INTRODUCTION TO THE DIGILENT ANALOG DISCOVERY 2 AND 3

TEST EQUIPMENT FOR YOUR WORKBENCH

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OVERVIEW – ANALOG DISCOVERY 2/3

- A USB Oscilloscope and So Much More
  - Oscilloscope, Waveform Generator, Power Supply, Voltmeter, Data Logger, Logic Analyzer, Pattern Generator , Static I/O, Spectrum Analyzer, Network Analyzer, Impedance Analyzer, Protocol Analyzer, Curve Tracer
- Analog Discovery 3 (Current Model)
  - Analog Discovery 2 (Previous Model)

SPACE EFFICIENT

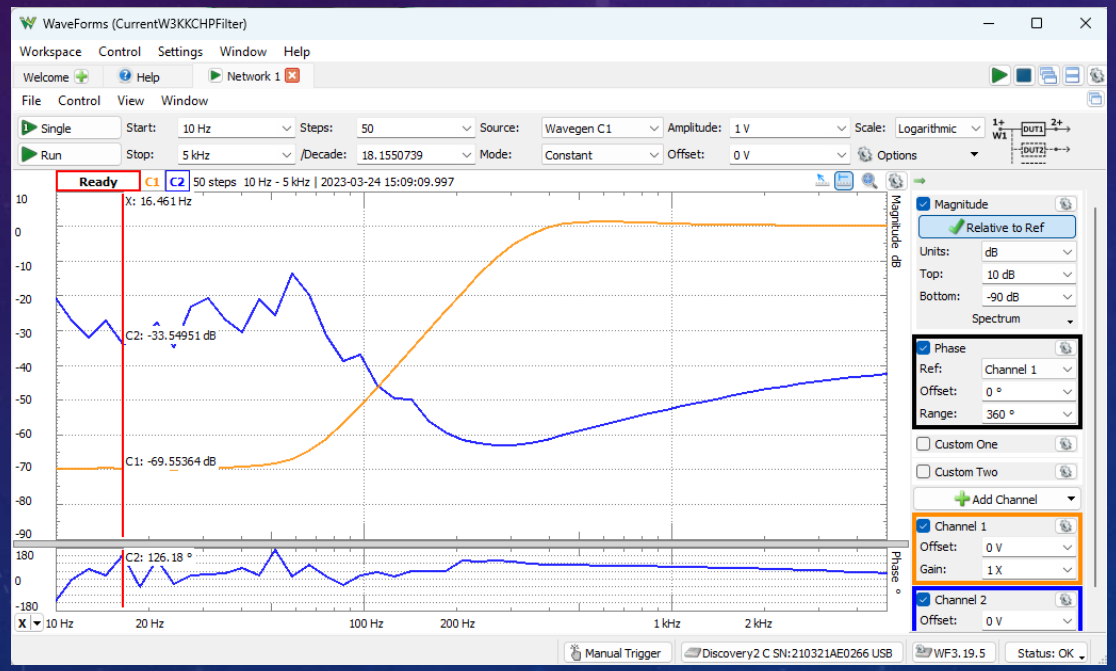
This…

Or This…

- A Pocket-size Portable Alternative to a Stack of Benchtop Equipment
  - With Some Limits

HOW DO THEY DO THAT?

- Two pieces
  - The USB Hardware Module
  - Waveforms Software for Your PC



- Waveforms Runs On…
  - Linux
  - Windows
  - Mac

HARDWARE SPECS

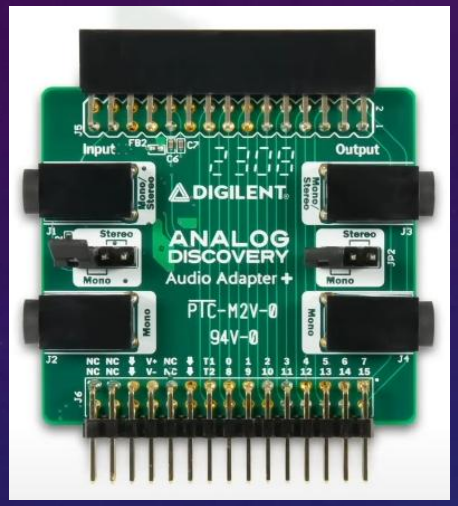
- Analog Inputs
  - Two 14-bit Differential Inputs
  - 100 MS/s Per Channel, 30 MHz BW (AD2)
  - +/- 25V
- Analog Outputs
  - Two 14-bit Single-Ended Outputs
  - 100 MS/s Per Channel, 12 MHz BW (AD2)
  - +/- 5V
- Note: AD3 Sample Rate is 125 MS/s.
- Digital I/O
  - Sixteen Channels
  - 3.3V (5V Tolerant)
  - 100 MS/s Per Channel (AD2)
- Programmable Power Supply
  - 0.5 to 5V
  - -0.5 to -5V
  - 800 ma Each With Auxiliary Power Source (USB Cannot Provide This Current)

