

# MX269015A

TD-SCDMA Measurement Software

MS2690A/MS2691A/MS2692A

Signal Analyzer

MS2690A/MS2691A/MS2692A Signal Analyzer

## MX269015A TD-SCDMA Measurement Software Product Introduction



Version 1.00

ANRITSU CORPORATION

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## All-in-One RF Test Functions

The compact MS2690A Signal Analyzer series has the functions required for testing Rx and Tx RF characteristics at R&D and manufacturing.

### [Main Frame] Signal Analyzer (MS2690A/MS2691A/MS2692A)

Spectrum Analyzer (Adjacent Channel Leakage Power, Occupied Bandwidth, etc.)

### ◆ TD-SCDMA Measurement Software (MX269015A)

Modulation accuracy, Carrier frequency, Transmitter power



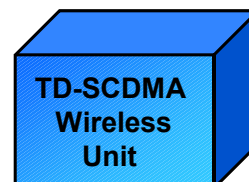
Tx Test

RF

RF

Data/Clock

Rx Test



### ◆ Vector Signal Generator (MS2690A-020/MS2691A-020/MS2692A-020):

Vector signal generation function + BER Test function

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## What is MX269015A TD-SCDMA Measurement Software?

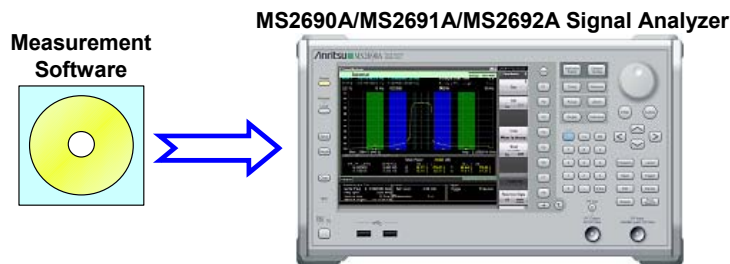
The MX269015A TD-SCDMA Measurement Software option (MX269015A) is for measuring the RF characteristics of 3GPP TD-SCDMA, low-chip-rate technologies (1.28 Mcps).

Installing the MX269012A in the MS269xA Signal Analyzer series supports tests of:

**Modulation accuracy, Carrier frequency, Tx power, etc.**

The following test items, which are generally measured using a spectrum analyzer, are measured by a one-touch button operation at the MS269xA screen.

**Adjacent Channel Leakage Power, Occupied Bandwidth, Spectrum Emission Mask**



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## MX269015A Specification

Item	Specification
<b>Common Specifications</b>	
Target signals	Uplink and Downlink
<b>Modulation/Frequency Measurement</b>	
Measurement Frequency Ranges	1850 to 2620 MHz
Measurement Level Range	-15 to +30 dBm (at Pre-Amp Off, or Pre-Amp not installed.) -30 to +10 dBm (at Pre-Amp On)
Carrier Frequency Measurement Accuracy	After CAL at 18 to 28°C Signal EVM of 1% ±(accuracy of reference crystal oscillator x carrier frequency + 20 Hz)
Residual EVM	After CAL at 18 to 28°C, measured signal measured within measurement level range and < Input Level. < 1.0% (rms)
Code Domain Power Measurement Accuracy	After CAL, input at 18 to 28°C, measured signal measured within measurement level range and < Input Level. ±0.18 dB (Code Power > -10dBc) ±0.32 dB (Code Power > -30dBc)
Code Domain Error Measurement Accuracy	After CAL, input at 18 to 28°C, measured signal measured within measurement level range and < Input Level. ±1.00 dB (Code Error > -40dBc)
Residual Code Domain Error	After CAL at 18 to 28°C, the measured signal is within the measurement level range and below the value set at Input Level. ? -40 dB
Transmitter power accuracy	After CAL, input at 18 to 28°C, measured signal measured within measurement level range and < Input Level. ±0.6 dB (at Pre-Amp Off, or Pre-Amp not installed.) ±1.1 dB (at Pre-Amp On) Transmitter power accuracy is calculated from the RSS (root sum square) error of the absolute amplitude accuracy and the in-band frequency characteristics of the MS2690A/MS2691A/MS2692A.
Waveform displays	Constellation Code Domain Power vs Code Number Code Domain Error vs Code Number

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## MX269015A Main Screen

The main screen when selecting the MX269015A at the MS269xA is shown below.

