

**Anritsu** envision : ensure

# Signalling Tester

MD8475A

MD8475B



Q.1

Do you use a base station simulator to reproduce any of the world's communications systems on the workbench?





yes

no





yes

Q.2

Do you have a hard time preparing complex measurement scenarios?



no

Q.2

Do you know any complex measurement scenarios that are required for most base station simulators?



yes

no



yes

no



yes

Q.3

Does your base station simulator meet the latest communications standards?



no

Q.3

Does your base station simulator meet the existing communications standards?



yes Ans. B

no Ans. A



yes Ans. A

no Ans. B



# Here's the Base Station Simulator It Answers All Your Questions.

**Reproduce the world's communications systems in a small workbench.**

As mobile terminals, such as smartphones, become increasingly high performance and diversified to enhance the user experience, carriers are starting to deploy LTE-Advanced technology as the next stage after LTE in speeding-up networks and meeting the needs of smartphone users. Additionally, the automotive world is pushing forward with new innovations, such as the connected car and self-driving vehicles, based on wireless communications technologies.

The Signalling Tester MD8475A/MD8475B is a base station simulator reproducing communications between base stations and UEs. It supports the full range of communication standards including LTE, and the Anritsu SmartStudio user interface, eliminates the need to create complex test scenarios, assuring efficient tests of complex UEs.



Ans. **B**

For R&D of New Mobile Terminals

Signalling Tester / Base Station Simulator

## MD8475B

8TX/4RX  
**RF**

3CC/4CC  
**CA**

IMS  
VoLTE

See page 40  
for more details

For R&D of Automotive Solutions and  
Wireless Connectivity

Signalling Tester / Base Station Simulator

# MD8475A

eCall  
ERA-  
GLONASS

Telema  
tics

AllRAT  
for Cellular

See page 28  
for more details

Ans. **A**



## POINT 1



**SmartStudio**

Scenario-less UE  
Function Tests using  
SmartStudio

See page 10  
for more details

## POINT 2



Automated Confirmation of  
Existing Mobile Functions  
using SmartStudio Manager

See page 12  
for more details

## POINT 3



All-in-One Support for LTE  
and Other Communications  
Systems

See page 12  
for more details



# SmartStudio — Changing the Smartphone

Anritsu

MD8475B

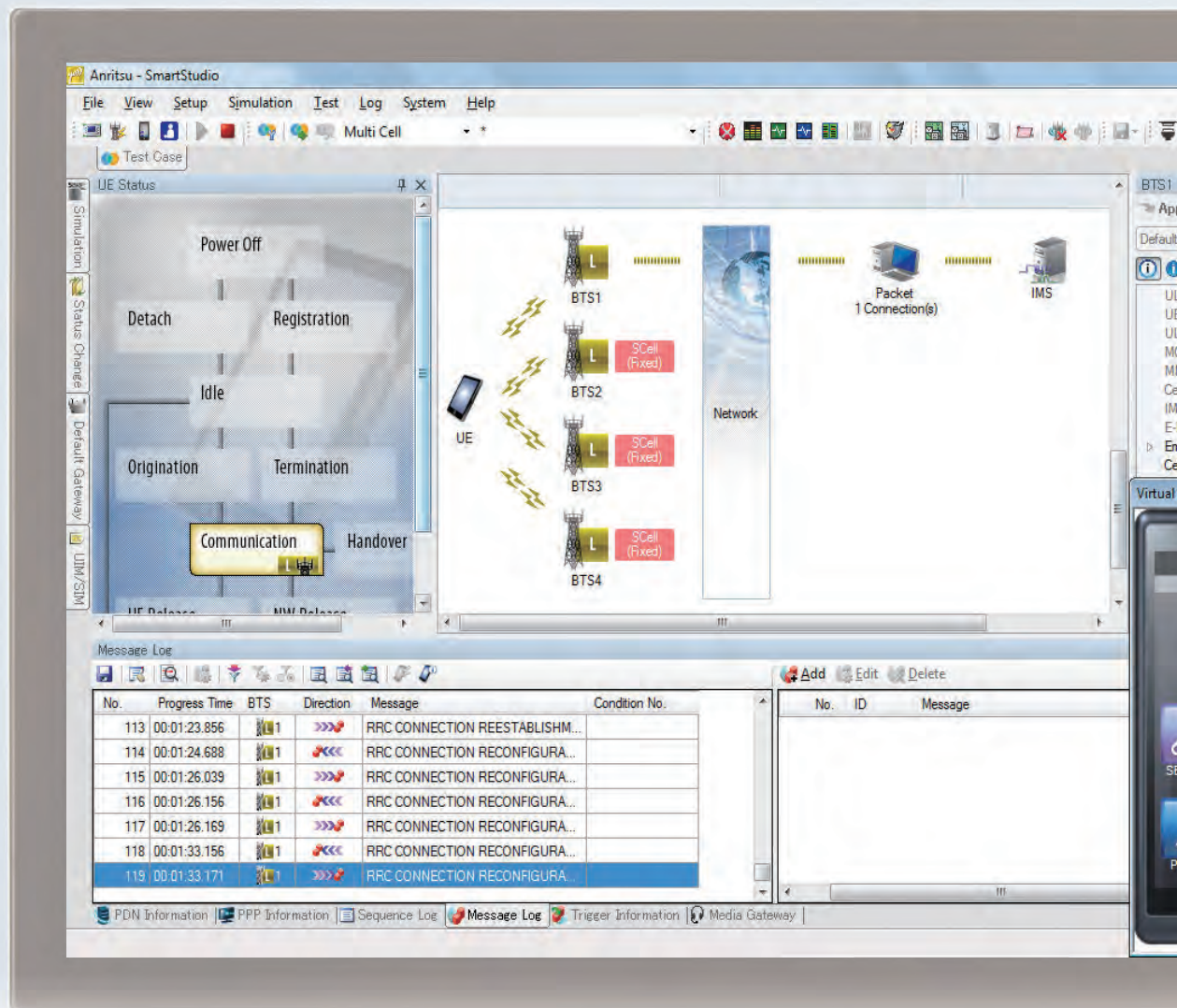
Signalling Tester

Remote

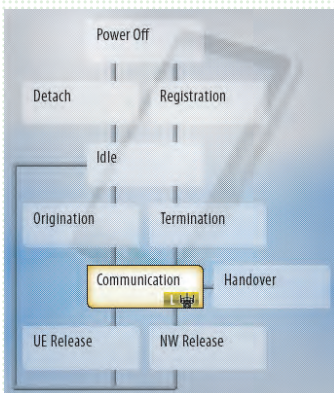
Local

Power

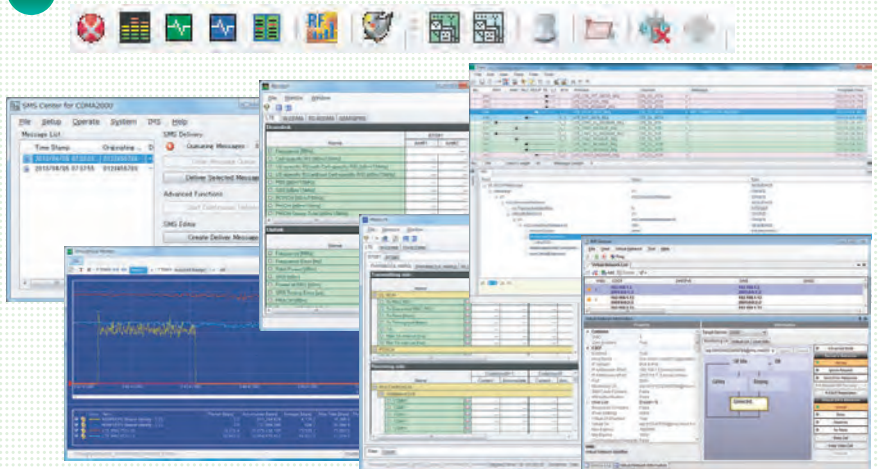
Power



- 1 The connection status of UE and SmartStudio are easy to understand at a glance from the block diagram.



- 2 Throughput, Trace, etc., screens are fetched by clicking one button.





# Test Environment

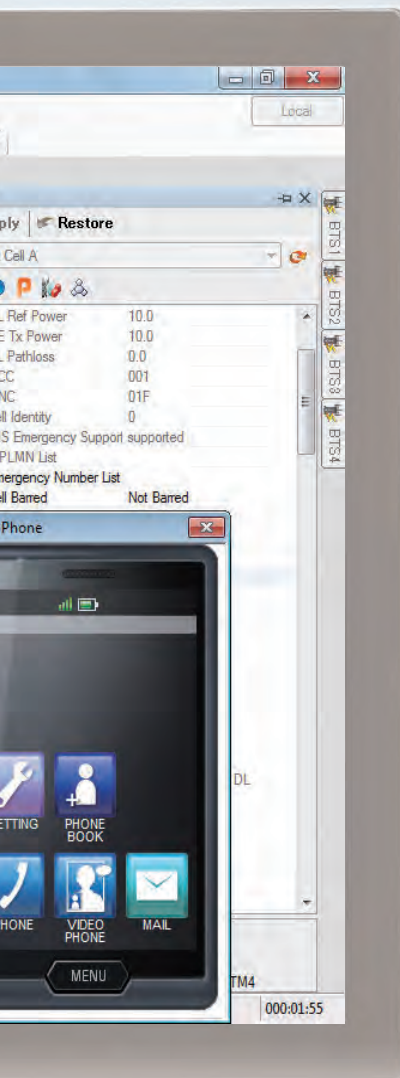


## POINT 1

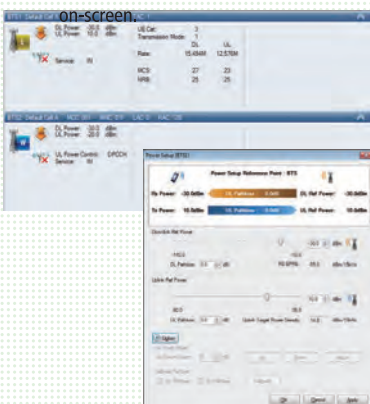
### Scenario-less Mobile Phone Function Tests using SmartStudio

#### Supports Versatile Smartphone Tests

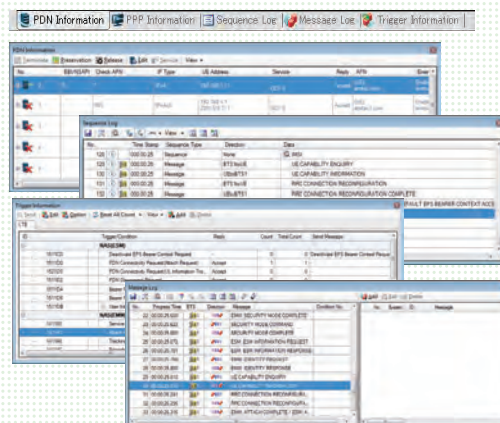
Complex tests of multifunction smartphones are supported by the all-in-one MD8475A/MD8475B with interactive SmartStudio interface.



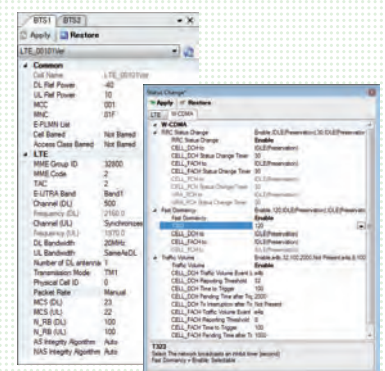
- Double-clicking the base station band displays the base station status. Changes to base station parameters during testing are reflected immediately on-screen.



- Details of the Smartphone and SmartStudio status can be verified easily. Changes to reject parameters during testing are reflected immediately on-screen.



- Both base station parameters and packet communications can be controlled. Changes to status change parameters during testing are reflected immediately on-screen.





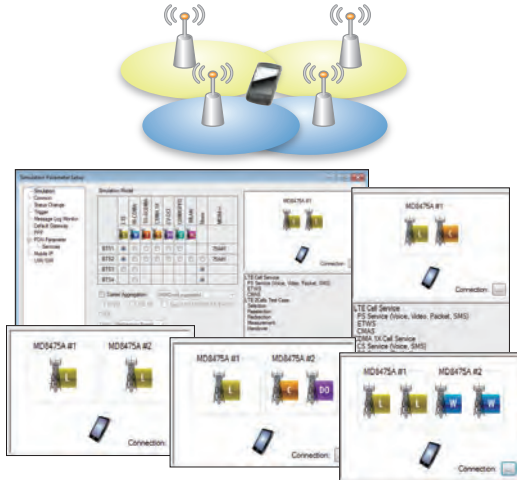
# Signalling Tester MD8475A/MD8475B Applications

## Configuring Multi-cell Test Environment

Performing UE tests between communications systems (handover tests) usually requires set-up of several measuring instruments and creation of complex scenarios. SmartStudio eliminates these problems by providing a simple test environment for fast and efficient testing.

### Multi System Configuration

Roaming and power consumption tests of UEs require multi-cell connections. The MD8475A supports dual-RF tests. And MD8475B supports up to 8RF tests. The SmartStudio GUI makes it easy to set multi-system test environments, especially for the latest Carrier Aggregation (CA) wireless standards.



### Multi-cell Test Configurations

Tests of UEs moving between cells take the Selection, Redirection, Handover, and other conditions into consideration, depending on the UE and base station conditions. SmartStudio can register these UE and base station conditions, including the RF power, as a test case, making it quick and easy to evaluate UE behaviors and reproduce failures. Test cases are also useful for general UE evaluations when reproducing Handover failures.



### Small-cell Switching Tests

Macrocell, small-cell, and femtocell base stations are being installed to provide wide coverage for people moving freely between base stations; SmartStudio provides easy test sequences for preferential capture of small-cells.

### 2-cell Testing Support by SmartStudio (MD8475A)

✓: Supported

Cell 1 \ Cell 2	LTE FDD/TDD	W-CDMA/HSPA/ HSPA Evolution/ DC-HSDPA	GSM/GPRS/EGPRS	TD-SCDMA/TD-HSPA	WLAN
LTE FDD/TDD	✓*1,*2	✓	✓	✓	✓*3
W-CDMA/HSPA/HSPA Evolution/DC-HSDPA	✓	✓	✓	—	✓*3
GSM/GPRS/EGPRS	✓	✓	✓	✓	✓*3
TD-SCDMA/TD-HSPA	✓	—	✓	✓	✓*3
WLAN	✓*3	✓*3	✓*3	✓*3	✓*3

\*1: Two MD8475A units are required for MIMO connection.  
 \*2: LTE-FDD/TDD Joint CA test is not supported.  
 \*3: The WLAN Offload test requires a separate WLAN access point.

### 2-cell Testing Support by SmartStudio (MD8475B)

✓: Supported

Cell 1 \ Cell 2	LTE FDD/TDD	W-CDMA/HSPA/ HSPA Evolution/ DC-HSDPA	GSM/GPRS/EGPRS	TD-SCDMA/TD-HSPA*2	WLAN
LTE FDD/TDD	✓	✓	✓	✓	✓*
W-CDMA/HSPA/HSPA Evolution/DC-HSDPA	✓	✓	✓	—	✓*
GSM/GPRS/EGPRS	✓	✓	✓	✓	✓*
TD-SCDMA/TD-HSPA*	✓	—	✓	✓	✓*
WLAN	✓*	✓*	✓*	✓*	—

\*: The WLAN Offload test requires a separate WLAN access point.

### Multi-cell Testing Support by SmartStudio (MD8475B)

Cell 1	Cell 2	Cell 3	Cell 4
LTE	LTE	LTE	—
LTE	LTE	W-CDMA	—
LTE	LTE	GSM	—
LTE	LTE	TD-SCDMA	—
LTE	LTE	LTE	LTE





# Signalling Tester MD8475A/MD8475B Applications

## Configuring Multi-cell Test Environment

### Carrier Aggregation Tests

The MD8475A/MD8475B supports LTE CA 2CC/3CC/4CC/5CC for throughput performance tests of UEs, such as smartphones using high-speed data networks.

	MD8475A	MD8475B
Configuration		
Operation Software	SmartStudio	
Required CA Option	MX847550A-040	MX847550B-040 MX847550B-041 (3CC) MX847550B-042 (4CC) MX847550B-043 (5CC) MX847570B-051
RF	1TX/1RX (standard), 2TX/2RX (option)	4TX/2RX (standard), 8TX/4RX (option)
Support for DL CA	2CC SISO 2CC MIMO (2×2)*	2CC SISO 2CC MIMO (2×2) 2CC MIMO (4×4) 3CC SISO 3CC MIMO (2×2) 3CC MIMO (4×4) 4CC SISO 4CC MIMO (2×2) 4CC MIMO (4×4) 5CC MIMO (4×4)
UE Category	Cat.4, Cat.6	Cat.4, Cat.6, Cat.9, Cat.11, Cat.16, Cat.18, Cat.19

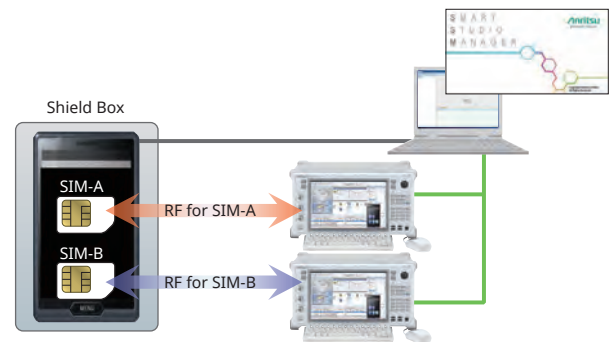
★: Two MD8475A units are required.

### SIM Connectivity Test

Dual SIM Dual Standby (DSDS) and Dual SIM Dual Active (DSDA) tests of dual-SIM UE can be performed using two sets of MD8475A/MD8475B. Additionally, Single SIM Dual Standby (SSDS) and Single SIM Dual Active (SSDA) of single-SIM UE can be performed using one MD8475A/MD8475B. These test environments can be fully automated using SmartStudio Manager.

#### Test Example:

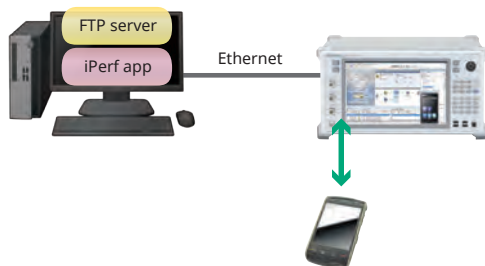
The power consumption and throughput of a dual-SIM UE can be confirmed while the UE is making a voice call using SIM1 and transferring packet data using SIM2.



### Simple Throughput Test Environment (MD8475B)

#### Throughput testing until now

- It needs to be adjusted for each application about radio layer settings and server settings.
- Performance depends on the PC specification and the load of Ethernet.



#### Throughput testing using MD8475B

- Single GUI supports to adjust for each application about radio layer settings and server settings.
- Performance is independent from PC specification and the load of Ethernet.



For the transmission and reception of the UE, use iPerf application which is widely used for throughput testing.

# Signalling Tester MD8475A/MD8475B Applications

## Data Packet Communications

Data packet communication environments are complex, but SmartStudio makes it easy to resolve troublesome packet bottlenecks, shortening evaluation times.

### Versatile Server Environment

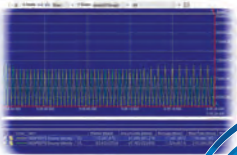
Because the MD8475A/MD8475B pre-installs Windows 7, commercial application servers can be easily installed.



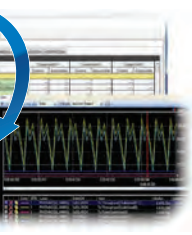
### Status Evaluation

A full line of function tools can be used to check communication status, including throughput, ACK/NACK counts, and RF monitoring. Simultaneous checking of multiple layers allows quick troubleshooting during data communications.

**Throughput Monitor**  
Checks data communications each layer for each BTS

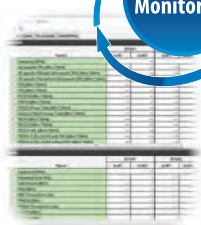


**Counter**  
Displays detailed information, including ACK/NACK and MCS



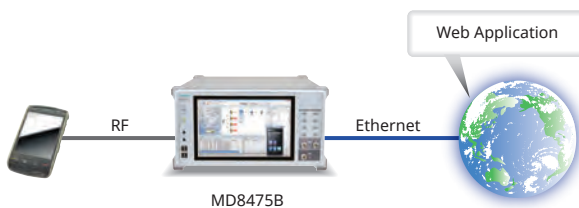
**Real Time Monitoring**

**RF Monitor**  
Displays TRx power for frequency and channels



### Genuine Application Test Environment

Connecting the MD8475A/MD8475B to the Internet supports Web application tests using UEs under development to verify actual in-use power consumption and throughput before market release.



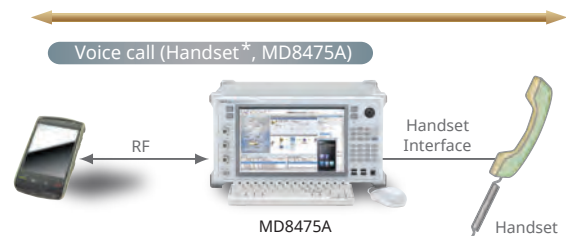
# Signalling Tester MD8475A/MD8475B Applications

## Voice Call Evaluation Environment

The need for voice-call evaluations has not changed even with the spread of LTE services. However, some voice-call test items, such as the access barred condition and emergency calls, are not easily evaluated on live networks. SmartStudio supports comprehensive evaluation of UE under high-load conditions, such as testing of simultaneous voice calls and other functions.

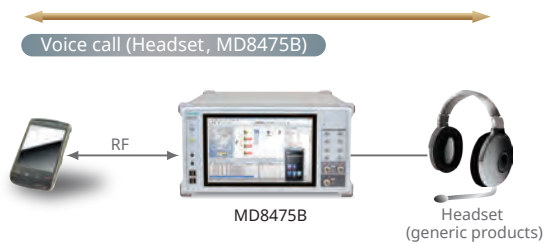
### 3G/2G Voice Calling Test

Just making voice settings using SmartStudio is all that is necessary for voice tests with the MD8475A/MD8475B.



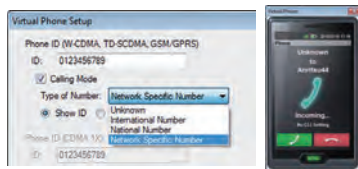
\*: Not supported for LTE.

### Multimedia Interface Software MX847508B



### Setting Roaming and Registering Address Book

When performing incoming-call tests of W-CDMA/GSM UE, SmartStudio can display any of 'Public', 'National', 'International', and 'Unknown' on the UE. Additionally, when the incoming call number matches a preregistered number in the address book, the name associated with the number is displayed.



### Setting Identify Type

When performing incoming call tests of W-CDMA/GSM UEs, either IMSI or TMSI can be chosen for the UE Caller ID using Paging.





# Signalling Tester MD8475A/MD8475B Applications

## Voice Call Evaluation Environment

### Voice over LTE Tests

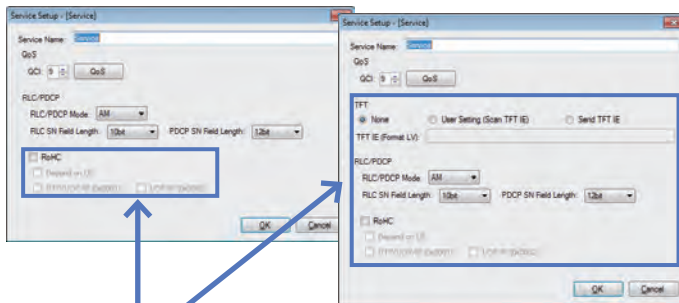
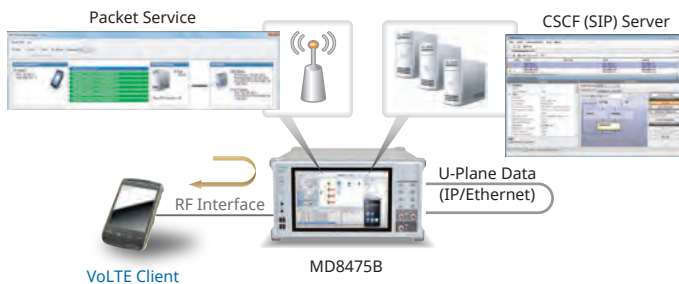
Since LTE uses the data network, Voice over LTE (VoLTE) communications also use the data network; SmartStudio simplifies VoLTE tests.

