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Anritsu

ME7877A

ME7878A

Mobile Communication Test System



This picture shows a general view of the ME7878A Mobile Communication Test System.

RF Test System for W-CDMA/GSM Mobile Terminals



A W-CDMA/GSM communications characteristics test bench

The ME7877A and ME7878A Mobile Communications Test System are an automatic system for testing the characteristics of W-CDMA/GSM mobile communications systems.

The ME7877A and ME7878A measurement systems are composed of different measuring instruments based around the MT8820A Radio Communication Analyzer and various dedicated software applications. The ME7877A supports measurement of spurious signals according to Section 5 (Transmitter Test) and Section 6 (Receiver Test) of the W-CDMA 3GPP TS34.121 measurement standard and Section 13 (Transmitter Test) and Section 14 (Receiver Test) of the GSM GPP TS51.010 measurement standard.

The ME7878A supports measurement of spurious signals and interference waveforms according to Section 5 (Transmitter Test) and Section 6 (Receiver Test) of the W-CDMA 3GPP TS34.121 measurement standard.

Both the ME7877A and ME7878A are ideal for performing the various test items, especially tests combining the many instruments required for measuring spurious signals and interference waves.

ME7877A

Test System for W-CDMA/GSM Spurious Measurement

Measurement of spurious signals in accordance with W-CDMA 3GPP TS34.121 and the GSM 3GPP TS51.010 recommendations is supported.

● Operating Bands

The ME7877A and ME7878A have the following operating band support:

- W-CDMA BandI, VI (both ME7877A and ME7878A)
- GSM 900 MHz/DCS1800 MHz/PCS1900 MHz (ME7877A)

● Automatic System Calibration Measurement

Since the system is composed of different measurement instruments, the I/O level frequency characteristics require calibration. Special calibration software enables the user to perform maintenance such as recovery and periodic calibration when the equipment composition is changed. This feature requires the use of Anritsu-specified measuring instruments: see the MX787850A instruction manual for details.

ME7878A

Test System for W-CDMA Spurious and Interference waveforms Measurement

Measurement of spurious and interference waveforms in accordance with the W-CDMA 3GPP TS34.121 recommendation is supported.



Syucture of Test System

● ME7877A Mobile Communication Test System



- MX787720A W-CDMA/GSM Test Software
- MT8820A Radio Communication Analyzer
- MS8609A Digital Mobile Radio Transmitter Tester
- MN7476A RF Interface Unit
- MN7451A RF Switch Driver Unit

● ME7878A Mobile Communication Test System



- MX787800A W-CDMA Test Software
- MT8820A Radio Communication Analyzer
- MS8609A Digital Mobile Radio Transmitter Tester
- MG3681A Digital Modulation Signal Generator
- MG3692B Signal Generator
- MN7476A RF Interface Unit
- MN7486A Interference Measurement Unit
- MN7478A Additional Unit For Interference Measurement
- MN7451A RF Switch Driver Unit

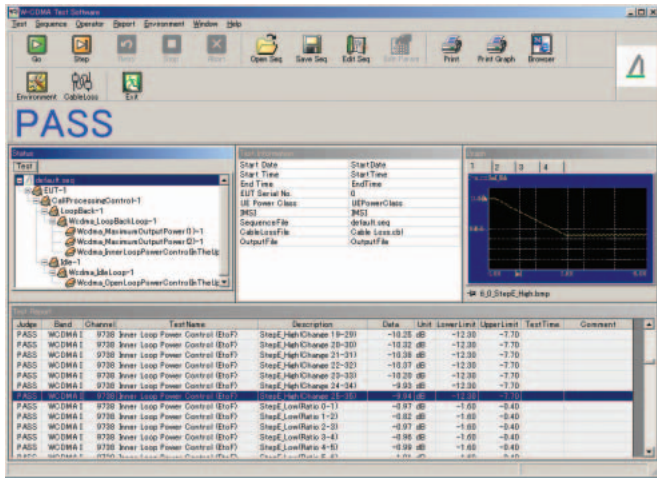
* The personal computer and DC power supply must be provided by the user.



Operating screens are based on the familiar Windows GUI.

● Main Screen for Operations and Monitoring

Operations are performed using the tool bar at the top of the main screen. Easy-to-understand icons indicate the tool bar operations. Test sequence items are shown in the center of the screen, while the right side displays the details of each test and the bottom displays the test results. Consequently, all the important aspects of the tests can be confirmed at a glance on the main screen.