LOTS OF ACCESSORIES

Impedance Analyzer

Transistor Tester

Audio Adapter



BNC Adapter

Flywires (Included)

And More…

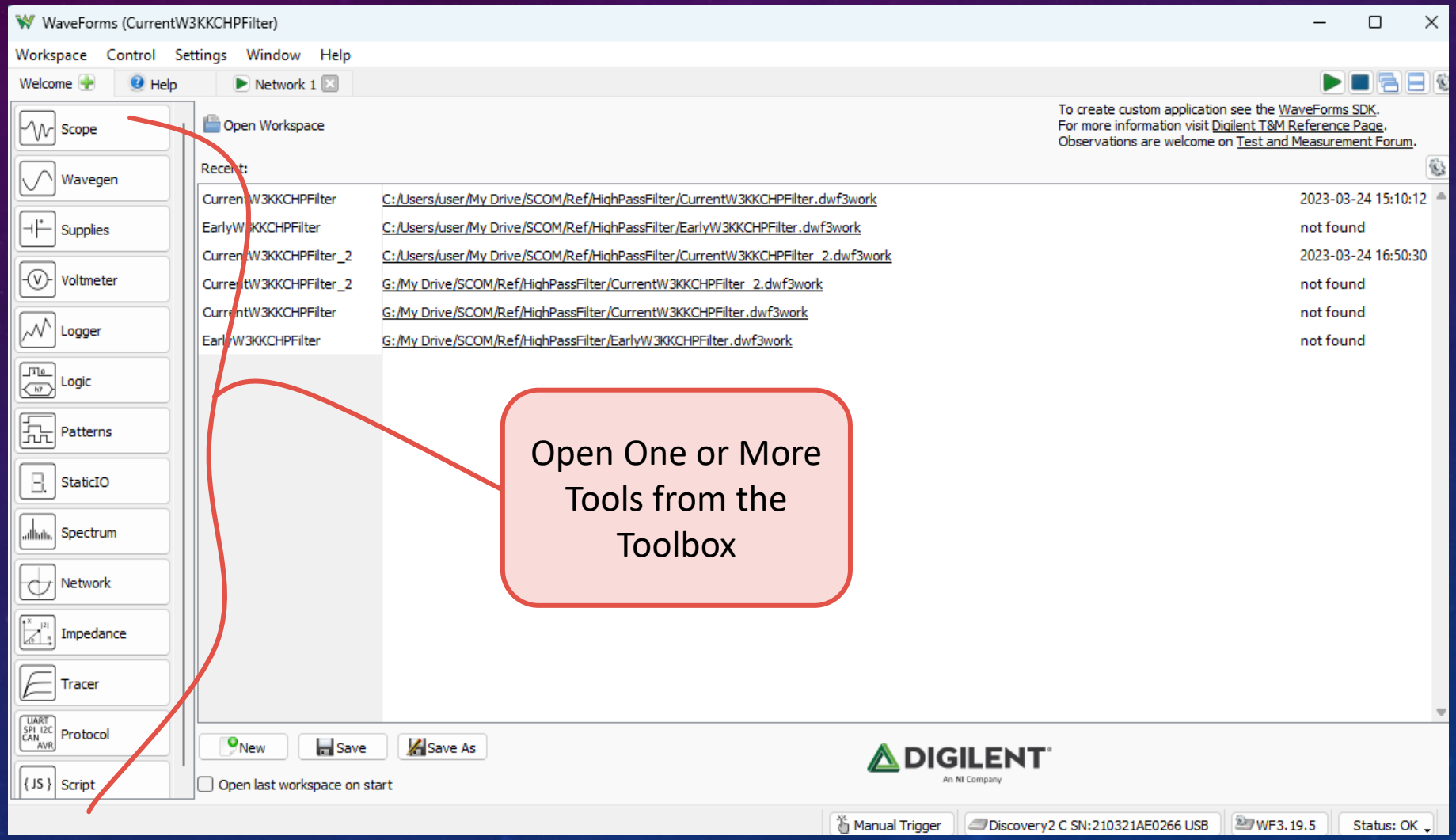
THE SOFTWARE -- WAVEFORMS

- Two-channel USB digital oscilloscope (1 MΩ, ±25 V, differential, 14-bit, 100 MS/s, 30 MHz+*)
  FFT, Spectrogram, Lock-In Amplifier, Additional Software Input Filters, Eye Diagram, XY Plot views, and more
- Two-channel arbitrary waveform generator (±5 V, 14-bit, 100 MS/s, 12 MHz+ bandwidth*)
  Standard waveforms, amplitude and frequency modulated signals, direct playback from analog inputs, custom waveforms
- 16-channel digital logic analyzer (3.3 V CMOS and 1.8 V or 5 V tolerant, 100 MS/s)
- 16-channel pattern generator (3.3 V CMOS, 100 MS/s)
- 16-channel virtual digital I/O including buttons, switches, displays, and LEDs, which is perfect for logic training applications
- Two input/output digital trigger signals for linking multiple instruments or providing an external trigger source
- Two channel voltmeter
- Network Analyzer with Bode, Nyquist, Nichols transfer diagrams of a circuit. The Network Analyzer has a range of 1 Hz to 10 MHz. Also measures distortion.

