MX268160A/MX268360A/MX268760A

(For MS2681A/MS2683A/MS2687B Spectrum Analyzers)

MX860860A/MX860960A

(For MS8608A/MS8609A Digital Mobile Radio Transmitter Testers)

TD-SCDMA Measurement Software

For TD-SCDMA Modulation Analysis and RF Power Measurement

# Supports Modulation Analysis and RF Power Measurement of TD-SCDMA Compliant UE/BTS

The MX268160A/MX268360A/MX268760A/MX860860A/ MX860960A TD-SCDMA measurement software is application software used by the MS2681A/MS2683A/MS2687B Spectrum Analyzers and the MS8608A/MS8609A Digital Mobile Radio Transmitter Testers.

When installed in the MS2681A/MS2683A/MS2687B or the MS8608A/MS8609A, it supports modulation measurement and RF power measurement for TD-SCDMA, which is one of 3GPP standards proposed for deployment in China.

● **Measurement Items [Common to Uplink and Downlink]**
- Frequency, Frequency Error
- RMS EVM, Peak EVM
- Peak Code Domain Error
- Phase Error, Magnitude Error
- RF Power (Slot, Subframe, Leading, Trailing)*

Parameter Settings

This screen is used to set basic parameters such as frequency and signal type. After setting, a simple operation completes each measurement.

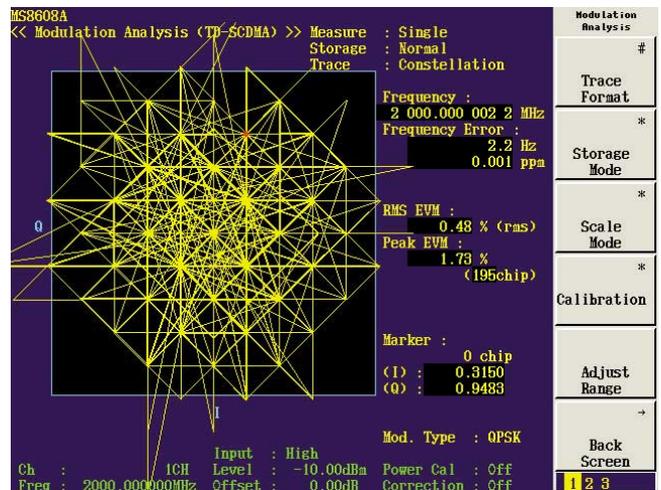* "Transmit ON/OFF power" measurement is not supported.
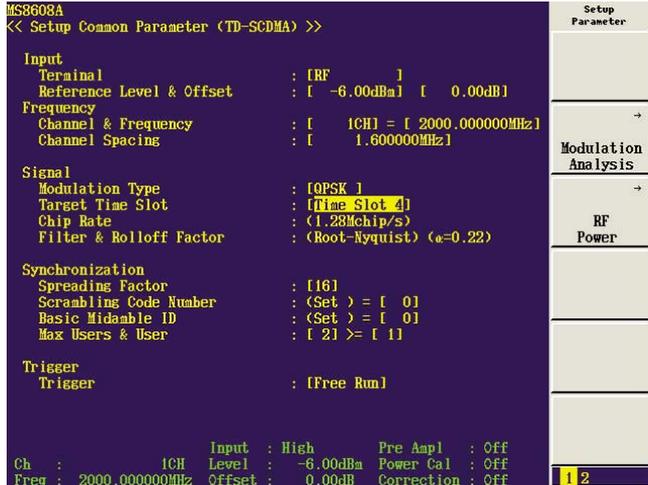
Modulation Analysis Measurement [1]

