NEWS – For Immediate Release

Large Channel-Count 65MSPS 14-bit A/D Board with Hardware Averaging, Stimulus Generation and Gb Ethernet Interface

OEM 16-256 channel DAQ board series with optional stimulus-creation and novel heterodyne trigger miniaturizes scientific, military and medical applications. Displays repetitive averaged signals as low as 10nV, from DC-400MHz, at only $299/channel.

Berkeley, CA. Jan 20, 2016. Ultraview Corporation, a maker of high speed data acquisition boards since 1989, announces a 14-bit 16-concurrent channel 65MSPS A/D board for demanding large-system uses, where signals on multiple time-aligned channels need to be observed with high SNR, such as RADAR, nuclear instrumentation, ultrasound, medical imaging, spectroscopy, communications systems, RF component and antenna testing and other critical applications. An on-board low-jitter LMX2581-based RF synthesizer allows any A/D sampling rate between 20MSPS and 65MSPS to be specified in software. A second on-board LMX2581 with synchronized reference can be optionally used to output four stimulus clocks on SMA connectors that can be vectored to any combination of 4 external transmitters, microwave pulse generators, laser modulators, and other devices.

A special array-RADAR-optimized version, the AD14-65Mx16AVESTIM, eliminates the 16 SMA analog input connectors and instead has 16 20-pin ZIF connectors that can accommodate a wide variety of front-end analog modules, such as transceivers, samplers, pulsed RADAR front ends, nuclear signal conditioners, etc. Each ZIF connector supplies an on-board-generated differential PECL sampling clock, a separately settable differential Tx/pulser clock, +12/15V and -4 to -12V power, and differential inputs to a dedicated internal A/D channel.

Based on a hardware averaging engine with near-zero dead-time, implemented in the board's Xilinx™ Zynq7000, the AD14-65Mx16AVE can each record concurrent time-aligned single shot waveforms of up to 4K samples on each of 16 concurrent channels or up to 16K samples/channel on 4 concurrent channels. It can additionally average up to 1024 repetitive signal strings on all 16 channels with record lengths to 4096 samples uninterruptedly. The precise repetitive summing of each new string of samples onto a running 24-bit average can be triggered by any one of three software-selectable triggering mechanisms:

A) A TTL input, with selectable –/+ slope, causes waveforms to be acquired or added to a running average.

B) A software slider-adjustable level on the incoming signal waveform on any of the 4 channels, with + or – slope, enabling scope-like triggering, with pre-trigger, on a given place on a repeating waveform.

C) Heterodyning trigger input - Triggering will occur on the difference frequency between this input and the sampling clock frequency. This is useful for time-of-flight imaging systems, RADAR and pulsed spectroscopy systems, in which transmit or stimulus waveforms are repeated M-times/second and the A/D samples data at a rate of N samples per sec. The result is that the ULTRADYNE16 will automatically acquire and/or average complete waveforms that repeat M minus N times per second.

In addition to its averaging and unique triggering modes, which include pre-triggering capability, the AD14-65Mx16AVE is a high dynamic range general purpose high speed data acquisition board capable of transferring acquired data to the host system at up to 60MB/sec (120MB/sec for 2-board/32-channel group, 240MB/sec for 4-board/64 channel group, etc). Mike Ingle, principal hardware architect, states: "The precise time alignment of acquisition all channels to within one sample period, the 24-bit averaging engine, the flexible triggering modes including novel heterodyne trigger, the selectable pre-trigger memory, and the huge 256-channel expandability, make the AD14-65Mx16AVE uniquely suited for scientific, nuclear, RADAR, medical imaging and other demanding applications. Moreover, the FPGA firmware and all software, are open-source".

As true network appliances, data acquisition on each AD14-65Mx16AVE can be operated from anywhere in the world. Data acquisition and display programs are supplied for 64-bit Windows™ 7/8 and Linux6.x/7.x. David Schriebman, who wrote the included Windows LabVIEW™ VI, states: “We included a very simple, yet powerful real-time, adjustable triggering menu and customizable display interface, which allows easy panning and zooming, to examine fine details on extremely sharp, low-noise averaged waveforms in the time and/or frequency domain on a single graph. Our project allows for continuous and single-shot acquisition, as well as the ability to view previously acquired data”.