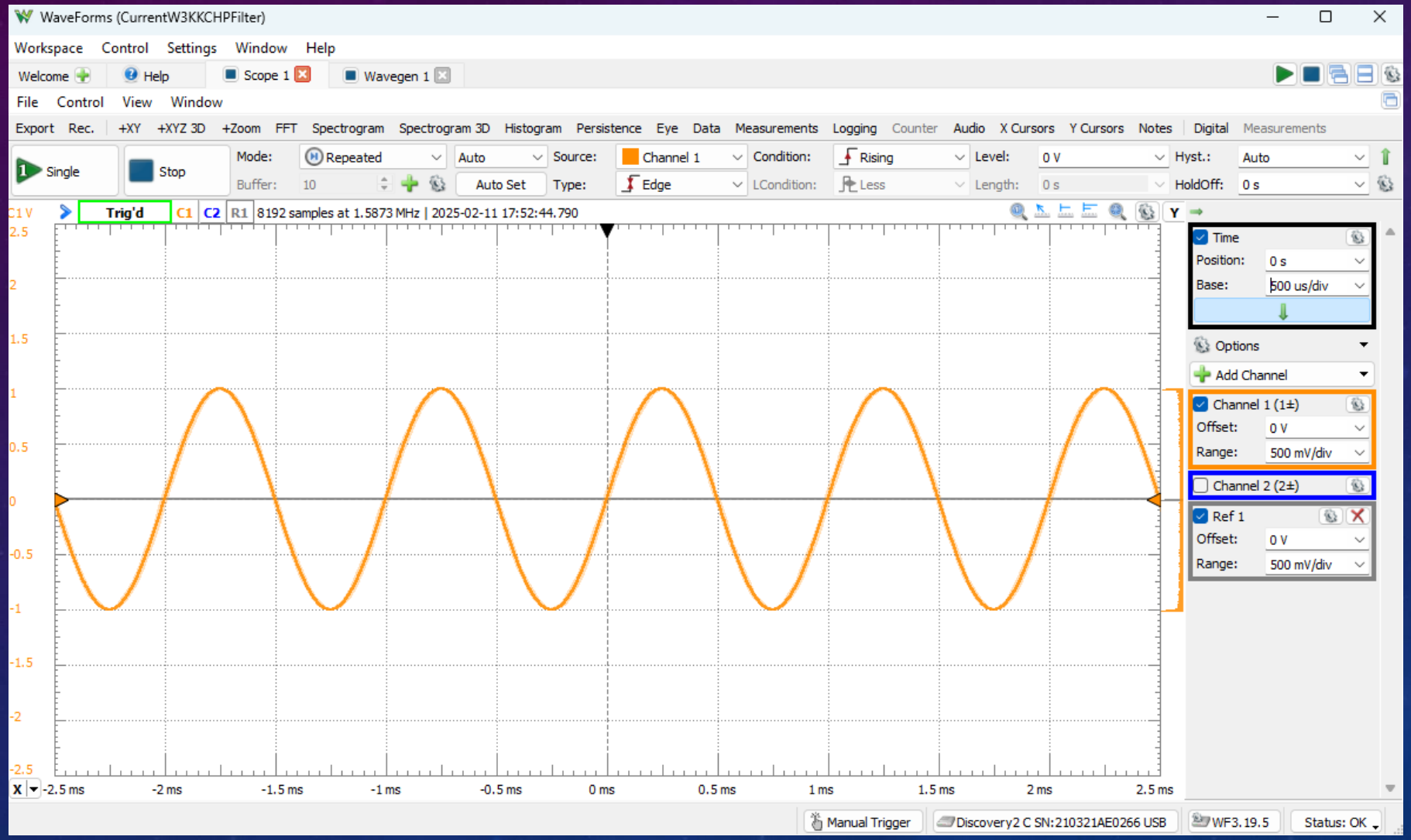
THE SOFTWARE -- WAVEFORMS

- Spectrum Analyzer capable of power spectrum and spectral measurements (noise floor, SFDR, SNR, THD, etc.)
- Data Logger with exportable data and plot functionality
- Impedance Analyzer for analyzing capacitive and inductive elements
- Curve Tracer to analyze characteristics of discrete semiconductors such as diodes and transistors
- Protocol Analyzer with SPI, I2C, CAN, AVR, UART, 1-Wire
- Two programmable power supplies (0.5 V to 5 V , -0.5 V to -5 V). The maximum available output current and power depend on the Analog Discovery 2 powering choice.
- Stereo audio amplifier to drive external headphones or speakers with replicated Arbitrary Waveform Generator signals
- An available Software Development Kit for programming with Python and C++, and a toolkit for programming with LabVIEW.

