Chapter 5 Multichannel Radio Equipment

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AN/GRC-103(V) Radio Set

NSN: 5820-00-935-4931 (AN/GRC-103(V)1)
      5820-00-116-6029 (AN/GRC-103(V)2)
      5820-00-116-6030 (AN/GRC-103(V)3)
      5820-01-081-8866 (AN/GRC-103(V)4)

Reference: TM 11-5820-540-12

General Information

The AN/GRC-103(V) is a compact, transportable UHF-FM radio set which provides facilities for multichannel transmission and reception of PCM signals. It will accommodate up to 24 telephone channels when used with appropriate PCM multiplex equipment. The multichannel radio system can be secured by using electronic key generator TSEC/KG-27. In various configurations, the AN/GRC-103(V) can be employed as radio terminals or repeater stations. The difference between the models is the frequency range of bands I, II, III, and IV.

Technical Characteristics

Frequency Range

<table>
<thead>
<tr>
<th>Band</th>
<th>Frequency Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>220 to 404.5 MHz</td>
</tr>
<tr>
<td>II</td>
<td>394.5 to 705 MHz</td>
</tr>
<tr>
<td>III</td>
<td>695 to 1000 MHz</td>
</tr>
<tr>
<td>IV</td>
<td>1350 to 1850 MHz</td>
</tr>
</tbody>
</table>

Frequency Separation:

<table>
<thead>
<tr>
<th>Transmit to Receive</th>
<th>16.5 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning Range</td>
<td>80 km (50mi)</td>
</tr>
</tbody>
</table>

Number of Channels

<table>
<thead>
<tr>
<th>Band</th>
<th>Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>369</td>
</tr>
<tr>
<td>II</td>
<td>621</td>
</tr>
<tr>
<td>III</td>
<td>610</td>
</tr>
<tr>
<td>IV</td>
<td>1,000</td>
</tr>
</tbody>
</table>

Power Input: 115 V AC, 47 to 420 Hz
Power Output: 15 to 25 W
Antenna: Combination of Mast AB-952/GRC-103 and either the AS-1852/GRC-103, Band I; AS-1853/GRC-103, Band II; AS-1854/GRC-103, Band III; or AS-3047( )/GRC-103, Band IV
Tuning: Continuous
Type of service: 500KF9W (designed for use with multichannel PCM equipment only)
Weight: 212.5 kg (468 lb)
AN/GRC-103(V)
Radio Set
AN/GRC-143
Radio Set

NSN: 5820-00-926-7355
Reference: TM 11-5820-595-12

**General Information**

The AN/GRC-143 is a general purpose, FM tactical radio set which provides duplex operations. The radio set can be used for diffraction and tropospheric scatter modes of propagation at ranges to 161 km (100 mi), when used with a suitable antenna. The AN/GRC-143 is compatible with PCM multiplex equipment for 12 or 24 channel full-duplex operation.

**Technical Characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Frequency Range</td>
<td>4400 to 5000 MHz</td>
</tr>
<tr>
<td>Power Output</td>
<td>1 kw</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>115/230 V AC, 47 to 63 Hz, 5.37 kW</td>
</tr>
<tr>
<td>Planning Range</td>
<td>161 km (100 mi)</td>
</tr>
<tr>
<td>Antenna</td>
<td>AN/TRA-37 (not included)</td>
</tr>
<tr>
<td>Type of Service</td>
<td>3200KF9W (PCM equipment only)</td>
</tr>
<tr>
<td>Weight</td>
<td>326.4 kg (719 lb)</td>
</tr>
</tbody>
</table>
AN/GRC-143
Radio Set

TRANSMITTER, RADIO
T-961/GRC-143

AMPLIFIER, RADIO FREQUENCY
AM-6090/GRC-143

RECEIVER, RADIO
R-1287/GRC-143
AN/GRC-144
Radio Set

NSN 5820-00-926-7356
Reference: TM 11-5820-695-12

General Information

The AN/GRC-144 is a general purpose FM tactical radio set which provides duplex operations. The radio set is primarily intended for use in a multichannel LOS communications system where difficult terrain or other considerations prevent the use of cable. The radio set is compatible with standard PCM multiplex equipment. The AN/GRC-144 can be used as a radio terminal or as a radio repeater.

Technical Characteristics

Frequency Range .................................................. 4400 to 5000 MHz
Power Output ...................................................... 25 W
Power Requirement ........................................... 120 V AC, 50 to 60Hz
Planning Range ................................................. 80km (50mi)
Type of service ............................................... 3000KF9W (PCM equipment only)
Weight ............................................................. 136kg (299 lb)
AN/GRC-144
Radio Set
**FM 24-24**

**AN/GRC-163**

**Radio Terminal Set**

**NSN:** 5820-00-832-5617

**Reference:** TM 11-5820-713-15

**General Information**

The AN/GRC-163 is a compact, transportable, multichannel VHF-FM radio terminal set used in point-to-point radio circuits. It can provide four voice and two teletypewriter channels plus an orderwire circuit. Four telephone ringers are built into the AN/TCC-70. Although the RT-524 can provide a secure single voice channel, current tactical bulk encryption devices are not compatible with the AN/TCC-70; therefore, this system cannot be operated in a secure mode.

**Technical Characteristics**

- **Frequency Range:** 30.00 to 75.95 MHz
- **Frequency Separation:** Transmit to receive vehicular whips, 10 MHz; fixed, with antennas 30.50 m (100 ft) apart, 3 MHz
- **Planning Range:** 8 to 41 km (5 to 25.5 mi)
- **Number of Channels:** 920
- **Power Input:** 115 V AC, 50, 60, or 400 Hz or 230 V AC, 50 to 60 Hz
- **Power Source:** 15 kW Generator Set, SF-15-MD
- **Power Output:** Low, 3 W; High, 35 W
- **Antenna:** Log periodic AS-2169/G (two each) or 3.05 m (10 ft) Whip AS-1729 (two each)
- **Tuning:** Detent
- **Squelch:** 150 Hz tone and noise
- **Type of Service:** 40 K0F9W (multichannel system)
- **Weight:** 105.1 kg (231 lb)
AN/GRC-163
Radio Terminal Set
AN/GRC-222
Radio Set

NSN: 5820-01-260-9945

Reference: TM 11-5820-1028-12

General Information

The AN/GRC-222 is designed as a short range wideband digital radio. The transmitter and receiver are tunable in 100 kHz steps over the 4.4 to 5.0 GHz frequency range. The modular design of the radio set reduces the amount of time necessary to troubleshoot and return the radio set to full service. If a problem occurs in a module, the procedure is to replace that module with an identical spare module. The faulty module is then returned to the factory for repair. The power supply module provides the DC power required to operate the radio set.

Technical Characteristics

Frequency Range ........................................ 4.4 to 5.0 GHz
Power Input .............................................. 115/230 V AC 60 Hz
Power Output ............................................ +15 V, +5 V, -5.2 V, and -20 V DC
Planning Range ........................................ 40 km (25mi) LOS mode
.................................................. 8 km (5 mi) SRWBR mode
Antenna .................................................. AS-1425/GRC and AB-1309 (V)/TRC
Weight .................................................... 44.9 kg (99 lbs)
AN/GRC-222
Radio Set