

MX882005A

PHS Measurement Software (For MT8820A Radio Communication Analyzer)



Supports PHS Communications Systems

Solution for PHS Mobile Terminals and Base Stations Production Lines

The MX882005A PHS Measurement Software supports transmit/receive measurements of mobile terminals conforming to the PHS system which is spreading through the world centering on Asia including Japan. By installing the MX882005A PHS Measurement Software in the MT8820A mainframe, one unit can evaluate major transmission/reception characteristics of PHS mobile terminals and base stations.

Advanced DSP & parallel measuring technologies greatly reduce manufacturing and test time for PHS mobile terminals and base stations.

In addition, multiple measurement items can be selected freely for batch processing while the number of repetitive measurements can be set for each individual measurement. The selected measurement items can be batch-measured with just one touch, thus a pass/fail evaluation on major test items such as transmission frequency, modulation accuracy, transmission power, adjacent channel power & BER can be conducted simply and quickly.

It can be built into automated production lines and can create an automated test system in maintenance site as the GPIB interface is equipped as standard.

Measurement items

• Transmitter tests

- Output power
- Modulation accuracy
- Occupied bandwidth
- Adjacent channel power
- Transmission rate

• Receiver tests

- Bit error ratio

Transmission Measurement

Transmission power

RF power and carrier-off leakage power of mobile terminals and base stations are measured. Maximum, average and minimum values of measured results are displayed by setting the number of repetitive measurements to 2 or above, so the variations in terminal characteristics can be assessed. This repetitive measurement function is also equipped for other measurements.

Parameter	Avg.	Max.	Min.	Unit
TX Power	-31.23	-31.21	-31.24	dBm
Carrier Off Power	0.753	0.756	0.751	µW
On/Off Ratio	-80.92	-80.81	-80.93	dBm
Modulation Power	8.087	8.293	7.964	µW
On/Off Ratio	59.03	59.12	58.93	dB
Modulation Power	-21.88	-21.87	-21.89	dBm
Timing	8.484	8.507	8.468	µs
Jitter	0.000	0.001	0.000	symbol
Rising Time	0.000	0.001	-0.001	symbol
Falling Time	8.38	8.45	8.33	µs
Template	7.77	7.85	7.72	µs
Template	Pass	Pass	Pass	

Normal measurement

Wide dynamic range mode

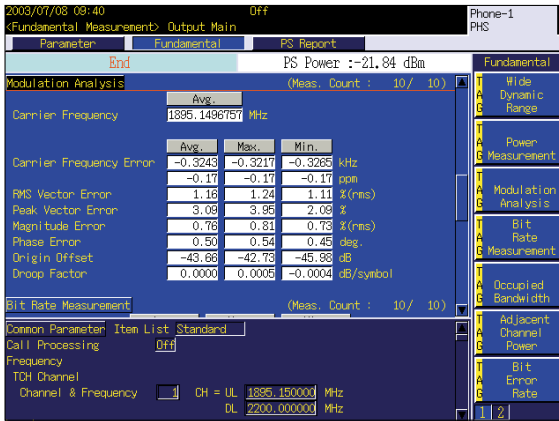
For carrier-off leakage power, the absolute value and On/Off ratio are measured. When the carrier-off level is low, measurement can be performed in the wide dynamic range mode.

Parameter	Avg.	Max.	Min.	Unit
Wide Dynamic Range Power	-31.21			dBm
Carrier Off Power	0.757			µW
Carrier Off Power	-81.16			dBm
On/Off Ratio	7.650			µW
Modulation Power	59.30			dB
Modulation Power	-21.86			dBm
Timing	8.512			µs
Jitter	0.001			symbol
Rising Time	8.41			µs
Falling Time	7.79			µs
Template	Pass			

