Product Brochure

Anritsu

For MT8820C Radio Communication Analyzer

MX882001C

GSM Measurement Software

MX882001C-011

EGPRS Measurement Software

Advanced High-speed Measurement Method and Batch Measurement Supporting the Manufacture of GSM/GPRS Terminals

The MX882001C GSM Measurement Software supports measurement of transmitters and receivers of digital mobile terminals conforming to GSM/GPRS/EGPRS*-the world's most widely used digital mobile standard.
When the MX882001C GSM Measurement Software and MX882000C W-CDMA Measurement Software are installed in the MT8820C main frame, the Tx and Rx characteristics of dual-mode W-CDMA/GSM terminals, which are becoming very popular worldwide, can be evaluated using a single MT8820C unit.
Anritsu's advanced DSP (Digital Signal Processing) and parallel-measurement technologies greatly reduce test times on automated production lines as well as when testing mobile terminals. Any combination of test parameters can be set, facilitating speedy batch measurement, and the number of measurements for each measurement item can be set independently.
At GSM measurement, selected measurement items can be batch-processed by one-touch operation, supporting easy, fast Pass/Fail evaluation of major test items including frequency error, modulation accuracy, transmit power, output RF spectrum, and BER.
At GPRS measurement, frequency error, modulation accuracy and transmit power are measured using a Test Mode A connection, while BLER with selected multislot class and coding scheme is measured using either a Test Mode B or BLER connection.
The built-in GPIB and Ethernet interface enables the MT8820C to be integrated into automated test systems for after-sales maintenance, as well as into automated production lines.

*: Require MX882001C-011 for EGPRS measurement

• GSM Measurement

Transmitter Tests	Transmit Power
	Power vs. Time (template mask)
	Frequency Error
	Phase Error (rms, peak)
	Output RF Spectrum
Receiver Tests	FER, BER and CRC error rates for TCH/FS, TCH/HS, TCH/EFS, TCH/AFS and TCH/AHS
Call Processing	Location registration, Terminal call origination, Network call origination, Communication, Handover, Terminal disconnect, Network disconnect
	Mobile Terminal Report Monitor (Reception level, Reception quality, etc)

• GPRS Measurement

Transmitter Tests	Transmit Power
	Power vs. Time (template mask)
	Frequency Error
	Phase Error (rms, peak)
	Output RF Spectrum
Receiver Tests	BLER
Call Processing	Test Mode A, B, BLER connection, Communication, Disconnection
	Mobile Terminal Report Monitor (Multislot Class, etc)

MX882001C GSM Measurement Software

GSM

Transmitter Measurement

Transmit Power

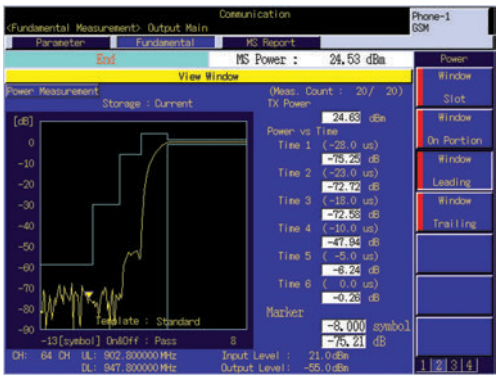
When two or more measurements are made, the maximum, average, and minimum results are displayed, supporting evaluation of the GSM terminal transmit power.
This functionality is also supported for other measurements.

Power vs. Time

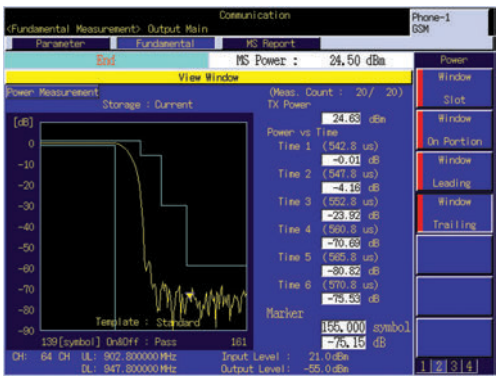
Power at six measuring points for each burst rise/fall edge can be measured, with measuring time set in increments of 0.1 µs resolution.

Burst Waveform Display

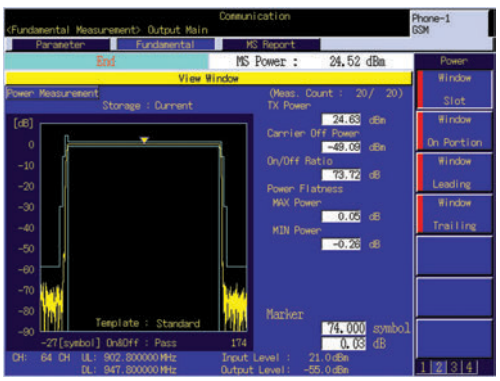
Burst waveforms can be displayed graphically, and a magnified display of the entire time slot and burst-on interval, as well as the rising and falling edges, supports easy evaluation of whether the burst waveform is within the limits of the power time template.



Rising Edge



Falling Edge



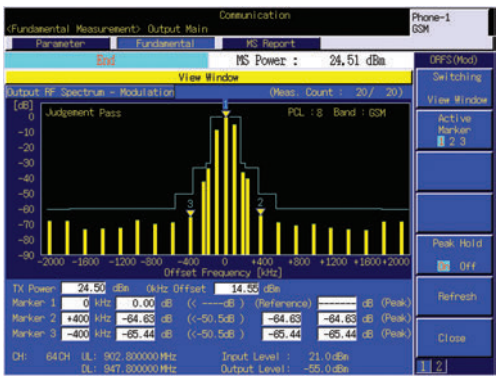
Entire Time Slot

Modulation Analysis

The frequency, frequency error (in kHz and ppm), phase error, and peak phase error can be measured simultaneously.
The amplitude error of the burst-on interval can be measured too.

