non-Broadcasting Services on Specific Issues between Thailand and Malaysia
TDD	Time Division Duplex
THA	Thailand
UHF band	Ultra High Frequency band
VHF band	Very High Frequency band
WCDMA	Wideband Code Division Multiple Access
WLL	Wireless Local Loop

Table of Contents

1. Introduction

The Joint Technical Committee on Coordination and Assignment of Frequencies along Thailand-Malaysia Common Border Meeting or in short, JTC Meeting; was formed with an objective to manage coordination of radio spectrum usage at the common border areas of Malaysia and Thailand. The first JTC Meeting was held on 28-29 October 1992 in Gentling Highland, Malaysia and the hosting of subsequent meetings was held on alternate basis between the two countries.

Activities of the committee includes frequencies registration for stations along the designated areas, resolving reported interference cases, frequency planning for future services and harmonization of existing band plans. This is to ensure harmonized use of spectrum at border areas by efficient coordination of frequency spectrum among neighboring countries. All processes carried by this committee conform to the Constitution and Convention of the International Telecommunication Union (ITU) and its Radio Regulations.

JTC is also involved in reaching agreements on sharing of certain blocks of frequency spectrum that have been designated to be allocated to certain services so that these services do not interfere into each other at the border areas and the spectrum is shared as much as possible among 2 border countries on equitable basis, in line with the Constitution and Convention of the ITU.

At JTC-23 Meeting, it was agreed to have a common document consisting of agreed band plans, coordination zones and technical coordination parameters for all services, as a future reference. At JTC-24 Meeting, responsible persons were assigned for developing the compilation document.

This compilation document is intended to provide information of the JTC agreements between Thailand and Malaysia with respect to frequency coordination and assignment along common border area. It covers agreed band plans, coordination parameters and registration and notification of frequency assignments for both broadcasting and non-broadcasting services. Portions of this document will be revised from time to time as a result of agreement from JTC Meetings.

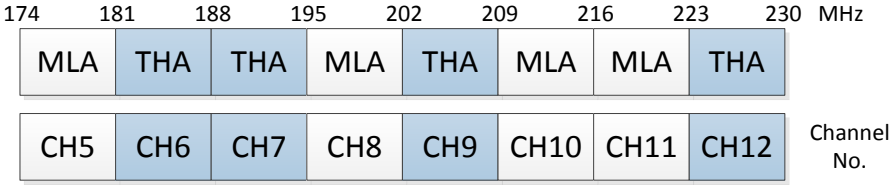
2. Agreed Band Plans

2.1. Broadcasting Service

2.1.1. VHF Band I/III

Band Plans for VHF Band I (47-68 MHz) is covered in 2.2.1.

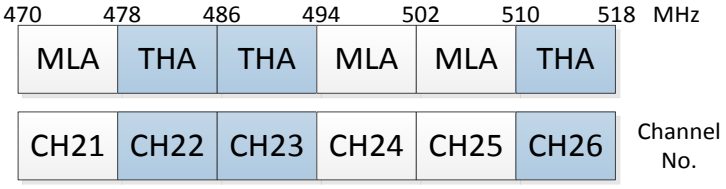
Band Plans for VHF Band III (174-230 MHz) as agreed at JTC-15



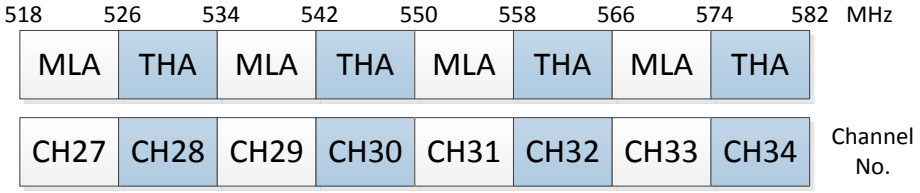
2.1.2. UHF Band IV/V

Band Plans for UHF Band IV (470-582 MHz) are as follows :

(1) Band Plans for 470-518 MHz as agreed at JTC-18

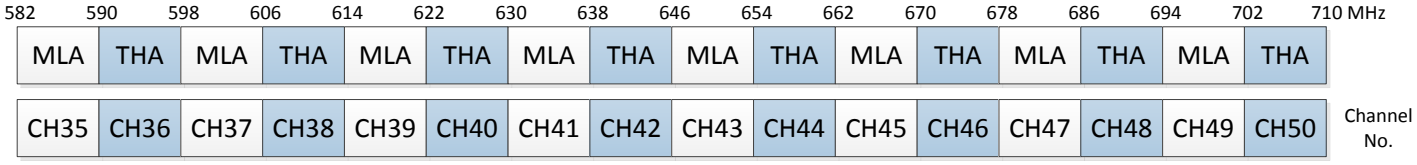


(2) Band Plans for 518-582 MHz as agreed at JTC-14

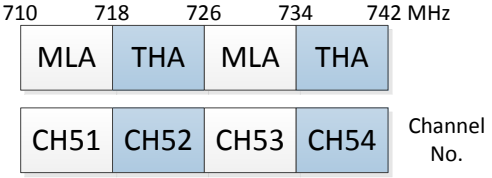


Band Plans for UHF Band V (582-790 MHz) are as follows :

(1) Band Plans for 582-710 MHz as agreed at JTC-14



(2) Band Plans for 710-742 MHz as agreed at JTC-19



(3) No agreed Band Plans for 742-790 MHz

2.1.3. L Band

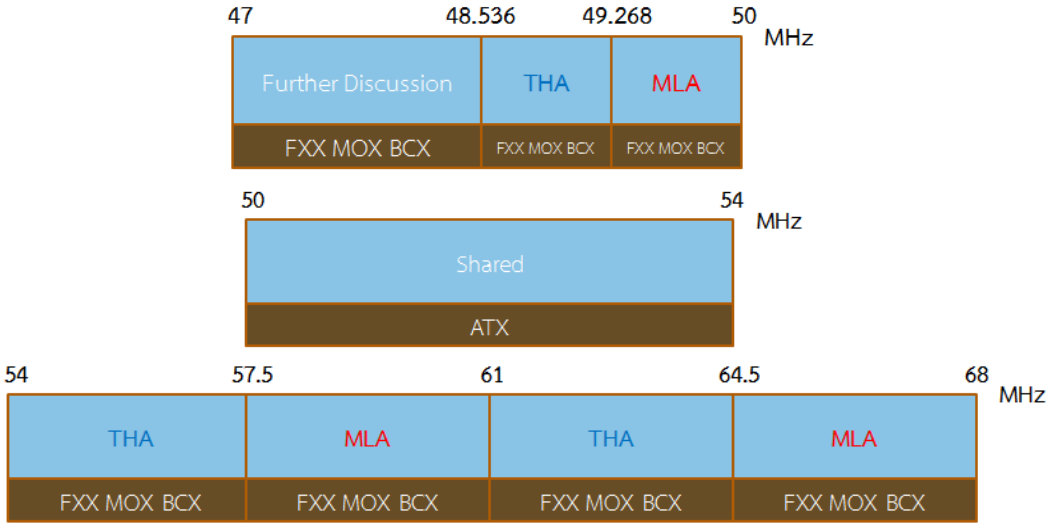
Band Plans for L Band as agreed at JTC-22 :

