Product Introduction

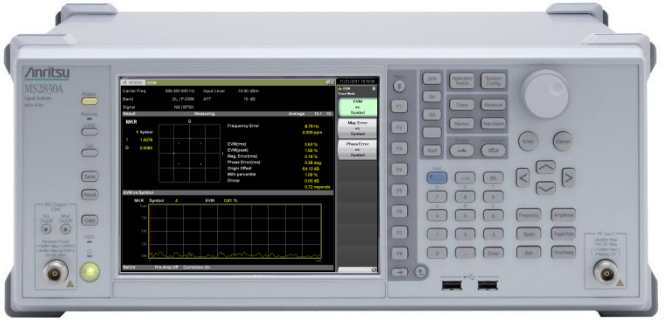
MX269013A GSM/EDGE Measurement Software
MX269013A-001 EDGE Evolution Measurement Software

MS2690A/MS2691A/MS2692A/MS2830A
Signal Analyzer

MX269013A GSM/EDGE Measurement Software
MX269013A-001 EDGE Evolution Measurement Software

Product Introduction

MS269xA



MS2830A

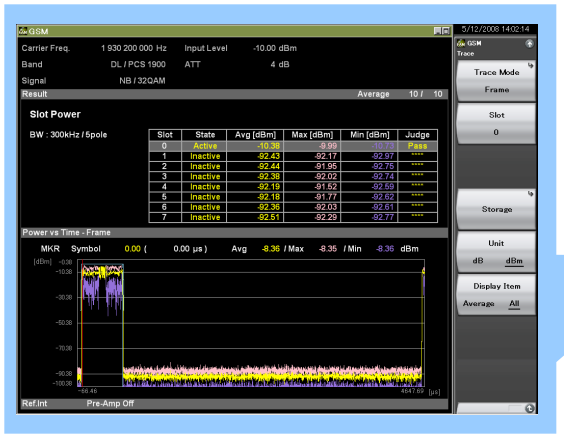
Version 3.00

Anritsu Corporation

GSM/EDGE, EDGE Evolution Measurement Software

The MX269013A GSM/EDGE and MX269013A-001 EDGE Evolution Measurement Software packages support measurement of RF Tx characteristics for GSM/EDGE (EGPRS) and EDGE Evolution (EGPRS2) signals.
Installing these software in the MS2690A/MS2691A/MS2692A/MS2830A Signal Analyzer supports Modulation Analysis, Output RF Spectrum and Power vs. Time measurements.

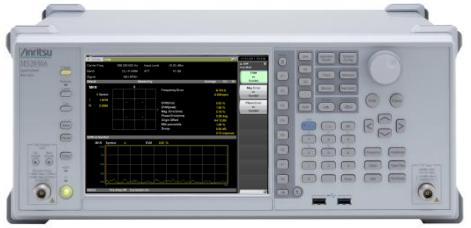
MX269013A
GSM/EDGE Measurement Software
MX269013A-001
EDGE Evolution Measurement Software



Install

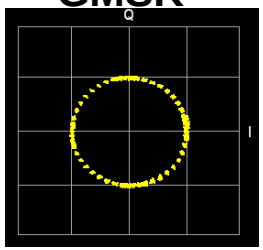
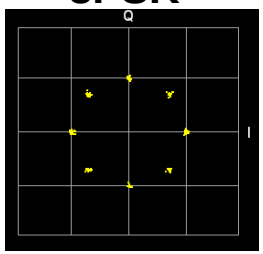
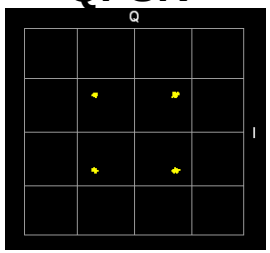
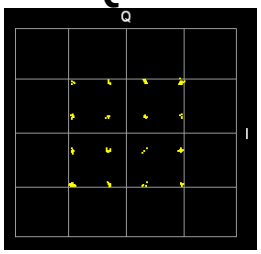
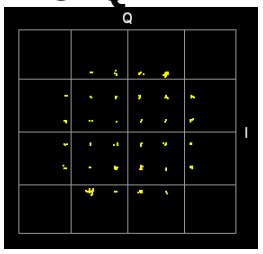
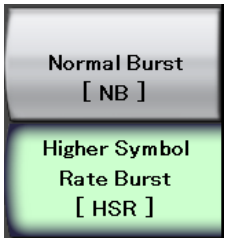
MS269xA

MS2830A



MX269013A and MX269013A-001 Measurements

The MX269013A GSM/EDGE Measurement Software analyzes GSM/EDGE (EGPRS) signals. The MX269013A-001 EDGE Evolution Measurement Software analyzes EDGE Evolution (EGPRS2) signals.

	Modulation	Burst Type
MX269013A GSM/EDGE Measurement Software	**GMSK**  **8PSK** 	
MX269013A-001 EDGE Evolution Measurement Software ***MX269013A required**	**QPSK**  **16QAM**  **32QAM** 	

