

## **1. GENERAL**

### **1-1 Introduction**

The HKP Corp. HKM-1002 is MURS handheld two-way radio VHF transceiver.

The transceiver has 5 Channels and 10 weathers. Weather channels can also be accessed immediately by pressing the Function key.

The radio is the newest generation in personal two way communications.

The radio is a lightweight, compact two way communication device that can be used to communicate with family or friends at parks, shopping malls, sporting events, concerts-any indoor or activity!

### **1-2 CHARACTERISTIC**

- 1) All active devices in the radio is composed of semiconductor and high density IC.
- 2) To design the radio in compact and weight approximately 120g with out battery.
- 3) Mi-com of the radio is Upd789418A by NEC
- 4) It's DC supply power can operate by use of alkaline 4 Cell (1.5V AAA) battery.

### **1-3 COMPOSITION**

The radio is composed of following.

- 1) Transceiver (W/Antenna)
- 2) Belt clip
- 3) Manual

## **2. SPECIFICATIONS**

### **General**

Frequency Range	151.820 – 154.600Mhz
Channels	5CH
Privacy Codes	38 for each main channel
Dimensions (W x H x D)	63mm x 120mm x 35mm

### **Power Supply**

Power Source	Alkaline Batteries, AA(4), 6VDC
Operating Time	26 Hours (Alkaline Batteries; 5:5:90)
	70 Hours (Standby)

### **Receiver**

Useable Sensitivity	> -120 dBm
Maximum Audio Output Power	> 0.3 Watts (8 Ohm)
Modulation Distortion	< 5% ( 1khz 60% )
SNR	35dB

### **Transmitter**

RF Output Power	High .5 Watt ERP, Low 0.033 Watt ERP
Range	Up to 5miles
Maximum Deviation	± 2.5khz
Modulation Distortion	< 5% ( 1khz 60% )
SNR	35 dB

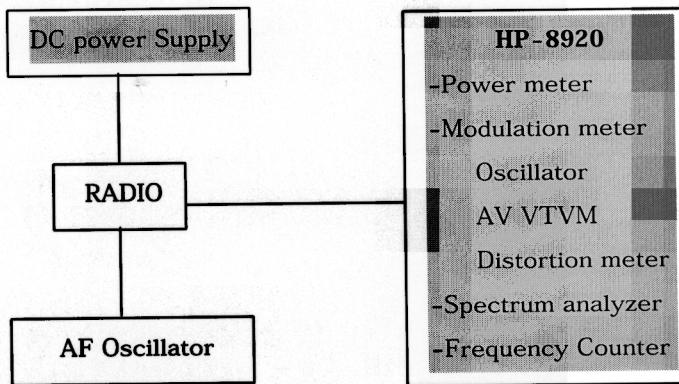
## 3. ADJUSTMENT

### 3-1. Frequency synthesizer

- After connecting the RF power meter and dummy load (50 ohm), join the antenna connector of HP8920 with above equipment.
- Check the voltage between TP and GND in digital Voltage meter.
- The set low channel(CH1, 151.820Mhz) of HP8920 the lowest frequency.
- After pressed PTT key of HP8920, check if the lowest frequency of Tx channel to DC 1.2V in the voltage of test point (VT)
- After releasing the PTT key of HP8920, check if the highest frequency (CH5,154.600Mhz) of Rx channel is within DC 1.2V in the voltage of test point (VT).

### 3-2. Transmitter

- Connect the RADIO and measure equipment according to block diagram below.



- Connect DC 6.0V voltage preset to the RADIO.
- Connect HP8920.
- Adjust Transmit frequency (CH1, 151.820Mhz) according to trimming trimmer capacitor X201.
- Connect AF Oscillator to MIC terminal for conform modulation degree.
- Set the frequency of AF Oscillator to 1khz and adjust AF level. Should be 100mV.
- Checking Oscilloscope and Modulation meter. Max deviation should be in  $\pm 2.5\text{khz}$ .

### 3-3. Transmitter Test

- Output RF power Test

DC Power (6.0V) should be Max. 5 Watts (ERP) and in -50% range.

- Audio Response

Connect AF oscillator to MIC terminal and then firm the audio level that doesn't distortion the wave of Oscilloscope in the frequency range, 300hz~3,000hz. Check the audio level for 300hz~3,000hz based on frequency standard, 1khz.

- Modulation degree Test.

- 1) Connect AF oscillator to the MIC terminal and then adjust the level to 100mV.
- 2) Measure the Oscillator wave and the point needle of Modulation Meter after pressing PTT key.
- 3) Sweep gradually the frequency of AF Oscilloscope from 300hz~3,000hz.
- 4) At this time, the point needle of Modulation Meter should be in  $\pm 2.5\text{khz}$ .

- Tx Spurious Test

- 1) Antenna is  $50\Omega$  and attenuation degree should be 20dB more.
- 2) Observe the Spectrum with pressing PTT key. The hamonics should be less  $-27 \sim -22\text{dBm}$  than carrier.

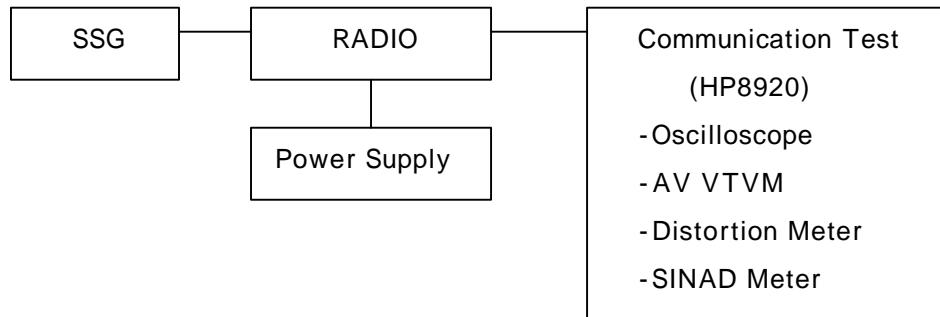
### 3-4. Receiver

- Preparation

- 1) Set the power supply to DC 6.0V.

- 2) Adjust Voltage level (AF) to 0.7Vrms(8Ω load) after power on.

- Connection method



- The Conform of Rx sensitivity

- 1) Set SSG to 1channel(151.820Mhz) frequency.

- 2) Adjust modulation frequency, 1khz to modulation degree, 1.5khz.

- 3) After adjusting the frequency of SSG to channel frequency, RF level sets to -47dBm.

- The Conform of Squelch sensitivity

- 1) Set the standard channel (CH1, 151.820Mhz)

- 2) In squelch mode, SQ variable resistor VR101 must be turned counterclockwise.

- 3) After adjusting SSG to channel frequency, the RF level of SSG is set On SINAD 12~0dB.

### 3-5. Receiver Test

- Rx sensitivity test

SSG should be adjusted to 12dB of SINAD point needle seeing wave of Oscilloscope as SSG sets in 1khz frequency deviation.

At this time, normal RF level is -122~-124dBm.

- Audio Distortion Test

- 1) SSG should be adjusted like way of point "Rx sensitivity test" and RF level sets to -47dBm.

- 2) Adjust to 0.7Vrms (8Ω load) seeing Audio wave.

- 3) Read the needle of Distortion Meter (Normal condition would be less then 5% Distortion)

- Squelch Test

After RF level of SSG should be set to the least