MD8430A
Signalling Tester
MX786201A Rapid Test Designer (RTD)
Early Support for Developing LTE FDD & TDD Chipsets and Mobile UEs

Mobile UEs are quickly becoming fast multimedia terminals due to widespread adoption of the LTE radio communications standard. The MD8430A Signalling Tester is a key LTE base station simulator for developing LTE-compliant chipsets and mobile devices. Using its extensive experience in 3G markets, Anritsu has developed the MD8430A as a powerful LTE protocol R&D test solution to help developers bring LTE terminals to market as fast as possible.

Key Features

- Early support for 3GPP LTE (FDD/TDD) Release 9 (MBMS, Positioning RS, Transmission Mode 8: Dual Layer Beamforming)
- Early support for Carrier Aggregation, which is a key feature of 3GPP LTE-Advanced (FDD)
- One MD8430A support 2×2 MIMO Intra-RAT handover and 4×2 MIMO with 300 Mbps (Carrier Aggregation) DL and 50 Mbps UL speeds
- Inter-RAT tests making effective use of previous MD8480C (UTRAN/GERAN), and MD8470A (CDMA2000) hardware investments
- Optimized investment from first R&D to protocol conformance testing
- Full development and analysis toolset cuts L1, L2, and L3 scenario development time and costs

Main Applications

- Coding/Decoding tests (RF/Baseband)
- Protocol sequence tests
- Throughout and stress tests (Performance test)
- Intra-RAT/Inter-RAT performance tests
- LTE Pre-conformance/Conformance tests
- Network interoperability tests
- LTE network operator acceptance tests (CAT)
- Troubleshooting field test problems
- Terminal QC inspection

MD8430A
Signalling Tester
MX786201A Rapid Test Designer (RTD)
Main Test Functions

- LTE Intra-RAT performance test (Hard handover)
- LTE ↔ UTRAN/GERAN Inter-RAT handover test
- LTE/CDMA2000 Interworking test
- Digital baseband slow clock test
- Protocol sequence analysis (Log analysis)
- Throughput monitoring
- UE Scheduling function (Time/MCS/Lowest RB/RB)
- H-ARQ Test (ACK/NACK/DTX)
- VoLTE Test (SPS, TTI Bundling, DRX, RoHC)

Basic Functions (LTE)

- Transmit Downlink (DL) signal
- Receive Uplink (UL) signal
- Call processing
- Transmit Power Control (TPC)
- Baseband interface
- Hard handover (HTM, STM, PTM)*
- 2×2 MIMO (MTM, STM, PTM)*
- 4×2 MIMO (PTM)*
- Encryption (option)

*: Please refer to page 6 for specifications of MD8430A models.

Supports Newest UE Categories

The MD8430A supports UE categories 1 to 4, 6 and will support all new future categories.

3GPP TS 36.306 V10.3.0 (2011-09)

LTE (DL)

<table>
<thead>
<tr>
<th>UE Category</th>
<th>Maximum number of DL-SCH transport block bits received within a TTI</th>
<th>Maximum number of bits of a DL-SCH transport block received within a TTI</th>
<th>Total number of soft channel bits</th>
<th>Maximum number of supported layers for spatial multiplexing in DL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>10296</td>
<td>10296</td>
<td>250368</td>
<td>1</td>
</tr>
<tr>
<td>Category 2</td>
<td>51024</td>
<td>51024</td>
<td>1237248</td>
<td>2</td>
</tr>
<tr>
<td>Category 3</td>
<td>102048</td>
<td>75376</td>
<td>1237248</td>
<td>2</td>
</tr>
<tr>
<td>Category 4</td>
<td>150752</td>
<td>75376</td>
<td>1827072</td>
<td>2</td>
</tr>
<tr>
<td>Category 5</td>
<td>295552</td>
<td>149776</td>
<td>3667200</td>
<td>4</td>
</tr>
<tr>
<td>Category 6</td>
<td>301504</td>
<td>149776 (4 layers)</td>
<td>3654144</td>
<td>2 or 4</td>
</tr>
<tr>
<td>Category 7</td>
<td>301504</td>
<td>149776 (4 layers)</td>
<td>3654144</td>
<td>2 or 4</td>
</tr>
<tr>
<td>Category 8</td>
<td>2998560</td>
<td>299856</td>
<td>35982720</td>
<td>8</td>
</tr>
</tbody>
</table>