Figure 1 shows a single 16-channel board. Figure 2 illustrates the LabVIEW screen display of an AD14-65Mx16AVE board fed by an array of Furaxa microwave sampler/pulser TDR spectrometers, displaying the reflection spectrum of microwave bowtie antenna array excited by a repeating 100 picosecond 100 million pulse/second train programmed for 1024 averages.

Pricing (Quantity 1):

AD14-65Mx16AVE or AD14-65Mx16AVESTIM – 16 chan 65MSPS 14-bit, 4K averager length: $ 4,795
AD14-65Mx32AVE or AD14-65Mx32AVESTIM – 32-channel (Two linked 16 chan 65MSPS boards): $ 7,995
AD14-65Mx64AVE or AD14-65Mx64AVESTIM – 64-channel (Four linked 16 chan 65MSPS boards): $ 15,995

Lead times: All models – 1-2 weeks ARO

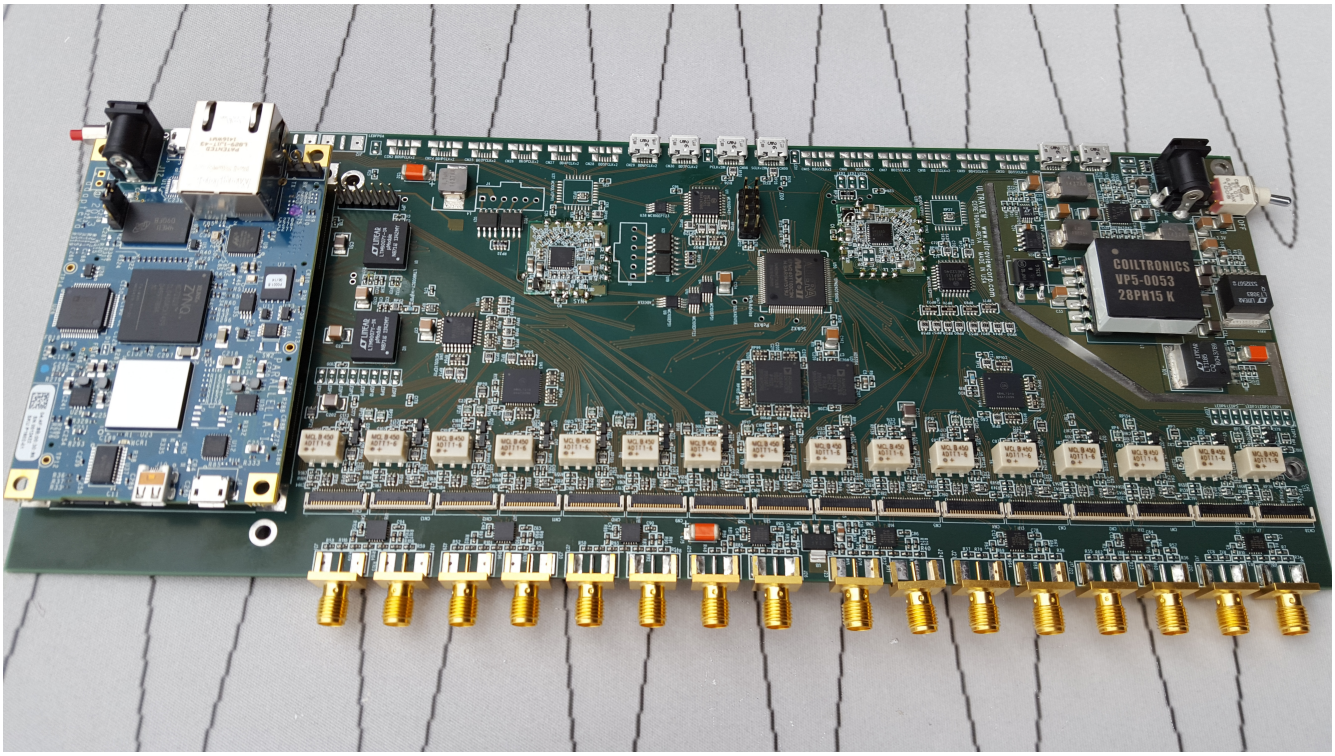

Figure 1. AD14x16-65Mx32AVE – 16-channel 14-bit 65MSPS Ethernet DAQ with synchronized stimulus and signal averaging.

