ECREE OF THE DIRECTOR GENERAL OF POST AND TELECOMMUNICATION

NUMBER: 171/DIRJEN/2009

ON

TECHNICAL REQUIREMENTS OF TOOLS AND EQUIPMENT OF HF, VHF, AND UHF COMMUNICATION RADIO

BY THE GRACE OF GOD THE ALMIGHTY

DIRECTOR GENERAL OF POST AND TELECOMMUNICATION,

Considering:

a. that the Decision of the Minister of Communication Number: KM 3 Year 2001 on Technical Requirements of Telecommunication Tools and Equipment stipulates that every telecommunication tool and equipment shall fulfil the technical requirements;

b. that in line with the provision of Article 2 paragraph (1) of the Decree of the Minister of Communication and Information Technology Number: 29/PER/M.KOMINFO/09/2008 on Certification of Telecommunication Tools and Equipment, any telecommunication tools and equipment manufactured, assembled, imported for trade and or for use in the territory of the Republic of Indonesia shall fulfil the technical requirements;

c. that based on considerations mentioned in points a and b above, it is considered necessary to issue a Decree of the Director General of Post and Telecommunication on Technical Requirements of Tools and Equipment of HF, VHF, and UHF Communication Radio.

Bearing in mind:

1. Law of the Republic of Indonesia Number 36 Year 1999 on Telecommunication (State Gazette of the Republic of Indonesia of Indonesia Number 154 Year 1999, Supplement to the State Gazette of the Republic of Indonesia Number 3881);

2. Government Regulation of the Republic of Indonesia Number 52 Year 2000 on Provision of Telecommunication (State Gazette of the Republic of Indonesia Number 107 Year 2000, Supplement to the State Gazette of the Republic of Indonesia Number 3980);

3. Government Regulation of the Republic of Indonesia Number 53 Year 2000 on Use of Radio Frequency Spectrum and Satellite Orbit (State Gazette of the Republic of Indonesia Number 108 Year 2000, Supplement to the State Gazette of the Republic of Indonesia Number 3981);

4. Decree of the President of the Republic of Indonesia Number 9 Year 2005 on Positions, Duties, Functions, Organizational Structure and Work Method of State Ministries of the Republic of Indonesia as amended latest by the Decree of the President of the Republic of Indonesia Number 20 Year 2008; ;

5. Decree of the President of the Republic of Indonesia Number 10 Year 2005 on Organizational Units and Duties of Echelon I of State Ministries of the Republic of Indonesia as amended latest by the Decree of the President of the Republic of Indonesia Number 21 Year 2008;

6. Decision of the Minister of Communication Number KM.3 Year 2001 on Technical Requirements of Telecommunication Tools and Equipment;

7. Decree of the Minister of Communication and Information Technology Number 25/P/M.KOMINFO/7/2008 on Organization and Work Method of the Department of Communication and Information Technology;

8. Decree of the Minister of Communication and Information Technology Number 29/PER/M.KOMINFO/09/2008 on Certification of Telecommunication Tools and Equipment.

DECIDES

In case the English translation gives rise to different interpretation, please refer to the original version in Indonesian language

To issue : **DECREE OF THE DIRECTOR GENERAL OF POST AND ELECOMMUNICATION ON TECHNICAL REQUIREMENTS OF TOOLS AND EQUIPMENT OF HF, VHF, and UHF Communication Radio**

Article 1

Tools and equipment of HF, VHF, and UHF Communication Radio shall comply with technical requirements referred to in the Attachment of this Decree.

Article 2

The implementation of certification of tools and equipment of HF, VHF, and UHF Communication Radio shall comply with technical requirements referred to in Article 1.

Article 3

This Decree shall come into force on the date of its issuance.

Done at: JAKARTA
On : July 9, 2009

DIRECTOR GENERAL OF POST AND TELECOMMUNICATION

Signed

BASUKI YUSUF ISKANDAR

In case the English translation gives rise to different interpretation, please refer to the original version in Indonesian language

COPIES of this Decree are sent to:

1. Minister of Communication and Information Technology;
2. Secretary of the Directorate General of Post and Telecommunication;
3. Directors within the Directorate General of Post and Telecommunication;
4. Head of Office of Telecommunication Equipment Testing Laboratory.

In case the English translation gives rise to different interpretation, please refer to the original version in Indonesian language

ATTACHMENT : DECREE OF THE DIRECTOR GENERAL OF POST AND TELECOMMUNICATION
NUMBER : 171/DIRJEN/2009
DATE : July 9, 2009

TECHNICAL REQUIREMENTS OF TOOLS AND EQUIPMENT OF HF, VHF, AND UHF COMMUNICATION RADIO

CHAPTER I

GENERAL PROVISIONS

1. Scope

The technical requirements of telecommunication tools and equipment of HF, VHF, and UHF cover :

a. General Provisions (scope, definition, abbreviations, terms);
b. Requirements (general and technical);
c. Testing Requirement;
d. Marking and Packaging.