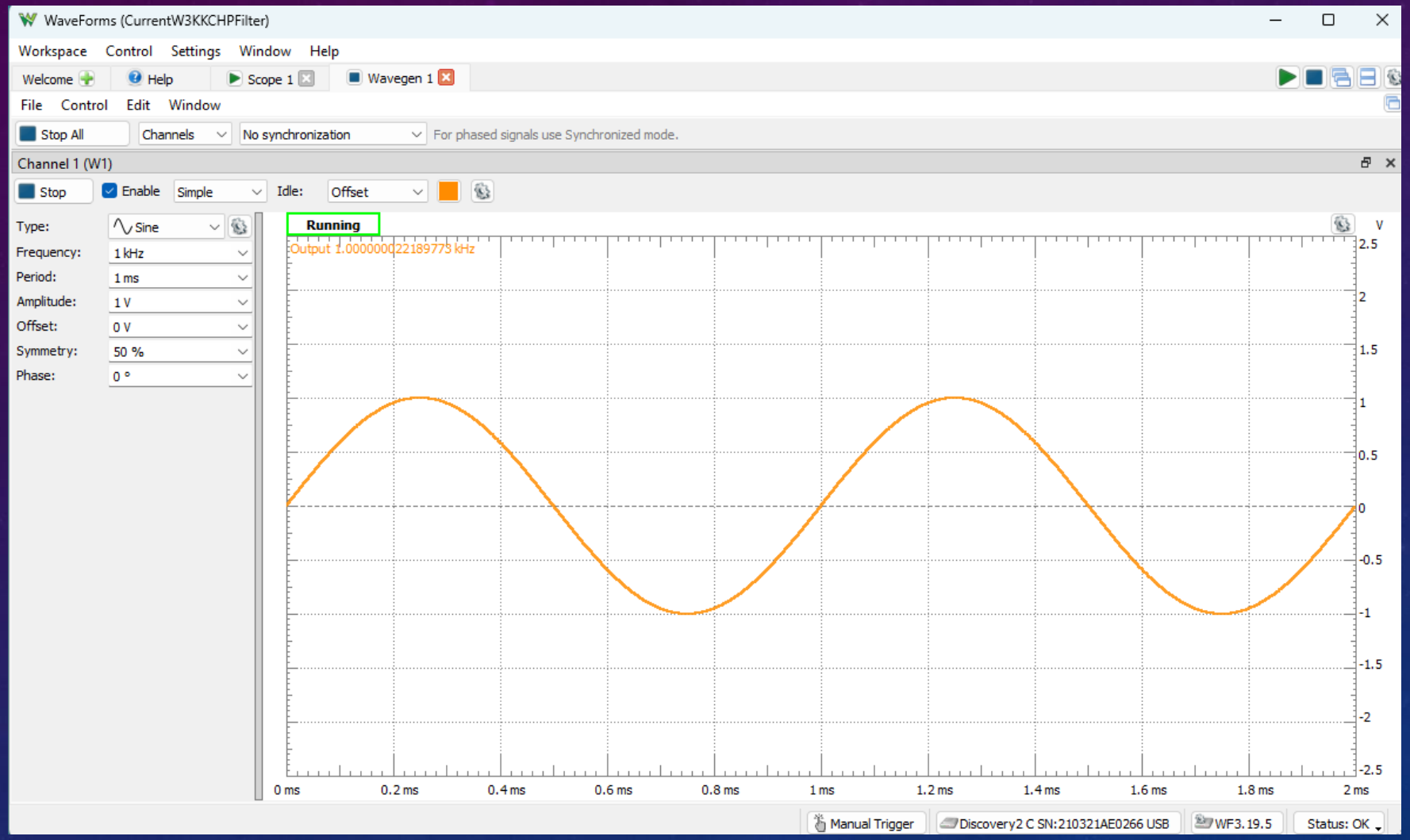
WAVEFORMS -- WORKSPACE

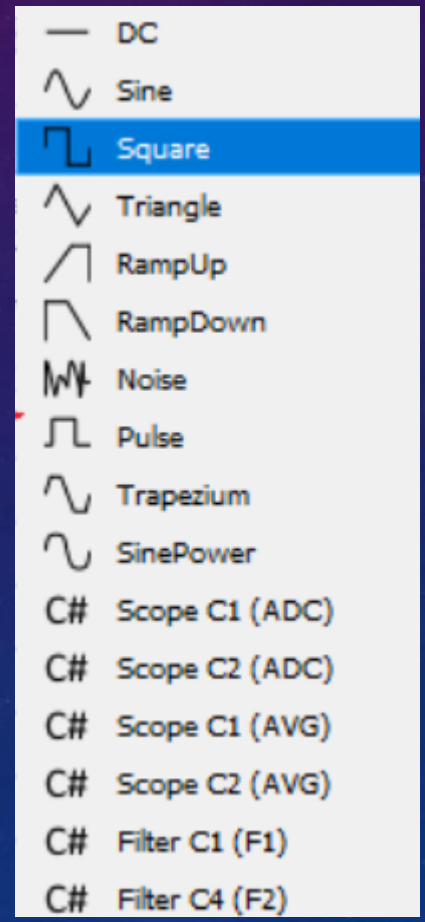