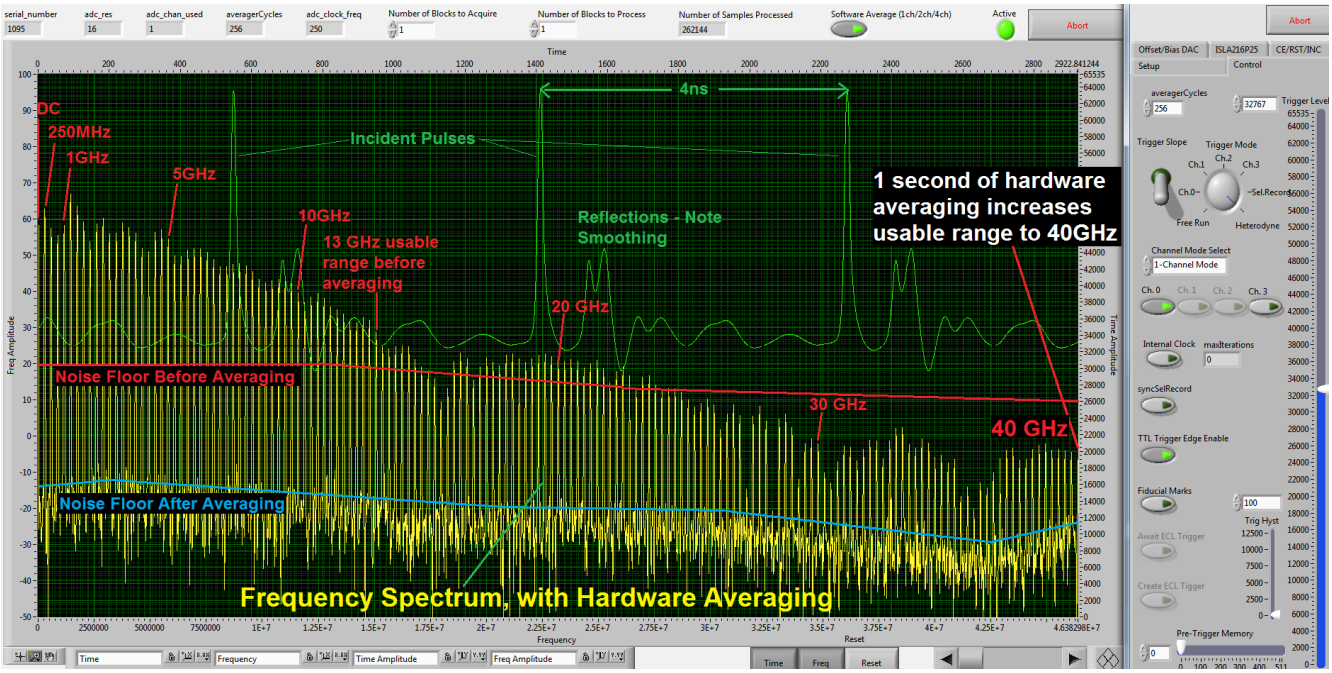

Figure 2. << FIG TO BE REPLACED WITH CURRENT SCREENSHOT >>> AD14x16-65MAVE, fed by a Libove-Chacko 40GHz microwave sampler/pulser TDR spectrometer, displaying the reflection spectrum of a microwave bowtie antenna excited by a repeating 100 picosecond 100 million pulse/second train. **Entire DC-xxGHz spectrum (yellow trace) is captured with 120dB dynamic range, using under 1 second of hardware averaging, at nearly 100% collection efficiency.** Averaged waveforms, despite containing antenna pickup of ambient RFI are so stable that they appear static. Heterodyne trigger **automatically triggers the board at the difference frequency (100 MPPS pulse frequency sampled at 99.95MSPS) to coherently average 50,000 waveforms per second**.

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