Channel No.	Center Frequency (MHz)	Country
1	1452.960	Malaysia
2	1454.672	Malaysia
3	1456.384	Malaysia
4	1458.096	Malaysia
5	1459.808	Shared between Malaysia and Thailand
6	1461.520	Thailand
7	1463.232	Thailand
8	1464.944	Thailand
9	1466.656	Thailand

2.2. Non-Broadcasting Services

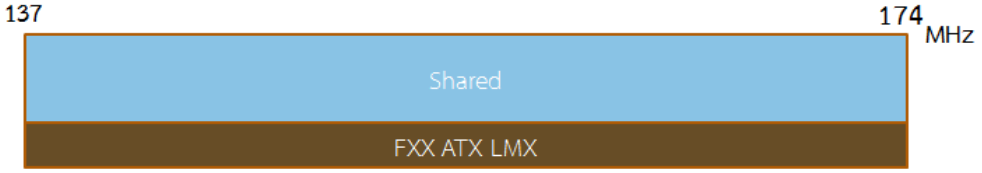
2.2.1. Band 47-68 MHz

Band Plans for 47-68 MHz as agreed at JTC-18



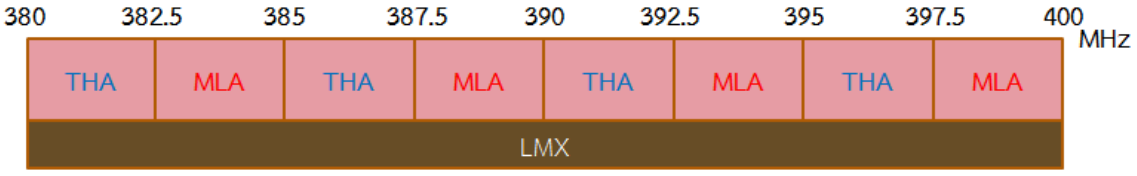
2.2.2. Band 137-174 MHz

Band Plans for 137-174 MHz as agreed at JTC-22



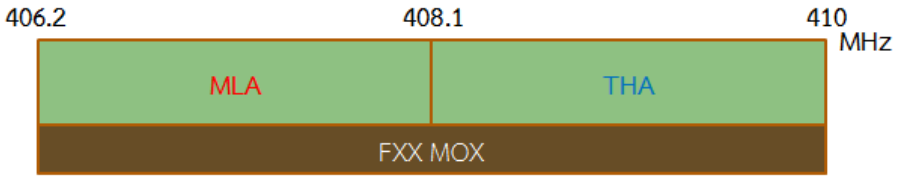
2.2.3. Band 380-400 MHz

Band Plans for 380-400 MHz as agreed at JTC-9



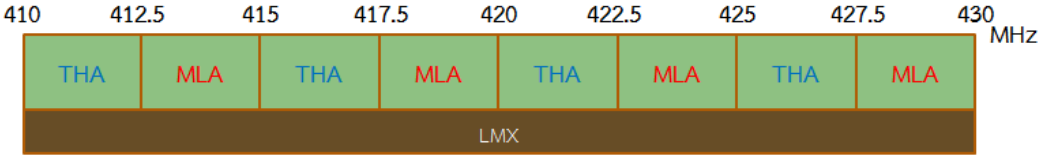
2.2.4. Band 406.2-410 MHz

Band Plans for 406.2-410 MHz as agreed at JTC-18



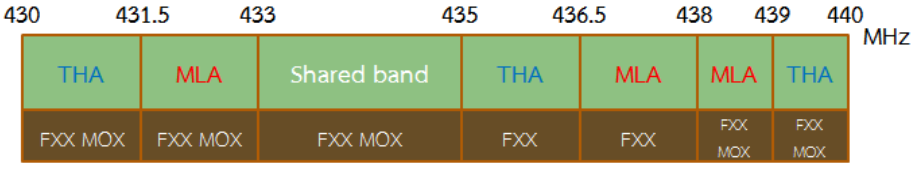
2.2.5. Band 410-430 MHz

Band Plans for 410-430 MHz as agreed at JTC-9

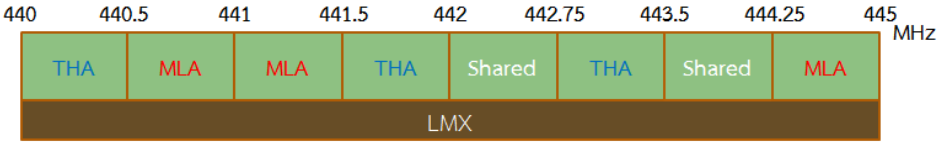


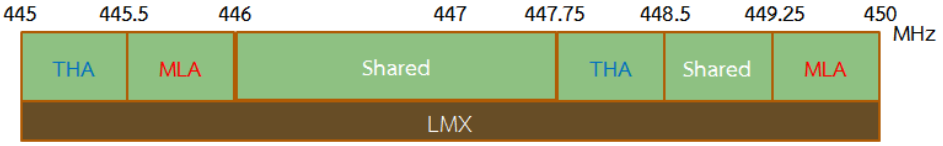
2.2.6. Band 430-450 MHz

Band Plans for 430-440 MHz as agreed at JTC-22



Band Plans for 440-450 MHz as agreed at JTC-23





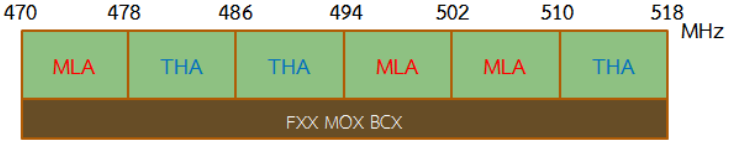
Band Plans for Common Official Correspondences during Emergency (PPDR) as agreed at JTC-15

	Frequency 1	Frequency 2	Bandwidth
THA	440.9750	448.9750	25 kHz
MLA	444.0875	449.0875	25 kHz