LTE (UL)

<table>
<thead>
<tr>
<th>UE Category</th>
<th>Maximum number of UL-SCH transport block bits transmitted within a TTI</th>
<th>Maximum number of bits of an UL-SCH transport block transmitted within a TTI</th>
<th>Support for 64QAM in UL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>5160</td>
<td>5160</td>
<td>No</td>
</tr>
<tr>
<td>Category 2</td>
<td>25456</td>
<td>25456</td>
<td>No</td>
</tr>
<tr>
<td>Category 3</td>
<td>51024</td>
<td>51024</td>
<td>No</td>
</tr>
<tr>
<td>Category 4</td>
<td>51024</td>
<td>51024</td>
<td>No</td>
</tr>
<tr>
<td>Category 5</td>
<td>75376</td>
<td>75376</td>
<td>Yes</td>
</tr>
<tr>
<td>Category 6</td>
<td>51024</td>
<td>51024</td>
<td>Yes</td>
</tr>
<tr>
<td>Category 7</td>
<td>102048</td>
<td>51024</td>
<td>No</td>
</tr>
<tr>
<td>Category 8</td>
<td>1497760</td>
<td>149776</td>
<td>Yes</td>
</tr>
</tbody>
</table>
For Developing LTE Chipsets and Mobile UE RF/Baseband Tests

**Coding/Decoding Test**

Coding/Decoding tests of LTE terminals are performed by making the RF connections shown in the following diagram.

**Easy MIMO Test Configuration Settings**

The MD8430A has 8 main and sub RF connectors as well as 8 digital IQ connectors as standard equipment for use with the MX843010A LTE Control Software to easily configure and monitor various settings, including RF parameters, channel power, MIMO, fading, connector selections, frame timing, BTS cell selections, etc.

**Fully Versatile L1/L2 Monitoring Functions**

The MX843010A software supports LTE development by processing large volumes of low-layer data at very high speeds using a full line of versatile power monitoring, throughput monitoring and log analysis functions. The Measure (Counter) functions can monitor Layer 1 and Layer 2 throughputs in real time by counting parameter values such as ACK/NACK/DTX/CQI.

**Coding/Decoding Test Example (RF, Patch Test)**

The MD8430A supports digital baseband I/O as standard functions. Using the baseband interface offers high-reproducibility coding/decoding tests free from the RF section, supporting stable evaluation of LTE chipset baseband performance.

Moreover, LTE coding/decoding tests are supported because the baseband chip can be evaluated using a slower clock than the clock frequency. And connecting the MF6900A Fading Simulator to the digital baseband interface supports slow clock evaluations in a fading environment, which are difficult to perform with an RF fading simulator.

**Setup Screen Example**

**Slow Clock Test Setup (Digital Baseband, Fading)**

**Measurement (Counter and Throughput) Screens**

**Monitor Screen Example**
Complete LTE Protocol Test Environment

Intelligent Test Creation
The MX786201A Rapid Test Designer (RTD) software tools gives users power to create tests that cannot be done with traditional language based tools. RTD Supports L1/L2/L3 testing using Lower Layer Configuration library and Layer 3 procedure library of UE development. Moreover, each procedure auto-sets the connection with the lower Layers (L1/L2) based on full compliance with the 3GPP standards. RTD can simulator LTE↔UMTS InterRAT and LTE↔CDMA2000 Interworking. The Reference Library test cases provides a reference to build the customized test cases and libraries with ease.

Cuts Test Case Development Time
The RTD GUI offers intuitive test case creation by linking procedures with parameters, such as network conditions and message data, at easy-to-understand setting screens, quickly increasing the number of working test cases. In addition, the Built-in Analyzer function checks for programming errors prior to testing, which can start immediately without recompiling after editing and changing settings.

