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

GENERAL DYNAMICS
C4 Systems
### Dynamic Call Simulation Mode

**Feature Description**
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.

**Benefits**
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.

**Image**
![Dynamic Call Simulation Mode](image1.png)

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

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

**Image**
![Radio-compatible vocoder](image2.png)

### Test Mode

**Feature Description**
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.

**Benefits**
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.

**Image**
![Test Mode](image3.png)

### 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.

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

**Image**
![The R2660](image4.png)

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

**Benefits**
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.

**Image**
![With the subscriber radio in test mode](image5.png)
## Specifications

These specifications are in addition to the standard R2600 series
For R2600 series specifications, consult brochure #5474-550

### Dynamic Call Test Mode:
- 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

### Frequency Error

<table>
<thead>
<tr>
<th>Description</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring Test mode:</td>
<td>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.</td>
</tr>
<tr>
<td>Monitoring Live Base Site Radio:</td>
<td>&lt; ±400 Hz</td>
</tr>
</tbody>
</table>

### 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).

<table>
<thead>
<tr>
<th>Generator BER Floor Range</th>
<th>Gen BER &lt;0.01% for levels -19.9 to -10 dBm</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF I/O Port Range</td>
<td>Gen BER &lt;0.005% for levels -80 to -20 dBm</td>
</tr>
</tbody>
</table>

### Monitor BER Measurement Specifications

- Input Duty Cycle Selection: Subscriber 1/6, Site 1/6, 4/4, 6/6
- Slot Number Selections: 4, 16, 80, 960
- BER Measurement Floor: .005%
- Output Ports: Baseband I & Q output, Slot sync output

### Average Wattmeter Performance

<table>
<thead>
<tr>
<th>Description</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range: 0.5 W to 125 Wpeak</td>
<td>±15%</td>
</tr>
<tr>
<td>Accuracy:</td>
<td>±15%</td>
</tr>
<tr>
<td>Period Selection Range:</td>
<td>90 mS to 4.32 mS</td>
</tr>
<tr>
<td>Increment:</td>
<td>90 S</td>
</tr>
</tbody>
</table>

### 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
### Model Nomenclature

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications System Analyzer w/iDEN Digital Capability</td>
<td>R2660D</td>
</tr>
<tr>
<td>Factory installed options: IEEE 488.2</td>
<td>RLAN4329A</td>
</tr>
<tr>
<td>ACCESSORIES SUPPLIED: Microphone</td>
<td>HMN1056D</td>
</tr>
<tr>
<td>Power Cord</td>
<td>3080397A62</td>
</tr>
<tr>
<td>Telescoping Antenna</td>
<td>TSNB</td>
</tr>
<tr>
<td>Signal Generator Termination (50 ohm)</td>
<td>5880396B73</td>
</tr>
<tr>
<td>Oscilloscope Probe</td>
<td>RTL4011A</td>
</tr>
<tr>
<td>BNC to N Adapter</td>
<td>5884300A98</td>
</tr>
<tr>
<td>DC Power Connector Kit</td>
<td>RPX4097A</td>
</tr>
<tr>
<td>Spare RF Fuses</td>
<td>GG653027C002</td>
</tr>
<tr>
<td>R-2660 Operator’s Manual</td>
<td>6880309F16</td>
</tr>
<tr>
<td>RF Detector Probe</td>
<td>RLAN4748A</td>
</tr>
<tr>
<td>BNC RF “T”</td>
<td>0982578B01</td>
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</table>

### OPTIONAL ACCESSORIES:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery Pack</td>
<td>RPN4000A</td>
</tr>
<tr>
<td>Canvas Case</td>
<td>1580367B77</td>
</tr>
<tr>
<td>Transit Case</td>
<td>A001</td>
</tr>
<tr>
<td>Transit Case with Wheels</td>
<td>A002</td>
</tr>
<tr>
<td>RF Detector (50 Ohm Termination)</td>
<td>5880345B96</td>
</tr>
</tbody>
</table>

### 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 distributor or sales representative for the facility nearest you.