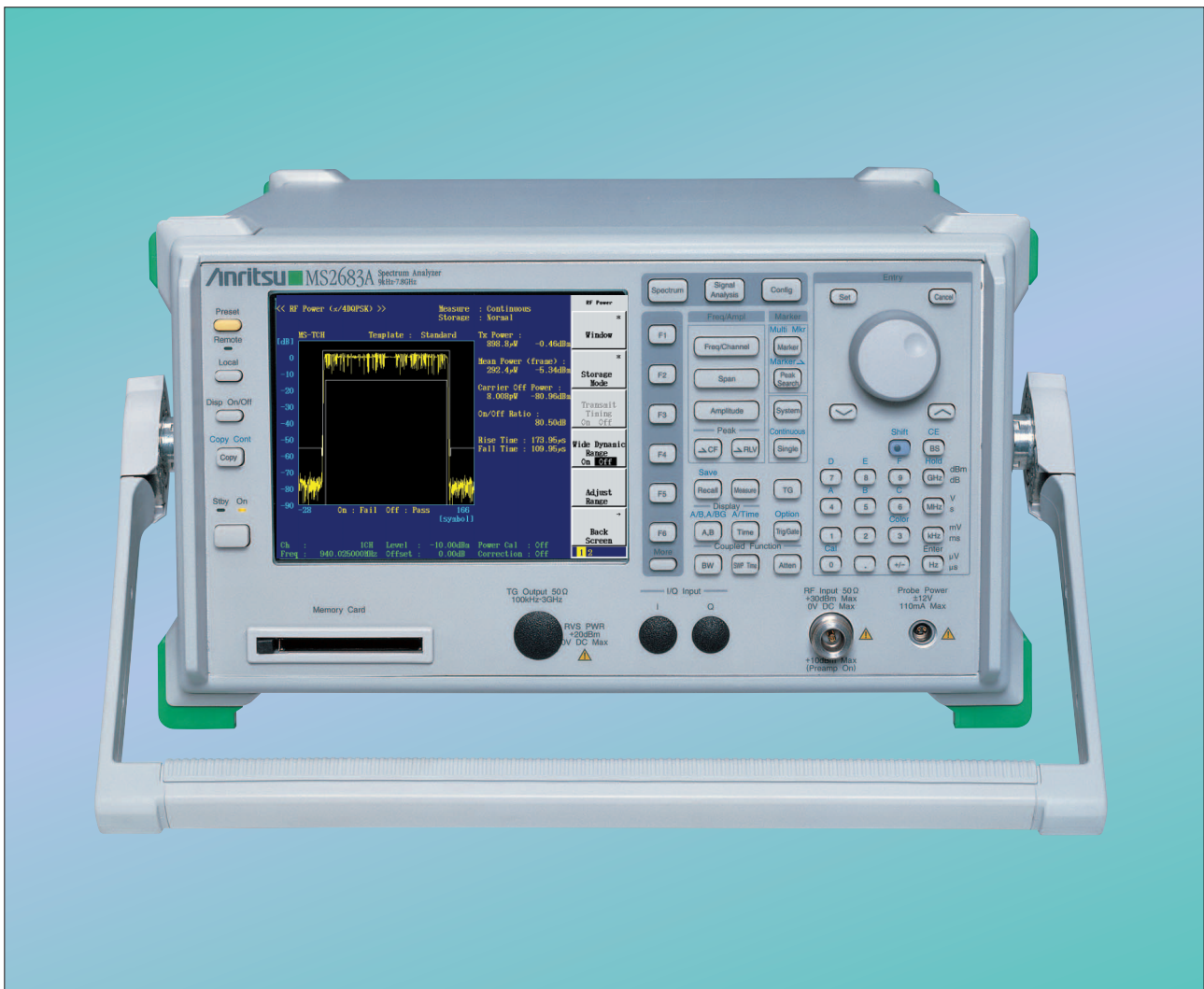




Discover What's Possible™

Anritsu

# MX268105A/268305A/268705A $\pi/4$ DQPSK Measurement Software (For MS2681A/MS2683A/MS2687B Spectrum Analyzer)



*For evaluation of PDC/PHS/NADC (IS-136), STD-39/T79, STD-T61 transmission*

# Supporting PDC, PHS, NADC (IS-136), STD-39/T79, STD-T61

## Evaluation of $\pi/4$ DQPSK transmission systems with one tester

The MX268105A/MX268305A/MX268705A application software is used with the MS2681A/MS2683A/MS2687B Spectrum Analyzer to evaluate transmission systems in conformance with the PDC, PHS, NADC (IS-136) standards and general purpose.

