

R2660 iDEN™ Digital Communications System Analyzer

Addendum to the "R2600 Series Communications System Analyzers"



The R2660 Supports iDEN TDMA Radio Systems

Whether you're testing subscriber units or site equipment, the R2660 offers the unique capability to test iDEN systems under actual TDMA operating conditions in either 6:1 or 3:1 format. Comprehensive diagnostic capabilities are provided to facilitate fault isolation and repair. In addition, the unit also provides dedicated screen displays for convenient observation or printout; innovative use of soft keys and windowing; fast reacting autoranging scales with both analog and digital readouts; and signaling encode and decode functions – all built into a versatile, rugged, and compact test unit designed specifically to meet the tough demands of the field service environment.

In iDEN mode, the R2660 provides the following special measurement features:

- Average power meter
- Frequency error meter
- SQE (Signal Quality Estimate)
- BER (Bit Error Rate)

In addition to offering all the standard system features, the R2660 also includes several high performance features for testing more sophisticated systems.

R2660 Standard System Capabilities

iDEN-Specific Test Capabilities

- Supports both 6:1 and 3:1 TDMA format
- Subscriber unit testing in dynamic call simulation mode including vocoder for live voice testing
- Subscriber unit testing in test mode
- Base site transmitter testing under operating conditions
- Base site receiver BER testing

General Diagnostic Features

- Tracking generator
- Cable fault locator
- High stability oscillator
- Enhanced spectrum analyzer with markers
- Test memory presets

iDEN Subscriber Unit Testing

Feature	Description	Benefits
---------	-------------	----------

Dynamic Call Simulation Mode



Test iDEN mobile and portable radio units under actual signaling conditions by simulating the function of the fixed-end system. The radio accesses the control channel, performs initial registration, and is directed to a traffic channel where parametric measurements and voice tests can be performed. This radio-initiated test uses either the phone interconnect or dispatch call modes. While the call is in process, the unit measures the average power and SQE. It also provides simultaneous display of thermometer call status and decoded radio data.

You can now verify basic functionality without using valuable air time for testing. This feature enables you to test in areas that are beyond the range of an actual system while also providing a more comprehensive measurement of radio performance. This ensures successful operation within the specification limits under all conditions.



Radio-compatible vocoder in both the generate and receive modes allows actual voice testing.

You can verify radio performance under actual voice conditions, providing you with absolute confidence in overall radio performance.



The R2660 has the ability to exit the dedicated iDEN test screens to use other standard diagnostic capabilities such as spectrum analyzer, meters, etc., while still maintaining an active call.

This feature provides you with the capability to diagnose specific problems to facilitate repair.

Test Mode



With the subscriber radio in test mode, the R2660 provides the capability to measure the performance of the transmitter. The unit measures the following parameters under TDMA modulating conditions: BER, over selectable time intervals; output power, averaged during selectable measurement intervals; frequency; and SQE. Results can be presented in a real-time display or in a table of the eight most recent readings of BER, frequency and SQE. A dedicated screen exists for average power measurements.

Test mode allows you to perform quantitative testing of the subscriber unit's transmitter under actual TDMA conditions to aid in the diagnosis of problems and ensure proper system performance.

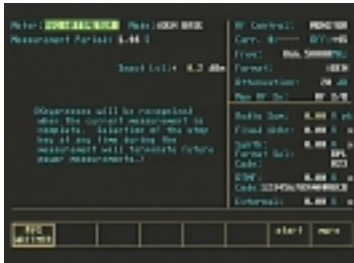



With the subscriber radio in test mode, the R2660 generates a BER pattern to test the sensitivity and demodulator performance.

This feature allows you to perform quantitative testing of the radio's receiver under actual TDMA conditions to aid in the diagnosis of problems and ensure proper system performance of the radio.



iDEN Fixed Site Testing

Feature	Description	Benefits
Base Site Transmitter Testing 	<p>The R2660 measures average power level, frequency, and SQE under actual operating conditions. A dedicated screen is provided for average power measurements with a selectable averaging interval. SQE provides a quantitative indication of modulation quality.</p>	<p>This feature allows you to monitor performance under traffic conditions without powering down the channel. It can also be done with the transmitter in an off-line test mode.</p>

Base Receiver BER Test 	<p>With the base receiver in its test mode, the R2660 will generate a carrier modulated with a standard bit pattern in order to perform a receiver bit error rate (BER) test. This can test the receiver's sensitivity as well as its demodulator performance.</p>	<p>This feature provides quantitative testing under actual TDMA conditions to aid in the measurement of receiver sensitivity and demodulator performance.</p>
--	--	---