● Flexible Testing

Measurements can be made individually, or selected measurements can be performed automatically as a group, permitting flexible testing according to the user's needs.

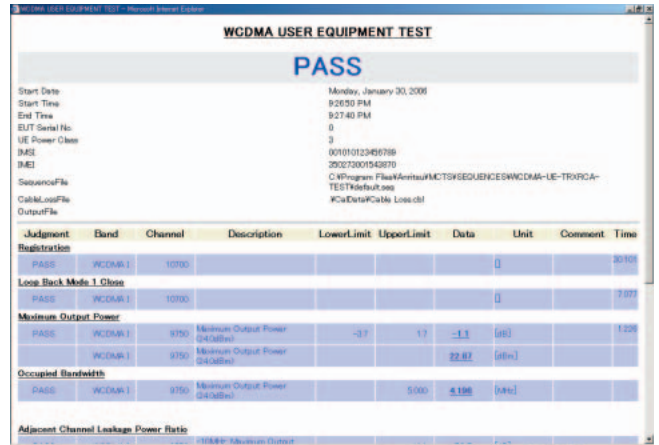
● Flexible Parameter Setting

In addition to flexible selection of test items in any frequency channel for each test, detailed parameters such as spec and average can be set for each test. This permits configuration of ideal test conditions matching the tested device and test objectives.

Moreover, setting changes can be saved to a file for readout when necessary.

● Measured Data Management Function

The measurement results obtained using this system can be displayed on and printed from a browser screen. Other relevant information such as the test start time can be recorded in the header of the measurement report and used for measurement file management. The measurement results can also be saved in both HTML and CSV file formats.



● Help Guide

The Help function offers on-screen guidance for using the operation software in either English or Japanese. Users select the guidance language during software installation.



Test Items

W-CDMA Test Items

● Operating Band: BandI, VI Loop-Back mode

3GPP TS34.121 Standard Test Items		ME7877A	ME7878A
5 Transmitter Tests			
5.2	Maximum Output Power	√	√
5.3	Frequency Error	√	√
5.4.1	Open Loop Power Control in the Uplink	√	√
5.4.2	Inner Loop Power Control in the Uplink	√	√
5.4.3	Minimum Output Power	√	√
5.4.4	Out-of-synchronisation handling of Output Power	√*1	√*1
5.5.1	Transmit OFF Power	√	√
5.5.2	Transmit ON/OFF Time Mask	√	√
5.6	Change of TFC	√*2	√*2
5.7	Power Setting in Uplink Compressed Mode		
5.8	Occupied Bandwidth (OBW)	√	√
5.9	Spectrum Emission Mask	√	√
5.10	Adjacent Channel Leakage Power Ratio (ACLR)	√	√
5.11	Spurious Emissions	√	√
5.12	Transmit Intermodulation		√
5.13.1	Error Vector Magnitude	√	√
5.13.2	Peak Code Domain Error	√*3	√*3
5.13.3	UE Phase Discontinuity	√	√
5.13.4	PRACH Preamble Quality	√*4	√*4
6 Receiver Tests			
6.2	Reference Sensitivity Level	√	√
6.3	Maximum Input Level	√	√
6.4	Adjacent Channel Selectivity (ACS)		√
6.5	Blocking Characteristics		√
6.6	Spurious Response		√
6.7	Intermodulation Characteristics		√
6.8	Spurious Emissions	√	√

*1: Timing measurement is not supported.

*2: Template judgement is not supported.

*3: The connection with UL RMC 768 kbps is not supported.

*4: The repetition measurement is not supported.



