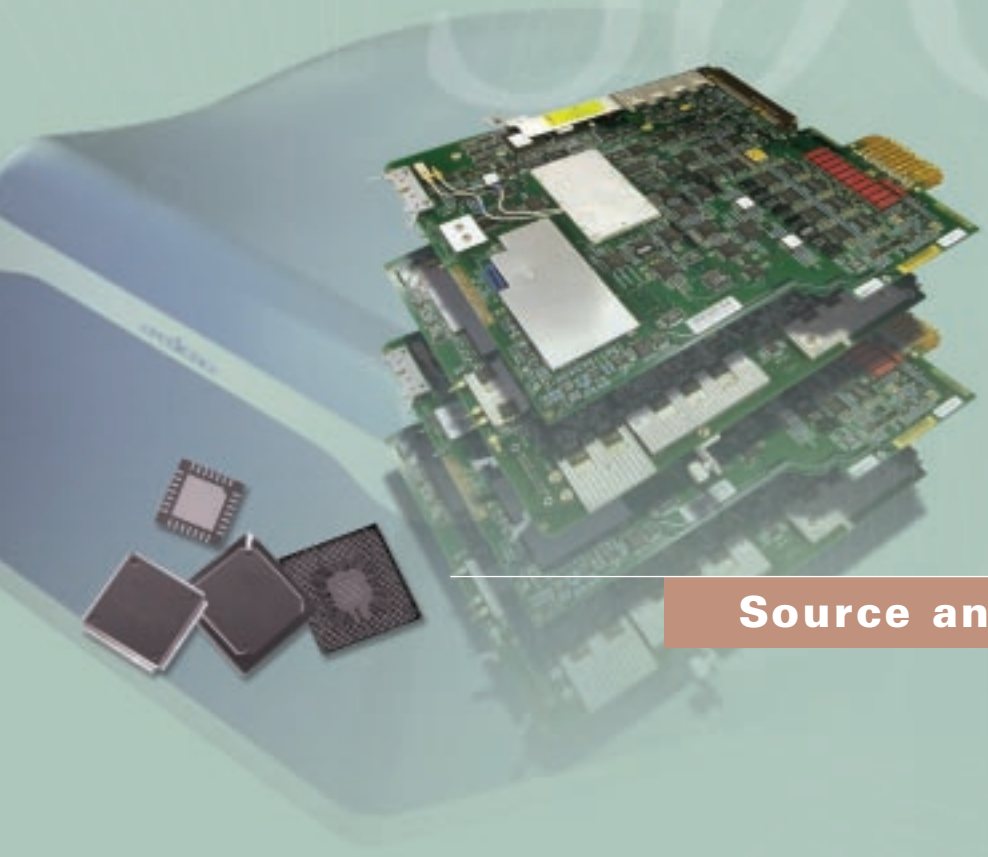


Octet

Source and Capture Instruments

for SoC Test

credence

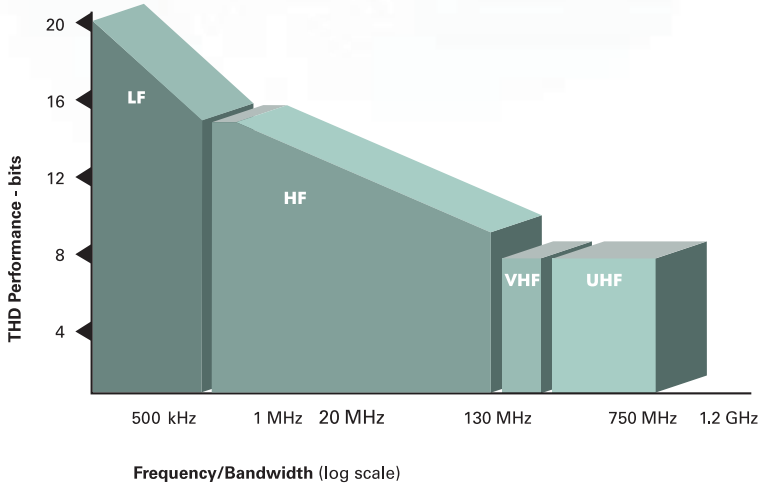
Octet Source

Analog Source Instruments

The Octet™ family of analog source instruments includes a range of arbitrary waveform generators with features to meet SoC test challenges in consumer, computer, and communications devices. Each test challenge is matched to the appropriate Octet solution, with instruments targeted toward flexible general-purpose applications and specialized instruments for high-frequency, multichannel, multi-site and precision audio applications. Many of these instruments are designed to extend customer test investments by being fully compatible with the Quartet™ Series of testers.

Low-Frequency Analog Source

The low-distortion waveforms generated by this instrument test high-performance audio and other advanced low-frequency devices requiring stimulus signals up to 500 kHz. Waveforms are stored in one or more packets in instrument memory, which may be called individually or in combinations. Also included are two precision DC references to support testing A/D converters which require accurate and stable references.



