# R8000B Communications System Analyzer

*The next generation of the world's only portable, full-featured communications analyzer*


General Dynamics is pleased to announce the second generation of its revolutionary R8000 communications system analyzer. The R8000B delivers a previously unimaginable result: a truly portable instrument with more functions than yesterday's bench top analyzers. *And it now offers significantly improved spectral purity*, surpassing that of comparably priced and even much more expensive radio test sets.

The R8000's 14 pound weight gives technicians power and flexibility never before attainable - or currently attainable with any other instrument. This, combined with the unit's feature-packed spectrum analyzer and bright 8.4" color LCD, makes it ideal for taking to sites for infrastructure maintenance and interference measurement.

Firmware upgrades are available free via web download for the life of the unit, and new capabilities are being constantly added - so your R8000B actually becomes more powerful over time! Software and protocol options can also be added directly from the front panel in less than 30 seconds; so it is clear that the R8000B is the most flexible, robust future-proofed radio test set the industry has ever seen. The R8000B will change the way you perform radio service forever.

GENERAL DYNAMICS
SATCOM Technologies

# R8000B Communications System Analyzer

## *The Ultimate Radio Test Set*

### *A Compact and Lightweight Solution*

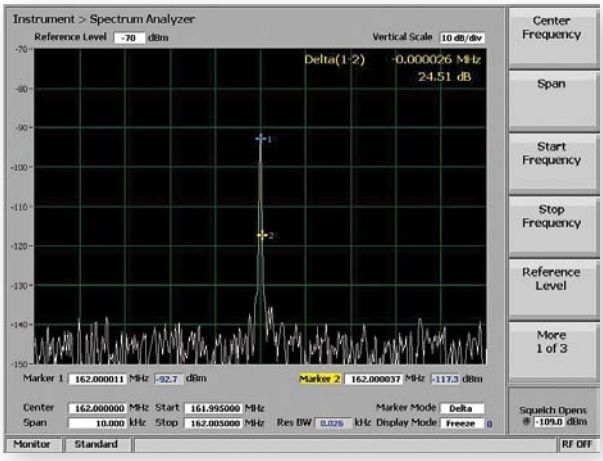
You no longer need to lug multiple pieces of heavy equipment to perform service at remote locations. The R8000 has everything you need in one compact, 14 lb. package! Among the instruments included in the R8000 are:

- **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**
- **Return Loss/VSWR bridge (optional)**
- **DMR (MOTOTRBO™) test mode (optional)**
- **NXDN test mode (optional)**
- **TETRA subscriber test mode (optional)**
- **P25 conventional test mode (optional)**
- **P25 trunking test mode (optional)**

| | |
|---|---|
| **Weight:** | 14 lbs. |
| **Frequency Range:** | 250 kHz to 3 GHz<br>(1 GHz standard, 3 GHz optional) |
| **Size:** | 9.4" high x 12.7" wide x 7.5" deep |
| **Display:** | 8.4" LCD, visible in sunlight,<br>with wide viewing angle |
| **Spec. An. Noise Floor:** | -120 dBm (-140 dBm at narrow spans) |
| **RF Input:** | 50 W 5 Min, 150 W maximum |

### *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 well below -140 dBm at narrow spans, super-fast signal acquisition, 4 markers (2 standard), and an available variable vertical scale down to 1 dB per division, the R8000 is the ideal tool for tracking and measuring elusive interfering signals.




### *Upgradable and Expandable*

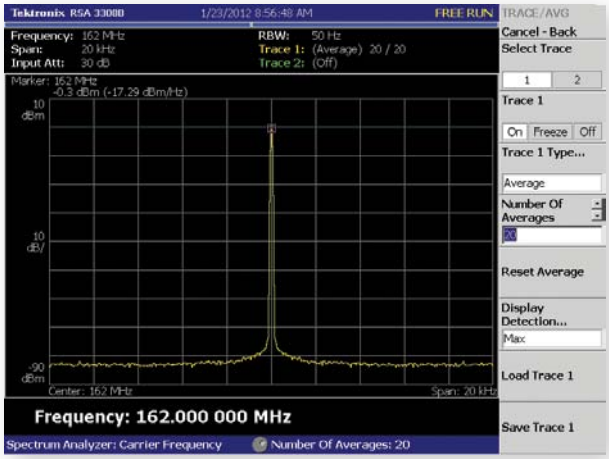
The software-based architecture of the R8000 lets you add software options and upgrades in the field. So if your needs change down the line, simply order the feature or protocol you need and enable it by entering a 16 digit option key using the front panel keypad.

*Firmware upgrades are available on our website free of charge for the life of the unit.*

# The R8000B: Production Grade Performance, Laboratory Grade Specifications, Field Portability

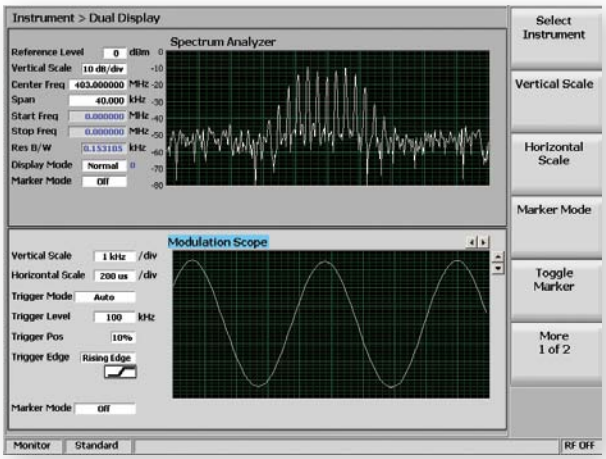
### *Monitor & Control Interface (M&C) & Low Phase Noise for Automated Test and High Performance applications*

