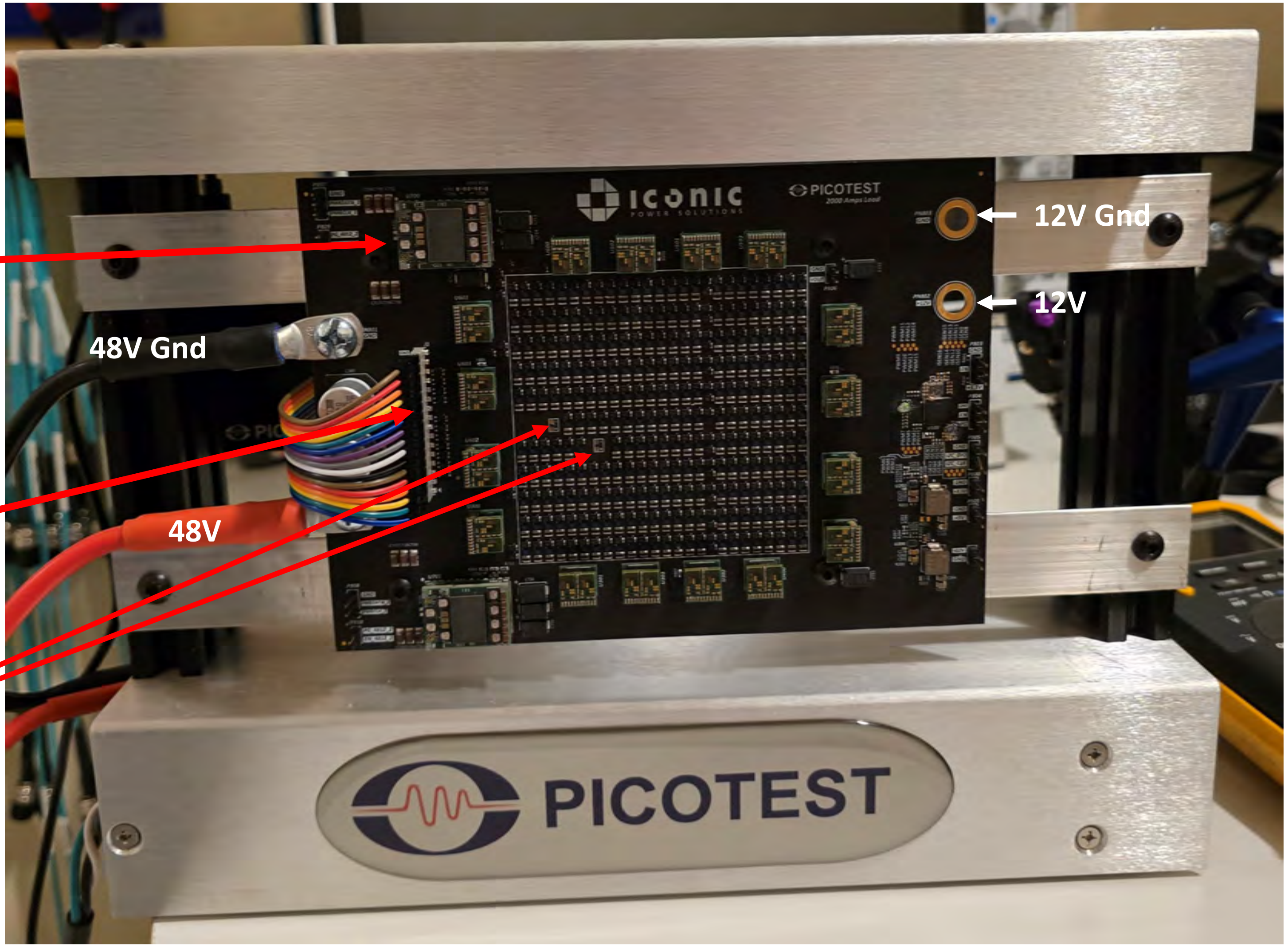
1500 Amps Transient Load Board Demonstration