Common Functions

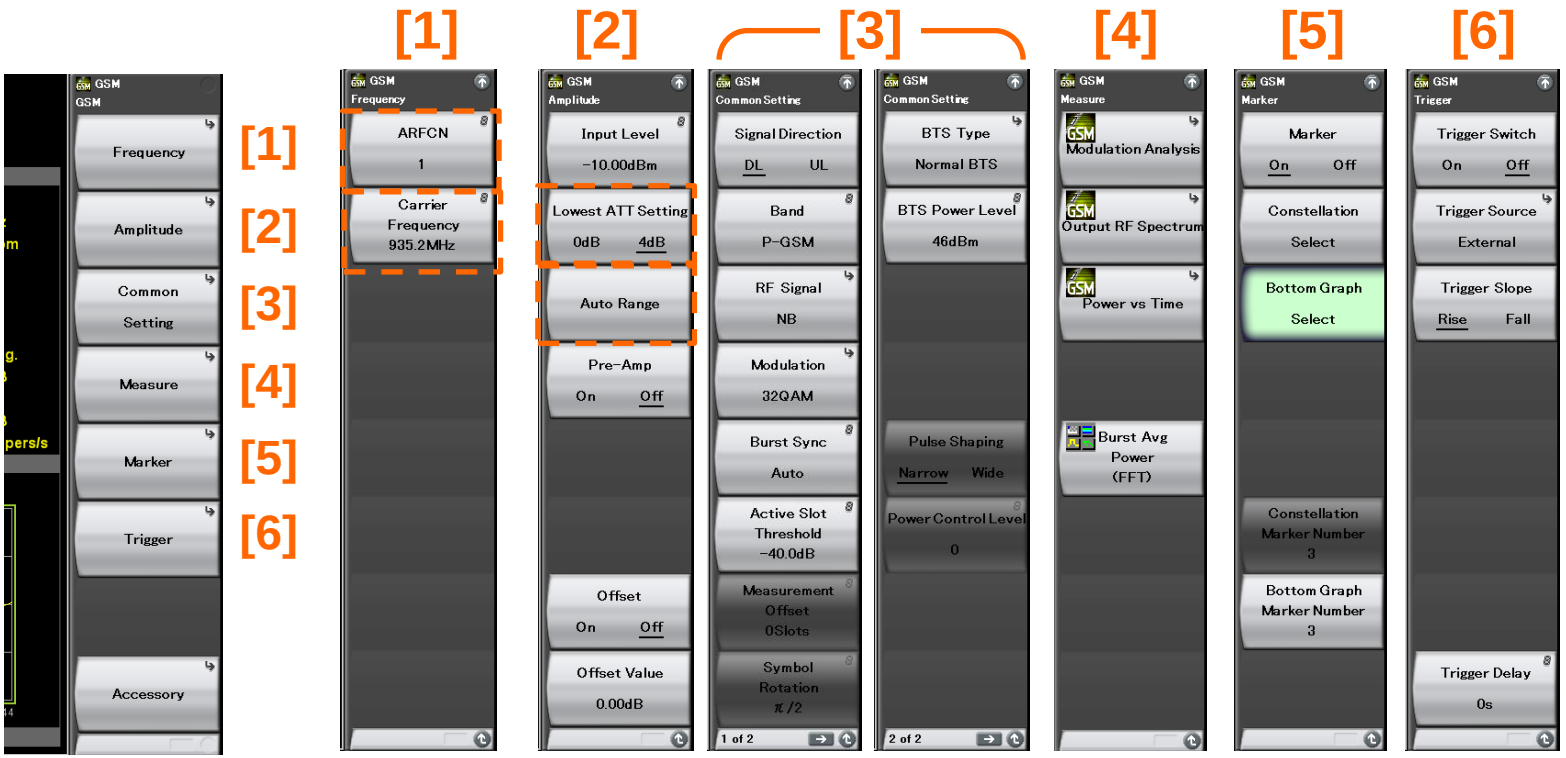
- Test Signals: Downlink/Uplink

- Bands: P-GSM, E-GSM, R-GSM, GSM 450, GSM 480,
  GSM 750, GSM 850, DCS 1800, PCS 1900
  *Other frequency signals measured by direct input

- Modulation: GMSK, 8PSK
  QPSK, 16QAM, 32QAM ⇐ requires MX269013A-001

- Signal Types: Normal Burst, Continuous
  Higher Symbol Rate Burst ⇐ requires MX269013A-001

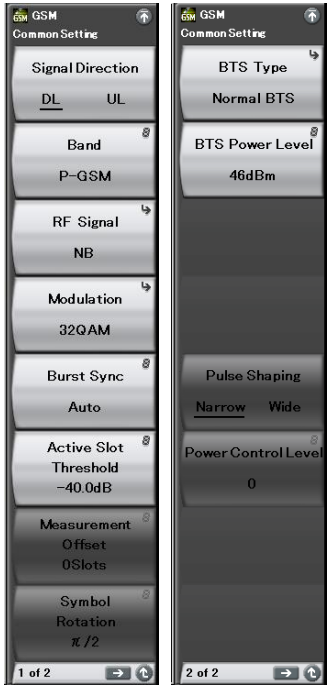
Setting Parameter (1/2)



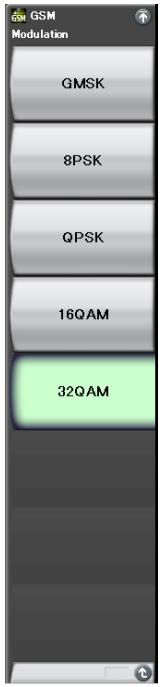
- **ARFCN**
  When setting ARFCN, the value matching the Band and RF signal settings is set as the carrier frequency.
- **Carrier Frequency:**
  Measurement range: 400 MHz to 2GHz Settable range: 10 MHz to the upper limit of the main unit
- **Lowest ATT Setting:**
  The lower limit for the attenuator, which is automatically adjusted according to the Input Level setting, can be changed manually.
- **Auto Range:**
  This function adjusts input level according to input signal.