Note : All of the above Frequencies can be used by both countries

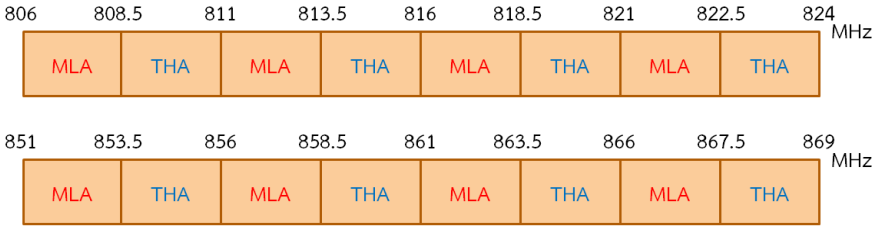
2.2.7. Band 470-518 MHz

Band Plans for 470-518 MHz as agreed at JTC-18

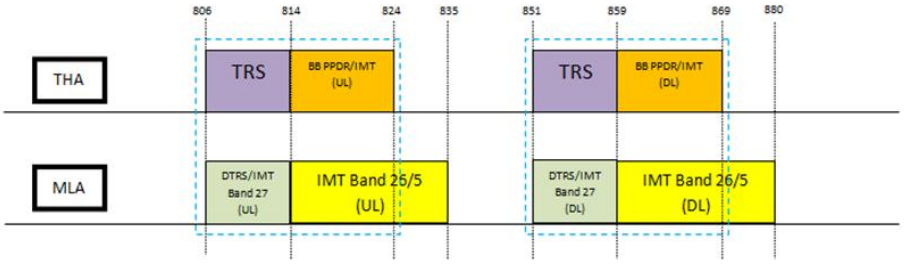


2.2.8. Band 800 MHz

Band Plans for 800 MHz as agreed at JTC-13

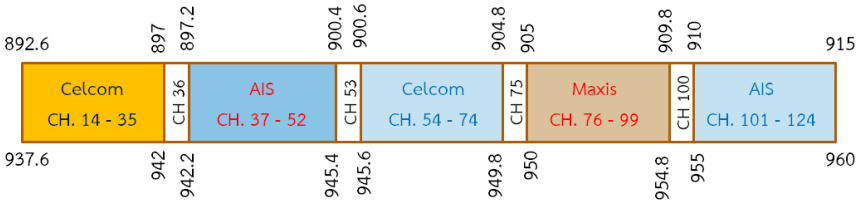


Band Plans for 800 MHz as agreed at JTC-26

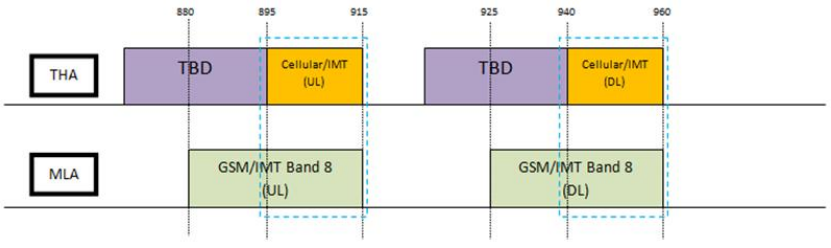


2.2.9. Band 900 MHz

Band Plans for 900 MHz as agreed at JTC-9

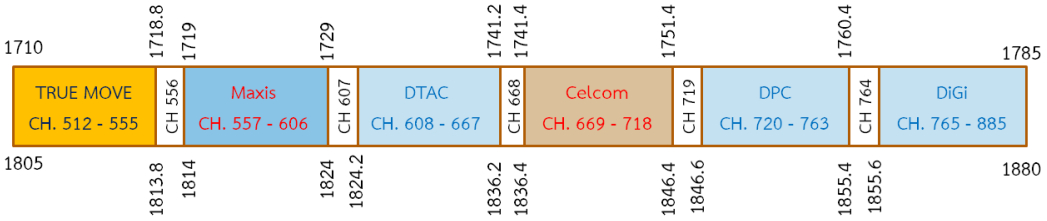


Band Plans for 900 MHz as agreed at JTC-26



2.2.10. Band 1800 MHz

Band Plans for 1800 MHz as agreed at JTC-11



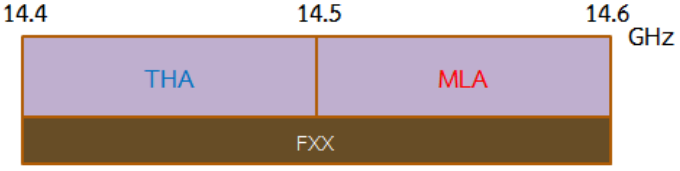
2.2.11. Band 2100 MHz

Band Plans for 2100 MHz as agreed at STF-23

Thailand	DTN	REAL FUTURE	AWN	TOT
Uplink	1920-1935	1935-1950	1950-1965	1965-1980
Downlink	2110-2125	2125-2140	2140-2155	2155-2170
Malaysia	UMOBILE	MAXIS	CELCOM	DIGI

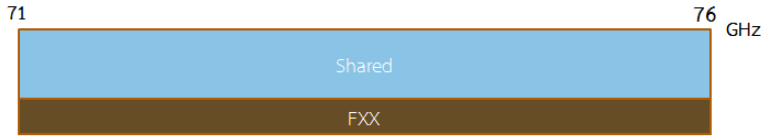
2.2.12. Band 14.4-14.6 GHz

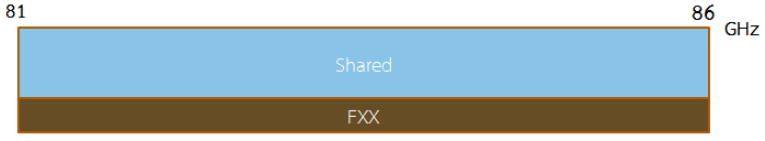
Band Plans for 14.4-14.6 GHz as agreed at JTC-10



2.2.13. Band 71-76 GHz and 81-86 GHz

Band Plans for 71-76 GHz and 81-86 GHz as agreed at JTC-24



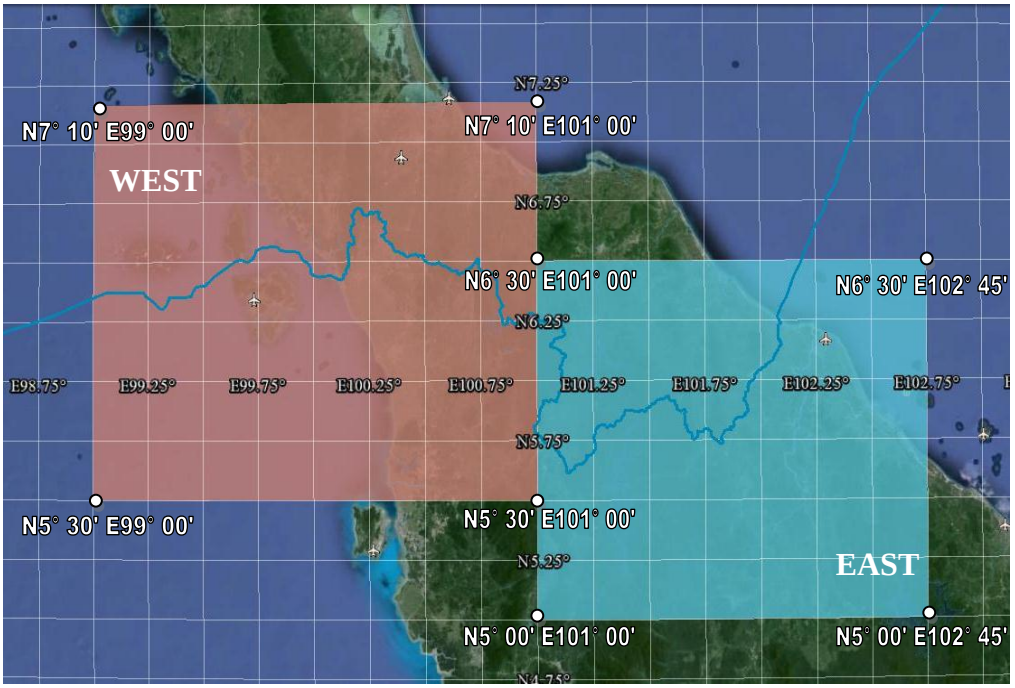


3. Coordination Parameters

3.1. Broadcasting Service Coordination Distances/Zones

3.1.1. Coordination Zones for Broadcasting Service in VHF Band II/III and UHF Band IV/V

The coordination zones between Thailand-Malaysia for Broadcasting Service in Bands II, III, IV and V are as shown in Table 1 below (JTC-25):



Legend:

Area / Zone	Longitude (between)	Latitude (between)
WEST	E99° 00' to E101° 00'	N5° 30' to N7° 10'
EAST	E101° 00' to E102° 45'	N5° 00’ to N6° 30’

This coordination would:

i. exclude broadcast transmitter station located at Bukit Sungai Kecil in Perak;

ii. be applicable for Broadcasting Service in Bands II, III, IV and V; and

iii. supersede all previous JTC agreements concerning coordination areas/zones.