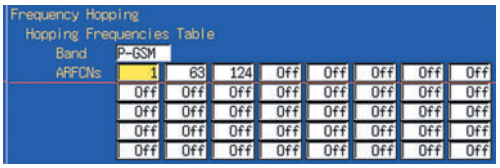
Output RF Spectrum

The spectrum can be measured at a total of 25 frequency points within the range of ±2 MHz of the carrier frequency.
“Modulation” is the spectrum resulting from the modulated signal around the center of the burst signal, while “Switching” is the spectrum resulting from the rising and falling edges of the burst signal.
In addition to using advanced DSP technology, parallel measurement supports faster display of the output RF spectrum.

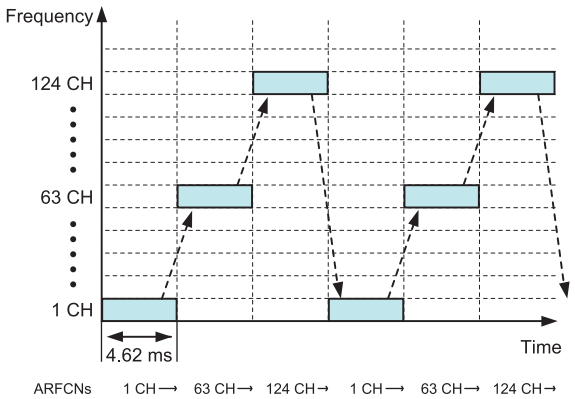


GSM Frequency Hopping Function

The frequency hopping is a function that changes the channel (ARFCN) used for communication between the base station (BS) and mobile station (MS) by each 4.62 ms frame. Frequency hopping is operated by the Measure Channel and Frequency set value of ‘hopping frequency table-ARFCNs’.*



Hopping Frequency Table



Example of Hopping Frequency

∗: Please refer MX882001C Operation manual for setting condition of the channel list.

Receiver Measurement

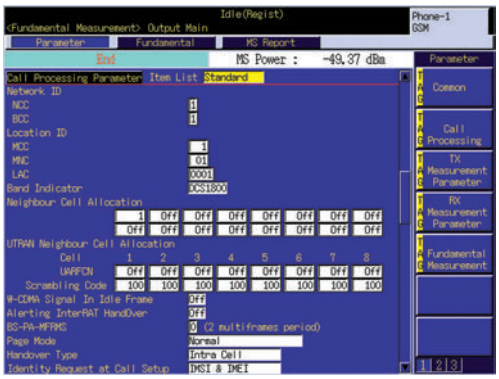
Error Rate Test

The uplink RF signal, which is looped back from GSM terminal, is demodulated by controlling the GSM terminal in the loopback condition to measure the frame error, bit error, and CRC error rates. The error rate for TCH/FS, TCH/HS, TCH/EFS, TCH/AFS and TCH/AHS can be measured. The FAST BER mode is also available.
Transmitter measurements can be run in parallel with error-rate measurements as well.

Call Processing

Connection Test

Various connection tests, such as registration, call origination from terminal and network, terminal disconnect, and network disconnect, can be tested using the call processing functionality.
Moreover, simple voice communication can be tested during a call using voice loopback.



Mobile Terminal Report Monitor

The GSM terminal status can be displayed as a periodic report sent by the GSM terminal to the MT8820C.
The downlink RF signal level at the GSM receiver can be checked with the Rx level reported from the GSM terminal.

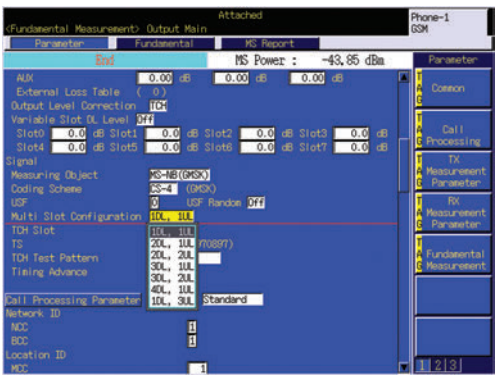
GPRS

Measurement Function

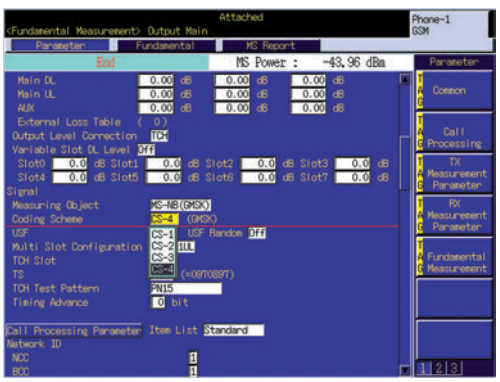
The MX882001C GSM Measurement Software supports GPRS measurement and terminals supporting both GSM and GPRS can be tested much faster because the software switches quickly between GSM and GPRS measurements.

Multislot Class and Coding Scheme

Various combinations of uplink/downlink slots can be selected for GPRS terminals with class 1 to 11.



All CS-1 to CS-4 coding schemes are supported.



Connection Type

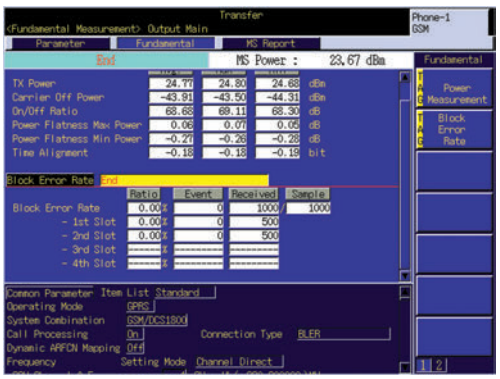
Test Mode A, Test Mode B, and BLER connections are supported.
In Test Mode A for transmitter measurements, the GPRS terminal generates pseudorandom data during uplink on PDTCH.
At BLER measurement, the GPRS terminal calculates block errors in received data at downlink and reports the result to the MT8820C at uplink. The MT8820C calculates the block error rate using the report from the GPRS terminal.