ICONIC Module Based

Sample Set-up and Waveform Display

Demo Board Setup – Front Side

48V->12V
RUNS HOT
Blow air or limit to a few minutes of operation



Iconic Power Module

11-bit Controller connector

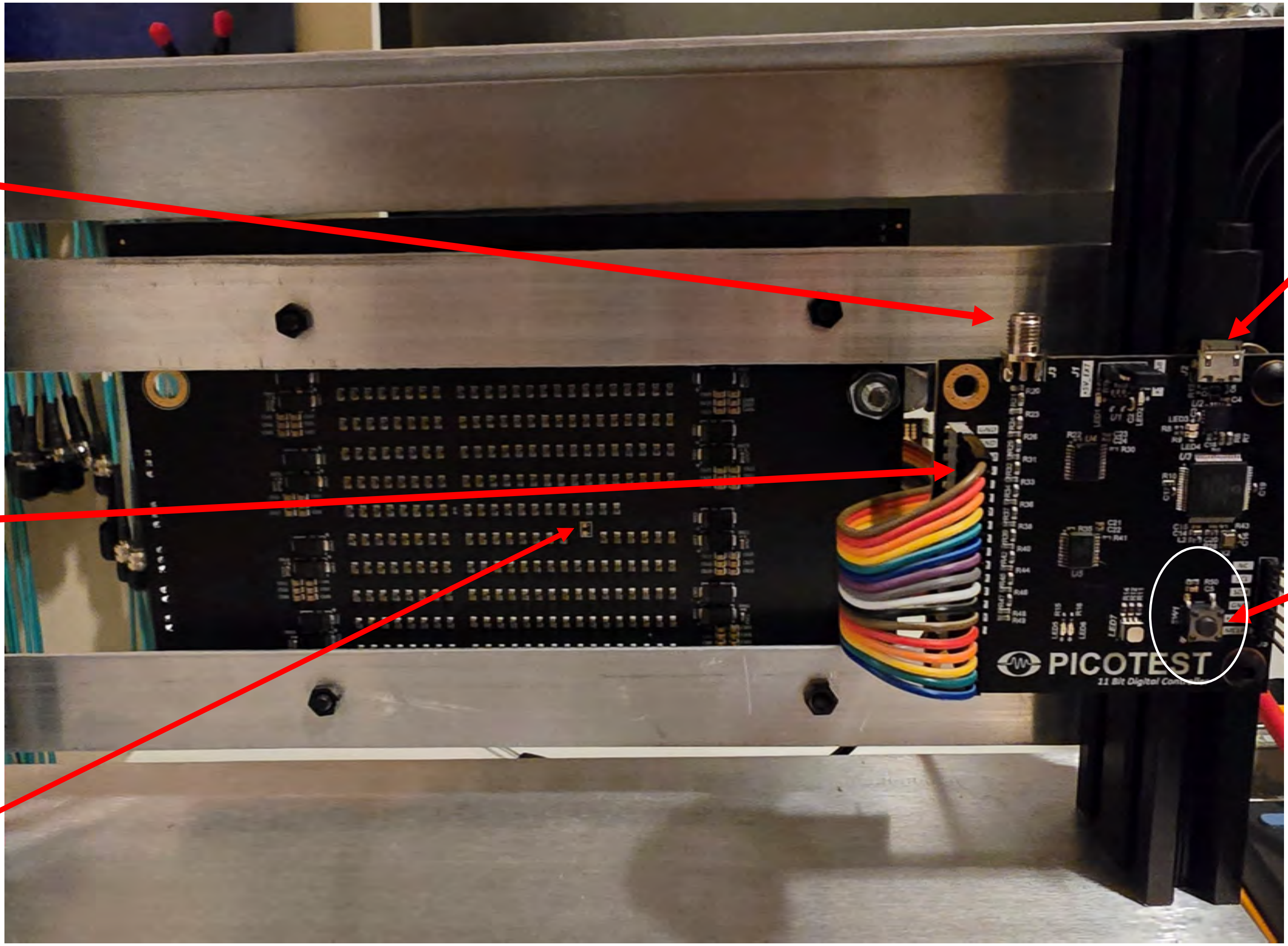
Voltage test points 0603 pad size – 60, 70 or 80 mil pitch