Test Items

GSM Test Items

● Operating Band : GSM900/DCS1800/PCS1900, Loop-Back mode

3GPP TS51.010 Standard Test Items		ME7877A
Transceiver Tests		
12.1	Conducted spurious emissions	
12.1.1	MS allocated a channel	√
12.1.2	MS in idle mode	√
12.2	Radiated spurious emissions	
12.3	Conducted spurious emissions for MS supporting the R-GSM frequency band	
12.3.1	MS allocated Channel	√
12.3.2	MS in idle mode	√
GSM Transmitter Tests		
13.1	Frequency error and phase error	√*1
13.2	Frequency error under multipath and interference conditions	
13.3	Transmitter output power and burst timing	√
13.4	Output RF spectrum	√*1
13.6	Frequency error and phase error in HSCSD multislot configurations	
13.7	Transmitter output power and burst timing in HSCSD configurations	
13.8	Output RF spectrum in HSCSD multislot configuration	
13.9	Output RF spectrum for MS supporting the R-GSM band	√*1
GPRS Transmitter Tests		
13.16.1	Frequency error and phase error in GPRS multislot configuration	√*1
13.16.2	Transmitter output power in GPRS multislot configuration	√*3
13.16.3	Output RF spectrum in GPRS multislot configuration	√*1, *4
13.17.1	Frequency error and Modulation accuracy in EGPRS configuration	
13.17.2	Frequency error under multipath and interference conditions	
13.17.3	EGPRS Transmitter output power	
13.17.4	Output RF spectrum in EGPRS configuration	
GSM Receiver Tests		
14.1.1	Bad frame indication - TCH/FS	
14.1.2	Bad frame indication - TCH/HS	
14.1.3	Bad frame indication - TCH/FS - Frequency hopping and downlink DTX	
14.1.4	Bad frame indication - TCH/HS - Frequency hopping and downlink DTX	
14.1.5	Bad frame indication - TCH/AFS (Speech frame)	
14.1.6	Bad frame indication - TCH/AHS	
14.2.1	Reference sensitivity - TCH/FS	√*1, *2
14.2.2	Reference sensitivity - TCH/HS (Speech frames)	√*1, *2
14.2.3	Reference sensitivity - FACCH/F	
14.2.4	Reference sensitivity - FACCH/H	
14.2.5	Reference sensitivity - full rate data channels	
14.2.6	Reference sensitivity - half rate data channels	
14.2.7	Bad frame indication - TCH/EFS	√*1, *2
14.2.8	Reference sensitivity - full rate data channels in multislot configuration	
14.2.9	Reference sensitivity - TCH/FS for MS supporting the R-GSM band	√*1, *2
14.2.10	Reference sensitivity - TCH/AFS	√*1, *2
14.2.18	Reference sensitivity - TCH/AHS	√*2
14.2.19	Reference sensitivity - TCH/AFS-INB	
14.2.20	Reference sensitivity - TCH/AHS-INB	
14.3	Usable receiver input level range	√*2



Test Items

14.4.1	Co-channel rejection - TCH/FS	
14.4.2	Co-channel rejection - TCH/HS	
14.4.3	Co-channel rejection - TCH/HS (SID frames)	
14.4.4	Co-channel rejection - FACCH/F	
14.4.5	Co-channel rejection - FACCH/H	
14.4.6	Co-channel rejection - TCH/EFS	
14.4.7	Receive performance in the case of frequency hopping and Co-channel interference on one carrier	
14.4.8	Co-channel rejection - TCH/AFS	
14.4.16	Co-channel rejection - TCH/AHS	
14.4.17	Co-channel rejection - TCH/AFS-INB	
14.4.18	Co-channel rejection - TCH/AHS-INB	
14.5.1	Adjacent channel rejection - speech channels	
14.5.2	Adjacent channel rejection - control channel	
14.6.1	Intermodulation rejection - speech channels	
14.6.2	Intermodulation rejection - control channel	
14.7.1	Blocking and spurious response - speech channels	
14.7.2	Blocking and spurious response - control channels	
14.7.3	Blocking and spurious response - speech channels for MS supporting the R-GSM band	
14.7.4	Blocking and spurious response - control channels for MS supporting the R-GSM band	
14.8.1	AM suppression - speech channels	
14.8.2	AM suppression - control channels	
14.9	Paging performance at high input levels	
14.10.1	Performance of the Codec Mode Request Generation - TCH/AFS	
14.10.2	Performance of the Codec Mode Request Generation - TCH/AHS	
GPRS Receiver Tests		
14.16.1	Minimum Input level for Reference Performance	$\sqrt{*1, *2}$
14.16.2	Co-channel rejection	
14.18.1	Minimum Input level for Reference Performance	
14.18.2	Co-channel rejection	
14.18.3	Adjacent channel rejection	
14.18.4	Intermodulation rejection	
14.18.5	Blocking and spurious response	
14.18.6	EGPRS Usable receiver input level range	
14.18.7	Incremental Redundancy performance	

*1: Measurement items for frequency hopping is not supported.

*2: Measurement items for fading tests is not supported.

*3: Measurement items for access burst is not supported.

*4: Measurement items for spectrum due to modulation at 2 to 6 MHz offset and spurious emissions in the MS receive bands is not supported.