Transmitter Measurement

The transmitter measurements listed below can be made with the Test Mode A connection as in GSM measurement.
- Power vs. Time (template mask)
- Frequency error
- Phase error (rms, peak)
- Output RF spectrum

Receiver Measurement

The block error rate can be measured using the block error reported from the GPRS terminal with the BLER connection.



Call Processing

The following functions can be tested using call processing.
- Location registration
- Connection
- Communication
- Disconnection

After connection, GPRS terminal generates uplink slot, enabling Transmission measurement and BLER measurement.

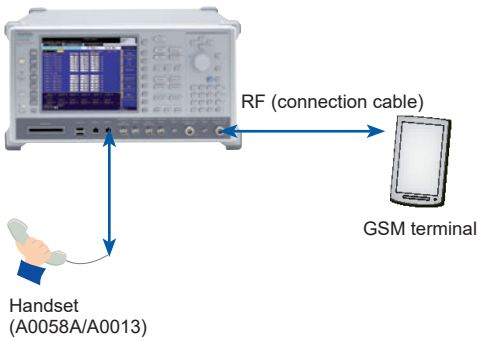
MX882001C-001 GSM Voice Codec

Real-time Voice Encoding/Decoding and Audio Measurement Functions

The optional MX882001C-001 GSM Voice Codec supports real-time voice encoding and decoding in software, so end-to-end communication with terminals can be tested by installing this option and the MT8820C-011 Audio Board option. In addition, the audio transmitter and receiver can be tested while calling.

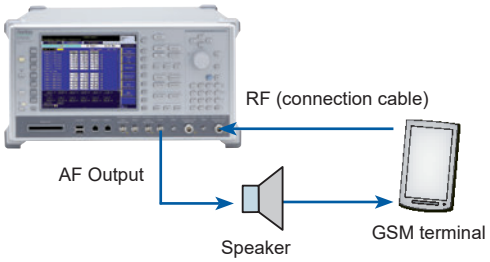
End-to-End Communications Test

Connection of an Anritsu handset (A0058A/A0013) to the MT8820C RJ11 connector enables end-to-end communications testing between the MT8820C and a GSM terminal.
This option supports voice tests by dividing Tx and Rx paths.



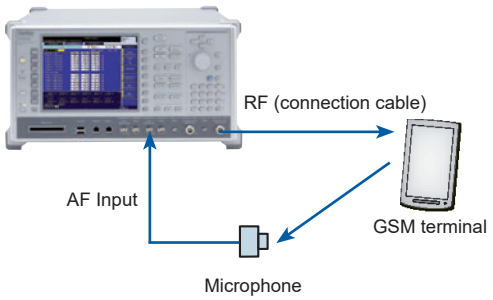
Audio Transmitter Measurement

The tone signal from the MT8820C AF Output connector is supplied to the microphone of the GSM terminal and the audio transmitter characteristics of the GSM terminal can be measured using the MT8820C to demodulate the uplink RF signal and to measure the level, frequency, and distortion of demodulated tone signal.



Audio Receiver Measurement

The tone signal demodulated by the GSM terminal is supplied to the MT8820C AF Input connector and the audio receiver characteristics of the GSM terminal can be measured by using the MT8820C to measure the level, frequency, and distortion of the tone signal at the AF Input.

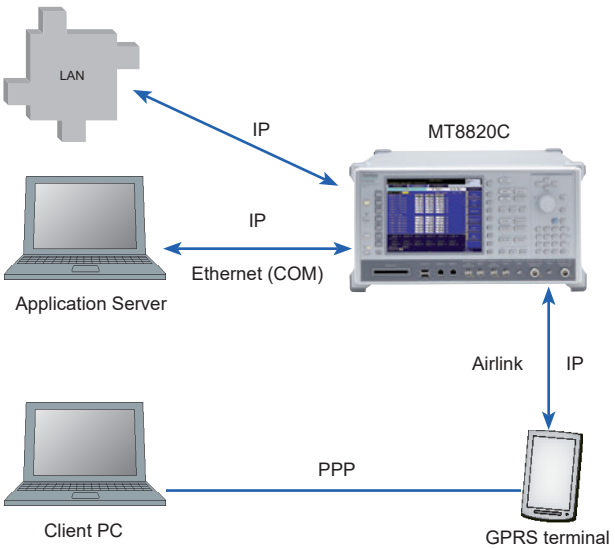


MX882001C-002 GSM External Packet Data

Verification Test Function for GPRS Packet Communication Data Transfer

The MX882001C-002 GSM External Packet Data option supports data transfer to/from external equipment via the Ethernet port on the back panel of the MT8820C.
The MX882001C-002 can test end-to-end data transfer both in the local environment, such as the connection between the application server connected to the MT8820C and GPRS terminal, as well as in an almost-real environment, such as the connection between equipment connected to a LAN and GPRS terminal.

External Packet Test



Sample MT8820C Connection

Advanced High-speed Measurement Method and Batch Measurement Supporting the Manufacture of EGPRS Terminals

The MX882001C-011 EGPRS Measurement Software supports Tx and Rx measurements of terminals supporting the enhanced GPRS system or EGPRS. It supports both the MCS-1 to MCS-4 coding schemes using GMSK modulation as well as the MCS-5 to MCS-9 coding schemes using 8PSK modulation. And installing the MX882001C-011 EGPRS Measurement Software supports EGPRS as the Operating Mode.
At EGPRS measurement, frequency error, modulation accuracy, and transmit power are measured using a Test Mode A connection, while BLER with selected multislot class and modulation and coding scheme is measured using a BLER connection; both transmitter and receiver are tested by loopback at the physical layer using an SRB loopback (Switched Radio Block loopback) connection.