Results such as frequency error, EVM, and PCDE as well as modulation analysis results are displayed together.
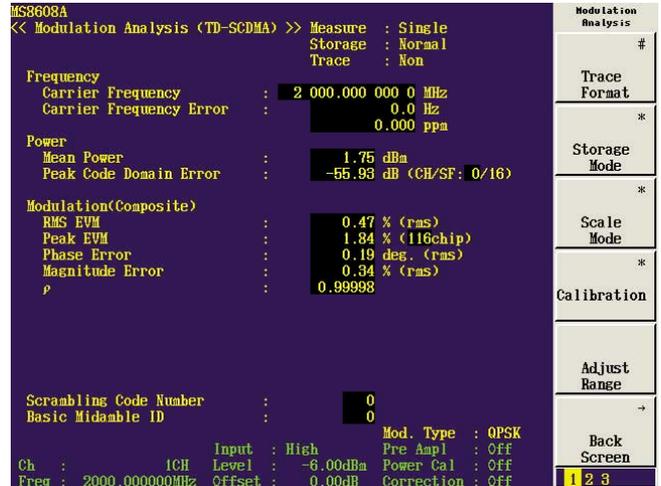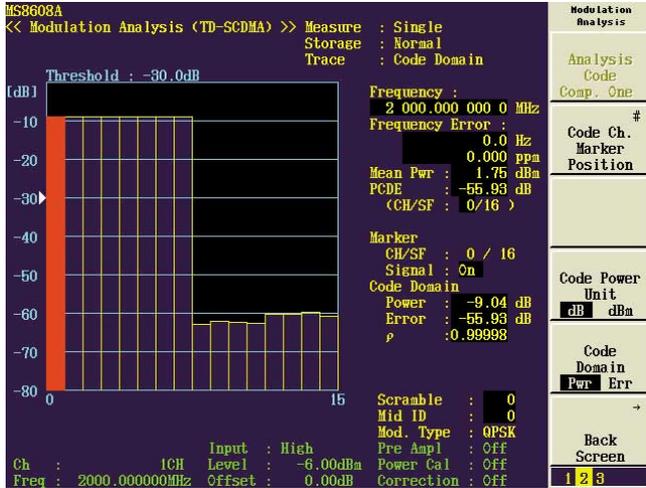

Various display methods such as Phase Error and Magnitude Error can be chosen. High-accuracy measurements are performed, reducing the residual vector error (rms) to 0.8% (typ.).
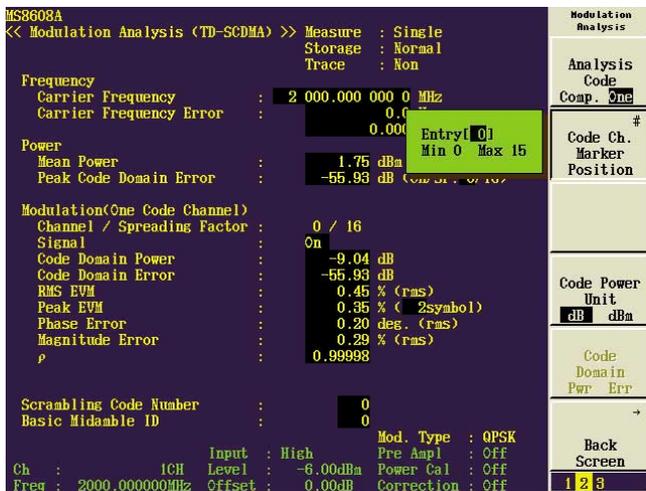
Modulation Analysis Measurement [2]

The power of each code can be visually monitored using code domain displays (Code Domain Power, Code Domain Error).

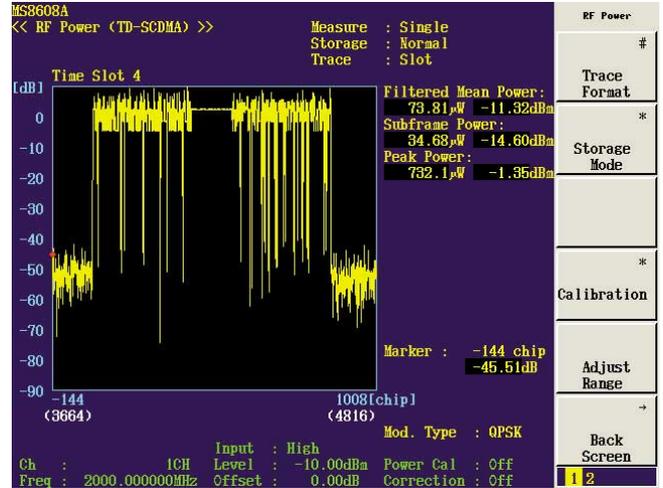Each code channel can be analyzed, and the results for the code channel at the marked position are displayed.