WAVEFORMS -- OSCILLOSCOPE

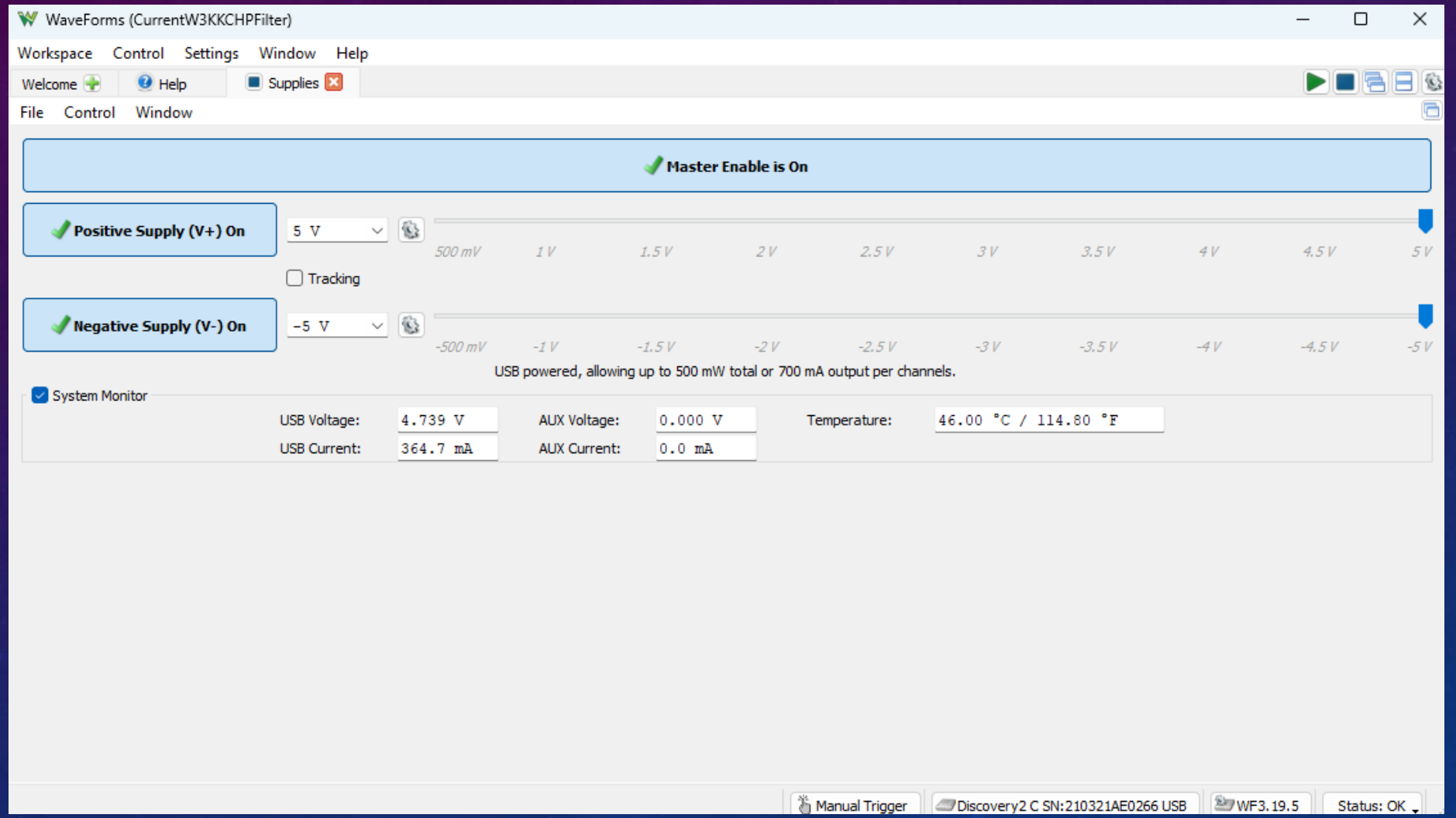


WAVEFORMS – WAVEFORM GENERATION (WAVEGEN)





