

Unofficial Translation

Notification of the National Telecommunications Commission

On Technical Standards for Telecommunication Equipment

Re: Radiocommunication Equipment for General Public Use in the 78 MHz or 245 MHz
Frequency Bands B.E. 2553 (2010)

Whereas the National Telecommunications Commission has a policy to revise technical standards for the radiocommunication equipment and accessories widely in use to keep pace with the changing technologies and comply with the international requirements without causing undue burden on the operators as well as to eliminate problems of frequency interference and increase efficient use of radio frequencies;

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 repeals the Notification of the National Telecommunications Commission on Technical Standards for Telecommunication Equipment Re: Radiocommunication Equipment for General Public Use in the 78 MHz or 245 MHz Frequency Bands which was issued on 29 August B.E. 2548 (2005) and prescribes Technical Standards for Telecommunication Equipment Re: Radiocommunication Equipment for General Public Use in the 78 MHz or 245 MHz

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Frequency Bands, as detailed in the Technical Standards No. NTC TS 1002 – 2553 appended hereto.

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

Announced on the 7th day of May B.E. 2553 (2010)

Professor Prasit Prapinmongkolkarn

Chairman of the National Telecommunications Commission

This English version is prepared by International Organizations Bureau with the sole purpose of facilitating the comprehension of foreign participants in the telecommunication rules and regulations and shall not in any event be construed or interpreted as having effect in substitution for or supplementary to the Thai version thereof.

Please note that the translation has not been subjected to an official review by the Office of the National Telecommunications Commission. The Office of NTC, accordingly, cannot undertake any responsibility for its accuracy, nor be held liable for any loss or damages arising out of or in connection with its use.



Technical Standards for Telecommunication Equipment

NTC TS 1002 - 2553

**Radiocommunication Equipment for General Public Use in
the 78 MHz or 245 MHz Frequency Bands**

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Technical Standards for Telecommunication Equipment
NTC TS 1002 - 2553
Radiocommunication Equipment for General Public Use in the 78 MHz or 245 MHz
Frequency Bands

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Technical Standards for Telecommunication Equipment
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Radiocommunication Equipment for General Public Use in the 78 MHz or 245 MHz
Frequency Bands

1. Scope

This technical standard specifies the minimum technical characteristics for radiocommunication equipment for general public use in the 78 MHz or 245 MHz frequency band, using frequency modulation (FM) with channel spacing of 12.5 kHz or 25.0 kHz.

2. General Requirements

2.1 External structure of a radiocommunication equipment

in the 78 MHz Frequency band Yellow

2.2 External structure of a radiocommunication equipment

in the 245 MHz Frequency band Red

2.3 Necessary bandwidth

2.3.1 Channel spacing of 12.5 kHz Not exceeding 11 kHz

2.3.2 Channel spacing of 25 kHz Not exceeding 16 kHz

2.4 Reception and transmission of signals Simplex (one frequency)

2.5 Radio frequency channels for use Radio frequency channels
authorized for use are given in
the **Annex**

3. Requirements for Transmitter

3.1 Rated carrier power

Definition **Rated carrier power** is the carrier power of the equipment as declared by the manufacturer in its technical documents. The carrier power is the average power delivered to the artificial antenna during a radio frequency cycle in the absence of modulation. The measured carrier power shall be within ± 1.5 dB of the rated carrier power.

Limit The rated carrier power shall not exceed 10 watts.

3.2 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.

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Limit The power levels of conducted spurious emissions within the frequency range of 9 kHz - 3 GHz shall be attenuated below the carrier power in the absence of modulation at least $43 + 10 \log P$ (dB) or 70 dBc, whichever is less stringent, where P is mean power in watt (W).

3.3 Frequency error

Definition **Frequency error** is the difference between the measured carrier frequency in the absence of modulation and the nominal frequency of the transmitter.

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

Channel spacing (kHz)	Frequency error (kHz)	
	78 MHz Frequency band	245 MHz Frequency band
12.5	± 1.00	± 1.50
25	± 1.35	± 2.00

3.4 Frequency deviation

Definition **Frequency deviation** is the maximum difference between the instantaneous frequency of the modulated radio frequency signal and the carrier frequency in the absence of modulation.

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

Channel spacing (kHz)	Frequency deviation (kHz)
12.5	± 2.5
25	± 5

3.5 Adjacent channel power

Definition **Adjacent channel power** is that part of the total output power of a transmitter under defined conditions of modulation, which falls within a specified passband centered on the nominal frequency of either of the adjacent channels. This adjacent channel power is the sum of the mean power produced by the modulation, hum and noise of the transmitter.

Limit The adjacent channel power levels shall have the values as given in the table below:

Channel spacing (kHz)	Adjacent channel power
12.5	at least 60 dB below the carrier power
25	at least 70 dB below the carrier power

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4. Requirements for Receiver

4.1 Reference sensitivity

Definition **Reference sensitivity** is the lowest 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 0.50 μ V (microvolt) at 12 dB SINAD.

4.2 Adjacent channel selectivity

Definition **Adjacent channel selectivity** is the capability of a receiver to receive a wanted modulated signal at the nominal frequency in the presence of an unwanted modulated signal in the adjacent channel.

Limit The difference of signal levels between the adjacent channel and the nominal channel must not be less than 50 dB.