The M&C consists of proprietary commands as well as support of IEEE standard equipment ID query for automating manufacturing test processes and procedures. This, along with the exceptional phase noise performance of the R8000B's signal generator, makes it suitable for manufacturing and other high-performance applications, enabling significant reductions in capital costs. *The outstanding purity of the R8000 signal generator can be seen in the spectrum analyzer capture on the right.*



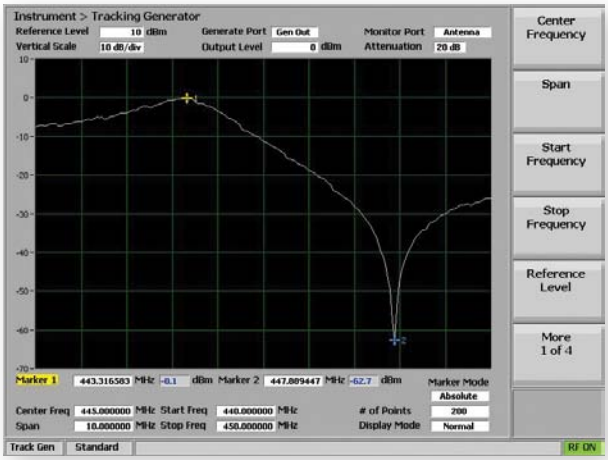

### *"Dual Display" lets you see carrier signal and demodulated audio simultaneously*

Our unique Dual Display allows you to view the RF spectrum analyzer and modulation scope at the same time, giving you the ability to analyze RF characteristics of the carrier signal and recovered audio from the same screen. Complete functionality of each instrument is available in Dual Display mode, and all associated measurements are displayed. With Dual Display, 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! Included with the Enhanced Spectrum Analyzer option R8-ESA.




### *Tracking Generator*

Our Tracking Generator option provides an integrated instrument that sets up the RF Generator in a sweeping mode that is lock stepped with the Spectrum Analyzer. This delivers a valuable capability for measuring and servicing a wide variety of RF filtering and combining networks such as IF filters, Duplexers, etc. A low Spectrum Analyzer noise floor, FFT processing, and a broad selection of customizable display and marker functions assure quick and accurate measurements. Antenna return loss and VSWR measurements can be made with the use of the optional Return Loss Bridge (R8-VSWR).



# Comprehensive P25 test capability in a truly portable unit!

The R8000 is the only portable communications analyzer with a comprehensive suite of APCO P25 diagnostics. The R8000's P25 test functions are fully compliant with the TIA/EIA-102.CAAA measurement standard and include.

- Bit Error Rate (BER) test patterns
- Symbol Deviation
- Modulation Fidelity
- Frequency Error
- Power
- Eye Diagrams

### *BER testing*

All 10 TIA specified test patterns for P25 radio receivers and all 7 TIA test patterns for radio transmitters are measured: 1011 Hz Tone, O.153, Busy, Calibration, Silence, Idle, AFC, Symbol Rate (Rx only), Low Deviation (Rx only), and C4FM Modulation Fidelity (Rx only).

### *P25 signal quality measurements*

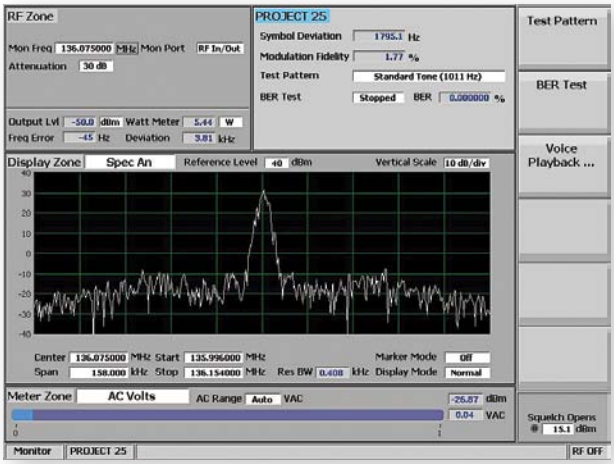
Modulation Fidelity indicates how far a P25 signal is from ideal theoretical modulation. Symbol Deviation is a convenient signal quality metric. A P25 radio with a perfect C4FM modulated signal should measure 1800 Hz. Significant variation from 1800 Hz indicates a potential transmitter problem. Frequency Error displays the difference between a P25 transmission carrier and operator-selected monitor frequency.

### *P25 Trunking*

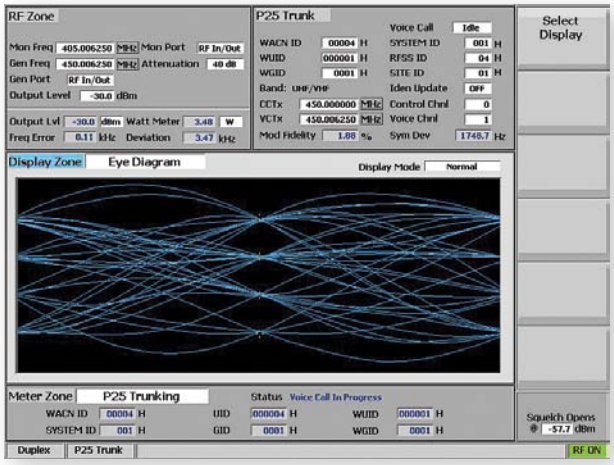
The P25 trunking option enables the R8000 to become a base station emulator and trunking controller. Default Frequency plans for the VHF/UHF, 700 MHz and 800 MHz bands are provided. The user may modify these plans as needed for channel bandwidth, duplex offset and the bands base frequency offering a complete and comprehensive test solution for all P25 trunked systems. Test functions include: *Control Channel Idle, Registration Request, Registration Grant, Traffic Channel Request/ Grant, Voice Channel audio paths, including encryption if fitted, with Voice Loopback, Incoming call alert tone, and Voice call (1011Hz Tone).*