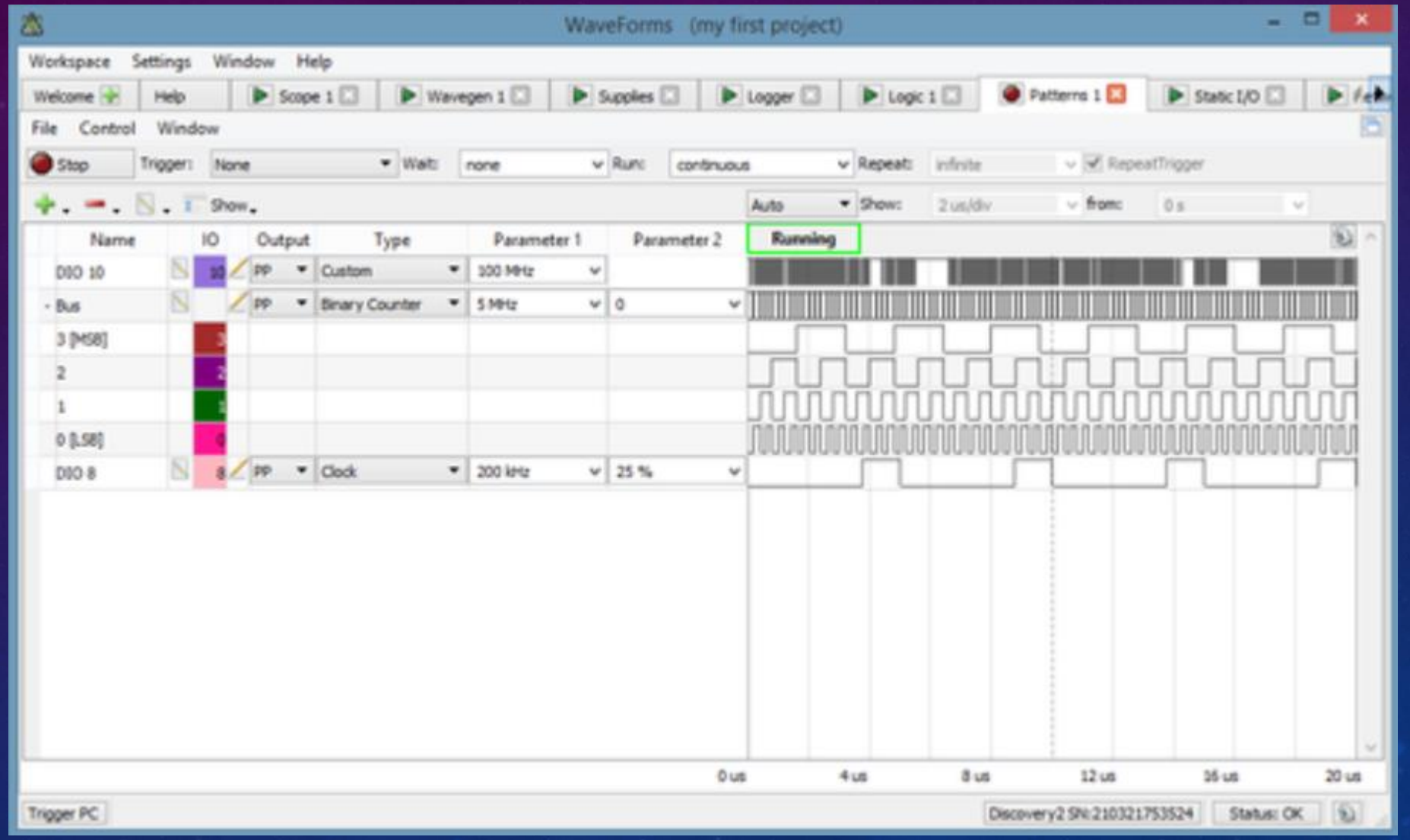
WAVEFORMS – POWER SUPPLIES



