

TD-SCDMA

Test & Measurement Solutions



Anritsu TD-SCDMA Solutions

R&D into devices, etc., and manufacturing of 3G TD-SCDMA mobile terminals and base stations is ramping up prior to introduction in China-the world leader in number of mobile telephone subscribers.

Anritsu offers a total solution covering R&D, manufacturing and maintenance of TD-SCDMA systems based on its world-leading technologies and experience in measurement of the main communications systems, including GSM/EGPRS, W-CDMA/HSPA, CDMA2000, etc., with special focus on mobile communications.



MT8820B/MT8815B Radio Communication Analyzer

The MT8820B/MT8815B Radio Communication Analyzer covers a frequency range of 30 MHz to 2.7 GHz. When the dedicated optional measurement software and hardware are installed, the main Tx and Rx characteristics of W-CDMA/HSPA, GSM/GPRS/EGPRS, CDMA2000 1X/1xEV-DO, TD-SCDMA/HSDPA, and PHS/Advanced PHS terminals can be measured using a single MT8820B unit.



MD8470A Signalling Tester

The MD8470A Signalling Tester is an all-in-one base station simulator with excellent cost-performance, supporting UE application tests, such as voice calls, video calls, data downloads, and SMS/MMS for GSM/GPRS/EGPRS, W-CDMA/HSPA, CDMA2000 1X/1xEV-DO, and TD-SCDMA-compliant mobiles.



MS2690A/MS2691A/MS2692A Signal Analyzers

The MS269xA Signal Analyzers are the very latest high performance signal analyzers for next-generation communication applications. The MS269xA base units include swept spectrum analysis, FFT signal analysis, and a precision digitizer function. Add options to incorporate a Signal Generator, and/or an RNC Simulator, to turn the instrument into a hassle free, plug and play, one box solution.

The MS269xA are accurate enough for the most demanding R&D environment, yet are fast enough for the factory floor! Currently supported applications include TD-SCDMA, W-CDMA, mobile WiMAX, and LTE.



MG3700A Vector Signal Generator

The MG3700A Vector Signal Generator supports digital modulation of signals for all major wireless communication systems, such as cellular phones and wireless LANs. With its 160 MHz high-speed arbitrary waveform baseband generator, wide vector modulation bandwidth, and large-capacity ARB memory, the MG3700A has the performance to generate signals for future wideband wireless communication systems.



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



- 3GPP-compliant TD-SCDMA (1.28 Mcps TDD) RF Tx/Rx test support
- HSDPA Throughput measurement
- Video-phone functions
- End-to-End communication tests and audio Tx/Rx measurements
- All-in-one unit supporting TD-SCDMA/GSM R&D and manufacturing

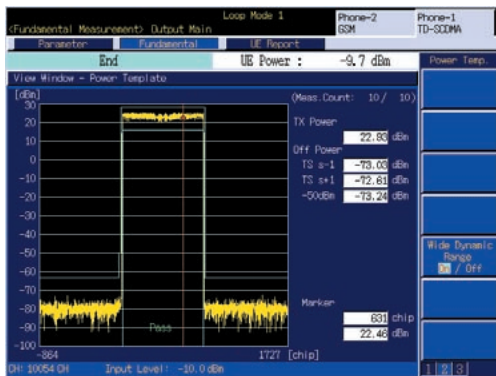
The all-in-one MT8820B/MT8815B high-reliability signalling functions and high-speed, high-accuracy measurements supporting multiple communications methods are ideal for both R&D and cost-effective, production-line testing.

Installing the MX882007C TD-SCDMA measurement software provides fast and accurate RF Tx/Rx tests in both the call-processing mode and in the test mode (no call processing) required for R&D and manufacturing.

In addition, adding options extends support for HSDPA throughput measurements, video-phone connections and end-to-end voice tests, as well as audio Tx/Rx measurements.

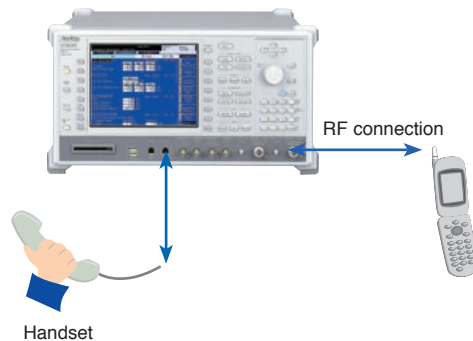
3GPP-compliant TD-SCDMA (1.28 Mcps TDD) RF Tx/Rx Test Support

3GPP-compliant (TS 34.122 Chapter 5 and Chapter 6) RF Tx/Rx tests are supported in the call-processing mode. One-touch setting is supported for main Tx/Rx test conditions and automatic tests like closed loop power control and out-of-sync handling, eliminating complex parameter settings and providing easy standard tests.