### *Patented Voice Loop*

The R8000's patented Voice Loop feature (U.S. patent 5703479) allows quick confirmation that P25 audio is being properly encoded and decoded by a subscriber unit. The user simply keys the radio and records up to 10 seconds of audio. When the radio is unkeyed, the R8000 automatically returns the recorded audio, which can then be heard over the radio's speaker. Recordings can be replayed as many times as needed.




**Comprehensive P25 Signal Quality Analysis**




**P25 Trunking with Eye Diagram**

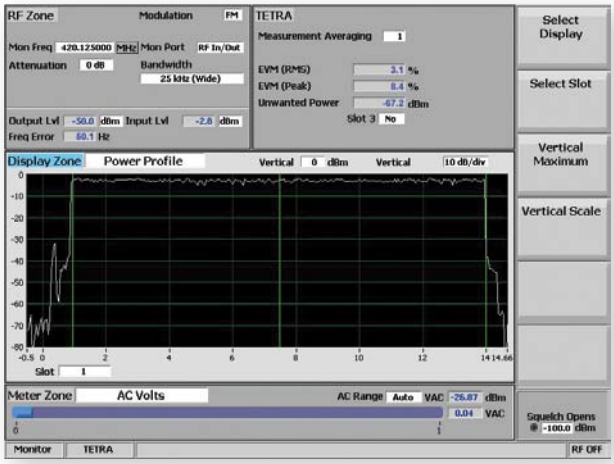
# TETRA

The TETRA option allows quick RF performance testing of TETRA radios with a Direct Mode Operation (DMO) channel. Modulation performance can be evaluated using Error Vector Magnitude (EVM) measurements and viewing a constellation display. Receiver performance can be tested using a 1000Hz test pattern.

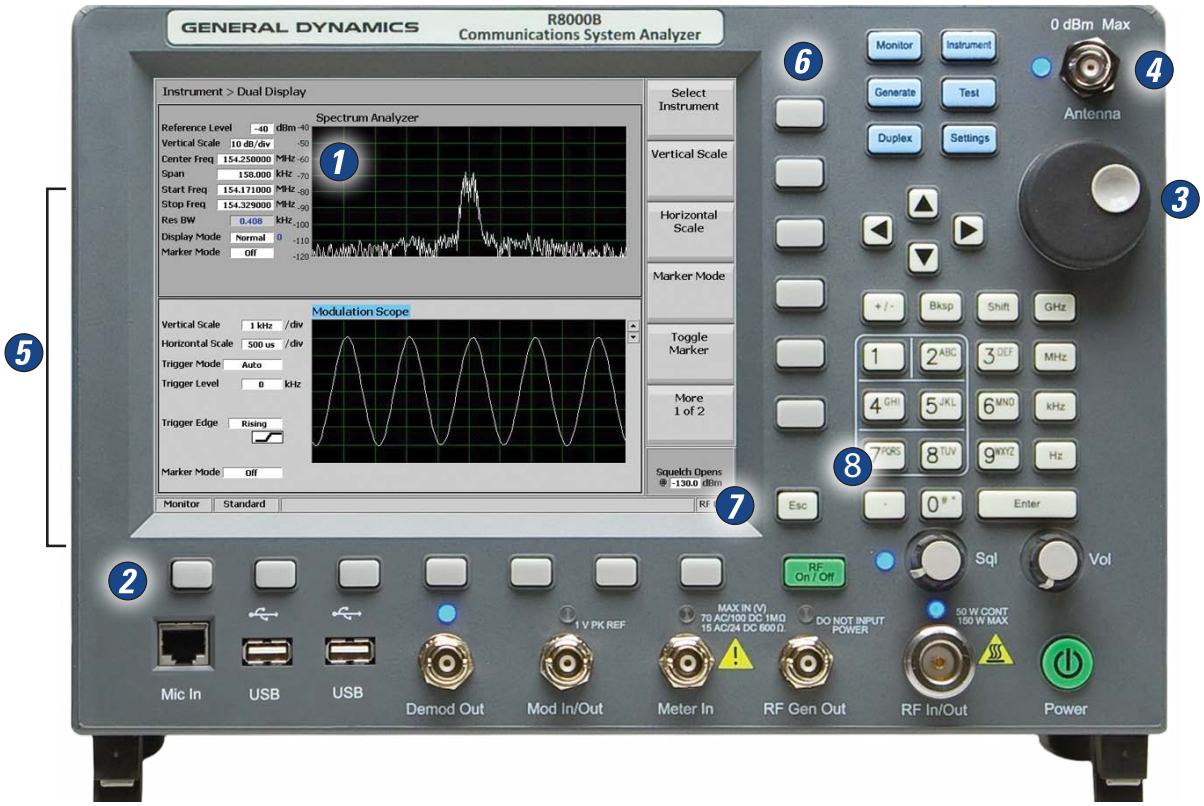
Radios can be verified to operate on channel and within timing and power requirements with measurement of:

- Carrier Frequency Offset
- Power Profile
- Unwanted Power
- Modulation Spectrum