Demo Board Setup – Back Side

Current Monitor Port - 50 Ohms Scale is 7000A/V. Connect to Scope via SMA – BNC cable

11-bit Controller connector/cable from controller to load board

Another voltage test point – same as those on the front side



Controller power and programming port – USB Power

Load Board's 1-Shot Trigger

Runs the pre-programmed waveform set for Scope capture

Quick Start

- Connect USB power to the controller
- Connect an SMA cable from the Current Monitor port to the Scope. Note: this is the programming signal for the current, NOT the actual measured current. Though it does represent the load current with minor differences. Set the input to 50ohm, set to ‘alternate units’ (Amps) and 7000A/V scaling.
- Plug in the AC power, press one shot to capture waveform
- Set the Scope Trigger to display the Current Monitor Port signal. Press the Controller Board’s 1-Shot Trigger
- Connect a voltage probe to display the Load Board Voltage using one of the open pad sets on the front or back of the board. (Power rail, P2105A or P2104A probe – 50 Ohms - 800mV offset). Load Board is setup for a single 0.8V power rail. Multiple rails voltages on a single load board are possible.
- **Unplug the AC power** or blow air over the LLC modules when not in use.

S2000 Features and Benefits

Highlights

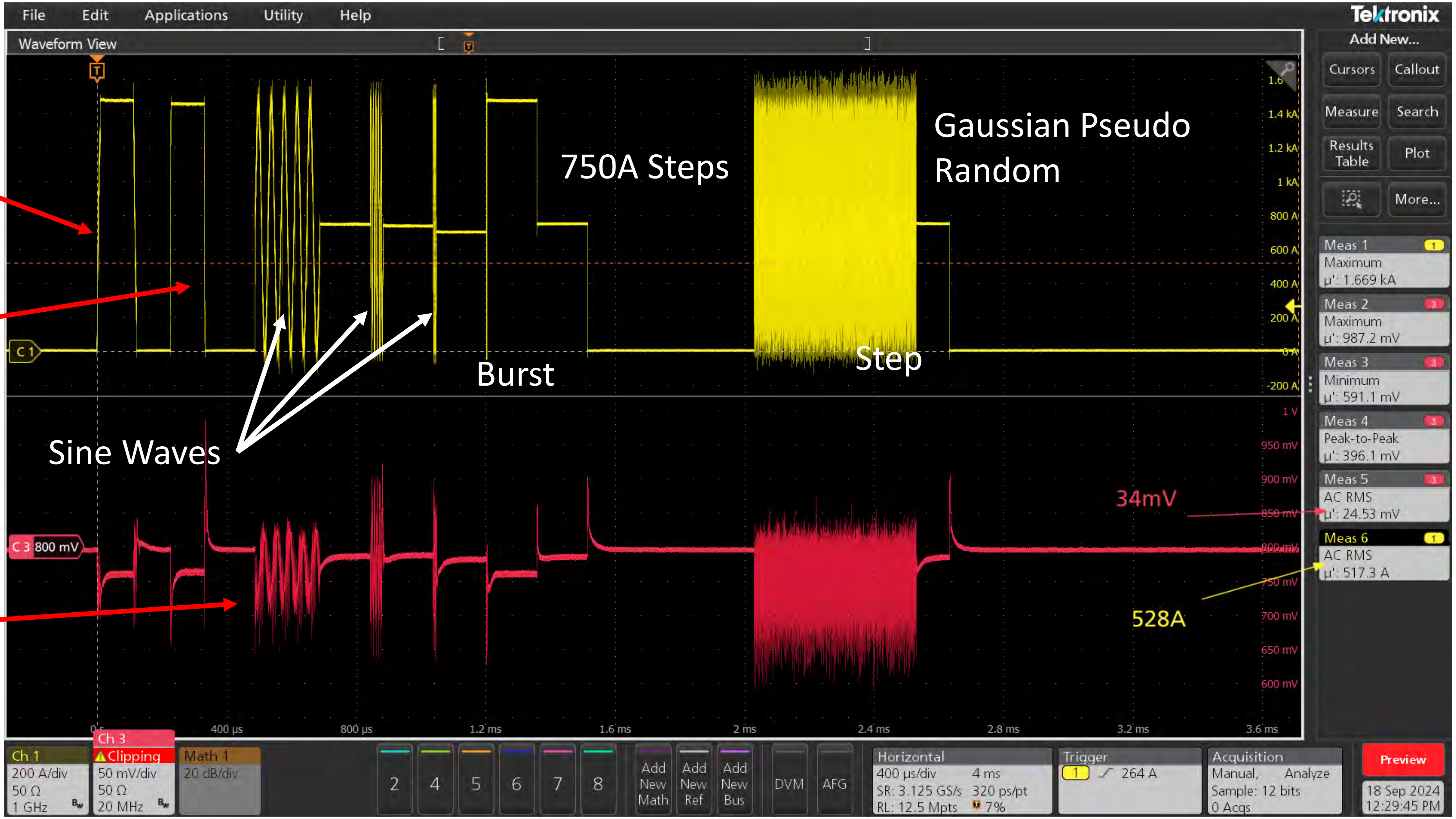
- Ultra-High Current Fast Transient Load Steps with 11-bit 66MSPS controller
- Supports the latest AI, Datacenter, and supercomputer applications
- Simple GUI application for creating and saving waveform patterns
- Compact water-cooled design (required only for continuous testing)
- Power Rail Small and Large Signal Step Load Response
- Power Integrity/Small and Large Signal PDN Impedance Testing
- Supports Your Socket and Power System Design
- Power Rail Crosstalk
- Power Supply Module Development, Optimization, and Efficiency
- Thermal Testing