5. Safety Requirements

5.1 Electrical safety requirements

The electrical safety requirements for radiocommunication equipment for general public use in the 78 MHz or 245 MHz frequency bands shall comply with any of the following standards:

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

5.1.2 TIS 1561 - 2548 : Information Technology Equipment – Safety:
General Requirements

5.2 Radiation exposure requirements

The installation of radiocommunication station and the use of radiocommunication equipment for general public use in the 78 MHz or 245 MHz frequency bands shall comply with the safety standard for the use of radiocommunication equipment on human health as well as safety criteria and measures for the use of radiocommunication equipment on human health prescribed by the National Telecommunications Commission.

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6. Methods of Measurement

6.1 Transmitter

6.1.1 Rated carrier power

The testing method shall follow IEC 60489-2 [1], ETSI EN 300 086-1 [2], ANSI/TIA/EIA-603-B [3], or any other equivalent method.

6.1.2 Conducted spurious emissions

The testing method shall follow ITU-R Rec. SM. 329-10 [4], ANSI/TIA/EIA-603-B, or any other equivalent method.

6.1.3 Frequency error

The testing method shall follow IEC 60489-2, ETSI EN 300 086-1, ANSI/TIA/EIA-603-B (Topic: Carrier frequency stability), or any other equivalent method.

6.1.4 Frequency deviation

The testing method shall follow IEC 60489-2, ETSI EN 300 086-1, ANSI/TIA/EIA-603-B (Topic: Modulation limiting), or any other equivalent method.

6.1.5 Adjacent channel power

The testing method shall follow IEC 60489-2, ETSI EN 300 086-1, ANSI/TIA/EIA-603-B, or any other equivalent method.

6.2 Receiver

6.2.1 Reference sensitivity

The testing method shall follow IEC 60489-3 [5], ANSI/TIA/EIA-603-B, or any other equivalent method.

6.2.2 Adjacent channel selectivity

The testing method shall follow IEC 60489-3, ETSI EN 300 086-1, ANSI/TIA/EIA-603-B, or any other equivalent method.

7. Conformity with the Standard

The radiocommunication equipment for general public use in the 78 MHz or 245 MHz 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.

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Frequency Bands**

Annex

**Radio Frequency Range for Radiocommunication Equipment for General Public Use
in the 78 MHz or 245 MHz Band**

1. **For 78 MHz Frequency band**, the following 80 radio frequency channels (in MHz) are authorized for use:

78.0000	78.0125	78.0250	78.0375	78.0500	78.0625	78.0750	78.0875
78.1000	78.1125	78.1250	78.1375	78.1500	78.1625	78.1750	78.1875
78.2000	78.2125	78.2250	78.2375	78.2500	78.2625	78.2750	78.2875
78.3000	78.3125	78.3250	78.3375	78.3500	78.3625	78.3750	78.3875
78.4000	78.4125	78.4250	78.4375	78.4500	78.4625	78.4750	78.4875
78.5000	78.5125	78.5250	78.5375	78.5500	78.5625	78.5750	78.5875
78.6000	78.6125	78.6250	78.6375	78.6500	78.6625	78.6750	78.6875
78.7000	78.7125	78.7250	78.7375	78.7500	78.7625	78.7750	78.7875
78.8000	78.8125	78.8250	78.8375	78.8500	78.8625	78.8750	78.8875
78.9000	78.9125	78.9250	78.9375	78.9500	78.9625	78.9750	78.9875

2. **For 245 MHz Frequency band**, the following 80 radio frequency channels (in MHz) are authorized for use:

245.0000	245.0125	245.0250	245.0375	245.0500	245.0625	245.0750	245.0875
245.1000	245.1125	245.1250	245.1375	245.1500	245.1625	245.1750	245.1875
245.2000	245.2125	245.2250	245.2375	245.2500	245.2625	245.2750	245.2875
245.3000	245.3125	245.3250	245.3375	245.3500	245.3625	245.3750	245.3875
245.4000	245.4125	245.4250	245.4375	245.4500	245.4625	245.4750	245.4875
245.5000	245.5125	245.5250	245.5375	245.5500	245.5625	245.5750	245.5875
245.6000	245.6125	245.6250	245.6375	245.6500	245.6625	245.6750	245.6875
245.7000	245.7125	245.7250	245.7375	245.7500	245.7625	245.7750	245.7875
245.8000	245.8125	245.8250	245.8375	245.8500	245.8625	245.8750	245.8875
245.9000	245.9125	245.9250	245.9375	245.9500	245.9625	245.9750	245.9875

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Reference

- [1] IEC 60489-2: Methods of measurement for radio equipment used in the mobile services - Part 2: Transmitters employing A3E, F3E or G3E emissions
- [2] ETSI EN 300 086-1 V1.2.1: Electromagnetic compatibility and radio spectrum matters (ERM); Land mobile service; Radio equipment with an internal or external RF connector intended primarily for analogue speech; Part 1: Technical characteristics and methods of measurement
- [3] ANSI/TIA/EIA-603-B: Land mobile FM or PM communications equipment; Measurement and performance standards
- [4] ITU-R Rec. SM. 329-10: Unwanted emissions in the spurious domain
- [5] IEC 60489-3: Methods of measurement for radio equipment used in the mobile services. Part 3: Receivers for A3E or F3E emissions