#### Loopback Tests of VoLTE/Video

The SmartStudio CSCF function supports VoLTE tests (AMR/W-AMR Codec, etc.) in the loopback mode.

In addition to an IMS server, VoLTE tests require a variety of LTE settings about multi-PDN. Not only does SmartStudio support multi-PDN\*1, but it also supports packet filter and QoS settings. Additionally, loopback audio data can be changed using the RTP function.

At VoLTE loopback testing, as well as looping voice data sent to the terminal from the network back from the terminal, the voice data can be changed to the MUTE status or to a fixed pattern to perform communications quality tests and battery consumption measurements requiring good reproducibility.\*2



Sets RoHC\*3 and TFT filter at Default Bearer and Dedicated Bearer

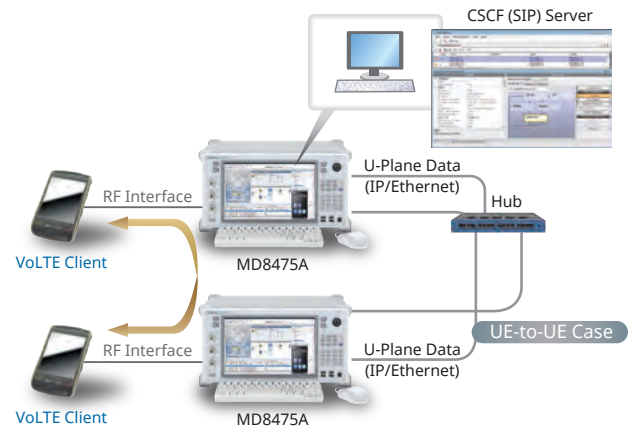
\*1: GSM and TD-SCDMA are not supported.

\*2: Requires MX847570A-086 or MX847570B-086.

\*3: RoHC settings require the MX847550A-060 or MX847550B-060 option.  
The RTP/UDP/IP (0x0001) and UDP/IP RoHC (0x0002) profiles are supported.

#### End-to-End Tests of VoLTE and Video Call

Voice over LTE can be tested between two LTE UEs in both directions using two MD8475A units to benchmark and evaluate calls between actual UEs.

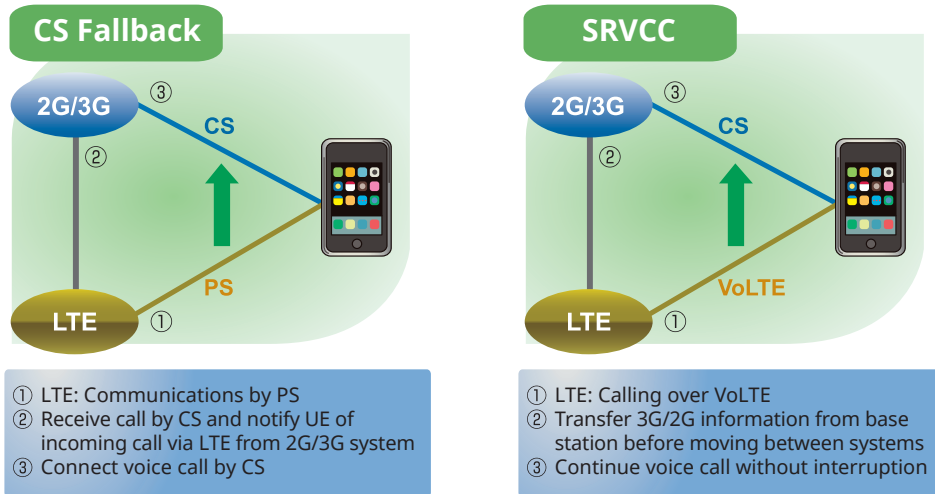


# Signalling Tester MD8475A/MD8475B Applications

## Voice Call Evaluation Environment

### Testing Voice Calls from LTE to 3G/2G

A variety of technologies are used when a UE moves between systems from an LTE to 3G/2G cell. Configuring a 2-cell test environment using SmartStudio supports LTE and 2G/3G system voice call tests such as CS Fallback and SV-LTE (Simultaneous Voice and LTE).

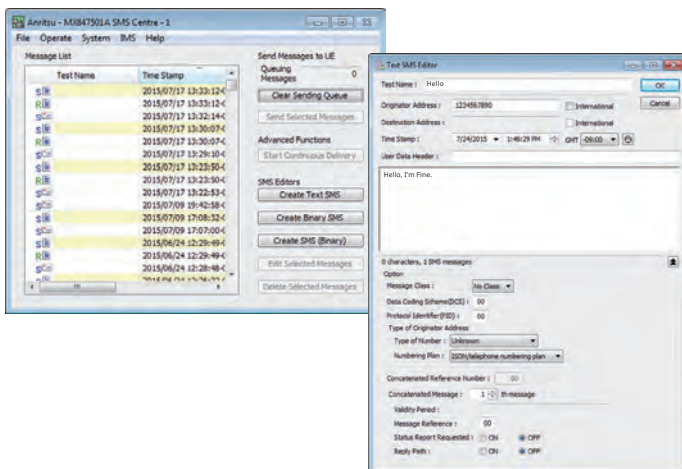


## SMS Tests

SMS and MMS are popular messaging services used worldwide. Exchanges between UEs as well as the number of verification items are both increasing because more direct control of UE is being attempted now.

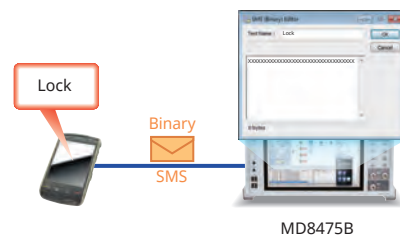
### Sending/Receiving SMS Text Messages

SmartStudio has a dedicated SMS server supporting sending and receiving of SMS messages at any PS or CS network setting. Multiple SMS messages can be preregistered for continuous sending and CBS messages can be sent too.



### Sending Binary SMS

The MD8475A/MD8475B can send binary messages as SMS supporting remote control of the UE. Additionally, general evaluations, such as behavior when receiving an SMS during a voice call, can be evaluated to help prevent problems occurring in the field.

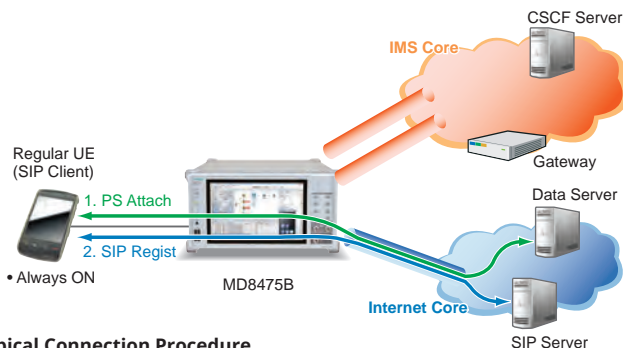


# Signalling Tester MD8475A/MD8475B Applications

## IMS Service Tests

SmartStudio has a built-in standard server environment for running IMS server functions for easy service tests, including VoLTE, SMS over IMS, etc.

### SIP Registration of a Non-IMS UE

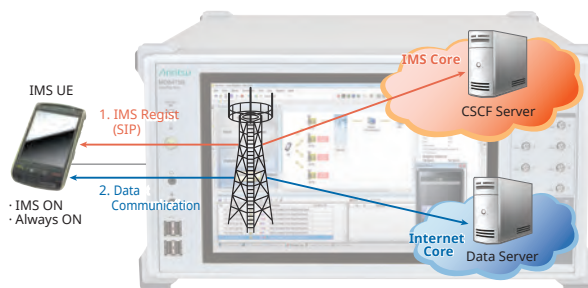


#### Typical Connection Procedure

1. PS Attach: Connect to Data server.  
→ Get address using DNS, etc.
2. SIP Register:  
→ Depends on application.

⇒ One PDN is required.

### SIP Registration of an IMS UE



#### Typical Connection Procedure

1. IMS Register: Connect to CSCF server using SIP.
2. Data Communication: Connect to Data server.

⇒ Consequently, two or more PDN required.

## Standard IMS Server Function

### CSCF (Call Session Control Function)

Supports standard server function for VoLTE and SMS over IMS tests as well as voice data loopback function. IPsec is supported too.

### DHCPv6 (Dynamic Host Configuration Protocol v6)

Allocates IPv6 address and notifies DNS/SIP server address to network node.

### DNS (Domain Name Server)

Operates as DNS cache server.

### NDP (Neighbor Discovery Protocol)

Supports function to transmit RA (Router Advertisement) and periodically transmit RA to RS (Router Solicitation).

### NTP (Network Time Protocol)

The UE and MD8475A times are synchronized by sending time data in response to an NTP request.

### PSAP (Public Safety Answering Point)

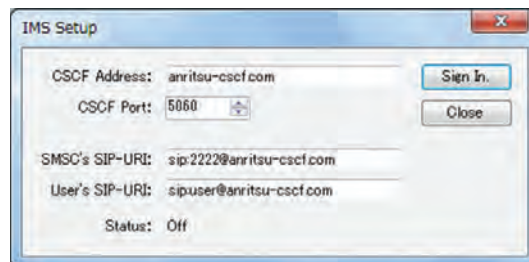
The UA (User Agent) and voice data loopback function support PSAP simulation for running IMS Emergency tests.

### XCAP (XML Configuration Access Protocol)

This function supports updating, referencing, and deleting of XML format file data (XCAP documents).

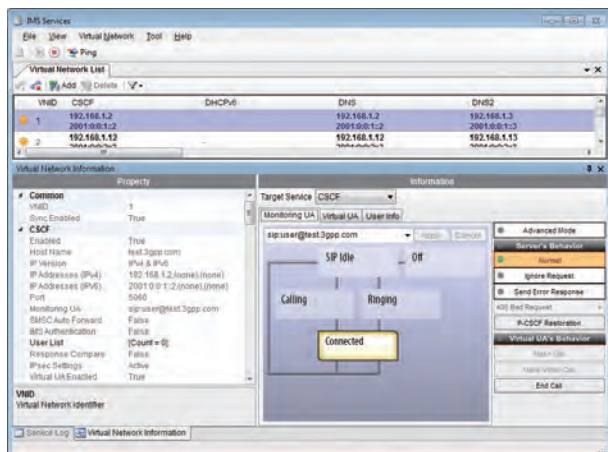
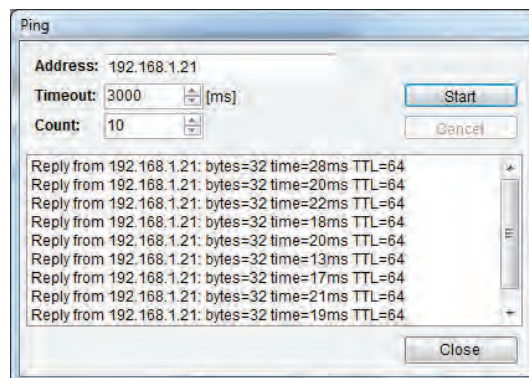
## SMS over IMS Setting

UE can register with CSCF server, and can transmit and receive SMS over IMS.



## Ping Sending Function

The Ping sending function is used to verify the connection of the device under test to the network.





# Signalling Tester MD8475A/MD8475B Applications

## IMS Options

### Extended CSCF Option MX847570A-080/MX847570B-080

Various conditions can be set for VoLTE/Video quasi-normal and abnormal tests. Moreover, VoLTE call and hang-up sequences can both be confirmed from SmartStudio. In addition, VoLTE/Video audio codec switchover tests are supported as well.

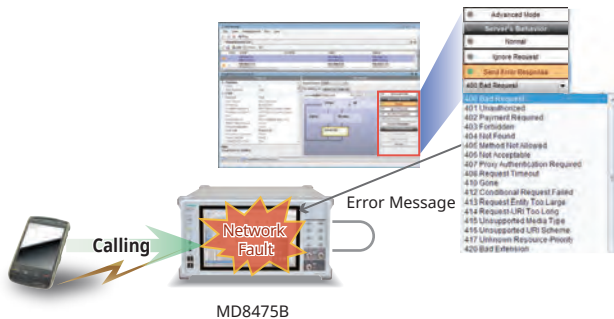
#### Virtual UA Calling/Release

VoLTE calling from the SmartStudio simulated UE (Virtual UA) is supported. In addition, any Virtual UA response can be set.



#### Network Fault

The occurrence of a server or network fault can be created.



#### Message Blocking

Ignore and Reply responses to specific messages can be changed arbitrarily.



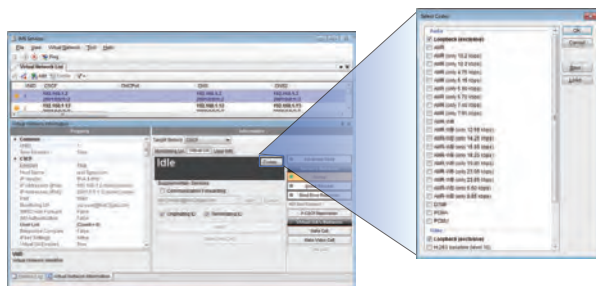
#### Multi-P-CSCF Settings

Up to three types of P-CSCF addresses can be notified to UE by one PDN to confirm correct UE operation for multiple addresses.



#### Voice Codec Switchover

Any codec can be sent from the MD8475A/MD8475B to the UE, and switchover tests, such as VoLTE → Video, are supported too.

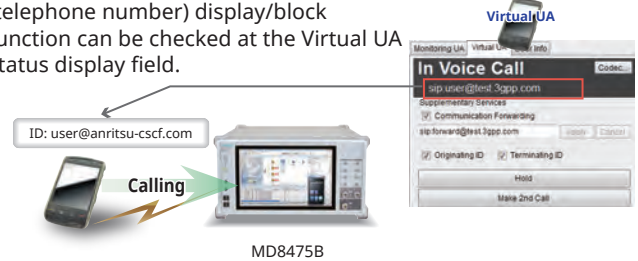


### IMS Supplementary Service Option MX847570A-081/MX847570B-081

This option adds functions for simulating VoLTE/Video caller ID, call transfer and call hold. Various CSCF and XCAP service settings as well as supplementary service functions can be set.

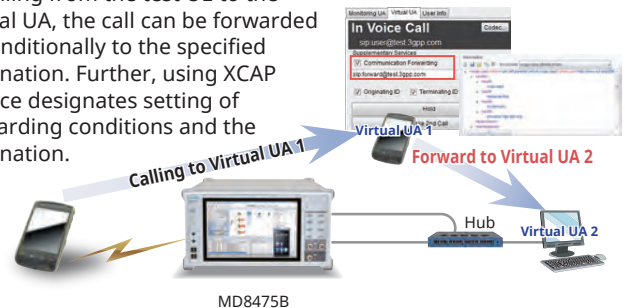
#### Caller ID Display ON/OFF Function

After a call from the test UE, the caller ID (telephone number) display/block function can be checked at the Virtual UA status display field.



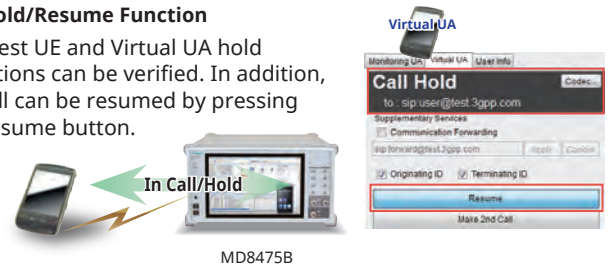
#### Forwarding Function

At calling from the test UE to the Virtual UA, the call can be forwarded unconditionally to the specified destination. Further, using XCAP Service designates setting of forwarding conditions and the destination.



#### Call Hold/Resume Function

Both test UE and Virtual UA hold operations can be verified. In addition, the call can be resumed by pressing the Resume button.



#### VoLTE Conference Test

The 3GPP TS 24.605 defined VoLTE Conference Call functions can be tested.



3GPP TS 24.605	
4.5.2.1.1	User joining a conference
4.5.2.1.2	User inviting another user to a conference
4.5.2.1.3	User leaving a conference
4.5.2.1.4	User creating a conference
4.5.2.1.5	Subscription for the conference event package
4.5.2.2.1	Conference focus
4.5.2.2.2	Conference notification service
4.5.2.7	Actions at the destination UE
4.6.1	Communication HOLD (HOLD)
4.6.3	Terminating Identification Restriction (TIR)
4.6.5	Originating Identification Restriction (OIR)

# Signalling Tester MD8475A/MD8475B Applications

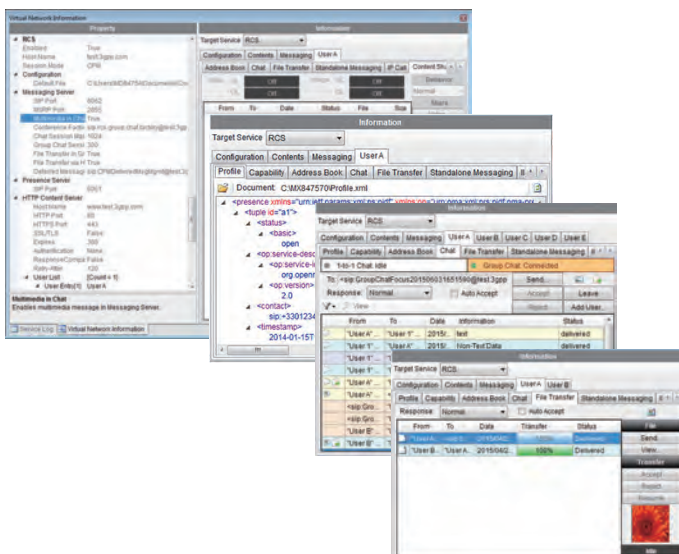
## IMS Options

### RCS Basic Option MX847570A-083/MX847570B-083

Rich Communication Suite (RCS) is the next evolutionary step in deploying existing simple voice and messaging (SMS, MMS) services on various networks and UEs with "rich" communications. Installing this software supports RCS defined tests of Instant Messaging (IM), Address Book, and Contents sharing.

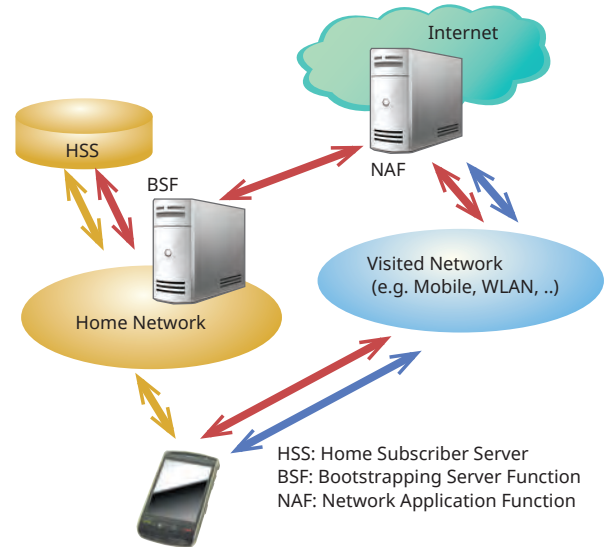
Item	Note
Configuration & Registration	HTTP (S) based support
Capability Discovery	
Standalone Messaging	
1-to-1 Chat	
Group Chat	
File Transfer	
Content Sharing	
Social Presence Information	Geolocation service not supported
IP Voice Call	IR.92 based support Interaction with other RCS services not supported
IP Video Call (IR.94)	IR.94 based support

### RCS Service Image



### GBA Authentication Option MX847570A-084/MX847570B-084

The software option references the 3GPP GBA Authentication algorithm to simulate the authentication procedure required when connecting to the Internet via networks other than Home Networks.

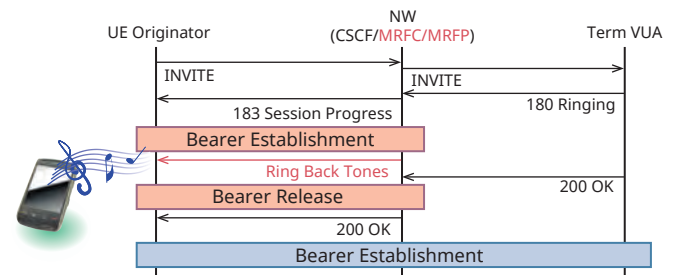


### IMS Early Media Option MX847570A-085/MX847570B-085

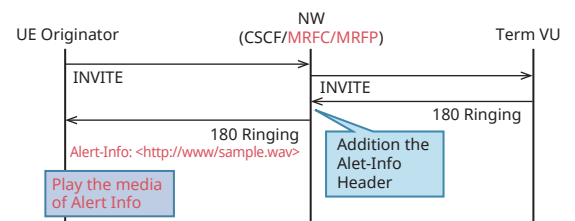
The software option simulates the IMS Early Media sequence. It supports MRFC, MRFP, etc., nodes and can authenticate service functions such as customized ringtones from the network side.

### NRBT: Function for recovering RBT (ring back tone) from network rather than from UE

The recovery status (recovery possible/not possible/recovering/ stopped) for each session is displayed on the Information screen.



### Alert-Info: Provides substitute ring back tone using Alert-Info, one of the Early Media switching function

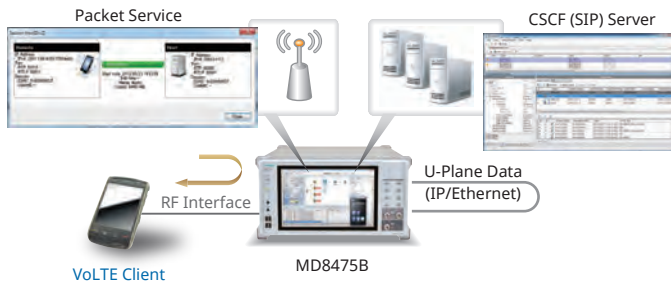


# Signalling Tester MD8475A/MD8475B Applications

## IMS Options

### RTP Frame Control Option MX847570A-086/MX847570B-086

This software controls the media data (RTP packets) during VoLTE communications. In addition to the MUTE condition and Fixed pattern, the data itself can be delayed; it can be used to configure the static stage required at audio evaluation and battery consumption measurement.



### IMS Script Basic Option MX847570A-060/MX847570B-060 XCAP Script Option MX847570A-061/MX847570B-061

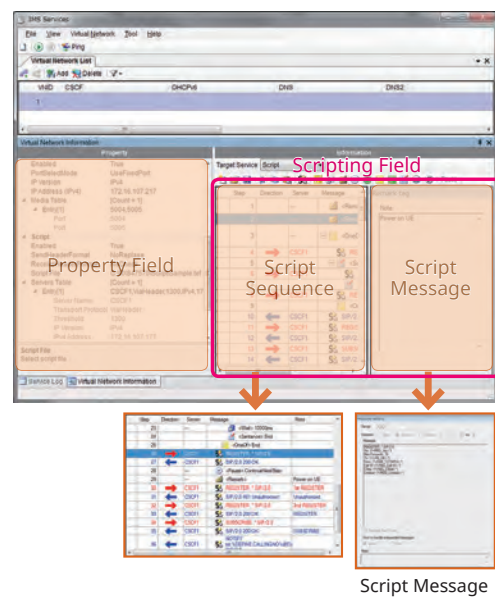
The software option can be used to edit and create SIP messages/XCAP messages using a ladder sequence to simulate the CSF server/XCAP server behavior. Not only can configure a test environment from the service designing specification stage, but also user-specific tests, such as quasi-normal and abnormal conditions, can also be tested to easily support every test requirement.

Property Field:

Network parameters such as IP address are set here.

Scripting Field:

Sequence messages between the UE and CSF are edited and executed here.



### IMS Log Import Option MX847570B-062

This software option enables importing Wireshark logs, and create IMS script automatically. This Script is editable using Add-in Sever window. This option help flexible evaluation of IMS.