Setting Parameter (2/2)

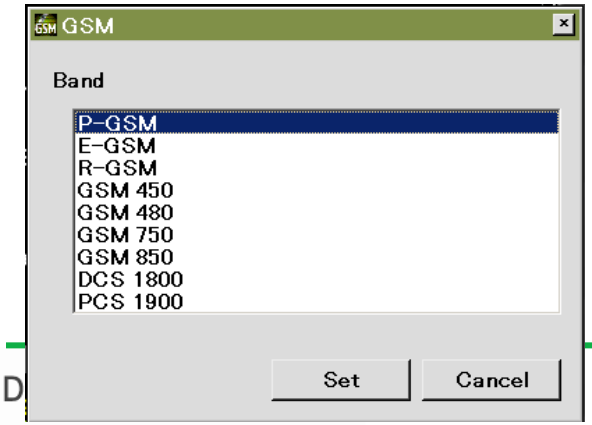
[3]



Modulatio



Band



- Signal Direction:
  DL: Select this for downlink input signal.
  UL: Select this for uplink input signal.
- Band: Select the frequency band of measurement target.
  P-GSM, E-GSM, R-GSM, GSM450, GSM480, GSM750, GSM850, GSM1800, GSM1900
- RF Signal: Select the burst type of the input signal.
  Normal Burst, Continuous
  Higher Symbol Rate Burst, ...Require MX269013A-001
- Modulation: Select the modulation method of the input signal.
  GMSK, 8PSK,
  QPSK, 16QAM, 32QAM .....Require MX269013A-001
- Burst Sync: Select the DUT signal sync detection method.
  Auto, TSC0, TSC1, TSC2, TSC3, TSC4, TSC5, TSC6, TSC7
- Active Slot Threshold:
  Select the slot detection level threshold value from the Input Level.
- Measurement Offset:
  Select the position of the measured target burst slot, on which trigger input point is based (frame header), in slot units.
- Symbol Rotation: Select the symbol rotation phase.
  π/2, π/4, 3π/8
- BTS Type: Select the BTS type for the measurement target.
  Normal BTS, Micro1/2/3 BTS, Pico BTS
- BTS Power Level:
  Select the BTS power level for the measurement target.
- Pulse Shaping:
  Select the type of Pulse Shaping filter applied to the DUT signal.
  Narrow, Wide
- Power Control Level:
  Select the MS power control levels for the measurement target.

Measurement Functions

Modulation analysis and Tx power measurement for GSM/EDGE/base station for EDGE Evolution/terminal/device component development performed at high speed and high accuracy

Modulation Analysis

Text Display

- Frequency Error *
- EVM (rms) *
- EVM (peak) *
- Magnitude Error (rms) *
- Phase Error (rms)
- Phase Error (peak) **
- Origin Offset *
- 95th percentile *
- Droop *

*: Exclude GMSK

**: GMSK only

Graph Display

- Constellation
- EVM vs Symbol *
- Magnitude Error vs Symbol *
- Phase Error vs Symbol

Burst Average Power

Output RF Spectrum

Text Display

- Reference Power
- Modulation Pass/Fail
- MKR

Graph Display

- Modulation
- Switching
- Numeric

Power vs Time

Text Display

- Slot Power: Avg/Max/Min
- Slot Status: Active/Inactive
- Judge: Pass/Fail

Graph Display

- Rise and Fail
- Slot
- Frame

Modulation Analysis (1/3)

GSM, EDGE and EDGE Evolution signals can be analyzed.
The frequency and vector error (Avg/Max) are displayed as numerics, while the constellation and vector error vs. symbol are displayed as graphs.

Modulation Analysis Screen

Constellation

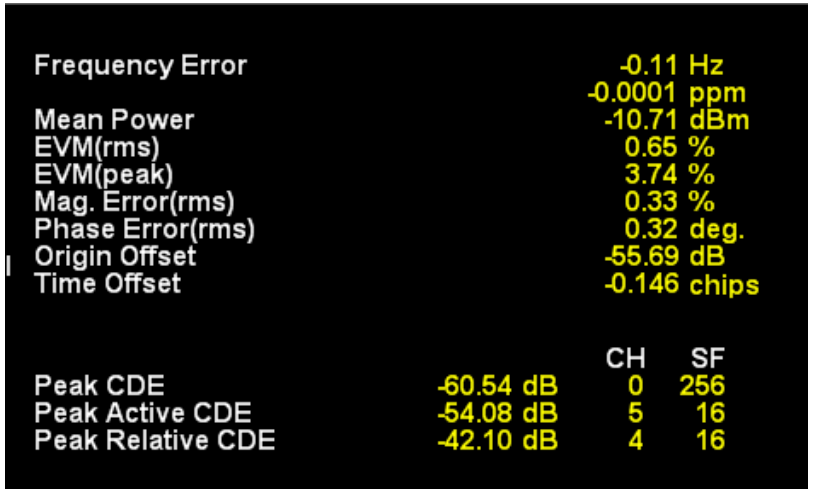
Text Display

Graph Display

Modulation Analysis (2/3)

Text Display

The Result window shows the numerical results.



- Frequency Error:
  Displays frequency error of analyzed signal in Hz and ppm units
- EVM (rms)*: Displays input signal EVM as RMS value
- EVM (peak)*: Displays peak EVM value of input signal
- Magnitude Error (rms)*:
  Displays amplitude error between input signal and ideal signal as RMS value
- Phase Error (rms):
  Displays phase error between input signal and ideal signal as RMS value
- Phase Error (peak)**:
  Displays peak phase error between input signal and ideal signal
- Origin Offset*: Displays Origin Offset of input signal
- 95th percentile*: Displays 95th percentile of input signal
- Droop*:
  Displays the Droop value of the analysis signal in dB and nepers/s.

*: Excluding GMSK

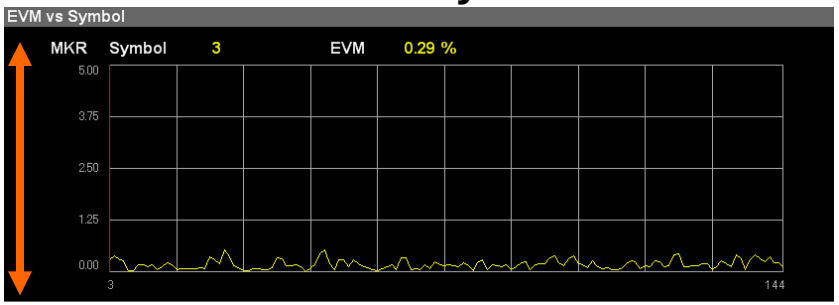
**: GMSK only

Modulation Analysis (3/3)

Vector, amplitude and phase errors can be graphed on the vertical axis to easily find instantaneous symbol-dependent signal degradation.

