Application Note

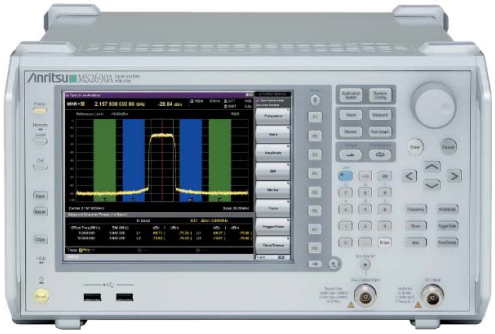
Anritsu

Introduction of Digitize Function

MS269xA
Signal Analyzer

MS269xA Signal Analyzer
MS269xA-020 Vector Signal Generator (Option)

Introduction to Digitize Function



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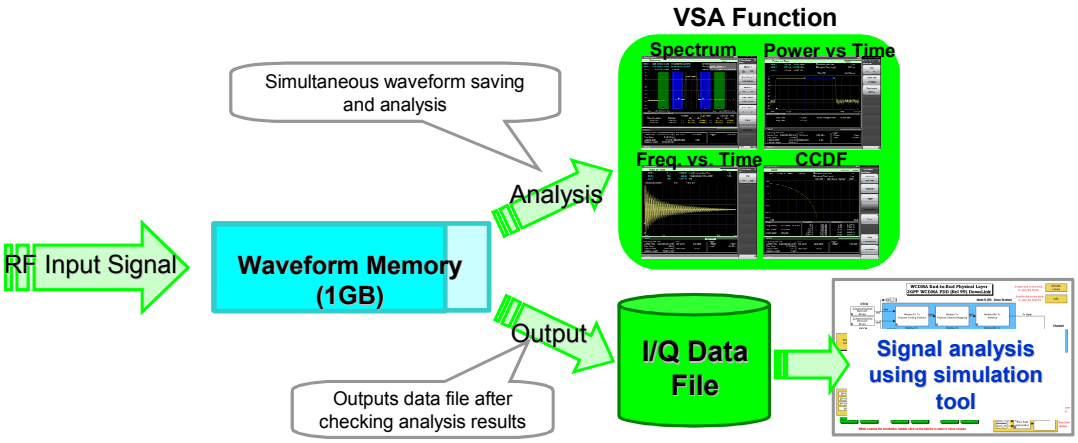
Anritsu Corporation

Digitize Function

The Digitize function records sampled RF input signals in waveform memory as I/Q data. I/Q data in waveform memory can be used by the Vector Signal Analysis (VSA) function and by simulation tools.



Key Features of Digitize Function

★**Max 125 MHz broadband signals capturing**

★**Long time capturing with no signal dropout**

★**Easy re-sampling function**

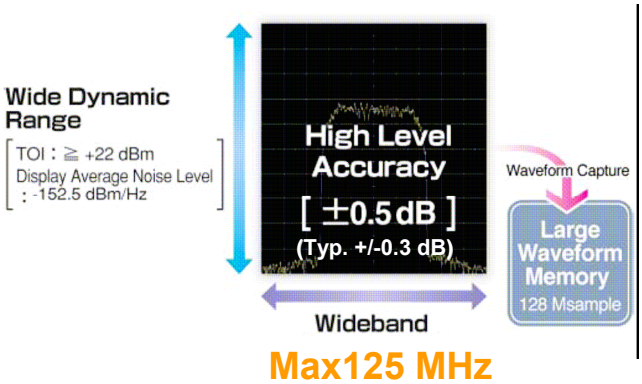
★**No-calibration absolute values data recording**

★**Easy file reading with simulation tool**

Max 125 MHz Broadband Signals Capturing

The MS269xA Digitize function support sampling with maximum resolution of 200 Msps/12 bit (standard: resolution of 50 Msps/16 bit) and recording RF signal up to 6 GHz that has 125 MHz (standards: 31.25 MHz) band width with high level accuracy and wide dynamic range.

Finely Record Wideband signal up to 6 GHz



Long Time Capturing with No Signal Dropout

The MS269xA Record up to 128M sampled data (I+Q phase) consecutively in the large-capacity waveform memory.