# Signalling Tester MD8475A/MD8475B Applications

## IMS Options

### IMS Options (MD8475A/MD8475B)

✓: Supported

Section	Function	Outline	GUI Option										Scripting Option*2							
			MX847570A	MX847570B	MX847570A-080	MX847570B-080	MX847570A-081	MX847570B-081	MX847570A-083	MX847570B-083	MX847570A-084	MX847570B-084	MX847570A-085	MX847570B-085	MX847570A-086	MX847570B-086	MX847570A-060	MX847570B-060	MX847570A-061	MX847570B-061
General	SIP REGIST Test	Function for verifying CSCF server Bind/Unbind operation	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—	—
	IPsec	Function for on/off of IPsec (3DES, AES).	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—
	DNS Server	Function for resolving address using DNS	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	NTP Server	Function for synchronizing time using NTP	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	PSAP Server	Function for looping-back voice for IMS Emergency	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—
	X-CAP Server	Function for verifying service using XML file	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	✓
	BSF Server	Function for verifying GBA	—	—	—	—	—	—	—	—	✓	—	—	—	—	—	—	—	—	—
	No Server (Network) Response Test	Function for verifying operation when no response due to error at server or network	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	✓
	Server Error Test	Function for verifying operation when error response received from server due to the error at server	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	✓
Multi P-CSCF	Function for reporting up to three P-CSCF servers to UE	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
VoLTE/ Video Telephony	Calling Sequence Test	Function for verifying call sequence from UE	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—
	Incoming Call Sequence Test	Function for verifying call sequence to UE	—	✓*1	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—
	Voice Loopback Test	Function for looping-back and sending uplink voice data to verify call at UE side	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—
	Voice Loopback Test (fixed pattern)	Function for configuring the static stage required at audio evaluation and battery consumption measurement	✓	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—	—	—
	Early media Test	Function for verifying early media sequence and Ring Back Tone	—	—	—	—	—	—	—	—	—	—	✓	—	—	—	—	—	—	—
	Disconnection (from UE) Sequence Test	Function for verifying disconnection sequence from UE	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—
	Disconnection (from NW) Sequence Test	Function for verifying disconnection sequence from network	—	✓*1	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—
	Called Party Busy Test	Function for verifying operation when called party busy	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—
	Called Party Not Found Test	Function for verifying operation when called party not found	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—
	Called Party No Response Test	Function for verifying operation when no response from called party	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—
	Codec Selection	Function for confirming VoLTE/VT traffic with any codec; also performs loopback	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—
	VoLTE/Video Telephony Upgrade/Downgrade	Switches VoLTE/Video Telephony during call	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	—
	Call ID Display/Block	TS 24.607 verifies IMS test UE caller ID display ON/OFF	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	✓
	Incoming Call ID Display/Block	TS 24.608 verifies IMS test UE incoming caller ID display ON/OFF	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	✓
	Call Forwarding, Holding, Catchphone	Function for simulating TS 24.604, TS 24.610, TS 24.615 call forwarding, call holding, and catchphone functions	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	✓
	VoLTE Conference Environment	Function for verifying TS 24.605 VoLTE Conference related tests (Event message, HOLD, etc.)	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	✓
	Message Waiting Indication	Function for notifying users of voice mail services about arriving voice mail	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	✓
	RCS	Configuration	Function for creating and updating UE configuration data using XML file	—	—	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—
Presence		Function for referring UE configuration data using XML file	—	—	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—
Instant Messaging		Function for sending and receiving Instant Message using XML file	—	—	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—
RCS Address Book		Function for registering and saving UE contacts using RCS	—	—	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—
1 to 1 Chat (CPM)		Function for 1 to 1 chat by connecting with CPM mode	—	—	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—
Group Chat		Function for multi party chat (Maximum 5 users)	—	—	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—
File Transfer		Function for sending and receiving same files between users	—	—	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—
Contents Sharing		Function for sharing same files between users	—	—	—	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—
SMS over IMS	SMS Message Send Test	Function for verifying UE SMS message sending	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	—	✓
	SMS Message Receive Test	Function for verifying UE SMS message receiving	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	✓
IPv6 Addressing	IP Address Allocation Test (RA)	Function for verifying IP address setting at RA receiving	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	IP Address Allocation Test (DHCPv6)	Function for verifying IP address setting allocated from DHCPv6 server	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
VoLTE Emergency Call	VoLTE Emergency Call (Voice)	Function for verifying IP VoLTE Emergency Call	—	✓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

\*1: This option is unnecessary when a separate network-side UE is prepared.

\*2: The user must create the test message script

## New Services

New network services are being deployed at an increasing rate, requiring more-and-more tests for UEs supporting such new services. The MD8475A/MD8475B makes it easy to support new mobile test environments.

## WLAN Offload Tests

Offloading data traffic to WLAN networks is being deployed as a technology for preventing traffic congestion on mobile networks. The MD8475A/MD8475B supports a WLAN data offload test environment.

## WLAN Offload Basic Option MX847570A-070/MX847570B-070

The software option provides functions for forwarding packets between the UE and networks with both Trusted non-3GPP Access and Untrusted non-3GPP Access authentication functions, as well as for monitoring packets graphically.

**ePDG Option MX847570A-071/MX847570B-071**

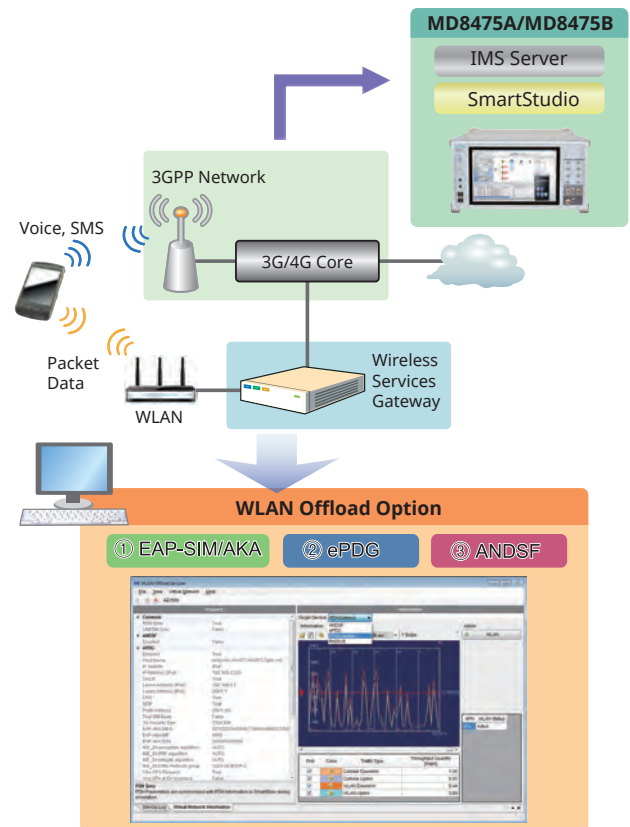
The software option supports the IKEv2 key exchange procedure and IPsec communications functions for Untrusted non-3GPP Access network authentication.

**ANDSF Option MX847570A-072/MX847570B-072**

The software option supports the function for setting and distributing the system selection policy between 3GPP and WLAN (distributes Policy and Discovery Information according to request from UE, and receives Location and Profile reports from UE).

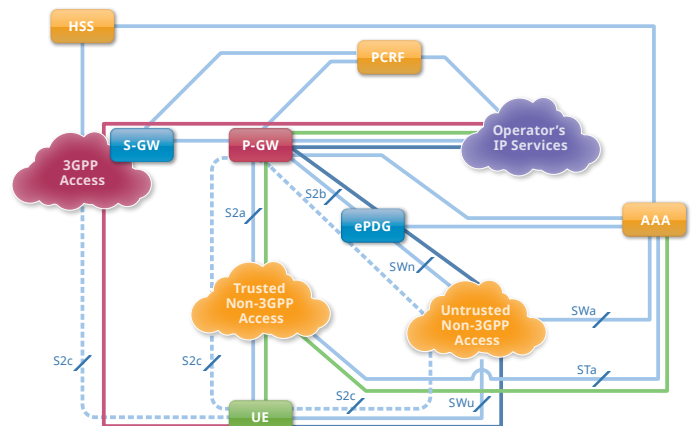
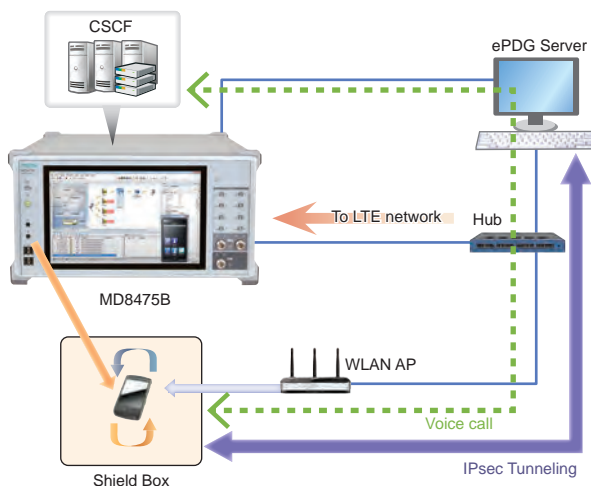
### Extended ePDG Option MX847570A-073/MX847570B-073

The software option supports configuration of an ePDG status fault test environment for inserting errors into the ePDG sequence, setting timeouts, etc. Additionally, this option can be used to support Fast Re-Authentication (EAP-SIM/EAP-AKA) tests without the need to generate UE-side authentication keys.



## Wi-Fi Calling Evaluation Environment

Wi-Fi Calling is a function for making voice calls and sending/receiving SMS over WLAN. Using this function, voice calls can be made using the telephone number registered inside the SIM card. Combining the MD8475A/MD8475B with the WLAN option supports verification of Wi-Fi Calling voice calls as well as handover tests from VoLTE to Wi-Fi Calling and vice versa.



# Signalling Tester MD8475A/MD8475B Applications

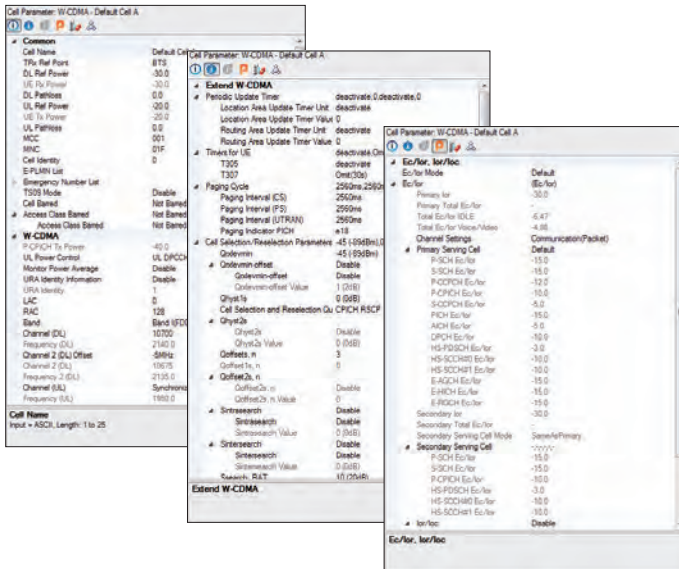
## Power Consumption Test

SmartStudio supports detailed settings such as changes to the UE RF output and stopping packet communications.

### Base Station Settings

Any messages, such as Paging Cycle, UL TPC, etc., can be sent to the UE\*.

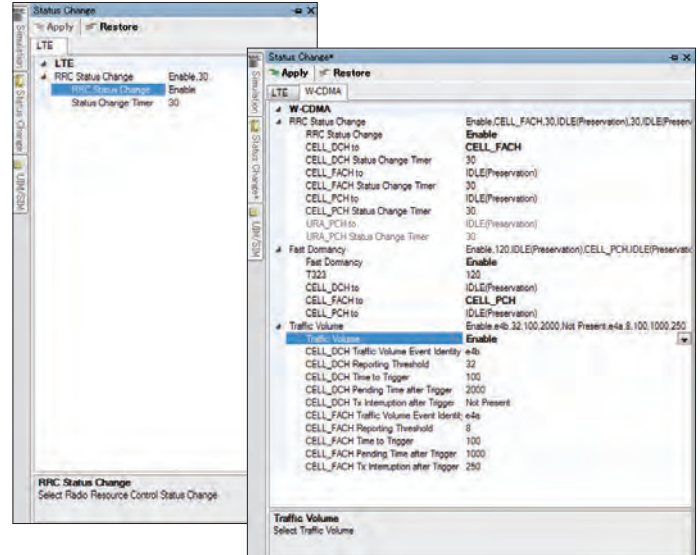
Support W-CDMA CPC, Ec/Ior, etc.



\*: The settable items differ by the systems.

### Packets Communication State (RRC State Change) Settings

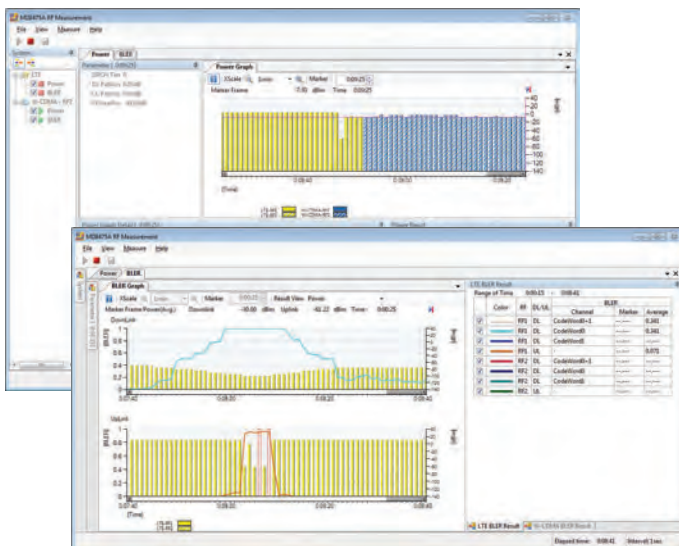
When packets stop passing over the network during data packet communications, the Cell Status can be transitioned at a specific timing to switch the UE to any RRC State. This is useful for configuring a test environment simulating a real network when testing battery life.



### Check UE Tx RF Power

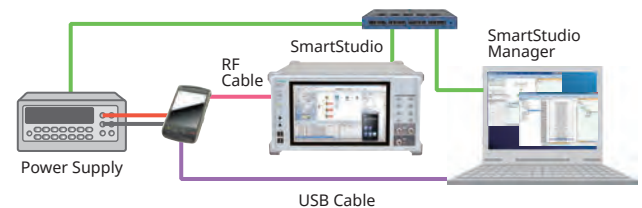
#### RF Measurement MX847506A Quick TRX Diagnosis MX847506B

Adding RF Measurement supports verification of UE Tx RF power. A UE power consumption test environment can be configured easily by combined use with SmartStudio base station settings from the UE. Further, BLER can be verified using graphical or tabulated data.



### Power Consumption Test using SmartStudio Manager

The MX847503A SmartStudio Manager software is bundled with test cases for measuring the UE power consumption. In addition, the MX847503A can also control peripheral devices simultaneously, shortening the time required for configuring UE test environments.





# Signalling Tester MD8475A/MD8475B Applications

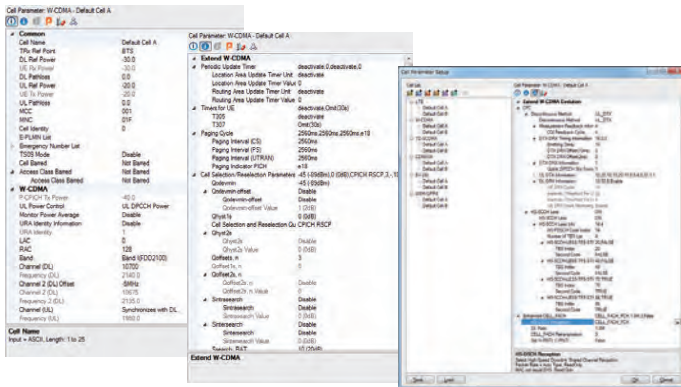
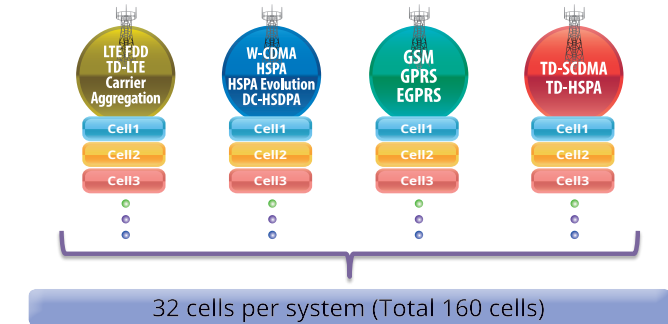
## Flexible Base Station Settings

Base station settings are essential for testing UE connections. Not only does SmartStudio support frequency band and Tx and Rx power settings, it can also be set to behave as a real base station.

### Setting Base Station Parameters

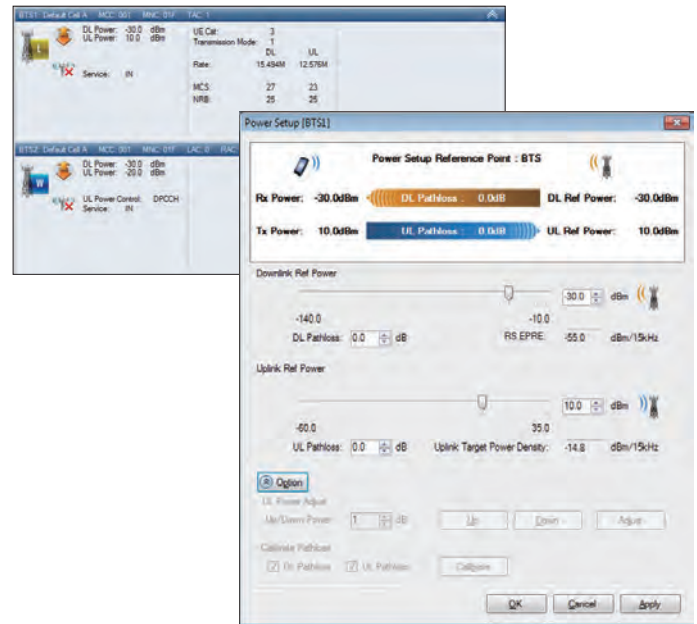
#### Cell Parameter Settings

Up to 32 base station parameters can be saved in one file to prevent setting errors and assure fast, smooth testing when making slight changes to frequency and bandwidth before retesting.



### Base Station Power Settings

The Tx/Rx power of the base station can be changed during testing to simulate Out-of-Service tests by stopping RF on Smartstudio.



### Setting Neighbor Cells

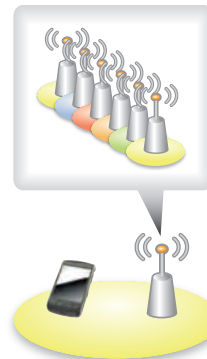
Neighbor cells can be set to display the mix of multiple cells for a UE graphically.

### At-a-Glance Confirmation of UE Performance

Moving the mouse cursor over the SmartStudio UE icon displays a summary of the UE capability information for easy confirmation of the categories, bands, etc., supported by the UE under test.

#### UE Capability Information

LTE  
Access Stratum Release = Rel.10  
UE Category = 4, 6  
Supported Band = 1, 3, 5, 7, 17  
Band Combinations:  
3A-5A, 5A-3A, 1A, 3A, 5A, 7A, 17A



System	Information Element	Example
LTE	Access Stratum Release	Rel.12
	UE Category	4, 6, 9
	Supported Band	1, 2, 3, 4
	Band Combination	1A-2A, 3C
	Band Combination (Rel.11)	1A-2A, 3C
W-CDMA	Access Stratum Release	Rel.10
	HSDPA Category (Rel.7/Rel.8)	10 (14/24)
	HSUPA Category	6
TD-SCDMA	Access Stratum Release	Rel.9
	HSDPA Category	15
	HSUPA Category	6
GSM/GPRS	Supported Band	a, f
	GPRS Multislot Class	12
	EGPRS Multislot Class	12
	Supported Band	GSM E

# Signalling Tester MD8475A/MD8475B Applications

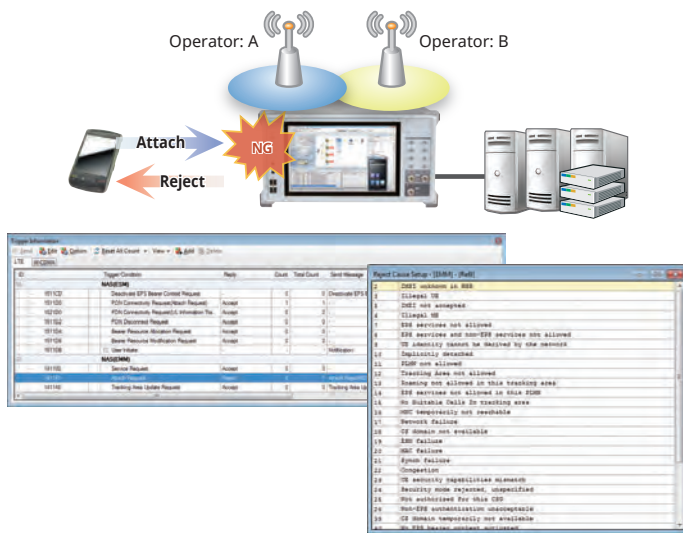
## Creating Environment for Difficult Tests on Live Network

Some UE tests cannot be run on a commercial live network and are difficult on a test network. SmartStudio makes it easy to support these tests.

### Reject Tests

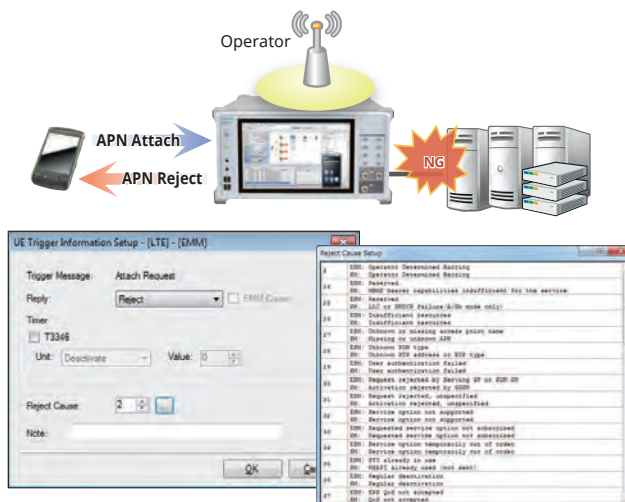
#### Attach Reject/Ignore

By setting specific messages, UE connection request can be rejected when the UE tries to connect the base station. In addition, the base station ignores messages from the UE by setting 'Ignore', enabling confirmation of the UE behavior when messages are ignored.



#### APN Reject

By setting specific messages, UE connection request can be rejected when the UE connects to the network.



### Emergency Alerts Tests

Using the built-in SmartStudio PWS center function supports sending of emergency alerts like earthquake and tsunami warnings to the UE\*.

ETWS/CMAS messages can be sent at any timing simply by selecting created/edited messages.

- ETWS (Earthquake and Tsunami Warning System used in Japan)
- CMAS (Commercial Mobile Alert System) North American Federal and state government system for sending standard-format text and audio messages to TV broadcast stations

✱: Supports LTE/W-CDMA/GSM.

### Barred Call and Emergency Call Tests

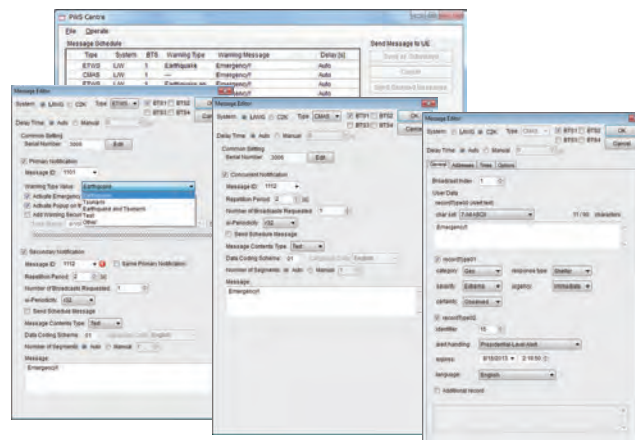
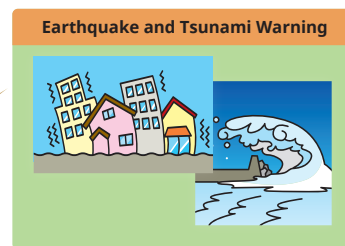
#### Access Class Control

Sometimes, carriers limit access at events where there are too many people trying to call at once or during abnormally busy times like New Year. SmartStudio can configure an access control test environment, which is difficult to do on a live network.