Wide dynamic range mode

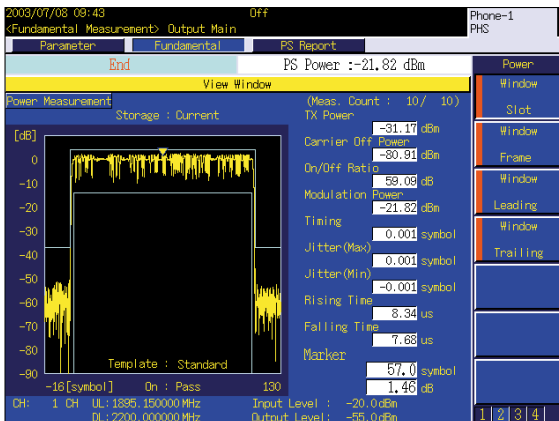
Modulation accuracy

Frequency, frequency errors (in kHz & ppm), modulation accuracy, phase error, amplitude error and origin offset of mobile terminals and base stations are measured simultaneously and can be displayed.

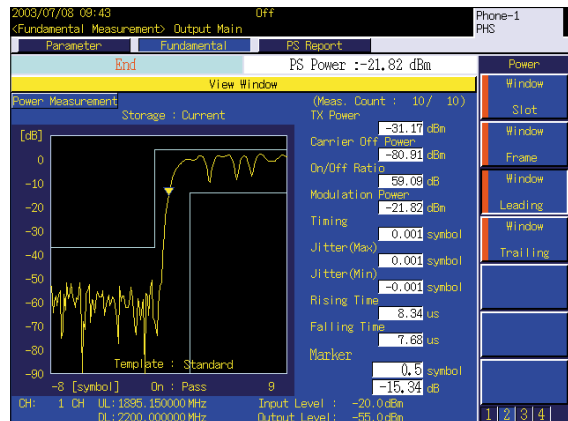


Burst waveform display

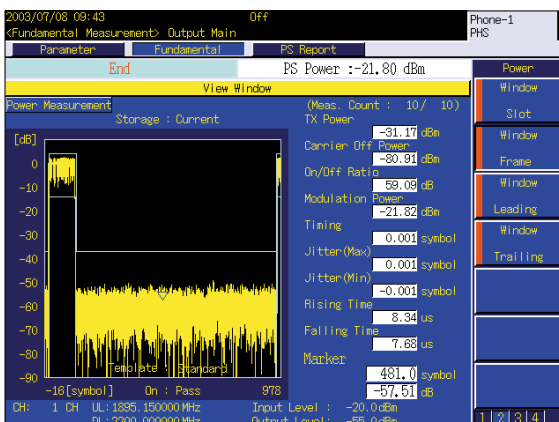
Graphical display of the burst waveform is also available. Magnified display of the entire time slot and the whole frame as well as the rising/falling edges enables users to confirm at a glance whether or not the burst waveform meets the PHS standard template.



