

Technical requirements of HF, VHF and UHF Radio Telecommunication Devices

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1. General

1.1 Display Unit

Display unit must be clearly legible and visible (not hidden), or must be placed on Front Panel. And it must be able to accommodate sufficient number of digits for that radio communication device usage. Use Twisted Neumatic Liquid Crystal materials or other types of material that are better or has the same quality, and it must use a low power supply.

1.2 Button Unit

The function keys unit of the HF / VHF / UHF device must be placed on the front panel so it is easy to use. Button needs to be easily pressed. And it should be equipped with an identifier for their usage / operation

1.3 Microphone Unit

Microphone unit of the communication device must be good, neat, sturdy and easily recognized in accordance to its function. It should be made of strong plastic material which is not easily broken and has a smooth surface and easy to clean. Additional Units that must be included with the microphone unit are *Microphone cord* and *PTT (Push To Talk) Button*.

- *Microphone Cord*
Microphone Cord is made of cables that have high flexibility and have good electrical power.
- *PTT Buttons*
PTT button is as a button to talk (Push to Talk). PTT key must be easy to press and sturdy

1.4 Connection

Connection must be easy to carry out and have good electrical properties

2. Power Supply

- a. AC Voltage or Alternating Current Device is as follows:
 - AC Power 220 Volt $\pm 10\%$ or/and 110 Volts $\pm 10\%$
 - Frequency: 50 Hz
- b. DC Voltage or Direct Current is as follows:
 - DC Power: 24 Volts $\pm 10\%$ or/and 12 Volts $\pm 10\%$

3. Working Frequency

Working frequency of HF/VHF/UHF Device as follows

- a. Frequency allocation for HF telecommunication device is 3 - 30 MHz, except for frequency allocations in aviation, maritime and broadcasting services. Assignment of working frequency will be determined by the Directorate that us in charge of radio frequency management.
- b. Frequency allocation for VHF telecommunication device is 30 to 300 MHz, except for frequency allocation in aviation, maritime, and broadcasting services. Assignment of working frequency will be determined by the Directorate that us in charge of radio frequency management.
- c. Frequency allocation for UHF telecommunication device is 300 to 3000 Mhz. Except for frequency allocation in aviation, maritime, broadcast, mobile service (including those using cellular technology), mobile and fixed satellite services. Assignment of work frequency will be determined by the Directorate that is in charge of radio frequency management

4. Transmitter Output Power

The Output Power of the HF / HF / UHF Device Transmitter is as follows:

- The permitted power output of the HF device is < 100 Watt.
- The permitted power output of the VHF / UHF device is ≤ 50 Watt.

5. Modulation

Modulation used for the operation of Radio Communication device is as follows:

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

6. Stability

Frequency stability in HF, VHF and UHF devices is $\pm 0.005\%$ at temperature (5 to 45) °C

7. Channel Spacing

Channel spaces of the HF, VHF and UHF Devices are as follows:

- Channel Spacing for HF devices: 10 KHz.



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- Channel Spacing for VHF / UHF devices: 15 KHz.

8. RF Impedance

- The device expansion is HF, VHF and UHF: 50 Ω .
- HF: impedance: 75 Ω , VHF: 75, 300 or 50 Ω

9. Room Temperature

HF, VHF and UHF devices must be able to work / operate well in tropical climatic conditions with room temperature that has a temperature (5 to 45) 'C and a humidity of 20% to 85%.

10. Frequencies Deviation

The frequency deviations of the HF, vHF and UHF devices are as follows:

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