Flexibility in Testing & Analysis
When the test finishes the execution, the RTD provides a preliminary judgment against predetermined criteria. This avoids the need to study complex message sequences and can show a test outcome explained in a local language. The Integrated protocol analyzer with RTD supports very detailed Message Sequence Analysis and provides a facility to export the Protocol Test logs in to HTML format which can be viewed at any PC with a Browser without a RTD license.
Efficient UE Integration and Performance Tests

Testing Throughput for Various Conditions
The MD8430A supports the latest UE categories with download speeds of 150 Mbps and uploads speeds of 50 Mbps. The bundled sample scenarios make it easy to change parameters such as bandwidth, scheduling, HARQ, etc., for evaluating LTE throughputs under various conditions. In addition, combination with the MF6900A Fading Simulator supporting LTE MIMO via the dedicated digital interface simplifies complex power control procedures for easy throughput testing in a fading environment with simple test setup.

Handover Tests Optimizing Hardware Investment
The MD8430A supports up to six cells (two active cells) allowing handover tests between two LTE BTS with one tester. In addition, LTE-UTRAN/GERAN Inter-RAT handover tests are supported by connecting the MD8480C W-CDMA Signalling Tester. And the MD8430C is not limited to the globally dominant W-CDMA technology but also supports the HSPA/HSPA Evolution and GSM/GPRS/EGPRS technologies. When combined with the MD8470A Signalling Tester, CDMA2000 Interworking tests are supported too, maximizing support for both worldwide communications technologies and investment in hardware.

Fading Setting Screen (MF6900A Fading Simulator)

Connecting three MF6900A units permits fading simulations for each of six cells.

Specifications of MD8430A Signalling Tester Models

<table>
<thead>
<tr>
<th>Model/Name</th>
<th>MD8430A-010 LTE Function Test Model (FTM)</th>
<th>MD8430A-012 LTE MIMO Test Model (MTM)</th>
<th>MD8430A-014 LTE Handover Test Model (HTM)</th>
<th>MD8430A-020 LTE Standard Test Model (STM)</th>
<th>MD8430A-030 LTE Performance Test Model (PTM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface</td>
<td>RF, Digital IQ</td>
<td>Max. 20 MHz</td>
<td>Category 1, 2, 3</td>
<td>Category 1, 2, 3, 4, 6</td>
<td></td>
</tr>
<tr>
<td>Frequency Band</td>
<td>Max. Data Rate (DL)</td>
<td>75 Mbps</td>
<td>100 Mbps</td>
<td>75 Mbps</td>
<td>300 Mbps††</td>
</tr>
<tr>
<td></td>
<td>Max. Data Rate (UL)</td>
<td>50 Mbps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No. of Simultaneous Tx Frequencies</td>
<td>1</td>
<td>2×2 MIMO</td>
<td>2×2 MIMO</td>
<td>2×2 MIMO, 4×2 MIMO</td>
</tr>
<tr>
<td></td>
<td>No. of Component Carrier (DL)†††</td>
<td>No</td>
<td>Active + Adjacent BTS: 1</td>
<td>Active + Adjacent BTS: 4</td>
<td>Active + Adjacent BTS: 6†‡</td>
</tr>
<tr>
<td></td>
<td>Max. No. of Base Station</td>
<td>Active + Adjacent BTS: 1</td>
<td>Active + Adjacent BTS: 2</td>
<td>Active + Adjacent BTS: 6†‡</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hard Handover (inc. at MIMO)</td>
<td>No</td>
<td>Between same frequency and different frequencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carrier Aggregation No. of Component Carrier (DL)†††</td>
<td>No</td>
<td></td>
<td>2†³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carrier Aggregation No. of Component Carrier (UL)†††</td>
<td>No</td>
<td></td>
<td>1†³</td>
<td></td>
</tr>
</tbody>
</table>

†1: For Layer-1 testing; 150 Mbps for Layer-2 (or upper) testing.
†2: For 4×2 MIMO, the maximum number of base stations is 1, the number of active base stations + number of adjacent base stations is 5.
†3: The active base station is used as the component carrier.
†4: Requires MD8430A-085.
Optimized Hardware Investment
A choice of five MD8430A models designed for early chipset and UE development, function tests, and performance tests ranging from carrier acceptance tests to protocol conformance tests as well as retrofit upgrades between models allows developers to tailor their hardware investment to current needs with future flexible upgrade options.