2. Definition

HF, VHF, and UHF Communication Radio is tool and equipment of communication radio that functions as transceiver that works in HF, VHF, and UHF frequency bands for the purpose of radio stations in terrestrial radio communication service (including radio Amateur stations and Inter-Inhabitant Radio Communication) in accordance with the list of allocation table at the afore-mentioned frequency bands.
The concerned equipment is applied in the form of Handy Talkie and fixed equipment (RIG).

3. Abbreviations

HF : *High Frequency*

VHF	:	*Very High Frequency*
UHF	:	*Ultra High Frequency*
AM	:	*Amplitude Modulation*
FM	:	*Frequency Modulation*
SSB	:	*Single Side Band*
Tx/Rx	:	*Transceiver/Receiver*
KHz	:	*Kilo Hertz*
MHz	:	*Mega Hertz*
rms	:	*root mean square*
PTT	:	*Push To Talk*
AC	:	*Alternating Current*
RF	:	*Radio Frequency*
dB	:	*Decibel*
DC	:	*Direct Current*
ppm	:	*part per million*
KRAP	:	*Inter-Inhabitant Radio Communication*

4. Terms

4.1 Radio Communication Service is a service defined in this part which covers transmission, emission and/or reception of radio waves for the purpose of certain telecommunication.
What is meant by radio communication service in the Radio regulations is terrestrial radio communication, except if stated otherwise.

4.2 Transmission Output Power
Carrier wave power (of a radio transmitter) : Average power supplied to antenna transmission channel by a transmitter for one radio frequency period taken in a condition without modulation, in this case, said carrier wave is usually excluded from final amplifier of a radio transmitter.

4.3 Spurious Emission
Spurious emission: Emission at a frequency or frequencies which emerge outside the needed bandwidth the level of which may be reduced without influencing the concerned information flow. These spurious emissions comprise harmonious emissions, parasitic emissions, inter modulation results, and frequency conversion results, except emission outside the band.

4.4 *Noise Figure*

Measurement of the level of comparison between signal and noise caused by component of a range of RF signals. Noise Figure is the comparison of noise output power of a device related to hot temperature (usually 290*K is taken).

4.5 *Necessary Bandwidth*

For certain emission class which may be meant as frequency bandwidth sufficient to guarantee the transmission of information with speed and quality pursuant to certain requirements.

4.6 Inter modulation

The product of a non-linear device or element, where when two or more frequencies are mixed in said non-linear element, it will produce a new work frequency. This non-linear work is usually found in transmission power amplifier or in the first range of RF Receiver.

4.7 Canal Space

The difference between the assigned frequency of two adjacent radio canals.

4.8 Work Frequency

Part of radio frequency spectrum confined by two specified frequencies for a service.

4.9 Frequency Tolerance

Frequency tolerance: Maximum deviation allowed for middle frequency of frequency band occupied by an emission toward assigned frequency for that emission, or maximum deviation allowed for characteristic frequency of an emission toward its compared frequency. This frequency tolerance is stated as part of 10^6 or in Hz.

4.10 *Image Rejection Radio*

Image Rejection Radio is a comparison between :

- the input level of undesired *Image Frequency* to produce certain output power Receiver.
- the input level of desired frequency to produce the same output power Receiver.

4.11 SINAD

A comparison stated in dB of noise plus signal and distortion toward distortion plus signal, where the first states that the resulting audio power is the remainder of audio after its audio signal is taken

$$\frac{(S + N + D)}{N + D}$$

4.12 Room Temperature

The temperature of surrounding media due to the influence of gas or liquid.

4.13 Humidity

The number of the content of water vapour in the atmosphere indicated by some measurements, for example, relative humidity.

4.14 Standard

Standard is technical specification or something applicable which is arranged based on consensus of all related parties by paying heed to the conditions of health, safety, the current and future development to obtain the greatest benefit.

4.15 Specification

Specification is determination or defining in the requirement whose characteristics may change due to technological development and or the condition of the field.

4.16 Classification

The equipment of HF/VHF/UHF Communication radio is classified based on modulation used by said radio equipment, i. e. as follows:

- Modulation used for HF Communication Radio Equipment is AM.
- Modulation used for VHF/UHF Communication Radio Equipment is FM.

4.17 Specification

Specification in this standard is to regulate technical provisions of HF/VHF/UHF equipment guided by ITU-T/ITU-R technical reference and other technical reference with the following objectives :

- General Objective
  Guidance of technical reference for the use of HF/VHF and UHF Equipment of National scale.

- Special Objective
  Guidance of technical reference for manufacturing/assembling (domestic product) of HF/VHF/UHF Communication Radio Equipment.

CHAPTER II

REQUIREMENTS

1. General

1.1. Display Unit
Display Unit must be clearly readable and easily seen by bare eyes (not hidden). Or must be placed in the front panel and must be able to accommodate sufficient number of digits for the use of said communication radio equipment. Using the material of type Twisted Neumatic Liquid Crystal or other better type or of the same quality, and use of low power supply.