***The R8000 communications analyzer is the worlds only portable full-featured radio test set with the ability to test TETRA, APCO P25, DMR, NXDN and analog radios across the entire RF spectrum from 250 kHz to 3 GHz!***




**TETRA Power Profile**




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*
8) *Hot Keys for quick navigation from screen to screen*

# Digital Narrowband: DMR and NXDN Test Options

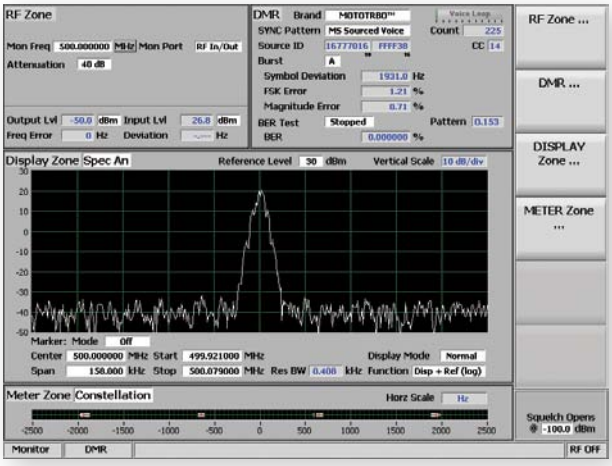
The migration to 6.25 kHz channel equivalency is moving faster and faster. The R8000 gives you the capability of maintaining radios and radio infrastructure for both major digital narrowband technologies: DMR and NXDN.

The R8000 features a Test option that allows testing of radios compliant with the ETSI Digital Mobile Radio (DMR) standard. The unit measures Bit Error Rate (BER) for all DMR specified test patterns, as well as RF input power and frequency error in both digital and analog modes. The R8000 fully supports MOTOTRBO™ Professional Digital Two-Way Radio System (Motorola's DMR implementation) using test procedures specified by Motorola engineers.

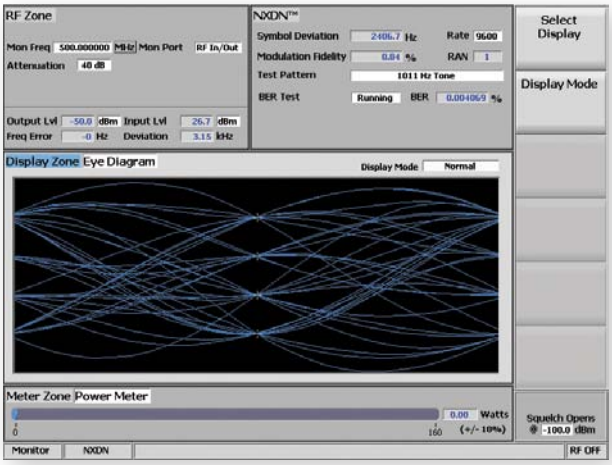
The R8000 NXDN mode provides a suite of test functions fully compliant with the Conformance Test section of the NXDN Common Air Interface (CAI) standard. These include Symbol Deviation, Modulation Fidelity, BER, Frequency Error, and Power. This option also features the Voice Loopback feature used in the P25 option to provide audio verification of the radio's end-to-end operation.

NXDN "Type C" trunking test capability is also available in the R8000. The trunking option emulates an NXDN trunking base station, allowing the user to test signal quality parameters such as power and frequency error and measure receiver sensitivity and audio quality as well.

The R8000 offers a radio service solution that was unimaginable just a few years ago: a multi-purpose communications analyzer with the performance of expensive stand-alone instruments, weighing just 14 pounds. It now adds to this powerful package the ability to test NXDN, DMR and P25 radios, making it the only sensible choice for today's radio service environment. And if your needs change tomorrow? No problem. The R8000's revolutionary, software-based architecture lets you can add protocols and other options in a matter of seconds!




**DMR Test Suite: Signal Quality Metrics and Constellation Display**




**NXDN Test Suite: Signal Quality Metrics and Eye Diagram**

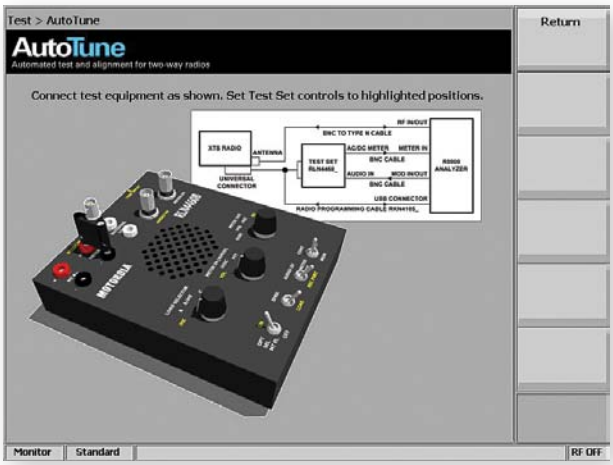
*The R8000 from General Dynamics: Comprehensive, state-of-the-art digital narrowband test capability in a portable software-defined analyzer.*

# AutoTune™ Automated Radio Test and Alignment

The R8000's AutoTune option performs all recommended factory test and alignment procedures in a fraction of the time needed to perform them manually. Just select your radio model and connect as shown on the R8000, choose the tests and alignments you wish to perform, then enter your operator ID and press the "start button."