The Protocol Conformance Test Toolkit (PCT) with MD8430A and GCF/PTCRB approved TTCN test package provide an optimum environment for LTE protocol conformance testing. Hence, a Single Hardware Platform that extends its usage from Platform development to Conformance Testing and Operator Acceptance Test.

Instant Firmware Switching
Because the MD8430A saves up to five firmware versions, the right firmware is selected easily at startup. There is no need to install/uninstall firmware when executing a test case that determines the firmware version.

Powerful Automated Testing
The RTD software supporting the UE control interface makes it easy to setup automated test systems. Furthermore, multiple test cases can be executed continuously and test reports generated automatically, and many functions, including repeat testing under different conditions with multiple settings, can be automated, offering carriers, etc., an ideal turnkey solution for acceptance testing.

Easy Test Case Maintenance
Test cases created by the RTD software can be updated easily when new 3GPP standard evolves, reducing the need for re-editing. In addition, guaranteed test case compatibility even when the MD8430A firmware version is changed removes the need to recompile, etc., resulting in greatly reduced costs for maintaining test cases to support regression testing when rolling out new terminals and performing pre-IOT to assure compatibility with network equipment worldwide.
Panel Layout

Front Panel

1. Monitor
   Connector outputting signal internal data and status to accessory Monitor Board

2. Digital IQ Input
   Connector for inputting digital IQ signal

3. Digital IQ Output
   Connector for outputting digital IQ signal

4. Clock Input
   BNC connector for inputting system clock to operate using external clock

5. Clock Output
   BNC Connector for outputting system clock

6. Sync Input
   BNC Connector for inputting and operating using external sync signal

7. Sync Output
   BNC Connector for outputting sync signal

8. Aux Input
   BNC Input connector reserved for adding future functions

9. Ethernet
   (1) Ethernet connector for connecting external PC controller
   (2) Ethernet connector for connecting MD8480C controller using ‘Control PC’ connector
   (3) Ethernet connector for server
   (4) Ethernet connector for connecting MD8480C using ‘10/100BASE-T’ connector

10. Sub (Simplex) Output
    N-type connector for RF output

11. Sub (Simplex) Input
    N-type connector for RF input

12. Main (Duplex) Input/Output
    N-type connector for RF input/output

13. LCD
    Screen displaying equipment information such as firmware selection and maintenance software screens
14 Trigger Input
BNC Connector for inputting a trigger signal from external equipment

15 Trigger Output
BNC Connector for outputting event timing to external equipment

16 10 MHz Reference Input
BNC Connector for inputting external reference signal

17 10 MHz Buffered Output
BNC Connector for outputting equipment reference signal

18 Detector Output
BNC Connector for outputting profile signal of RF signal power

19 Sync Out
BNC Connector for outputting sync signal to MF6900A Fading Simulator

20 LVDS
Connector for connecting MF6900A Fading Simulator using Digital IQ
Test Models/Options/Software

Test Models

MD8430A-010 LTE Function Test Model (FTM)
MD8430A-012 LTE MIMO Test Model (MTM)
MD8430A-014 LTE Handover Test Model (HTM)
MD8430A-020 LTE Standard Test Model (STM)
MD8430A-030 LTE Performance Test Model (PTM)

Choose one of the above five models.

∗ Please refer to page 6 for more details.

Test Model Upgrade

Required option when upgrading to higher order model.

Upgrade from Function Test Model (FTM)
Z1398A LTE FTM to MTM Upgrade Kit
Z1399A LTE FTM to HTM Upgrade Kit
Z1342A LTE FTM to STM Upgrade Kit
Z1344A LTE FTM to PTM Upgrade Kit

Upgrade from MIMO Test Model (MTM)
Z1401A LTE MTM to STM Upgrade Kit
Z1402A LTE MTM to PTM Upgrade Kit

Upgrade from Handover Test Model (HTM)
Z1403A LTE HTM to STM Upgrade Kit
Z1404A LTE HTM to PTM Upgrade Kit

Upgrade from Standard Test Model (STM)
Z1343A LTE STM to PTM Upgrade Kit

Options

MD8430A-002 Extended Frequency Range to 3.8 GHz
Required software option when extending maximum frequency of MD8430A (Tx/Rx) to 3.8 GHz.

MD8430A-003 Extended Frequency Range to 3.8 GHz Hardware
Required hardware option when extending maximum frequency of MD8430A (Tx/Rx) to 3.8 GHz.