### • Measurement Items by MX268103A/268303A/268703A

Modulation analysis:

Carrier frequency, vector error, phase error, magnitude error

Amplitude measurement:

Transmitter power, carrier-off leakage power, rise/fall characteristics

Adjacent channel power measurement

Spurious measurement

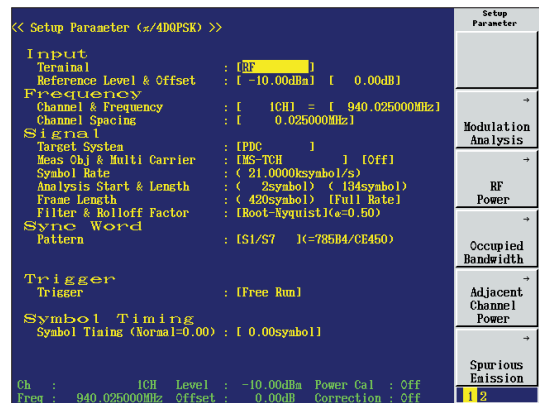
Occupied bandwidth measurement

IQ level measurement

General purpose measurement

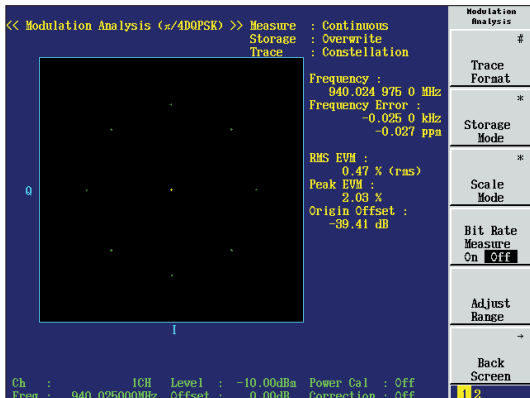
## Parameter Setting

Analysis of PDC, PHS and NADC (IS-136) systems requires setting of parameters for important measurement such as modulation accuracy at this screen. Changing the symbol rate also permits analysis of systems other than PDC, PHS and NADC.



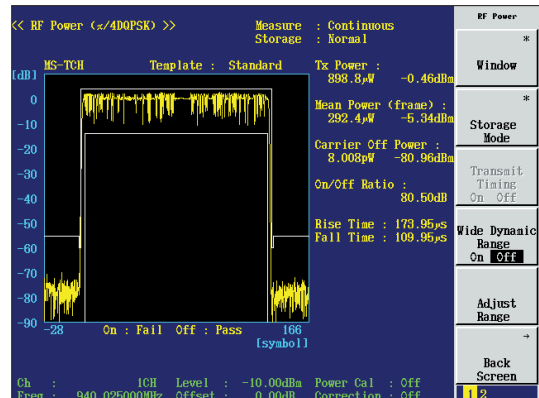
## Modulation Accuracy Measurement

The constellation display is combined with the modulation accuracy measurement results to monitor the residual vector error (rms) with a high accuracy of 0.5% (PDC).



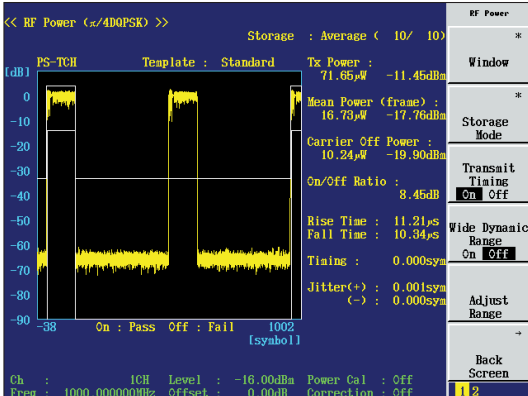
## Transmitter Power Measurement

This screen displays the transmitter power and waveform.



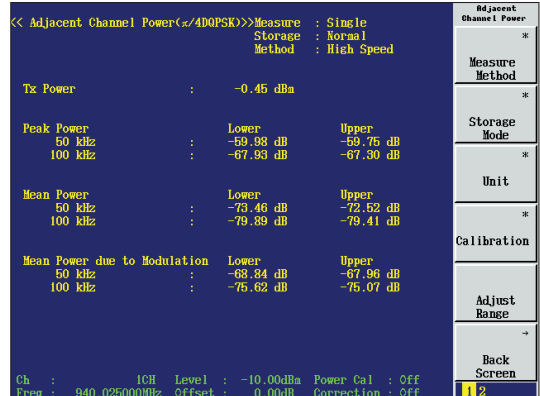
## Send Timing Measurement

This screen displays the PHS send timing. In addition, when average measurement is selected, the send jitter is also displayed.



