

SPECIFICATIONS

SYSTEM

Frequency Range	
Band A	29.7 to 36 MHz
Band B	36 to 43 MHz
Band C	43 to 50 MHz
Channel Spacing	30 kHz
Programmable Freq. Step	5 kHz
Antenna Impedance	50 Ω
Channel Capacity	16
Power Source	13.6 VDC \pm 10%
Current Consumption	
Squelched	0.6 A
Unsquelled	1A
Keyed	13A

TRANSMITTER

Power Output	60 Watts (30 - 60 adjustable)
Frequency Stability	\pm 5 PPM (-30 to 60 $^{\circ}$ C)
Maximum Freq. Deviation	\pm 5 kHz
Audio Freq. Response	With +1 to -3 dB of a 6 dB per octave pre-emphasis curve from 300 to 3000 Hz as reference at 100 Hz
Signal to Noise Ratio	-45 dB
Distortion	3% or less at 60% modulation
Modulation Sensitivity	-25.5 dBm \pm 3 dB
Modulation Input Imp.	600 Ω \pm 20%
Spurious	-75 dB
Maximum Freq. Separation	2 MHz

Specifications [continued]

RECEIVER

Intermediate Frequencies

High (first) 21.6 MHz

Low (second) 455 kHz

Tolerance, Injection ± 5 PPM (-30 to 60 °C)

Sensitivity 0.35 μ V 12dB SINAD (-3.1 dBuV emf)
0.45 μ V 20 dB Quieting (-0.9 dBuV emf)

Modulation Acceptance ± 7 kHz

Adjacent Channel Selectivity -85 dB

Intermodulation -75 dB

Spurious Response -85 dB

Audio Output 1.5 Watts (built-in speaker)
3 Watts (external speaker)

Distortion 5% at 1.5 Watts Output

Audio Freq. Response Within $+2$ to -8 dB of a 6 dB per octave de-emphasis curve from 300 to 3000 Hz as 1000 Hz reference

Signal to Noise Ratio -45 dB

Maximum Freq. Separation 2 MHz

SECTION 2 OPERATION

2.1 CONTROLS AND DISPLAYS

The complete operating instructions for the synthesized two-way radio are provided in the Operation Manual. The basic procedures for receiving and transmitting the messages in the two-way radio communications are as follows;

To Receive a Message:

1. Turn the radio on by turning the volume control clockwise. The previously selected channel is displayed on the LED with a beep.
2. Press the MON key to release the audio mute when the radio is operated with the tone applications. The audio mute by the tone applications can be released by simply removing the microphone assembly from the hanger which has been connected to a system ground of the vehicle. The MON key will glow in either case.
3. Turn the squelch control counterclockwise so the noise is heard from the speaker and the BUSY indicator lamp turns on.
4. Turn the squelch control clockwise slowly until the noise just disappears and the BUSY indicator turns off. Advance 10 degrees more.
5. Select the desired channel or specify the Priority Channel for scanning as follows.
 - (a) Select the desired channel by rotating the channel selector switch. The selected channel number is displayed on the LED. Press the MON key again (so a lamp on the key turns off) for the tone applications if any are equipped and programmed.
 - (b) Press the P/S key for scanning of the channels (either NORMAL or MEMORY) and a lamp on the key glows and scanning starts. The channel selected at steps (a) is specified as the priority

channel automatically by entering into the scan mode and monitored on every 0.5 second while the other channels are scanned and even while a non-priority busy channel is captured.

To Transmit a Message:

1. Turn the radio on and select the desired channel or access the scan mode as described in the last paragraph.
2. Pick up the microphone assembly (to release the audio mute) and listen briefly to make sure no one else is using the channel (press the MON key if it does not glow). Press the press-to-talk bar on the microphone assembly and speak into it in a normal tone of voice. Transmission is indicated by the red lamp at TX, otherwise the loop fails to lock. Transmission will be made on the channel where;
 - (a) Being selected and displayed on the LED at step 1 in non-scanning mode (P/S key is not glowing).
 - (b) Being specified as the priority channel at step 1 and displayed on the LED while scanning in the scan mode (P/S key is glowing).
 - (c) Being captured (either priority or non-priority) during scanning in the scan mode (P/S key and BUSY indicators are glowing) and displayed on the LED.
3. Release the PTT bar after the message has been sent.

2.2 OPERATING INSTRUCTIONS

WARNING

Use the Regulated Power Supply S0802 for the Base Station use of the Challenger 7154 VHF radio to prevent the radio from degradation of the performance caused by the electromagnetic induction.