MD8430A-060 LTE FDD Option
Required option when simulating 3GPP LTE FDD.

MD8430A-061 LTE TDD Option
Required option when simulating TD-LTE.

MD8430A-080 LTE Ciphering Option
Option for adding ciphering function supporting EEA0, EEA1, and EEA2 (TS 33.401, TS 36.323) algorithms to LTE.

MD8430A-081 LTE ROHC Option
Option for adding LTE ROHC function supporting RTP/UDP/IP (RFC3095, RFC4815), UDP/IP (RFC3095, RFC4815), ESP/IP (RFC3095, RFC4815), and IP (RFC3843, RFC4815). Required this option for VoLTE testing.

MD8430A-082 LTE MBMS Option
Option for adding LTE MBMS function supporting (P) MCH Transmission Scheduling, MCCH Message Transmission, MSI MAC control element Transmission and MTCH Message Transmission described in 3GPP (TS 36.211, TS36.221).

MD8430A-083 LTE ZUC Ciphering Option
Option for adding ciphering function supporting EEA3 and EIA3 (TS 33.401, TS 35.221) algorithms to LTE.

MD8430A-085 LTE Carrier Aggregation Option
Option for adding Carrier Aggregation (CA) function supporting transmission of up to two component carriers on downlink.

Application Products

MF6900A Fading Simulator
This Fading Simulator supports LTE 4×2 MIMO using a dedicated connection with the Anritsu Signalling Tester.

MD8470A Signalling Tester
Base Station Simulator supporting CDMA2000 Multiple Sector/Carrier or 1xEV-DO Rev.A. Realizes Inter-working tests between LTE and CDMA2000 by controlling MD8430A and MD8470A simultaneously from MX786201A Rapid Test Designer (RTD).

MD8480C W-CDMA Signalling Tester
Base Station Simulator supporting HSPA Evolution based on the 3GPP Release 8 specification, W-CDMA and GSM. Realizes Inter-RAT handover tests between LTE and UTRAN/GERAN by controlling MD8430A and MD8480C from MX786201A Rapid Test Designer (RTD).

CDMA2000® is a registered trademark of the Telecommunications Industry Association (TIA-USA).
Software

MX843010A LTE Control Software
Software for simulating L1 and L2 with test cases in C.

MX786201A Rapid Test Designer (RTD)
Software for simulating L1 to L3 with test cases described by GUI for automating testing, analyzing test cases and creating reports.

Software Maintenance Contract

Service Provided
- Contract for adding/revising software functions in line with 3GPP revisions
- Technical support for troubleshooting user problems

Annual Support Service (1 year)
Option providing 1 year of service support for LTE functions including web downloads of latest software and technical enquiries. Services depend on option configuration.

MD8430A Support Services

MD8430A Support (FDD)
- MD8430A-SS110 1 Year Support Service LTE FDD (FTM)
- MD8430A-SS112 1 Year Support Service LTE FDD (MTM)
- MD8430A-SS114 1 Year Support Service LTE FDD (HTM)
- MD8430A-SS120 1 Year Support Service LTE FDD (STM)
- MD8430A-SS130 1 Year Support Service LTE FDD (PTM)

MD8430A Support (TDD)
- MD8430A-SS111 1 Year Support Service LTE TDD (FTM)
- MD8430A-SS113 1 Year Support Service LTE TDD (MTM)
- MD8430A-SS115 1 Year Support Service LTE TDD (HTM)
- MD8430A-SS121 1 Year Support Service LTE TDD (STM)
- MD8430A-SS131 1 Year Support Service LTE TDD (PTM)

MX843010A LTE Control Software Support
- MX843010A-SS120 1 Year Support Service
## Specifications