• EGPRS Measurement

Transmitter Tests	Transmit Power
	Power vs. Time (template mask)
	Frequency Error
	Phase Error (rms, peak) (GMSK)
	Modulation Accuracy (8PSK)
	Output RF Spectrum
Receiver Tests	BLER, BER
Call Processing	Test Mode A, BLER, SRB Loopback, Communication, Disconnection
	Mobile Terminal Report Monitor (Multislot Class, etc)

MX882001C-011 EGPRS Measurement Software

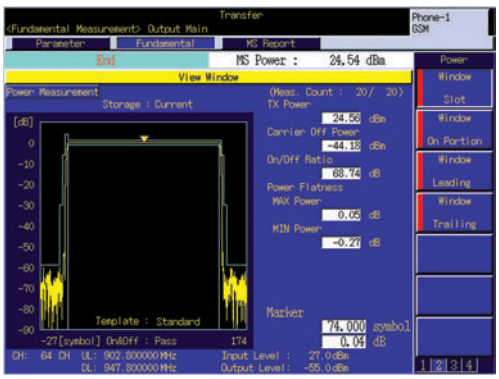
Transmitter Measurement

Transmit Power

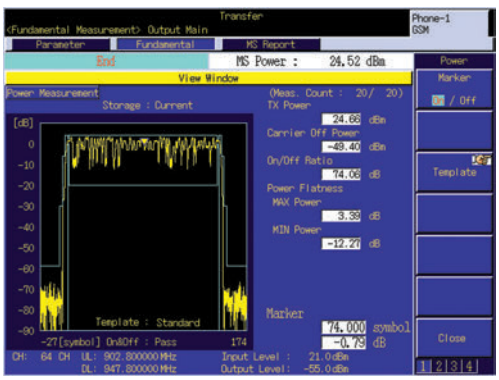
When two or more measurements are made, the maximum, average, and minimum results are displayed, supporting evaluation of the transmit power distribution of the EGPRS terminal.
This functionality is also supported for other measurements.

Power vs. Time

The power can be measured with 0.1 µs resolution at five measurement points within the rising and falling edges of the burst signal.
Burst waveforms can be displayed graphically, and a magnified display of the entire time slot and burst-on interval as well as the rising and falling edges supports easy evaluation of whether the burst waveform is within the limits of the power time template.



Entire Time Slot of GMSK Modulation



Entire Time Slot of 8PSK Modulation

Modulation Analysis

The frequency, frequency error (in kHz and ppm), phase error, and peak phase error of GMSK modulated signals can be measured simultaneously. The EVM, peak EVM, 95th percentile EVM and origin offset of 8PSK modulated signals can also be measured.

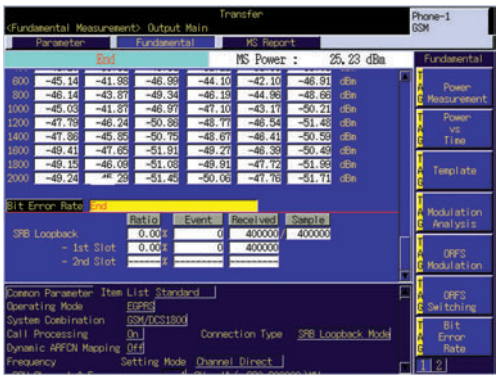
Output RF Spectrum

The spectrum can be measured at a total of 25 frequency points within the range of ±2 MHz of the carrier frequency.
“Modulation” is the spectrum resulting from the modulated signal around the center of the burst signal, while “Switching” is the spectrum resulting from the rising and falling edges of the burst signal.
In addition to using advanced DSP technology, parallel measurement supports faster display of the output RF spectrum.

Receiver Measurement

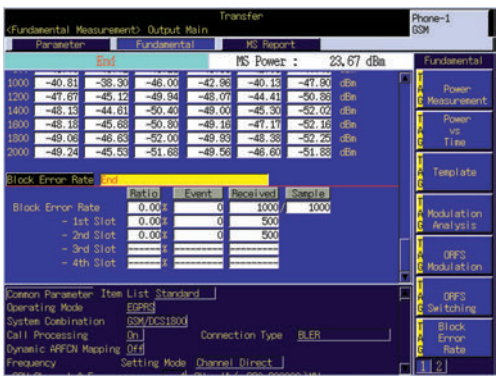
Bit Error Rate (BER)

At SRB loopback, the bit error rate can be measured using the MT8820C-demodulated uplink RF signal looped back from the EGPRS terminal. The error rate can be measured in parallel with transmitter measurements.



Block Error Rate (BLER)

At BLER connection, the EGPRS terminal calculates block errors in received data at downlink and reports the result to the MT8820C at uplink. The MT8820C calculates the block error rate using the report from the EGPRS terminal.



Call Processing

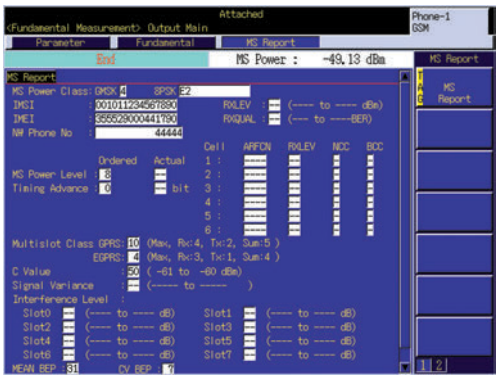
Connection Test

The following functions can be tested using call processing.
- Location registration
- Connection
- Communication
- Disconnection

After connection, EGPRS terminal generates uplink slot, enabling transmission measurement and BLER measurement.

Mobile Terminal Report Monitor

The EGPRS terminal status can be displayed as a periodic report sent by the EGPRS terminal to the MT8820C for checking information such as Multislot Class and BEP (Bit Error Probability).



MX882001C-041 GSM High-speed Adjustment

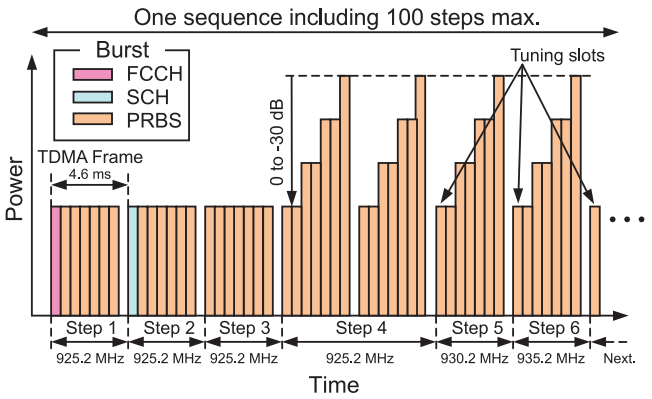
Reduced RF Adjustment Times, Linked with Chipset Adjustment Function

Installing the MX882001C-041 GSM High-speed Adjustment cuts the RF adjustment time, running in synchronization with the chipset adjustment function on GSM terminal.
And it runs IQ Capturing Measurement.