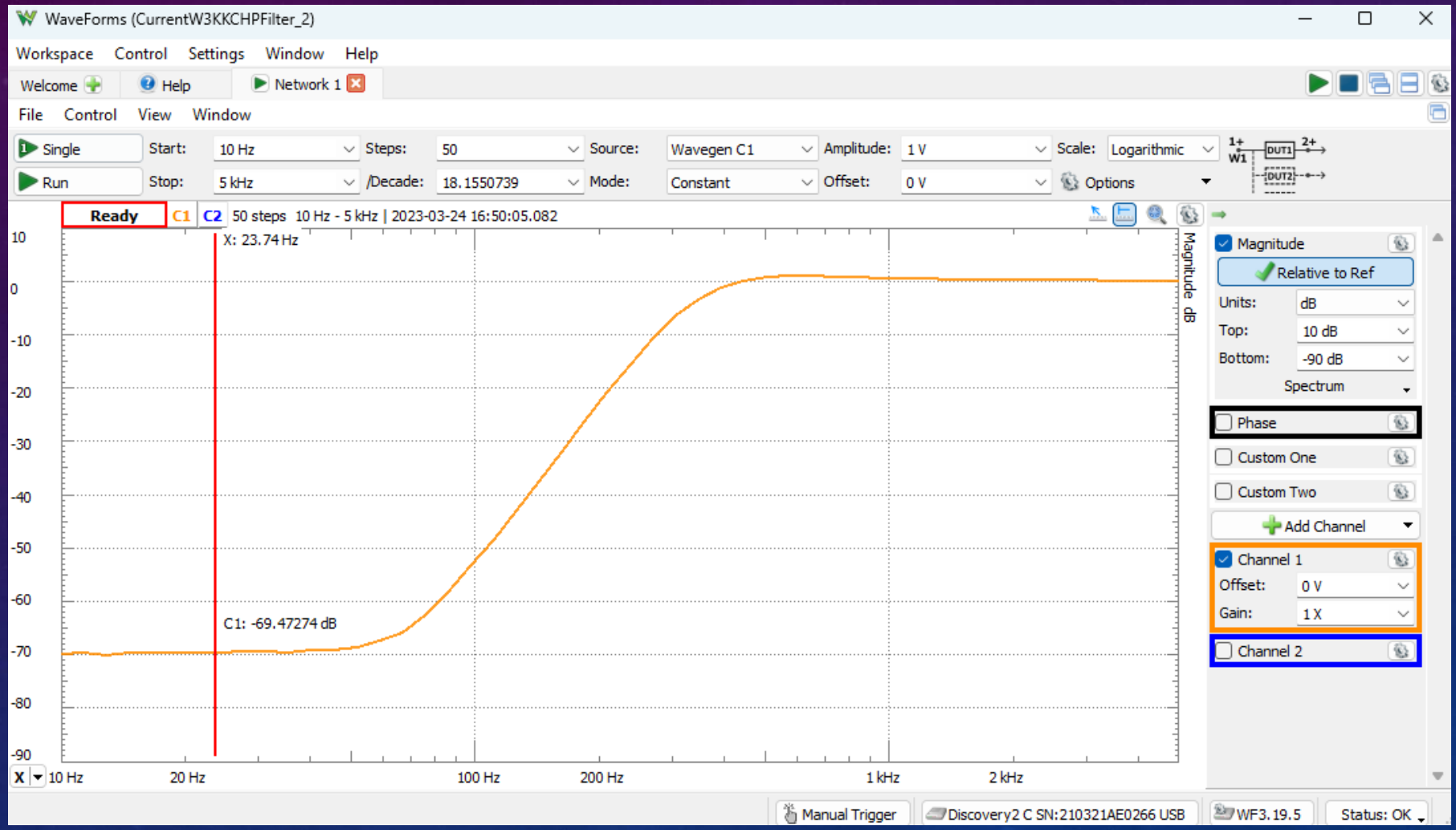
WAVEFORMS – LOGIC ANALYZER

- Scope
- Logic Analyzer