Set the basic parameters first and then press [Measure] to start a test.



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## MX269015A Editing Parameters

Frequency, Amplitude, and Common Setting parameter settings

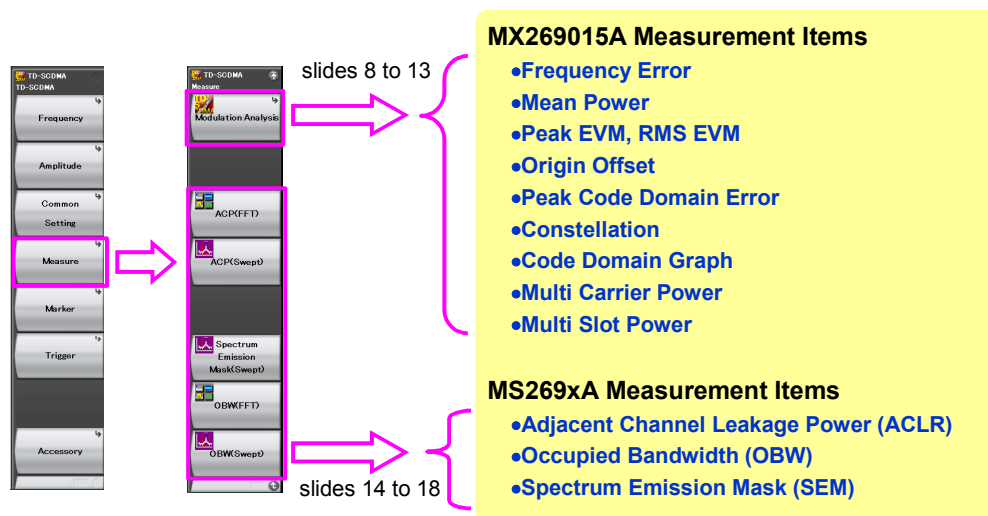
Items	Summary	Setting range
<b>Frequency</b>		
Carrier Frequency	Sets a carrier frequency.	100 MHz to the upper limit of the
Center Frequency	Sets center frequency.	MS2690A/MS2691A/MS2692A
Frequency Mode	Selects Frequency mode.	Carrier Frequency Center Frequency
<b>Amplitude</b>		
Input Level	Sets input level from target DUT.	Pre-Amp: On : (-80.00 + Offset Value) to (10.00 + Offset Value) dBm Pre-Amp: Off: (-60.00 + Offset Value) to (30.00 + Offset Value) dBm
Pre-Amp	Toggles Pre-Amp function On and Off.	On: Enables Pre-Amp function. Off: Disables Pre-Amp function.
Offset	Toggles Offset function On and Off.	On: Enables Offset function. Off: Disables Offset function.
Offset Value	Sets level offset coefficient.	-99.99 to +99.99 dB
<b>Common Setting</b>		
Signal Direction	Selects measured target signal direction	UL: Analyzes Uplink input signal DL: Analyzes Downlink input signal
Scrambling Code Number	Sets Scrambling Code Number	0 to 127
K	Sets value of K (number of maximum users)	2, 4, 6, 8, 10, 12, 14, 16
Target Time Slot	Selects analyzed Time Slot	Time Slot x: Analyzes Time Slot x (x = 0 to 6) Burst: With waveform imported by measuring instrument, analyzes initial time slot
Carrier Number	Sets number of measured carriers	1 to 6
Target Carrier	Sets analyzed carrier	1 to Carrier Number
Active Channel Threshold	Sets Active Channel Threshold value	-5.0 to -50.0 dB
Active Slot Threshold	Sets Active Slot Threshold value	-10.0 to -50.0 dB
Auto Rate Detection	Selects Auto Rate Detection mode	On: Enables Auto Rate Detection Off: Disables Auto rate Detection
Spreading Factor	Sets Spreading Factor value when Auto Rate Detection disabled	1, 2, 4, 8, 16

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## MX269015A Measurement Items: Measure



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## MX269015A Modulation Analysis: Editing Parameters