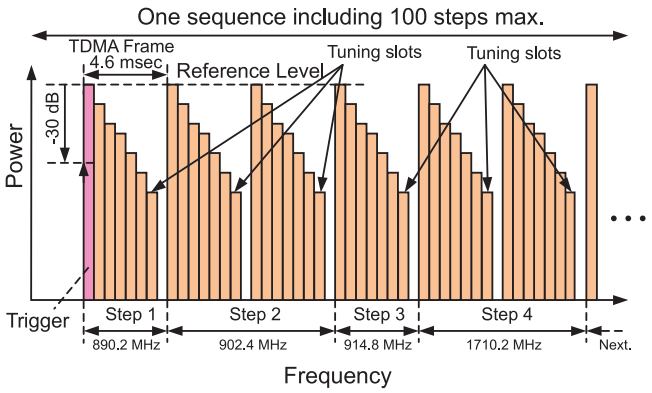
The measurement runs Fundamental Measurement screen.
The measurement can't run Fundamental Measurement, and IQ Capturing Measurement, or High-Speed Adjustment Measurement when the measurement is effective.
The measurement runs with Remote Control only.

High-speed Adjustment Measurement

GSM High-speed Adjustment Measurement function adjusts both Tx and Rx. This function consists of Rx Sweep used for Rx adjustment and Tx Sweep used for Tx adjustment.



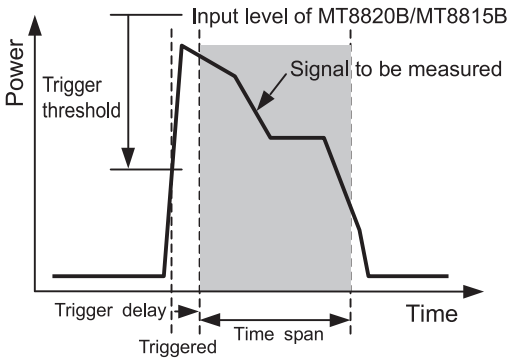
Sequence of Rx Sweep



Sequence of Tx Sweep

IQ Capturing Measurement

IQ Capturing Measurement converts from Tx signal to Band-limited Base band signal and output sampling IQ binary data.



IQ Capturing Measurement

Specifications

∗ Typical values are for reference only; specifications are not guaranteed.

• MT8820C-002 TDMA Measurement Hardware, MX882001C GSM Measurement Software

Frequency/Modulation measurement	Frequency: 300 MHz to 2.7 GHz Input level: –30 to +40 dBm (Average power of burst signal, Main) Measurement items: Normal burst, RACH Carrier frequency accuracy: ± (Setting frequency × Reference oscillator accuracy +10 Hz) (When measuring Normal Burst) ± (Setting frequency × Reference oscillator accuracy +20 Hz) (When measuring RACH) Residual phase error: ≤0.5° rms, 2° peak
Amplitude measurement	Frequency: 300 MHz to 2.7 GHz Input level: –30 to +40 dBm (Average power of burst signal, Main) Measurement items: Normal burst, RACH Measurement accuracy: ±0.3 dB (typ.), ±0.5 dB (–20 to +40 dBm), ±0.7 dB (–30 to –20 dBm) ∗After calibration, 10° to 40°C Linearity: ±0.2 dB (–40 to 0 dB, ≥–30 dBm) Carrier-off power: ≥65 dB (Input level ≥–10 dBm), ≥45 dB (–30 dBm ≤ Input level < –10 dBm) Burst waveform display: Rise, Fall, Time slot, Burst-on
Output RF spectrum measurement	Frequency: 300 MHz to 2.7 GHz Input level: –10 to +40 dBm (Average power of burst signal, Main) Measurement item: Normal burst Measurement range in modulation area: ≤–55 dB (≤250 kHz offset), ≤–66 dB (≥400 kHz offset) ∗Average of 10 measurements Measurement range in transient area: ≤–57 dB (≥400 kHz offset) Measurement points: ±100, ±200, ±250, ±400, ±600, ±800, ±1000, ±1200, ±1400, ±1600, ±1800, ±2000 kHz
RF signal generator	Output frequency: 300 MHz to 2.7 GHz (1 Hz step) Phase error: ≤1° rms, ≤4° peak Output patterns: CCH, TCH, CCH + TCH TCH Data: PN9, PN15, ALL 0, ALL 1, Fixed pattern (PAT0 to PAT9) USF: 0 to 7 (at GPRS)
Error rate measurement	Functions: frame, bit and CRC error measurement Measurement object: Loopback data imposed on uplink TCH Serial data input from rear panel call processing I/O port Number of blocks received from terminal imposed on uplink TCH for GPRS Number of USF blocks received from terminal for GPRS
Call processing	Call controlling: GSM Location registration, Terminal call origination, Network call origination, Network disconnect, Terminal disconnect GPRS Connection, Disconnection, Data transfer Terminal controlling: GSM Output level, Time slot, Timing advance, Loopback on/off GPRS Test Mode A, Test Mode B, BLER
Channel coding	FS, EFS, HS0, HS1, AFS, AHS0, AHS1
Coding scheme	CS-1, CS-2, CS-3, CS-4
Frequency bands	GSM450, GSM480, GSM710, GSM750, T-GSM810, GSM850, P-GSM, E-GSM, R-GSM, DCS1800, PCS1900

