**Unofficial Translation**

# Notification of the National Telecommunications Commission

## On Technical Standards for Telecommunication Equipment

## Re: Radiocommunication Equipment Used in Maritime Mobile Service in the MF/HF Bands

---

Whereas it is deemed appropriate to prescribe the technical standards for radiocommunication equipment used in maritime mobile service in the MF/HF bands to keep pace with the advancement of radiocommunication technologies and comply with the radio regulations of the International Telecommunication Union, which are the international principles under which Thailand, as a member country, shall be obliged and follow to prevent frequency interference among businesses, and hence respond to efficient use of radio frequencies, as well as to protect the safety of life and properties used in the navigation in international territorial waters in accordance with the criteria and regulations of the International Maritime Organization (IMO).

Pursuant to Section 51 (6) and Section 78, paragraph one, of the Act on Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunication Services, B.E. 2543 (2000) which contains certain provisions regarding the restriction of the rights and freedom of an individual as permitted to be done under the law by Article 29, in conjunction with Article 35, Article 36, Article 43, Article 45, Article 46, Article 47, Article 61 and Article 64 of the Constitution of the Kingdom of Thailand; and pursuant to Section 32 of the Telecommunications Business Act B.E. 2544 (2001) which contains certain provisions regarding the restriction of the rights and freedom of an individual as permitted to be done under the law by Article 29, in conjunction with Article 35, Article 36, Article 41, Article 43 and Article 45 of the Constitution of the Kingdom of Thailand; together with Section 29 (4) of the Radiocommunications Act B.E. 2498 (1955) which contains certain provisions regarding the restriction of the rights and freedom of an individual as permitted to be done under the law by Article 29, in conjunction with Article 35, Article 36, Article 41, Article 43, Article 45, Article 46, Article 47 and Article 61 of the Constitution of the Kingdom of Thailand; the National Telecommunications Commission hereby specifies the Technical Standards for Telecommunication Equipment Re: Radiocommunication Equipment Used in Maritime Mobile Service in the MF/HF Bands, as detailed in the Technical Standard No. NTC TS 1022-2552 appended hereto.

**Unofficial Translation**

This Notification shall come into force as from the day following the date of its publication in the Government Gazette.

Announced on the 8th day of December B.E. 2552 (2009)

General Choochart Promphrasid

Chairman of the National Telecommunications Commission

# TECHNICAL STANDARDS FOR TELECOMMUNICATION EQUIPMENT

## NTC TS 1022-2552

## Radiocommunication Equipment Used in Maritime Mobile Service In the MF/HF Bands

**Office of the National Telecommunications Commission**

87 Phahon Yothin 8 Road, Samsennai, Phayathai, Bangkok 10400

Tel. 0 2271 0151-60 Website: **www.ntc.or.th**

**Technical Standards for Telecommunication Equipment**

**NTC TS 1022-2552**

**Radiocommunication Equipment Used in Maritime Mobile Service in MF/HF Bands**

## Table of Contents

**Technical Standards for Telecommunication Equipment**

**NTC TS 1022-2552**

**Radiocommunication Equipment Used in Maritime Mobile Service in MF/HF Bands**

## 1. Scope

This technical standard specifies the minimum technical characteristics for radiocommunication equipment used in the maritime mobile service in the MF/HF bands. The frequency range of radiocommunication equipment and the permissible frequency range are as given in the table below:

**Transmitter**

| Frequency range of radiocommunication equipment (MHz) | Permissible frequency range (MHz) |
|---|---|
| 1.6 - 30.0 | 1.6065 - 27.5 |

**Receiver**

| Frequency range of radiocommunication equipment (MHz) | Permissible frequency range (MHz) |
|---|---|
| 0.5 - 30.0 | 1.6065 - 27.5 |

The channel spacing of the radiocommunication equipment for ship station is 3 kHz in the presence of Upper Side Band (USB) modulation for speech communication (J3E), whereas:

**Radiocommunication equipment for ship station** is a transceiver, fitted with an antenna socket for use with an external antenna, for use on board a vessel, but not including a survival craft station.

## 2. Requirements for Transmitter

### 2.1 Output power

**Definition** **Output power** is the carrier power of the equipment as declared by the manufacturer in its technical documents. Output power is the peak envelope power delivered to the artificial antenna in the presence of modulation. The measured power shall not exceed ± 1.5 dB of the output power.

**Limit** The output power allowed to be used shall not exceed the values given in the table below:

| **Frequency band (MHz)** | **Output power Watt (PEP)** |
|---|---|
| 1.6065 – 4.000 | 400 |
| 4.000 – 27.500 | 1500 |

## 2.2 Frequency error

**Definition** **Frequency error** is the difference between the specified frequency and the measured frequency, deducted by 1000 Hz when modulated by the 1000 Hz voice signal.