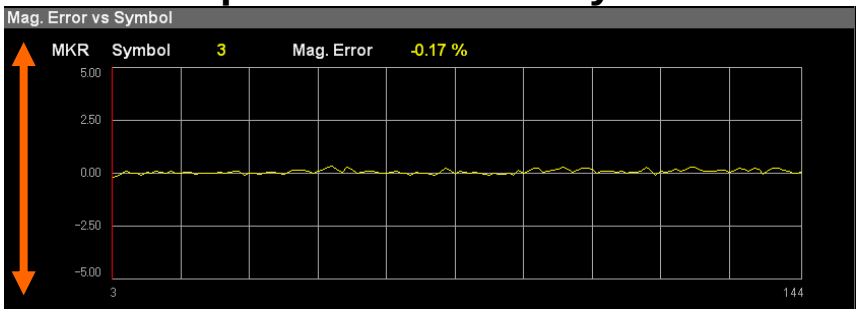
Modulation Analysis

EVM vs. Symbol



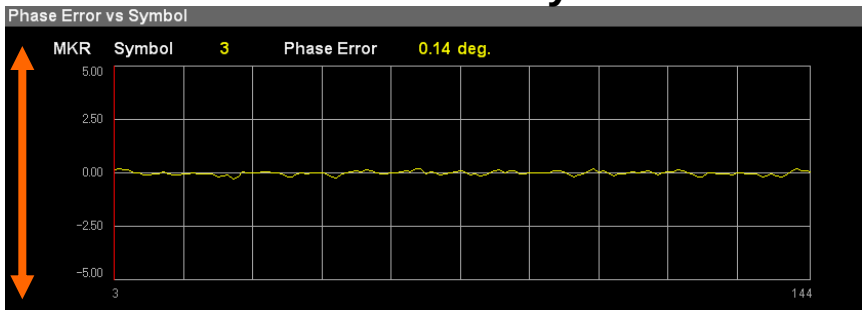
EVM

Amplitude Error vs. Symbol



Amplitude Error

Phase Error vs. Symbol



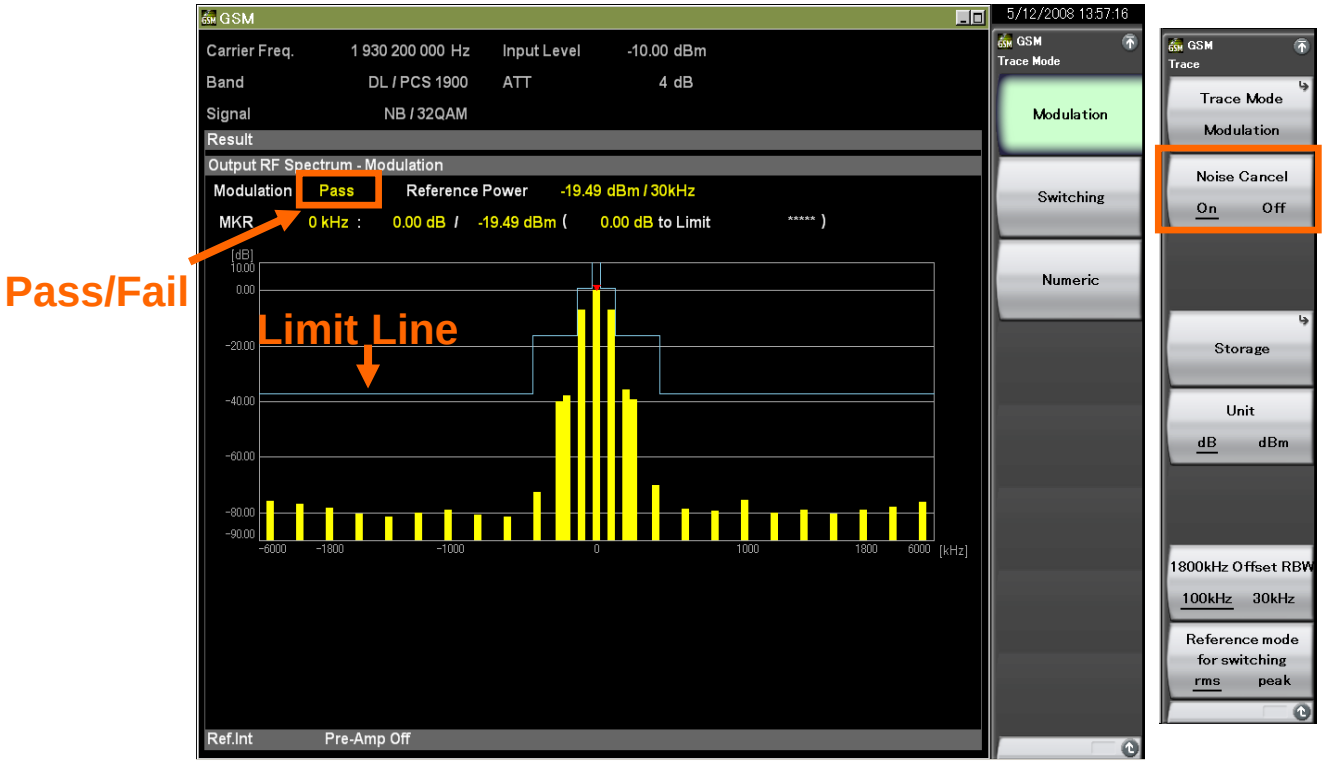
Phase Error

Output RF Spectrum (1/4)

Modulation

This function supports measurement of the output RF spectrum modulation specified by 3GPP TS45.005. Pass/fail is evaluated from the limit line.