End-to-End Communication Tests and Audio Tx/Rx Measurements

Installing the voice codec option adds real-time audio encoding/decoding to the TD-SCDMA measurement software to support End-to-End communication tests. In addition, the Tx and Rx audio can be measured in the call-processing.

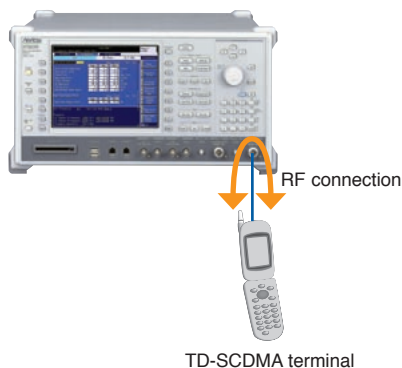


HSDPA Throughput Measurement

3GPP-compliant Rx throughput measurements and CQI measurements are supported at connection to TD-SCDMA HSDPA mobile terminals. Both RMC signals supporting all TD-SCDMA HSDPA categories as well as maximum data rate (2.8 Mbps) signals for category-15 are provided as throughput DUT test signals.

Video-phone Function

One TD-SCDMA terminal can be connected by looping-back at the tester and end-to-end video-phone connections between two TD-SCDMA terminals are supported via the Ethernet port on the MT8820B/MT8815B back panel.

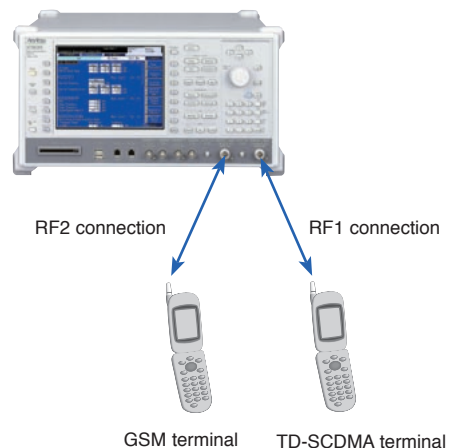


All-in-one Unit Supporting TD-SCDMA/GSM R&D and Manufacturing

When combined with the GSM option, one unit can be used to evaluate RF Tx/Rx characteristics required for R&D and production-line tests of dual-mode TD-SCDMA/GSM terminals.

TD-SCDMA to GSM handover reduces greatly production-line test times.

In addition, when the MT8820B ParallelPhone measurement option is added, two mobile terminals can be tested simultaneously and independently, greatly improving efficiency on production lines.





The MD8470A Signalling Tester is an all-in-one base station simulator supporting major 2.5G, 3G and 3.5G communications systems, as well as UE application function tests, such as voice and video call, contents download, SMS/MMS, etc. Since basic call connections are supported as standard, a simulation environment for application tests is easily configured.

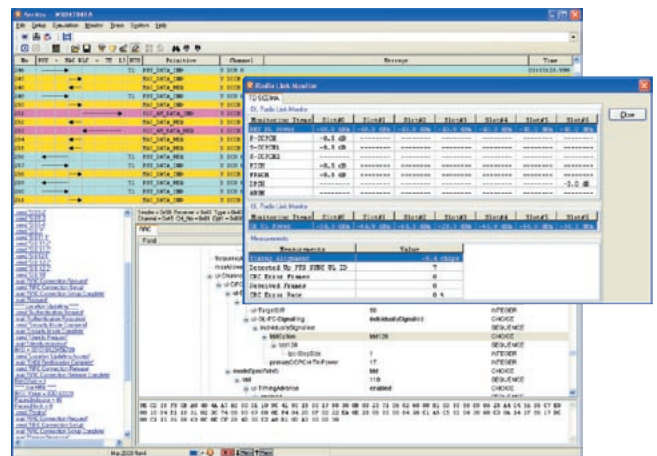
- All-in-one support for UE application function tests such as voice and video call, contents download, messaging, etc.
- Simple call connection
TD-SCDMA: Voice/Package/SMS/MMS
- Multi-system support
W-CDMA/HSDPA/HSUPA, GSM/GPRS/EGPRS, CDMA2000 1X/1xEV-DO, TD-SCDMA
- Frequency coverage of 400 to 2700 MHz

MX847040A TD-SCDMA Simulation Kit Flexible TD-SCDMA Network Simulation

The MD8470A Signalling Tester with the MU847040A TD-SCDMA Signalling Unit and the MX847040A TD-SCDMA Simulation Kit provide a flexible, repeatable and highly integrated TD-SCDMA network simulation environment for TD-SCDMA technology developers. This new solution allows users to perform extensive testing to create quality devices, protocols, user equipment, and applications for TD-SCDMA systems.