For example, it can records 1000 frames (10 s) of W-CDMA (FDD) 5 MHz band signal.

•Frequency
50Hz to 6 GHz (MS2690A)
50Hz to 13.5 GHz (MS2691A)
50Hz to 26.5 GHz (MS2692A)

•Frequency Span
1 kHz to 31.25 MHz
1 kHz to 120 MHz (Opt-004)

•Sampling Rate
2 kHz to 50 MHz
2 kHz to 200 MHz (Opt-004)
(Automatic frequency span setting)

•Attenuator: 0 to 60 dB

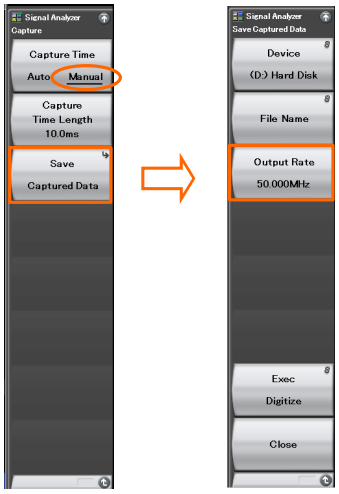
•Trigger: Wide IF Video/External/ SG Marker

Frequency Span	Sampling Rate	Max. Capture Time
1 kHz	2 kHz	2000 s
2.5 kHz	5 kHz	2000 s
5 kHz	10 kHz	2000 s
10 kHz	20 kHz	2000 s
25 kHz	50 kHz	2000 s
50 kHz	100 kHz	1000 s
100 kHz	200 kHz	500 s
250 kHz	500 kHz	200 s
500 kHz	1 MHz	100 s
1 MHz	2 MHz	50 s
2.5 MHz	5 MHz	20 s
5 MHz	10 MHz	10 s
10 MHz	20 MHz	5 s
25 MHz	50 MHz	2 s
31.25 MHz	50 MHz	2 s
50 MHz	100 MHz	500 ms
100 MHz	200 MHz	500 ms
125 MHz	200 MHz	500 ms

Opt-004 is necessary

Resample Function

Resampling function allows to convert captured waveform data sampling rate to user-specified sampling rate by simple operation.



Frequency Span	Output Rate		
	Minimum	Maximum	Resolution
1 kHz	1 kHz	2 kHz	0.001kHz
2.5 kHz	2 kHz	5 kHz	0.001kHz
5 kHz	5 kHz	10 kHz	0.001kHz
10 kHz	10 kHz	20 kHz	0.001kHz
25 kHz	20 kHz	50 kHz	0.001kHz
50 kHz	50 kHz	100 kHz	0.01kHz
100 kHz	100 kHz	200 kHz	0.01kHz
250 kHz	200 kHz	500 kHz	0.01kHz
500 kHz	500 kHz	1 MHz	0.1kHz
1 MHz	1 MHz	2 MHz	0.0001MHz
2.5 MHz	2 MHz	5 MHz	0.0001MHz
5 MHz	5 MHz	10 MHz	0.001MHz
10 MHz	10 MHz	20 MHz	0.001MHz
25 MHz	20 MHz	50 MHz	0.001MHz
31.25 MHz	20 MHz	50 MHz	0.001MHz
50 MHz *	50 MHz	100 MHz	0.01MHz
100 MHz *	100 MHz	200 MHz	0.01MHz
125 MHz *	100 MHz	200 MHz	0.01MHz