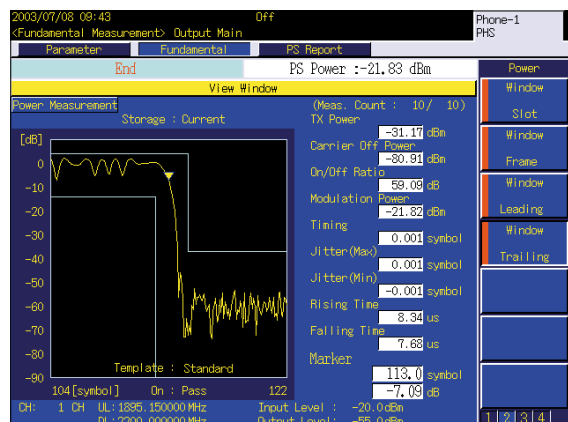
Entire time slot



Rising edge



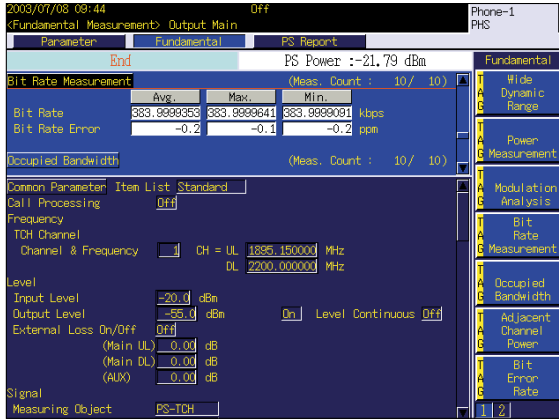
Whole frame



Falling edge

Transmission rate

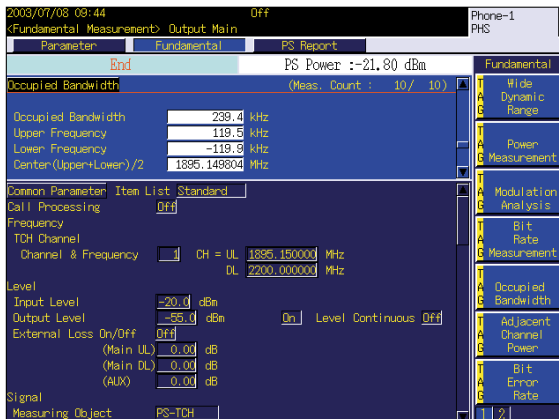
Transmission rate and transmission speed error of mobile terminals and base stations can be measured.



Occupied bandwidth

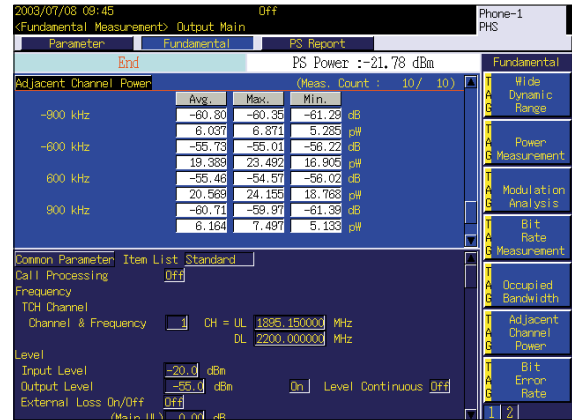
Occupied bandwidth of mobile terminals and base stations is measured.

The bandwidth ratio for total power can be changed within the range of 80.0% to 99.9%. Measurements in the high-speed mode are supported.



Adjacent channel power

Adjacent channel power of mobile terminals and base stations is measured. Power spectrum is measured at 4 frequency points, -900 kHz, -600 kHz, 600 kHz and 900 kHz, offset from the carrier frequency. Advanced DSP technology and parallel processing of power spectrum with other measurements enable high-speed measurement.

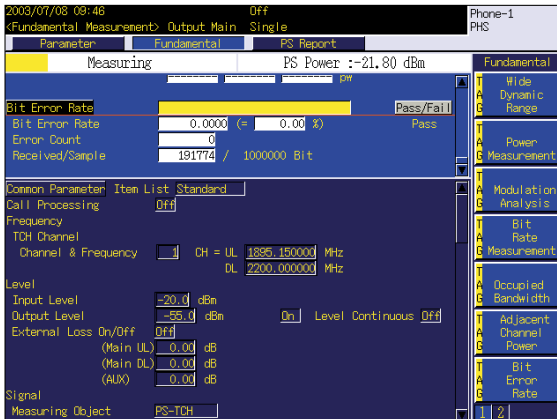


Reception Measurement

Error rate test

By controlling PHS terminals, up-link RF signals are demodulated to measure the bit error rate. This measurement can be performed simultaneously with Tx measurement.

By controlling PHS base station and using external trigger function, down-link RF signals(base station signal) are demodulated to measure the bit error rate.