Output RF Spectrum (Modulation)



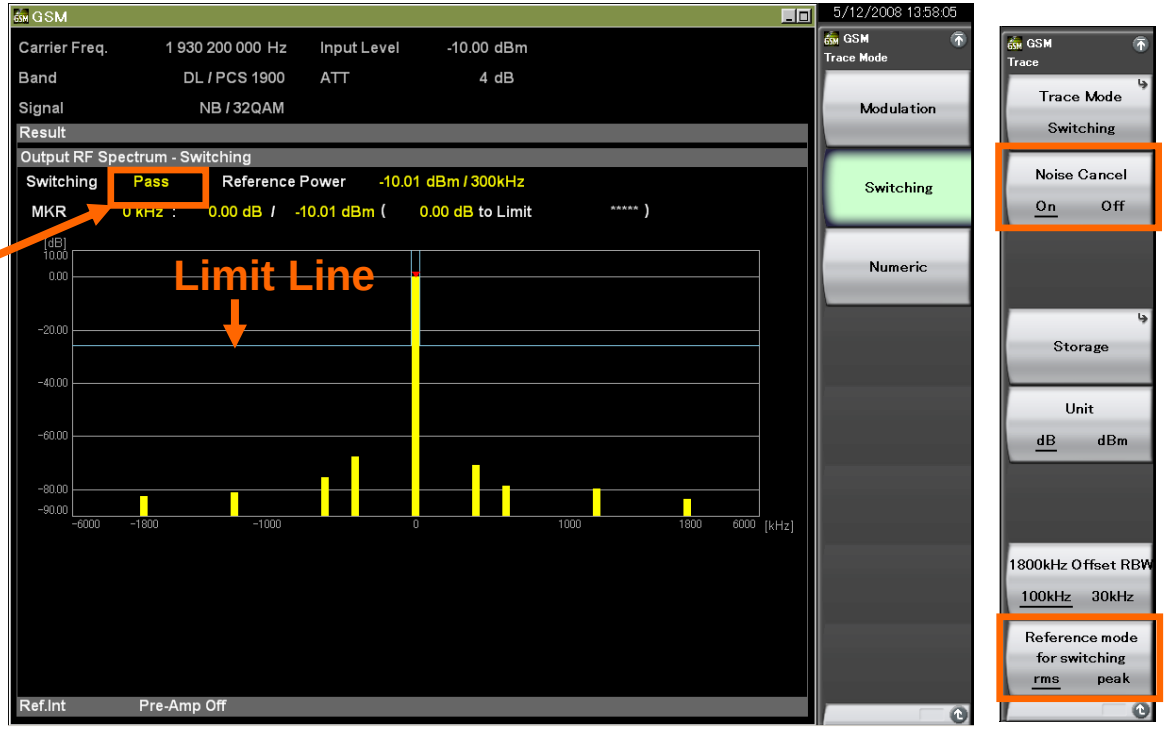
- **Noise Cancel:**
  Noise cancellation function ON/OFF
  (subtracts main-frame noise from measurement result)

Output RF Spectrum (2/4)

Switching

This function supports measurement of the output RF spectrum switching (rise/fall part) specified by 3GPP TS45.005. Pass/fail is evaluated from the limit line.

Output RF Spectrum (Switching)



- **Noise Cancel:**
  Noise cancellation function ON/OFF
  (subtracts main-frame noise from measurement result)

- **Reference mode for switching:**
  This sets Reference Power for the Switching measurement.
  rms: Sets the power measured at Detection=RMS to the Reference Power.
  peak: Sets the power measured at Detection=Peak to the Reference Power.

Output RF Spectrum (3/4)

Numeric

The modulation and switching output RF spectrum measurement results are listed for simultaneous pass/fail evaluation.

Output RF Spectrum (Numeric)

Modulation

Switching

- **Noise Cancel:**
  Noise cancellation function ON/OFF
  (subtracts main-frame noise from measurement result)

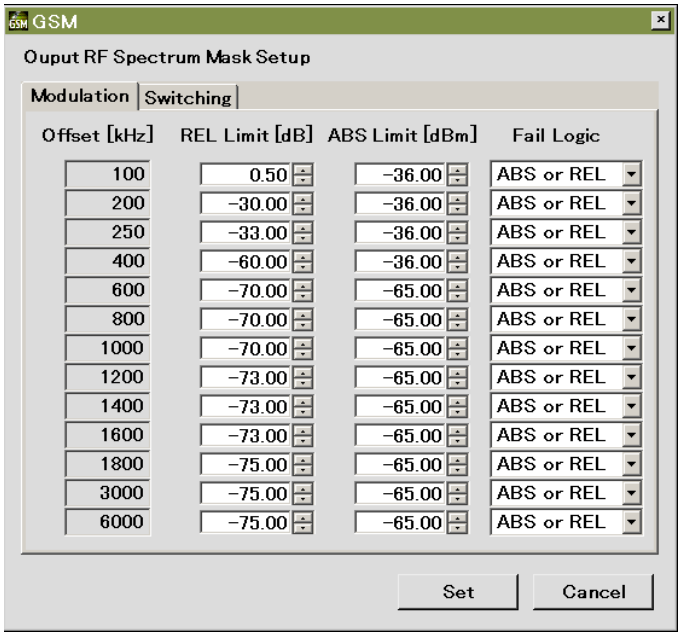
- **Reference mode for switching:**
  This sets Reference Power for the Switching measurement.
  rms: Sets the power measured at Detection=RMS to the Reference Power.
  peak: Sets the power measured at Detection=Peak to the Reference Power.