3.1.2. Criteria for Coordination and Class of Transmitters

The following conditions shall be applied for Broadcasting Service in Bands II, III, IV and V:

i. All stations within the defined coordination zones shall be assigned the coordinated frequency channels as agreed at JTC.

ii. All stations, excluding low power TV broadcast transmitters and low power FM Radio transmitters, within the defined coordination zones shall be registered. (See section 4)

iii. High, medium, and low power digital broadcast transmitters are defined as follows (JTC-14):

- **High power transmitter** is a transmitter with an ERP ≥ 10 kW in Band III, IV and V.
- **Medium power transmitter** is a transmitter with an ERP:
  - ≥ 50 W and < 10 kW in Band III;
  - ≥ 250 W and < 10 kW in Band IV/V.
- **Low power transmitter** is a transmitter with an ERP:
  - < 50 W in Band III;
  - < 250 W in Band IV/V.

iv. Low power FM Radio and analogue TV (Band V) transmitters are defined as follows (JTC-5):

- Low power analogue TV transmitter is a transmitter operating in Band V with ERP ≤ 3 kW; and
- Low power FM Radio transmitter is a transmitter with ERP ≤ 2 kW.

v. Low power TV broadcast transmitters and low power FM Radio transmitters as defined above and operated within the coordination zone along Malaysia – Thailand common borders are only required to notify each Administration and be recorded at JTC frequency registration database without coordination.

3.2. Broadcasting Service Parameters

Minimum Frequency Separation for FM Radio Stations

The minimum frequency separation for FM Radio stations along Malaysia-Thailand common border areas is as shown in the table below (JTC-22 and JTC-23):

Minimum Frequency Separation in MHz							
		THAILAND					
		SONGKHLA	SATUN	YALA	BETONG	NARATHIWAT	SUNGAI KOLOK
MALAYSIA	GNG. RAYA (KEDAH)	0.3	0.4	0.2	0.1	0.1	0.1
	JERAI (KEDAH)	0.3	0.3	0.1	0.2	0.1	0.1
	DEDAP (KEDAH)	0.0	0.0	0.2	0.2	0.0	0.0
	TELIPOT (KELANTAN)	0.1	0.0	0.3	0.1	0.3	0.4
	PERINGAT (KELANTAN)	0.1	0.0	0.3	0.1	0.3	0.4
	TANGKI AIR (KELANTAN)	0.0	0.0	0.2	0.1	0.2	0.3
	PANAU (KELANTAN)	0.1	0.0	0.3	0.2	0.3	0.4
	BKT.BAKAR (KELANTAN)	0.2	0.0	0.3	0.2	0.3	0.4
	BKT.BINTANG (TERENGGANU)	0.0	0.0	0.2	0.0	0.2	0.3
	GERIK (PERAK)	0.0	0.0	0.2	0.2	0.0	0.0

The values in the table above are applicable only to new frequency assignments from both countries.

Test points for Broadcasting Service

The test points for broadcasting service in Band III, IV and V are as shown in the table below (JTC-14):

	No.	Location	Longitude	Latitude
Malaysia	1	Tanjung Rhu	099 E 49’ 24”	06 N 27’ 20”
	2	Kangar	100 E 11’ 25”	06 N 25’ 59”
	3	Alor Setar	100 E 23’ 20”	06 N 06’ 35”
	4	Baling	100 E 55’ 10”	05 N 40’ 01”
	5	Gerik	101 E 08’ 15”	05 N 23’ 20”
	6	Jeli	101 E 50’ 05”	05 N 40’ 00”
	7	Kota Bharu	102 E 15’ 30”	06 N 06’ 40”
Thailand	1	Satun (Pak Bara)	099 E 47’ 10”	06 N 50’ 34”
	2	Sadao	100 E 25’ 12”	06 N 37’ 52”
	3	Chana	100 E 43’ 35”	06 N 54’ 10”
	4	Betong	101 E 03’ 50”	05 N 46’ 37”
	5	Wang	101 E 53’ 08”	05 N 55’ 57”
	6	Tak Bai	102 E 03’ 20”	06 N 15’ 03”
	7	Thepa	100 E 56’ 38”	06 N 43’ 13”

The following conditions shall be applied:

i. These test points are applied to analog and digital broadcasting (both sound and television) in Band III, IV and V.

ii. These test points could be used for field strength measurement to facilitate the coordination and the implementation of digital broadcasting in Malaysia and Thailand.

3.3. Non-Broadcasting Services Parameters

The maximum permissible levels of interference and coordination distances for non-broadcasting service are shown in the table below:

Services	Max. Permissible Level of Interference		Coordination Perimeter (km)
	Signal Strength (dBm) *	C/I (dB)	
A) Cellular Mobile			
1. NMT 450/470	-85	18	50
2. NMT 900	-85	18	15
3. ETACS 900	-85	18	15
4. AMPS 800	-85	18	15
5. GSM 900	-85	12	10
6. GSM 1800	-85	9	8
7. CDMA 800	-110	Ec/Io: -12 dB	10
8. WCDMA (3G) 2100	-105 **	-	6
9. WiMax 2300	***	-	7
10. LTE 2600	***	-	7
11. LTE 1800	****	-	8
B) WLL			
1. 1900/2400 MHz	-91	9	15
2. CDMA 800	-110	Ec/Io: -12 dB	10
C) Radio Paging			
1. VHF	-85	18	30
2. UHF	-85	18	30
D) Trunked Radio/PMR			
1. VHF	-85	18	60
2. UHF	-85	18	30
E) Satellite	-	-	60
F) Microwave			
1. < 10 GHz	-	-	35
2. 10 GHz to < 17 GHz	-	-	15
3. >= 17 GHz	-	-	5

Note:

* The Signal Strength is measured in dBm at 5 km from border and 1.5 m above ground level. This applies to all services except WCDMA (3G) 2100 MHz, WiMax 2300 MHz and LTE 2600 MHz.

** For WCDMA (3G) 2100 MHz, the Signal Strength is measured in dBm at 3 km from border and 1.5 m above ground level.

*** The Signal Strength in the table below is used for LTE 2600 MHz (FDD system), as well as temporarily used for WiMax 2300 MHz (TDD system) and LTE 2600 MHz (TDD system):

BW (MHz)	Field strength at 3m height (general case)	Field strength at 3m height (LTE case)
5	65.0 dBµV/m/5MHz @ 0km	65.0 dBµV/m/5MHz @ 0km
	37.0 dBµV/m/5MHz @ 6km	49.0 dBµV/m/5MHz @ 6km
10	68.0 dBµV/m/10MHz @ 0km	68.0 dBµV/m/10MHz @ 0km
	40.0 dBµV/m/10MHz @ 6km	52.0 dBµV/m/10MHz @ 6km
15	69.8 dBµV/m/15MHz @ 0km	69.8 dBµV/m/15MHz @ 0km
	41.8 dBµV/m/15MHz @ 6km	53.8 dBµV/m/15MHz @ 6km
20	71.0 dBµV/m/20MHz @ 0km	71.0 dBµV/m/20MHz @ 0km
	43.0 dBµV/m/20MHz @ 6km	55.0 dBµV/m/20MHz @ 6km

When TDD systems are implemented in Thailand, this Signal Strength will be further reviewed.