• MT8820C-011 Audio Board, MX882001C-001 GSM Voice Codec

Voice codec	GSM_EFR, GSM_AMR
Codec level adjustment	Encoder input gain: –3 to +3 dB, 0.01 dB step Handset microphone volume: 0, 1, 2, 3, 4, 5 Handset speaker volume: 0, 1, 2, 3, 4, 5
AF output	Frequency range: 30 Hz to 10 kHz, 1 Hz step Frequency accuracy: ± (Setting frequency × Reference oscillator accuracy +0.1 Hz) Setting range: 0 to 5 Vpeak (AF Output) Setting resolution: 1 mV (≤5 Vpeak), 100 µV (≤500 mVpeak), 10 µV (≤50 mVpeak) Accuracy: ±0.2 dB (≥10 mVpeak, ≥50 Hz), ±0.3 dB (≥10 mVpeak, <50 Hz) Waveform distortion: In ≤30 kHz band, ≤–60 dB (≥500 mVpeak, ≤5 kHz), ≤–54 dB (≥70 mVpeak) Output impedance: ≤1 Ω Max. output current: 100 mA
AF input	Frequency range: 50 Hz to 10 kHz Input voltage range: 1 mVpeak to 5 Vpeak (AF Input) Max. allowable input voltage: 30 Vrms Input impedance: 100 kΩ
Frequency measurement	Accuracy: ± (Reference oscillator accuracy +0.5 Hz)
Level measurement	Accuracy: ±0.2 dB (≥10 mVpeak, ≥50 Hz), ±0.4 dB (≥1 mVpeak, ≥1 kHz)
SINAD measurement	At frequency 1 kHz in ≤30 kHz band, ≥60 dB (≥1000 mVpeak), ≥54 dB (>50 mVpeak), ≥46 dB (≥10 mVpeak)
Distortion rate measurement	At frequency 1 kHz in ≤30 kHz band, ≤–60 dB (≥1000 mVpeak), ≤–54 dB (>50 mVpeak), ≤–46 dB (≥10 mVpeak)

• MT8820C-002 TDMA Measurement Hardware, MX882001C-011 EGPRS Measurement Software

Frequency/Modulation measurement	Frequency: 300 MHz to 2.7 GHz Input level: –30 to +40 dBm (Average power of burst signal, Main) Measurement items: Normal burst (GMSK, 8PSK), RACH Carrier frequency accuracy: ± (Setting frequency × Reference oscillator accuracy +10 Hz) (When measuring Normal Burst) ± (Setting frequency × Reference oscillator accuracy +20 Hz) (When measuring RACH) Residual phase error (GMSK): ≤0.5° rms, 2° peak Residual EVM (8PSK): ≤1.5% rms Waveform display: Phase error vs. Bit number, Amplitude error vs. Bit number, EVM vs. Bit number
Amplitude measurement	Frequency: 300 MHz to 2.7 GHz Input level: –30 to +40 dBm (Average power of burst signal, Main) Measurement items: Normal burst (GMSK, 8PSK), RACH Measurement accuracy: ±0.3 dB (typ.), ±0.5 dB (–20 to +40 dBm), ±0.7 dB (–30 to –20 dBm) ∗After calibration, 10° to 40°C Linearity: ±0.2 dB (–40 to 0 dB, ≥–30 dBm) Carrier-off power: ≥65 dB (Input level ≥–10 dBm), ≥45 dB (–30 dBm ≤ Input level < –10 dBm) Burst waveform display: Rise, Fall, Time slot, Burst-on
Output RF spectrum measurement	Frequency: 300 MHz to 2.7 GHz Input level: –10 to +40 dBm (Average power of burst signal, Main) Measurement item: Normal burst (GMSK, 8PSK) Measurement range in modulation area: ≤–55 dB (≤250 kHz offset), ≤–66 dB (≥400 kHz offset) ∗Average of 10 measurements Measurement range in transient area: ≤–57 dB (≥400 kHz offset) Measurement points: ±100, ±200, ±250, ±400, ±600, ±800, ±1000, ±1200, ±1400, ±1600, ±1800, ±2000 kHz
RF signal generator	Output frequency: 300 MHz to 2.7 GHz (1 Hz step) Phase error: ≤1° rms, ≤4° peak Modulation accuracy (8PSK): ≤3% rms Output patterns: OCH, TCH, OCH + TCH TCH Data: PN9, PN15, ALL 0, ALL 1, Fixed pattern (PAT0 to PAT9)
Error rate measurement	Functions: bit and CRC error measurement Measurement object: Loopback date imposed on uplink TCH (GMSK, 8PSK) Number of blocks received from terminal imposed on uplink TCH for EGPRS Number of USF blocks received from terminal for EGPRS
Call processing	Call controlling: Location registration, Connection, Termination, Data transfer via EGPRS Terminal controlling: Output level, Time slot, Timing advance, Test Mode A, BLER, SRB loopback
Coding scheme	MCS1 to MCS4 (GMSK), MCS5 to MCS9 (8PSK)
Puncturing scheme	P1, P2, P3
Frequency bands	GSM450, GSM480, GSM710, GSM750, T-GSM810, GSM850, P-GSM, E-GSM, R-GSM, DCS1800, PCS1900