Output RF Spectrum (4/4)

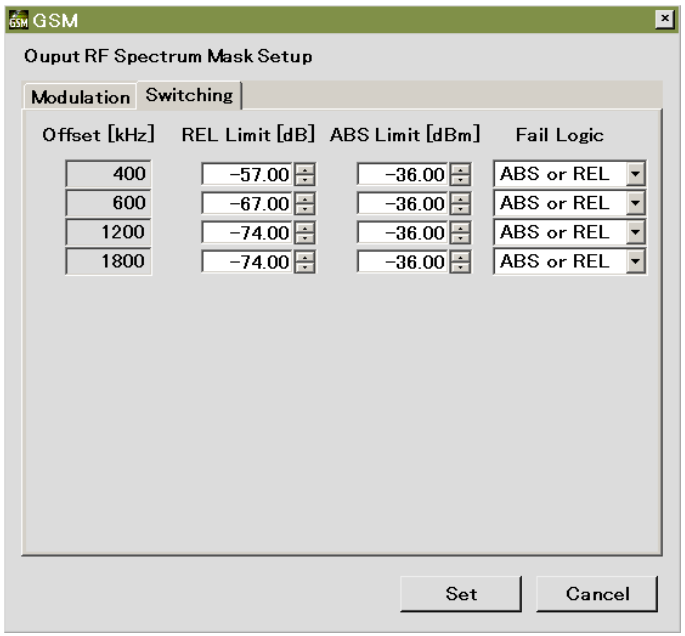
Mask Template Editing

This function supports editing of the mask template for the output RF spectrum. Listed setting parameters can be changed easily.

Mask Setting (Modulation)



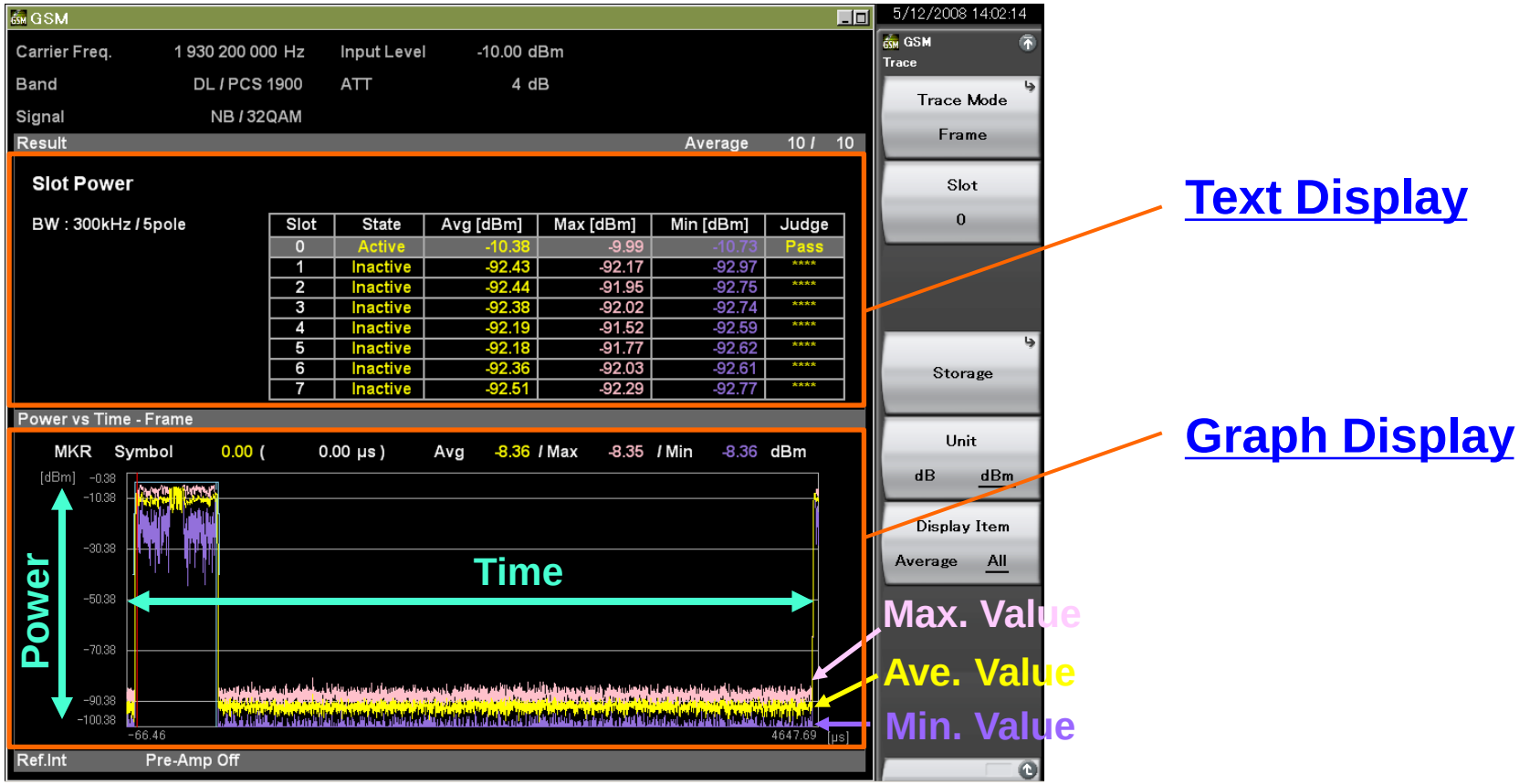
Mask Setting (Switching)



Power vs. Time (1/4)

The slot power results are listed and symbol power vs. time is graphed. Avg, max, and min values are displayed.

Power vs. Time Screen



Power vs. Time (2/4)

Text Display

The Result window shows the numerical results.

