Verasonics®
The leader in Research Ultrasound™

Vantage® *NXT*

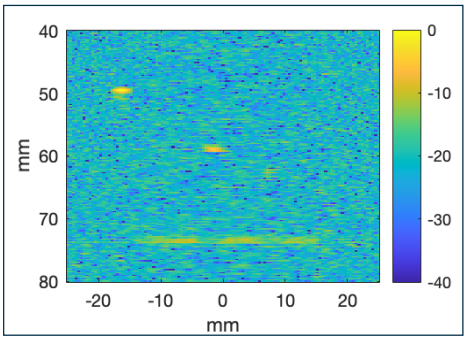
Advanced Ultrasonic NDT

Next generation multi-channel and phased array ultrasound instrumentation
Engineered for cutting-edge performance in research and industry
32 – 2048 Channels | 20 kHz* – 60 MHz Bandwidth

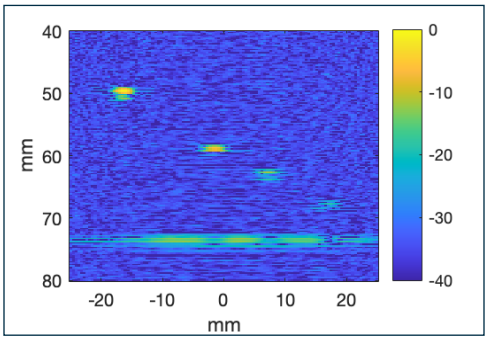
Advanced Transmit Capability

The transceiver is the heart of an ultrasound acquisition device, but not all transceivers are created equal. Verasonics' proprietary, patented *NXT* transceiver was specifically engineered to provide the next level of transmit and receive fidelity required for cutting-edge ultrasound research and inspection.

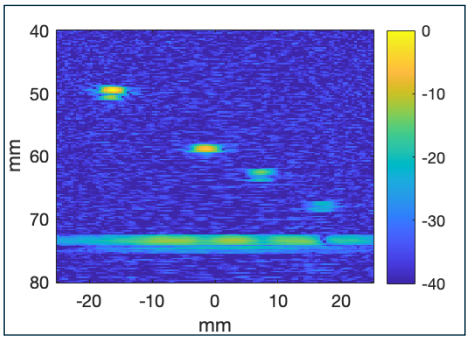
- **Industry-leading transmit fidelity:**
  Resolution, dynamic range, pulse inversion symmetry, and harmonic distortion.
- **High power transmit:**
  Continuous transmit on all channels for milliseconds duration (or seconds depending on configuration).
- **Coded waveform capabilities:**
  Advanced waveform coding performance enabled by *NXT* transmit pulse symmetry and repeatability.
- **Benefits of transmit coding:**
  – Increased resolution
  – Higher SNR
  – Faster inspection



No Averages:
64 Acquisitions



64 Averages:
4096 Acquisitions



32-bit Golay Compression:
128 Acquisitions

Waveform Coding Example: 5 MHz TFM Imaging in HDPE, dB Scale

Arbitrary Waveform Generation

- Proprietary algorithms enable generation of high-fidelity arbitrary analog acoustic waveforms using the *NXT* three-level transmitter.
- DAC + linear amplifier level performance with high channel counts for a fraction of the cost and power consumption.

Experimentally measured arbitrary ultrasonic waveform: Pseudo-random 5-11 MHz

Engineered for High-Speed Inspection

Vantage *NXT* features hardware and software engineered for the highest performance in acquisition speed, enabling continuous, uninterrupted data acquisition with scan speeds limited only by acoustic travel time.

- **Ultra-Fast Data Transfer:**
  Up to 52.8 Gbit/s (6.6 GB/s) sustained.
- **GPU Direct:**
  Data transfer directly to VRAM.
- **Asynchronous Architecture:**
  Parallelization of data acquisition, transfer and processing.
- **Large Internal Memory:**
  256 MB per Channel.

Vantage *NXT* Specifications

TRANSMIT SPECIFICATIONS	
Low Frequency	20 kHz - 2 MHz*
Mid Frequency	250 kHz - 24 MHz
High Frequency	1.0 MHz - 60 MHz
HIFU Operating Band	250 kHz to 8 MHz
Programmable Pulser Amplitude	3.0 to 192 V p-p
Waveform Duration	Standard: ~microseconds Extended Transmit: ~milliseconds HIFU: ~seconds
Minimum "on" state duration	4 ns
Resolution (clock frequency)	2 ns (500 MHz)
Voltage transition time	2-3 ns
FET technology	GaN

RECEIVE SPECIFICATIONS	
Low Frequency	20 kHz - 2 MHz*
Mid Frequency	250 kHz - 60 MHz
High Frequency	250 kHz - 60 MHz
ADC sample rate	125 MHz
ADC Resolution	16-bit
Channel memory	256 MB
Sustained data transfer rate	Up to 52.8 Gbits/s (6.6 GB/s)
Subsampling	Non-integer, rational factors
Data type	16-bit integer, 16-bit float

** Future availability*

I/O OPTIONS	
Triggers	4 input/outputs programable pulse width
Quadrature Encoder Inputs*	3 quadrature encoders
Analog Inputs	2 inputs Signal +/- 5V range Sample rate 4 KHz 12-bit ADC
PCIe	Gen 3x8 FireFly™ firefly optical connection with 2 m cable (up to 100 m)

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