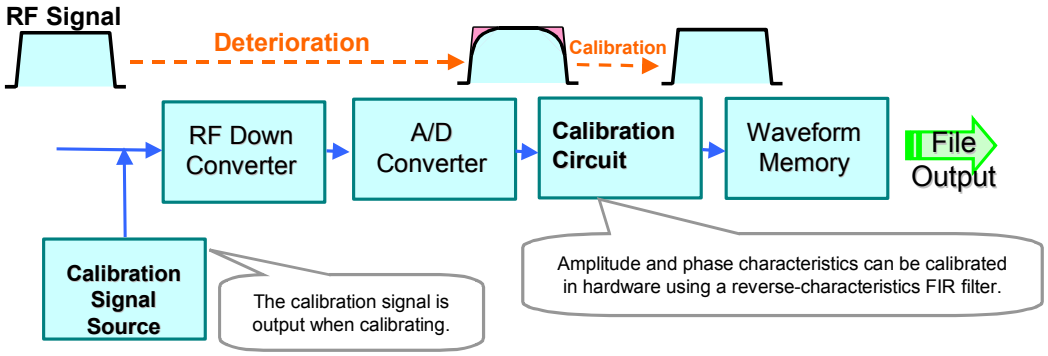
Opt-004 is necessary

*50 MHz, 100 MHz, and 125 MHz can be set only when Option 004 Wideband Analysis Hardware is installed.

No-calibration Absolute Values Data Recording

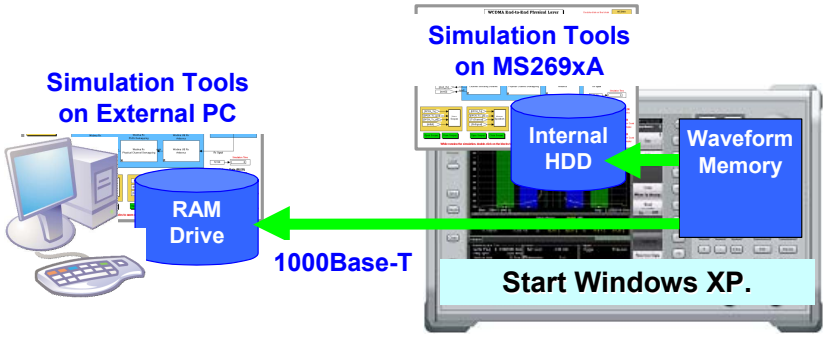
Usually, modulation/phase errors are observed with RF signal in the process of down-convert etc., so error calibration is necessary in the signal analysis.

Due to the unique modulation and phase calibration circuit, the MS269xA record data as absolute values by calibrating measurement instrument internal error in real time. Captured data with the MS29xA can be used with customers' analysis tools/programs without expert calibration knowledge.



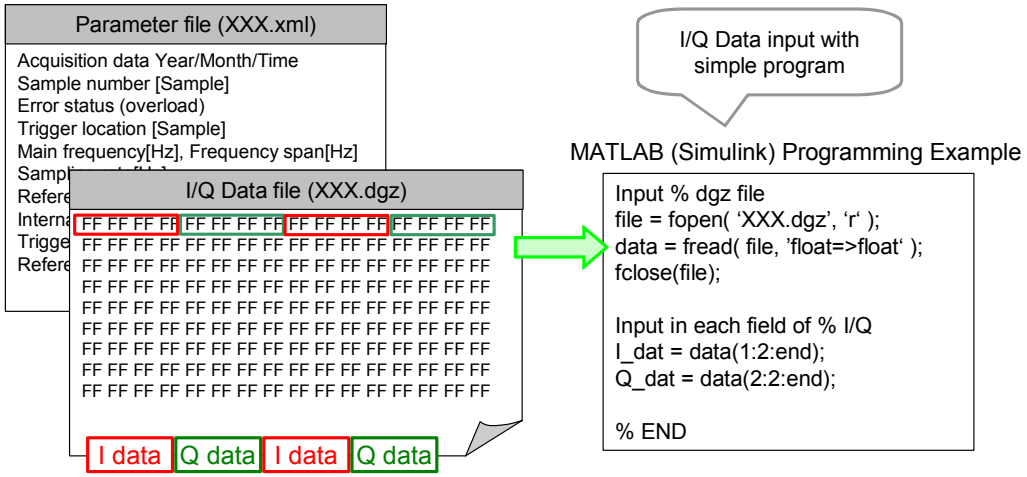
Easy File Reading with Simulation Tool (1)

A sampling data file can be created on a specified drive (hard disk/network drive/USB memory).
Creating a file on the internal hard disk allows simulation tools to run on the built-in Windows XP PC.
High-speed file transfer by 1000Base-T brings stress-free analysis in the simulation on external PC.



