General Dynamics is pleased to introduce a revolutionary product: The R8000 communications system analyzer. The R8000 utilizes leading-edge software defined radio technology to deliver a previously unimaginable result: a truly portable instrument with more functions than today’s bench top analyzers.

Weighing only 14 pounds, the R8000 gives service technicians power and flexibility not previously available. This, combined with the unit’s feature-packed spectrum analyzer, makes the R8000 ideal for taking to sites for infrastructure maintenance and interference measurement. The unit’s bright 8.4” color LCD is well visible in sunlight and features wide viewing angles, making the R8000 your best choice for on-site work.

There has simply never been a communications analyzer that combines this level of portability and power. See how the R8000 can change the way you perform radio and radio system service forever.
A Compact and Lightweight Solution
You no longer need to lug multiple pieces of heavy equipment to perform service at remote locations. The R8000 has everything you need in one compact, 14 lb. package! Among the instruments included in the R8000 are:

• Spectrum Analyzer
• Signal Generator
• Sensitive Measurement Receiver
• Tracking Generator (optional)
• SINAD Meter
• Distortion Meter
• Modulation Scope
• Oscilloscope
• Frequency Error Meter
• Cable Fault Locator (optional)
• FM Deviation Meter
• AM Modulation Meter
• Receive Signal Strength Meter
• Broadband and Narrowband Power Meters
• Audio Counter
• Audio Generator
• AC / DC Voltmeters
• MOTOTRBO™ signal quality test (optional)

MOTOTRBO is a registered trademark of Motorola, Inc.

Superior Spectrum Analyzer
The R8000 comes equipped with a spectrum analyzer comparable to those found on stand-alone instruments costing as much or more. With a noise floor below -120dBm, super-fast signal acquisition, 4 markers (2 standard), an available variable vertical scale down to 1dB per division, the R8000 is the ideal tool for tracking and measuring elusive interfering signals.

Upgradable and Expandable
The software-based architecture of the R8000 lets you add software options and upgrades in the field. So if your needs change down the line, simply order the feature or protocol you need, and program it into your unit via one of its 4 standard USB ports.

R8000 Series Communications System Analyzers
The Ultimate Radio Service Tool

Weight: 14 lbs.
Frequency Range: 250 kHz to 3GHz (1GHz standard, 3GHz optional)
Size: 9.4" high x 12.7" wide x 7.5" deep
Display: 8.4" LCD, visible in sunlight, with wide viewing angle
Spec. An. Noise Floor: -120dBm
RF Input: 50W continuous, 150W maximum
“DualScope”™ display lets you see carrier signal and demodulated audio simultaneously

Our DualScope display allows you to view the RF spectrum analyzer and modulation scope simultaneously, giving you the ability to analyze RF characteristics of the carrier signal and recovered audio from the same screen. The complete functionality of both instruments is available in DualScope mode, and all associated measurements are displayed. With DualScope, you no longer need to go back and forth from the spectrum analyzer to the modulation scope to see everything you need – it’s all on one screen! DualScope is included with Enhanced Spectrum Analyzer/Oscilloscope option R8-ESA.

Operate the R8000 from your PC with optional Remote Control software

The R8000 virtual keyboard includes every key on the R8000 itself. Just assign an IP address to the unit, and operate every function of the box from a remote PC. Monitor channel activity, measure interference, track site performance, all from any networked PC with our remote control software installed.

MOTOTRBO test option

With the R8000, you can now test the digital signal quality of your MOTOTRBO radios. Simply put the analyzer in TRBO mode to test Bit Error Rate (BER), FSK and magnitude error, and receive audio quality.