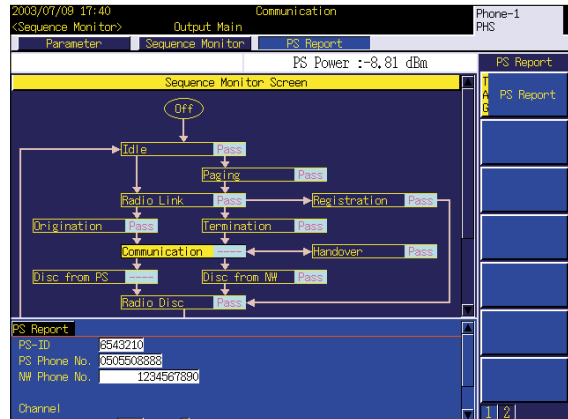


Error rate measurement

Call Processing Function

Connection test

The call processing function enables to perform various connection tests including location registration, terminal call origination, network call origination, terminal disconnect and network disconnect. During a call, the user's speech can be echoed back from the terminal to provide a simple voice communication test.



Mobile terminal report monitor

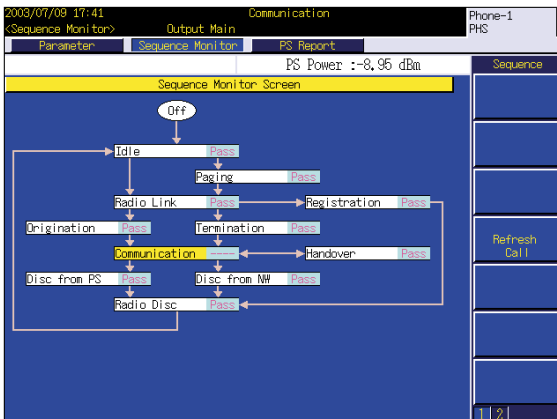
Terminal information reported by a PHS terminal is displayed on the screen. As well as the dial network number, this information includes the identification code (PS-ID) and phone number of the PHS terminal.



Sequence monitor

Functions of a PHS mobile terminal can be operated and verified by using the call processing function. The MT8820A simulates the PHS base station and displays the sequence screen.

On this screen, pass/fail judgment results of connection test for location registration, call-origination, call-termination, communication, handover (for THC switch type), terminal disconnect, network disconnect, etc., can be checked at a glance.



Transmission test in communication state

A transmission test can be performed in communication state. As well as being able to conduct evaluations in actual communication with the base station, transmission measurement can be performed regardless of restrictions on test controls, which vary depending on carriers and manufacturers. This function contributes greatly to production and maintenance.

The screenshot shows the 'Fundamental Measurement' screen with the following data:

Parameter	Avg.	Max.	Min.	Unit
TX Power	6.67	6.67	6.67	dBm
Carrier Off Power	4.643	4.643	4.643	mW
On/Off Ratio	-55.82	-55.82	-55.82	dBm
Modulation Power	2.617	2.617	2.617	mW
Timing	71.88	71.88	71.88	dB
Jitter	16.04	16.04	16.04	dBm
	40.195	40.195	40.195	mW
	-0.673	-0.673	-0.673	symbol
				symbol

Additional information on the screen includes: PS Power: 16.05 dBm, (Meas. Count: 1/1), and a list of parameters for Call Processing, TX Measurement, and RX Measurement.

High-speed, User-friendly GPIB Controls

Eliminating dependence on measurement screen

Readout and changes of settings can be performed freely without having to change screens, even when no items that exist on screen are currently being displayed. This controls loss time effects, crucial for screen plotting.

Batch measurement results readout command

All results for batch measurements can be read out with one "ALLMEAS?" command. In addition, the desired measurement results can be selected for readout by specifying measurement targets such as "ALLMEAS? MOD" (Modulation Analysis). Decreases in the number of GPIB commands lower the load for the MT8820A and controller PC while enhancing measurement throughput. Since the step size of a control program is reduced, it's effective in creating a control program with high maintainability that's easy to view.