Test Challenge:
USB 2.0
Complex serial data waveform

Key Specification:
480 Mbps differential

Octet Instrument Solution:
OC AWG 4001/4002
2.6 or 4.0 GS/s multi-site analog source

High-Frequency Analog Source

When testing high-end video, cable modems, DSL and other devices requiring sine stimulus to 30 MHz or pulses to 125 MHz, this workhorse instrument is the right choice. It features four differential output channels and selectable lowpass filters.

VHF Analog Source

This instrument is designed for applications requiring the testing of LAN and PRML read channel devices. With up to 200 MHz output bandwidth and a differential output mux, it is capable of driving four differential channels.

2.6/4.0 Gigasample UHF Multi-Site Analog Source

For multi-site testing of high-speed LAN, USB 2.0, PRML read channel, and other devices requiring agile and accurate generation of multiple complex test waveforms, this instrument is an ideal signal generator. It is available in 2.6 GS/s and 4.0 GS/s options both with four simultaneous outputs.

Test Challenge:
PC99, AC97
PC analog audio

Key Specification:
ADA loop path THD ≤ 0.02%

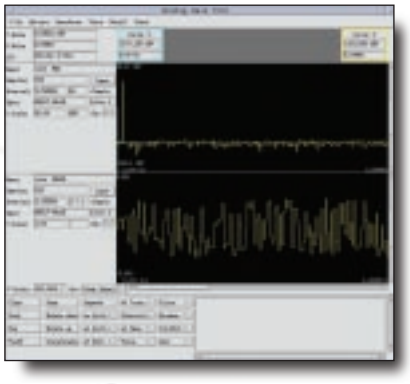
Octet Instrument Solution:
OC AWG 1001
Low-frequency analog source

and Capture Instruments

Software Tools

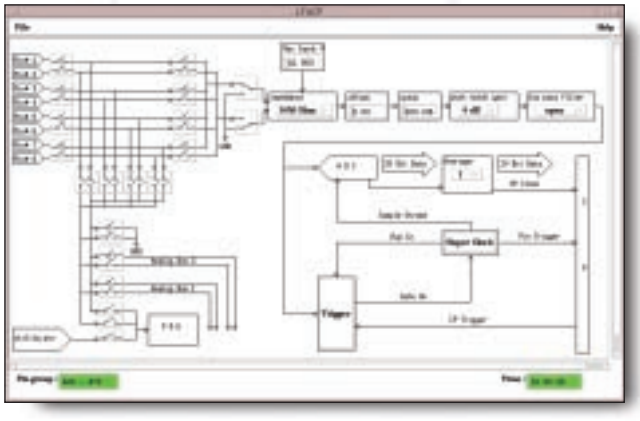
Analog Wavetool

For test development the Analog Wavetool can display and access multiple waveforms. Using a library of standard DSP functions, it allows extensive post-processing of any acquired data set. Multiple acquisition waveforms may be viewed with zoom and pan in both x and y-axes. Measurements, conversions and math functions may be performed on waveforms. A scope editor mode is also available for examination of digital data.



Instrument Tool

The Instrument Tool is an interactive graphical setup interface for Octet instruments. The flexible user interface shows both a functional diagram and setup/settings information for each instrument. Setups with all settings may be entered and saved to a file.



Capture Instruments

The Octet family of analog and digital capture instruments together with their corresponding capture processors provide a comprehensive and efficient set of capabilities for the full range of applications from precision audio through video, high-frequency applications and beyond. Each instrument acquires, digitizes, processes and post-processes signals over an optimized frequency range. Each also includes its own individual phase coherent Superclock, allowing fully coherent waveform capture and independent signal timing relationships. The Capture Processor (CP) associated with each port provides 64 bit processing power and 128 MBytes of capture memory.

High-Performance Audio Testing

with Low-Frequency Analog Capture Instrument

This instrument is optimized for testing high-performance audio devices. It combines inherently low distortion and noise with hardware features such as tunable notch filtering.

The low-frequency, 500 kHz analog capture port provides capture and analysis capabilities required for testing high-performance audio devices. Audio signals from a device-under-test (DUT) are captured and digitized in a low noise, low distortion environment, then coupled to the processor-per-capture instrument architecture. Four fully differential input paths are relay selected and can accept full scale input signals up to 41.8 Vpp with up to 10.5 V offset. Built-in programmable lowpass and tunable notch filters provide further flexibility for maximizing measurement dynamic range – for instance, by notching the fundamental frequency before measurements are made on noise and residual distortion. The low-frequency analog capture instrument (LF-ACI) also takes advantage of the inherent low noise performance in the tester to provide measurement capability with a very high effective dynamic range, ideal for testing audio paths in multimedia and other systems with precision audio.

Each mixed-signal test challenge is matched with the appropriate Octet instrument solution.

Video and High Bandwidth Testing

with High-Frequency Analog Capture Instrument

This dedicated capture instrument acquires video and other high-frequency signals up to 10 MHz, with an overall minimum bandwidth of 500 MHz. Consisting of a pin card located in the test head, supported by a Capture Processor in the mainframe, the instrument offers dedicated data capturing and processing to provide maximum throughput. Unlike most wide-band sampling systems, it features an inherently low jitter architecture consisting of a single-strobed track and hold with a 12 bit flash converter. There are four fully differential inputs, which may be simultaneously sampled for maximum overall throughput. As with all Octet instruments in this series, fully coherent signal capture handles complex timing and trigger requirements.