#### Emergency Call Test

Obviously, emergency calls cannot be tested on a live network but this is an essential test that must be performed. SmartStudio offers emergency call test settings and execution.

System	Control Method	Operation
W-CDMA/ GSM	Not Barred	No Access Control
	Barred	Call barring for all communications
	Emergency	Call barring for communications except emergency call





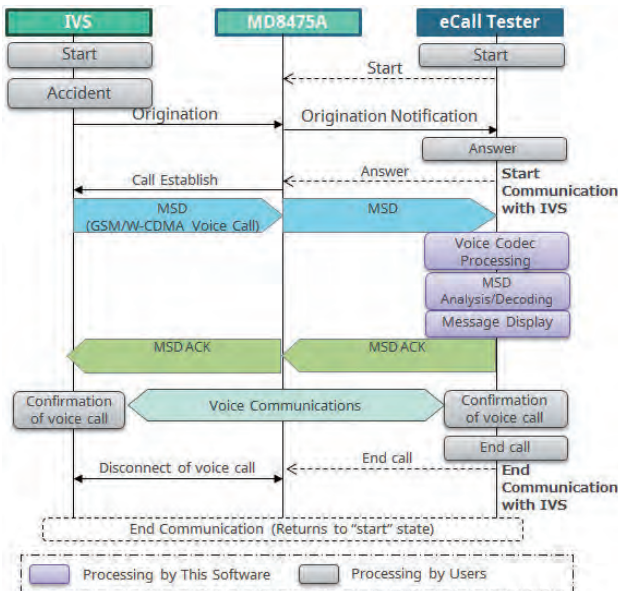
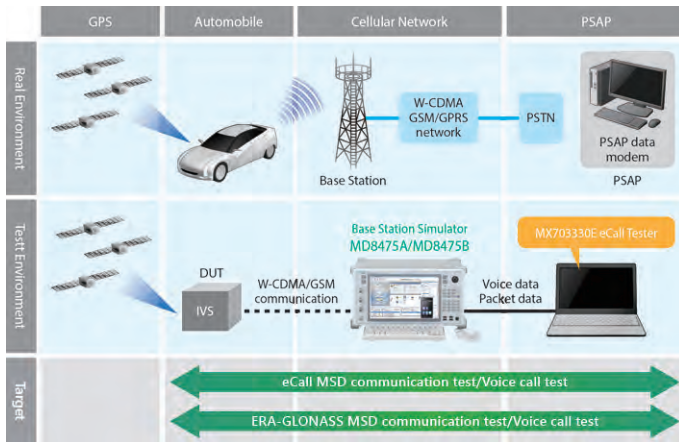
# Signalling Tester MD8475A/MD8475B Applications

## Configuring eCall Compliance to Application Test Environments

This solution makes it easy to configure an environment for emulating the eCall emergency rescue information system for automatically transmitting traffic accident information, including accident location, as well as for making voice calls to an emergency assistance Public Safety Answering Point (PSAP). Since emergency calls cannot be tested on live communications networks, combining the Signalling Tester MD8475A/B and eCall Tester MX703330E software is the perfect answer to testing IVS (In Vehicle System) communications functions.

### eCall Tester MX703330E

The MX703330E emulates the eCall system IVS and PSAP communications sequence. It supports quasi-normal test of MSD timeout that are hard to simulate on a live network, as well as comparison of reference MSD (expected) and received data.



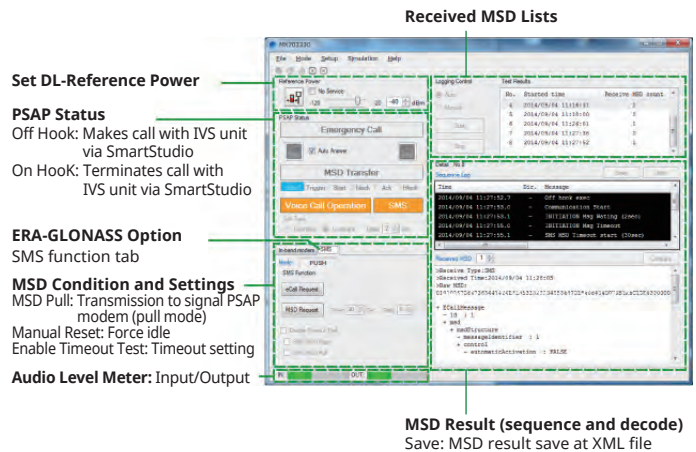
### Features

- EN16454-compliant
- Implements communications sequence tests between IVS and PSAP
- Trace-displays status of eCall communications (MSD-Voice) and MSD communications (in-band modem)
- Displays in-band modem sequence and MSD decode data (conversion to meaningful data) execution results and outputs as data file
- Sets reference MSD (expected values) and displays results of comparison with received MSD
- Simulates base station operation in eCall Tester background, making specialist mobile protocol knowledge unnecessary for eCall evaluation
- Performs external control of eCall tester using SmartStudio Manager automation tool to perform PSAP operations

### EU eCall Compliance Test

European Commission regulation (EU) 2017/79 approved sale of new M1 and N1 category in-vehicle eCall equipment from 31 March 2018. eCall is an emergency rescue information system for automatically transmitting traffic accident information, including accident location, as well as for making voice calls to an emergency assistance centre, or Public Safety Answering Point (PSAP). The eCall Tester with EN 16454 PSAP server function supports configuration of the type-certification test environment. Additionally, the interactive GUI simplifies parameter changes, while display of real-time MSD analysis data improves the efficiency of pre-compliance testing, including debugging.

- ★ M1 Category: Passenger vehicles with driver and 8 or less seats
- N1 Category: Trucks up to 3.5 tonnes max. load weight

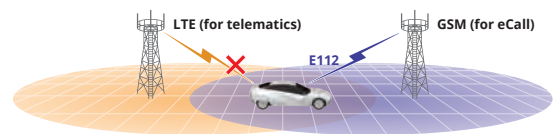


### eCall Application Testing

Some IVS have requirements for both calling and Telematics functions while driving. Figure shows the handover between base stations during driving.



Figure shows the situation when the IVS switches from a 4G network connection used by Telematics services during driving to a 2G/3G network connection for eCall functions when an accident occurs. To emulate this type of test environment, the MD8475A and eCall Tester software perform the handover and CS fallback switching tests in combination with the eCall function test. Requires Multi-Cell Option MX703330E-061.



One-touch handover test settings save time and eliminate user worries. The following cells are supported.

	LTE	W-CDMA	GSM
LTE*	—	✓	✓
W-CDMA	✓	✓	✓
GSM	✓	✓	✓

★: VoLTE not supported

These tests help to greatly improve IVS quality and reliability.

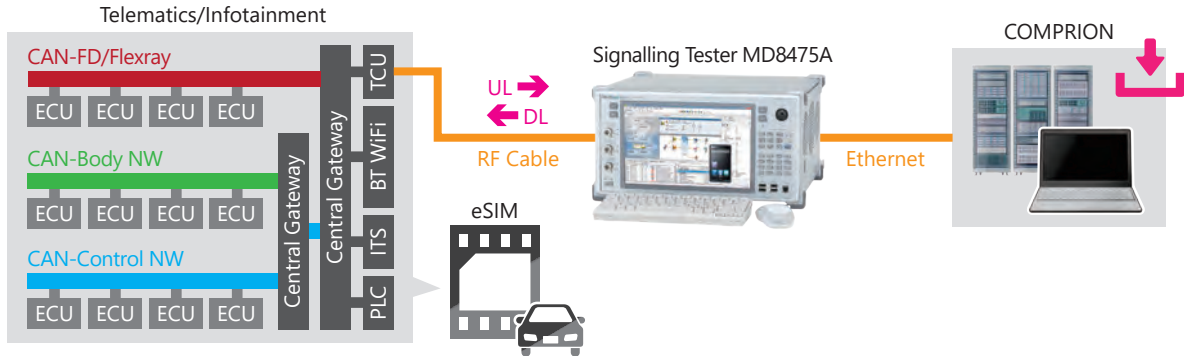


## Signalling Tester MD8475A Applications

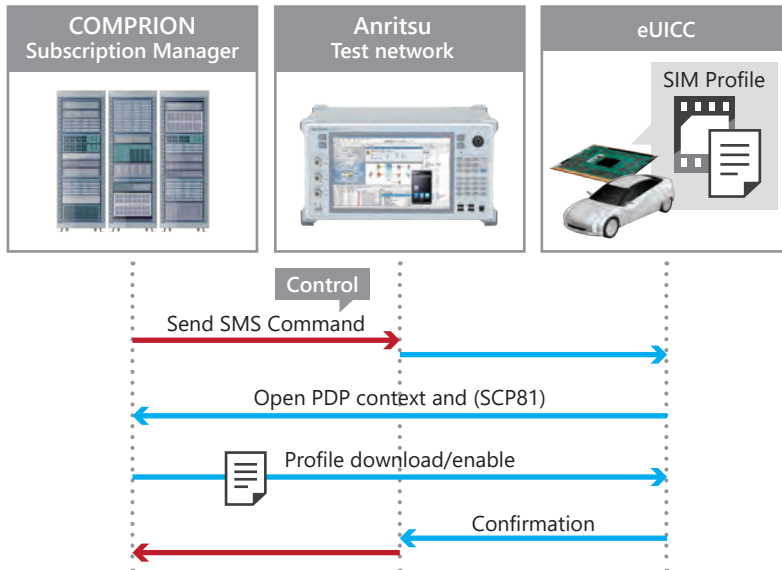
### eSIM OTA Verification Solution eUICC Profile Manager Z2002A

MD8475A with COMPRION's software eUICC Profile Manager can performing eSIM (Embedded SIM) test.

eSIM allows the communication protocol information on a SIM to be changed via an OTA (Over the Air) environment.



#### Sequence Flow



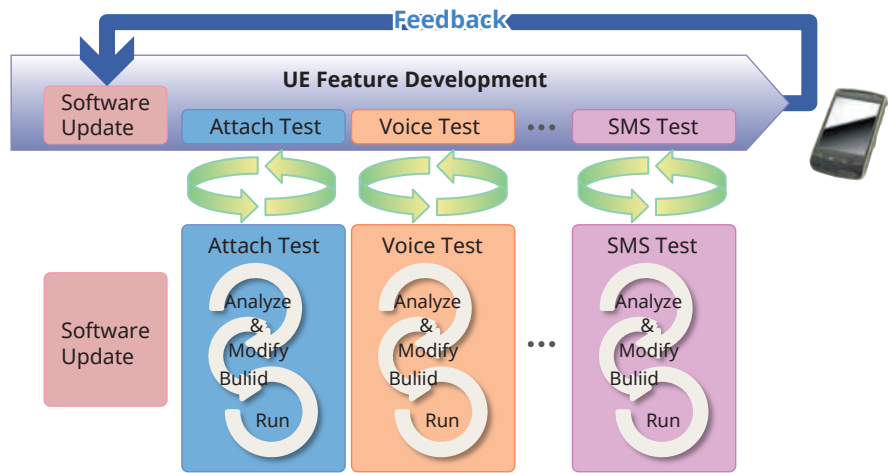
Z2002A include following Software and USB dongle 1pc made by COMPRION.

Model No.	Model name	Quantity
31000111	eUICC Profile Manager	1
31000204	Network Simulation Control Connection Package Anritsu MD8475A	1
31000134	Network Simulation Control Connection	
31000057	SMSC Simulation	
31000205	Anritsu MD8475A Signaling Control	
31000113	Profile Explorer	1
31000114	Profile Loader M2M	1
#3100 0171	Dongle	1

# Signalling Tester MD8475A/MD8475B Automation Functions

## Regression Tests Necessity

Verification of existing functions and regression testing are key elements of software update testing during UE development. Automated and repeated testing of known items to confirm the absence of new software bugs plays a major role in improving development efficiency and cutting costs.



## Automated Testing with SmartStudio: SmartStudio Manager MX847503A

The SmartStudio Manager MX847503A software is for editing test sequences and running created test sequences automatically and continuously. This software automates manual testing using the SmartStudio MX847570A software. Automated, unmanned operation test improves efficiency. Additionally, Pass/Fail results can be reported along with the continuous test.

### Test Sequence Editing Screen

The screenshot shows the SmartStudio Manager MX847503A Test Sequence Editing Screen. It displays a complex flowchart of test sequences. Four numbered steps are highlighted with colored boxes and arrows pointing to specific parts of the interface:

1. Configure RAT & Network (SimParameters)
2. Configure BTS (Cell Parameters)
3. Start Simulation
4. Wait UE response

### Test Sequence Continuous Execution Screen

The screenshot shows the SmartStudio Manager MX847503A Test Sequence Continuous Execution Screen. It displays a "Campaign Run Report" for a test sequence. The report includes the following information:

- Run Name: New\_Campaign\_1\_2015-09-18\_15:53:40
- Start Time: 2015-09-18 15:53:40
- Duration: 14 minutes, 53 seconds
- Status: Run in completion
- # Run: 2
- # Passed: 1
- # Failed: 1
- # Skipped: 0
- Pass Rate: 50%
- Comments: n/a

A summary table is also provided:

Execution Order	Result	Test	Duration	ID
0	✓	Service_12W_CSPB_MONR	1m 18s	1
1	✓	Service_12W_CSPB_MONR	4m 54s	1
2	✗	Registration_C_CSPBService	4m 16s	2

Report generated: 2015-09-18 16:13:42 by MX847503A\_1\_8\_0\_A

### Test Sequence Continuous Execution Results Display

The screenshot shows the SmartStudio Manager MX847503A Test Sequence Continuous Execution Results Display. It displays two "Test Run Report" windows. The first window shows a "Failed" result, and the second window shows a "Passed" result. Both reports include the following information:

- Start: 2015-09-18 16:44:24, 15 seconds
- Status: Failed, run to completion
- Watermark: Not Watermarked
- Comments: n/a
- Run name: SampleTestcase

The "Failed" report also includes a "Criteria Evaluation" section:

Criteria	Path	Criteria_Group	Path	Criteria_Group	Path	Criteria_Group	Path	Criteria_Group
1	Path_Criteria_Group_1	Path_Criteria_Group_1	Path_Criteria_Group_1	Path_Criteria_Group_1	Path_Criteria_Group_1	Path_Criteria_Group_1	Path_Criteria_Group_1	Path_Criteria_Group_1

The "Passed" report also includes a "Criteria Evaluation" section:

Criteria	Path	Criteria_Group	Path	Criteria_Group	Path	Criteria_Group	Path	Criteria_Group
1	Path_Criteria_Group_1	Path_Criteria_Group_1	Path_Criteria_Group_1	Path_Criteria_Group_1	Path_Criteria_Group_1	Path_Criteria_Group_1	Path_Criteria_Group_1	Path_Criteria_Group_1

Report generated: 2015-09-18 16:44:21 by MX847503A\_1\_8\_0\_A

# Signalling Tester MD8475A/MD8475B Automation Functions

## Regression Tests Necessity

### UE Operation Auto-Recording/Auto-Executing: Smartphone Control Platform MX847504A

The MX847504A software option can records Android OS smartphone operations and offers an environment for creating, editing and running UE automated control scripts. Regression and stable operation confirmation testing of UE are easy using the intuitive editing environment with pre-installed scripts and GUI.



Android™ is a trademark of Google Inc.

### Regression Tests and Test Sequences

SmartStudio Manager has various test sequences over 180. These test sequences can be used to confirm basic UE operations, such as making and answering voice calls and SMS messages, as well as measuring throughput. Users can use the AT command interface and Smartphone Control Platform MX847504A to control the UE remotely and perform continuous testing without hands-on UE operation.

#### Test Sequences (extract)

Category	Procedure	Comment
Registration	Attach	Testing UE and base station registration, etc.
	Out of Service	
Voice/Packet/SMS	Voice	Basic UE tests such as voice, data, CSFB, etc.
	Packet	
	SMS over SGs	
	MOMR/ MTNR CSFB	
PWS	ETWS Primary + Secondary Notification	Emergency message tests
	CMAS Concurrent Notification	
	CMAS	
Cell Barred	Cell Barred	Network restriction tests
	Access Class Barred	
CS Emergency	CS emergency	Emergency call tests
	CS emergency CSFB	
Stress Test	Voice	Basic function tests and throughput tests
	Handover	
	Throughput testing	
Mobility	Cell Selection/Reselection	Handover tests
	Handover	
	MOMR/MTNR SRVCC	
WLAN Offload	Untrusted non-3GPP access	WLAN Offload tests
	Trusted non-3GPP access	
IMS/RCS	MO/ MT SMS over IMS	IMS/RCS tests
	MOMR: Voice/Video Call Establishment/Release	
	RCS Registration	
TS 09	Stand-by test	TS 09 power consumption tests
	MOMR: Talk time Test	
	MTNR: Talk time Test	
	Packet Switch Transfer Test	
	Browsing Test	
	Streaming Content Test (Video/Audio)	
	Video Telephony Test	
	FTP Download Test	



✓: Supported

Function		Description	MD8475A			
			LTE	W-CDMA	GSM	TD-SCDMA
General						
Position Registration*1		Connects UE and creates test environment	✓	✓	✓	✓
L1/L2 Counter		Counts values for each L1/L2 channel every second	✓	✓	—	✓
Throughput Counter		Simultaneously displays PHY layer and IP Throughput (SDU)	✓	✓	✓	✓
Trace		Displays events for each layer as arrows	✓	✓	✓	✓
Reject		Returns arbitrary reject message when UE connected	✓	✓	✓	✓
Neighbor Cell Setting		Reports information to UE about BTS adjacent to BTS under test	✓	✓	✓	✓
RF Related						
TRx Power Setting		Changes TRx power of BTS during Idle Communication	✓	✓	✓	✓
No Network Setting		Sets BTS Power output to OFF and switches UE to no network status	✓	✓	✓	✓
RF Monitor		Displays frequency, frequency error, and power for each channel such as PDSCH, PUSCH, etc.	✓	✓	✓	✓
TPC Setting		Changes TPC (Transmit Power Control) arbitrarily	✓	✓	✓	✓
AWGN		Sends AWGN in conjunction with normal signal	✓	✓	—	—
RF Measurement Options		Measures UE RF power at each second	✓	✓	✓	—
External Control						
Ethernet		Controls SmartStudio operation (parameter selection, start, etc.) from external PC	✓	✓	✓	✓
GPiB		Controls SmartStudio setting parameters from external PC	✓	✓	✓	✓
Voice/Video Communications						
LTE FDD/TDD						
VoLTE/Video Telephony Calling/Answering (Loopback)		Executes call test for UE supporting Voice over LTE/Video over LTE	✓			
Emergency Call/Originating System		Sets emergency call, and VoLTE/Video call control at LTE	✓			
Codec Change		Changes audio and video codecs arbitrarily and executes UE switchover test	✓			
LTE FDD/TDD, W-CDMA, GSM, TD-SCDMA						
CSFB/eCSFB*2		Auto-switches communication method when other system voice call received during LTE call	✓	✓	✓	✓
SRVCC*2		Performs seamless switch to CS voice call during VoLTE call	✓	✓	✓	—
W-CDMA, GSM, TD-SCDMA						
Voice Call/Answer/On-hook (Loopback/Echoback)		Performs loopback call test*3		✓	✓	✓
Voice Call/Answer/On-hook (Handset)		Performs call test using headset		✓	✓	✓
Emergency Call/Originating		Performs emergency call test with and without Test SIM		✓	✓	✓
Caller ID Setting		Sets Caller ID notification/non-notification/notification disabled/public phone/international call answer		✓	✓	✓
Call Blocking (Release99) <Barred>		Sets call conditions for Release99 for W-CDMA, GSM, TD-SCDMA and bars all calls		✓	✓	✓
Call Blocking (Release99) <Emergency>		Sets call conditions for Release99 for W-CDMA, GSM, TD-SCDMA and bars all calls except emergency calls		✓	✓	✓
W-CDMA, TD-SCDMA						
Videophone Call/Answer/On-hook (Loopback)		Performs loopback call test*3		✓		✓
Packet Data Communications						
IPv4 Packet Test		Performs data TRx using IPv4	✓	✓	✓	✓
IPv6 Packet Test		Performs data TRx using IPv6	✓	✓	✓	✓
Packet Preservation/Dormant Test		Releases RRC Connection while preserving PDP Context	✓	✓	—	✓
Multiple PDP Context/PDN Connect		Connects multiple PDN and performs multisession packet data test	✓	✓	—	—
State Change		Changes state from BTS during packet data communications	✓	✓	—	✓
LTE FDD/TDD						
SISO/MIMO Packet Calling/Answering		Connects server and performs application test using packet data communications	✓			
SISO/MIMO Packet UE Side Disconnect			✓			
SISO/MIMO Packet Network Side Disconnect			✓			
DL2CC Carrier Aggregation		Performs DL2CC carrier application tests	✓*4			
DL3CC Carrier Aggregation		Performs DL3CC carrier application tests				
UL2CC Carrier Aggregation		Performs UL2CC carrier application tests	✓*6			
FDD/TDD Joint Operation		Performs FDD and TDD Joint Operation test	✓*5			
W-CDMA						
W-CDMA/HSPA/HSPA Evolution Packet Calling/Answering		Connects server and performs application test using packet data communications		✓		
W-CDMA/HSPA/HSPA Evolution Packet UE Side Disconnect			✓			
W-CDMA/HSPA/HSPA Evolution Packet Network Side Disconnect			✓			
PPP Packet Calling		Performs DL2CC carrier application tests		✓		
PPP Packet UE Side Disconnect		Performs DL3CC carrier application tests		✓		
PPP Packet Network Side Disconnect		Performs UL2CC carrier application tests		✓		
GSM						
GPRS/EGPRS Packet Calling/Answering		Connects server and performs application test using packet data communications			✓	
GPRS/EGPRS Packet UE Side Disconnect					✓	
GPRS/EGPRS Packet Network Side Disconnect					✓	
TD-SCDMA						
TD-SCDMA/HSPA*7 Packet Calling/Answering		Connects server and performs application test using packet data communications				✓
TD-SCDMA/HSPA*7 Packet UE Side Disconnect						✓
TD-SCDMA/HSPA*7 Packet Network Side Disconnect						✓
Messaging						
ETWS Message Sending		Performs ETWS message send test during Idle or Communication state	✓	✓	—	—
CMAS Message Sending		Performs CMAS message send test during Idle or Communication state	✓	✓	—	—
CBS Message Sending		Performs CBS message send test during Idle or Communication state	—	✓	✓	—
SMS Message Sending/Receiving		Performs SMS (7 bit-ASCII, Unicode, Binary) test using PS and CS networks*3	✓	✓	✓	✓
SMS over IMS Test		Performs SMS send/receive test via IMS server	✓	—	—	—
SMS Message Continuous Sending		Sends selected multiple SMS to UE continuously	✓	✓	✓	✓
MMS Sending/Receiving*8		Performs MMS send/receive test	✓	✓	✓	✓

\*1: Ciphering function not supported

\*2: Only dual system configuration is supported

\*3: Two-way tests using two UEs not supported

\*4: Requires two MD8475A sets for 2CC MIMO tests

\*5: LTE-FDD/TDD Joint CA test is not supported.