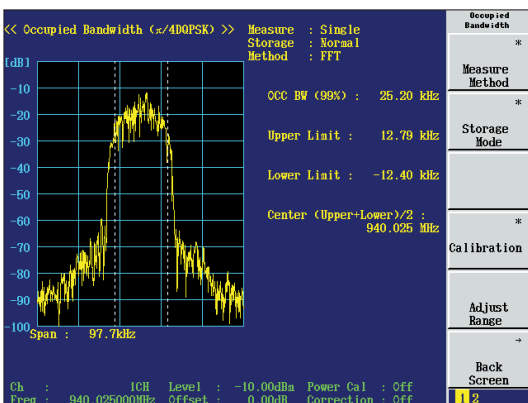
## Adjacent Channel Power Measurement

When measurement is performed using a spectrum analyzer, the adjacent channel power is measured after passage through a built-in filter (root Nyquist). A high-speed measurement method can also be selected.



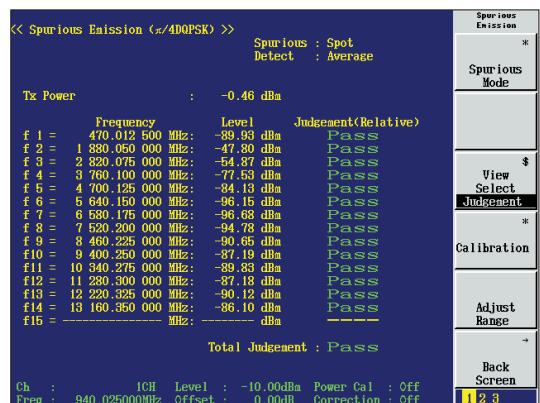
## Occupied Bandwidth Measurement

The occupied bandwidth is measured with a spectrum analyzer or by FFT using DSP, and displayed.



## Spurious Measurement

There are three methods: spot, sweep and search. Frequency and limit value can be set maximum 15 in the tables. The measurement results are displayed with a limit evaluation.





# Specifications

Following specifications are guaranteed after optimized internal level (Range of internal receiver is automatically adjusted by pushing Adjust Range key).

The “pre-amp On” of MS2681A and MS2683A can be set up when MS2681A-08/MS2683A-08 of an option are carried.

Model	MS2681A	MS2683A	MS2687B
Modulation/ frequency measurement	Measurement frequency range	50 MHz to 2.1 GHz	
	Measurement level range	-40 to +30 dBm (average power within burst, pre-amp off) -60 to +10 dBm (average power within burst, pre-amp on)	-30 to +30 dBm (average power within burst)
	Carrier frequency accuracy*1	± (reference oscillator accuracy + 10 Hz)	
	Modulation accuracy (residual vector error)*1	Averaging: 10 times <0.5 %(rms) (PDC, NADC), <0.7 %(rms) (PHS)	
	Origin offset accuracy*1	Relative to signal with origin offset of -30 dBc: ±0.50 dB	
	Transmission rate accuracy*1	±1 ppm	
	Waveform display	Constellation, eye diagram, EVM vs. symbol No., phase error vs. symbol No., amplitude error vs. symbol No.	
Amplitude measurement	Frequency range	50 MHz to 2.1 GHz	
	Measurement level range	-40 to +30 dBm (average power within burst, pre-amp off) -60 to +10 dBm (average power within burst, pre-amp on)	-30 to +30 dBm (average power within burst)
	Tx power measurement range	-10 to +30 dBm (average power within burst, pre-amp off) -10 to +10 dBm (average power within burst, pre-amp on)	-10 to +30 dBm (average power within burst)
	Tx power measurement accuracy	±2 dB typical	
	Power measurement linearity	Unchanged reference level setup after range adjustment ±0.20 dB (0 to -30 dB)	
	Carrier-off power measurement*2	Normal mode measurement range: ≥65 dB (PDC, NADC), ≥60 dB (PHS) (Relative to average power within burst) Wide dynamic range mode measurement range: ≥90 dB [measurement limits of average noise level: ≤-80 dBm (50 MHz to 2.1 GHz)] (PDC, NADC) ≥80 dB [measurement limits of average noise level: ≤-70 dBm (50 MHz to 2.1 GHz)] (PHS)	
	Rise/fall characteristics	Display rising/falling edges while synchronizing to modulation data of signal data to be measured. Standard line display, NO/GO judgement function	
Occupied bandwidth measurement	Frequency range	50 MHz to 2.1 GHz	
	Measurement level range	-40 to +30 dBm (average power within burst, pre-amp off) -60 to +10 dBm (average power within burst, pre-amp on)	-30 to +30 dBm (average power within burst)
	Measurement method	Sweep method: Calculates and displays result after signal measured with sweep spectrum analyzer FFT method: Calculates and displays result after FFT	
Adjacent channel power measurement	Frequency range	100 MHz to 2.1 GHz	
	Input level range	-10 to +30 dBm (average power within burst, pre-amp off) -20 to +10 dBm (average power within burst, pre-amp on)	-10 to +30 dBm (average power within burst)
	Measurement method	Sweep method (all): Calculates and displays result after signal measured with sweep spectrum analyzer Sweep method (separate): Calculates and displays after measuring adjacent channel and next adjacent channel signal with sweep spectrum analyzer High-speed method: Calculates and displays after measuring adjacent channel and next adjacent channel power (rms) through internal receive filter	
	Measurement range	CW signal input, at high-speed method) PDC: ≥60 dB (50 kHz offset), ≥65 dB (100 kHz offset) PHS: ≥60 dB (600 kHz offset), ≥60 dB (900 kHz offset) NADC: ≥30 dB (30 kHz offset), ≥60 dB (60 kHz offset), ≥65 dB (90 kHz offset) (Adjacent channel power averaging ratio found from average power within burst and during burst on interval)	

