

MCMC MTSFB TC T021:2023

TECHNICAL CODE

MARITIME RADIOCOMMUNICATIONS EQUIPMENT - SPECIFICATIONS

Developed by



Registered by



Registered date: 31 October 2023

© Copyright 2023

MCMC MTSFB TC T021:2023

Development of technical codes

The Communications and Multimedia Act 1998 (Laws of Malaysia Act 588) ('the Act') provides for a Technical Standards Forum designated under section 184 of the Act or the Malaysian Communications and Multimedia Commission ('the Commission') to prepare a technical code. The technical code prepared pursuant to section 185 of the Act shall consist of, at least, the requirements for network interoperability and the promotion of safety of network facilities.

Section 96 of the Act also provides for the Commission to determine a technical code in accordance with section 55 of the Act if the technical code is not developed under an applicable provision of the Act and it is unlikely to be developed by the Technical Standards Forum within a reasonable time.

In exercise of the power conferred by section 184 of the Act, the Commission has designated the Malaysian Technical Standards Forum Bhd ('MTSFB') as a Technical Standards Forum which is obligated, among others, to prepare the technical code under section 185 of the Act.

A technical code prepared in accordance with section 185 shall not be effective until it is registered by the Commission pursuant to section 95 of the Act.

For further information on the technical code, please contact:

Malaysian Communications and Multimedia Commission (MCMC)

MCMC Tower 1
Jalan Impact
Cyber 6
63000 Cyberjaya
Selangor Darul Ehsan
MALAYSIA

Tel: +60 3 8688 8000
Fax: +60 3 8688 1000
<http://www.mcmc.gov.my>

OR

Malaysian Technical Standards Forum Bhd (MTSFB)

MCMC Tower 2
Level 3A
Jalan Impact
Cyber 6
63000 Cyberjaya
Selangor Darul Ehsan
MALAYSIA

Tel: +60 3 8680 9950
Fax: +60 3 8680 9940
<http://www.mtsfb.org.my>

Contents

	Page
Committee representation.....	ii
Foreword.....	iii
1. Scope	1
2. Normative references.....	1
3. Abbreviations.....	1
4. Requirements	1
4.1 General requirements.....	1
4.2 Technical requirements	2
Annex A Normative references	4
Annex B Technical requirements	6

MCMC MTSFB TC T021:2023

Committee representation

This technical code was developed by Fixed and Wireless Terminal Working Group of the Malaysian Technical Standards Forum Bhd (MTSFB), which consists of representatives from the following organisations:

Digi Telecommunications Sdn Bhd
Digital Nasional Berhad
Harvestnet Sdn Bhd
International Islamic University Malaysia
Maxis Broadband Sdn Bhd
Net2One Sdn Bhd
Redsun Engineering Sdn Bhd
Rohde & Schwarz Malaysia Sdn Bhd
SIRIM Berhad
TM Technology Services Sdn Bhd
Universiti Kuala Lumpur
Universiti Malaysia Terengganu
Wideminds Pte Ltd
YTL Communications Sdn Bhd

Foreword

This technical code for the Maritime Radiocommunications Equipment - Specifications ('this Technical Code') was developed pursuant to Section 185 of the Communications and Multimedia Act 1998 (Laws of Malaysia Act 588) by the Fixed and Wireless Terminal Working Group of the Malaysian Technical Standards Forum Bhd (MTSFB).

This Technical Code was developed for the purpose of certifying communications equipment under the Communications and Multimedia (Technical Standards) Regulations 2000.

This Technical Code shall serve as a replacement for any maritime requirements mentioned in any other Technical Code. It supersedes the specific requirements mentioned therein.

This Technical Code shall continue to be valid and effective from the date of its registration until it is replaced or revoked.

THIS PAGE IS INTENTIONALLY LEFT BLANK

MARITIME RADIOCOMMUNICATIONS EQUIPMENT - SPECIFICATIONS

1. Scope

This Technical Code specifies the minimum requirements for Maritime Radio Equipment (“the Equipment”) designed for use in coastal stations and ship stations in Malaysia.

2. Normative references

The following normative references are indispensable for the application of this Technical Code. For dated references, only the edition cited applies. For undated references, the latest edition of the normative references (including any amendments) applies.

See Annex A.

3. Abbreviations

For the purposes of this Technical Code, the following abbreviations apply.