**At Modulation Analysis, set the test conditions as shown below first.**

Items	Summary	Setting range
Trace Mode	Sets type of result displayed in graph window	Code Domain Power: Displays Code Domain Power vs Code number in graph window Code Domain Error: Displays Code Domain Error vs Code number in graph window Multi Slot Power: Displays Subframe Power, Mean, Data1, Midamble and Data2 Powers vs Slot number in t
Scale	Sets vertical scale of a graphical result.	Code Domain Power Scale: Sets scale for Code Domain Power Code Domain Error Scale: Sets scale for Code Domain Error
Scale: Code Domain Power Scale	Sets scale for Code Domain Power vs Code Number Display	20/40/60/80 dB
Scale: Code Domain Error Scale	Sets scale for Code Domain Error vs Code Number Display	20/40/60/80 dB
Storage	Sets number of measurements and displayed format of numerical results.	Mode: Selects displayed format of numerical results. Count: Sets number of measurements.
Storage: Mode	Selects displayed format of numerical results.	Off: Displays the numerical results in a single measurement. Average: Displays the averages of numerical results in specified number of measurements. Average & Max: Displays the averages and maximums of numerical results in specified number of measurement
Storage: Count	Sets number of measurements (number of captures).	2 to 9999

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## MX269015A Modulation Analysis: Numerical Results

<Modulation accuracy, Carrier frequency, Transmitter power, Code Domain Power>

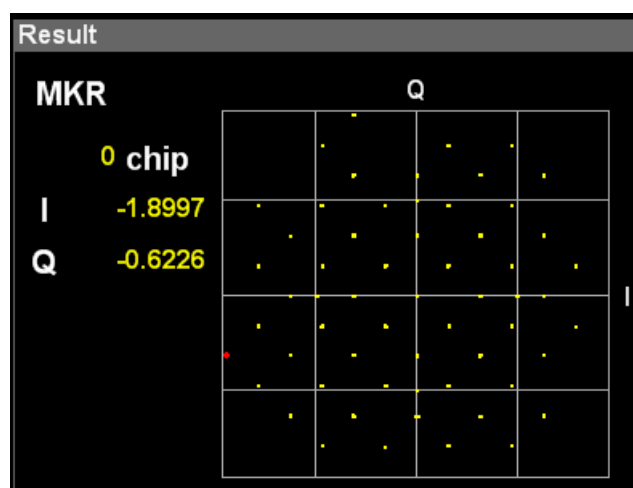
Target Time Slot	Burst
Frequency Error	1.13 Hz
Mean Power	-11.75 dBm
EVM(rms)	0.40 %
EVM(peak)	1.22 %
	121 chip
Origin Offset	-62.34 dB
PCDE	-58.56 dB

Target Time Slot	Displays current <a href="#">Target Time Slot number</a> set in Target Time Slot
Frequency Error	Displays <a href="#">frequency error</a> in Target Time Slot of target carrier
Mean Power	Displays <a href="#">average RF level</a> of Target Time Slot of target carrier
EVM (rms)	Displays <a href="#">average EVM</a> of all chips in Target Time Slot of target carrier
EVM (peak)	Displays <a href="#">maximum EVM</a> of all chips in Target Time Slot of target carrier
chip	Displays <a href="#">chip</a> number where EVM (peak) occurred
Origin Offset	Displays <a href="#">origin offset</a> in Target Time Slot of target carrier
PCDE	Displays <a href="#">Peak Code Domain Error</a> in Target Time Slot of target carrier

## MX269015A Modulation Analysis: Graphical Results 1/4

### Constellation:

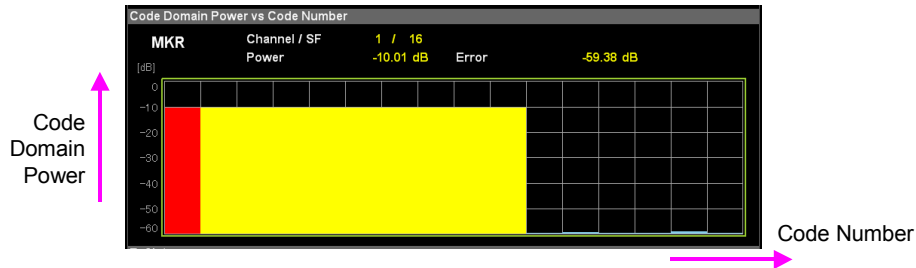
The Constellation for chips in Target Time Slot of target carrier is displayed.