Specifications

MT8820A-02 TDMA measurement hardware, MX882005A PHS measurement software

Frequency/modulation measurement	<p>Frequency: 300 to 2200 MHz</p> <p>Input level (Average power within burst, Main connector):</p> <ul style="list-style-type: none"> -30 to +40 dBm (Measurement object: PS-TCH, PS-SYNC, CS-TCH, CS-SYNC) -30 to +35 dBm (Measurement object: Continuous wave) <p>Carrier frequency accuracy: \pm (reference oscillator accuracy + 10 Hz)</p> <p>Modulation accuracy: \pm (2% of indicated value + 0.7%)</p> <p>Origin offset accuracy: \pm0.5 dB to signal level of -30 dBc</p> <p>Transmission rate: \pm1 ppm (Measurement range 384 kbps \pm100 ppm)</p>
Amplitude measurement	<p>Frequency: 300 to 2200 MHz</p> <p>Input level (Average power within burst, Main connector):</p> <ul style="list-style-type: none"> -30 to +40 dBm (Measurement object: PS-TCH, PS-SYNC, CS-TCH, CS-SYNC) -30 to +35 dBm (Measurement object: Continuous wave) <p>Measurement accuracy: After calibration</p> <ul style="list-style-type: none"> \pm0.5 dB (-20 to +40 dBm), \pm0.7 dB (-30 to -20 dBm) <p>Linearity: \pm0.2 dB (0 to -40 dB, \geq-30 dBm)</p> <p>Carrier-off power measurement range:</p> <ul style="list-style-type: none"> \geq55 dB (Input level: \geq-10 dBm), \geq70 dB (Wide dynamic range power measurement)
Occupied bandwidth	<p>Frequency: 300 to 2200 MHz</p> <p>Input level (Average power within burst, Main Connector):</p> <ul style="list-style-type: none"> -10 to +40 dBm (Measurement object: PS-TCH, PS-SYNC, CS-TCH, CS-SYNC) -10 to +35 dBm (Measurement object: Continuous wave)
Adjacent channel power	<p>Frequency: 300 to 2200 MHz</p> <p>Input level (Average power within burst, Main connector):</p> <ul style="list-style-type: none"> -10 to +40 dBm (Measurement object: PS-TCH, PS-SYNC, CS-TCH, CS-SYNC) -10 to +35 dBm (Measurement object: Continuous wave) <p>Measurement range: \leq-60 dB (600 kHz offset), \leq-65 dB (900 kHz offset)</p>
RF signal generator	<p>Output frequency: 300 to 2200 MHz, 1 Hz step</p> <p>Modulation accuracy: \leq3 % rms</p> <p>Modulation data: PN9, PN15 and arbitrary 4-bit data repetitive patterns</p>
Error rate measurement	<p>Function: Bit error rate measurement</p> <p>Measurement items: Serial data inputted from the Call Proc.I/O terminal of a rear panel</p>