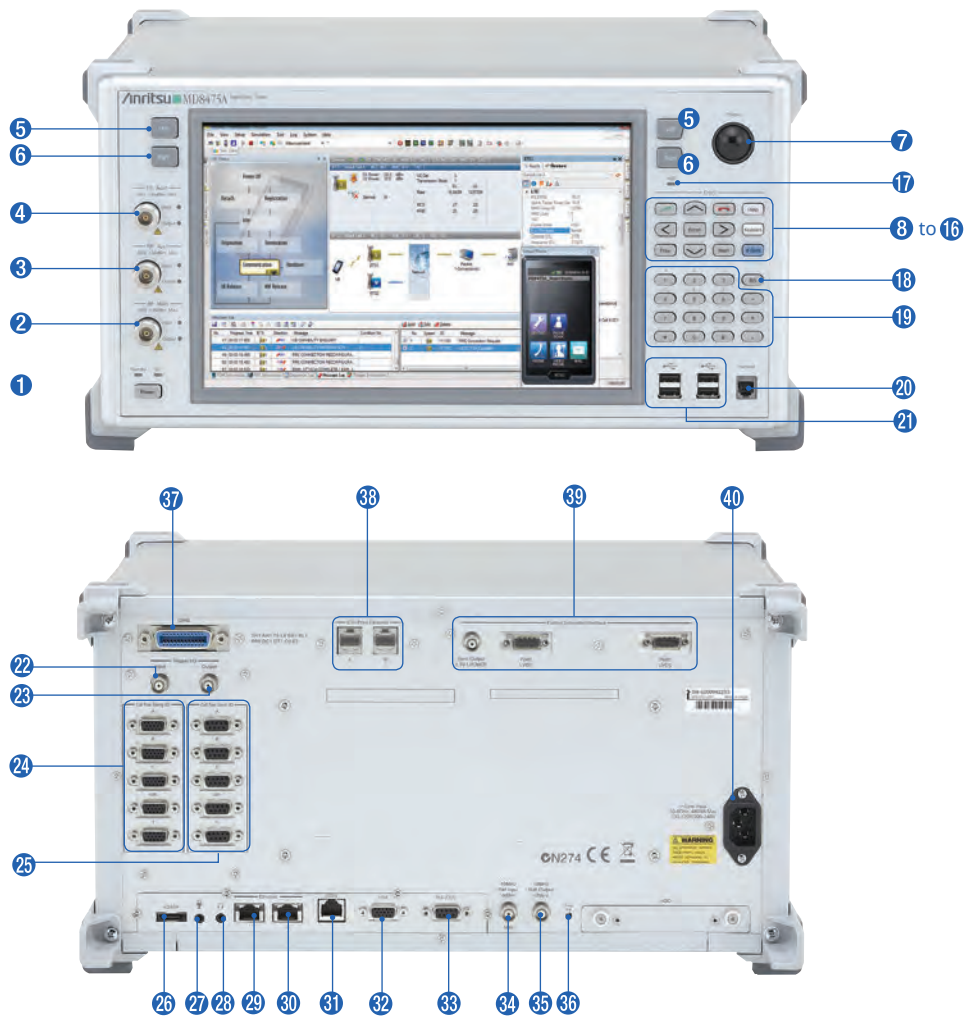
\*6: Throughput limited up to 50 Mbps

\*7: DCH Measurement Occasion/Idle Interval Measurement Function are not supported

\*8: Requires separate MMS server

# Signalling Tester MD8475A

## Signalling Tester MD8475A Panel Layout



- |   |  |
|---|--|
| 1 Power switch  | 22 [Trigger I/O Input] Trigger input connector (BNC)   |
| 2 [RF Main] N-type Main I/O connector (N)                   | 23 [Trigger I/O Output] Trigger output connector (BNC)   |
| 3 [RF Aux1] N-type auxiliary I/O connector 1 (N)            | 24 [Call Proc Timing I/O A to F] Timing I/O connectors for call processing (15 Pin Mini D-Sub) Shared connectors D/E |
| 4 [RF Aux2] N-type auxiliary I/O connector 2 (N)            | 25 [Call Proc Serial I/O A to F] Serial I/O connectors for call processing (9 Pin Mini D-Sub) Shared connectors D/E  |
| 5 Left keys   | 26 [eSATA] eSATA connector   |
| 6 Right keys  | 27 Microphone connector (ø3.5 mm)  |
| 7 [Pointer] Pointer   | 28 Headphone connector (ø3.5 mm)   |
| 8 Left arrow, Right arrow, Up arrow, Down arrow Cursor keys | 29 [Ethernet 1] Ethernet 1 connector (RJ-45)   |
| 9 Enter Enter key   | 30 [Ethernet 0] Ethernet 0 connector (RJ-45)   |
| 10 Off-hook key   | 31 [ISDN] ISDN connector (RJ-45) <Option>  |
| 11 On-hook key  | 32 [VGA] VGA connector (15 Pin Mini D-Sub)   |
| 12 Prev Prev key  | 33 [RS-232C] RS-232C connector (9 Pin Mini D-Sub)  |
| 13 Next Next key  | 34 [10 MHz Ref Input] Reference signal input connector (BNC)   |
| 14 Help Help key  | 35 [10 MHz Buff Output] Reference signal input connector (BNC)   |
| 15 Keyboard Keyboard key                                    | 36 [Freq Adj] Frequency adjustment   |
| 16 Shift Shift key  | 37 [GPIB] GPIB connector   |
| 17 [HDD] Hard disk access lamp                              | 38 [Call Proc Ethernet] Call Proc Ethernet I/O Port (RJ-45)  |
| 18 Backspace key  | 39 Fading IO connector <Option>  |
| 19 Numeric keypad, symbol keys                              | 40 Power inlet (100 Vac to 120 Vac/200 Vac to 240 Vac)   |
| 20 [Handset] Handset connector                              |  |
| 21 [USB] USB connectors                                     |  |

## Signalling Tester MD8475A System Configurations/Option/Software

### Main Frame Options

#### 2nd RF MD8475A-001

This option is required for tests using two RF signals, such as 2-cell and MIMO tests.

#### Multi-cell Software MX847502A

This option is required when simultaneously activating two cells such as at handover tests within the same system, Inter-RAT tests between different systems, LTE Carrier Aggregation tests, etc.

#### RF Measurement MX847506A

Installing combinations of the MX847510A, MX847520A, and MX847550A software options supports extended RF Tx power accuracy, RF Rx power, and BLER measurements for each system.

#### Multimedia Interface Software MX847508A

This software is required for end-to-end voice tests between microphones and speakers (headsets) connected to the MD8475A and the mobile equipment. The W-CDMA and GSM AMR-NB (AMR Narrowband), GSM EFR (Enhanced Full Rate Speech), FR (Full Rate Speech), and HR (Half Rate Speech) codec can be used.

#### AMR-WB MX847508A-001

This option supports the W-CDMA AMR-WB (AMR Wideband) codecs. The MX847508A is required.

Supported voice codec list

Supported Codecs	Multimedia Interface Software MX847508A	AMR-WB MX847508A-001
AMR-NB (W-CDMA/GSM)	✓	—
GSM-EFR (GSM)	✓	—
GSM-FR (GSM)	✓	—
GSM-HR (GSM)	✓	—
AMR-WB (W-CDMA)	—	✓

#### SmartStudio MX847570A

This software supports the user interface for scenario-less testing. In addition to offering functions such as sending and receiving SMS messages, sending and receiving ETWS/CMAS messages, making and receiving voice calls, and sending and receiving data packets, it also supports CSCF server functions required for IMS service tests.

### Automation Tool

#### SmartStudio Manager MX847503A

This option increases the efficiency of evaluations by automating manual tests performed by the MX847570A SmartStudio software. In addition, the package includes test sequences required for evaluating basic functions.

#### eCall Tester Control Library MX847503A-923

This library option is for remote control of tests using the MX703330E eCall tester. Test automation without manual operation increases test efficiency.

#### Smartphone Control Platform MX847504A

Recorded via ADB and UE automated control scripts can be created, edited and run. As well as supporting automated control from the MX847503A, two-way automatic control of the measuring instrument and UE supports an operator-free test environment for higher test efficiency.

### W-CDMA

#### • Basic Configuration (Voice/Video/Packet)

##### Multi-signalling Unit MD8475A-070

##### W-CDMA Simulation Software MX847510A

##### W-CDMA Option MX847570A-010

These are for basic W-CDMA configuration. These tests support voice, videophone, packet, and SMS tests.

#### • Options

##### HSPA Option MX847510A-001

This option supports HSPA UE categories defined by the 3GPP Release 5/Release 6 standards.

##### HSPA Evolution/DC-HSDPA Option MX847510A-011

##### HSPA Evolution/DC-HSDPA Option MX847570A-011

These options support HSPA Evolution and DC-HSPA packet communications tests for high-speed packet services used by W-CDMA systems.

#### 3GPP TS 25.306 Category List for MX847570A

##### HSDPA

HS-DSCH Category	HS-DSCH Codes	Minimum Inter-TTI	TB-Sizes	Total Number of Soft Channel Bits	Modulation	Maximum Throughput [bps]
5*	5	1	7298	57600	QPSK/16QAM	3649000
6	5	1	7298	67200	QPSK/16QAM	3649000
7*	10	1	14411	115200	QPSK/16QAM	7205500
8	10	1	14411	134400	QPSK/16QAM	7205500
9	15	1	20251	172800	QPSK/16QAM	10125500
10	15	1	27952	172800	QPSK/16QAM	13976000
12	5	1	3630	28800	QPSK	1815000
13	15	1	35280	259200	Not Applicable (dual cell operation not supported)	17640000
14	15	1	42192	259200		21096000
21	15	1	23370	345600	QPSK/16QAM	23370000
22	15	1	27952	345600	QPSK/16QAM	27952000
23	15	1	35280	518400	QPSK (16QAM)	35280000
24	15	1	42192	518400	64QAM	42192000

##### HSUPA

E-DCH Category	E-DCH Codes	Minimum Spreading Factor	Support for TTI EDCH	TB-Sizes E-DCH TTI	Maximum Throughput [bps]
3	2	SF4	10 ms TTI	14484	1459500
5	2	SF2	10 ms TTI	20000	2918500
6	4	SF2	10 ms TTI	14484	5760000

★: Not supported when UE specifies a category.

#### • Support Service

##### MX847510A 1Year Support Service MX847510A-SS110

This service contract offers customers 1 year of support for technical enquiries as well as updates to the latest software versions adding extra functionality and bug fixes via downloads from the web page.



## Signalling Tester MD8475A System Configurations/Option/Software

### LTE

#### • Basic Configuration

**Multi-signalling Unit MD8475A-070**  
**LTE Simulation Software MX847550A**  
**LTE FDD Option MX847550A-010**  
**LTE TDD Option MX847550A-015**  
**LTE FDD Option MX847570A-050**  
**LTE TDD Option MX847570A-055**

These are for basic LTE FDD/TDD configuration. It supports both FDD and TDD technologies. These tests support confirmation of connections with LTE UEs during SISO, packet communications, and SMS sending/receiving. In addition, 2-cell tests are supported by installing the 2-cell Software MX847502A.

#### 3GPP TS 36.306 V12.5.0 (2015-06) Category List

Downlink physical layer parameter values set by the field *ue-Category*

UE DL Category	Maximum number of DL-SCH transport block bits received within a TTI	Maximum number of bits of a DL-SCH transport block received within a TTI	Total number of soft channel bits	Maximum number of supported layers for spatial multiplexing in DL
Category 0	1000	1000	25344	1
Category 1	10296	10296	250368	1
Category 2	51024	51024	1237248	2
Category 3	102048	75376	1237248	2
Category 4	150752	75376	1827072	2
Category 5	299552	149776	3667200	4
Category 6	301504	149776 (4 layers, 64QAM) 75376 (2 layers, 64QAM)	3654144	2 or 4
Category 7	301504	149776 (4 layers, 64QAM) 75376 (2 layers, 64QAM)	3654144	2 or 4
Category 8	2998560	299856	35982720	8
Category 9	452256	149776 (4 layers, 64QAM) 75376 (2 layers, 64QAM)	5481216	2 or 4
Category 10	452256	149776 (4 layers, 64QAM) 75376 (2 layers, 64QAM)	5481216	2 or 4
Category 11	603008	149776 (4 layers, 64QAM) 195816 (4 layers, 256QAM) 75376 (2 layers, 64QAM) 97896 (2 layers, 256QAM)	7308288	2 or 4
Category 12	603008	149776 (4 layers, 64QAM) 195816 (4 layers, 256QAM) 75376 (2 layers, 64QAM) 97896 (2 layers, 256QAM)	7308288	2 or 4

Uplink physical layer parameter values set by the field *ue-Category*

UE UL Category	Maximum number of UL-SCH transport block bits transmitted within a TTI	Maximum number of bits of an UL-SCH transport block transmitted within a TTI	Support for 64QAM in UL
Category 0	1000	1000	No
Category 1	5160	5160	No
Category 2	25456	25456	No
Category 3	51024	51024	No
Category 4	51024	51024	No
Category 5	75376	75376	Yes
Category 6	51024	51024	No
Category 7	102048	51024	No
Category 8	1497760	149776	Yes
Category 9	51024	51024	No
Category 10	102048	51024	No
Category 11	51024	51024	No
Category 12	102048	51024	No

#### • Options

##### LTE 2×2 MIMO Option MX847550A-020

This option adds 2×2 MIMO to the MX847550A. Supported LTE 2×2 MIMO Functions.\*

##### LTE Carrier Aggregation Option MX847550A-040

This software options supports LTE 2CC Carrier Aggregation. It supports the 2CC SISO test environment. Additionally, installing the MX847550A-020 software supports the 2CC MIMO test environment.

##### Fading IO Option MD8475A-003

This hardware option is required for connecting two MD8475A sets or the combination of one MD8475A and one MD8430A. In addition, combining one MD8475A and one MF6900A Fading Simulator supports configuration of LTE FDD Fading test environment.

##### LTE RoHC Option MX847550A-060

This option adds better compression algorithms to improve LTE IP packet transfer efficiency.

#### Supported Profiles

IP	Profile
0x0000	No compression (LTE)/Uncompressed (UMTS)
0x0001	RTP/UDP/IP
0x0002	UDP/IP

#### • Support Service

##### MX847550A 1Year Support Service MX847550A-SS110

This service contract offers customers 1 year of support for technical enquiries as well as updates to the latest software versions adding extra functionality and bug fixes via downloads from the web page.

\*: Handover tests not supported when testing 2×2 MIMO.

## Signalling Tester MD8475A System Configurations/Option/Software

### GSM

#### • Basic Configuration

##### GSM Signalling Unit MD8475A-020

##### GSM/GPRS Simulation Software MX847520A

##### GSM Option MX847570A-020

This is the basic configuration for performing GSM/GPRS tests. It supports voice and packet communications tests, SMS sending and receiving, etc.

#### • Options

##### EGPRS Option MX847520A-001

This option supports EGPRS evaluation — a GPRS high-speed, data communication method. Application tests using EGPRS communications are supported.

Supported EGPRS Specifications

Layer 1	Frequency Bandwidth	850, 900, 1800, 1900 MHz
	Modulation & Coding Scheme	MCS 1, 2, 3, 4 (GMSK) MCS 5, 6, 7, 8, 9 (8PSK)
	Number of Slots	Up to Multi Slot Class 12 (DL: 4/UL: 4/SUM: 5)
	Channel Combination	Combination 11 & 13
Layer 2, 3	Broadcasting Control Channel	BCCH/CCCH, PBCCH/PCCH
	ARQ Type	Type 1
	Window Size	64 to 192
Standard		3GPP Release 99

#### • Support Service

##### MX847520A 1Year Support Service MX847520A-SS110

This service contract offers customers 1 year of support for technical enquiries as well as updates to the latest software versions adding extra functionality and bug fixes via downloads from the web page.

### TD-SCDMA

#### • Basic Configuration

##### TD-SCDMA Signalling Unit MD8475A-040

##### TD-SCDMA Simulation Software MX847540A

##### TD-SCDMA Option MX847570A-040

These are for basic TD-SCDMA configuration which support voice, videophone, packet, and SMS tests.

#### • Options

##### TD-HSPA Option MX847540A-001

This is for evaluating all 3GPP TS 25.306 HSPA UE categories\*1.

##### 3GPP TS 25.306

##### TD-HSDPA

HS-DSCH category	Maximum number of HSDSCH codes per timeslot	Maximum number of HSDSCH timeslots per TTI	Maximum number of HSDSCH transport channel bits can be received within an HSDSCH TTI	Total number of soft channel bits	Maximum Throughput [bps]
Category 1 to 3	16	2	2788	11264	557600
Category 4 to 6	16	2	5600	22528	1120000
Category 7 to 9	16	3	8416	33792	1688200
Category 10 to 12	16	4	11226	45056	2245200
Category 13 to 15	16	5	14043	56320	2808600

##### TD-HSUA

E-DCH category	Maximum number of E-DCH timeslots per TTI	Maximum number of E-DCH transport channel bits that can be received within an E-DCH TTI	Maximum Throughput [bps]
Category 1	2*2	2754	550800
Category 2	3*2	4162	832400
Category 3	2*2	5532	1106400
Category 4	3*2	8348	1669600
Category 5	4*2	11160	2232000
Category 6	5*2	11160	2232000

\*1: MX847570A supports Category 6 only.

\*2: One timeslot supports two physical channels when 16QAM not used.

#### • Support Service

##### MX847540A 1Year Support Service MX847540A-SS110

This service contract offers customers 1 year of support for technical enquiries as well as updates to the latest software versions adding extra functionality and bug fixes via downloads from the web page.

### IMS Options

#### IMS Script Basic Option MX847570A-060

This software supports scripting of the communication procedure between the test UE and CSCF server using a ladder sequence to provide a very flexible and expandable test environment.

#### XCAP Script Option MX847570A-061

This option provides a test environment with high flexibility and expandability for creating scripts using a ladder sequence to edit XCAP messages between the UE and server without the need to prepare an actual server.

#### Extended CSCF Option MX847570A-080

This software option adds functions for calling from the network to the UE as well as extended functions for CSCF-server-side network congestion and no response status.

#### IMS Supplementary Service Option MX847570A-081

This software option adds other service tests, including VoLTE caller ID display, call forwarding, call holding, etc.

#### RCS Basic Option MX847570A-083

This software option simulates RCS services. It is used to perform tests including RCS Configuration, Registration, Instant Messaging, etc.

#### GBA Authentication Option MX847570A-084

This option has the 3GPP GBA Authentication algorithm, authentication procedure and parameter settings for simulating GBA operations.

#### IMS Early Media Option MX847570A-085

This software supports IMS Early Media sequence tests. It can be used to confirm customized call tone services at the network side, such as NRBT (Network Ring Back Tone) and CAT (Customized Alerting Tone).

#### RTP Frame Control Option MX847570A-086

This option is for controlling media data (RTP packets) during VoLTE communications. It can be used to configure a voice environment in the MUTE status and with fixed data; a measurement environment can be configured for abnormal audio quality verification and battery power consumption tests in a fixed state.

#### • Support Service

##### MX847570A-060 1-Year Technical Support Service MX847570A-TS160

This contract offers customers support for technical enquiries for 1 year.

##### MX847570A-061 1-Year Technical Support Service MX847570A-TS161

This contract offers customers support for technical enquiries for 1 year.

### WLAN Offload Options

#### WLAN Offload Basic Option MX847570A-070

This software option provides an EAP authentication server for performing EAP over RADIUS communications (EAP-SIM/EAP-AKA) between a WLAN access point and the EAP authentication server. Additionally, data access by the physical bearers is displayed to verify the 3GPP/WLAN switchover.

#### ePDG Option MX847570A-071

This software option provides an ePDG server for testing the UE functions at Untrusted non-3GPP Access by running IKEv2 key exchanges and IPsec communications between the UE and ePDG. It requires the MX847570A-070 option as well.

#### ANDSF Option MX847570A-072

This software option provides the ANDSF function for testing the UE functions after ANDSF policy distribution to the UE. It requires the MX847570A-070 options as well.

#### Extended ePDG Option MX847570A-073

This software option supports configuration of an ePDG status fault test environment for inserting errors into the ePDG sequence, setting timeouts, etc. Additionally, this option can be used to support Fast Re-Authentication (EAP-SIM/EAP-AKA) tests without the need to generate UE-side authentication keys. It requires the MX847570A-070/MX847570A-071.



### eCall Options

#### eCall Tester (Perpetual License) MX703330E-PL010

This option simulates the PSAP used by eCall services to support the eCall sequence (MSD call → Voice call) between the IVS and PSAP at a road accident.

The following test standards are supported:

- TS 26 .267 V8.6.0 (2011-03)
- TS 26 .268 V8.6.0 (2011-03)
- EN15722: 2015
- EN16062: 2015
- EN16454: 2015
- ISO3779: 2009

This option can be used as a test environment for model authentication in accordance with the EN16454 recommendations. This option provides audio replay and record functions.

#### MSD ERA GLONASS Option MX703330E-031

This option supports the MSD data communications function over SMS used by the ERA-GLONASS system

The following test standards are supported:

- GOST R 54619-2011
- GOST R 54620-2011
- GOST R 54721-2011
- GOST R 55530-2013

#### EGTS Server ERA GLONASS Option MX703330E-032

This option provides a test environment to send/receive and encode/decode EGTS messages defined in the GOST R 54619/54620. MX703330E-031 is separately required.

#### NG112 LTE eCall Option MX703330E-041

This option provides functional tests for MSD data communication and voice call over IMS defined in the RFC8147 standard.

#### Multi-Cell Option MX703330E-061

This option provides the handover test environment required when setting two or more cells as well as the CS Fallback test environment at the eCall environment. Practical eCall module tests are supported using this option.

The cell combinations are as follows:

	LTE	W-CDMA	GSM
LTE*	—	✓	✓
W-CDMA	✓	✓	✓
GSM	✓	✓	✓

\*: VoLTE is not supported

### Support Service

#### MX703330E 1-Year Support Service MX703330E-SS110

This service contract offers customers 1 year of support for technical enquiries as well as updates to the latest software versions adding extra functionality and bug fixes via downloads from the web page.

#### SSM Test PKG European eCall MX847503A-601

This test package provides automated test environment. Opening the test case on the SSM, it shows test procedures of test items defined in the (EC) 2017/79 and EN16454, and automatically configures the setting of MD8475A/MD8475B and eCall tester. This test package also has report functions for each standards.

#### SSM Test PKG GOST 33467 MX847503A-701

This test package provides automated test environment. Opening the test case on the SSM, it shows test procedures of test items defined in the GOST33457, and automatically configures the setting of MD8475A/MD8475B and eCall tester. This test package also has report functions for each standards.

### Scenario Tools

#### SIDE Software MX847580A

#### SIP Option MX847580A-018

These software are for executing scenarios created using the MX843080A Scenario Integrated Development Environment in combination with the MX847510A, MX847520A, and MX847550A software.

### Ciphering Option

#### W-CDMA Ciphering Option MX847510A-050

This option adds the W-CDMA ciphering function\*<sup>1</sup>, \*<sup>2</sup> and supports for KASUMI (3GPP-recommended algorithm).

#### GSM/GPRS Ciphering Option MX847520A-050

This option adds the GSM/GPRS ciphering function\*<sup>1</sup>, \*<sup>2</sup> and supports both the GSM A5/1, A5/2, and A5/3 ciphering algorithms as well as the GPRS GEA/1, GEA/2, and GEA/3 ciphering algorithms.

#### TD-SCDMA Ciphering Option MX847540A-050

This option adds the TD-SCDMA ciphering function\*<sup>1</sup>, \*<sup>2</sup> and supports SNOW 3G (3GPP-recommended algorithm).

#### LTE Ciphering Option MX847550A-050

This option adds the LTE ciphering function\*<sup>1</sup>, \*<sup>2</sup> and supports SNOW 3G (3GPP-recommended algorithm) and AES.

\*<sup>1</sup>: Does not work with MX847570A.

\*<sup>2</sup>: The Integrity Algorithm does not require this option.