1.2. Button Unit
Unit of the Buttons of the function of HF/VHF/UHF Equipment must be place in the front panel of the equipment house and easily used (the press must not be forced). The buttons must be provided with identifiers for their usage/operation.

1.3. Microphone Unit
Microphone Unit of Communication equipment must be good, neat, solid and easily identified in line with its function. Made of strong plastic material, not easily breakable and has smooth surface and easily cleaned. Additional unit that must be included in the microphone unit is Microphone Cord and PTT Button.

- Microphone Cord
  Microphone Cord is made of cable which has high feasibility power and good electrical power.
- PTT Button
  PTT Button is a button to speak. The pressure of PTT button must be easily and tenaciously done.

1.4. Connection

Connection must be easily done and has good electrical characteristics.

2. Source of Power Supply

a. Equipment with AC or Alternating Current Voltage is as follows:
   - AC Voltage : 220 Volts ± 10% or/and 110 Volts ± 10%..
   - Frequency : 50 Hz.

b. Source of DC or Direct Current Voltage is as follows :
   - DC Voltage : 24 Volts ± 10% or /and 12 Volts ± 10%.

3. Work Frequency

Work Frequency of HF/VHF/UHF Equipment is as follows :

a. Work Frequency of Equipment of HF Communication Radio is at frequency span of 3 up to 30 MHz, except for frequency allocation at frequency service of aviation, maritime, and broadcast. The assignment of work frequency will be determined by the Directorate in charge of radio frequency management.
b. Work Frequency of VHF Communication Radio is at frequency span of 30 up to 300 MHz, except for frequency allocation at frequency service of aviation, maritime, and broadcast. The assignment of work frequency will be determined by the Directorate in charge of radio frequency management.
c. Work Frequency of UHF Communication radio is at frequency span of 300 up to 3000 MHz, except for frequency allocation at frequency service of aviation, maritime, broadcast, mobile service (among other things that uses cellular technology), mobile and fixed satellite service. The assignment of work frequency will be determined by the Directorate in charge of radio frequency management.

4. Output Power of Transmitter

Output Power of Transmitter of HF/VHF/UHF Equipment is as follows :

- Output power of transmission of HF equipment allowed is ≤ 100 Watt.
- Output power of transmission of VHF/UHF equipment allowed is ≤ 50 Watt.

5. Modulation

Modulation used to operate Communication Radio equipment is as follows :

- HF Communication Radio using AM modulation.
- VHF/UHF Communication Radio using FM modulation.

6. Stability

Frequency stability at HF, VHF, and UHF equipment is ± 0.005% at the temperature of (5 up to 45)^{o} C.

7. Canal Space

Canal; Space of HF, VHF, and UHF equipment is as follows :

- Canal Space for HF equipment : 10 KHz.
- Canal Space for VHF/UHF equipment : 15 KHz.

8. RF Impedance

Impedance of HF, VHF, and UHF Equipment : 50 Ώ.
HF impedance : 75 Ώ, VHF : 75, 300 or 50 Ώ.

9. Room Temperature

HF, VHF, and UHF equipment must be able to work/operate well at tropical climate condition with room temperature of (5 up to 45)^{o} C and Humidity of 20% up to 85%.

10.Frequency Deviation

Frequency Deviation of HF, VHF, and UHF Equipment is as follows :

- For HF = ± 10 ppm
- For VHF = ± 10 ppm
- For UHF = ± 5 ppm.

CHAPTER III

TESTING REQUIREMENT

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1. Method of Sampling

Selection of samples of telecommunication tools and equipment to be tested is done in accordance with the test procedure with minimum number of samples of two units..

2. Test Method

The testing procedure is arranged by a Testing Laboratory assigned by the Directorate General of Post and Telecommunication and the Laboratory must be able to show in a qualitative and quantitative manner that the tested telecommunication tools and equipment comply with the technical requirement..

3. Condition for Passing the Test

The testing result is stated to PASS THE TEST if all the tested materials comply with the provisions contained in this technical requirement. The condition of passing the test may also be done by providing a declaration on the compliance with the technical requirement by enclosing specification and/or data of measurements conducted by accredited producers or accredited laboratories..

4. Conditions for Safety and Health

The testing result must prove that the telecommunication tools and equipment of HF, VHF, and UHF are capable of protecting users from electrical and electromagnetic disturbances.

5. Condition of Electromagnetic Compatibility

Refer to CISPR-22 and CISPR-24 Standards.

CHAPTER IV

MARKING AND PACKAGING

1 Every telecommunication tool and equipment of HF, VHF, and UHF that have passed the test shall be marked with the name of the manufacturer, manufacturing country, brand, type, serial number, and comply with the certification provision.

2. The packaging size depends on the manufacturer by taking into account the elements of safety, aesthetics, and space efficiency.

DIRECTOR GENERAL OF POST AND TELECOMMUNICATION

Signed

BASUKI YUSUF ISKANDAR

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