AC	Alternating Current
DC	Direct Current
EMC	Electromagnetic Compatibility
EPIRB	Emergency Position Indicating Radio Beacon
GMDSS	Global Maritime Distress and Safety System
ICNIRP	International Commission on Non-Ionizing Radiation Protection
PLB	Personal Locator Beacon
PVC	Polyvinyl Chloride
RF	Radio Frequency
SAR	Specific Absorption Rate

4. Requirements

4.1 General requirements

The Equipment shall not cause interference with other authorised radiocommunication services and be able to tolerate any interference caused by other radiocommunication services, electrical or electronic equipment.

4.1.1 Power supply

The Equipment may be powered by Alternating Current (AC) or Direct Current (DC).

For AC powered equipment, the operating voltage shall be 240 V + 5 %, - 10 % and frequency 50 Hz ± 1 % in accordance with MS 406 or 230 V ± 10 % and frequency 50 Hz ± 1 % in accordance with MS IEC 60038, IEC 60945 whichever is current.

MCMC MTSFB TC T021:2023

Where external power supply is used, e.g. AC adaptor, it shall not affect the capability of the Equipment to meet this Technical Code. The adaptor shall be pre-approved by the relevant regulatory body before being used with the Equipment.

4.1.2 Power supply cord and mains plug

The Equipment for coastal stations shall be fitted with a suitable and certified power supply cord and mains plug. The power supply cord and mains plug are regulated products and shall be pre-approved by the relevant regulatory body, with the following requirements, before they can be used with the Equipment.

- a) The power supply cord shall be certified according to:
 - i) MS 2112-5 or BS EN 50525-2-11 or IEC 60227-5 (for Polyvinyl Chloride (PVC) insulated - flexible cables or cords); or
 - ii) MS 2127-4 or IEC 60245-1 and IEC 60245-4 (for rubber insulated - flexible cables or cords).
- b) The mains plug shall be certified according to:
 - i) MS 589-1 or BS 1363 (for 13 A, fused plug);
 - ii) MS 1577 (for 15 A, fused plugs); or
 - iii) MS 1578 or BS EN 50075 (for 2.5 A, 250 V, flat non-rewireable two-pole plugs with cord for the connection of class II equipment).

4.1.3 Marking

The Equipment shall be marked with the following information:

- a) supplier or manufacturer's name or identification mark;
- b) equipment's brand name or trademark and model; and
- c) other markings as required by the relevant standards.

The markings shall be legible, indelible and readily visible. All information on the marking shall be either in Bahasa Malaysia or English language.

4.2 Technical requirements

The Equipment shall comply with the following requirements:

- a) Radio Frequency (RF);
- b) Electromagnetic Compatibility (EMC); and
- c) Safety and Health requirements.

4.2.1 Radio Frequency (RF)

The Equipment shall operate within the permitted frequency bands and transmitter output power. The operational frequency of the equipment may be a wide range, potentially exceeding the prescribed limits. Therefore, the equipment shall be configured according to the operating frequency range, and it shall conform to the test references as specified in Table B.1 of Annex B.

4.2.2 Electromagnetic Compatibility (EMC)

The Equipment shall comply with the conducted emission and radiated emission requirements as defined in the following standards:

- a) ETSI EN 301 843;
- b) IEC 60945; or
- c) any equivalent standards.

4.2.3 Safety and health

4.2.3.1 Electrical safety and health

The Equipment shall comply with the safety requirements defined in IEC 60945, or any equivalent standards.

4.2.3.2 Specific Absorption Rate (SAR)

The Equipment that is intended to be used at a position near the human body, in the manner described by the manufacturer, with the radiating part(s) of the device at distances up to and including 200 mm from a human body, e.g. body-mounted, body-supported, front-of-face, hand-held, limb-mounted, push-to-talk and clothing-integrated, shall comply with one or more of the following standards:

- a) BS EN 50360;
- b) IEC 62209-1; and/or
- c) IEC 62209-2.

Annex A
(normative)

Normative references

MS 406, *Specification for voltages and frequency for alternating current transmission and distribution systems*

MS 589-1, *13 A plugs, socket-outlets, adaptors and connection units - Part 1: Specification for rewirable and non-rewirable 13 A fused plugs*

MS 1577, *Specification for 15 A plugs and socket-outlets for domestic and similar purposes*

MS 1578, *Specification for flat non-rewirable two-pole plugs, 2.5 A, 250 V with cord, for the connection of class II - Equipment for household and similar purposes*

MS 2112-5, *Electric cable and wire - Polyvinyl Chloride (PVC) insulated cables of rated voltages up to and including 450/750 V - Part 5: Flexible cables*

MS 2127-4, *Rubber insulated cables of rated voltages up to and including 450/750 V - Part 4: Cords and flexible cables*