### MD8430A Signalling Tester

#### Reference oscillator

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference frequency</td>
<td>10 MHz</td>
</tr>
<tr>
<td>Activation characteristics</td>
<td>±5 × 10⁻² (2 minutes after turning on the power)</td>
</tr>
<tr>
<td></td>
<td>±5 × 10⁻³ (5 minutes after turning on the power)</td>
</tr>
<tr>
<td></td>
<td>* At 25°C, Based on the frequency 24 hours after turning on the power</td>
</tr>
<tr>
<td>Aging rate</td>
<td>±1 × 10⁻⁹/day (Specification per day, based on the frequency 48 hours after turning on the power)</td>
</tr>
<tr>
<td></td>
<td>±1 × 10⁻⁹/year (Specification per day, based on the frequency 10 days after turning on the power)</td>
</tr>
<tr>
<td>Temperature characteristics</td>
<td>±2 × 10⁻⁸ (0°C to 45°C)</td>
</tr>
<tr>
<td></td>
<td>* Based on the frequency at 25°C</td>
</tr>
<tr>
<td>External reference input</td>
<td>Frequency: 10 MHz</td>
</tr>
<tr>
<td></td>
<td>Operating range: ±1 ppm</td>
</tr>
<tr>
<td></td>
<td>Input level: −15 dB ≤ level ≤ +20 dB (50Ω, AC coupling)</td>
</tr>
<tr>
<td></td>
<td>Connector: BNC-J, 50Ω (nominal)</td>
</tr>
<tr>
<td>Internal reference output</td>
<td>Frequency adjusted at shipment: 10 MHz ±0.02 ppm</td>
</tr>
<tr>
<td></td>
<td>Output level: ≥0 dBm (50Ω, AC coupling)</td>
</tr>
<tr>
<td></td>
<td>Connector: BNC-J, 50Ω (nominal)</td>
</tr>
</tbody>
</table>

#### Transmission signal

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum level</td>
<td>Main connector: −40 dBm (Maximum setting level at Main connector: −20 dBm)</td>
</tr>
<tr>
<td></td>
<td>Sub connector: 0 dBm</td>
</tr>
<tr>
<td>Level accuracy</td>
<td>±1.5 dB</td>
</tr>
<tr>
<td></td>
<td>Main connector: −113 dBm ≤ Level ≤ −40 dBm</td>
</tr>
<tr>
<td></td>
<td>Sub connector: −113 dBm ≤ Level ≤ 0 dBm</td>
</tr>
<tr>
<td></td>
<td>* After calibration, 18°C to 28°C, for calibration CW</td>
</tr>
<tr>
<td>Frequency</td>
<td>350 MHz to 3.0 GHz² (setting resolution: 100 kHz)</td>
</tr>
<tr>
<td></td>
<td>*: 350 MHz to 3.8 GHz² using MD8430A-002.</td>
</tr>
<tr>
<td>Access method</td>
<td>OFDMA</td>
</tr>
<tr>
<td>Modulation method</td>
<td>QPSK, 16QAM, 64QAM</td>
</tr>
<tr>
<td>Modulation accuracy</td>
<td>±2%</td>
</tr>
<tr>
<td></td>
<td>Sub output, 0 dBm, 18°C to 28°C</td>
</tr>
<tr>
<td></td>
<td>LTE (OFDM, 64QAM, 20 MHz band)</td>
</tr>
</tbody>
</table>

#### Received signal

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input level</td>
<td>Setting demodulation range</td>
</tr>
<tr>
<td></td>
<td>Based on the value set for the Reference Power</td>
</tr>
<tr>
<td></td>
<td>QPSK: −28 to +15 dB</td>
</tr>
<tr>
<td></td>
<td>16QAM: −21 to +15 dB</td>
</tr>
<tr>
<td></td>
<td>64QAM: −15 to +15 dB</td>
</tr>
<tr>
<td></td>
<td>(Input signal: EVM ≤1%, BER ≤1×10⁻², 20 MHz band, SC-FDMA)</td>
</tr>
<tr>
<td></td>
<td>* Main connector input:</td>
</tr>
<tr>
<td></td>
<td>Reference Power setting range: −20 to +20 dB</td>
</tr>
<tr>
<td></td>
<td>However, within the input level range from −30 to +35 dB</td>
</tr>
<tr>
<td></td>
<td>* Sub connector input:</td>
</tr>
<tr>
<td></td>
<td>Reference Power setting range: −35 to +5 dB</td>
</tr>
<tr>
<td></td>
<td>However, within the input level range from −45 to +20 dB</td>
</tr>
<tr>
<td>Level accuracy</td>
<td>Main: ±3.0 dB</td>
</tr>
<tr>
<td></td>
<td>Sub: ±3.0 dB</td>
</tr>
<tr>
<td></td>
<td>* At 18°C to 28°C, for calibration CW, within the Main input level range from −30 to +35 dB, the Sub input level range from −45 to +20 dB, and the reference power range of ±15 dB</td>
</tr>
<tr>
<td>Frequency</td>
<td>350 MHz to 3.0 GHz² (setting resolution: 100 kHz)</td>
</tr>
<tr>
<td></td>
<td>*: 350 MHz to 3.8 GHz² using MD8430A-002.</td>
</tr>
<tr>
<td>Access method</td>
<td>SC-FDMA</td>
</tr>
<tr>
<td>Modulation method</td>
<td>QPSK, 16QAM, 64QAM</td>
</tr>
<tr>
<td>Synchronization acquirable range</td>
<td>PRACH: ±100 μs</td>
</tr>
<tr>
<td></td>
<td>PUSCH: ±50 μs</td>
</tr>
</tbody>
</table>