Digital Capture Instrument

For parallel and serial digital signals, such as an ADC output, digital capture ports acquire as many as 16 bits of data, while also providing frequency and jitter measurements. With real-time sampling at up to 200 MHz, the digital capture instrument (DCI) captures 8 or 16 bits (with dual cards) of parallel or serial digital signal data. At a capture depth up to 128 MBytes, the DCI also provides frequency and jitter measurement, as well as high speed clock driver capability for the DUT. All signals may be captured coherently and a dedicated Capture Processor supports the DCI.

Test Challenge:
Base and premium consumer audio
"Near-CD" and CD quality audio signals

Key Specification:
80-100 dB S/N ratio; response 20 Hz to 20 kHz/45 kHz

Octet Instrument Solution:
OC ACP 1001
Low-frequency analog capture instrument

The Capture Processor

The Capture Processor (CP) contains a high performance, high precision (64 bit math) processor coupled with a 128 MBytes front end capture memory and 256 MBytes processor waveform memory for fast, local processing of acquired signals. The high computational precision provides benefits such as a signal to noise ratio greater than 150 dB on Fast Fourier Transforms. The high overall processor capability combined with the architecture means that processing for measurements is achieved locally within the CP without relying on time-consuming data transfers to other processors. Following our proven processor-per-capture instrument strategy, each data acquisition instrument on the tester uses its own CP and thus may easily perform parallel tasks and tests for such applications as multichannel audio or multi-site testing without the awkward programming required when processing resources must be shared and large amounts of data moved.

Test Challenge:
Composite or component video
Consumer or professional applications

Key Specification:
10 MHz to 25 MHz

Octet Instrument Solution:
OC ACP 2001
High-frequency analog capture instrument
Real and equivalent time sampling

Popular consumer products are driving the demand to speed time-to-market and lower overall cost of devices in the semiconductor industry.

Octet Instrument Advantages

- Instrument choices, based on performance needs
- GUI based software tools for development, analysis, waveform generation, display and debug
- Fully coherent waveform generation
- Sophisticated triggering between the digital subsystem, analog instruments, and the DUT

OCTET ANALOG SOURCE INSTRUMENTS

	Low-Frequency Analog Source OC AWG 1001	**High-Frequency Analog Source** OC AWG 2001	**VHF Analog Source** OC AWG 3001	**2.6 and 4.0 GS/s Multi-Site Analog Sources** OC AWG 4001/02
APPLICATIONS	**Premium Audio/ LF**	**Video and other HF**	**UHF LAN, HDD PRML & other HF UHF**	**LAN/Communications**
Output	Differential with 1:4 MUX	Differential with 1:4 Mux	Differential with 1:4 Mux	Differential; 4 independent channels
Analog Bandwidth	500 kHz	100 MHz	> 200 MHz	750 MHz
Resolution	16 bit	12 bit	8 bit	8 bit
Waveform Memory	1 Meg	128 k	2 Meg	8 Meg/16 Meg
Filters	Tunable bandpass + Selectable lowpass	Selectable lowpass	Selectable lowpass	Selectable lowpass

OCTET CAPTURE INSTRUMENTS

	Low-Frequency Analog Capture Instrument OC ACI 1001	**High-Frequency Analog Capture Instrument** OC ACI 2001	**Digital Capture Instrument** OC DCI 1001/2001
APPLICATIONS	**ANALOG**		**DIGITAL**
	Premium Audio/ LF	**Video and other HF**	**Digital signals such as ADC outputs**
Channels	1 differential with x4 MUX	4 differential with x4 MUX	8 single-ended
Bandwidth	500 kHz min.	500 MHz min; 650 MHz typ	200 MHz
Resolution - Hardware - Extended	 16 bit 18/20 bit	 12 bit -	 16 bit -
Capture/Waveform Memory	128 MBytes / 256 MBytes	128 MBytes / 256 MBytes	128 MBytes / 256 MBytes
Filters	Tunable notch + Selectable lowpass	Two lowpass (anti-alias)	NA
Coherent Capture/ Superclock	Yes	Yes	Yes

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Why Credence?

As market forces and technological innovations demand a seamless design-to-production test flow, Credence delivers compelling products and technologies, backed by a world-class customer service and technical support organization. With the most comprehensive product portfolio offered in the industry today, Credence helps to accelerate time-to-volume and maximize profitability for industry-leading integrated device manufacturers (IDMs), outsource assembly and test (OSAT) suppliers, foundries and fabless chip companies.

2002 VLSI Research Customer Satisfaction Survey

Credence is proud to have been ranked the number one North American automatic test equipment (ATE) supplier and the number four test & material handling equipment supplier worldwide by VLSI Research's 2002 Customer Satisfaction Survey. This award is presented annually to suppliers in the semiconductor manufacturing industry who achieve overall excellence in customer service and support. The rankings are based on customer responses in thirteen categories, which include seven measures of equipment performance and six measures of customer service.

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