# Signalling Tester MD8475A

## Signalling Tester MD8475A SmartStudio System Configuration

System		LTE		W-CDMA	TD-SCDMA	GSM
		FDD	TDD			
Unit		Signalling Tester MD8475A				
Unit Option		2nd RF MD8475A-001				
		Fading IO Option MD8475A-003				
Platform Software		Multi-cell Software MX847502A				
		—		Multimedia Interface Software MX847508B		
		—		AMR-WB MX847508B-001	—	—
Basic Configuration	Hardware	Multi Signalling Unit MD8475A-070			TD-SCDMA/HSPA Signalling Unit MD8475A-040	GSM Signalling Unit MD8475A-020
	Software	LTE Simulation Software MX847550A		W-CDMA Simulation Software MX847510A	TD-SCDMA Simulation Software MX847540A	GSM/GPRS Simulation Software MX847520A
		LTE FDD Option MX847550A-010	LTE TDD Option MX847550A-015			
Options		LTE 2×2 MIMO Option MX847550A-020		HSPA Option MX847510A-001	TD-HSPA Option MX847540A-001	EGPRS Option MX847520A-001
		LTE Carrier Aggregation Option MX847550A-040				
		LTE RoHC Option MX847550A-060				
		LTE Ciphering Option MX847550A-050		W-CDMA Ciphering Option MX847510A-050	TD-SCDMA Ciphering Option MX847540A-050	GSM/GPRS Ciphering Option MX847520A-050
Support Service		MX847550A 1Year Support Service MX847550A-SS110		MX847510A 1Year Support Service MX847510A-SS110	MX847540A 1Year Support Service MX847540A-SS110	MX847520A 1Year Support Service MX847520A-SS110
User Interface		SmartStudio MX847570A				
SmartStudio License	System Option	LTE FDD Option MX847570A-050	LTE TDD Option MX847570A-055	W-CDMA Option MX847570A-010	TD-SCDMA Option MX847570A-040	GSM Option MX847570A-020
				HSPA Evolution/ DC-HSDPA Option MX847570A-011		
	IMS	Extended CSCEF Option MX847570A-080				
		IMS Supplementary Service Option MX847570A-081				
		RCS Basic Option MX847570A-083				
		GBA Authentication Option MX847570A-084				
		IMS Early Media Option MX847570A-085				
		RTP Frame Control Option MX847570A-086				
	WLAN	WLAN Offload Basic Option MX847570A-070				
		ePDG Option MX847570A-071				
		ANDSF Option MX847570A-072				
		Extended ePDG Option MX847570A-073				
	Scripting Option	IMS Script Basic Option MX847570A-060				
		XCAP Script Option MX847570A-061				
	Technical Support Service	MX847570A-060 1 Year Technical Support Service MX847570A-TS160				
MX847570A-061 1 Year Technical Support Service MX847570A-TS161						
RF Measurement		RF Measurement MX847506A			—	RF Measurement MX847506A
Remote Interface		SmartStudio Manager MX847503A				
		eCall Tester Control Library MX847503A-923				
		Smartphone Control Platform MX847504A				
eCall Option		eCall Tester (Perpetual License) MX703330E-PL010		eCall Tester (Perpetual License) MX703330E-PL010	—	eCall Tester (Perpetual License) MX703330E-PL010
		—		MSD ERA GLONASS Option MX703330E-031	—	MSD ERA GLONASS Option MX703330E-031
		—		EGTS Server ERA GLONASS Option MX703330E-032	—	EGTS Server ERA GLONASS Option MX703330E-032
		NG112 LTE eCall Option MX703330E-041		Multi-Cell Option MX703330E-061	—	Multi-Cell Option MX703330E-061
		MX703330E 1-Year Support Service MX703330E-SS110		MX703330E 1-Year Support Service MX703330E-SS110	—	MX703330E 1-Year Support Service MX703330E-SS110

## Signalling Tester MD8475A Specifications

RF Connector		<p>RF Input/Output connector (Main, Aux 1, Aux 2) Connector: N type, Impedance: 50Ω, VSWR: ≤1.5 (500 MHz to 3 GHz)</p> <p>Reference oscillator Frequency: 10 MHz Level: TTL level Connector: BNC type</p> <p>Startup characteristics: <math>\pm 5 \times 10^{-8}</math> (10 minutes after power-on, referenced to frequency 24 hours after power-on) Aging rate: <math>2 \times 10^{-8}</math>/day, <math>\leq 1 \times 10^{-7}</math>/year (referenced to frequency 24 hours after power-on) Temperature characteristics: <math>\leq \pm 2 \times 10^{-8}</math></p> <p>External reference input Frequency: 10 MHz, Acceptable frequency range: <math>\pm 0.5</math> ppm, Level: <math>\geq 0</math> dBm, Impedance: 50Ω, Connector: BNC type</p>
Transmission Characteristics		<p>Frequency Frequency range: 350 MHz to 3.6 GHz Setting resolution: 100 kHz (Depending on MX847501A used) Accuracy: Based on reference oscillator accuracy</p> <p>Output level Level range: -130 to -10 dBm (Main, Aux1, Aux2) Resolution: 0.1 dB Transmission level <math>\pm 1.0</math> dB (-120 dBm ≤ Output level, 350 MHz ≤ Frequency ≤ 3 GHz, +20° to +30°C, after CAL) <math>\pm 1.2</math> dB (-120 dBm ≤ Output level, 3 GHz &lt; Frequency ≤ 3.6 GHz, +20° to +30°C, after CAL)</p> <p>Signal purity Non-harmonic spurious: ≤ -40 dBc (at ≥500 kHz frequency offset) Harmonics: ≤ -25 dBc</p>
Reception Characteristics		<p>Frequency Frequency range: 350 MHz to 3.6 GHz Setting resolution: 100 kHz (Depending on MX847501A used)</p> <p>Level Maximum input level: +35 dBm (Average) Input level range: -60 to +35 dBm (with MD8475A-010, MD8475A-011, MD8475A-030, MD8475A-032, MD8475A-050, MD8475A-070) -30 to +40 dBm (in-burst average power) (with MD8475A-020)</p> <p>Reference level: -60 to +35 dBm Reception level (with MX847506A) MX847510A <math>\pm 1.1</math> dB (-60 to +35 dBm, 350 MHz ≤ Frequency ≤ 3 GHz, +20° to +30°C, after CAL) <math>\pm 1.3</math> dB (-60 to +35 dBm, 3 GHz &lt; Frequency ≤ 3.6 GHz, +20° to +30°C, after CAL) MX847520A <math>\pm 1.1</math> dB (-30 to +40 dBm, 350 MHz ≤ Frequency ≤ 3 GHz, +20° to +30°C, after CAL) <math>\pm 1.3</math> dB (-30 to +40 dBm, 3 GHz &lt; Frequency ≤ 3.6 GHz, +20° to +30°C, after CAL) MX847550A <math>\pm 1.1</math> dB (-50 to +35 dBm, 350 MHz ≤ Frequency ≤ 3 GHz, +20° to +30°C, after CAL) <math>\pm 1.3</math> dB (-50 to +35 dBm, 3 GHz &lt; Frequency ≤ 3.6 GHz, +20° to +30°C, after CAL) <math>\pm 2.0</math> dB (-60 to +35 dBm, 350 MHz ≤ Frequency ≤ 3.6 GHz, after CAL)</p> <p>Variable range Rx level setting resolution: 1 dB</p>
General		<p>Display: Color TFT LCD screen, 12.1 inches (wide type), 1280 × 800 dots</p> <p>External interface Trigger I/O: BNC Call Proc Timing I/O: 15-pin mini D-Sub connector Call Proc Serial I/O: D-sub connector, RS-232C level Call Proc Ethernet A/B: RJ-45 connector, 10Base-T/100Base-TX/1000Base-T Handset: RJ-11 connector Headphone: 3.5-mm dia. headphone jack Microphone: 3.5-mm dia. microphone jack USB: Type A, 4 ports RS-232C: D-sub connector, conforms to RS-232C GPIB: IEEE488 connector VGA: Mini D-Sub connector Ethernet 0/1: RJ-45 connector 10Base-T/100Base-TX/1000Base-T</p>
Power Supply		100 Vac to 120 Vac ( $\pm 10\%$ )/200 Vac to 240 Vac (-15%/+10%, Max.: 250 Vac), 50 Hz to 60 Hz (Rating), ≤600 VA (Max.)
Dimensions and Mass		426 (W) × 221.5 (H) × 398 (D) mm (excl. protrusions), <25 kg (with all options)
Temperature Range & Humidity		Operation: +5° to +40°C, Storage: -20° to +60°C, ≤90% (no condensation)
CE	EMC	2014/30/EU, EN61326-1, EN61000-3-2
	LVD	2014/35/EU, EN61010-1
	RoHS	2011/65/EU, EN50581



# Signalling Tester MD8475A Ordering Information

## Signalling Tester MD8475A

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.

Model/Order No.	Name	Model/Order No.	Name
MD8475A	<b>Main frame</b> Signalling Tester	MX847503A	<b>Automation tools</b> SmartStudio Manager
MX847500A	<b>Standard accessories</b> Platform Software (Factory-installed)	MX847503A-601	SSM Test PKG European eCall
MX847501A	Control Software (Factory-installed)	MX847503A-701	SSM Test PKG GOST 33467
J0017F	Power Cord, 2.6 m	MX847503A-923	eCall Tester Control Library
P0035B	MD8475A CD-ROM (Operation manual)	MX847504A	Smartphone Control Platform
P0035B7	W-CDMA/GSM Test USIM (Standard UICC size)	Z1813A	USB Dongle (Automation)
J1440A	W-CDMA/GSM Test USIM (Micro UICC Size)		
Z0541A	LAN Cable (3 m)	MX847580A	<b>Scenario tools</b> SIDE Execution Software
Z0975A	USB Mouse	MX847580A-018	SIP Execution Option
A0058A	Keyboard (USB)		
	Handset	MX703330E-PL010	<b>Automotive applications</b> eCall Tester (Perpetual License)
MD8475A-001	<b>Hardware options</b> 2nd RF	MX703330E-031	MSD ERA GLONASS Option
MD8475A-003	Fading IO Option	MX703330E-032	EGTS Server ERA GLONASS Option
		MX703330E-041	NG112 LTE eCall Option
MX847502A	<b>Software options</b> Multi-cell Software	MX703330E-061	Multi-Cell Option
MX847506A	RF Measurement		
MX847508A	Multimedia Interface Software	MX847510A-050	<b>Ciphering Options</b> W-CDMA Ciphering Option
MX847508A-001	AMR-WB	MX847520A-050	GSM/GPRS Ciphering Option
		MX847540A-050	TD-SCDMA Ciphering Option
MX847570A	<b>User interface</b> SmartStudio	MX847550A-050	LTE Ciphering Option
MX847570A-010	W-CDMA Option		
MX847570A-011	HSPA Evolution/DC-HSDPA Option	MX847510A-SS110	<b>Software support services</b> MX847510A 1Year Support Service
MX847570A-020	GSM Option	MX847520A-SS110	MX847520A 1Year Support Service
MX847570A-040	TD-SCDMA Option	MX847540A-SS110	MX847540A 1Year Support Service
MX847570A-050	LTE FDD Option	MX847550A-SS110	MX847550A 1Year Support Service
MX847570A-055	LTE TDD Option	MX702600B-SS110	MX702600B 1Year Support Service
MX847570A-060	IMS Script Basic Option	MX703330E-SS110	MX703330E 1Year Support Service
MX847570A-061	XCAP Script Option		
MX847570A-070	WLAN Offload Basic Option	MX847570A-TS160	<b>Technical support services</b> MX847570A-060 1 Year Technical Support Service
MX847570A-071	ePDG Option	MX847570A-TS161	MX847570A-061 1Year Technical Support Service
MX847570A-072	ANDSF Option	MX703330E-TS110	MX703330E 1 Year Technical Support Service
MX847570A-073	Extended ePDG Option		
MX847570A-080	Extended CSCF Option	MD8475A-ES210	<b>Warranty</b> 2 Years Extended Warranty Service
MX847570A-081	IMS Supplementary Service Option	MD8475A-ES310	3 Years Extended Warranty Service
MX847570A-083	RCS Basic Option	MD8475A-ES510	5 Years Extended Warranty Service
MX847570A-084	GBA Authentication Option		
MX847570A-085	IMS Early Media Option		
MX847570A-086	RTP Frame Control Option		
MD8475A-070	<b>LTE system</b> Multi-signalling Unit		
MX847550A	LTE Simulation Software		
MX847550A-010	LTE FDD Option		
MX847550A-015	LTE TDD Option		
MX847550A-020	LTE 2x2 MIMO Option		
MX847550A-040	LTE Carrier Aggregation Option		
MX847550A-060	LTE RoHC Option		
MD8475A-070	<b>W-CDMA system</b> Multi-signalling Unit		
MX847510A	W-CDMA Simulation Software		
MX847510A-001	HSPA Option		
MX847510A-011	HSPA Evolution/DC-HSDPA Option		
MD8475A-020	<b>GSM system</b> GSM Signalling Unit		
MX847520A	GSM/GPRS Simulation Software		
MX847520A-001	EGPRS Option		
MD8475A-040	<b>TD-SCDMA system</b> TD-SCDMA Signalling Unit		
MX847540A	TD-SCDMA Simulation Software		
MX847540A-001	TD-HSPA Option		

## Signalling Tester MD8475A Ordering Information

### Signalling Tester MD8475A

Model/Order No.	Name
	<b>Application parts</b>
41KC-3	Fixed Attenuator 3 dB
B0655A	Rack Mount Kit
J0004	Coaxial Adaptor (N (male)-SMA (female))
J0127A	Coaxial Cord, 1.0 m (BNC-P · RG58A/U · BNC-P)
J0127B	Coaxial Cord, 2.0 m (BNC-P · RG58A/U · BNC-P)
J0576B	Coaxial Cord, 1.0 m (N-P · 5D-2W · N-P)
J0576D	Coaxial Cord, 2.0 m (N-P · 5D-2W · N-P)
J0658	Adapter (SMA male-female L-type)
J1262A	RS-232C Cable (Straight 2 m, male-female)
J1262B	RS-232C Cable (Crossover 2 m, male-female)
J1263	W-CDMA Interface Cable (UE connection cable)
J1287	HDD-SUB15P Cable (milli-inch, for connecting MN8110B)
J1333A	HDD-SUB15P Crossover Cable (inch)
J1416A	LVDS Cable
J1440A	LAN Cable
J1524A	Dsub15-BNC Conversion Cable
J1549A	LTE-C2K Sync Cable
J1605A	MD8475A 3GPP Sync Cable
J1609A	Signal Divider
J1610A	MD8475A 2CC MIMO Connect Cable Kit
J1651A	MD8475A Sync In Cable (for 3CC Test)
J1674A	SMA/P-SMA/P Soft Rigid Cable
J1674E	SMA/P-SMA/P Soft Rigid Cable (5 pcs)
J1674K	SMA/P-SMA/P Soft Rigid Cable (10 pcs)
MN8150A	RF Combiner Unit
P0035B	W-CDMA/GSM Test USIM (Standard UICC Size)
P0035B7	W-CDMA/GSM Test USIM (Micro UICC Size)
P0135A6	Anritsu Test UICC GA (nano UICC Size)
P0135A7	Anritsu Test UICC GA (Micro UICC Size)
P0135B6	Anritsu Test UICC GA (nano UICC Size)
P0135B7	Anritsu Test UICC GA (Micro UICC Size)
P0250A6	Anritsu Test UICC GT (nano UICC Size)
P0250A7	Anritsu Test UICC GT (Micro UICC Size)
P0250B6	Anritsu Test UICC GT (nano UICC Size)
P0250B7	Anritsu Test UICC GT (Micro UICC Size)
P0260A6	Anritsu Test UICC GM (nano UICC Size)
P0260A7	Anritsu Test UICC GM (Micro UICC Size)
P0260B6	Anritsu Test UICC GM (nano UICC Size)
P0260B7	Anritsu Test UICC GM (Micro UICC Size)
Z0749	MN8110B + Inch Screw Cable (for call processing I/O)
Z1908D	Standard Laptop for SSM
Z1919B	Standard Desktop for WLAN
Z2002A	eUICC Profile Manager

✓: Supported

Function		Description	MD8475 B			
			LTE	W-CDMA*2	GSM*2	TD-SCDMA*2
General						
Position Registration*1		Connects UE and creates test environment	✓	✓	✓	✓
L1/L2 Counter		Counts values for each L1/L2 channel every second	✓	✓	—	✓
Throughput Counter		Simultaneously displays PHY layer and IP Throughput (SDU)	✓	✓	✓	✓
Trace		Displays events for each layer as arrows	✓	✓	✓	✓
Reject		Returns arbitrary reject message when UE connected	✓	✓	✓	✓
Neighbor Cell Setting		Reports information to UE about BTS adjacent to BTS under test	✓	✓	✓	✓
RF Related						
TRx Power Setting		Changes TRx power of BTS during Idle Communication	✓	✓	✓	✓
No Network Setting		Sets BTS Power output to OFF and switches UE to no network status	✓	✓	✓	✓
RF Monitor		Displays frequency, frequency error, and power for each channel such as PDSCH, PUSCH, etc.	✓	✓	✓	✓
TPC Setting		Changes TPC (Transmit Power Control) arbitrarily	✓	✓	✓	✓
AWGN		Sends AWGN in conjunction with normal signal	✓	✓	—	—
RF Measurement Options		Measures UE RF power at each second	✓	✓	✓	—
External Control						
Ethernet		Controls SmartStudio operation (parameter selection, start, etc.) from external PC	✓	✓	✓	✓
GPiB		Controls SmartStudio setting parameters from external PC	✓	✓	✓	✓
Voice/Video Communications						
LTE FDD/TDD						
VoLTE/Video Telephony Calling/Answering (Loopback)		Executes call test for UE supporting Voice over LTE/Video over LTE	✓			
Emergency Call/Originating System		Sets emergency call, and VoLTE/Video call control at LTE	✓			
Codec Change		Changes audio and video codecs arbitrarily and executes UE switchover test	✓			
LTE FDD/TDD, W-CDMA, GSM, TD-SCDMA						
CSFB/eCSFB*3		Auto-switches communication method when other system voice call received during LTE call	✓	✓	✓	✓
SRVCC*3		Performs seamless switch to CS voice call during VoLTE call	✓	✓	✓	—
W-CDMA, GSM, TD-SCDMA						
Voice Call/Answer/On-hook (Loopback/Echoback)		Performs loopback call test*4		✓	✓	✓
Voice Call/Answer/On-hook (Handset)		Performs call test using headset		✓	✓	✓
Emergency Call/Originating		Performs emergency call test with and without Test SIM		✓	✓	✓
Caller ID Setting		Sets Caller ID notification/non-notification/notification disabled/public phone/international call answer		✓	✓	✓
Call Blocking (Release99) <Barred>		Sets call conditions for Release99 for W-CDMA, GSM, TD-SCDMA and bars all calls		✓	✓	✓
Call Blocking (Release99) <Emergency>		Sets call conditions for Release99 for W-CDMA, GSM, TD-SCDMA and bars all calls except emergency calls		✓	✓	✓
W-CDMA, TD-SCDMA						
Videophone Call/Answer/On-hook (Loopback)		Performs loopback call test*4		✓		✓
Packet Data Communications						
IPv4 Packet Test		Performs data TRx using IPv4	✓	✓	✓	✓
IPv6 Packet Test		Performs data TRx using IPv6	✓	✓	✓	✓
Packet Preservation/Dormant Test		Releases RRC Connection while preserving PDP Context	✓	✓	—	✓
Multiple PDP Context/PDN Connect		Connects multiple PDN and performs multisession packet data test	✓	✓	—	—
State Change		Changes state from BTS during packet data communications	✓	✓	—	✓
IP Data Traffic Functions		Uses built-in packet generator to implement simple measurement system with automated high-reproducibility data throughput test	✓	✓	✓	✓
LTE FDD/TDD						
SISO/MIMO Packet Calling/Answering		Connects server and performs application test using packet data communications	✓			
SISO/MIMO Packet UE Side Disconnect			✓			
SISO/MIMO Packet Network Side Disconnect			✓			
DL2CC Carrier Aggregation		Performs DL2CC carrier application tests	✓			
DL3CC Carrier Aggregation		Performs DL3CC carrier application tests	✓			
DL4CC Carrier Aggregation		Performs DL4CC carrier application tests	✓			
DL5CC Carrier Aggregation		Performs DL5CC carrier application tests	✓			
UL2CC Carrier Aggregation		Performs UL2CC carrier application tests	✓*5			
FDD/TDD Joint Operation		Performs FDD and TDD Joint Operation test	✓*6			
W-CDMA						
W-CDMA/HSPA/HSPA Evolution Packet Calling/Answering		Connects server and performs application test using packet data communications		✓		
W-CDMA/HSPA/HSPA Evolution Packet UE Side Disconnect				✓		
W-CDMA/HSPA/HSPA Evolution Packet Network Side Disconnect				✓		
PPP Packet Calling		Performs DL2CC carrier application tests		✓		
PPP Packet UE Side Disconnect		Performs DL3CC carrier application tests		✓		
PPP Packet Network Side Disconnect		Performs UL2CC carrier application tests		✓		
GSM						
GPRS/EGPRS Packet Calling/Answering		Connects server and performs application test using packet data communications			✓	
GPRS/EGPRS Packet UE Side Disconnect					✓	
GPRS/EGPRS Packet Network Side Disconnect					✓	
TD-SCDMA						
TD-SCDMA/HSPA*7 Packet Calling/Answering		Connects server and performs application test using packet data communications				✓
TD-SCDMA/HSPA*7 Packet UE Side Disconnect						✓
TD-SCDMA/HSPA*7 Packet Network Side Disconnect						✓
Messaging						
ETWS Message Sending		Performs ETWS message send test during Idle or Communication state	✓	✓	—	—
CMAS Message Sending		Performs CMAS message send test during Idle or Communication state	✓	✓	—	—
CBS Message Sending		Performs CBS message send test during Idle or Communication state	—	✓	✓	—
SMS Message Sending/Receiving		Performs SMS (7 bit-ASCII, Unicode, Binary) test using PS and CS networks*4	✓	✓	✓	✓
SMS over IMS Test		Performs SMS send/receive test via IMS server	✓	—	—	—
SMS Message Continuous Sending		Sends selected multiple SMS to UE continuously	✓	✓	✓	✓
MMS Sendina/Receivina*8		Performs MMS send/receive test	✓	✓	✓	✓

\*1: Ciphering function not supported

\*2: Support for installing the Enhanced Multi-signalling Unit (MD8475B-071) is expected in future.

