

Discover What's Possible™

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PRODUCT INTRODUCTION

MT8820A

Radio Communication Analyzer

ANRITSU CORPORATION

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MT8820A

Radio Communication Analyzer

Product Introduction



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Product Marketing Dept.
Wireless Measurement Div.
Anritsu Corporation

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1. IMT-2000 -R&D, Standardization and Anritsu's Stance

1998-----3GPP was established for the purpose of W-CDMA system integration proposed mainly by Japan and Europe. Anritsu joined in the 3GPP working group as an original member.

(3GPP: 3rd Generation Partnership Project)

Afterwards, 3GPP2 was established as a committee for CDMA2000 standard adopted mainly in the U.S.

1999-----Basic standards were decided for 3GPP(Release 99) and 3GPP2 (Release A) at the end of the year.

Anritsu contributed to the standardization activities by assigning Sub Chairman for T1 and Chairman for T1-Sig in 3GPP UE Test WG.

At the same time, Anritsu started to provide the test solution conforming to the standard specifications.

2000-----Anritsu provided W-CDMA BS/UE Conformance Test System to TELEC.

2001-----3GPP fixed the specifications for Release 99 (corresponding to 3) and starts to discuss Release 4 and 5 for level up as UMTS including GSM.

3GPP2 urged the standardization of intelligent system exclusive for Packet Data communication.

Anritsu developed various W-CDMA measurement solutions for BS/UE production, BS construction and service area status testing as well as starting to support CDMA2000.

2002-----Anritsu collaborates with 7 Layers Corp. in Germany for the business of Conformance Test System.

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1. IMT-2000 -R&D, Standardization and Anritsu's Stance (contd.)

2003-----Anritsu's ME7873A W-CDMA TRX/Performance Test System has been approved by GCF (GCF: Global Certification Forum) regarding 3GPP TS34.121 RF test (10 items) defined in 3GPP standard for the first time in industry.

Furthermore, the MX785201A W-CDMA Protocol Test System has been approved by GCF regarding 3GPP protocol test in 3GPP TS34.123-3 (13 items).

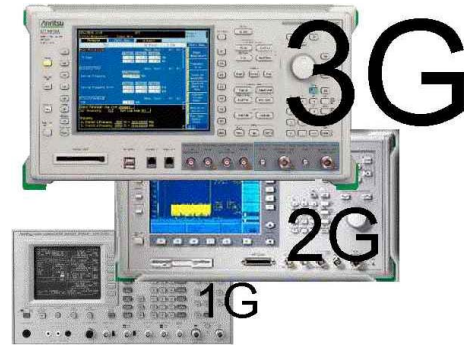
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2. Outline of MT8820A

One-box type radio equipment tester has been developed for the first time in the world by engaging in the 3G communication system, W-CDMA from its trial stage (Japan), following the major communication system for 1G and 2G.



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MT8820A is...

the measuring instrument platform which can perform connection testing and transmission/reception testing of 3G UE with standalone equipment.

The MT8820A hardware platform covers a frequency range of 30 MHz to 2.7 GHz. When dedicated measurement software and hardware are installed, this single platform supports evaluation of all the main transmission/reception characteristics for W-CDMA, GSM/GPRS, CDMA2000 1X and PDC terminals. The built-in GPIB interface enables MT8820A to be integrated into automated production lines as well as to configure an automated test system for after-sales maintenance.



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MT8820A is the new platform targeting at 3G, supporting W-CDMA/GSM/GPRS/CDMA2000/PDC measurement .

for UE Development

Efficient and detailed UE evaluation is required in development site, where MT8820A is effectively used for transmission/reception testing and call processing test with standalone equipment.