**** The Signal Strength for LTE 1800 is under discussion.

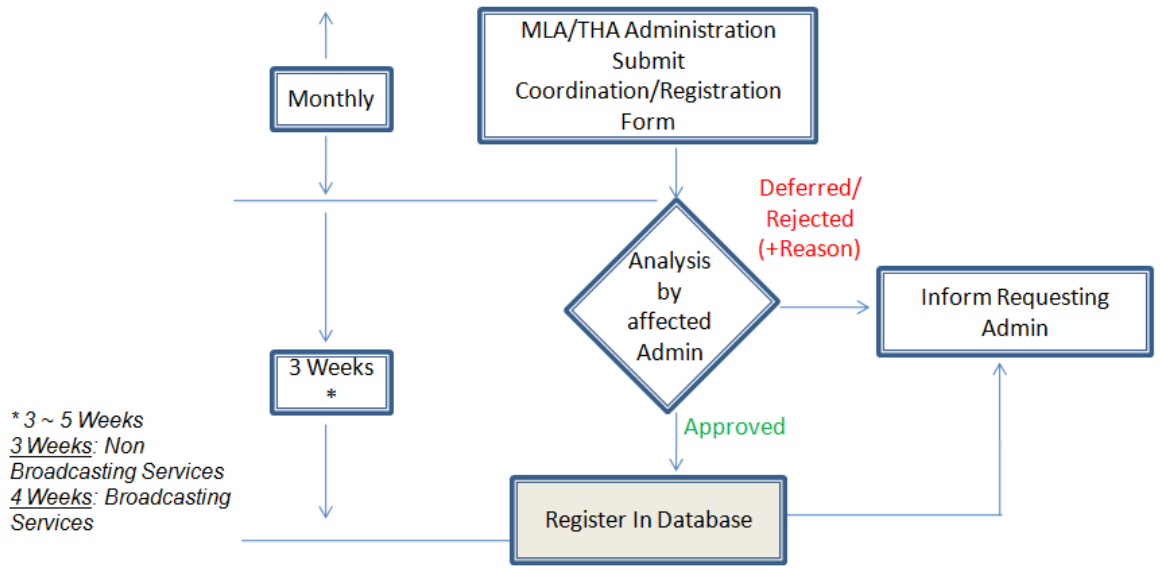
4. Registration and Notification of Frequency Assignments

4.1. Registration and Notification Procedure

Registration and Notification of frequency assignments are required prior to use so that in the event of interference occurs, the station causing interference and the owner of the station could be identified to resolve the interference. The interference protection of the registered frequency is based on "first comes, first served" basis, while the notified frequency does not establish this priority.

The Registration and Notification information should be exchanged via electronic submission, such as Email, and the database is to be maintained in Microsoft Access/Microsoft Excel format. The received date would be based on electronic delivery of the information.

The procedure of Registration and Notification appears below:



4.2. Registration Format

(As agreed at JTC-7 and amended by database review committee at JTC-24 and JTC-25)

No.	Field name		No.	Field name	
1	ID		24	A7_MODEL	
2	SUB_TYPE		25	S7_RADIUS	
3	MTG_NO		26	F1_TXRX	
4	APPDATE		27	F2_POLCODE	
5	OAC		28	F3_TXASFRE	
6	CLIENT		29	F4_TXCRFRE	
7	S1		30	F5_RXASFRE	
8	S2		31	F6_RXCRFRE	
9	S3		32	F7_SVCCODE	
10	S4		33	F8_ITUCODE	
11	S_5 LAT		34	F9_STCODE	
12	S_5 LONG		35	F10_HOUR	
13	S_6 LATLINK		36	T1_BW	
14	S_6 LONG LINK		37	T2_EMCLASS	
15	S6LINK_LOC		38	T3_RFOPPOW	
16	S8_AMSL_M		39	T5_TOTALLO	
17	A1_AGL_M		40	T6_RAD_PWR	
18	A1_AMSL_M		41	T8_MODTYPE	
19	A2_GAIN_DB		42	T9_MODSCHE	
20	A3_AZIMUTH		43	T10_MODFACT	
21	A4_3DB		44	T12_BITRATE	
22	A8_ELEVATI		45	R1_PMIN	
23	A6_MFR		46	REMARKS	

4.3. Notification Formats

3G 2100 MHz (as agreed at JTC-23)

No.	Field name		No.	Field name	
1	ADMIN		7	TX FREQ	
2	CLIENT		8	RX FREQ	
3	STATION NAME		9	BANDWIDTH	
4	LOCATION		10	TX POWER	
5	LATITUDE		11	EFF RADIATED POWER	
6	LONGITUDE				

E-Band (71-76/81-86 GHz) (as agreed at JTC-24)

No.	Field name		No.	Field name	
1	ADMIN		10	RX FREQ	
2	CLIENT		11	BANDWIDTH	
3	STATION NAME		12	TX POWER	
4	LOCATION		13	EFF RADIATED POWER	
5	LATITUDE		14	ANTENNA HEIGHT	
6	LONGITUDE		15	ANTENNA AZIMUTH/ELEVATION	
7	LINK LATITUDE		16	ANTENNA GAIN	
8	LINK LONGITUDE		17	ANTENNA PATTERN	
9	TX FREQ		18	ANTENNA POLARIZATION	

4.4. Frequency Registration Guideline

The Frequency Registration Guideline as agreed at JTC-7 is reproduced in Annex 1 and the associated Explanatory Notes for Frequency Registration as agreed at JTC-26 is reproduced in Annex 2.

Annex 1

Frequency Registration Guidelines[1]

Introduction

In view of the need to cooperate and coordinate future planning, allocation and assignment of frequencies along the common border areas between Thailand and Malaysia, the 2nd Meeting of Thailand—Malaysia Joint Technical Committee on Coordination and Assignment of Frequencies along the Common Border Areas known as JTC, the 3rd Meeting of Malaysia—Thailand Joint Permanent Committee on Coordination and Assignment of Frequencies along the Common Border Areas known as JPC, and the 6th Meeting of Thailand—Malaysia Joint Commission known as JC, recommended that Frequency Registration Guidelines be further studied and adopted.

Recognizing that the guidelines will achieve the objectives set forth by the above Meetings, the Post and Telegraph Department of Thailand and the Jabatan Telekom Malaysia, adopted the following procedures,

1. Registration of Frequency

Frequencies used along the common border areas between Thailand and Malaysia which may cause mutual interference shall in normal circumstances be registered.

2. Mechanism for Frequency Registration

JTC of each party shall be the functional body for the frequency registration and shall set up its own secretariat to be responsible for registration work.

3. Schedule for submission of frequency notification and dispatch of agenda/minutes

3.1 Submission for coordination shall reach the Secretariat of each party at least 7 days before a meeting.

(a) Nil submission shall be notified to the Secretariat.

[1] As agreed at JTC-7. The information contained in this Annex may not reflect the current situation.

(b) Late submission for coordination as addendum shall be discouraged.

3.2 Agenda shall be dispatched 10 days before a meeting.

3.3 Minutes shall be dispatched within 14 days after a meeting.

4. Application Form for Coordination

4.1 Format

Information concerning a frequency assignment shall be notified in accordance with the format shown in Annex 2.