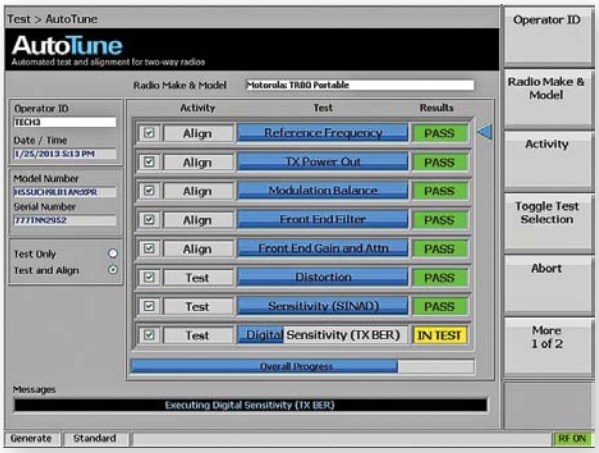
### *Benefits:*

- Test time reduced by over 80%
- Consistent manufacturer specified alignments among radios
- Accurate and repeatable test results
- Comprehensive test reports show before & after readings, time, date and operator identification
- Pass/Fail indicators flag radio defects
- Little or no technical expertise required
- Results are stored on the R8000 and can be exported to a USB drive for analysis with PC spreadsheet software




**R8000 XTS AutoTune Setup Diagram**

The R8000 automatically reads key radio information such as model number and serial number, and makes the measurements and alignments needed to bring the radio within factory specifications. Within minutes you have a complete record of your test session stored on the R8000 in comma delimited form for quick and easy recall. Over time you will build a complete test history for every radio – ideal for large fleets with formal Preventative Maintenance programs. Test reports can be conveniently viewed on the R8000 or exported for further analysis using spreadsheets and other data manipulation programs.




**MOTOTRBO AutoTune Status Screen**

***Reduces radio test and alignment time from an hour or more to 10 - 12 minutes!***

## Tests and Alignments Performed:

**Transmitter Tests**

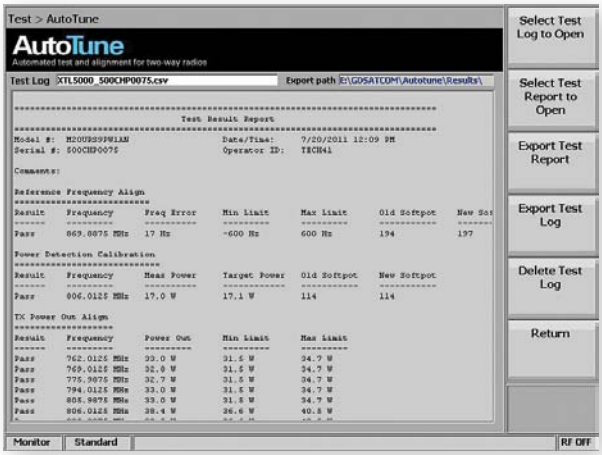
- Bit Error Rate (BER)
- Reference Frequency
- RF Output Power

**Alignments**

- Reference Oscillator
- Transmit Deviation Balance
- Transmit Deviation Limit
- Transmit Power Level

**Receiver Tests**

- Rated Audio
- Distortion
- SINAD Sensitivity
- Noise squelch
- Voice Modulation




**XTL5000 AutoTune Test Report**

## R8000 AutoTune is now available for:

- **Motorola TRBO Mobiles & Portables**
- **Motorola XTL Series Mobiles**
- **Motorola XTS2500/5000 Portables**
- **Motorola APX Mobiles & Portables**

# Specifications

## OPERATING/DISPLAY MODES

| | |
|---|---|
| AM/FM Monitor | Spectrum Analyzer |
| AM/FM Generator | Frequency Counter |
| AM Modulation Meter | Frequency Error Meter |
| FM Deviation Meter | Digital Voltmeter |
| Audio Synthesizer | Power Meter |
| Duplex Generator | Oscilloscope |
| Tracking Generator (Opt.) | Signal Strength Meter |
| Dual Display (Opt.) | SINAD/Distortion Meter |
| Cable Fault Locator (Opt.) | |

## GENERAL

| | |
|---|---|
| **Displayed Average Noise Level (DANL):** | -140 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:** | 24 VDC @ 5.0 A max |
| **AC Adapter Specs:** | 100-240 VAC, 2.5 A max, 50-60 Hz |
| **Battery Power:** | Optional External Battery |
| **Battery Operation:** | 1 hour minimum |
| **MECHANICAL / ENVIRONMENTAL** | |
| **Weight:** | <14 lbs (6.4 kg) |
| **Dimensions:** | 9.4" (23.9 cm) H, 12.7" (32.3 cm) W, 7.5" (19.1 cm) D |
| **Operating Altitude:** | Up to 10,000 ft (3048 m) |
| **Humidity:** | 80% maximum relative humidity |
| **Operating Temperature:** | 0° to 50° C |
| **Storage Temperature:** | -30° to +80° C |
| **WARRANTY** | |
| **Standard Warranty:** | One year |
| **Three Year Service Plan:** | Optional |
| **Five Year Service Plan:** | Optional |