Ordering Information

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

Model/Order No.	Name
MT8820A	Main frame Radio Communication Analyzer
	Standard accessories
	Power cord, 2.6 m : 1 pc
HB28B064C8H	CF card (64 MB) : 1 pc
CA68ADP	PC card adapter : 1 pc
W1940AE	MT8820A operation manual (CD-ROM) : 1 copy
	Options
MT8820A-01	W-CDMA measurement hardware
MT8820A-02	TDMA measurement hardware
MT8820A-03	CDMA2000 measurement hardware
MT8820A-04	1xEV-DO measurement hardware
MT8820A-11	Audio board
MT8820A-12	Parallel phone measurement hardware
MT8820A-21	W-CDMA measurement hardware retrofit
MT8820A-22	TDMA measurement hardware retrofit
MT8820A-23	CDMA2000 measurement hardware retrofit
MT8820A-24	1xEV-DO measurement hardware retrofit
MT8820A-31	Audio board retrofit
MT8820A-32	Parallel phone measurement hardware retrofit
	Softwares
MX882000B	W-CDMA Measurement Software (requires MT8820A-01 and MX88205xA)
MX882000B-01	W-CDMA voice codec (requires MT8820A-11 and MX882000B)
MX882001A	GSM Measurement Software (requires MT8820A-02)
MX882001A-01	GSM voice codec (requires MT8820A-11 and MX882001A)
MX882001A-02	GSM external packet data (requires MX882001A)
MX882001A-11	EGPRS Measurement Software (requires MX882001A)
MX882002A	CDMA2000 Measurement Software (requires MT8820A-03)
MX882002A-02	CDMA2000 external packet data (requires MX882002A)
MX882003A	1xEV-DO measurement Software (requires MT8820A-03, MT8820A-04 and MX882002A)
MX882003A-02	1xEV-DO external packet data (requires MX882003A)
MX882004A	PDC Measurement Software (requires MT8820A-02)
MX882005A	PHS Measurement Software (requires MT8820A-02)
MX882010A	Parallel Phone Measurement Software*1 [requires MT8820A-12, the two same measurement hardware (2 board/set) and one measurement software]
MX882022A	CDMA2000 Wireless Application Test Software (requires MT8820A-03)
MX882050A	W-CDMA Call Processing Software*2 (requires MX882000B)
MX882051A	W-CDMA Call Processing Software*2 (requires MX882000B)

Model/Order No.	Name
MX882051A-02	W-CDMA external packet data*2 (requires MX882051A)
MX882051A-03	W-CDMA video phone test*2 (requires MX882051A)
MX882071A	W-CDMA Ciphering Software*2 (requires MX882051A)
W2161AE	MX882000B operation manual*3 (attached to MX882000B)
W2026AE	MX882001A operation manual*3 (attached to MX882001A)
W2104AE	MX882002A operation manual*3 (attached to MX882002A)
W2201AE	MX882003A operation manual*3 (attached to MX882003A)
W2159AE	MX882004A operation manual*3 (attached to MX882004A)
W2228AE	MX882005A operation manual*3 (attached to MX882005A)
W2247AE	MX882022A operation manual*3 (attached to MX882022A)
W2220AE	MX88205xA operation manual*3 (attached to MX88205xA)
W2230AE	MX88207xA operation manual*3 (attached to MX88207xA)
	Warranty
MT8820A-90	Extended three year warranty service
MT8820A-91	Extended five year warranty service
	Application parts
	TEST USIM001
	Handset
J0576B	Coaxial cord (N-P · 5D-2W · N-P), 1 m
J0576D	Coaxial cord (N-P · 5D-2W · N-P), 2 m
J0127A	Coaxial cord (BNC-P · RG58A/U · BNC-P), 1 m
J0127C	Coaxial cord (BNC-P · RG58A/U · BNC-P), 0.5 m
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)
B0333G	Rack mount kit
B0499	Carrying case (hard type, with protective cover and casters)
B0499B	Carrying case (hard type, with protective cover, without casters)
W1943AE	MT8820A operation manual (booklet)
W2162AE	MX882000B operation manual (booklet)
W2027AE	MX882001A operation manual (booklet)
W2100AE	MX882002A operation manual panel operation (booklet)
W2101AE	MX882002A operation manual remote control (booklet)
W2202AE	MX882003A operation manual panel operation (booklet)
W2203AE	MX882003A operation manual remote control (booklet)
W2160AE	MX882004A operation manual (booklet)
W2229AE	MX882005A operation manual (booklet)
W2245AE	MX882022A operation manual panel operation (booklet)
W2246AE	MX882022A operation manual remote control (booklet)
W2221AE	MX88205xA operation manual (booklet)
W2231AE	MX88207xA operation manual (booklet)

*1: Max two types of measurement hardware (MT8820A-01, MT8820A-02) are selectable for parallel phone measurement.

*2: For W-CDMA terminal connectivity, contact your Anritsu sales representative.

*3: Supplied by CD-ROM

Anritsu

Specifications are subject to change without notice.

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