4.2 Incomplete Application

An application for registration which does not include all the technical parameters in Annex 2 shall have no priority in its registration and shall accommodate a new assignment without imposing any NIB. Should mutual interference between the two assignments occur, both should adjust their technical parameters to eliminate the mutual interference. (see para 11 Imposition of NIB)

4.3 Assigned Frequency

In notification and registration of frequencies, the assigned frequency is adequate.

4.4 Power of Multiple Emissions

For a frequency assignment with more than one emission, the power for each type of emission shall be notified.

4.5 Out-of-Band Frequency

Registration of out-of-band frequency is not permitted.

4.6 Block Registration of Frequencies

Block registration of a large number of frequencies in a particular band by a single user shall, as far as possible, be avoided.

5. Categories of Frequency Registration

5.1 Registration of a new assignment (see para 6)

5.2 Re-registration of a recorded assignment (see para 7)

5.3 Amendment of a recorded assignment (see para 8)

5.4 Deletion of a recorded assignment (see para 9)

6. Registration of a new assignment

The parties shall only register frequency which they are using or have firm intention of using and shall observe the JTC Frequency Plan and the conditions laid down in the Radio Regulations.

6.1 Frequency Allocated by World Radiocommunication Conferences

Frequency allocated by ITU World Radiocommunication Conferences shall have priority over existing assignments which are not coordinated with international organizations and/or registered with ITU. The latter shall not cause interference to ITU allocated frequencies and where interference is likely to occur, it should be changed according to an agreed time frame, taking into account the implementation date of the ITU allocated frequencies. Where existing assignments are already coordinated with international organization and/or registered with ITU, the normal registration procedures shall be apply and ITU allocated frequencies should, as far as possible, be accommodated.

6.2 Aeronautical Mobile Frequency

(a) In registering aeronautical mobile frequencies in the band 108-137 MHz, each party shall refer to Annex 10 to the Convention on International Civil Aviation for frequency assignments and technical guidance.

(b) In registering HF Aeronautical mobile frequencies for route (R) and off-route (OR) services, each party shall refer to Appendices S26 and S27 of the Radio Regulations.

6.3 Radar Station Frequency

Radar frequencies shall be registered, where possible, as spot frequencies instead of a whole band.

6.4 Frequency for Receive Only

Request for registration of receive frequency shall be entered in F5 and F6 columns.

6.5 Visiting Armed Forces and Joint Forces Frequencies

Registration of visiting armed forces frequencies shall be the responsibility of the host country concerned. The registration shall indicate the administration of the host armed forces concerned with the words of Australia Forces, New Zealand Forces, United States of America or United Kingdom Forces, as the case may be.

7. Re-registration of a recorded assignment

7.1 A recorded assignment requiring a change in any one of the following characteristics which may increase the probability of interference to existing assignments, shall be considered as a new application for coordination :

(a) Location of transmitting station
(b) Power or bandwidth (other than a reduction)
(c) Other necessary transmission characteristics (e.g. class of emission, transmitting antenna characteristics, etc.).

7.2 Any NIBs previously imposed by the recorded assignment on other frequency assignments shall cease to be effective upon approval of the re-registration.

8. Amendment of a recorded assignment

8.1 A recorded assignment requiring a reduction in power or bandwidth shall be considered as an amendment.

8.2 An amendment to a recorded assignment shall not lose the priority of the registration.

9. Deletion of recorded assignment

9.1 The parties shall delete all frequencies which they no longer require or in use by notification to the Secretariat of each party.

9.2 The frequencies shall subsequently be deleted from the JTC Register.

10. Frequency need not be notified

10.1 Frequency for World-wide Use

Frequencies prescribed by the Radio Regulations for common use by stations of a given service need not be registered. (see Section V of the preface to the International Frequency List (IFL) and mobile parts of the Radio Regulations)

10.2 Maritime Mobile Band

(a) Frequencies of ship station and coast station operating in the band allocated to the maritime mobile service need not be registered. Each party must conform to the instructions pertaining to the spot frequencies, channel spacing and mode of operation as specified in the relevant Appendices (Appendices S17 and S25) of the Radio Regulations where appropriate.

(b) Frequencies of ship station operating in the radiolocation and radio navigation bands need not be registered.

10.3 HF Broadcast Frequency

Broadcast frequencies in the bands allocated exclusively to the broadcasting service between 5,950 — 26,100 kHz, need to be notified to ITU only.

10.4 Frequency with Power Below 50 mW

The stations of frequency below 1 GHz having power below 50 mW (may be referred to as low power device) need not be registered but a notification for information is required.

11. Imposition of Non-Interference Basis (NIB)

NIB shall be imposed only when there exists a high probability that interference to an existing frequency assignment will occur. A general guide, NIB should be applied when there are overlapping of :

(a) coverage area,
(b) necessary RF bandwidths,
(c) radiation directions, and
(d) hours of transmission.

of the existing and proposed frequency assignments. Should mutual interference between the two assignments occur, both should adjust their technical parameters to eliminate the mutual interference.

12. Temporary Registration of Frequency

Frequencies required for specified periods and "on-test" registration are to be recorded on a 3 months basis and shall not be recorded in the JTC Register, but recorded on a separate list attached to the Minutes of Meeting which will be carried forward to subsequent minutes. At the end of the 3 months periods, the temporary registrations shall be withdrawn or extended on request.

Annex 2

JTC THA-MLA REGISTRATION

EXPLANATORY NOTES TO THE INFORMATION TO BE FURNISHED FOR THE RESPECTIVE DATA FIELDS:

DATA ITEM	DATA NAME	FIELD NAME	DATA TYPE	CODE	DESCRIPTION
1	Identification Number	ID	Char(10)	-	Unique ID for each submission record: TXXX for Thailand Submission MXXX for Malaysia Submission e.g. T25, M150
2	Submission Type	SUB_TYPE	Char(7)	Meeting Online	Submission at JTC meeting Submission Online
3	JTC Meeting Number	MTG_NO	Char(7)	-	Number of JTC Meeting that approves frequency registration records e.g. JTC-24
4	Approval Date	APPDATE	Char(9)	-	Date of the frequency registration records approval e.g. DDMMMYYYY
5	Operating Administration	OAC	Char(4)	PTD NTC NBTC MCMC	Post and Telegraph Department (2001 – 2004) National Telecommunications Commission (2005 – 2011) National Broadcasting and Telecommunications Commission (2012 – present) Malaysian Communications and Multimedia Commission (Malaysia)
6	Client Name	CLIENT	Char(40)	-	Full name of applicant
7	Station Type	S1	Char(2)	10 11 12 20	Land/Fixed Station (Non-Microwave) Microwave Earth Station Microwave Fixed Station Land Mobile Station (Non-Microwave)
8	Station Name	S2	Char(40)	-	Name of the locality of the station
9	Location of Operation	S3	Char(40)	-	Country/State/Province/District or Town in which the station is located
10	Intended Use	S4	Char(2)	01 02 03 04 05 06 07 08 09	Paging Leased Channel Trunked Radio System Personal Communication Network Rural Call Service Cellular Mobile Radio System Telepoint (e.g. CT2) Carphone Country Set