MS IEC 60038, *IEC standard voltages*

IEC 60227-5, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Part 5: Flexible cables (cords)*

IEC 60245-1, *Rubber insulated cables - Rated voltages up to and including 450/750 V - Part 1: General requirements*

IEC 60245-4, *Rubber insulated cables - Rated voltages up to and including 450/750 V - Part 4: Cords and flexible cables*

IEC 60945, *Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results*

IEC 62209-1, *Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz)*

IEC 62209-2, *Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)*

ETSI EN 300 066, *Radio Equipment and Systems (RES); Float-free maritime satellite Emergency Position Indicating Radio Beacons (EPIRBs) operating on 406,025 MHz; Technical characteristics and methods of measurement*

ETSI EN 300 152-1, *ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM); Maritime Emergency Position Indicating Radio Beacons (EPIRBs) intended for use on the frequency 121,5 MHz or the frequencies 121,5 MHz and 243 MHz for homing purposes only; Part 1: Technical characteristics and methods of measurement*

ETSI EN 300 338-1, *Technical characteristics and methods of measurement for equipment for generation, transmission and reception of Digital Selective Calling (DSC) in the maritime MF, MF/HF and/or VHF mobile service; Part 1: Common requirements*

ETSI EN 300 338-2, *Technical characteristics and methods of measurement for equipment for generation, transmission and reception of Digital Selective Calling (DSC) in the maritime MF, MF/HF and/or VHF mobile service; Part 2: Class A DSC*

ETSI EN 300 373-1, *Electromagnetic compatibility and Radio spectrum Matters (ERM); Maritime mobile transmitters and receivers for use in the MF and HF bands; Part 1: Technical characteristics and methods of measurement*

ETSI EN 300 698-1, *Electromagnetic compatibility and Radio spectrum Matters (ERM); Radio telephone transmitters and receivers for the maritime mobile service operating in the VHF bands used on inland waterways; Part 1: Technical characteristics and methods of measurement*

ETSI EN 301 033, *Electromagnetic compatibility and Radio spectrum Matters (ERM); Technical characteristics and methods of measurement for shipborne watchkeeping receivers for reception of Digital Selective Calling (DSC) in the maritime MF, MF/HF and VHF bands*

ETSI EN 301 843, *ElectroMagnetic Compatibility (EMC) standard for marine radio equipment and services; Harmonised Standard for electromagnetic compatibility*

ETSI EN 301 925, *Radiotelephone transmitters and receivers for the maritime mobile service operating in VHF bands; Technical characteristics and methods of measurement*

ETSI EN 302 248, *Navigation radar for use on non-SOLAS vessels; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU*

ETSI EN 303 135, *Coastal Surveillance, Vessel Traffic Services and Harbour Radars (CS/VTS/HR); Harmonised Standard for access to radio spectrum*

BS 1363-1, *13 A plugs, socket-outlets, adaptors and connection units. Specification for rewirable and non-rewirable 13 A fused plugs*

BS EN 50075, *Specification for flat non-wirable two-pole plugs 2.5 A 250 V, with cord, for the connection of class II-equipment for household and similar purposes*

BS EN 50360, *Product standard to demonstrate the compliance of mobile phones with the basic restrictions related to human exposure to electromagnetic fields (300 MHz - 3 GHz)*

BS EN 50525-2-11, *Electric cables. Low voltage energy cables of rated voltages up to and including 450/750V (U0/U) Cables for general applications. Flexible cables with thermoplastic PVC insulation*

Annex B
(normative)

Technical requirements

Table B.1. Technical requirements for radio equipment to be used in maritime radio services

No.	Operating frequency	Type of equipment	Output power (maximum)	Test reference
1.	0.490 MHz and 0.518 MHz	Global Maritime Distress and Safety System (GMDSS)	Manufacturer declaration	Not available
2.	0.518 MHz (Transmission using English language)	Navigational Telex (NAVTEX)	1KW - 5 KW (transmitter)	Not available
3.	0.490 MHz (Transmission using local language)		Not applicable (receiver)	ETSI EN 300 065-1
4.	1.605 MHz - 27.500 MHz	Maritime Mobile Service and GMDSS	Manufacturer declaration	ETSI EN 300 373-1 ETSI EN 300 338-1 ETSI EN 300 338-2 ETSI EN 301 033
5.	121.5 MHz	Personal Locator Beacon (PLB) and Emergency Position Indicating Radio Beacon (EPIRB)	25 mW - 100 mW	ETSI EN 300 152-1
6.	156.025 MHz - 162.025 MHz	Handheld or mobile base station and repeater for Maritime Mobile Service and GMDSS	Manufacturer declaration	ETSI EN 301 925 ETSI EN 300 698-1
7.	406.0 MHz - 406.1 MHz	PLB and EPIRB	5 W	ETSI EN 300 066
8.	1 530 MHz - 1 545 MHz	GMDSS	Manufacturer declaration	Not available
9.	1 621.35 MHz - 1 646.50 MHz			
10.	9 200 MHz - 9 500 MHz	Radar	Manufacturer declaration	ETSI EN 302 248 ETSI EN 303 135