RF Power Measurement

The specified burst is searched from DwPTS and the RF power measured. The Filtered Mean Power, Subframe Power, and Peak Power are listed.

There are four display methods: Slot, Subframe, Leading, and Trailing, These displays enable flexible use matching the measurement conditions.
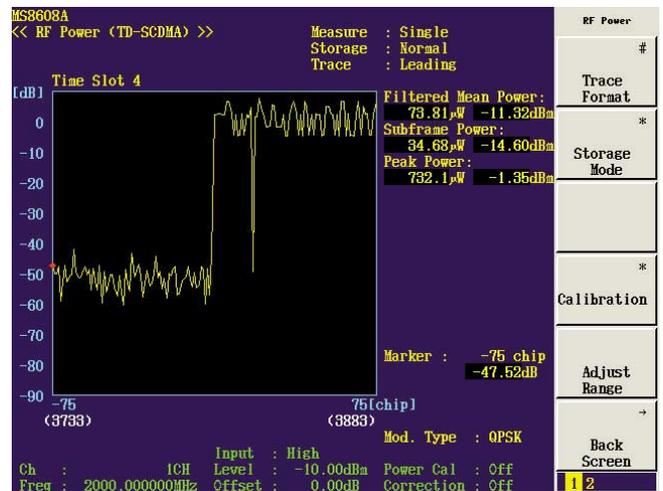
Specifications *(For MX268160A/MX268360A/MX268760A)*

The following specifications are guaranteed after the warm-up of a mainframe (30 minutes or more) and the internal level is optimized (the internal receiver range is automatically adjusted by pushing the Adjust Range key). Power values show burst mean power. The "pre-amp on" specification for MS2681A and MS2683A applies when options MS2681A-08/MS2683A-08 are installed.

Model		MX268160A	MX268360A	MX268760A
Modulation/ frequency measurement	Measurement frequency range	50 MHz to 3.0 GHz 50 MHz to 2.3 GHz (MS2681A-08 / MS2683A-08 is installed)		50 MHz to 3.0 GHz
	Measurement level range	–40 to +30 dBm (Pre-amp off) –60 to +10 dBm (Pre-amp on)		–40 to +30 dBm
	Measurement items	Carrier frequency, carrier frequency error, EVM (RMS), EVM (Peak), phase error (RMS), amplitude error (RMS), origin offset, code domain power, code domain error, peek code domain error, waveform quality, Tx power		

	Carrier frequency accuracy	± (reference frequency accuracy + 10 Hz)
		    At 1 code channel
		    Input level: ≥–30 dBm (Pre-amp off)
		    Input level: ≥–40 dBm (Pre-amp on)
				± (reference frequency accuracy + 10 Hz)
				    At 1 code channel
				    Input level: ≥–30 dBm

	Modulation accuracy (residual vector error)	<2.0% (rms)
		    At 1 code channel
		    Input level: ≥–30 dBm (Pre-amp off)
		    Input level: ≥–40 dBm (Pre-amp on)
				<2.0% (rms)
				    At 1 code channel
				    Input level: ≥–30 dBm

	Origin offset accuracy	±0.5 dB
		    Relative to signal with origin offset of –30 dBc
		    at 1 code channel
		    Input level: ≥–30 dBm (Pre-amp off)
		    Input level: ≥–40 dBm (Pre-amp on)
				±0.5 dB
				    Relative to signal with origin offset of –30 dBc
				    at 1 code channel
				    Input level: ≥–30 dBm