Model	MS2681A	MS2683A	MS2687B	
Spurious measurement	Measurement frequency range	10 MHz to 3.0 GHz (except within carrier frequency $\pm 50$ MHz)	10 MHz to 7.8 GHz (except within carrier frequency $\pm 50$ MHz)	10 MHz to 12.75 GHz (except within carrier frequency $\pm 50$ MHz)
	Input level range (Tx power)	0 to +30 dBm (average power within burst)		
	Measurement method	Sweep method: Sweeps the specified range of frequency using the spectrum analyzer, and then detects and displays the peak value. Calculates the rate for transmission power value and displays it as power rate. Waveform detection mode: average Spot method: Measures the specified frequency with time domain from the spectrum analyzer and then displays the average value. Calculates the rate for transmission power value and displays it as power rate. Waveform detection mode: average Search method: Sweeps the specified frequency range using the spectrum analyzer to detect the peak value, then measures the frequency using the time domain to display the average value. Calculates the rate for transmission power value and displays it as power rate. Waveform detection mode: average		
Electric performance (IQ input)*3	Input impedance	1 M $\Omega$ (parallel capacitance: <100 pF), 50 $\Omega$		
	Balance input	Differential voltage: 0.1 to 1 Vp-p In-phase voltage: $\pm 2.5$ V	-	
	Unbalance Input	0.1 to 1 Vp-p DC/AC coupling: Changeable		
	Measurement items	Modulation accuracy, amplitude, occupied bandwidth (FFT method), IQ level		
	Modulation accuracy measurement	Input level: 0.1 V (rms) *Temperature range: +18° to +28°C Residual vector error PDC/NADC: <0.5 % (rms) *Typical, DC coupling PHS: <0.7 % (rms) *Typical, DC coupling		
	IQ level measurement	Level measurement: Measurement and display each I, Q input voltage (rms, p-p)		
	IQ phase difference measurement	Phase difference between I and Q phase signals when CW signal input to I and Q input terminals		

\*1 [MS2687B] Input level:  $\geq -30$  dBm  
 [MS2681A/MS2683A] Input level  $\geq -30$  dBm (pre-amp off),  $\geq -40$  dBm (pre-amp on)

\*2 [MS2687B] Input level:  $\geq -10$  dBm  
 [MS2681A/MS2683A] Input level:  $\geq -10$  dBm (pre-amp off),  $\geq -20$  dBm (pre-amp on)

\*3 Specifications of electric performance are applied when the following option is mounted.  
 [MS2681A] MS2681A-17, MS2681A-18  
 [MS2683A] MS2683A-17, MS2683A-18  
 [MS2687B] MS2687B-18



# Ordering Information

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

Model/Order No.	Name
MX268105A	<b>Main frame</b>
MX268305A	$\pi$ /4DQPSK Measurement Software (for MS2681A)
MX268705A	$\pi$ /4DQPSK Measurement Software (for MS2683A)
	$\pi$ /4DQPSK Measurement Software (for MS2687B)
	<b>Standard accessories</b>
JT32MA3-NT1	PC-ATA card (32 MB, for backup): 1 pc
W1866AE	$\pi$ /4DQPSK measurement software operation manual (Vol. 1): 1 copy



Specifications are subject to change without notice.

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