



## AN/ARC-164 UHF Airborne Radio



The AN/ARC-164 standard avionics radio provides the DoD and NATO standard anti-jam UHF voice communications in support of modern military operations.

### Benefits

- 10 watts AM; 25 kHz channel spacing
- Have Quick II ECCM
- Line-of-sight voice
- 2,000 hours demonstrated mean-time-between-failures (MTBF)
- COMSEC/secure speech compatible
- ANVIS Green A front panel lighting and electronic fill port
- Form, fit, function replacement for obsolete UHF radios
- Upgradable in the field

The AN/ARC-164 is the standard avionics radio for the U.S. Air Force and U.S. Army. It provides the DoD and NATO standard anti-jam ultra-high frequency (UHF) voice communications in support of modern military operations. The latest AN/ARC-164 radios feature MIL-STD-1553B interfaces.

Raytheon developed the RT-1614 to provide anti-jam UHF voice communications to an avionics management system. The RT-1614 is in service on U.S. Air Force, U.S. Army, and

international platforms that have federated avionics systems. Raytheon provides modification kits to upgrade other ARC-164s to this configuration.

The RT-1505A (USAF), RT-1518 (U.S. Army), and the C-11718 feature a front panel with ANVIS Green A lighting and a fill port for electronic insertion of the Have Quick II multiple-word-of-day (MWOD). Modification kits to upgrade other ARC-164s with this new front panel are also available.

The MXF-243 radio set control was designed to meet the need for remote electronic fill of the Have Quick II MWOD in a smaller package.

The AN/ARC-164 is in production and available for immediate needs. Over 60,000 units have been delivered to date.

This product meets the definition of commercial item as defined by FAR 2.101.

# AN/ARC-164 UHF Airborne Radio

## Technical Specifications

|   |   |                             |                   |                   |
|---|---|-----------------------------|-------------------|-------------------|
| <b>General Characteristics:</b>           | C-11718, MXF-243, RT-1505A, RT-1518C, RT-1504, RT-1614  |                             |                   |                   |
| <b>Mounting Configuration:</b>            | RT-1505A<br>Panel   | RT-1518C<br>Panel           | RT-1504<br>Remote | RT-1614<br>Remote |
| <b>Frequency Range:*</b>                  | 225.000 to 399.975 MHz  |                             |                   |                   |
| <b>No. of Channels:</b>                   | UHF 7000 (including 20 preset and 1 Guard channel available from panel mount RT and the radio set control), MXF-243 has 20 additional presets for VHF |                             |                   |                   |
| <b>Modulation Type:</b>                   | AM (FM available for VHF/UHF MXF-243 control)   |                             |                   |                   |
| <b>Primary Power:</b>                     | Receiver: 35 watts to 16 watts typical<br>Transmitter: 110 watts to 85 watts typical at 24 to 33 Vdc  |                             |                   |                   |
| <b>R/T</b>                                | 20 watts at 24 to 33 Vdc  |                             |                   |                   |
| <b>Control Boxes Channel Time Change</b>  | 0.25 second maximum in normal mode<br>*MXF-243 includes 30 to 87.975 MHz (2,320 channels), and 108 to 151.975 MHz (1,760 channels)                    |                             |                   |                   |
| <b>Main Receiver Characteristics:</b>     | RT-1505A, RT-1518C, RT-1504, RT-1614  |                             |                   |                   |
| <b>Sensitivity (10 dB S+N/N) Typical:</b> | 2.5 $\mu$ V   |                             |                   |                   |
| <b>Standard Conditions:</b>               | 4 $\mu$ V maximum   |                             |                   |                   |
| <b>Service Conditions:</b>                | 6 $\mu$ V maximum   |                             |                   |                   |
| <b>Receive Signal Range:</b>              | Receives AM signals at levels between -101 dBm and +2 dBm   |                             |                   |                   |
| <b>AGC:</b>                               | +5, -4 dB from 4 $\mu$ V to 0.5 V (all receivers) (1 mV ref)  |                             |                   |                   |
| <b>Squelch:</b>                           | Adjustment Range: 0 to 4 $\mu$ V minimum<br>Hysteresis: 2 to 8 dB<br>Attack Time: 50 minutes maximum  |                             |                   |                   |
| <b>Selectivity:</b>                       | <u>Narrowband</u>   | <u>Wideband</u>             |                   |                   |
| <b>6 dB</b>                               | $\pm$ 12 kHz minimum  | $\pm$ 35 kHz minimum        |                   |                   |
| <b>40 dB</b>                              | $\pm$ 25 kHz maximum  |                             |                   |                   |
| <b>60 dB</b>                              |   | $\pm$ 75 kHz                |                   |                   |
| <b>Audio Output Power Level:</b>          | <u>Normal</u>   | <u>Wideband</u>             |                   |                   |
| <b>Power Level:</b>                       | 200 mW Min (Adj)  |                             |                   |                   |
| <b>Voltage Level:</b>                     |   |                             | 2.0 Vrms min      |                   |
| <b>Load Impedance</b>                     | 150 ohms  | 500 ohms                    |                   |                   |
| <b>Response</b>                           | +1, -3 dB<br>(300 to 3500 Hz)   | +3, -5 dB<br>(70 to 25 kHz) |                   |                   |
| <b>Distortion at 50% Mod</b>              | 10% maximum   |                             |                   |                   |
| <b>Noise Quieting:</b>                    | 35 dB   | No squelch                  |                   |                   |
| <b>Volume Control Range:</b>              | 37 dB   | Not controlled              |                   |                   |
| <b>Environmental Characteristics</b>      |   |                             |                   |                   |
| <b>Data:</b>                              | MIL-E-5400 Class II modified  |                             |                   |                   |
| <b>Temperature Range:</b>                 | -55 to +71°C  |                             |                   |                   |
| <b>Altitude:</b>                          | 0 to 70,000 feet  |                             |                   |                   |
| <b>Vibration:</b>                         | 5 g, 10 to 2000 Hz  |                             |                   |                   |
| <b>Shock:</b>                             | 15 g Service, 30 g Crash Safety   |                             |                   |                   |
| <b>Humidity:</b>                          | 95%, 10 days, with temperature cycling  |                             |                   |                   |

