

JF-414EU

SERVICE MANUAL

2-WAY PORTABLE

HANDHELD

RADIOS

J-communications co., ltd

CONTENT

1. GENERAL
 - 1.1 General
 - 1.2 Characteristic
 - 1.3 Composition
2. SPECIFICATION
 - 2.1 General Specification
 - 2.2 Electrical Specification
3. OPERATION
 - 3.1 Key Name
 - 3.2 Key Functions
 - 3.3 Setting and Operation
4. ADJUSTMENT
 - 4.1 Frequency synthesizer
 - 4.2 Transmitter
 - 4.3 Transmitter Test
 - 4.4 Receiver
 - 4.5 Receiver Test
 - 4.6 Symptoms, check point & Correction
5. DESCRIPTION OF RADIO CIRCUIT
 - 5.1 Frequency Synthesizer
 - 5.2 Receiver
 - 5.3 Transmitter
6. BLOCK DIAGRAM
7. SCHEMATIC
8. COMPONENT PARTLIST
9. ASSMBLEY DRAWING AND PHOTOGRAPH
10. SPEC SHEET
11. CHANNEL DATA

1. GENERAL

1.1 GENERAL

This equipment, JF-414EU is called 2 way portable handheld radios. The frequency range is 462~467MHz, UHF operating channels for international 2 way portable radios.

1.2 CHARACTERISTIC

- a) All active device in this radio is composed of semiconductor and high density IC.
- b) To design this radio in compact and weight approximately 140g with battery cell.
- c) CPU of this equipment is TMP47P202 from TOSHIBA.
- d) It's power can operate by use of alkaline 4 cell(1.5V AAA) battery.

1.3 COMPOSITION

This radio is composed of following.

- a) Transmitter
- b) Antenna
- c) Hand Strap

2. SPECIFICATION

2.1 GENERAL SPECIFICATIONS

- a) Frequency Range : 462MHz,467MHz
- b) Output Impedance : 50 Ω Unbalanced
- c) Modulation Type : 8K00F3E
- d) Communication Mode : Half duplex
- e) Channel Capacity : 14 channel
- f) Channel spacing : 12.5 kHz
- g) Power : 5.4 or 6.6V
- h) Battery Life : > 30 hours (Tx5%, Rx5%, Stand-by 90%)
- i) Operating Temperature : -10°C ~+60°C
- j) Dimension : 100(H)x 50(W)x 24(D)mm
- k) Weight : 140g(with Battery)

2.2 ELECTRICAL SPECIFICATION

a) TRANSMITTER

- 1) Output power : Max 500mW
- 2) Frequency Stability : $\pm 5\text{ppm}(-10^{\circ}\text{C} \sim +60^{\circ}\text{C})$
- 3) Modulation Method : FM
- 4) Oscillation Method : PLL SYNTHESIZER
- 5) Max. Frequency Deviation : < $\pm 2.5\text{kHz}$
- 6) Cooling Method : air-cooling Method
- 7) Spurious Emission : < 60dB
- 8) FM Hum/Noise : < 40dB(1kHz 70% modulation)
- 9) Distortion : > 5%(1kHz 60% modulation)
- 10) Tx Audio Response : 6dB /OCT $\pm 3\text{dB PRE-EMPHASIS}(300\text{Hz} \sim 2.5\text{kHz})$

b) RECEIVER

- 1) Receive Method : Double Super Heterodyne
- 2) Receive Sensitivity : < 0.25 uV(12dB SINAD)
- 3) Squelch Sensitivity : 0.2 uV

- 4) Selectivity : < 60dB (12.5kHz)
- 5) Local Frequency Stability : $\pm 5\text{ppm}(-10^{\circ}\text{C} \sim +60^{\circ}\text{C})$
- 6) Spurious Response : < 60dB
- 7) Audio output : < 250mW
- 8) Distortion : > 5% (1kHz 60% Modulation)
- 9) RX Audio Response : 6dB/OCT $\pm 3\text{dB DE-EMPHASIS}(300\text{Hz} \sim 2.5\text{kHz})$
- 10) S/N Ratio : < 40dB (1kHz 70% modulation)
- 11) IF : 1st IF = 21.7MHz
2nd IF = 450kHz
- 12) Local Frequency : 1st Local Frequency = $f_c - 21.7\text{MHz}$
2nd Local Frequency = 21.25MHz