Note: Certification of all equipment is required in accordance with the aforementioned standards or any other relevant standards. The certifying agency will verify the relevancy of these standards through the certification process, which includes conducting a comprehensive suitability study and gap analysis.

Acknowledgements

Members of the Fixed and Wireless Terminal Working Group

Mr Ahmad Faizan Pardi (Chair)	SIRIM Berhad
Mr Fazli Shamsuddin (Vice Chair)	TM Technology Services Sdn Bhd
Mr Muhammad Rezza Alui (Secretary)	Digi Telecommunications Sdn Bhd
Mr Ahmad Amzar Hanis Ahmad Zaki (Draft lead)	SIRIM Berhad
Mr Muhaimin Mat Salleh/ Mr Ahmad Syazilie Shamsuddin (Secretariat)	Malaysian Technical Standards Forum Bhd
Mr Sarvesh Gopalakrishnan	Digital Nasional Berhad
Mr Abdul Ghani Zainal Abidin	Harvestnet Sdn Bhd
Ts Prof Ir Dr Ahmad Fadzil Ismail/ Assoc Prof Ir Dr Khairayu Badron/ Mr Mohd Shukur Ahmad	International Islamic University Malaysia
Mr Abdul Ghafar Zainol/ Mr Liew Chee Seng/ Mr Pang Chee Wai/ Mr Rakuram Gandhi	Maxis Broadband Sdn Bhd
Ts Mohammad Hafiz Halal	Net2One Sdn Bhd
Mr Leong Woon Min/ Mr See Boon Leng	Redsun Engineering Sdn Bhd
Mr Mohammad Rizal Ali	Rohde & Schwarz Malaysia Sdn Bhd
Mr Abdul Hafiz Syafiq Rozali/ Ms Khairunnisa Ab Halim/ Mr Mohd Rizal Ali/ Ms Nurul Ain Ab Karim/ Mr Wan Mohd Iidil Abdul Rahman/ Ms Wan Zarina Abdullah/ Mr Zul Jaafar	SIRIM Berhad
Mr Abdul Ghani Abdul Jalil/ Mr Ahmad Razaleigh Mohd Ghastu/ Ts Ahmad Syamil Wahid/ Mr Amran Naemat/ Mr Anuar Mat Alim/ Ms Erliz Rizuan/ Mr Jaganathan Subramaniam/ Ms Madikhah Abu Hassan/ Mr Mohd Fahmi Abd Aziz/ Mr Mohd Sabri Mohd Jamil/ Mr Sufian Harris Ab Hadi	TM Technology Services Sdn Bhd
Prof Madya Datin Ts Dr Nurul Adilah Abdul Latiff/ Ts Dr Shahrizan Jamaludin	Universiti Malaysia Terengganu
Assoc Prof Ir Ts Abu Hanifah Abdullah	Universiti Kuala Lumpur

Mr Low Wei Yap
Mr Yew Kuan Min

Wideminds Pte Ltd
YTL Communications Sdn Bhd

By invitation:

Captain George Oommen/
Mr Mohd Faizal Mohd Isa
Lt Kdr Ahmad Amal Abdul Hamid/
Kdr Mohd Fazla Rahim/
Mej Mohd Hazimi Afif Jasni/
Mej Mohd Shazmir Osman/
Mej Shahrul Razman Mohd Sallehudin/
Kapt Wan Muhammad Nabil Wan Hussin
Ms Christina Teoh May Hong/
Mr Lee Keat Seng
Mr Emizul Fadly Masdek
ASP Mohd Zamri Mohd Nor/
Insp Ts Wan Zamzulri Wan Ibrahim
Mr Tan Wee Meng/
Ms Zety Akhta Ahmad

Akademi Laut Malaysia
Malaysian Armed Forces
Furuno Electric Malaysia
Marine Department of Malaysia
Royal Malaysian Police
Radii Teknologi Sdn Bhd