Specifications

These specifications are in addition to the standard R2600 series

iDEN TESTS		FREQUENCY ERROR RANGE	
FORMATS SUPPORTED iDEN 6:1: Subscriber dynamic call testing in dispatch and interconnect modes; live site monitoring, test mode iDEN 3:1: Subscriber dynamic call testing in interconnect mode DJSMR: Test mode only DMCA: Test mode only	DYNAMIC CALL TEST MODE: <ul style="list-style-type: none"> • Simulates system to test subscriber radios under actual operating condition • Tests control channel access, registration and traffic channel access • Tests dispatch in 6:1 mode • Tests interconnect calls in either 3:1 or 6:1 mode • Vocoder provides live voice testing of both transmitter and receiver • Access is provided to diagnostic measurement capabilities during live calling conditions • Supports user specification of PLMN codes 	Monitoring Test mode: < ±400 Hz Monitoring Live Base Site Radio: < ±1800 Hz	SQE MEASUREMENT SPECIFICATIONS Resolution: 0.1 dB Range: 0 to 99.9 dBm BER Test Mode: (BER Specifications are for predefined data sequence. Percentages are averaged over 960 slots). Generator BER Floor Gen Port Range: Gen BER <0.01% for levels -19.9 to -10 dBm Gen BER <0.005% for levels -80 to -20 dBm RF I/O Port Range: Gen BER <0.005% for levels -130 to -70 dBm Generator BER Duty Cycle Selection: Subscriber 1/6 Site 1/6, 4/4, 6/6
AVERAGE WATTMETER PERFORMANCE Range: 0.5 W to 125 W _{peak} Accuracy: ±15% Period Selection Range: 90 mS to 4.32 mS Increment: 90 S	MONITOR BER MEASUREMENT SPECIFICATIONS (for Predefined Data Sequence) Input Duty Cycle Selections: Subscriber 1/6 Slot Number Selections: 4, 16, 80, 960 BER Measurement Floor: .005%	Output Ports: Baseband I & Q output Slot sync output	

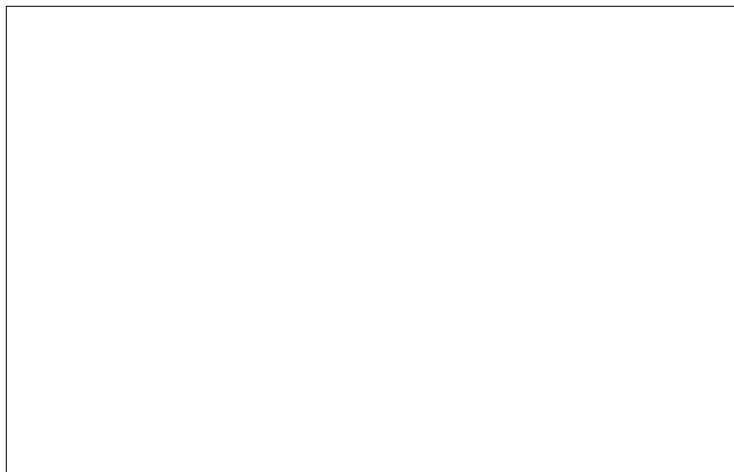
Model Nomenclature

<u>DESCRIPTION</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>
Communications System Analyzer w/iDEN Digital Capability	R2660D	<i>OPTIONAL ACCESSORIES:</i> Battery Pack	RPN4000A
Factory installed options: IEEE 488.2	RLN4329A	Canvas Case	1580357B77
<i>ACCESSORIES SUPPLIED:</i> Microphone	HMN1056D	Transit Case	A001
Power Cord	3080397A62	Transit Case with Wheels	A002
Telescoping Antenna	RTA4000A	RF Detector (50 Ohm Termination)	5880345B96
Signal Generator Termination (50 ohm)	5880386B73	Programming Reference Manual (RS-232 & IEEE)	6880309E55
Oscilloscope Probe	RTL4011A	Service Manual on CD	RLN5237A
BNC to N Adapter	5884300A98		
DC Power Connector Kit	RPX4097A		
Spare RF Fuses	GG6530277C002		
R-2660 Operator's Manual	6880309F16		
RF Detector Probe	RLN4748A		
BNC RF "T"	0982578B01		

Service, maintenance and technical support

For support on your General Dynamics test equipment in the U.S. contact:
Motorola Test Equipment Service Center, 2216 Galvin Drive, Elgin, Illinois 60123
1-800-323-6967

Service is also available in many areas other than the U.S. Please contact your local
General Dynamics sales or service representative for the facility nearest you.



All trademarks indicated as such herein are trademarks of General Dynamics © Reg. U.S. Pat. & Tm. Off. All other product or service names are the property of their respective owners. © 2002 General Dynamics. All rights reserved. General Dynamics reserves the right to make changes in its products and specifications at any time and without notice.

GENERAL DYNAMICS

8201 E. McDowell Road Scottsdale, AZ 85252 • Please call the General Dynamics representative in your area for assistance with product information, pricing and orders. In the United States • Telephone: 877-449-0600 (Toll Free) • FAX: 480-441-4535
Web Site: www.gd-decisionssystem.com/cte