Ordering Information

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

Model/Order No.	Name
	Main frame
MT8820C	Radio Communication Analyzer
	Standard accessories
	Power Cord: 1 pc
	CF Card: 1 pc
	PC Card Adapter (For CF card): 1 pc
W3320AE	MT8820C Operation Manual (CD-ROM): 1 pc
	Options
MT8820C-017	Extended RF Hardware*1
MT8820C-001	W-CDMA Measurement Hardware
MT8820C-002	TDMA Measurement Hardware
MT8820C-007	TD-SCDMA Measurement Hardware
MT8820C-008	LTE Measurement Hardware
MT8820C-011	Audio Board
MT8820C-012	Parallel Phone Measurement Hardware
MT8820C-018	Extended RF 3.4 GHz to 3.8 GHz (requires MT8820C-017, MT8820C-119, or MT8820C-120)
MT8820C-101	W-CDMA Measurement Hardware Retrofit
MT8820C-102	TDMA Measurement Hardware Retrofit
MT8820C-107	TD-SCDMA Measurement Hardware Retrofit
MT8820C-108	LTE Measurement Hardware Retrofit
MT8820C-111	Audio Board Retrofit
MT8820C-112	Parallel Phone Measurement Hardware Retrofit
MT8820C-119	Extended RF Hardware for SPM Retrofit
MT8820C-120	Extended RF Hardware for PPM Retrofit
MT8820C-177	TD-SCDMA Measurement Retrofit (requires MT8820C-001)
	Software options
MX882000C	W-CDMA Measurement Software (requires MT8820C-001 and MX88205xC)
MX882000C-001	W-CDMA Voice Codec (requires MT8820C-011 and MX882000C)
MX882000C-011	HSDPA Measurement Software (requires MT8820C-001, MX882000C, and MX882050C)
MX882000C-013	HSDPA High Data Rate (requires MT8820C-001, MX882000C, MX882000C-011, and MX882050C)
MX882000C-021	HSUPA Measurement Software (requires MT8820C-001, MX882000C, MX882000C-011, and MX882050C)
MX882000C-031	HSPA Evolution Measurement Software*2 (requires MT8820C-001, MX882000C, MX882000C-011, MX882000C-021, and MX882050C)
MX882000C-032	DC-HSDPA Measurement Software*2, *3 (requires MT8820C-001 (2 sets), MT8820C-012, MX882000C, MX882000C-011, MX882000C-021, MX882000C-031, MX882010C, and MX882050C)
MX882000C-033	DC-HSUPA Measurement Software*2, *4 (requires MT8820C-001 (2 sets), MT8820C-012, MX882000C, MX882000C-011, MX882000C-021, MX882000C-031, MX882000C-032, MX882010C, MX882050C)
MX882000C-034	4C-HSDPA Measurement Software*2, *4 (requires MT8820C-001 (2 sets), MT8820C-012, MX882000C, MX882000C-011, MX882000C-021, MX882000C-031, MX882000C-032, MX882010C, MX882050C)
MX882001C	GSM Measurement Software (requires MT8820C-002)
MX882001C-001	GSM Voice Codec (requires MT8820C-011 and MX882001C)
MX882001C-002	GSM External Packet Data (requires MX882001C)
MX882001C-011	EGPRS Measurement Software (requires MX882001C)
MX882001C-041	GSM High-speed Adjustment (requires MX882001C)
MX882005C	PHS Measurement Software (requires MT8820C-002)
MX882005C-011	Advanced PHS Measurement Software (requires MX882005C)
MX882007C	TD-SCDMA Measurement Software (requires MT8820C-001 and MT8820C-007)
MX882007C-001	TD-SCDMA Voice Codec (requires MT8820C-011 and MX882007C)
MX882007C-003	TD-SCDMA Video Phone Test (requires MX882007C)
MX882007C-011	TD-SCDMA HSDPA Measurement Software*2 (requires MT8820C-001, MT8820C-007, and MX882007C)
MX882007C-012	TD-SCDMA HSDPA Evolution Measurement Software*2 (requires MT8820C-001, MT8820C-007, MX882007C, MX882007C-011)
MX882007C-021	TD-SCDMA HSUPA Measurement Software*2 (requires MT8820C-001, MT8820C-007, MX882007C, MX882007C-011)
MX882010C	Parallel Phone Measurement Software*5 [requires MT8820C-012, the two same measurement hardware (2 board/set) and one measurement software]
MX882012C	LTE FDD Measurement Software*2 (requires MT8820C-008)
MX882012C-006	LTE FDD IP Data Transfer*2 (requires MX882012C)
MX882012C-011	LTE FDD 2×2 MIMO DL*2, *6 (requires MT8820C-012 and MX882012C)
MX882012C-016	LTE FDD CS Fallback to W-CDMA/GSM*7 (requires MX882012C)
MX882012C-021	LTE-Advanced FDD DL CA Measurement Software*2, *8 (requires MT8820C-008 (2 sets), MT8820C-012, MX882010C, and MX882012C)
MX882012C-026	LTE-Advanced FDD DL CA IP Data Transfer*9 (requires MT8820C-008 (2 sets), MT8820C-012, MX882010C, MX882012C, MX882012C-006, MX882012C-021)
MX882012C-031	LTE-Advanced FDD DL CA 3CCs Measurement Software*2, *10 (requires MT8820C 2 sets. One is required MT8820C-008 (2 sets), MT8820C-012, MX882010C, MX882012C and MX882012C-021. The other is required MT8820C-008, MX882012C.)
MX882013C	LTE TDD Measurement Software*2 (requires MT8820C-008)
MX882013C-006	LTE TDD IP Data Transfer*2 (requires MX882013C)
MX882013C-011	LTE TDD 2×2 MIMO DL*2, *6 (requires MT8820C-012 and MX882013C)
MX882013C-016	LTE TDD CS Fallback to W-CDMA/GSM*11 (requires MX882013C)
MX882013C-018	LTE TDD CS Fallback to TD-SCDMA/GSM*11 (requires MX882013C)
MX882013C-021	LTE-Advanced TDD DL CA Measurement Software*2, *8 (requires MT8820C-008 (2 sets), MT8820C-012, MX882010C, and MX882013C)
MX882013C-026	LTE-Advanced TDD DL CA IP Data Transfer*9 (requires MT8820C-008 (2 sets), MT8820C-012, MX882010C, MX882013C, MX882013C-006, MX882013C-021)
MX882013C-031	LTE-Advanced TDD DL CA 3CCs Measurement Software*2, *10 (requires MT8820C 2 sets. One is required MT8820C-008 (2 sets), MT8820C-012, MX882010C, MX882013C, MX882013C-021. The other is required MT8820C-008, MX882013C.)
MX882032C	CDMA2000 Measurement Software Lite*2
MX882036C	1xEV-DO Measurement Software Lite*2
MX882036C-011	1xEV-DO Rev. A Measurement Software*2
MX882042C	LTE FDD Measurement Software Lite*2
MX882043C	LTE TDD Measurement Software Lite*2
MX882050C	W-CDMA Call Processing Software*2, *12 (requires MX882000C)
MX882050C-002	W-CDMA External Packet Data*2 (requires MX882050C)
MX882050C-003	W-CDMA Video Phone Test*2 (requires MX882050C)
MX882050C-007	W-CDMA Band XII, XIII, XIV, XIX, XX, XXI*2, *13 (requires MX882050C)
MX882050C-008	W-CDMA Band XI*2 (requires MX882050C)
MX882050C-009	W-CDMA Band IX*2 (requires MX882050C)
MX882050C-011	HSDPA External Packet Data*2 (requires MX882000C-011)
MX882051C	W-CDMA Call Processing Software*2 (requires MX882000C)
MX882051C-002	W-CDMA External Packet Data*2 (requires MX882051C)
MX882051C-003	W-CDMA Video Phone Test*2 (requires MX882051C)
MX882070C	W-CDMA Ciphering Software*2 (requires MX882050C)
MX882071C	W-CDMA Ciphering Software*2 (requires MX882051C)
	Warranty
MT8820C-ES210	2 years Extended Warranty Service
MT8820C-ES310	3 years Extended Warranty Service
MT8820C-ES510	5 years Extended Warranty Service
	Application parts
P0035B	W-CDMA/GSM Test USIM
P0035B7	W-CDMA/GSM Test USIM*14
P0135A6	Anritsu Test UICC GA (Nano UICC size)*15
P0135A7	Anritsu Test UICC GA (Micro UICC size)*15
P0250A6	Anritsu Test UICC GT (Nano UICC size)*15
P0250A7	Anritsu Test UICC GT (Micro UICC size)*15
P0260A6	Anritsu Test UICC GM (Nano UICC size)*15
P0260A7	Anritsu Test UICC GM (Micro UICC size)*15
P0135B6	Anritsu Test UICC GA (Nano UICC size)*15
P0135B7	Anritsu Test UICC GA (Micro UICC size)*15
P0250B6	Anritsu Test UICC GT (Nano UICC size)*15
P0250B7	Anritsu Test UICC GT (Micro UICC size)*15
P0260B6	Anritsu Test UICC GM (Nano UICC size)*15
P0260B7	Anritsu Test UICC GM (Micro UICC size)*15
A0058A	Handset