The R8000’s constellation display provides a quick graphic look at the FSK signals. Actual signal points are plotted against ideal IQ points. If the signal points line up with the ideal IQ points, the signal is good. If not, further investigation is required.
The R8000 PREMIER PACKAGE is the best value available in communications test equipment. It includes all the capabilities of a standard R8000A, PLUS:

- **3GHz operation of all RF features**
- **Remote control software for operating the unit from a networked PC**
- **Tracking Generator for accurate tuning of cavities, duplexers, and filters**
- **Enhanced Spectrum Analyzer and Scope Package, including DualScope and 1dB vertical scale per division**
- **Cable Fault Locator**
- **Soft Carrying Case**

Whether you choose the PREMIER PACKAGE, or the standard R8000, you will own the new standard in communications test equipment. Nothing in the industry offers anything close to the combination of features, portability, expandability, and cost effectiveness of the R8000 by General Dynamics. And because it’s a General Dynamics product, you know you can count on world-class reliability and after-sale support. The software-based architecture of the R8000 will allow rapid introduction of new protocols and feature enhancements, and the product has been designed in such a way that these new features can be easily added to existing units. So you can be assured that your communications analyzer will always be upgradable should your needs so require.

Contact your local representative for a demonstration today!
To find your General Dynamics test equipment representative, go to [http://www.gdsatcom.com/ctereps.html](http://www.gdsatcom.com/ctereps.html)
## Specifications

**Operating/Display Modes**
- AM/FM Monitor
- AM/FM Generator
- Audio Synthesizer
- Spectrum Analyzer
- Duplex Generator
- Sweep Generator
- Tracking Generator (Opt.)
- DualScope (Opt.)
- AM Modulation Meter

**General**
- Displayed Average Noise Level (DANL): -120 dBm (50 Ohm input termination)
- Dynamic Range: 80 dB
- Input Related Spurious: -60 dBc max
- Residual Spurious (non-input related): -70 dBm

**Power**
- DC Power Requirements: 24VDC @ 5.0 A max (AC adapter included)
- Battery Power: Optional External Battery
- Battery Operation: 1 hour minimum

**Mechanical/Environmental**
- Weight: <14 lbs (6.4 kg)
- Dimensions: 9.4"(23.9 cm) high, 12.7"(32.3 cm) wide, 7.5"(19.1 cm) deep
- Operating Temperature: 0º to 50º C
- Storage Temperature: -30º to +80º C

**Warranty**
- Standard Warranty: One year
- Three Year Service Plan: Optional
- Five Year Service Plan: Optional

**Generator (Receiver Test)**
- Port Protection Limit: 50W for 30 seconds
- Frequency Range: 250 kHz to 1 GHz
- Extended Frequency Range (Optional): 250 kHz to 3 GHz
- Frequency Resolution: 1 Hz

**Output Level**
- Generate Port
  - Range: +5 dBm to -95 dBm
  - Resolution: 0.1 dB
  - Accuracy: ±1 dB to 1GHz; ±2dB > 1 GHz
- RF I/O Port
  - Range: -30 dBm to -130 dBm
  - Resolution: 0.1 dB
  - Accuracy: ±1 dB to 1GHz; ±2dB > 1 GHz

**Spectral Purity**
- Harmonic Spurious: -20 dBc max
- Non-Harmonic Spurious: -35 dBc max
- Residual FM: 20 Hz max, 300 Hz to 3 kHz
- Residual AM: 1.0% max, 300 Hz to 3 kHz
- SSB Phase Noise (20kHz Offset): -75 dBc/Hz

**FM Modulation**
- Deviation Accuracy: 5% of setting
- Deviation Range: 0 to 75 kHz
- Modulation Bandwidth: 5 Hz to 20 kHz

**AM Modulation**
- AM Depth Range: 0 to 90%
- Resolution: 1% of setting
- Modulation Bandwidth: 100 Hz to 10 kHz
- Accuracy: 5% of setting

**Modulation Types**
- 1 kHz Tone
- Private Line
- Digital Private Line
- Single Tone
- DTMF
- External Inputs from microphone and BNC

**Receiver (Transmitter Test)**
- Frequency Range: 250 kHz – 1GHz (3 GHz optional)

**Sensitivity**
- Narrowband FM: 2.0 uV for 10 dB EIA SINAD
- Wideband FM: 10 uV for 10 dB EIA SINAD
- AM: 10 uV for 10 dB EIA SINAD