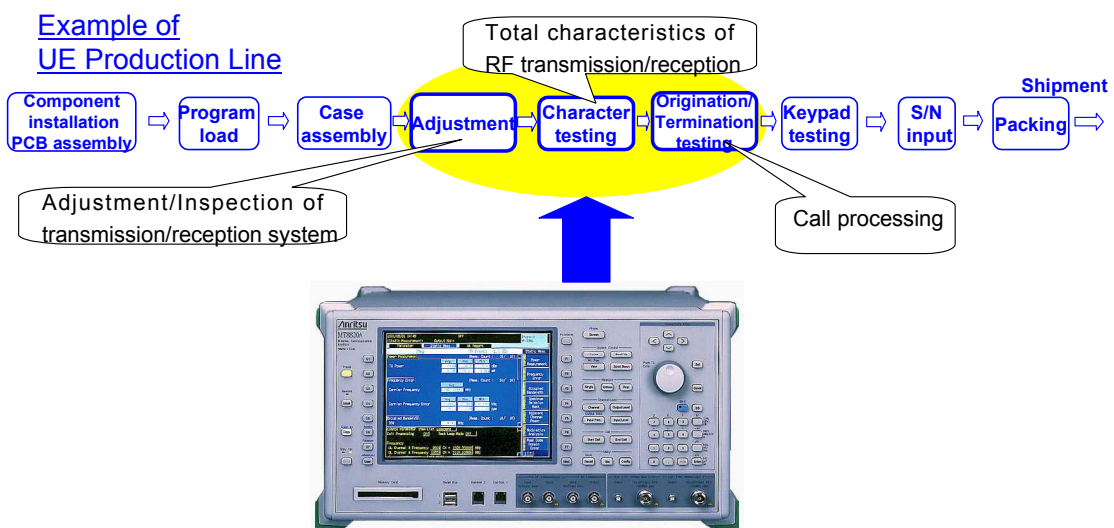
for Maintenance

UE can be evaluated by simple operation.

Also, the waveform of defective UE can be easily checked.

For UE Production

The throughput improved by high-speed measurement contributes to efficient and high-quality UE adjustment/inspection.

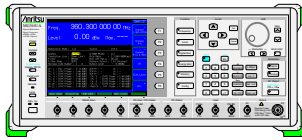


3. Features of MT8820A



MS8608A/09A Transmitter Tester

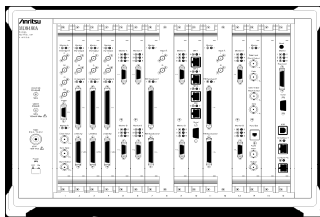
Single chassis is able to perform transmission/reception characteristic test and call processing test of UE.



MG3681A Digital Modulation Signal Generator



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MD8480A Signaling Tester

Cost & Space: 1/3

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Multi System Support

CDMA2000 unit (for CDMA2000 1X), TDMA unit (for GSM, for PDC) and W-CDMA unit can be installed simultaneously, which additionally supports UMTS terminal test.



W-CDMA Unit

TDMA Unit

CDMA2000 Unit

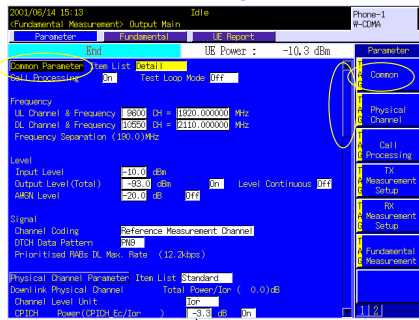
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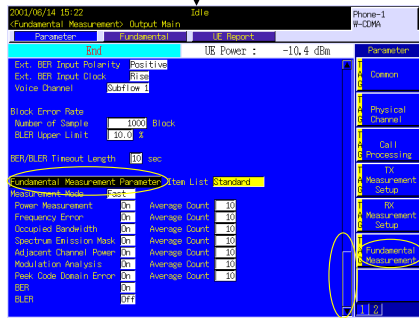
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User friendly MMI (1)



Excellent usability and operability are achieved by minimized screen hierarchies.



As shown on W-CDMA parameter screen(left), items from Common (screen top) through Fundamental Measurement (screen bottom) are configured visually in one screen, enabling smooth screen shift with Encoder/Scroll/Function(Tag) keys.

W-CDMA Parameter (left)

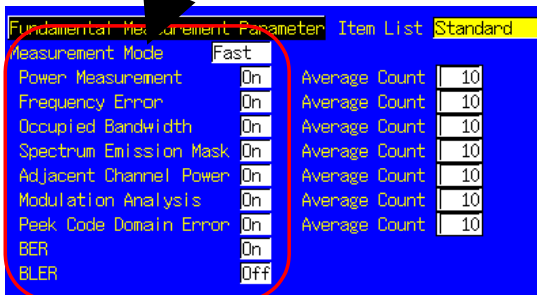
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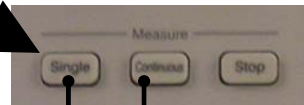
User friendly MMI (2)

Selected items can be measured in a batch through one touch operation.