DATA ITEM	DATA NAME	FIELD NAME	DATA TYPE	CODE	DESCRIPTION
				10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32	Wireless LAN Multi-Channel Analogue-Main Multi-Channel Analogue-Spur Multi-Channel Digital-Main Multi-Channel Digital-Spur Multi-Access Radio System (MARS) Service Channel Telemetry Private Business Broadcasting (including Auxiliary to Broadcasting) Press Localized Network is a radiocommunication network in which the handheld equipment are intended to be operated in a small specific geographical area e.g. factories, warehoused, campus, hospitals, shops and office complexes for security and/or operational communication Official Network is radiocommunication network operated by statutory and government bodies Radar Station Radio Mobile Data Equipment operating in the ISM Bands LPD use for remote-control (alarm & etc.) Satellite systems (Including earth station and VSAT) Receiving systems operating in the band approved by agreements Amateur Station (Tx and Rx) Radionavigation, DF & Sat-GPS Aeronautical Communications Point-to-multipoint system (e.g. FWA)
11	Station Coordinates Latitude	S_5 LAT	Char(7)	-	a) Latitude and Longitude of the station b) Mobiles-to-mobiles communication: Latitude and Longitude of the centre of coverage is to be given c) Mobiles–to-base stations communication: Latitude and Longitude of the base station is to be given <u>Lat(N/S) Long(E/W)</u> deg (00-90) deg (000-180) min (00-59) min (00-59) sec (00-59) sec (00-59) e.g. 065439N, 1004523E
12	Station Coordinates Longitude	S_5 LONG	Char(8)	-	
13	Link Coordinates Latitude	S_6 LATLINK	Char(7)	-	Microwave Link: Latitude and Longitude of the target of the main beam link (the receiving station's coordinates or a

DATA ITEM	DATA NAME	FIELD NAME	DATA TYPE	CODE	DESCRIPTION
14	Link Coordinates Longitude	S_6 LONG LINK	Char(8)	-	geographic point) Lat(N/S)Long(E/W) deg (00-90) deg (000-180) min (00-59) min (00-59) sec (00-59) sec (00-59) e.g. 065439N, 1004523E
15	Link Location	S6LINK_LOC	Char(40)		Name of the geographic location where the radio link terminates
16	Elevation (m)	S8_AMSL_M	Number (6,2)	-	Elevation above mean sea level of the ground at the site of the station e.g. 0.00
17	Height Above Ground (m)	A1_AGL_M	Number (6,2)	-	Height of the antenna above ground level at the location e.g. 0.00
18	Antenna Height AMSL (m)	A1_AMSL_M	Number (6,2)		Height of the antenna above mean sea level (= A1_AGL_M + S8_AMSL_M) e.g. 0.00
19	Gain (dB)	A2_GAIN_DB	Number (4,2)	-	Maximum radiation to that of a reference antenna for equal power (Ratio of radiation) e.g. 0.00
20	Azimuth (deg)	A3_AZIMUTH	Number (3,2)	-	a) Direction to which the antenna point, measured at an angle clockwise from true North in degrees b) Non-directional antenna/Omni: 0.0 is to be indicated e.g. 0.00
21	3 dB Beamwidth (deg)	A4_3DB	Number (3,2)	-	a) Angle between two half-power points (3 dB below maximum radiated power) of the main lobe b) Non-directional antenna/Omni: 360.00 is to be indicated e.g. 0.00
22	Elevation Angle (deg)	A8_ELEVATI	Number (2,2)	-	Microwave Earth Stations and Microwave Fixed Stations: from the horizontal plane, the angle of the antenna which provide maximum radiation to the target (endpoint) e.g. 0.00
23	Manufacturer	A6_MFR	Char(10)	-	Name of the manufacturer of the antenna
24	Model Code	A7_MODEL	Char(25)	-	Model number of the antenna provided by the manufacturer

DATA ITEM	DATA NAME	FIELD NAME	DATA TYPE	CODE	DESCRIPTION
25	Radius (km)	S7_RADIUS	Number (4,2)	-	Nominal radius of the circular transmitting area e.g. 0.00
26	Tx/Rx Indicator	F1_TXRX	Char(2)	1 2 3	Transmits only Receives only Transmits and Receives
27	Polarization	F2_POLCODE	Char(2)	C CL CR D E H HV L M O R SL SR V	Circular Circular Left Polarized Circular Right Polarized Dual Polarized Elliptical Polarized Horizontal Polarized Horizontal/ Vertical Linear Polarized Mixed Other (unspecified polarization) Rotating Slant Left Polarized Slant Right Polarized Vertical Polarized
28	Tx Assigned Frequency (MHz)	F3_TXASFRE	Number (6,4)	-	Frequency assigned to the transmitting station e.g. 0.0000
29	Tx Carrier Frequency (MHz)	F4_TXCRFRE	Number (6,4)	-	a) Frequency on which the signal is modulated to facilitate transmission b) To be provided only if it is different from the assigned frequency e.g. 0.0000
30	Rx Assigned Frequency (MHz)	F5_RXASFRE	Number (6,4)	-	Frequency assigned to the receiving station e.g. 0.0000
31	Rx Carrier Frequency (MHz)	F6_RXCRFRE	Number (6,4)	-	Frequency on which the signal is modulated to facilitate reception of the transmission e.g. 0.0000
32	Nature of Service	F7_SVCCODE	Char(2)	AS AX CO CP CR CV FS HP	Station using a frequency adaptive system Fixed station used for provision of services related to aircraft flight safety Station open to official correspondence exclusively Station open to public correspondence Station open to limited public correspondence Station open exclusively to correspondence of a private agency Land station established solely for the safety of life Fixed station using high altitude platform

DATA ITEM	DATA NAME	FIELD NAME	DATA TYPE	CODE	DESCRIPTION
				MX	Fixed station used for transmission of meteorological information
				OT	Station open exclusively to operational traffic of the service concerned
				PX	Fixed station used for press transmission
				RC	Non-directional radiobeacon
				RD	Directional radiobeacon
				RG	Radio direction-finding station
				RT	Revolving radiobeacon
				ST	Fixed station using tropospheric scatter
33	ITU Service Code	F8_ITUCODE	Char(3)	AFX	Aeronautical Fixed
				AMR	Aeronautical Mobile-Satellite(R)
				AMS	Aeronautical Mobile-Satellite
				AMX	Aeronautical Mobile
				ARS	Aeronautical Radionavigation-Satellite
				ARX	Aeronautical Radionavigation
				ATX	Amateur
				ATS	Amateur-Satellite
				BCS	Broadcasting-Satellite
				BCX	Broadcasting
				EES	Earth Exploration-Satellite
				FXS	Fixed-Satellite
				FXX	Fixed
				ISM	Industrial, Scientific and Medical Application
				ITS	Intersatellite Service
				LMS	Land Mobile-Satellite
				LMX	Land Mobile
				MAX	MeteorologicalAids
				MES	Meteorological-Satellite
				MMX	Maritime Mobile
				MMS	Maritime Mobile-Satellite
				MOS	Mobile-Satellite
				MOX	Mobile
				MRS	Maritime Radionavigation-Satellite
				MRX	Maritime Radionavigation
				POX	Port Operations
				RAX	Radio Astronomy
				RCX	Radiocommunication
				RDS	Radiodetermination-Satellite
				RDX	Radiodetermination
				RLX	Radiolocation
				RNS	Radionavigation-Satellite
				RNX	Radionavigation
				SFS	Standard Frequency and Time Signal-Satellite
				SFT	Standard Frequency and Time Signal
				SMX	Ship Movement
				SOX	Space Operations
				SRX	Space Research
				SSX	Safety Services
				SVX	Special Services
34	Class of Station Code	F9_STCODE	Char(2)	AL	Aeronautical radionavigation land station (transmitting station in the service)
				AM	Aeronautical radionavigation mobile station(receiving station in the service)
				AT	Amateur station
				AX	Aeronautical fixed
				BC	Broadcasting station, sound