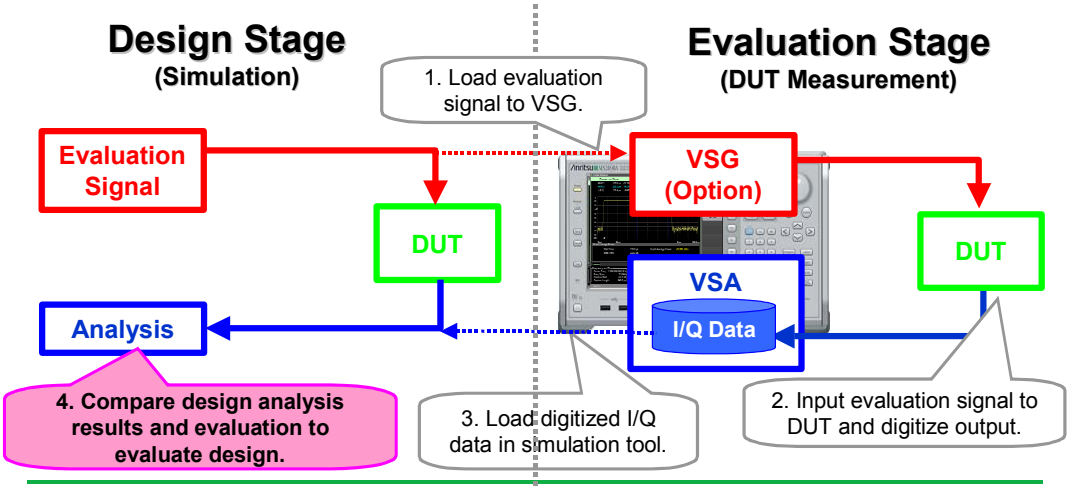
Easy File Reading with Simulation Tool (2)

Digitized parameter and I/Q data files can be output simultaneously. The I/Q data file format is binary in which each I/Q is recorded alternately as float format (4-byte), so it support easy-to-operate data input using simulation tools, such as MATLAB.



Application Example (1): Device Design

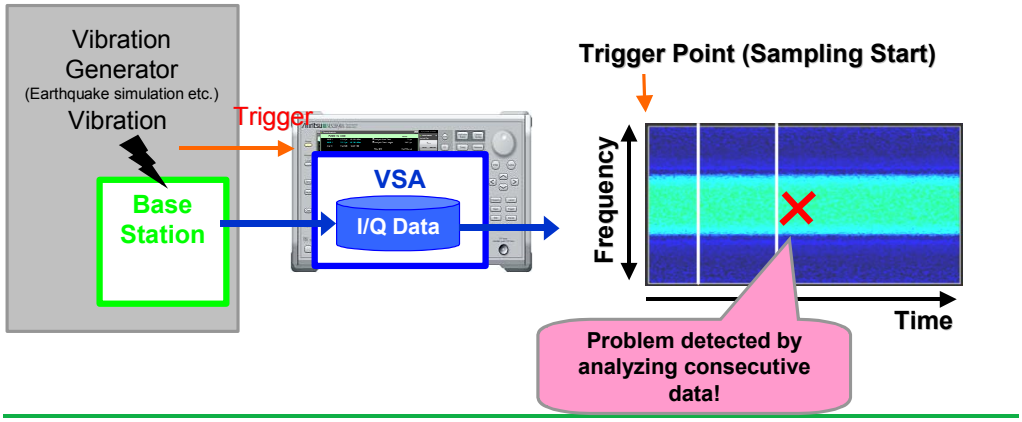
The Digitize function is useful for design feedback by comparing simulated results at the design stage and actual values at the evaluation stage. The MS269xA-020 Vector Signal Generator Option supports output of simulated evaluation signals.



Application Example (2): Environment Test

Transient phenomenon can be captured by analyzing consecutive sampling data recorded using an external trigger. Sampling can be started before trigger input by setting a trigger delay.

— Vibration Test Environment —



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