**RF I/O Port**
- VSWR: < 1.20:1
- Max Power: 50 W for 5 minutes, 150 W for 30 seconds (30 sec. on, 5 min. off)
- Absolute Max Power: 150 W
- Alarm: Internal temperature alarm

**Antenna Port**
- Maximum Power: 0 dBm
- Alarm: +10 dBm

**IF Filters**
- 6.25 kHz, 12.5 kHz, 25 kHz, 60 kHz, 200 kHz

**Frequency Error Measurement**
- Type of Display: Autoranging
- Resolution: 1 Hz

**FM Deviation Measurement**
- Demodulation Range: Up to ±5 kHz in Narrowband
- Accuracy: ±5% plus peak residual FM
- Frequency Response: Selectable per the following:
  - Low Pass Filters: 300 Hz, 3 kHz, 20 kHz
  - High Pass Filters: 5 Hz, 300 Hz, 3 kHz
- Demodulated Output Level: 0.8 V peak per 1 kHz peak deviation in Narrowband and per 10 kHz deviation in Wideband
- Demodulation Output Impedance: 100 ohms nominal
- Deviation Alarm: Audible, set via keypad in 100 Hz increments

**AM Modulation Measurements**
- Demodulation Range: 0 to 100%
- Accuracy: ±5% for levels below 80%
- Frequency Response: Selectable per the following:
  - Low Pass Filters: 300 Hz, 3 kHz, 20 kHz
  - High Pass Filters: 5 Hz, 300 Hz, 3 kHz
- Demodulated Output Level: 0.8 V peak per 10% AM Modulation
- Output Impedance: 100 ohms nominal
- AM Depth Range: 0 to 90%
- Resolution: 1% of setting
- Modulation Bandwidth: 100 Hz to 10 kHz
- Accuracy: 5% of setting

**Receive Signal Strength Level Meter**
- Frequency Range: 250 kHz – 1 GHz (3 GHz optional)
- Accuracy: ±2 dB
- Sensitivity: -120 dBm

**Broadband Power Meter (I/R Port)**
- Frequency Range: 250 kHz – 1 GHz (3 GHz optional)
- Measurement Range: 0.1 W to 150 W
- Input Impedance: 50 Ohms w/ max. VSWR of 1.5:1
- Accuracy: ±10%
- Protection: Over temp alarms

**Frequency Counter**
- Frequency Range: 5 Hz to 100 kHz
- Period Counter Range: 5 Hz to 20 kHz
- Input Level: 0.1 V rms min

**SINAD Meter**
- Accuracy: ±1 dB @ 12 dB SINAD
- Input Level: 0.1 V rms min
### RECEIVER (Transmitter Test) (Cont.)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distortion Meter</td>
<td>1% to 20%</td>
</tr>
<tr>
<td>Distortion Accuracy</td>
<td>The greater of:</td>
</tr>
<tr>
<td></td>
<td>±0.5% of distortion or</td>
</tr>
<tr>
<td></td>
<td>±10% of reading</td>
</tr>
<tr>
<td>Input Level</td>
<td>0.1 V rms min</td>
</tr>
</tbody>
</table>

### Optional Digital Demodulation Meters
- MOTOTRBO™

### Spectrum Analyzer

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweep Range</td>
<td>250 kHz – 1GHz (3 GHz optional)</td>
</tr>
<tr>
<td>Frequency Resolution</td>
<td>1 Hz</td>
</tr>
<tr>
<td>Span Accuracy</td>
<td>5%</td>
</tr>
<tr>
<td>Update Rate</td>
<td>~10 times per second (depending on span)</td>
</tr>
</tbody>
</table>

### Audio Modulation Synthesizer

- **Modulation Types:** 1 kHz tone, Private Line, Digital Private Line, Single Tone, DTMF, Two-Tone Paging, 5/6 Tone Paging, International Select V, 20 Tone General Sequence, Tone Remote Control, External inputs from both a supplied microphone and BNC input.
- **Modulation Output Amplitude Flatness:** 5 Hz to 20 kHz ±1 dB
- **Modulation Output Level:** Programmable to ±8 V peak
- **1 kHz Tone Distortion:** Not to exceed 1% THD
- **Input Impedance:** 600 Ohms