## Transmitter Characteristics

|                             |  |                  |
|-----------------------------|--|------------------|
| <b>Power Output:</b>        | Standard conditions  | 10 watts minimum |
|                             | Service conditions   | 8 watts minimum  |
| <b>Frequency Accuracy:</b>  | $\pm$ 500 Hz maximum   |                  |
| <b>Voice Modulation:</b>    |  |                  |
| <b>Level (adjusted)</b>     | 0.7 Vrms input for 90% modulation  |                  |
| <b>Distortion</b>           | 10% maximum  |                  |
| <b>Response</b>             | +1, -3 dB (300 to 3500 Hz)   |                  |
| <b>Noise Level</b>          | 40 dB below 80% modulation   |                  |
| <b>Input Impedance</b>      | 150 ohms   |                  |
| <b>Tone Modulation</b>      | 1020 Hz, 80% modulation  |                  |
| <b>Carrier Rise Time</b>    | 40 to 80 m   |                  |
| <b>Sidetone Level:</b>      | 100 mW at 90% modulation (adjusted)  |                  |
| <b>Wideband Noise Level</b> | -110 dBm/Hz maximum $\pm$ 10 MHz from carrier<br>-130 dBm/Hz maximum $>$ $\pm$ 20 MHz from carrier |                  |

## Guard Receiver Characteristics Same as Main Receiver Except:

|                           |   |
|---------------------------|---|
| <b>Channel Frequency:</b> | 243.000 MHz nominal                                     |
| <b>Adjustment Range:</b>  | 238.000 to 248.000 MHz (with crystal change)            |
| <b>Selectivity:</b>       | 6 dB $\pm$ 30 kHz minimum<br>60 dB $\pm$ 80 kHz maximum |

## Physical Characteristics

| Configuration (in.) | Width (in.) | Height (in.) | Depth (in.) | Weight (lb.) |
|---------------------|-------------|--------------|-------------|--------------|
| RT-1504             | 4.98        | 4.730        | 8.32        | 8.84         |
| RT-1505A            | 5.75        | 4.875        | 8.85        | 9.25         |
| RT-1518C            | 5.75        | 4.875        | 8.85        | 9.25         |
| RT-1614             | 4.98        | 4.730        | 9.11        | 9.75         |
| C-11718             | 5.75        | 4.875        | 5.44        | 4.32         |
| MXF-243             | 5.74        | 2.980        | 5.45        | 3.00         |

## Mating Connectors

| Configuration | J1 Main                | J2 RF           | J3 Aux.          |
|---------------|------------------------|-----------------|------------------|
| RT-1504       | MS27473T18B-32S        | UG-1185/U       | MS27467T11B-35P  |
| RT-1505A      | MS27473T18B-32S        | M39012/26-0010  | MS27473T18B-32SA |
| RT-1518C      | MS27473T18B-32S        | UG-1366/U (TPS) | MS27473T18B-32SA |
| RT-1614*      | MS27473T18B-32S        | UG-1185/U       | MS27473T18B-32SA |
| C-11718       | MS27473T20B-41S        |                 |                  |
| MXF-243       | J1 UHF - MS3126F22-55S |                 |                  |

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\*RT-1614 MIL-STD-1553B Data Bus Connectors  
RAYCHEM D621-0411 with D-602-54 insert, 2 each