DATA ITEM	DATA NAME	FIELD NAME	DATA TYPE	CODE	DESCRIPTION
				BT	Broadcasting station, television
				EA	Space station in the amateur-satellite service
				EB	Space station in the broadcasting-satellite service (sound broadcasting)
				EC	Space station in the fixed-satellite service
				ED	Space telecommand space station
				EE	Space station in the standard frequency-satellite service
				EF	Space station in the radiodetermination-satellite service
				EG	Space station in the maritime mobile-satellite service
				EH	Space research space station
				EI	Space station in the mobile-satellite service
				EJ	Space station in the aeronautical mobile-satellite service
				EK	Space tracking space station
				EM	Space station in the meteorological-satellite service
				EN	Space station in the radionavigation-satellite service
				EO	Space station in the aeronautical radionavigation-satellite service
				EQ	Space station in the maritime radionavigation-satellite service
				ER	Space telemetering space station
				ES	Station in the inter-satellite service
				ET	Space station in the space operation service
				EU	Space station in the land mobile-satellite service
				EV	Space station in the broadcasting-satellite service (television)
				EW	Space station in the earth exploration-satellite service
				EX	Experimental Station
				EY	Space station in the time signal-satellite service
				FA	Aeronautical station
				FB	Base station
				FC	Coast station
				FD	Aeronautical station in the aeronautical mobile (R) service
				FG	Aeronautical station in the aeronautical mobile (OR) service
				FL	Land station
				FP	Port station
				FR	Receive only station
				FX	Fixed station
				LR	Radiolocation land station
				MA	Aircraft station
				ML	Land mobile station
				MO	Mobile station
				MR	Radiolocation mobile station
				MS	Ship station
				NL	Maritime radionavigation land station
				NR	Radionavigation mobile station
				OD	Oceanographic data station (RX)

DATA ITEM	DATA NAME	FIELD NAME	DATA TYPE	CODE	DESCRIPTION
				OE	Oceanographic data interrogation station (TX)
				PL	Combination of two or more classes of station (limited to collective entries made under the terms of RR2184)
				RA	Radio astronomy station
				RM	Maritime radionavigation mobile station
				RN	Radionavigation land station
				SA	Meterological aids mobile station (Rx)
				SM	Meteorological aids station (Tx)
				SS	Standard frequency and time signal station
				TA	Amateur Earth Station (Space operation earth station in the amateur-satellite service)
				TB	Aeronautical earth station
				TC	Earth station in the fixed-satellite service
				TD	Space telecommand earth station
				TE	Satellite EPIRB in the mobile-satellite service
				TF	Fixed earth station in the radiodetermination-satellite service
				TG	Ship earth station
				TH	Earth station in the space research service
				TI	Coast earth station
				TJ	Aircraft earth station
				TK	Space tracking earth station
				TL	Mobile earth station in the radiodetermination-satellite service
				TM	Earth station in the meteorological-satellite service
				TN	Fixed earth station in the radionavigation-satellite service
				TO	Mobile earth station in the aeronautical radionavigation-satellite service
				TP	Receiving earth station
				TQ	Mobile earth station in the maritime radionavigation-satellite service
				TR	Space telemetering earth station
				TS	Television, sound channel (audio)
				TT	Earth station in the space operation service
				TU	Earth station in the land mobile service
				TV	Television, vision channel (visual)
				TW	Earth station in the earth exploration-satellite service
				TX	Fixed earth station in the maritime radionavigation-satellite service
				TY	Base earth station
				TZ	Fixed earth station in the aeronautical radionavigation-satellite service
				UA	Mobile earth station
				UB	Earth station in the broadcasting-satellite service (sound broadcasting)
				UD	Space telecommand mobile earth station
				UH	Mobile earth station in the space research service
				UK	Space tracking mobile earth station
				UM	Mobile earth station in the meteorological-satellite service

DATA ITEM	DATA NAME	FIELD NAME	DATA TYPE	CODE	DESCRIPTION
				UN UR UT UV UW VA YY	Mobile earth station in the radionavigation-satellite service Space telemetering mobile earth station Mobile earth station in the space operation service Earth station in the broadcasting-satellite service (television) Mobile earth station in the earth exploration-satellite service Land earth station Repeater
35	Usage Period	F10_HOUR	Char(3)	H H8 H16 H24 HJ HN HT HX	Scheduled 8 hours service provided by a ship station of the third category 16 hours service provided by a ship station of the second category 24 hours operation Day use Night use Transit period operation Intermittent use during 24 hours operation
36	Bandwidth (kHz)	T1_BW	Number (6,2)	-	Size of bandwidth e.g. 0.00
37	Class of Emission	T2_EMCLASS	Char(9)	-	According to the RR Appendix 1, class of emission comprises of : a) Char(4): Necessary bandwidth b) Char(5): Emission characteristics (the first three characters are mandatory and the last two characters are optional) e.g. 28M0G7WET
38	TX Output Power (Watt)	T3_RFOPPOW	Number (6,2)	-	Radiated power of the transmitter e.g. 0.00
39	Total System Loss (dB)	T5_TOTALLO	Number (6,2)	-	Total reduction in the signal strength through the signal path including insertion and line loss e.g. 0.00
40	Effective Radiated Power (dBW)	T6_RAD_PWR	Number (6,2)	-	Effective radiated power e.g. 0.00
41	Modulation Type	T8_MODTYPE	Char(1)	A D	Analog Digital
42	Modulation Scheme	T9_MODSCHE	Char(9)	 AM-SSB-TV AM VIDEO ASK DAV DIV	How the information carried by the signal is encoded onto the carrier frequency Amplitude Modulation SSB-TV Amplitude Modulation Video (Audio Sub-Carrier) Amplitude Shift Keying Data Above Voice Data In Voice

DATA ITEM	DATA NAME	FIELD NAME	DATA TYPE	CODE	DESCRIPTION
				DUV FDM-FM FM VIDEO FSK MSK OQPSK PSK QAM QPR QPRS QPSK TCM	Data Under Voice Frequency Division Multiplex-Frequency Modulation Frequency Modulation Video Frequency Shift Keying Minimum Shift Keying Offset Quadrature Phase Shift Keying Phase Shift Keying Quadrature Amplitude Modulation Quadrature Partial Response Quadrature Partial Response Signaling Quadrature Phase Shift Keying Trellis Coded Modulation
43	Modulation Factor	T10_MODFACT	Number (4)	-	Modulation factor of the digital modulation type e.g. PSK 8 Phase: the code to be furnished is 8
44	Bit Rate (Mbits/s)	T12_BITRATE	Number (6,2)	-	Rate of transmission at which a digital system can send binary signal e.g. 0.00
45	Minimum Rx Signal (dBW)	R1_PMIN	Number (6,2)	-	Minimum received signal level required at the receiving site e.g. 0.00
46	Remarks	REMARKS	Char(40)	-	Any comments or special consideration to be noted

Note: Hyphen (-) indicates that no info provided in the submission