\*3: Only dual system configuration supported

\*4: Two-way tests using two UEs not supported

\*5: Limited to 50 Mbps throughput when MD8475B-070 installed

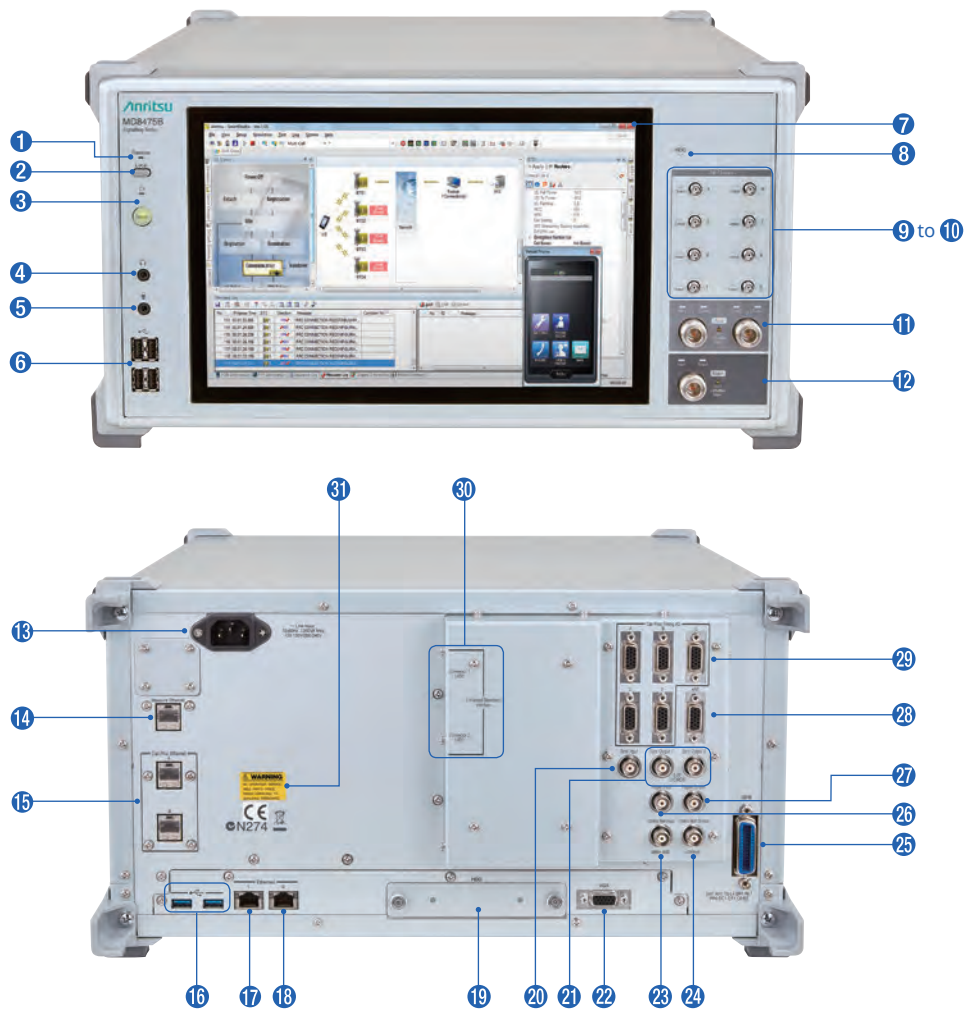
\*6: Requires MD8475B-071

\*7: DCH Measurement Occasion/Idle Interval Measurement function not supported

\*8: Requires separate MMS server

# Signalling Tester MD8475B

## Signalling Tester MD8475B Panel Layout



- |  |  |
|--|--|
| ① Remote lamp                          | ①⑦ Ethernet 1 connector                      |
| ② Local key                            | ①⑧ Ethernet 0 connector                      |
| ③ Power switch                         | ①⑨ Hard disk                                 |
| ④ Headphone jack                       | ①⑩ Sync Input connector                      |
| ⑤ Microphone jack                      | ①⑪ Sync Output connectors                    |
| ⑥ USB connectors                       | ①⑫ VGA connector                             |
| ⑦ Display                              | ①⑬ Reference signal input connector          |
| ⑧ Hard disk access lamp                | ①⑭ Reference signal output connector         |
| ⑨ SMA-type DL Output 1/2/5/6 connector | ①⑮ GPIB connector                            |
| ⑩ SMA-type DL Output 3/4/7/8 connector | ①⑯ Trigger output connector                  |
| ⑪ N-type Main I/O connector            | ①⑰ Trigger input connector                   |
| ⑫ N-type auxiliary I/O 1/2 connector   | ①⑱ ARB I/O connector                         |
| ⑬ Power inlet                          | ①⑲ Timing I/O connectors for call processing |
| ⑭ Ethernet I/O connector for Measure   | ①⑳ Enhanced Baseband Interface connectors    |
| ⑮ Call Proc Ethernet I/O connectors    | ①㉑ Safety label                              |
| ⑯ USB connectors                       |  |



## Signalling Tester MD8475B System Configurations/Option/Software

### Main Frame Options

#### Extended RF MD8475B-002

This option is required to simulate the operation of three or more base-station cells. It supports 8Tx/4RX using the MD8475B.

#### Fading IO Option MD8475B-004

Combining the Signalling Tester MD8430A with the fading option and the MD8475B supports configuration of a fading test environment.

#### IP Extension Option MD8475B-005

This option enables FTP throughput testing with multiple external servers.

#### Multi-cell Software MX847502B

This option is required when simultaneously activating two or more cells such as at handover tests within the same system, Inter-RAT tests between different systems, LTE Carrier Aggregation tests, etc.

#### Multimedia Interface Software MX847508B

This option is required when performing end-to-end voice tests with microphones and speakers (headset) connected to the MD8475B. It can be used for W-CDMA and GSM AMR-NB (AMR Narrowband), GSM EFR (Enhanced Full Rate Speech), FR (Full Rate Speech), and HR (Half Rate Speech) codecs.

#### AMR-WB MX847508B-001

This option supports the W-CDMA AMR-WB (AMR Wideband) codec. It requires the MX847508B.

Supported voice codec list

Supported Codecs	Multimedia Interface Software MX847508B	AMR-WB MX847508B-001
AMR-NB (W-CDMA/GSM)	✓	—
GSM-EFR (GSM)	✓	—
GSM-FR (GSM)	✓	—
GSM-HR (GSM)	✓	—
AMR-WB (W-CDMA)	—	✓

#### SmartStudio MX847570B

This software supports the user interface for scenario-less testing. In addition to offering functions such as sending and receiving SMS messages, sending and receiving ETWS/CMAS messages, making and receiving voice calls, and sending and receiving data packets, it also supports CSCF server functions required for IMS service tests.

### • Support Service

#### MX847570B 1Year Support Service MX847570B-SS110

This service contract offers customers 1 year of support for technical enquiries as well as updates to the latest software versions adding extra functionality and bug fixes via downloads from the web page.

### W-CDMA

#### • Basic Configuration (Voice/Video/Packet)

#### Multi-signalling Unit MD8475B-070

#### W-CDMA Simulation Software MX847510B

#### W-CDMA Option MX847570B-010

These are for basic W-CDMA configuration. These tests support voice, videophone, packet, and SMS tests.

#### • Options

#### HSPA Evolution/DC-HSDPA Option MX847510B-011

#### HSPA Evolution/DC-HSDPA Option MX847570B-011

These options support HSPA Evolution and DC-HSPA packet communications tests for high-speed packet services used by W-CDMA systems.

#### 3GPP TS 25.306 Category List for MX847570A

##### HSDPA

HS-DSCH Category	HS-DSCH Codes	Minimum Inter-TTI	TB-Sizes	Total Number of Soft Channel Bits	Modulation	Maximum Throughput [bps]
5*	5	1	7298	57600	QPSK/16QAM	3649000
6	5	1	7298	67200	QPSK/16QAM	3649000
7*	10	1	14411	115200	QPSK/16QAM	7205500
8	10	1	14411	134400	QPSK/16QAM	7205500
9	15	1	20251	172800	QPSK/16QAM	10125500
10	15	1	27952	172800	QPSK/16QAM	13976000
12	5	1	3630	28800	QPSK	1815000
13	15	1	35280	259200	Not Applicable (dual cell operation not supported)	17640000
14	15	1	42192	259200		21096000
21	15	1	23370	345600	QPSK/16QAM	23370000
22	15	1	27952	345600	QPSK/16QAM	27952000
23	15	1	35280	518400	QPSK/16QAM	35280000
24	15	1	42192	518400	64QAM	42192000

##### HSUPA

E-DCH Category	E-DCH Codes	Minimum Spreading Factor	Support for TTI EDCH	TB-Sizes E-DCH TTI	Maximum Throughput [bps]
3	2	SF4	10 ms TTI	14484	1459500
5	2	SF2	10 ms TTI	20000	2918500
6	4	SF2	10 ms TTI	14484	5760000

★: Not supported when UE specifies a category

## Signalling Tester MD8475B System Configurations/Option/Software

### LTE

#### • Basic Configuration

##### Multi-signalling Unit MD8475B-070

##### Enhanced Multi-signalling Unit MD8475B-071

##### LTE Simulation Software MX847550B

##### LTE Option MX847570B-050

These are for basic LTE FDD/TDD configuration. It supports both FDD and TDD technologies. These tests support confirmation of connections with LTE UEs during SISO, packet communications, and SMS sending/receiving. In addition, multi-cell tests are supported by installing the Multi-cell Software MX847502B.

#### 3GPP TS 36.306 V14.10.0 (2019-03) Category List

Downlink physical layer parameter values set by the field UE-Category

UE DL Category	Maximum number of DL-SCH transport block bits received within a TTI	Maximum number of bits of a DL-SCH transport block received within a TTI	Total number of soft channel bits	Maximum number of supported layers for spatial multiplexing in DL
DL Category M1	1000	1000	25344	1
DL Category M2	4008	4008	73152	1
DL Category 0	1000	1000	25344	1
DL Category 1 bis	10296	10296	250368	1
DL Category 4	150752	75376	1827072	2
DL Category 6	301504	149776 (4 layers, 64QAM) 75376 (2 layers, 64QAM)	3654144	2 or 4
DL Category 7	301504	149776 (4 layers, 64QAM) 75376 (2 layers, 64QAM)	3654144	2 or 4
DL Category 9	452256	149776 (4 layers, 64QAM) 75376 (2 layers, 64QAM)	5481216	2 or 4
DL Category 10	452256	149776 (4 layers, 64QAM) 75376 (2 layers, 64QAM)	5481216	2 or 4
DL Category 11	603008	149776 (4 layers, 64QAM) 195816 (4 layers, 256QAM) 75376 (2 layers, 64QAM) 97896 (2 layers, 256QAM)	7308288	2 or 4
DL Category 12	603008	149776 (4 layers, 64QAM) 195816 (4 layers, 256QAM) 75376 (2 layers, 64QAM) 97896 (2 layers, 256QAM)	7308288	2 or 4
DL Category 13	391632	195816 (4 layers, 256QAM) 97896 (2 layers, 256QAM)	3654144	2 or 4
DL Category 14	3916560	391656 (8 layers, 256QAM)	47431680	8
DL Category 15	749856-807744	149776 (4 layers, 64QAM) 195816 (4 layers, 256QAM, if alternativeTBS-Index-r14 is not supported) 201936 (4 layers, 256QAM, if alternativeTBS-Index-r14 is supported) 75376 (2 layers, 64QAM) 97896 (2 layers, 256QAM, if alternativeTBS-Index-r14 is not supported) 100752 (2 layers, 256QAM, if alternativeTBS-Index-r14 is supported)	9744384	2 or 4
DL Category 16	978960-1051360	149776 (4 layers, 64QAM) 195816 (4 layers, 256QAM, if alternativeTBS-Index-r14 is not supported) 201936 (4 layers, 256QAM, if alternativeTBS-Index-r14 is supported) 75376 (2 layers, 64QAM) 97896 (2 layers, 256QAM, if alternativeTBS-Index-r14 is not supported) 100752 (2 layers, 256QAM, if alternativeTBS-Index-r14 is supported)	12789504	2 or 4
DL Category 17	25065984	391656 (8 layers, 256QAM)	303562752	8
DL Category 18	1174752-1211616	[299856 (8 layers, 64QAM) 391656 (8 layers, 256QAM)] 149776 (4 layers, 64QAM) 195816 (4 layers, 256QAM, if alternativeTBS-Index-r14 is not supported) 201936 (4 layers, 256QAM, if alternativeTBS-Index-r14 is supported) 75376 (2 layers, 64QAM) 97896 (2 layers, 256QAM, if alternativeTBS-Index-r14 is not supported) 100752 (2 layers, 256QAM, if alternativeTBS-Index-r14 is supported)	14616576	2 or 4 [or 8]

UE DL Category	Maximum number of DL-SCH transport block bits received within a TTI	Maximum number of bits of a DL-SCH transport block received within a TTI	Total number of soft channel bits	Maximum number of supported layers for spatial multiplexing in DL
DL Category 19	1566336-1658272	[299856 (8 layers, 64QAM) 391656 (8 layers, 256QAM)] 149776 (4 layers, 64QAM) 195816 (4 layers, 256QAM, if alternativeTBS-Index-r14 is not supported) 201936 (4 layers, 256QAM, if alternativeTBS-Index-r14 is supported) 75376 (2 layers, 64QAM) 97896 (2 layers, 256QAM, if alternativeTBS-Index-r14 is not supported) 100752 (2 layers, 256QAM, if alternativeTBS-Index-r14 is supported)	19488768	2 or 4 [or 8]
DL Category 20	1948064-2019360	[299856 (8 layers, 64QAM) 391656 (8 layers, 256QAM)] 149776 (4 layers, 64QAM) 195816 (4 layers, 256QAM, if alternativeTBS-Index-r14 is not supported) 201936 (4 layers, 256QAM, if alternativeTBS-Index-r14 is supported) 75376 (2 layers, 64QAM) 97896 (2 layers, 256QAM, if alternativeTBS-Index-r14 is not supported) 100752 (2 layers, 256QAM, if alternativeTBS-Index-r14 is supported)	24360960	2 or 4 [or 8]
DL Category 21	1348960-1413120	149776 (4 layers, 64QAM) 195816 (4 layers, 256QAM, if alternativeTBS-Index-r14 is not supported) 201936 (4 layers, 256QAM, if alternativeTBS-Index-r14 is supported) 75376 (2 layers, 64QAM) 97896 (2 layers, 256QAM, if alternativeTBS-Index-r14 is not supported) 100752 (2 layers, 256QAM, if alternativeTBS-Index-r14 is supported)	17052672	2 or 4

#### Uplink physical layer parameter values set by the field UE-Category

UE UL Category	Maximum number of UL-SCH transport block bits transmitted within a TTI	Maximum number of bits of an UL-SCH transport block transmitted within a TTI	Support for 64QAM in UL	Support for 256QAM in UL
UL Category M1	1000 or 2984	1000 or 2984	No	No
UL Category M2	6968	6968	No	No
UL Category 0	1000	1000	No	No
UL Category 1 bis	5160	5160	No	No
UL Category 3	51024	51024	No	No
UL Category 5	75376	75376	Yes	No
UL Category 7	102048	51024	No	No
UL Category 8	1497760	149776	Yes	No
UL Category 13	150752	75376	Yes	No
UL Category 14	9585664	149776	Yes	No
UL Category 15	226128	75376	Yes	No
UL Category 16	105528	105528	Yes	Yes
UL Category 17	2119360	211936	Yes	Yes
UL Category 18	211056	105528	Yes	Yes
UL Category 19	13563904	211936	Yes	Yes
UL Category 20	316584	105528	Yes	Yes
UL Category 21	301504	75376	Yes	No

★ These UE Category tables show the case when MD8475B-071 is installed.

### • Options

#### **LTE 2×2 MIMO Option MX847550B-020**

This option adds 2×2 MIMO to the MX847550B.

#### **LTE 4×4 MIMO Option MX847550B-021**

This option adds 4×4 MIMO to the MX847550B.

#### **LTE Licensed Assisted Access (LAA) Option MX847550B-030**

This software option provides LTE Licensed Assisted Access (LAA) capability that can be used with the MIMO options and the Carrier Aggregation Options.

#### **LTE Carrier Aggregation Option MX847550B-040**

This software option supports LTE 2CC Carrier Aggregation. It supports the 2CC SISO test environment. Additionally, installing the MX847550B-020 software supports the 2CC MIMO test environment.

#### **LTE Carrier Aggregation DL3CCs Option MX847550B-041**

This software option supports LTE 3CC Carrier Aggregation. It supports the 3CC SISO test environment. Additionally, installing the MX847550B-020 software supports the 3CC MIMO test environment.

#### **LTE Carrier Aggregation DL4CCs Option MX847550B-042**

This software option supports LTE 4CC Carrier Aggregation. It supports the 4CC SISO test environment. Additionally, installing the MX847550B-020 software supports the 4CC MIMO test environment.

#### **LTE Carrier Aggregation DL5CCs Option MX847550B-043**

This software option supports LTE 5CC Carrier Aggregation. It supports the 5CC SISO test environment. Additionally, installing the MX847550B-020 software supports the 5CC MIMO test environment.

#### **LTE RoHC Option MX847550B-060**

This option adds better compression algorithms to improve LTE IP packet transfer efficiency.

#### Supported Profiles

IP	Profile
0x0000	No compression (LTE)/Uncompressed (UMTS)
0x0001	RTP/UDP/IP
0x0002	UDP/IP

#### **LTE 20 Layers Extension Option MX847550B-070**

This option enables LTE 20 Layers (LTE 5CC, 4×4 MIMO) testing. If this option is not installed, LTE 16 Layers (4×4 MIMO for 3CCs and 2×2 MIMO for 2CCs out of LTE 5CCs) is maximum.

### GSM

#### • Basic Configuration

#### **GSM Signalling Unit MD8475B-020**

#### **GSM/GPRS Simulation Software MX847520B**

#### **GSM Option MX847570B-020**

This is the basic configuration for performing GSM/GPRS tests. It supports voice and packet communications tests, SMS sending and receiving, etc. Additionally, it can be used for evaluating application functions using EGPRS communications for EGPRS high-speed data communications.

#### Supported EGPRS Specifications

Layer 1	Frequency Bandwidth	850, 900, 1800, 1900 MHz
	Modulation & Coding Scheme	MCS 1, 2, 3, 4 (GMSK) MCS 5, 6, 7, 8, 9 (8PSK)
	Number of Slots	Up to Multi Slot Class 12 (DL: 4/UL: 4/SUM: 5)
	Channel Combination	Combination 11 & 13
Layer 2, 3	Broadcasting Control Channel	BCCH/CCCH, PBCCH/PCCH
	ARQ Type	Type 1
	Window Size	64 to 192
Standard		3GPP Release 99

## Signalling Tester MD8475B System Configurations/Option/Software

### TD-SCDMA

#### • Basic Configuration

**TD-SCDMA Signalling Unit MD8475B-040**

**TD-SCDMA Simulation Software MX847540B**

**TD-SCDMA Option MX847570B-040**

These are for basic TD-SCDMA/TD-HSUPA\*1 configuration which support voice, videophone, packet, and SMS tests.

### 3GPP TS 25.306

#### TD-HSDPA

HS-DSCH category	Maximum number of HSDSCH codes per timeslot	Maximum number of HSDSCH timeslots per TTI	Maximum number of HSDSCH transport channel bits can be received within an HSDSCH TTI	Total number of soft channel bits	Maximum Throughput [bps]
Category 1 to 3	16	2	2788	11264	557600
Category 4 to 6	16	2	5600	22528	1120000
Category 7 to 9	16	3	8416	33792	1688200
Category 10 to 12	16	4	11226	45056	2245200
Category 13 to 15	16	5	14043	56320	2808600

#### TD-HSUPA

E-DCH category	Maximum number of E-DCH timeslots per TTI	Maximum number of E-DCH transport channel bits that can be received within an E-DCH TTI	Maximum Throughput [bps]
Category 1	2*2	2754	550800
Category 2	3*2	4162	832400
Category 3	2*2	5532	1106400
Category 4	3*2	8348	1669600
Category 5	4*2	11160	2232000
Category 6	5*2	11160	2232000

\*1: MX847570B supports Category 6 only.

\*2: One timeslot supports two physical channels when 16QAM not used.

### IMS Options

#### IMS Script Basic Option MX847570B-060

This software supports scripting of the communication procedure between the test UE and CSCF server using a ladder sequence to provide a very flexible and expandable test environment.

#### XCAP Script Option MX847570B-061

This option provides a test environment with high flexibility and expandability for creating scripts using a ladder sequence to edit XCAP messages between the UE and server without the need to prepare an actual server.

#### IMS Log Import Option MX847570B-062

This software option enables importing Wireshark logs, and create IMS script automatically. This Script is editable using Add-in Sever window. This option help flexible evaluation of IMS.

#### Extended CSCF Option MX847570B-080

This software option adds functions for calling from the network to UE as well as extended functions for CSCF-server-side network congestion and no response status.

#### IMS Supplementary Service Option MX847570B-081

This software option adds other service tests, including VoLTE caller ID display, call forwarding, call holding, etc.

#### RCS Basic Option MX847570B-083

This software option simulates RCS services. It is used to perform tests including RCS Configuration, Registration, Instant Messaging, etc.

#### GBA Authentication Option MX847570B-084

This option has the 3GPP GBA Authentication algorithm, authentication procedure and parameter settings for simulating GBA operations.

#### IMS Early Media Option MX847570B-085

This software supports IMS Early Media sequence tests. It can be used to confirm customized call tone services at the network side, such as NRBT (Network Ring Back Tone) and CAT (Customized Alerting Tone).

#### RTP Frame Control Option MX847570B-086

This option is for controlling media data (RTP packets) during VoLTE communications. It can be used to configure a voice environment in the MUTE status and with fixed data; a measurement environment can be configured for abnormal audio quality verification and battery power consumption tests in a fixed state.

#### • Support Service (IMS options)

##### MX847570B-060 1-Year Technical Support Service MX847570B-TS160

This contract offers customers support for technical enquiries for 1 year.

##### MX847570B-061 1 Year Technical Support Service MX847570B-TS161

This contract offers customers support for technical enquiries for 1 year.



### WLAN Offload Options

#### WLAN Offload Basic Option MX847570B-070

This software option provides an EAP authentication server for performing EAP over RADIUS communications (EAP-SIM/EAP-AKA) between a WLAN access point and the EAP authentication server. Additionally, data access by the physical bearers is displayed to verify the 3GPP/WLAN switchover.

#### ePDG Option MX847570B-071

This software option provides an ePDG server for testing the UE functions at Untrusted non-3GPP Access by running IKEv2 key exchanges and IPsec communications between the UE and ePDG. It requires the MX847570B-070 option as well.

#### ANDSF Option MX847570B-072

This software option provides the ANDSF function for testing the UE functions after ANDSF policy distribution to the UE. It requires the MX847570B-070 options as well.

#### Extended ePDG Option MX847570B-073

This software option supports configuration of an ePDG status fault test environment for inserting errors into the ePDG sequence, setting timeouts, etc. Additionally, this option can be used to support Fast Re-Authentication (EAP-SIM/EAP-AKA) tests without the need to generate UE-side authentication keys. It requires the MX847570B-070/ MX847570B-071.

### eCall Options

#### eCall Tester (Perpetual License) MX703330E-PL010

This option simulates the PSAP used by eCall services to support the eCall sequence (MSD call → Voice call) between the IVS and PSAP at a road accident.

The following test standards are supported:

- TS 26 .267 V8.6.0 (2011-03)
- TS 26 .268 V8.6.0 (2011-03)
- EN15722: 2015
- EN16062: 2015
- EN16454: 2015
- ISO3779: 2009

This option can be used as a test environment for model authentication in accordance with the EN16454 recommendations. This option provides audio replay and record functions.

#### MSD ERA GLONASS Option MX703330E-031

This option supports the MSD data communications function over SMS used by the ERA-GLONASS system

The following test standards are supported:

- GOST R 54619-2011
- GOST R 54620-2011
- GOST R 54721-2011
- GOST R 55530-2013

#### EGTS Server ERA GLONASS Option MX703330E-032

This option provides a test environment to send/receive and encode/decode EGTS messages defined in the GOST R 54619/54620. MX703330E-031 is separately required.

#### NG112 LTE eCall Option MX703330E-041

This option provides functional tests for MSD data communication and voice call over IMS defined in the RFC8147 standard.

#### Multi-Cell Option MX703330E-061

This option provides the handover test environment required when setting two or more cells as well as the CS Fallback test environment at the eCall environment. Practical eCall module tests are supported using this option.

The cell combinations are as follows:

	LTE	W-CDMA	GSM
LTE*	—	✓	✓
W-CDMA	✓	✓	✓
GSM	✓	✓	✓

★: VoLTE is not supported

### • Support Service

#### MX703330E 1-Year Support Service MX703330E-SS110

This service contract offers customers 1 year of support for technical enquiries as well as updates to the latest software versions adding extra functionality and bug fixes via downloads from the web page.

#### SSM Test PKG European eCall MX847503A-601

This test package provides automated test environment. Opening the test case on the SSM, it shows test procedures of test items defined in the (EC) 2017/79 and EN16454, and automatically configures the setting of MD8475A/MD8475B and eCall tester. This test package also has report functions for each standards.

#### SSM Test PKG GOST 33467 MX847503 A-701

This test package provides automated test environment. Opening the test case on the SSM, it shows test procedures of test items defined in the GOST33467, and automatically configures the setting of MD8475A/MD8475B and eCall tester. This test package also has report functions for each standards.

### Scenario Tools

**SIDE Software MX847580B**  
**SIP Option MX847580B-018**

These software are for executing scenarios created using the MX843080A Scenario Integrated Development Environment in combination with the MX847510B, MX847520B, and MX847550B software.

### Ciphering Option

**W-CDMA Ciphering Option MX847510B-050**

This option adds the W-CDMA ciphering function\*<sup>1</sup>, \*<sup>2</sup> and supports for KASUMI (3GPP-recommended algorithm).

**GSM/GPRS Ciphering Option MX847520B-050**

This option adds the GSM/GPRS ciphering function\*<sup>1</sup>, \*<sup>2</sup> and supports both the GSM A5/1, A5/2, and A5/3 ciphering algorithms as well as the GPRS GEA/1, GEA/2, and GEA/3 ciphering algorithms.

**TD-SCDMA Ciphering Option MX847540B-050**

This option adds the TD-SCDMA ciphering function\*<sup>1</sup>, \*<sup>2</sup> and supports SNOW 3G (3GPP-recommended algorithm).