Slot Power

BW : 300kHz / 5pole

Time Offset 10.94 µs

Slot	State	Avg [dBm]	Max [dBm]	Min [dBm]	Judge
0	Active	-10.43	-10.43	-10.43	Pass
1	Active	-10.43	-10.43	-10.43	Pass
2	Active	-10.43	-10.43	-10.43	Pass
3	Active	-10.43	-10.43	-10.43	Pass
4	Active	-10.43	-10.43	-10.43	Pass
5	Active	-10.43	-10.43	-10.43	Pass
6	Active	-10.43	-10.43	-10.43	Pass
7	Inactive	-91.78	-91.65	-91.88	****

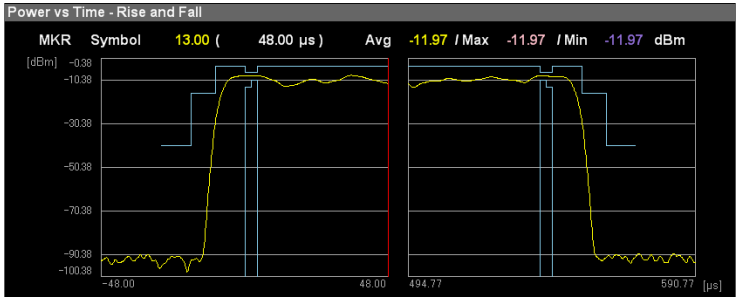
- Slot Power: Avg/Max/Min:
  Displays power for 8 consecutive slots from measurement target head slot
- Slot Status: Active/Inactive:
  Displays Active/Inactive status for 8 consecutive slots from measurement target head slot
- Judge: Pass/Fail:
  Displays mask evaluation result for Symbol Power at each measurement target slot (8 slots)

Power vs. Time (3/4)

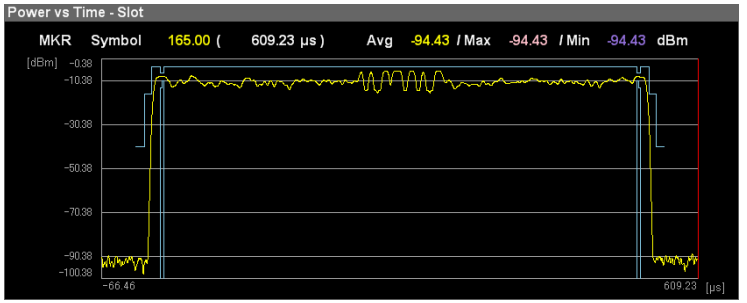
The change in DUT output power over time can be observed using three rising/falling, slot, and frame displays. Pass/fail is evaluated using the template.

Power vs. Time

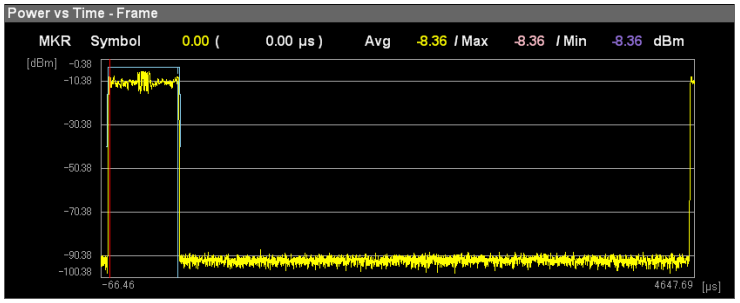
Rising/Falling



Slot



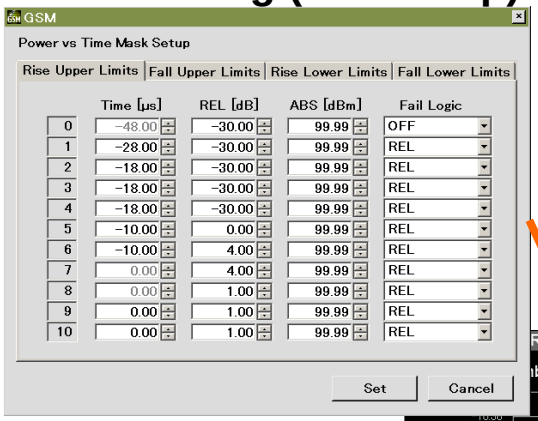
Frame



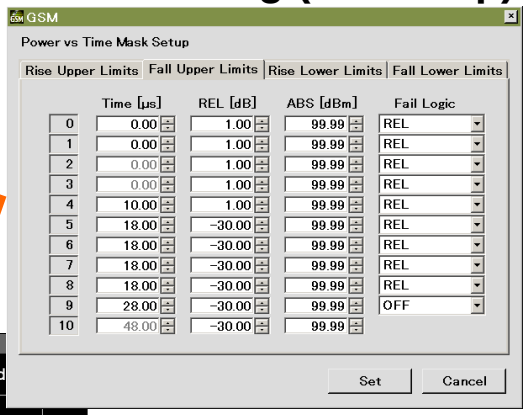
Power vs. Time (4/4)

This function supports editing of the mask template for power vs. time. Listed setting parameters can be changed easily.

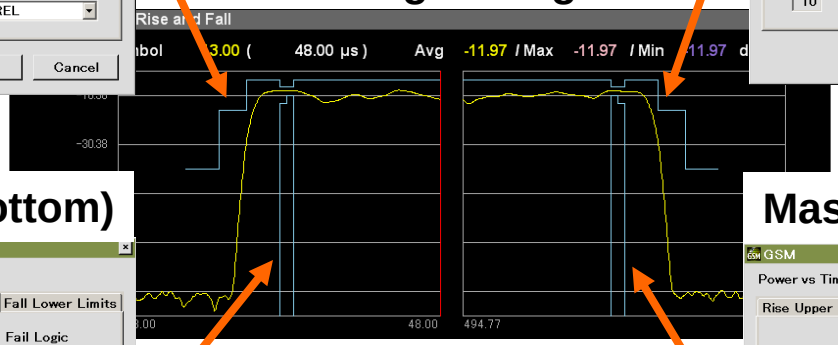
Mask Setting (rise at top)