## MX269015A Modulation Analysis: Graphical Results 2/4

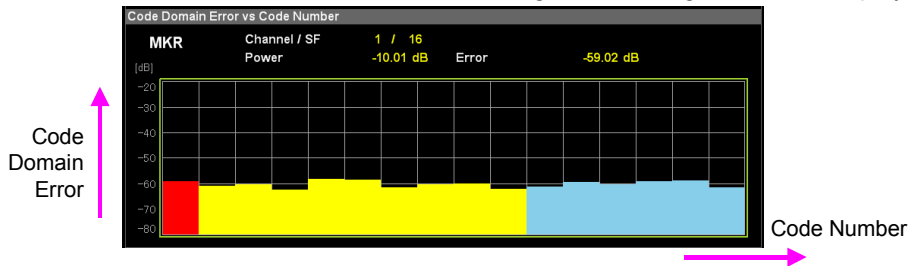
### Code Domain Power vs Code Number Display:

The Code Domain Power measurement results for Target Slot of target carrier is displayed.



### Code Domain Error vs Code Number Display:

The Code Domain Error measurement results for Target Slot of target carrier is displayed.



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## MX269015A Modulation Analysis: Graphical Results 3/4

### Multi Slot Power Display:

The Subframe Power, Mean, Data1, Midamble and Data2 Powers vs Slot number, including Downlink Pilot Time Slot (DwPTS) and Uplink Pilot Time Slot (UpPTS), in table form is displayed.

Multi Slot Power (dBm)										
Subframe	TS0	DwPTS	UpPTS	TS1	TS2	TS3	TS4	TS5	TS6	
Mean	-18.21	-18.24	***	-18.21	-18.21	-18.21	-18.21	-18.21	-18.21	
Data1	-18.21			-18.21	-18.21	-18.20	-18.21	-18.21	-18.20	
Midamble	-18.20			-18.21	-18.21	-18.20	-18.18	-18.22	-18.19	
Data2	-18.21			-18.21	-18.21	-18.21	-18.22	-18.21	-18.22	

Subframe	Displays <a href="#">average power</a> for Subframe of target carrier.
Mean	Displays <a href="#">mean power</a> for each slot, including Downlink Pilot Time Slot (DwPTS) and Uplink Pilot Time Slot (UpPTS) of target carrier.
Data1	Displays <a href="#">average power for Data part (352 chips)</a> before Midamble for each slot of target carrier.
Midamble	Displays <a href="#">average power for Midamble (144 chips)</a> for each slot of target carrier.
Data2	Displays <a href="#">average power for Data part (352 chips)</a> after Midamble for each slot of Target carrier.

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## MX269015A Modulation Analysis: Graphical Results 4/4

### Multi Carrier Power Display:

The average power for each slot, including Downlink Pilot Time Slot (DwPTS) and Uplink Pilot Time Slot (UpPTS), of all carriers in table form is displayed.

[illegible]

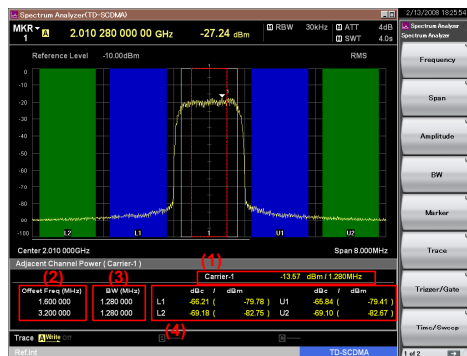
Carrier	Displays <b>mean power for each slot</b> , including Downlink Pilot Time Slot (DwPTS) and Uplink Pilot Time Slot (UpPTS), of carrier.
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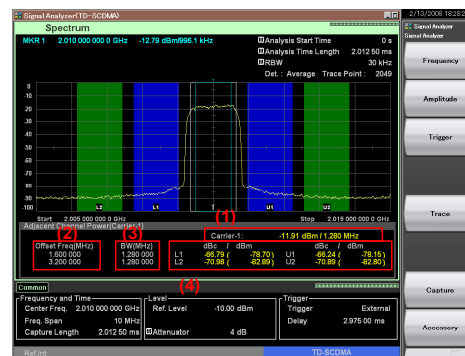
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## MX269015A Adjacent Channel Leakage Power