	Code domain power accuracy	±0.1 dB (code power ≥–10 dBc)
		±0.3 dB (code power ≥–25 dBc)
		    The input signal does not have the origin offset
		    At relative value (dB) display
		    Input level: ≥–10 dBm (Pre-amp off)
		    Input level: ≥–20 dBm (Pre-amp on)
				±0.1 dB (code power ≥–10 dBc)
				±0.3 dB (code power ≥–25 dBc)
				    The input signal does not have the origin offset
				    At relative value (dB) display
				    Input level: ≥–10 dBm

	Code domain error	Residual error: <–50 dB
		Accuracy: ±0.5 dB (Error: –30 dB)
		    Spread factor: 16
		    The input signal does not have the origin offset
		    Input level: ≥–10 dBm (Pre-amp off)
		    Input level: ≥–20 dBm (Pre-amp on)
				Residual error: <–50 dB
				Accuracy: ±0.5 dB (Error: –30 dB)
				    Spread factor: 16
				    The input signal does not have the origin offset
				    Input level: ≥–10 dBm

	Waveform display	Constellation display, EVM vs. Chip, Phase error vs. Chip, Amplitude error vs. Chip, Code domain		
RF power measurement	Frequency range	50 MHz to 3.0 GHz, 50 MHz to 2.3 GHz (MS2681A-08 / MS2683A-08 is installed)		50 MHz to 3.0 GHz
	Measurement level range	–40 to +30 dBm (Pre-amp off) –60 to +10 dBm (Pre-amp on)		–40 to +30 dBm

	Tx power accuracy	±3 dB (Typical)
		    Measurement range:
		    –10 to +30 dBm (Pre-amp off)
		    –10 to +10 dBm (Pre-amp on)
				±3 dB (Typical)
				    Measurement range: –10 to +30 dBm

	Power measurement linearity	±0.2 dB (0 to –40 dB)
		After optimized internal level, When the reference level setting is not changed.
		    Input level: ≥–10 dBm (Pre-amp off)
		    Input level: ≥–20 dBm (Pre-amp on)
				±0.2 dB (0 to –40 dB)
				After optimized internal level, When the reference level setting is not changed.
				    Input level: ≥–10 dBm

	Dynamic range	≥50 dB (Typical) The reference level setting is not changed.		≥50 dB (Typical) The reference level setting is not changed.
	Waveform display	Slot display, sub-frame display, leading display, trailing		

Model		MX268160A	MX268360A	MX268760A
IQ input *	Input impedance	1 MΩ (parallel capacitance: <100 pF), 50 Ω		
	Balance input	Differential voltage: 0.1 to 1.0 Vp-p (input terminals) In-phase voltage: ±2.5 V (input terminals)		—
	Unbalance input	0.1 to 1.0 Vp-p (input terminals), DC/AC coupling: Changeable		
	Measurement items	EVM (RMS), EVM (Peak), phase error (RMS), amplitude error (RMS), origin offset, code domain power, code domain error, peek code domain error, waveform quality, mean power, RRC filtered mean power, IQ level		
	Modulation accuracy measurement	Residual vector error: <2% (rms) (Typical) The input signal dose not have the origin offset DC coupling, Input level: ≥0.1 V (rms)		
	IQ level measurement	Measures and displays input level of I and Q (rms, p-p)		
	IQ phase difference measurement	When a CW signal is inputted to the I and Q input terminals, measures and displays the phase difference between the I-phase and Q-phase signals.		

* IQ balance input is enabled when MS2681A-17 / MS2683A-17 is installed.
IQ unbalance input is enabled when MS2681A-18 / MS2683A-18 / MS2687B-18 is installed.

Specifications *(For MX860860A/MX860960A)*

The following specifications are guaranteed after the warm-up of a mainframe (30 minutes or more) and the internal level is optimized (the internal receiver range is automatically adjusted by pushing the Adjust Range key). Power values show burst mean power. The "pre-amp on" specification for MS8608A and MS8609A applies when options MS8608A-08/MS8609A-08 are installed.