Stored Demo Pattern Exercises Power Rail

Exponential R/F edges

Linear R/F edge

Output Voltage Variations Due To Transient Load Steps



Compute Large Signal Transient Responses

Current - 1500A

C3 is output voltage

C5 is input voltage

CH8 is input current power

CH1*C3 is output power and CH5*CH8 is input power.

Divide these and you can see the operating efficiency.

Sine Patterns give you impedance.

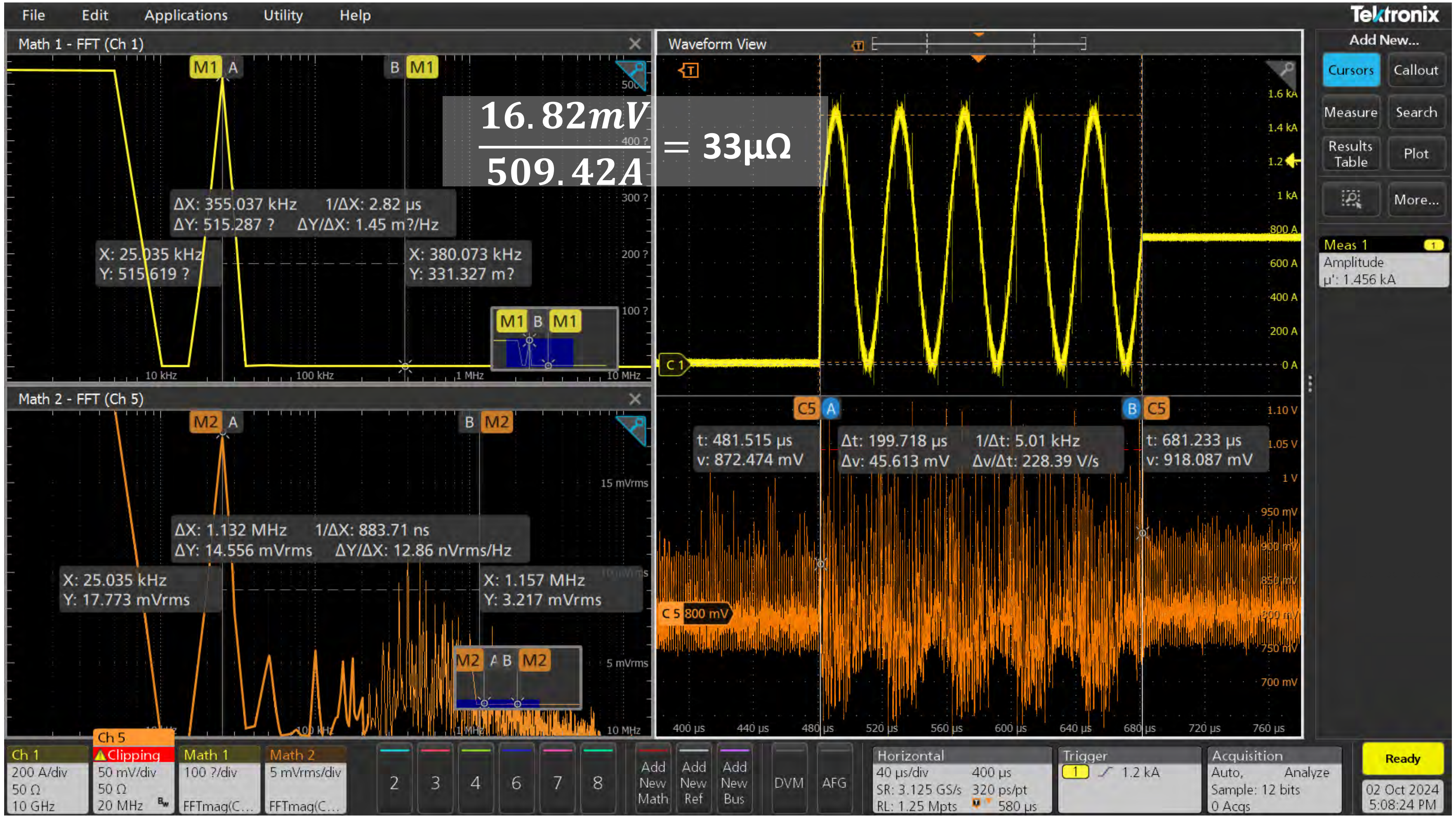
Measuring Impedance with Large-Signal Sine Waves

Sine Wave FFT Give Impedance

It takes a lot of modulated current to overcome power rail noise on an ultra-low impedance board.

Here we are showing 1500Amp peak-to-peak sine modulation and the resulting voltage response.

The FFTs are clear and show very good SNR.



PICOTEST

Picotest Load Board Edge Speed Nano-Seconds Count

Load transient edges need to get much faster to measure TODAY's power systems (let alone Tomorrow's).