**LTE Ciphering Option MX847550B-050**

This option adds the LTE ciphering function\*<sup>1</sup>, \*<sup>2</sup> and supports SNOW 3G (3GPP-recommended algorithm) and AES.

\*<sup>1</sup>: Does not work with MX847570B.

\*<sup>2</sup>: The Integrity Algorithm does not require this option.

### Upgrade Kits\*

**MD8475A to MD8475B Upgrade MD8475B-UG101**  
**MD8475A to MD8475B Upgrade (with Ciphering) MD8475B-UG102**  
**MD8475A to MD8475B Upgrade (with SIDE) MD8475B-UG103**  
**MD8475A to MD8475B Upgrade (with Ciphering/SIDE) MD8475B-UG104**  
**MD8475A to MD8475B Upgrade MD8475B-UG201**  
**MD8475A to MD8475B Upgrade (with Ciphering) MD8475B-UG202**  
**MD8475A to MD8475B Upgrade (with SIDE) MD8475B-UG203**  
**MD8475A to MD8475B Upgrade (with Ciphering/SIDE) MD8475B-UG204**

These retrofit kits upgrade the MD8475A in use to the MD8475B.

**MSU Upgrade MD8475B-UG170**

**MSU Upgrade MD8475B-UG270**

When upgrading the MD8475A in use to the MD8475B specifications, if a legacy unit such as the MD8475A-010 or MD8475A-040 is installed that cannot be transferred to the MD8475B-070 Multi-signalling Unit, the legacy unit must be changed to the MD8475B-070 with these retrofit kits.

\*: Upgrade kit models vary according to the configuration of the MD8475A options in use; contact our sales section for more details.

**eMSU Upgrade MD8475B-UG171**

**eMSU Upgrade MD8475B-UG271**

The MD8475A-011, MD8475A-050 and MD8475A-070 can be changed to the MD8475B-071 when upgrading the MD8475A to the MD8475B.

**eMSU Upgrade MD8475B-UG179**

**eMSU Upgrade MD8475B-UG279**

The MD8475B-070 can be changed to the MD8475B-071.

### Automation Tool

**SmartStudio Manager MX847503A**

This option increases the efficiency of evaluations by automating manual tests performed by the MX847570B SmartStudio software. In addition, the package includes test sequences required for evaluating basic functions.

**Smartphone Control Platform MX847504A**

Using this option, Android OS smartphone operations can be recorded via ADB and UE automated control scripts can be created, edited and run. As well as supporting automated control from the MX847503A, two-way automatic control of the measuring instrument and UE supports an operator-free test environment for higher test efficiency.

# Signalling Tester MD8475B

## Signalling Tester MD8475B SmartStudio System Configuration

System		LTE		W-CDMA	TD-SCDMA	GSM
		LTE-A	LTE			
Unit		Signalling Tester MD8475B				
Unit Option		Extended RF MD8475B-002				
		Fading IO Option MD8475B-004				
Platform Software		Multi-cell Software MX847502B				
		—		Multimedia Interface Software MX847508B		
		—		AMR-WB MX847508B-001	—	—
Basic Configuration	Hardware	Multi Signalling Unit MD8475B-070				GSM Signalling Unit MD8475B-020
	Software	Enhanced Multi-signalling Unit MD8475B-071		—	—	—
Options		LTE Simulation Software MX847550B		W-CDMA Simulation Software MX847510B	TD-SCDMA Simulation Software MX847540B	GSM/GPRS Simulation Software MX847520B
		LTE 2×2 MIMO Option MX847550B-020		HSPA Evolution/ DC-HSDPA Option MX847510B-011	—	—
		LTE 4×4 MIMO Option MX847550B-021				
		LAA Option MX847550B-030	—			
		LTE Carrier Aggregation Option MX847550B-040				
		LTE Carrier Aggregation DL3CCs Option MX847550B-041				
		LTE Carrier Aggregation DL4CCs Option MX847550B-042				
		LTE Carrier Aggregation DL5CCs Option MX847550B-043				
LTE RoHC Option MX847550B-060						
Support Service		MX847570B 1 Year Support Service MX847570B-SS110				
User Interface		SmartStudio MX847570B				
SmartStudio Licence	System Option	LTE Option MX847570B-050		W-CDMA Option MX847570B-010	TD-SCDMA Option MX847570B-040	GSM Option MX847570B-020
		LTE Carrier Aggregation Option MX847570B-051	—	HSPA Evolution/ DC-HSDPA Option MX847570B-011		
		LTE Licensed Assisted Access (LAA) Option MX847570B-052				
	IMS	Extended CSCEF Option MX847570B-080				
		IMS Supplementary Service Option MX847570B-081				
		RCS Basic Option MX847570B-083				
		GBA Authentication Option MX847570B-084				
		IMS Early Media Option MX847570B-085				
		RTP Frame Control Option MX847570B-086				
	WLAN	WLAN Offload Basic Option MX847570B-070				
		ePDG Option MX847570B-071				
		ANDSF Option MX847570B-072				
	Scripting Option	Extended ePDG Option MX847570B-073				
		IMS Script Basic Option MX847570B-060				
		XCAP Script Option MX847570B-061				
		MX847570B-060 1 Year Technical Support Service MX847570B-TS160				
	Technical Support Service	MX847570B-061 1 Year Technical Support Service MX847570B-TS161				
Remote Interface		Quick TRX Diagnosis MX847506B				
		SmartStudio Manager MX847503A				
		Smartphone Control Platform MX847504A				
eCall Option		eCall Tester (Perpetual License) MX703330E-PL010		eCall Tester (Perpetual License) MX703330E-PL010	—	eCall Tester (Perpetual License) MX703330E-PL010
		—		MSD ERA GLONASS Option MX703330E-031	—	MSD ERA GLONASS Option MX703330E-031
		—		EGTS Server ERA GLONASS Option MX703330E-032	—	EGTS Server ERA GLONASS Option MX703330E-032
		NG112 LTE eCall Option MX703330E-041		Multi-Cell Option MX703330E-061	—	Multi-Cell Option MX703330E-061
		MX703330E 1-Year Support Service MX703330E-SS110		MX703330E 1-Year Support Service MX703330E-SS110	—	MX703330E 1-Year Support Service MX703330E-SS110

## Signalling Tester MD8475B Specifications

RF Connector		RF Input/Output connector (Main, Aux 1, Aux 2) Connector: N (j) type, Impedance: 50Ω VSWR (Main): ≤1.9 (350 MHz to 3.8 GHz), ≤2.0 (3.8 GHz to 6.0 GHz) VSWR (Aux1, 2): ≤1.5 (350 MHz to 3.8 GHz), ≤1.6 (3.8 GHz to 6.0 GHz) Output connector (DL Output 1 to 8) Connector: SMA (j) type, Impedance: 50Ω VSWR: ≤1.5 (350 MHz to 3.8 GHz), ≤1.6 (3.8 GHz to 6.0 GHz) Reference oscillator Frequency: 10 MHz Level: TTL level Connector: BNC (j) type Startup characteristics: ≤5 × 10 <sup>-8</sup> (10 minutes after power-on, referenced to frequency 24 hours after power-on) Aging rate: 2 × 10 <sup>-8</sup> /day, ≤1 × 10 <sup>-7</sup> /year (referenced to frequency 24 hours after power-on) Temperature characteristics: ≤5 × 10 <sup>-8</sup> Frequency Accuracy at Shipment: ±2.2 × 10 <sup>-8</sup> (At +20° to +30°C, 1 hour after power-up) External reference input Frequency: 10 MHz, Acceptable frequency range: ±1.0 ppm, Level: ≥0 dBm, Impedance: 50Ω, Connector: BNC (j) type
Transmission Characteristics		Frequency Frequency range: 350 MHz to 6.0 GHz Setting resolution: 100 kHz (Depending on MX847501B used) Accuracy: Based on reference oscillator accuracy Output level Level range: (Main, Aux1, Aux2): LTE : -130 to -27 dBm (350 MHz to 3.8 GHz), -130 to -32 dBm (3.8 GHz to 6.0 GHz) W-CDMA : -130 to -27 dBm (350 MHz to 3.6 GHz) Others: -130 to -25 dBm (350 MHz to 3.6 GHz) Level Range (DL Output 1 to 8): LTE : -115 to -5 dBm (350 MHz to 3.8 GHz), -115 to -10 dBm (3.8 GHz to 6.0 GHz) W-CDMA: -115 to -5 dBm (350 MHz to 3.6 GHz) Others: -115 to -3 dBm (350 MHz to 3.6 GHz)  Resolution: 0.1 dB Level Accuracy (Main): -120 dBm ≤ Output Level, after CAL, excluding other effects of internal signal generator ±1.7 dB (350 MHz to 3.8 GHz, +20° to +30°C) ±2.0 dB (3.8 GHz to 6.0 GHz, +20° to +30°C) Level Accuracy (Aux 1, Aux 2): -120 dBm ≤ Output Level, after CAL, excluding other effects of internal signal generator ±1.0 dB ±1.0 dB (350 MHz to 3.8 GHz, +20° to +30°C) ±1.3 dB (3.8 GHz to 6.0 GHz, +20° to +30°C) Level Accuracy (DL Output 1 to 8): -110 dBm ≤ Output Level, after CAL ±1.0 dB (350 MHz to 3.8 GHz, +20° to +30°C) ±1.3 dB (3.8 GHz to 6.0 GHz, +20° to +30°C)  Signal purity Non-harmonic spurious: ≤-30 dBc (at ≥100 kHz frequency offset) Harmonics: ≤-25 dBc Modulation Accuracy : At +20° to +30°C W-CDMA: ≤3.5%rms (350 MHz to 2.7 GHz) GSM: ≤1.5%rms (350 MHz to 2.7 GHz) LTE: ≤3.5%rms (400 MHz to 6.0 GHz)
Reception Characteristics		Frequency Frequency range: 350 MHz to 6.0 GHz Setting resolution: 100 kHz (Depending on MX847501B used) Level Maximum input level: +35 dBm (Average)
General		Display: Color TFT LCD screen, 12.1 inches (WXGA), 1280 × 800 dots External interface Trigger I/O: BNC (j) Call Processing Timing I/O: 15-pin mini D-Sub (f) connector Call Processing Ethernet A/B: RJ-45 connector, 10Base-T/100Base-TX/1000Base-T Measure Ethernet: RJ-45 connector, 10Base-T/100Base-TX/1000Base-T Headphone: 3.5-mm dia. headphone jack Microphone: 3.5-mm dia. microphone jack USB (Type-A) × 2 (Back Panel) USB (Type-A) × 4 (Front Panel) GPIO: IEEE488 connector VGA: Mini D-Sub connector Ethernet 0/1: RJ-45 connector, 10Base-T/100Base-TX/1000Base-T ARB : Mini D-sub connector Sync Input: BNC (j) × 1, Output : BNC (j) × 2
Power Supply		100 Vac to 120 Vac (±10%)/200 Vac to 240 Vac (-10%/+10%, Max.: 250 Vac), 50 Hz to 60 Hz (Rating), ≤1350 VA (Max.)
Dimensions and Mass		426 (W) × 221.5 (H) × 578 (D) mm (excl. protrusions), <40 kg (with all options)
Temperature Range & Humidity		Operation: +5° to +40°C, Storage: -20° to +60°C, ≤90% (no condensation)
CE	EMC	2014/30/EU, EN61326-1, EN61000-3-2
	LVD	2014/35/EU, EN61010-1
	RoHS	2011/65/EU, EN50581



# Signalling Tester MD8475B Ordering Information

## Signalling Tester MD8475B

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.

Model/Order No.	Name	Model/Order No.	Name
MD8475B	<b>Main frame</b> Signalling Tester	MD8475B-020 MX847520B	<b>GSM system</b> GSM Signalling Unit GSM/GPRS Simulation Software
MX847500B MX847501B J1211 P0031A P0035B P0035B7 J1440A Z0541A Z0975A A0131A	<b>Standard accessories</b> Platform Software Control Software POWER CORD.3M USB Memory W-CDMA/GSM Test USIM (Standard UICC size) W-CDMA/GSM Test USIM (Micro UICC Size) LAN Cable (3 m) USB Mouse Keyboard (USB) Handset	MD8475B-070 MX847540B	<b>TD-SCDMA system</b> Multi-signalling Unit TD-SCDMA Simulation Software
MD8475B-002 MD8475B-004 MD8475B-005	<b>Hardware options</b> Extended RF Fading IO Option IP Extension Option	MX847503A MX847503A-601 MX847503A-701 MX847503A-923 MX847504A Z1813A	<b>Automation tools</b> SmartStudio Manager SSM Test PKG European eCall SSM Test PKG GOST 33467 eCall Tester Control Library Smartphone Control Platform USB Dongle (Automation)
MX847502B MX847506B MX847508B MX847508B-001	<b>Software options</b> Multi-cell Software Quick TRX Diagnosis Multimedia Interface Software AMR-WB	MX847580B MX847580B-018	<b>Scenario tools</b> SIDE Execution Software SIP Execution Option
MX847570B MX847570B-010 MX847570B-011 MX847570B-020 MX847570B-050 MX847570B-051 MX847570B-052 MX847570B-060 MX847570B-061 MX847570B-062 MX847570B-070 MX847570B-071 MX847570B-072 MX847570B-073 MX847570B-080 MX847570B-081 MX847570B-083 MX847570B-084 MX847570B-085 MX847570B-086	<b>User interface</b> SmartStudio W-CDMA Option HSPA Evolution/DC-HSDPA Option GSM Option LTE Option LTE Carrier Aggregation Option LTE Licensed Assisted Access (LAA) Option IMS Script Basic Option XCAP Script Option IMS Log Import Option WLAN Offload Basic Option ePDG Option ANDSF Option Extended ePDG Option Extended CSCF Option IMS Supplementary Service Option RCS Basic Option GBA Authentication Option IMS Early Media Option RTP Frame Control Option	MX703330E-PL010 MX703330E-031 MX703330E-032 MX703330E-041 MX703330E-061	<b>Automotive applications</b> eCall Tester (Perpetual License) MSD ERA GLONASS Option EGTS Server ERA GLONASS Option NG112 LTE eCall Option Multi-Cell Option
		MX847510B-050 MX847520B-050 MX847540B-050 MX847550B-050	<b>Ciphering Options</b> W-CDMA Ciphering Option GSM/GPRS Ciphering Option TD-SCDMA Ciphering Option LTE Ciphering Option
		MX847570B-SS110 MX703330E-SS110	<b>Software support services</b> MX847570B 1 Year Support Service MX703330E 1 Year Support Service
		MX847570B-TS160 MX847570B-TS161 MX703330E-TS110	<b>Technical support services</b> MX847570B-060 1 Year Technical Support Service MX847570B-061 1 Year Technical Support Service MX703330E 1 Year Technical Support Service
		MD8475B-UG□01 MD8475B-UG□02 MD8475B-UG□03 MD8475B-UG□04 MD8475B-UG□70 MD8475B-UG□71 MD8475B-UG□79	<b>Upgrade kits*</b> MD8475A to MD8475B Upgrade MD8475A to MD8475B Upgrade (with Ciphering) MD8475A to MD8475B Upgrade (with SIDE) MD8475A to MD8475B Upgrade (with Ciphering/SIDE) MSU Upgrade eMSU Upgrade (MD8475A to MD8475B) eMSU Upgrade (MD8475B-070 to MD8475B-071)
MD8475B-070 MD8475B-071 MX847550B MX847550B-020 MX847550B-021 MX847550B-030 MX847550B-040 MX847550B-041 MX847550B-042 MX847550B-043 MX847550B-060 MX847550B-070	<b>LTE system</b> Multi-signalling Unit Enhanced Multi-signalling Unit LTE Simulation Software LTE 2x2 MIMO Option LTE 4x4 MIMO Option LTE Licensed Assisted Access (LAA) Option LTE Carrier Aggregation Option LTE Carrier Aggregation DL3CCs Option LTE Carrier Aggregation DL4CCs Option LTE Carrier Aggregation DL5CCs Option LTE RoHC Option LTE 20 Layers Extension Option	MD8475B-ES210 MD8475B-ES310 MD8475B-ES510	<b>Warranty</b> 2 Years Extended Warranty Service 3 Years Extended Warranty Service 5 Years Extended Warranty Service
MD8475B-070 MX847510B MX847510B-011	<b>W-CDMA system</b> Multi-signalling Unit W-CDMA Simulation Software HSPA Evolution/DC-HSDPA Option		

★: MD8475B-UG □ ##

□: Select from the following according to the option type.

1: Retrofit option (Must be returned to factory in Japan)

2: Retrofit option (Must be returned to service center outside of Japan)

## Signalling Tester MD8475B Ordering Information

### Signalling Tester MD8475B

Model/Order No.	Name
	<b>Application parts</b>
B0703A	Rack Mount Kit
B0726A	Carrying Case
J0004	Coaxial Adaptor (N (male)-SMA (female))
J0127A	Coaxial Cord, 1.0 m (BNC-P · RG58A/U · BNC-P)
J0127B	Coaxial Cord, 2.0 m (BNC-P · RG58A/U · BNC-P)
J0322B	Coaxial Cord, 1.0 m
J0322D	Coaxial Cord, 2.0 m
J0658	Adapter (SMA male-female L-type)
J0576B	Coaxial Cord, 1.0 m (N-P · 5D-2W · N-P)
J0576D	Coaxial Cord, 2.0 m (N-P · 5D-2W · N-P)
J1263	W-CDMA Interface Cable (UE connection cable)
J1287	HDD-SUB15P Cable (milli-inch, for connecting MN8110B)
J1333A	HDD-SUB15P Crossover Cable (inch)
J1398A	N-SMA ADAPTOR
J1416A	LVDS Cable
J1440A	LAN Cable
J1489A	PP2S OUTPUT CABLE
J1524A	Dsub15-BNC Conversion Cable
J1609A	Signal Divider
J1651A	MD8475A Sync In Cable (for 3CC Test)
J1674A	SMA/P-SMA/P Soft Rigid Cable
J1674E	SMA/P-SMA/P Soft Rigid Cable (5 pcs)
J1674K	SMA/P-SMA/P Soft Rigid Cable (10 pcs)
MN8150A	RF Combiner Unit
P0035B	W-CDMA/GSM Test USIM (Standard UICC Size)
P0035B7	W-CDMA/GSM Test USIM (Micro UICC Size)
P0135A6	Anritsu Test UICC GA (nano UICC Size)
P0135A7	Anritsu Test UICC GA (Micro UICC Size)
P0250A6	Anritsu Test UICC GT (nano UICC Size)
P0250A7	Anritsu Test UICC GT (Micro UICC Size)
P0260A6	Anritsu Test UICC GM (nano UICC Size)
P0260A7	Anritsu Test UICC GM (Micro UICC Size)
Z0749	MN8110B + Inch Screw Cable (for call processing I/O)
Z1858A	Divider (2 way)
Z1859A	Divider (3 way)
Z1908D	Standard Laptop for SSM
Z1919B	Standard Desktop for WLAN



## • United States

### **Anritsu Americas Sales Company**

450 Century Parkway, Suite 190, Allen,  
TX 75013, U.S.A.  
Phone: +1-800-Anritsu (1-800-267-4878)

## • Canada

### **Anritsu Electronics Ltd.**

700 Silver Seven Road, Suite 120, Kanata,  
Ontario K2V 1C3, Canada  
Phone: +1-613-591-2003  
Fax: +1-613-591-1006

## • Brazil

### **Anritsu Eletronica Ltda.**

Praça Amadeu Amaral, 27 - 1 Andar  
01327-010 - Bela Vista - Sao Paulo - SP  
Brazil  
Phone: +55-11-3283-2511  
Fax: +55-11-3288-6940

## • Mexico

### **Anritsu Company, S.A. de C.V.**

Bldv Miguel de Cervantes Saavedra #169 Piso 1, Col. Granada  
Mexico, Ciudad de Mexico, 11520, MEXICO  
Phone: +52-55-4169-7104

## • United Kingdom

### **Anritsu EMEA Ltd.**

200 Capability Green, Luton, Bedfordshire, LU1 3LU, U.K.  
Phone: +44-1582-433200  
Fax: +44-1582-731303

## • France

### **Anritsu S.A.**

12 avenue du Québec, Bâtiment Iris 1- Silic 612,  
91140 VILLEBON SUR YVETTE, France  
Phone: +33-1-60-92-15-50  
Fax: +33-1-64-46-10-65

## • Germany

### **Anritsu GmbH**

Nemetschek Haus, Konrad-Zuse-Platz 1  
81829 München, Germany  
Phone: +49-89-442308-0  
Fax: +49-89-442308-55

## • Italy

### **Anritsu S.r.l.**

Via Elio Vittorini 129, 00144 Roma, Italy  
Phone: +39-6-509-9711  
Fax: +39-6-502-2425

## • Sweden

### **Anritsu AB**

Isafjordsgatan 32C, 164 40 KISTA, Sweden  
Phone: +46-8-534-707-00

## • Finland

### **Anritsu AB**

Teknobulevardi 3-5, FI-01530 VANTAA, Finland  
Phone: +358-20-741-8100  
Fax: +358-20-741-8111

## • Denmark

### **Anritsu A/S**

Torveporten 2, 2500 Valby, Denmark  
Phone: +45-7211-2200  
Fax: +45-7211-2210

## • Russia

### **Anritsu EMEA Ltd.**

#### **Representation Office in Russia**

Tverskaya str. 16/2, bld. 1, 7th floor.  
Moscow, 125009, Russia  
Phone: +7-495-363-1694  
Fax: +7-495-935-8962

## • Spain

### **Anritsu EMEA Ltd.**

#### **Representation Office in Spain**

Edificio Cuzco IV, Po. de la Castellana, 141, Pta. 5  
28046, Madrid, Spain  
Phone: +34-915-726-761  
Fax: +34-915-726-621

## • United Arab Emirates

### **Anritsu EMEA Ltd.**

#### **Dubai Liaison Office**

902, Aurora Tower,  
P O Box: 500311 - Dubai Internet City  
Dubai, United Arab Emirates  
Phone: +971-4-3758479  
Fax: +971-4-4249036

## • India

### **Anritsu India Private Limited**

6th Floor, Indigube ETA, No.38/4, Adjacent to EMC2,  
Doddanekundi, Outer Ring Road, Bengaluru - 560048, India  
Phone: +91-80-6728-1300  
Fax: +91-80-6728-1301

## • Singapore

### **Anritsu Pte. Ltd.**

11 Chang Charn Road, #04-01, Shriro House  
Singapore 159640  
Phone: +65-6282-2400  
Fax: +65-6282-2533

## • P.R. China (Shanghai)

### **Anritsu (China) Co., Ltd.**

Room 2701-2705, Tower A,  
New Caohejing International Business Center  
No. 391 Gui Ping Road Shanghai, 200233, P.R. China  
Phone: +86-21-6237-0898  
Fax: +86-21-6237-0899

## • P.R. China (Hong Kong)

### **Anritsu Company Ltd.**

Unit 1006-7, 10/F., Greenfield Tower, Concordia Plaza,  
No. 1 Science Museum Road, Tsim Sha Tsui East,  
Kowloon, Hong Kong, P.R. China  
Phone: +852-2301-4980  
Fax: +852-2301-3545

## • Japan

### **Anritsu Corporation**

8-5, Tamura-cho, Atsugi-shi, Kanagawa, 243-0016 Japan  
Phone: +81-46-296-6509  
Fax: +81-46-225-8352

## • Korea

### **Anritsu Corporation, Ltd.**

5FL, 235 Pangyoyeok-ro, Bundang-gu, Seongnam-si,  
Gyeonggi-do, 13494 Korea  
Phone: +82-31-696-7750  
Fax: +82-31-696-7751

## • Australia

### **Anritsu Pty. Ltd.**

Unit 20, 21-35 Ricketts Road,  
Mount Waverley, Victoria 3149, Australia  
Phone: +61-3-9558-8177  
Fax: +61-3-9558-8255

## • Taiwan

### **Anritsu Company Inc.**

7F, No. 316, Sec. 1, NeiHu Rd., Taipei 114, Taiwan  
Phone: +886-2-8751-1816  
Fax: +886-2-8751-1817