Model		MX860860A	MX860960A
Modulation/ frequency measurement	Measurement frequency range	50 MHz to 3.0 GHz, 50 MHz to 2.3 GHz (MS8608A-08 / MS8609A-08 / MS8609A-30 is installed)	
	Measurement level range	–20 to +40 dBm (high power input) –40 to +20 dBm (low power input, Pre-amp off) –60 to +10 dBm (low power input, Pre-amp on)	–40 to +20 dBm (Pre-amp off) –60 to +10 dBm (Pre-amp on) –40 to +26 dBm (MS8609A-32 is installed, Pre-amp off) –60 to +10 dBm (MS8609A-32 is installed, Pre-amp on)
	Measurement items	Carrier frequency, carrier frequency error, EVM (RMS), EVM (Peak), phase error (RMS), amplitude error (RMS), origin offset, code domain power, code domain error, peek code domain error, waveform quality, Tx power	

	Carrier frequency accuracy	± (reference frequency accuracy + 10 Hz)
		  At 1 code channel
		  Input level: ≥–10 dBm (high power input)
		  Input level: ≥–30 dBm
		    (low power input, Pre-amp off)
		  Input level: ≥–40 dBm
		    (low power input, Pre-amp on)
			± (reference frequency accuracy + 10 Hz)
			  At 1 code channel
			  Input level: ≥–30 dBm (Pre-amp off)
			  Input level: ≥–40 dBm (Pre-amp on)

	Modulation accuracy (residual vector error)	<2.0 % (rms)
		  At 1 code channel
		  Input level: ≥–10 dBm (high power input)
		  Input level: ≥–30 dBm
		    (low power input, Pre-amp off)
		  Input level: ≥–40 dBm
		    (low power input, Pre-amp on)
			<2.0 % (rms)
			  At 1 code channel
			  Input level: ≥–30 dBm (Pre-amp off)
			  Input level: ≥–40 dBm (Pre-amp on)

	Origin offset accuracy	±0.5 dB
		  Relative to signal with origin offset of –30 dBc at 1 code channel
		  Input level: ≥–10 dBm (high power input)
		  Input level: ≥–30 dBm
		    (low power input, Pre-amp off)
		  Input level: ≥–40 dBm
		    (low power input, Pre-amp on)
			±0.5 dB
			  Relative to signal with origin offset of –30 dBc at 1 code channel
			  Input level: ≥–30 dBm (Pre-amp off)
			  Input level: ≥–40 dBm (Pre-amp on)

	Code domain power accuracy	±0.1 dB (code power ≥–10 dBc)
		±0.3 dB (code power ≥–25 dBc)
		  The input signal does not have the origin offset
		  At relative value (dB) display
		  Input level: ≥+10 dBm (high power input)
		  Input level: ≥–10 dBm
		    (low power input, Pre-amp off)
		  Input level: ≥–20 dBm
		    (low power input, Pre-amp on)
			±0.1 dB (code power ≥–10 dBc)
			±0.3 dB (code power ≥–25 dBc)
			  The input signal does not have the origin offset
			  At relative value (dB) display
			  Input level: ≥–10 dBm (Pre-amp off)
			  Input level: ≥–20 dBm (Pre-amp on)

	Code domain error	Residual error: <–50 dB
		Accuracy: ±0.5 dB (Error: –30 dB)
		  Spread factor: 16
		  The input signal does not have the origin offset
		  Input level: ≥+10 dBm (high power input)
		  Input level: ≥–10 dBm
		    (low power input, Pre-amp off)
		  Input level: ≥–20 dBm
		    (low power input, Pre-amp on)
			Residual error: <–50 dB
			Accuracy: ±0.5 dB (Error: –30 dB)
			  Spread factor: 16
			  The input signal does not have the origin offset
			  Input level: ≥–10 dBm (Pre-amp off)
			  Input level: ≥–20 dBm (Pre-amp on)