### Specifications (Cont.)

#### Tracking Generator
- **Frequency Range:** 250 kHz – 1GHz (3 GHz optional)

#### Digital Voltmeter (DVM)
- **Input Impedance:** 1 M Ohm
- **Voltage Range:** 1 V, 10 V, 70 V full scale
- **Frequency Range:** 50 Hz to 20 kHz
- **DC Accuracy:** 1% full scale ±1 LSB
- **AC Accuracy:** 5% full scale ±1 LSB

#### Timebase
- **Output Frequency:** 10 MHz
- **Stability:**
  - Aging: ±0.1 ppm / year
  - Temp: ±0.01 ppm
- **Output Level:** Minimum 0 dBm into 50 Ohms
- **Warm Up:** 3 minutes: within ±0.1 ppm

#### Display
- **Front Panel Display**
  - Resolution: 800 x 600
  - Size: 8.4” (21.3 cm) Full Color LCD
- **External Display**
  - VGA

#### Remote Interface (Optional Feature)
- **Remote Front Panel Available over Ethernet**
Ordering Information

<table>
<thead>
<tr>
<th>Item #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R8000A</td>
<td>Communications System Analyzer, 1GHz</td>
</tr>
<tr>
<td>R8000A-Premier</td>
<td>Premier Package, w/ highlighted options (*)</td>
</tr>
</tbody>
</table>

**Accessories included with every unit:**
- Antenna
- Microphone
- Power Cord
- Oscilloscope Probe
- Users Manual CD

**Options**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>*R8-3G</td>
<td>3GHz Operation</td>
</tr>
<tr>
<td>*R8-Remote</td>
<td>Remote Control Software</td>
</tr>
<tr>
<td>*R8-TG</td>
<td>Tracking Generator</td>
</tr>
<tr>
<td>*R8-ESA</td>
<td>Enhanced Spec. An./ Oscilloscope</td>
</tr>
<tr>
<td>*R8-CF</td>
<td>Cable Fault Locator</td>
</tr>
<tr>
<td>*R8-SC</td>
<td>Soft Carrying Case</td>
</tr>
<tr>
<td>R8-TC</td>
<td>Transit Case</td>
</tr>
<tr>
<td>R8-TRBO</td>
<td>MOTOTRBO™ test package</td>
</tr>
<tr>
<td>R8-3Y</td>
<td>Three Year Service Plan</td>
</tr>
<tr>
<td>R8-5Y</td>
<td>Five Year Service Plan</td>
</tr>
</tbody>
</table>

1) Bright 8.4” Color LCD with wide viewing angles
2) User-Friendly, softkey driven operation
3) Tuning Knob for quick and easy changes of numeric entries: Digital precision with an analog feel
4) Off-the-air antenna port for sensitive receiver measurements
5) VGA, Ethernet, Key Loader, and additional USB ports
6) One-touch mode keys take you directly to the instrument you need
7) Escape Key returns user to previous screen for easy navigation
Service, maintenance and technical support

For support on General Dynamics test equipment contact:

**United States:**
General Dynamics SATCOM Technologies, Inc.
3750 W. Loop 281
Longview, TX  75604
Phone: (480) 441-0664

**Canada:**
Navair, Inc.
6375 Dixie Road
Mississauga, Ontario
Canada, L5T2E7
Phone: (800) 668-7440

**Japan and Korea:**
Nextec Japan Ltd.- Nextec High Tech Center
10-8 Mitsuzawanakamachi, Kanagawa Ward
Yokohama City, Japan 221-0851
Phone: +81-45-410-2287

**Australia and New Zealand:**
Australian Support Center
Motorola Australia Pty. Ltd.
10 Wesley Court
Tally Ho Business Park
East Burwood, VIC  3151
Australia
Phone: +61-3-9847-7725

**Asia and the Pacific Rim (excluding Japan), Europe, Latin America, Middle East, and Africa:**
General Dynamics SATCOM Technologies, Inc.
3750 W. Loop 281
Longview, TX  75604
Phone: (480) 441-0664