#### RF connector

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main connector</td>
<td>Type: N</td>
</tr>
<tr>
<td></td>
<td>Impedance: 50Ω</td>
</tr>
<tr>
<td></td>
<td>VSWR: ±1.3</td>
</tr>
<tr>
<td>Sub (Downlink) connector</td>
<td>Type: N</td>
</tr>
<tr>
<td></td>
<td>Impedance: 50Ω</td>
</tr>
<tr>
<td></td>
<td>VSWR: ±1.5</td>
</tr>
<tr>
<td>Sub (Uplink) connector</td>
<td>Type: N</td>
</tr>
<tr>
<td></td>
<td>Impedance: 50Ω</td>
</tr>
<tr>
<td></td>
<td>VSWR: ±1.5</td>
</tr>
</tbody>
</table>
### Front panel interface

- **Digital IQ I/F**: DX20 connector (50 pin) × 8, 3.3 V-CMOS level
  - Digital IQ signal, IQ: 16 bit
- **Monitor I/F**: DX20 connector (80 pin), 3.3 V-CMOS level
  - Connection with the Monitor board (G0091)
- **Sync Out**: BNC connector, 3.3 V-CMOS level
  - Internal Sync Start signal output
- **Sync In**: BNC connector, 3.3 V-CMOS level
  - External Sync Start signal input
- **Clock Out**: BNC connector, 3.3 V-CMOS level
  - Internal Clock signal output
- **Clock In**: BNC connector, 3.3 V-CMOS level
  - 10 kHz to 30.72 MHz
  - External Clock signal input

### MF6900 interface

- **Sync Out**: BNC connector × 3, 3.3 V-CMOS level
  - Connection with the MF6900A (Sync Start signal)
- **Port**: H8-B16LFYGA connector × 6, LVDS level
  - Connection with the MF6900A (Digital IQ signal)

### Specifications related to EMC and LVD

- **EMC**: EN61326-1, EN61000-3-2
- **LVD**: EN61010-1

### Temperature

- **Operating**: 0° to +45°C
- **Storage**: −20° to +60°C

### Power supply

- **Voltage**: 100 V (ac) to 120 V (ac)/200 V (ac) to 240 V (ac) (Automatic switching system)
- **Frequency**: 50 Hz/60 Hz (Automatically changeover system)
- **Power consumption**: ≤1200 VA

### Dimensions, Mass

- **Dimensions**: 426 (W) × 310 (H) × 500 (D) mm
- **Mass**: ≤35 kg
## Ordering Information

Please specify the model/order number, name and quantity when ordering.
The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