Model/Order No.	Name
J1195A	PP2S Output Cable
J1249	CDMA2000 Cable [D-Sub (15 pin, P-type) · D-Sub (15 pin, P-type), used in combination with J1267 (sold separately)]*16
J1267	CDMA2000 Cross Cable [D-Sub (9 pin, P-type) · D-Sub (9 pin, P-type), reverse cable used in combination with J1249 (sold separately)]
J1606A	Cable*16
J0576B	Coaxial Cord, 1 m (N-P · 5D-2W · N-P)
J0576D	Coaxial Cord, 2 m (N-P · 5D-2W · N-P)
J0127A	Coaxial Cord, 1 m (BNC-P · RG58A/U · BNC-P)
J0127C	Coaxial Cord, 0.5 m (BNC-P · RG58A/U · BNC-P)
J0007	GPIB Cable, 1 m
J0008	GPIB Cable, 2 m
MN8110B	I/O Adapter (for call processing I/O)
B0332	Joint Plate (4 pcs/set)
B0643A	Rack Mount Kit (MT8820C)
B0499	Carrying Case (Hard type) (with protective cover and casters)
B0499B	Carrying Case (Hard type) (with protective cover, without casters)

∗1: MT8820C-017 has been a standard option that MT8820C are shipped with until July 2012 (Simultaneous order is required MT8820C and MT8820C-017).
∗2: For terminal connectivity, contact your Anritsu sales representative.
∗3: MX882000C-032 is required a Parallelphone measurement configuration of W-CDMA HSPA Evolution.
For use MT8820C 2 units, contact your Anritsu sales representative.
∗4: MX882000C-033 (034) is required W-CDMA DC-HSDPA configuration.
∗5: The following measurement hardware supports the Parallelphone measurement option: MT8820C-001, MT8820C-002, MT8820C-007, MT8820C-008.
All the measurement hardware can be installed simultaneously.
∗6: MX882012C-011 is required MT8820C-012.
∗7: The MX882012C-016 LTE FDD CS Fallback to W-CDMA/GSM requires a separate MT8820C with the W-CDMA/GSM configuration. Contact your Anritsu sales representative for the CS Fallback function test configuration.
∗8: MX882012C (12C)-021 is required a Parallelphone measurement configuration of LTE FDD (TDD).
For Use MT8820C 2 units, contact your Anritsu sales representative.
∗9: MX882012C (13C)-026 function test is required external server PCs (2 sets).
LTE Advanced FDD (TDD) DL CA IP Data Transfer (2CCs, 2Layer) is required MT8820C LTE 2×2 MIMO DL configuration (2 sets) and external server PCs (2 sets).
∗10: One is required LTE FDD (TDD) ParallelPhone Configuration.
The other is required LTE FDD Single Phone Configuration.
For use MT8820C 3 units, contact your Anritsu sales representative.
A synchronized cable is required too.
∗11: The MX882013C-016 (018) LTE TDD CS Fallback to W-CDMA/GSM (TD-SCDMA/GSM) requires a separate MT8820C with the W-CDMA/GSM (TD-SCDMA/GSM) configuration. Contact your Anritsu sales representative for the CS Fallback function test configuration.
∗12: These options preinstall the integrity protection function.
∗13: MX882050C-007 supports W-CDMA Band 12, 13, 14, 19, 20, 21.
∗14: The P0035B7 MicroSIM is a cut-down P0035B W-CDMA/GSM Test USIM. The P0035B7 Test USIM is a microSIM. It CANNOT be used in a normal size USIM card slot. A commercial SIM adapter CANNOT be used with the P0035B7.
If used, it may jam and break in the terminal.
∗15: Refer to the P0135Ax/P0250Ax/P0260Ax leaflet for details.
∗16: J1267 (J1606A) cable can use for LTE-Advanced DLCA synchronized cable.
Contact your Anritsu sales representative for details.

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