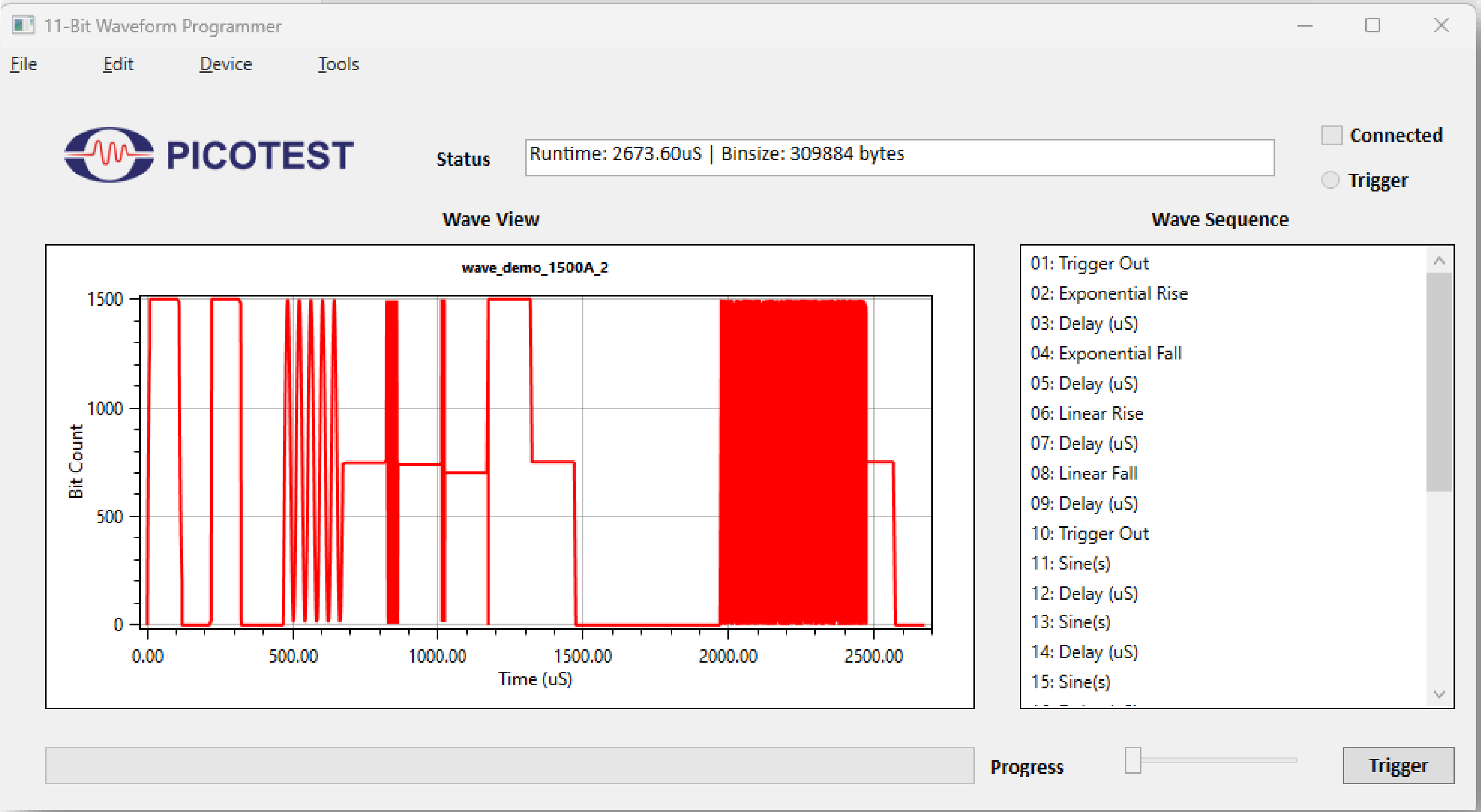
The GaN based approach taken by Picotest is the best way to achieve sufficient performance.

This is not evident to most customers.

GUI Software and Display

Transient Generator Programming Software – Custom and preprogrammed Patterns

https://www.dropbox.com/scl/fi/fnnliuvlutxvec7wybbkb/PLConfig1.3.4.0.zip?rlkey=xpisjyd3h2evev51a1kvs6ofn&dl=0



01: Trigger Out
02: Exponential Rise
03: Delay (uS)
04: Exponential Fall
05: Delay (uS)
06: Linear Rise
07: Delay (uS)
08: Linear Fall
09: Delay (uS)
10: Trigger Out
11: Sine(s)
12: Delay (uS)
13: Sine(s)
14: Delay (uS)
15: Sine(s)
16: Delay (uS)
17: Pulse(s)
18: Set Bit Value
19: Delay (uS)
20: Set Bit Value
21: Delay (uS)
22: Set Bit Value
23: Delay (uS)
24: Gaussian Random
25: Set Bit Value
26: Delay (uS)
27: Set Bit Value
28: Delay (uS)

PICOTEST