Specifications

ME7877A, ME7878A (Main Frame)

General*	Max. input level	+33 dBm (2 W)
	Input/Output	Type N, 50 Ω VSWR ≤ 1.2 (30 MHz to 2.7 GHz: for measuring Maximum Output Power) VSWR ≤ 2.0 (3 to 13 GHz: for measuring RX Spurious Emissions) VSWR ≤ 1.3 (1 MHz to 3.1 GHz: for measuring Blocking characteristics) VSWR ≤ 2.0 (3.1 to 12.75 GHz: for measuring Blocking characteristics)
	Reference oscillator	Uses MT8820A External reference input enabled [Frequency: 10/13 MHz selectable, BNC connector]
Power supply	100 to 120 Vac or 200 to 240 Vac, 50/60 Hz, ≤1350 VA (ME7877A), ≤1900 VA (ME7878A)	
Operating temperature	+15 to +35°C (operation), -20 to +60°C (storage)	
EMC	EN61326: 1997/A2: 2001 (Class A), EN61000-3-2: 2000 (Class A), EN61326: 1997/A2: 2001 (Annex A)	
LVD	EN61010-1: 2001 (Pollution Degree 2)	

*: The general specifications apply to use of the MN7476A RF Interface Unit (with 3 dB attenuator connector).



Ordering Information

ME7877A Mobile Communication Test System

Please specify the model/order number, name and quantity when ordering.

Model/Order No.	Name	Remarks
ME7877A	— Mainframe — Mobile Communication Test System	
	— Components —	
MT8820A	Radio Communication Analyzer	
MT8820A-01	W-CDMA Measurement Hardware	
MT8820A-02	TDMA Measurement Hardware	
MX882000B	W-CDMA Measurement Software	
MX882001A	GSM Measurement Software	
MX882050A	W-CDMA Call Processing Software	
MS8609A	Digital Mobile Radio Transmitter Tester	
MS8609A-04	Digital Resolution Bandwidth	
MS8609A-08	Pre-amplifier	
MS8609A-31	Low Noise Floor	
MX860901B	W-CDMA Measurement Software	
MX860902A	GSM Measurement Software	
MN7476A	RF Interface Unit	
MN7451A	RF Switch Driver Unit	
MX787720A	W-CDMA/GSM Test Software (Spurious)	
	— Standard accessories —	
MX787850A	Correction Software	
Z0790	Accessory Kit	
W2635AE	ME7877A/ME7878A Operation Manual (CD-ROM)	
W2596AE	MN7476A Operation Manual (CD-ROM)	
W2573AE	MN7451A Operation Manual (CD-ROM)	
W2637AE	MX787600/601/620/720/800A Operation Manual (CD-ROM)	
W2599AE	MX787850A Operation Manual (CD-ROM)	
	— Options —	
ME7877A-051	W-CDMA BandI Measurement Setup	
ME7877A-056	W-CDMA BandVI Measurement Setup	
ME7877A-071	GSM GSM 900 Band Measurement Setup	
ME7877A-072	GSM DCS 1800 Band Measurement Setup	
ME7877A-073	GSM PCS 1900 Band Measurement Setup	
MN7476A-005	Low Loss Path for Downlink Signal	For GSM900/DCS1800/PCS1900 Spurious Measurement
MN7476A-010	2 GHz BRF for Spurious Measurement	For BandI Spurious Measurement
MN7476A-011	1.9 GHz BRF for Spurious Measurement	For PCS1900 Spurious Measurement
MN7476A-012	1.8 GHz BRF for Spurious Measurement	For DCS1800 Spurious Measurement
MN7476A-013	900 MHz BRF for Spurious Measurement	For GSM900 Spurious Measurement
MN7476A-014	850 MHz BRF for Spurious Measurement	For BandVI Spurious Measurement
MN7476A-015	1600 MHz HPF for Spurious Measurement	For BandVI/GSM900 Spurious Measurement
MN7476A-016	3100 MHz HPF for Spurious Measurement	For DCS1800/PCS1900 Spurious Measurement
MX787720A-051	W-CDMA BandI Measurement Software	
MX787720A-056	W-CDMA BandVI Measurement Software	
MX787720A-071	GSM 900 Band Measurement Software	
MX787720A-072	DCS 1800 Band Measurement Software	
MX787720A-073	PCS 1900 Band Measurement Software	
	— Application parts —	
J0007	408JE-104 GPIB Cable	
J0008	GPIB Cable, 2.0 m	
P0027	W-CDMA/GSM Test USIM	



Ordering Information

ME7878A Mobile Communication Test System

Please specify the model/order number, name and quantity when ordering.