	Waveform display	Constellation display, EVM vs. Chip, Phase error vs. Chip, Amplitude error vs. Chip, Code domain	

Model		MX860860A	MX860960A
RF power measurement	Measurement frequency range	50 MHz to 3.0 GHz, 50 MHz to 2.3 GHz (MS8608A-08 / MS8609A-08 / MS8609A-30 is installed)	
	Measurement level range	–20 to +40 dBm (high power input) –40 to +20 dBm (low power input, Pre-amp off) –60 to +10 dBm (low power input, Pre-amp on)	–40 to +20 dBm (Pre-amp off) –60 to +10 dBm (Pre-amp on) –40 to +26 dBm (MS8609A-32 is installed, Pre-amp off) –60 to +10 dBm (MS8609A-32 is installed, Pre-amp on)

	Tx power accuracy	±0.6 dB
		After Power Calibration, relative to repetition signal in sub-frame period.
		  Measurement range:
		   +10 to +40 dBm (high power input)
		   –10 to +20 dBm (low power input, Pre-amp off)
		   –10 to +10 dBm (low power input, Pre-amp on)
			±0.6 dB
			After Power Calibration, relative to repetition signal in sub-frame period.
			  Measurement range:
			   –10 to +20 dBm (Pre-amp off)
			   –10 to +10 dBm (Pre-amp on)
			   –4 to +26 dBm
			    (MS8609A-32 is installed, Pre-amp off)
			   –4 to +10 dBm
			    (MS8609A-32 is installed, Pre-amp on)

	Power measurement linearity	±0.2 dB (0 to –40 dB)
		After optimized internal level, when the reference level setting is not changed.
		  Input level: ≥+10 dBm (high power input)
		  Input level: ≥–10 dBm
		  (low power input, Pre-amp off)
		  Input level: ≥–20 dBm
		  (low power input, Pre-amp on)
			±0.2 dB (0 to –40 dB)
			After optimized internal level, when the reference level setting is not changed.
			  Input level: ≥–10 dBm (Pre-amp off)
			  Input level: ≥–20 dBm (Pre-amp on)

	Dynamic range	≥50 dB (Typical) The reference level setting is not changed.	≥50 dB (Typical) The reference level setting is not changed.
	Waveform display	Slot display, sub-frame display, leading display, trailing	
IQ input	Input impedance	1 MΩ (parallel capacitance: <100 pF), 50 Ω	
	Balance input	Differential voltage: 0.1 to 1.0 Vp-p (input terminals) In-phase voltage: ±2.5 V (input terminals)	
	Unbalance input	0.1 to 1.0V p-p (input terminals), DC/AC coupling: Changeable	
	Measurement items	EVM (RMS), EVM (Peak), phase error (RMS), amplitude error (RMS), origin offset, code domain power, code domain error, peek code domain error, waveform quality, mean power, RRC filtered mean power, IQ level	
	Modulation accuracy measurement	Residual vector error: <2% (rms) (Typical) The input signal dose not have the origin offset DC coupling, Input level: ≥0.1 V (rms)	
	IQ level measurement	Measures and displays input level of I and Q (rms, p-p)	
	IQ phase difference measurement	When a CW signal is inputted to the I and Q input terminals, measures and displays the phase difference between the I-phase and Q-phase signals.	

Ordering Information

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

Model/Order No.	Name
	– Main frame –
MX268160A	TD-SCDMA Measurement Software (for MS2681A)
MX268360A	TD-SCDMA Measurement Software (for MS2683A)
MX268760A	TD-SCDMA Measurement Software (for MS2687B)
MX860860A	TD-SCDMA Measurement Software (for MS8608A)
MX860960A	TD-SCDMA Measurement Software (for MS8609A)
	– Standard accessories –
Z0744	Memory card (compact flash, for backup): 1 pc
W2593AE	TD-SCDMA Measurement Software operation manual: 1 copy

/Inritsu

Specifications are subject to change without notice.