<table>
<thead>
<tr>
<th>Model/Order No</th>
<th>Name</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD8430A</td>
<td>LTE Function Test Model</td>
<td>Signalling Tester*</td>
</tr>
<tr>
<td>MD8430A-003</td>
<td>Extended Frequency Range to 3.8 GHz Hardware</td>
<td>LTE Function Test Model (FTM)</td>
</tr>
<tr>
<td>MD8430A-010</td>
<td>LTE MIMO Test Model</td>
<td>Signalling Tester*</td>
</tr>
<tr>
<td>MD8430A-003</td>
<td>Extended Frequency Range to 3.8 GHz Hardware</td>
<td>LTE MIMO Test Model (MTM)</td>
</tr>
<tr>
<td>MD8430A-012</td>
<td>LTE Handover Test Model</td>
<td>Signalling Tester*</td>
</tr>
<tr>
<td>MD8430A-014</td>
<td>LTE Standard Test Model</td>
<td>Signalling Tester*</td>
</tr>
<tr>
<td>MD8430A-003</td>
<td>Extended Frequency Range to 3.8 GHz Hardware</td>
<td>LTE Standard Test Model (STM)</td>
</tr>
<tr>
<td>MD8430A-020</td>
<td>LTE Performance Test Model</td>
<td>Signalling Tester*</td>
</tr>
<tr>
<td>MD8430A-003</td>
<td>Extended Frequency Range to 3.8 GHz Hardware</td>
<td>LTE Performance Test Model (PTM)</td>
</tr>
</tbody>
</table>

### Standard Accessories
- CD-ROM (Operation Manual and Maintenance Software): 1 pc
- LAN Cable: 2 pcs
- Coaxial Cord, 1.0 m (BNC-P-5G5AU-BNC-P): 1 pc
- Coaxial Cord, 1.0 m (N-P-5D-2W-N-P): 2 pcs
- N-SMA Adaptor: 6 units
- Monitor Board: 1 pc
- Monitor Cable 80: 1 pc
- Digital IQ Cable (50 cm): 1 pc

### Options
- MD8430A-002 Extended Frequency Range to 3.8 GHz
- MD8430A-060 LTE FDD Option
- MD8430A-061 LTE TDD Option
- MD8430A-080 LTE Ciphering Option
- MD8430A-081 LTE ROHC Option
- MD8430A-082 LTE MBMS Option
- MD8430A-083 LTE ZUC Ciphering Option
- MD8430A-085 LTE Carrier Aggregation Option
- MD8430A-103 Extended Frequency Range to 3.8 GHz Hardware Retrofit (for Asia, Oceania)
- MD8430A-203 Extended Frequency Range to 3.8 GHz Hardware Retrofit

### Software Options
- MX843010A LTE Control Software
- MX786201A Rapid Test Designer (RTD)

### Main frame Support Service
- [FDD]
  - MD8430A-SS110 1 Year Support Service LTE FDD (FTM)
  - MD8430A-SS112 1 Year Support Service LTE FDD (STM)
  - MD8430A-SS114 1 Year Support Service LTE FDD (STM)
  - MD8430A-SS130 1 Year Support Service LTE FDD (PTM)
- [TDD]
  - MD8430A-SS111 1 Year Support Service LTE TDD (FTM)
  - MD8430A-SS113 1 Year Support Service LTE TDD (STM)
  - MD8430A-SS115 1 Year Support Service LTE TDD (STM)
  - MD8430A-SS121 1 Year Support Service LTE TDD (STM)
  - MD8430A-SS131 1 Year Support Service LTE TDD (PTM)

### Software Support Service
- MD8430A-SS120 1 Year Support Service LTE Control Software

### Upgrade Options
- Z1398A LTE FTM to MTM Upgrade Kit
- Z1399A LTE TDD to STM Upgrade Kit
- Z1342A LTE FTM to STM Upgrade Kit
- Z1344A LTE FTM to STM Upgrade Kit
- Z1401A LTE MTM to STM Upgrade Kit
- Z1402A LTE TDD to PTM Upgrade Kit
- Z1403A LTE STM to STM Upgrade Kit
- Z1404A LTE TDD to PTM Upgrade Kit
- Z1343A LTE STM to PTM Upgrade Kit

### Application Products
- MF6900A Fading Simulator
- MD8470A Signalling Tester
- MD8480C W-CDMA Signalling Tester

### Upgrade Options
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### Application Products
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* A PC* running Microsoft Visual C++ 2008 Express Edition or Microsoft Visual C++ 2010 Express Edition is required to use the MD8430A. It must be supplied by the customer.

*1: The PC controller for the MD8430A must meet or exceed the following specifications: OS: Windows XP (SP3), Windows 7 (64 bit) or later CPU: Intel Core 2 Duo 2 GHz or faster RAM: 2 GB or more NIC: 1000 BASE-T

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