Model/Order No.	Name	Remarks
ME7878A	<p align="center">— Mainframe —</p> Mobile Communication Test System	
	<p align="center">— Components —</p>	
MT8820A	Radio Communication Analyzer	
MT8820A-01	W-CDMA Measurement Hardware	
MX882000B	W-CDMA Measurement Software	
MX882050A	W-CDMA Call Processing Software	
MS8609A	Digital Mobile Radio Transmitter Tester	
MS8609A-04	Digital Resolution Bandwidth	
MS8609A-08	Pre-amplifier	
MS8609A-31	Low Noise Floor	
MX860901B	W-CDMA Measurement Software	
MG3681A	Digital Modulation Signal Generator	
MU368040A	CDMA Modulation Unit	
MX368041B	W-CDMA Software	
MG3692B	Signal Generator	
MG3690B/2A	110 dB Mechanical Step Attenuator	
MG3690B/4	Digital Down Converter	
MG3690B/22	0.1 Hz to 10 MHz Audio Coverage	
34RKNF50	Coaxial Adapter (strengthened K-M, N-F)	
MN7476A	RF Interface Unit	
MN7486A	Interference Measurement Unit	
MN7478A	Additional Unit for Interference Measurement	
MN7451A	RF Switch Driver Unit	
MX787800A	W-CDMA Test Software (Spurious/Interference)	
	<p align="center">— Standard accessories —</p>	
MX787850A	Correction Software	
Z0760	Accessory Kit	
W2635AE	ME7877A/ME7878A Operation Manual (CD-ROM)	
W2596AE	MN7476A Operation Manual (CD-ROM)	
W2597AE	MN7486A Operation Manual (CD-ROM)	
W2601AE	MN7478A Operation Manual (CD-ROM)	
W2573AE	MN7451A Operation Manual (CD-ROM)	
W2637AE	MX787600/601/620/720/800A Operation Manual (CD-ROM)	
W2599AE	MX787850A Operation Manual (CD-ROM)	



Ordering Information

Model/Order No.	Name	Remarks
— Options —		
ME7878A-051	W-CDMA BandI Measurement Setup	
ME7878A-056	W-CDMA BandVI Measurement Setup	
MN7476A-010	2 GHz BRF for Spurious Measurement	For BandI Spurious Measurement
MN7476A-014	850 MHz BRF for Spurious Measurement	For BandVI Spurious Measurement
MN7476A-015	1600 MHz BRF for Spurious Measurement	For BandVI Spurious Measurement
MN7486A-020	800 MHz Band Isolator	For BandVI Interference Measurement
MN7486A-021	2 GHz Band Isolator	For BandI Interference Measurement
MN7486A-022	Low Loss Path for Interference Signal	For BandI/VI Interference Measurement
MN7486A-030	1.5 GHz LPF/3.0 GHz HPF for Blocking Measurement	For BandI Interference Measurement
MN7486A-031	600 MHz LPF/1.3 GHz HPF for Blocking Measurement	For BandVI Interference Measurement
MN7486A-032	2 GHz BRF for Blocking Measurement	For BandI Interference Measurement
MN7478A-043	850 MHz BRF for Blocking Measurement	For BandVI Interference Measurement
MX787800A-051	W-CDMA BandI Measurement Setup	
MX787800A-056	W-CDMA BandVI Measurement Setup	
— Application parts —		
J0007	408JE-104 GPIB Cable	
J0008	GPIB Cable, 2.0 m	
P0027	W-CDMA/GSM Test USIM	

In addition to the components listed above, customers need to provide a personal computer and peripherals based on the following recommended specifications:

<Recommended PC and Peripheral Specifications>

- CPU: Pentium® 4 -- 1.6 GHz or greater
- OS: Microsoft Windows® XP Professional SP1 or later
Microsoft Windows® 2000 Professional SP3 or later
- Main Memory: 512 MB or greater
- Screen Resolution: 1024 x 768 dots
- Hard Disk: 1 GB or greater
- CD-ROM Drive: For installing and upgrading software
- GPIB Interface: Either of the National Instruments products below:
 - PCI-GPIB (PCI-Bus)
 - PCMCIA-GPIB (PCMCIA-Bus)

Pentium® is a registered trademark of Intel Corporation in the U.S. and other countries.

Windows® 2000 and Windows® XP is a registered trademark of Microsoft Corporation in the U.S. and other countries.

Current consumption measurement can be performed with recommended DC power.

- <Recommended DC power supply>
- Keithley Instruments, Inc. 2303
- Agilent Technologies, Inc. 66311A/66312A



Specifications are subject to change without notice.

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