## GENERATOR (Receiver Test)

| | |
|---|---|
| **Port Protection Limit:** | 5W 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 FM:** | +5 dBm to -95 dBm below 2 GHz<br>-5 dBm to -95 dBm above 2 GHz |
| **Range AM:** | -1 dBm to -95 dBm below 2 GHz<br>-11 dBm to -95 dBm above 2 GHz |
| **Resolution:** | 0.1 dB |
| **Accuracy:** | ±2 dB |
| **OUTPUT LEVEL RF I/O PORT** | |
| **Range FM:** | -30 dBm to -130 dBm below 2 GHz<br>-40 dBm to -130 dBm above 2 GHz |
| **Range AM:** | -36 dBm to -130 dBm below 2 GHz<br>-46 dBm to -130 dBm above 2 GHz |
| **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:** | 4 Hz, 300 Hz to 3 kHz (< 1 GHz)<br>5 Hz, 300 Hz to 3 kHz (> 1 GHz) |
| **Residual AM:** | 1.0% max, 300 Hz to 3 kHz |
| **SSB Phase Noise (20 kHz Offset):** | -95 dBc/Hz max below 1 GHz (15° to 35° C)<br>-93 dBc/Hz max all frequencies (0° to 50° C) |
| **FM MODULATION** | |
| **Deviation Accuracy:** | 5% of setting |
| **Deviation Range:** | 0 to 75 kHz |
| **Deviation Resolution:** | 10 Hz |
| **Modulation Bandwidth:** | 5 Hz to 20 kHz |

## GENERATOR (Receiver Test) (Cont.)

| | |
|---|---|
| **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 (w/ DPL Invert), Single Tone, DTMF, Two-Tone Paging, 5/6 Tone Paging, POCSAG, External Inputs from both a supplied microphone and BNC input. |

## RECEIVER (Transmitter Test)

| | |
|---|---|
| **Frequency Range:** | 250 kHz – 1 GHz (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:** | < 1.2 to 2 GHz, ≤ 1.5 to 3 GHz |
| **Max Power:** | 50 W for 5 minutes<br>150 W for 30 seconds<br>(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,<br>50 kHz, 100 kHz, 200 kHz |
| **FREQUENCY ERROR MEASUREMENT** | |
| **Type of Display:** | Autoranging |
| **Resolution:** | 1 Hz |
| **FM DEVIATION MEASUREMENT** | |
| **Demodulation Range:** | Up to ±75 kHz |
| **Accuracy:** | ±5% plus residual FM |
| **Frequency Response:** | Selectable per the following:<br>Low Pass Filters: 300 Hz, 3 kHz, 20 kHz<br>High Pass Filters: 1 Hz, 300 Hz, 3 kHz |
| **Demodulation Output Level:** | 6.25 kHz B/W: 2.56V / 1 kHz<br>12.5 kHz B/W: 1.28V / 1 kHz<br>25 kHz B/W: 0.64V / 1 kHz<br>50 kHz B/W: 0.32V / 1 kHz<br>100 kHz B/W: 1.6V / 10 kHz<br>200 kHz B/W: 0.8V / 10 kHz |
| **Demodulation Output Amplitude Flatness:** | ±0.2 dB (300 Hz to 3 kHz), 1 dB point @ 20 kHz |
| **Demodulation Output Impedance:** | 100 ohms nominal |
| **AM MODULATION MEASUREMENTS** | |
| **Demodulation Range:** | 0 to 100% |
| **Accuracy:** | ±5% for levels below 80% |
| **Frequency Response:** | Selectable per the following:<br>Low Pass Filters: 300 Hz, 3kHz, 20kHz<br>High Pass Filters: 1 Hz, 300 Hz, 3 kHz |
| **Demodulation Output Level:** | 0.8 V peak per 10% AM Modulation |
| **Demodulation Ouput Amplitude Flatness:** | ±0.2 dB (300 Hz to 3 kHz), 1 dB point @ 20 kHz |
| **Output Impedance:** | 100 ohms nominal |
| **RECEIVE SIGNAL STRENGTH LEVEL METER** | |
| **Frequency Range:** | 250 kHz – 1 GHz (3 GHz optional) |
| **Accuracy:** | ±2 dB |
| **Sensitivity:** | -120 dBm<br>(Antenna Port; Preamplifier on; 6.25 kHz IF B/W) |

# Specifications (Cont.)

## RECEIVER (Transmitter Test) (Cont.)

| | |
|---|---|
| **BROADBAND POWER METER (RF In/Out 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% (250 kHz - 1 GHz);<br>±10% (1 GHz - 3 GHz < 2.5W) |
| **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 |
| **DISTORTION METER** | |
| **Range:** | 1% to 20% |
| **Distortion Accuracy:** | The greater of:<br>±0.5% of distortion or<br>±10% of reading |
| **Input Level:** | 0.1 V rms min |
| **OPTIONAL DIGITAL DEMODULATION MODES** | DMR (MOTOTRBO™), NXDN, P25, TETRA |

## SPECTRUM ANALYZER

| | |
|---|---|
| **SWEEP** | |
| **Frequency Range:** | 250 kHz – 1GHz (3 GHz optional) |
| **Frequency Resolution:** | 1 Hz |
| **Span Accuracy:** | 5% |
| **Update Rate:** | ~10 times per second (depending on span) |
| **AMPLITUDE** | |
| **Level Accuracy:** | ±2 dB |
| **Scales (dB/div):** | 10 (1, 2, & 5 w/ ESA option) |
| **Log Linearity Accuracy:** | < 0.1 dB |
| **Reference Level Resolution:** | 1 dB |
| **Reference Level Range:** | +60 to -70 dB |
| **Antenna Port Dynamic Range:** | 80 dB |
| **T/R Port Dynamic Range:** | 80 dB |
| **Typical Noise Floor Performance:** | -140 dBm |
| **SSB Phase Noise (20 kHz Offset):** | -95 dBc/Hz max below 1 GHz (15° to 35° C)<br>-93 dBc/Hz max all frequencies (0° to 50° C) |
| **Resolution Bandwidth** | Auto Selected |
| **Harmonic Spurious (Antenna Port, No Attenuation):** | -20 dBc max |
| **Non-Harmonic Spurious (Antenna Port, No Attenuation):** | -60 dBc max |
| **Residual Spurious (Input Terminated):** | -70 dBm |
| **Markers:** | Delta, Absolute Level, and Frequency |
| **Modes:** | Standard, Average, Freeze, Max Hold, and Peak Hold |

