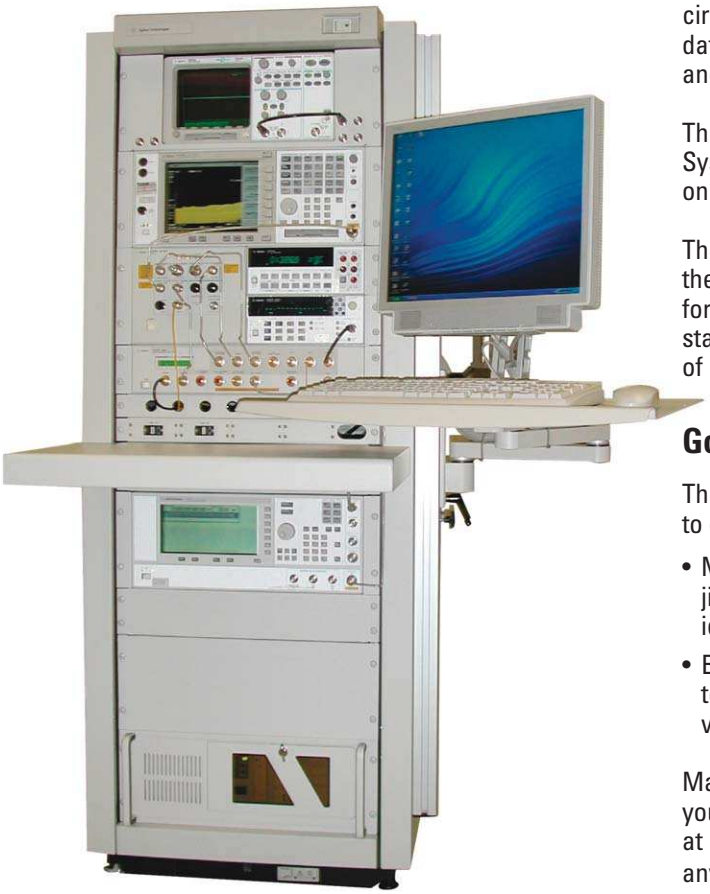
Agilent JS-500

Clock Jitter Solution

In-depth jitter characterization
of clocks from 50 kHz to 20 GHz



A fully integrated, turnkey solution

The Agilent JS-500 is a high-performance characterization and verification solution for testing electrical timing generators suchas VCOs, clock multipliers (CMUs), or instrument-grade signal generators. Wide frequency coverage supports testing of everything from low-frequency oscillators for general-purpose electronics to more highly-integrated digitally-controlled timing circuits for standard electrical and optical communications system data rates. Low system intrinsic jitter, an automated jitter test set, and simplified GUI ensure high accuracy and repeatability.

The JS-500 solution is a tailored Phase Noise Measurement System that performs absolute jitter generation measurements on clock sources from 50 kHz to 20 GHz.

The JS-500 was created for designers who want to differentiate their products on performance, time to market, or price. It allows for characterization of products to SONET/SDH jitter generation standards as well as IEC standards governing the quality of crystal-controlled oscillators.

Go beyond compliance testing

The JS-500 goes beyond compliance testing to ITU-T O.172 to offer ongoing competitive advantage in two areas:

- Maximum design insight through very low intrinsic jitter, narrow- band jitter spectral information, and spur identification and separation
- Broad application support for current and future telecom/datacom standards through continuously-variable frequency of test

Maximum frequency coverage means maximum ROA as you can reuse the same hardware set to test your devices at Ethernet, FibreChannel, and FEC rates today as well as any new standard rates that appear tomorrow.

Test system features and benefits

Agilent's JS-500 is a flexible platform designed to help you quickly respond to ever-changing manufacturing needs, such as the need to test diverse jitter frequencies.

Agilent's test system derives much of its accuracy and advanced diagnostic capability from using the E5505 series Phase Noise Solution, which allows you to examine clock jitter

in the frequency domain as well as the time domain. Measuring jitter in the frequency domain offers many advantages including:

Frequency domain rms noise measurements have very low intrinsic jitter; flexibility in the frequencies you measure beyond SONET/SDH data rates; diagnostic insight by viewing random and non-random (spur) components; and the capability to measure every zero-crossing on the incoming signal within 100 MHz of bandwidth.

In addition, the JS-500 system enables the user to easily setup band-limited peak-peak measurements for up to 500 seconds in which there is no processing 'dead time' in which a rare peak 'event' may be missed.

The JS-500 utilizes an automated jitter test set including a variety of standards-compliant peak-peak filters and frequency dividers to optimize measurement performance at frequencies below 250 MHz. The test set also contains signal conditioning and autoranging hardware to maximize the dynamic range of the measurement system both in terms of signal power and jitter deviation. Along with both single-ended and differential inputs, this allows the system to measure a variety of very low-jitter devices as well as clock signals that have been impaired with intentional noise, sinusoidal, or other jitter.

Tailored to your specific needs

Applications vary, so the Agilent JS-500 was designed to meet specific testing needs by offering flexible, tailored solutions for software, data acquisition, external switching, DUT power, DUT comms, facility interface, and power supplies. Agilent provides the expertise to incorporate additional measurement capabilities, such as calibrated impairments and wideband total jitter characterization using high-speed scopes as well as custom fixturing with RF enclosures specifi cally for your product. All JS platform and tailored solutions offer consulting and uptime support as well.

Typical Characteristics

	Min	Value	Max	Units	Notes
DUT Output Clock Rate	50 kHz		20 GHz		
DUT Output Level					50 ohm
Single-Ended:					
50 kHz to 10 MHz	0.63		20	V_{pp}	
10 MHz to 13 GHz	0.1		3.56	V_{pp}	
13 GHz to 20 GHz	0.63		20	V_{pp}	
Differential:					
10 MHz to 13 GHz	0.1		1	V_{pp}	
Jitter Measurement Ranges		0.03		UI_{pp}	
		0.06		UI_{pp}	
		0.12		UI_{pp}	
		0.24		UI_{pp}	
		0.48		UI_{pp}	
System Intrinsic Jitter					
600 MHz:					
1 kHz to 5 MHz			26	µUIrms	
20 kHz to 80 MHz			70	µUIrms	
10 GHz:					
20 kHz to 80 MHz			200	µUIrms	
Pk-Pk Jitter Accuracy	-10%		10%		measured value >10 × Intrinsic over pp bandpass
Pk-Pk Measurement Duration	2		500	s	
Pk-Pk Bandpass Filters	10 Hz, 10 kHz		100 kHz		
	20 Hz, 20 kHz		500 kHz		
	100 Hz, 50 kHz		1.5 MHz		
	1 kHz, 200 kHz		5 MHz		
	5 kHz, 500 kHz		15 MHz		
	5/12 kHz, 1 MHz		20 MHz		
	20 kHz, 50 kHz		80 MHz		
	2 MHz, 4 MHz		80 MHz		

Other features included:

Non-brickwall filter for RMS integration
Integrated peak event capture
Phase noise measurement GUI
Jitter generation measurement GUI
Remote interface to jitter measurement server
Industrial PC, LCD panel monitor, Windows XP

Technical data subject to change.

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