Features

- Flexible physical layer configuration
- Message encode/decode tool and programming library to support efficient test scenario creation
- Protocol message and user data logging at each layer
- Protocol message analysis support for various messages including RRC, NAS [RR, CC, MM, GMM, SM], SMS, SS [Supplementary Service], and CONFIG
- Powerful logging data sorting, searching and filtering for effective troubleshooting
- Monitoring function for DL channel power, UL power, timing alignment, and CRC errors



Simulation Control Software

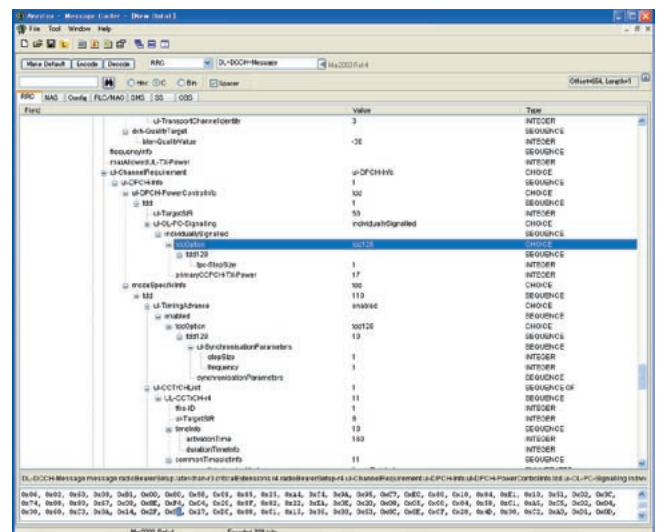
Effective Scenario Creation

Protocol Message Encoder/Decoder Tools (Message Coder)

The Message Coder is a protocol message encoder/decoder tool supporting RRC, NAS (RR, CC, MM, GMM, SM), SMS, and SS (Supplementary Services). It makes creation of protocol messages needed for test scenarios more efficient.

Message Encoder/Decoder Library

A protocol message encoder/decoder library supporting RRC, NAS (RR, CC, MM, GMM, SM), SMS, and SS (Supplementary Service) simplifies changing or extracting message information elements in test scenarios. The information elements are designated using the tree structure shown in the decode results of the Message Coder. This feature can be used for conditional branch processing in the scenario and analysis of received messages.



Message Coder



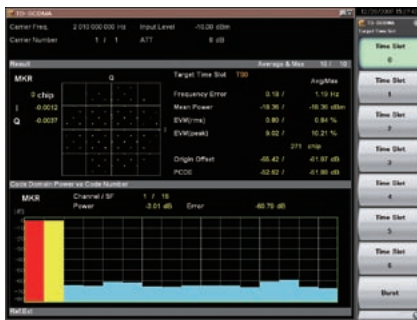
The MX269015A TD-SCDMA Measurement Software is for measuring the transmit characteristics of TD-SCDMA Radio used in 3G digital mobile communications. Anritsu's MS269xA Signal Analyzer main frame, with its best-of-class RF performance and cutting-edge architecture, supports high-speed, highly accurate measurements to increase R&D efficiency and cut time to market.

Measurements

- Frequency Error
- Tx Power (Mean)
- Vector Error (Peak/RMS EVM)
- Origin Offset
- Peak Code Domain Error
- Constellation Graph
- Code Domain Graph
- Multi Carrier Power
- Multi Slot Power
- Adjacent Channel Leakage Power (ACLR)
- Occupied Bandwidth (OBW)
- Spectrum Emission Mask (SEM)

Frequency Error/Tx Power/Modulation Accuracy

The Frequency Error, Tx Power, and Modulation Accuracy for the specified carrier slot are displayed simultaneously as constellation and code domain power graphs.