## OSCILLOSCOPE

| | |
|---|---|
| **VERTICAL INPUT** | |
| **Input Impedance:** | 1 Meg Ohm / 600 Ohm (Selectable) |
| **Range:** | ±100 VDC, ±70 Vrms AC |
| **Accuracy:** | 5% of full scale |
| **Bandwidth:** | 0 to 50 kHz |
| **HORIZONTAL SWEEP** | |
| **Range:** | 20 uSec to 1 Sec / div. (Selectable) |
| **TRIGGER SELECTION** | Normal, Auto (Free Running), Single Sweep |

## OSCILLOSCOPE (Cont.)

| | |
|---|---|
| **SPECIAL FUNCTIONS** | |
| **Markers:** | Delta Voltage, Delta Frequency, Delta Period |

## AUDIO MODULATION SYNTHESIZER

| | |
|---|---|
| **Modulation Types:** | 1 kHz tone, Private Line, Digital Private Line (w/ DPL Invert), Single Tone, DTMF, Two-Tone Paging, 5/6 Tone Paging, POCSAG, A&B Independent Synths., EURO Tones, User Defined Tone Sequences, and External inputs from both a supplied micro-phone and BNC input. |
| **Modulation Ouput Level:** | Programmable to ±8 V peak |
| **Amplitude Flatness:** | ±0.2 dB (300 Hz to 3 kHz), 1 dB point @ 20 kHz |
| **1 kHz Tone Distortion:** | Not to exceed 1% THD |
| **Impedance:** | 100 Ohms |
| **External Modulation Input Level:** | ±1 V peak reference |
| **Amplitude Flatness:** | ±0.2 dB (300 Hz to 3 kHz), 1 dB point @ 20 kHz |
| **Impedance:** | 600 Ohms |
| **External Microphone Input Amplitude Flatness:** | ±0.2 dB (300 Hz to 3 kHz), 1 dB point @ 20 kHz |

## TRACKING GENERATOR

| | |
|---|---|
| **Frequency Range:** | 250 kHz – 1GHz (3 GHz optional) |

## DIGITAL VOLTMETER (DVM)

| | |
|---|---|
| **Input Impedance:** | 1 Meg Ohm / 600 Ohm (Selectable) |
| **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<br>Temp.: ±0.01 ppm |
| **Output Level:** | Minimum 0 dBm into 50 Ohms |
| **Warm Up:** | 3 minutes: within ±0.1 ppm |

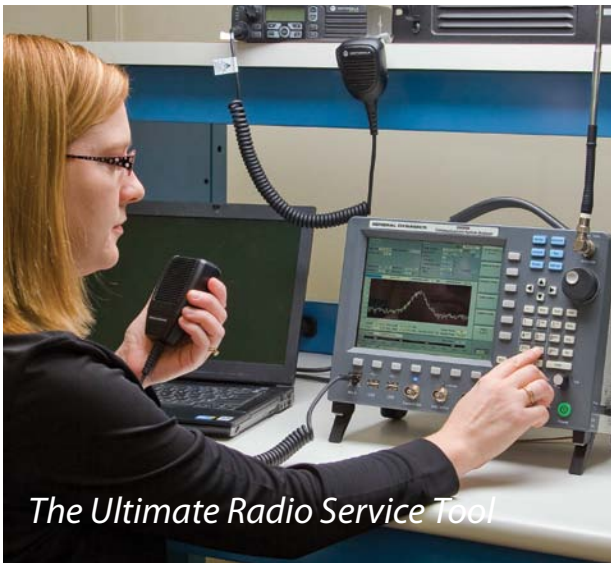
## DISPLAY

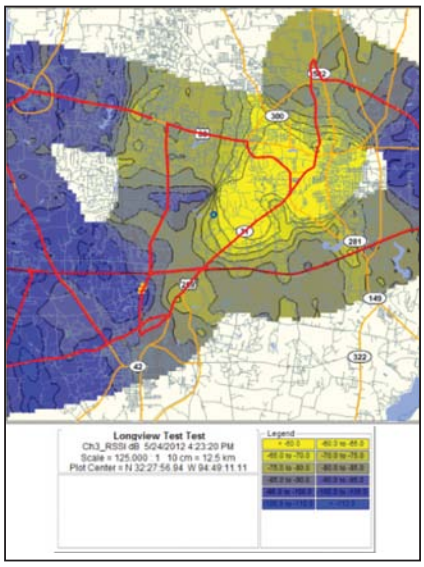
| | |
|---|---|
| **FRONT PANEL DISPLAY** | |
| **Resolution:** | 800 x 600 |
| **Size:** | 8.4" (21.3 cm) Full Color LCD |
| **EXTERNAL DISPLAY** | VGA |

## REMOTE INTERFACE (Optional Feature)

| | |
|---|---|
| **Remote Front Panel** | Available over Ethernet |

# R8000 Premier Packages | Coverage Mapping Option



**Sample Blended Coverage Map**

## The R8000B *PREMIER PACKAGES* are the best values in LMR test equipment.

Both packages include the following options:

- **Tracking Generator** – A must for tuning cavities, duplexers and filters
- **Enhanced Spectrum Analyzer** – Includes our proprietary DualScope display which shows the carrier signal and modulation scope simultaneously
- **Remote Front Panel** – Operates all functions from a networked PC
- **Cable Fault Locator**
- **Soft Carrying Case**

The packages differ only in frequency capability and service coverage. The 3GHz package features operation of all features to 3GHz with a 1 year service plan. The 1GHz package features a 3 year plan.