W-CDMA Parameter (above)

Front Panel
(Measurement start/stop key)



Continuous Mode

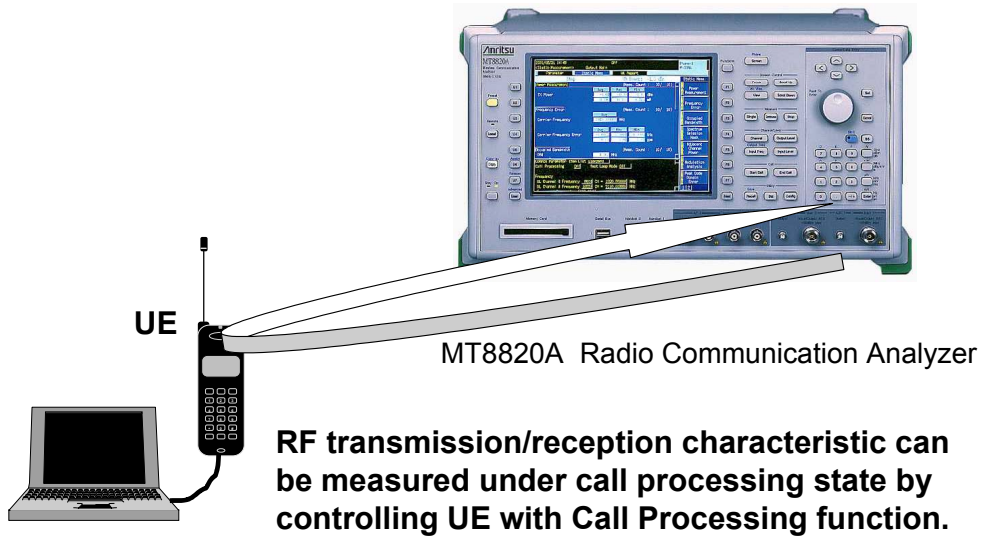
Single Mode

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RF Characteristic Test is performable by Call Processing (including Loop-back Mode)



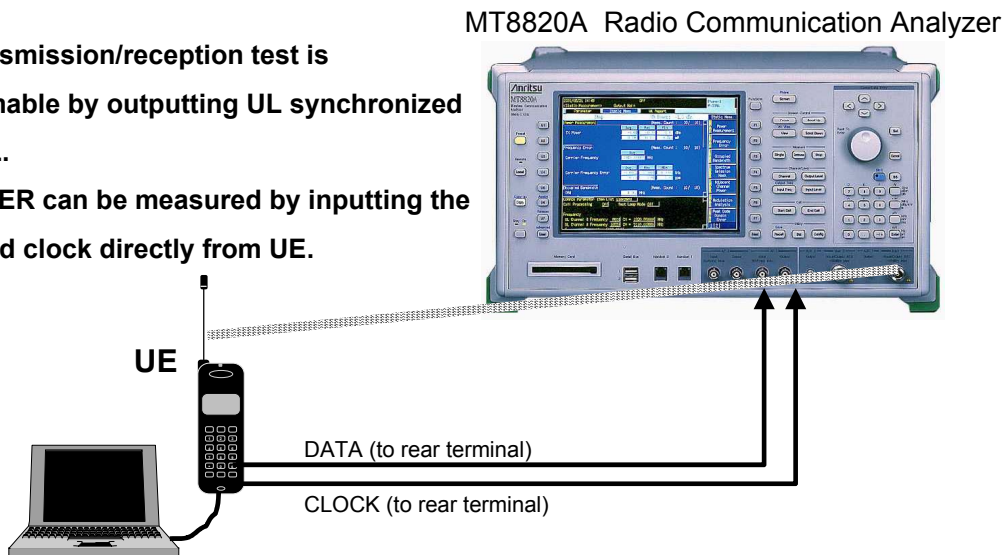
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RF Characteristic Test is performable in Call Processing OFF

RF transmission/reception test is performable by outputting UL synchronized with DL.
Also, BER can be measured by inputting the data and clock directly from UE.



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4. Application Support Table

APPLICATION	W-CDMA Terminal testing	GSM Terminal testing	W-CDMA /GSM Dual-mode Terminal testing	W-CDMA Terminal testing (with audio)	GSM Terminal testing (with audio)	W-CDMA /GSM Dual-mode Terminal testing (with audio)
MT8820A Main Frame	√	√	√	√	√	√
MT8820A-01 W-CDMA Measurement Hardware	√		√	√		√
MT8820A-02 TDMA Measurement Hardware		√	√		√	√
MT8820A-11 Audio Board				√	√	√
MX882000A W-CDMA Measurement Software (requires MT8820A-01)	√		√	√		√
MX882000A-01 W-CDMA voice codec (requires MT8820A-11 and MX882000A)				√		√
MX882001A GSM Measurement Software (requires MT8820A-02)		√	√		√	√
MX882001A-01 GSM voice codec (requires MT8820A-11 and MX882001A)					√	√

√ Option required

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4. Application Support Table (contd.)