Spectrum Analyzer (SWEEP mode)



Signal Analyzer (FFT mode)

- |   |  |
|---|--|
| <p><b>(1)</b> Display the integral power in the screen display band.<br/>(When "ACP Reference" is "Span Total".)</p> <p><b>(1)</b> Display the integral power in In-Band.<br/>(When "ACP Reference" is "Carrier Total".)</p> <p><b>(1)</b> Displays the selected carrier power.<br/>(When "ACP Reference" is "Carrier Select".)</p> <p><b>(1)</b> Displays the carrier power on both sides.<br/>(When "ACP Reference" is "Both Sides of Carriers".)</p> | <p><b>(2)</b> Offset Freq<br/>Displays the setting of the offset frequency. [MHz]</p> <p><b>(3)</b> BW<br/>Displays the setting of the channel bandwidth. [MHz]</p> <p><b>(4)</b> L1/L2/U1/U2<br/>Displays the relative value of the total power of the Offset Channel bandwidth around Offset-1 to -3 and the reference power selected in "ACP Reference". It also displays the total power of the Offset Channel bandwidth around Offset-1 to -3 in parentheses.</p> |
|---|--|

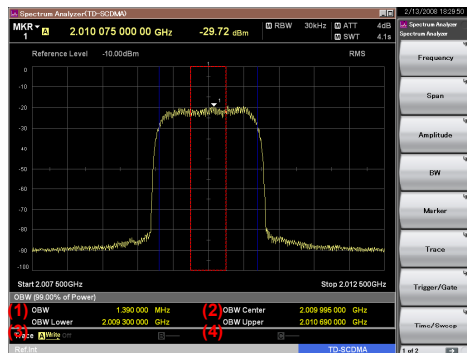
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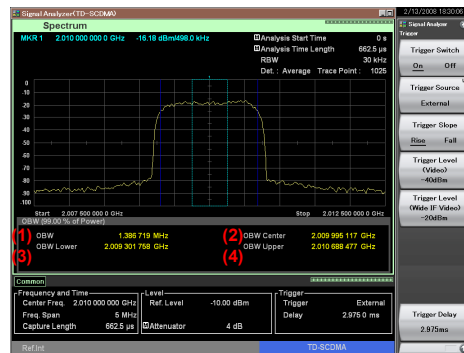
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## MX269015A Occupied Bandwidth



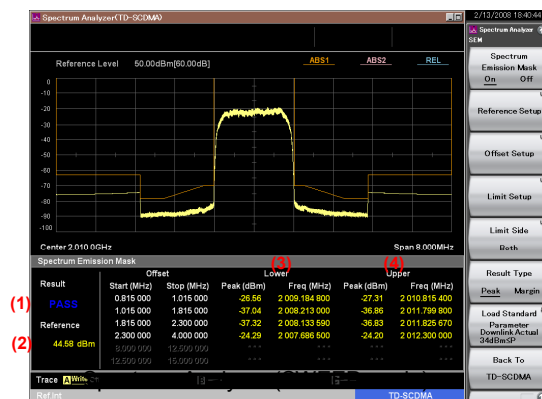
Spectrum Analyzer (SWEEP mode)



Signal Analyzer (FFT mode)

- (1) OBW  
Displays the occupied bandwidth.
- (2) OBW Center  
Displays the center frequency of the occupied bandwidth.
- (3) OBW Lower  
Displays the left frequency of the occupied bandwidth.
- (4) OBW Upper  
Displays the right frequency of the occupied bandwidth.

## MX269015A Spectrum Emission Mask



- (1) Result  
Displays results of Pass/Fail judgment.
- (2) Reference  
Displays the reference power.
- (3) Lower  
Displays the result of the offset on the left of the reference.
- (4) Upper  
Displays the result of the offset on the right of the reference.



## NOTE

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