With the R8000B, you have a test set that is not only state-of-the-art, but state-of-tomorrow's-art. We continue to add capabilities with frequent firmware releases, all of which are available on our web site ***free for the life of the unit.***

And if you find yourself needing an option or protocol you didn't originally obtain? Just order the feature you need, enter the installation key, and in seconds you have your new capability.

### *The R8000: The World's Most Future-Proofed Radio Test Set*

## Coverage Mapping

General Dynamics now offers a coverage mapping software package for use with its R8000 Communications Systems Analyzer. This new 'Drive-Test' software, developed for General Dynamics by Survey Technologies, Inc., is a customized version of the company's successful "Field Test 7" product, widely considered the industry standard for two-way radio system coverage mapping.

The FT7 translates thousands of signal measurements into highly customizable contour plots and critical signal strength data which can be exported as an Excel file or as comma or tab delimited data files for subsequent analysis. The maps and data files provide baseline information for analysis of two-way radio communication system coverage and performance; new transmission site setup and maintenance. The package includes:

- **STI enhanced 'Field Test 7' Software** - Including "tile analysis" software and indoor measurement capability
- **GPS receiver/antenna**
- **Street map data for the U.S. and Canada**
- **R8000 software driver**
- **1 year STI service and support**

# Ordering Information

| Model | Description |
|---|---|
| R8000B | Communications System Analyzer, 1 GHz |
| R8000B-1GHz Premier | 1 GHz Premier Package, w/ highlighted options |
| R8000B-3GHz Premier | 3 GHz Premier Package, w/ highlighted options |

***NOTE:*** *In Canada, packages do not include service plans or soft cases.*

## Options & Accessories

| Part Number | Description | R8000B | R8000B-1GHz Premier | R8000B-3GHz Premier |
|---|---|---|---|---|
| R8-Remote | Remote Front Panel | OPTIONAL | ✓ | ✓ |
| R8-TG | Tracking Generator | OPTIONAL | ✓ | ✓ |
| R8-ESA | Enhanced Spectrum Analyzer | OPTIONAL | ✓ | ✓ |
| R8-CF | Cable Fault Locator | OPTIONAL | ✓ | ✓ |
| R8-SC | Soft Carry Case | OPTIONAL | ✓ | ✓ |
| R8-3G | 3 GHz Operation | OPTIONAL | OPTIONAL | ✓ |
| R8-3Y | Three Year Service Plan | OPTIONAL | ✓ | OPTIONAL |
| R8-5Y | Five Year Service Plan | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-DMR | DMR (MOTOTRBO™) Test | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-DPMR | dPMR Test | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-AT_TRBO | AutoTune for MOTOTRBO Mobiles and Portables | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-NXDN | NXDN Test | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-NXDNTYPC | NXDN "Type C" Trunking Test (Requires R8-NXDN) | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-P25 | APCO Project 25 | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-P25TRNK | APCO Project 25 Trunking Test (Requires R8-P25) | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-TETRA | TETRA Subscriber Test | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-AT_XTL | AutoTune for Motorola XTL Series Mobile Radios | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-AT_KWNX | AutoTune for Kenwood NX Series Radios | OPTIONAL | OPTIONAL | OPTIONAL |
| 202161-01 | Audio Breakout Box for XTL Radios | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-AT_XTS | AutoTune for Motorola XTS2500/XTS5000 Portable Radios | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-AT_APX | AutoTune for Motorola APX Mobiles and Portables | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-HC | Protective "Glove Case" | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-TC | Transit Case with Foam Molding for R8000 | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-TSC | Transit Case with Foam Molding for Soft Carry Case R8-SC | OPTIONAL | OPTIONAL | OPTIONAL |
| 202907-01 | Li-Ion Battery Kit, 24V | OPTIONAL | OPTIONAL | OPTIONAL |
| 202908-01 | Li-Ion Battery Kit, 24V, CE & C-Tick Approved | OPTIONAL | OPTIONAL | OPTIONAL |
| 01-80302E82 | Isolation Transformer for Baseband Output (600 Ω) | OPTIONAL | OPTIONAL | OPTIONAL |
| 01-80302E83 | Isolation Transformer for Meter Input (600 Ω) | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-VSWR | Antenna Return Loss Bridge Kit | OPTIONAL | OPTIONAL | OPTIONAL |
| R8-FT7 | "Field Test 7" Coverage Mapping Package | OPTIONAL | OPTIONAL | OPTIONAL |

✓ = Included

**Accessories included with every unit:**

- Antenna
- Microphone
- Oscilloscope Probe
- Power Cord
- Users manual CD
- 24V to 12V Converter

**Additional accessories sold separately:**

R8-HC Protective Glove Case

R8-VSWR Bridge Kit

# 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: (903) 381-4156
E-mail: LV_CustomerService@gdsatcom.com

***Canada:***
Navair Technologies
6375 Dixie Road
Mississauga, Ontario
Canada, L5T2E7
Phone: (800) 668-7440
E-mail: Service@navair.com

***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 Solutions
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: (903) 381-4156
E-mail: LV_CustomerService@gdsatcom.com

Complies With
UL 61010-1
CSA C22.2 No. 61010-1

ISO 9001:2008 CERTIFIED



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