**Limit** The frequency error shall not exceed the values given in the table below:

| Frequency band (MHz) | Frequency Error |
|---|---|
| 1.6065 – 4.000 | ± 40 Hz |
| 4.000 – 27.500 | ± 50 Hz |

## 2.3 Conducted spurious emissions

**Definition** **Conducted spurious emissions** are emissions at the antenna connector on a frequency or frequencies which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products, and frequency conversion products, but exclude out-of-band emissions.

**Limit** The power levels of conducted spurious emissions within the frequency range 9 kHz - 1 GHz must be attenuated at least 43 dB below the peak envelope power.

## 2.4 Carrier suppression

**Definition** **Carrier suppression** is the ratio between the peak envelope power and the carrier power in the presence of modulation of 1000 Hz voice signal.

**Limit** The power of carrier suppression shall be at least 40 dB.

**Technical Standards for Telecommunication Equipment**

**NTC TS 1022-2552**

**Radiocommunication Equipment Used in Maritime Mobile Service in MF/HF Bands**

## 3. Requirements for Receiver

### 3.1 Reference sensitivity

**Definition** **Reference sensitivity** is the level of receiver input signal at a nominal frequency with specified modulation that will result in the standard SINAD at the output of the receiver.

**Limit** The maximum input signal level shall not exceed the values given in the table below:

| Frequency band (MHz) | Reference sensitivity at 20 dB SINAD |
|---|---|
| 1.6065 – 4.000 | +16 dBμV |
| 4.000 – 27.500 | +11 dBμV |

### 3.2 Adjacent channel selectivity

**Definition** **Adjacent channel selectivity** is the capability of a receiver to better receive a wanted modulated signal than the unwanted signal from the adjacent channel.

**Limit** The adjacent channel selectivity shall not be less than the values given in the table below:

| Unwanted carrier power and wanted carrier power | Difference of signal levels between the adjacent channel and the specified channel |
|---|---|
| - 1 kHz and + 4 kHz | 40 dB |
| - 2 kHz and + 5 kHz | 50 dB |
| - 5 kHz and + 8 kHz | 60 dB |

**Technical Standards for Telecommunication Equipment**

**NTC TS 1022-2552**

**Radiocommunication Equipment Used in Maritime Mobile Service in MF/HF Bands**

## 4. Safety Requirements

### 4.1 Electrical safety requirements

The electrical safety requirements for radiocommunication equipment used in maritime mobile phone service in the MF/HF frequency bands shall comply with one or more of the following standards:

4.1.1 IEC 60950-1 : Information Technology Equipment – Safety – Part 1: General Requirements

4.1.2 TIS 1561—2548: Information Technology Equipment - Safety : General Requirements

## 5. Methods of Measurement

### 5.1 Transmitter

#### 5.1.1 Output power

The measurement method shall follow ETSI EN 300 373-1 [1], or any other equivalent method.

#### 5.1.2 Frequency error

The measurement method shall follow ETSI EN 300 373-1, or any other equivalent method.

#### 5.1.3 Conducted Spurious emissions

The measurement method shall follow ETSI EN 300 373-1, ITU-R Rec. SM. 329-10 [2], or any other equivalent method.

#### 5.1.4 Carrier suppression

The measurement method shall follow ETSI EN 300 373-1, or any other equivalent method.

### 5.2 Receiver

#### 5.2.1 Reference sensitivity

The measurement method shall follow ETSI EN 300 373-1, or any other equivalent method.

#### 5.2.2 Adjacent channel selectivity

The measurement method shall follow ETSI EN 300 373-1, or any other equivalent method.

## 6. Conformity with the Standard

The radiocommunication equipment used in maritime mobile phone service in the MF/HF frequency bands shall present its conformity with this Standard. It shall be regarded as telecommunication equipment Type B prescribed in the Notification of the National Telecommunications Commission Re: Conformity Assessment of Telecommunication Equipment.

---

**Technical Standards for Telecommunication Equipment**

**NTC TS 1022-2552**

**Radiocommunication Equipment Used in Maritime Mobile Service in MF/HF Bands**

## References


[1] ETSI EN 300 373-1 v1.2.1: 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

[2] ITU-R Recommendation SM.329-10: Unwanted emissions in the spurious domain

[3] ITU-R Recommendation M.1173: Technical characteristics of single-sideband transmitters used in the maritime mobile service for radiotelephony in the bands between 1 606.5 kHz (1 605 kHz Region 2) and 4 000 kHz and between 4 000 kHz and 27 500 kHz


---