Constellation and Code Domain Power

**Adjacent Channel Leakage Power/
Occupied Bandwidth/Spectrum Emission Mask**

One-button tests make measuring TD-SCDMA signal characteristics easy when using the Spectrum Analyzer and Signal Analyzer functions of the MS269xA.

Multi Carrier/Multi Slot Power Measurements

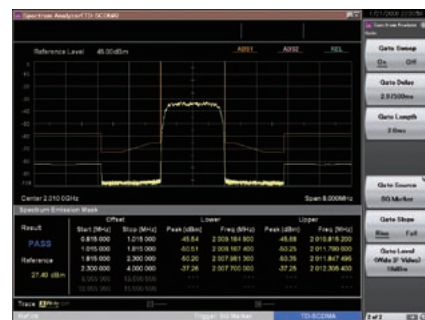
The Multi Carrier measurement function simultaneously displays the Tx power for all carriers and slots of the multi carrier signal, while the Multi Slot Power measurement function simultaneously displays the mean and partial Tx powers for all slots.



ACLR (Multi Carrier)



Multi Carrier Power



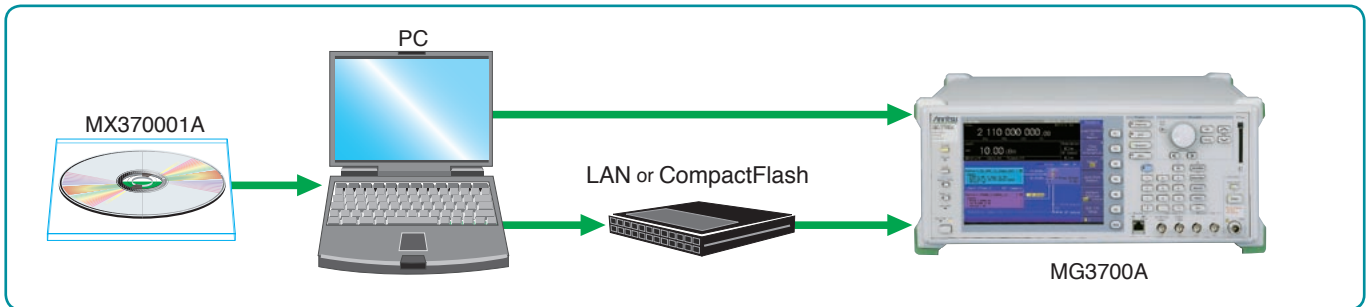
Spectrum Emission Mask



Multi Slot Power



Signals for 3GPP 1.28 Mcps TDD options can be output by installing the MX370001A TD-SCDMA Waveform Pattern option in the MG3700A. Typical 3GPP waveforms, such as the reference management channel, are output just by selecting the waveform pattern stored in the MG3700A internal hard disk without setting any complex TD-SCDMA parameters.



Waveform Patterns for Evaluating BS Transmitters

Target	BS Transmitter Test (DL)			
	BS			
Test Signal	BS-DL RMC			
Waveform Pattern	rmc_1 code_bs_dl	rmc_P-CCPCH_bs_dl	rmc_8 code_bs_dl	rmc_10 code_bs_dl
Test	Freq/Power Ctrlr/ Minimum Pwr	PCCPCH Pw	OBW/On Off Ratio/Max Pwr/ spurious/ACLR/TxIM	EVM/ Peak code domain err
Standard	TS25.142			

Waveform Patterns for Evaluating BS Receivers

Target	BS Receiver Test (UL)				
	BS				
Test Signal	BS-UL RMC				
Waveform Patterns	rmc12_2k_bs_ul	rmc12k_ocns_bs_ul	rmc64k_ocns_bs_ul	rmc144k_bs_ul	rmc384k_bs_ul
Test	RS/Min. Input Lev./ Dynamic range/ACS/ Blocking/Rx IM	Performance Req.	Performance Req.	Performance Req.	Performance Req.
Standard	TS25.142				

Waveform Patterns for Evaluating UE Receivers

Target	UE Receiver Test (DL)				
	UE				
Test Signal	UE-DL RMC				
Waveform Pattern	rmc12_2k_ue_dl	rmc12k_ocns_ue_dl	rmc64k_ocns_ue_dl	rmc144k_ocns_ue_dl	rmc384k_ue_dl
Test	RS/Min. Input Lev./ACS/ Blocking/Spur.Resp./ Inter Mod	Maximum input level test/ RMC 12.2k	Performance Req.	Performance Req.	Performance Req.
Standard	TS25.102				

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