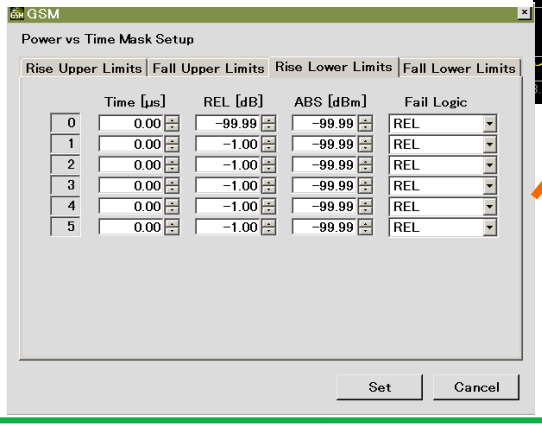
Mask Setting (fall at top)



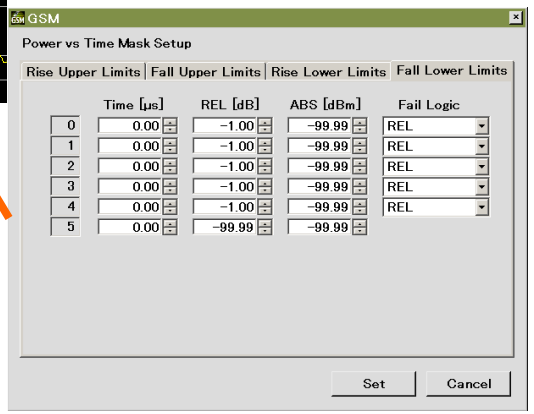
Rising/Falling



Mask Setting (rise at bottom)



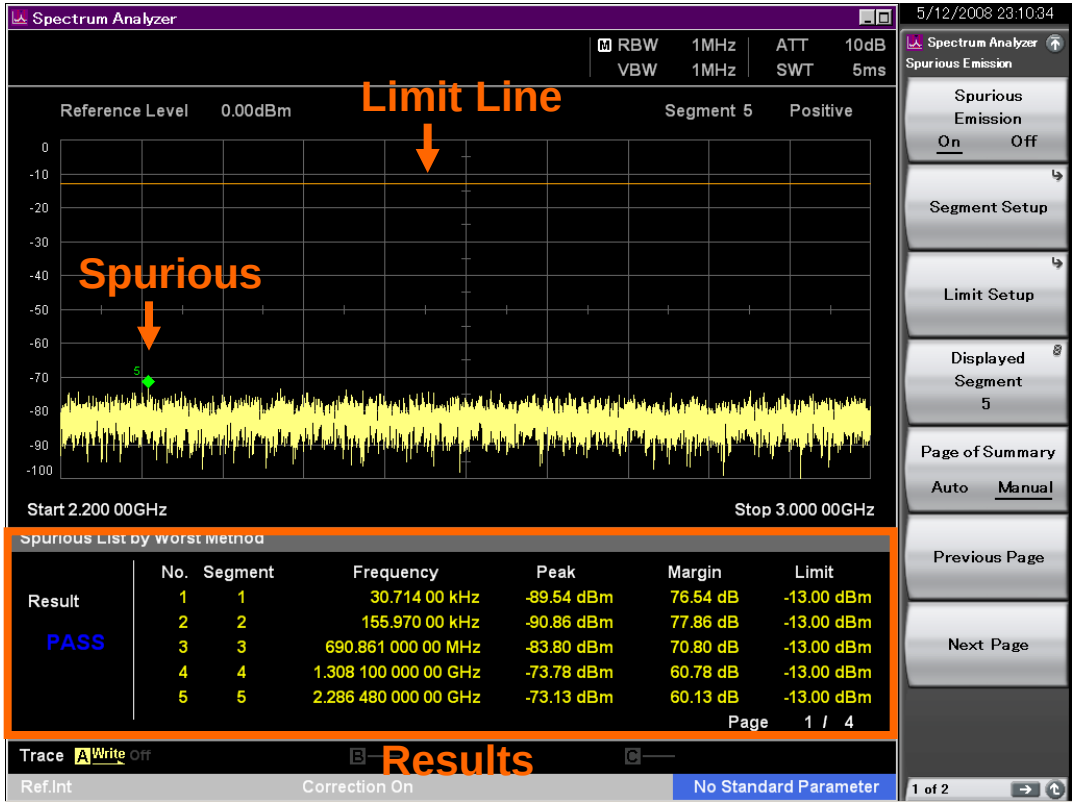
Mask Setting (fall at bottom)



Spurious Emission (Mainframe Function)

The peak frequency and level in each segment and the standard margin are displayed; parts exceeding the limit line are indicated in red. The limit line and measurement method can be set for up to 20 segments.

Spurious Emission Measurement



Specifications

All 3GPP TS45.005 (Rel. 8) RF Tx tests of GSM/EDGE/EDGE Evolution systems are supported.

3GPP TS45.005 Transmitter Characteristics		Software	SPA
4.1	Output Power	Yes	
4.2	Output RF spectrum		
4.2.1	Spectrum due to modulation and wideband noise	Yes	
4.2.2	Spectrum due to switching transients	Yes	
4.3	Spurious emissions	No	Yes
4.4	Radio frequency tolerance	Yes	
4.5	Output level dynamic operation	Yes	
4.6	Modulation accuracy		
4.6.1	GMSK Modulation	Yes	
4.6.2	QPSK, 8-PSK, 16-QAM and 32-QAM modulations		
4.6.2.1	RMS EVM	Yes	
4.6.2.2	Origin offset suppression	Yes	
4.6.2.3	Peak EVM	Yes	
4.6.2.4	95th percentile	Yes	
4.7	Intermodulation attenuation	Yes	

*ATT, filters and amplifiers required as necessary

Anritsu

Specifications are subject to change without notice.

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