APPLICATION	PDC Terminal testing	CDMA2000 Terminal testing	CDMA2000 External Packet testing
MT8820A Main Frame	√	√	√
MT8820A-02 TDMA Measurement Hardware	√		
MX882004A PDC Measurement Software (requires MT8820A-02)	√		
MT8820A-03 CDMA2000 Measurement Hardware		√	√
MT882002A CDMA2000 Measurement Software (requires MT8820A-03)		√	√
MT882002A-02 CDMA2000 External Packet Data (requires MX882002A)			√

√ Option required

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5. Measurement Items for W-CDMA

TS 34.121	Terminal Conformance Specification	Function	MT8820A	Reference
5	Transmitter Test			
5.2	Maximum Output Power	Power Level	√	
5.3	Frequency Stability	Frequency	√	
5.4	Output Power Dynamics in the Uplink			
5.4.1	Open Loop Power Control in the Uplink	Power Level	√	
5.4.2	Inner Loop Power Control in the Uplink	Power Level	√	
5.4.3	Minimum Output Power	Power Level	√	
5.5	Transmit ON/OFF Power			
5.5.1	Transmit OFF Power	Power Level	√	
5.8	Occupied Bandwidth	Spectrum	√	
5.9	Spectrum Emission Mask	Spectrum	√	
5.10	Adjacent Channel Leakage Power Ratio	Spectrum	√	
5.13	Transmit Modulation			
5.13.1	Modulation Accuracy	EVM	√	
5.13.2	Peak Code Domain Error	PCDE	√	
6	Receiver Test			
6.2	Reference Sensitivity Level	BER	√	
6.3	Maximum Input Level	BER	√	
7	Performance requirements			
7.2.1	Demodulation of Dedicated Channel(DCH)	BLER	√	

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6. Measurement Items for GSM

6.1 Measurement items for GSM

Transmission Measurements

Transmission power
Power vs Time (template/mask evaluation)
Frequency error
Phase error (rms and peak)
Output spectrum

Reception Measurements

FER/BER/CRC error rate

Call Processing

Location registration, origination, termination,
communication, hand over, disconnection from UE,
disconnection from network
UE report monitor (RxLev, RxQual and others)

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6.2 Measurement items for GPRS

Transmission Measurements

Carrier frequency and frequency error
Phase error (rms and peak)
Burst power
Power vs time *1
Output RF spectrum due to modulation
Output RF spectrum due to switching *1

Reception Measurements

Block error rate (BLER)

*1) Measuring object is single slot which user assigns.

Call Processing

Coding schemes: CS-1,CS-2,CS-3,CS-4
Multi-slot configurations: 1+1,2+1,3+1,4+1,2+2,3+2 (downlink+uplink)
Multi-slot classes supported: 1 through 6, 8through10
test mode A
GSM400/GSM850/GSM900/DCS1800/PCS1900

7. Measurement items for CDMA2000(IS-2000)

Transmission Measurements

Transmission Power
Modulation Analysis
Code Domain power
Occupied Bandwidth
Spurious Emission

Reception Measurements

Frame Error Rate (FER)

Call Processing

Band Class 0 to 10
SO 1,2,3,9,32(TDSO),33,55,32768
Location registration, origination, termination, communication,
disconnection from CDMA2000 terminal , disconnection from network
MS report monitor (MS ID)
Universal Handoff(Band Class, Channel, P_REV, RC, SO)

8. Measurement items for PDC

Transmission Measurements

Transmission Power
Occupied Bandwidth
Modulation Accuracy
Adjacent Channel Power
Transmission Speed

Reception Measurements

BER

9. Merits of Introducing MT8820A

No need of equipment replacement even for the manufacture of W-CDMA/GSM, W-CDMA/CDMA2000 and CDMA2000/GSM DUAL mode phones in future

- MT8820A is the first to support W-CDMA measurement in the world.
- Well-developed functions support various phases ranging from R&D to manufacturing and maintenance.
- More efficient production cost is achieved than aging equipment supporting 3G.

Advanced measurement technology has increased UE throughput to 1.4 times and more of competitors. (W-CDMA measurement)

- Contributes to the cost reduction for UE production.

Satisfactory support by 3-year/5-year warranty service (optional)

- Quick and accurate calibration and repair services are provided.

10. Conclusion

With our Signalling & RF technologies, Anritsu provides complete support for customers' 3G business ranging from R&D through manufacturing and maintenance.

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Specifications are subject to change without notice.

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