- Protocol Analyzer

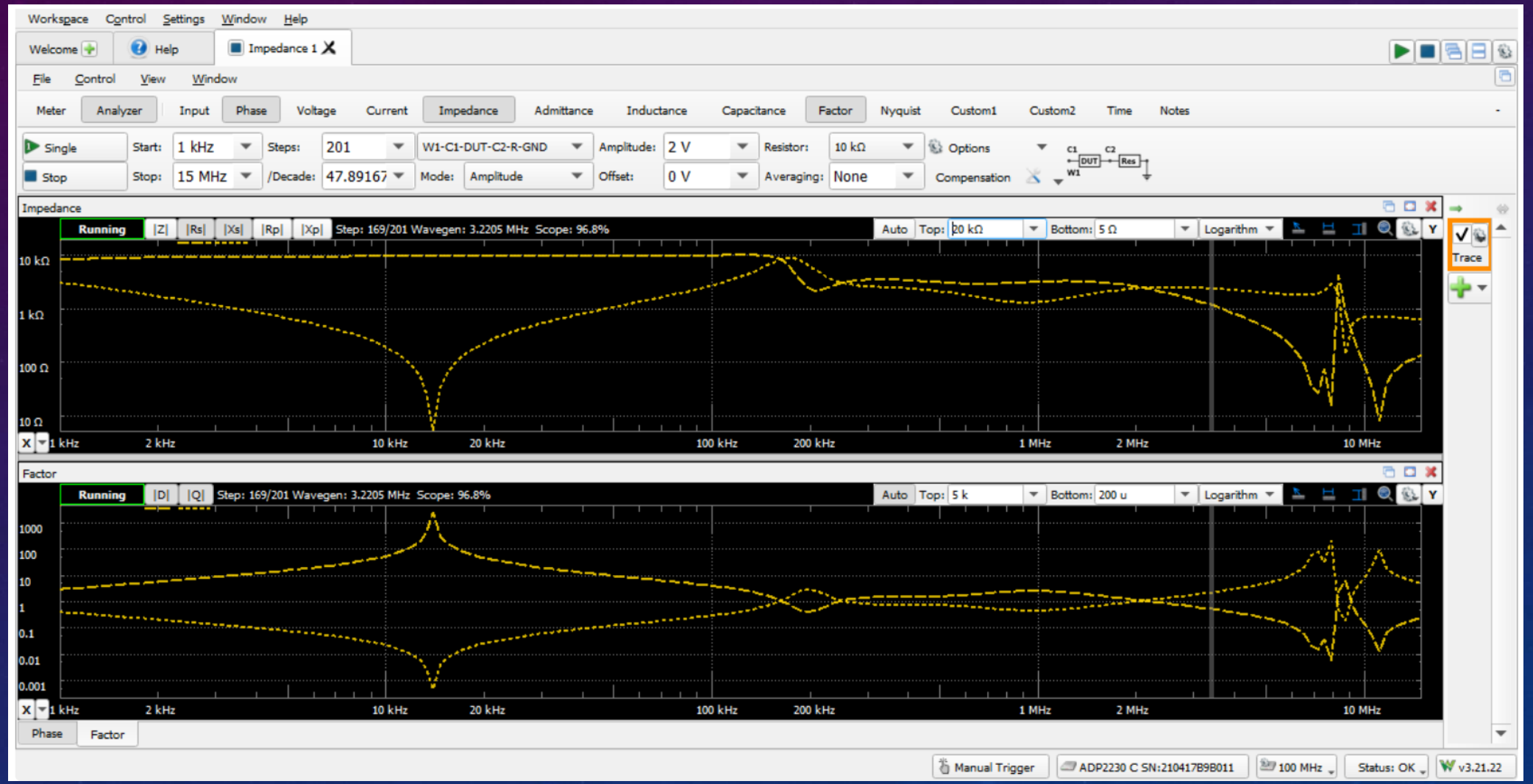
WAVEFORMS – PATTERN GENERATOR



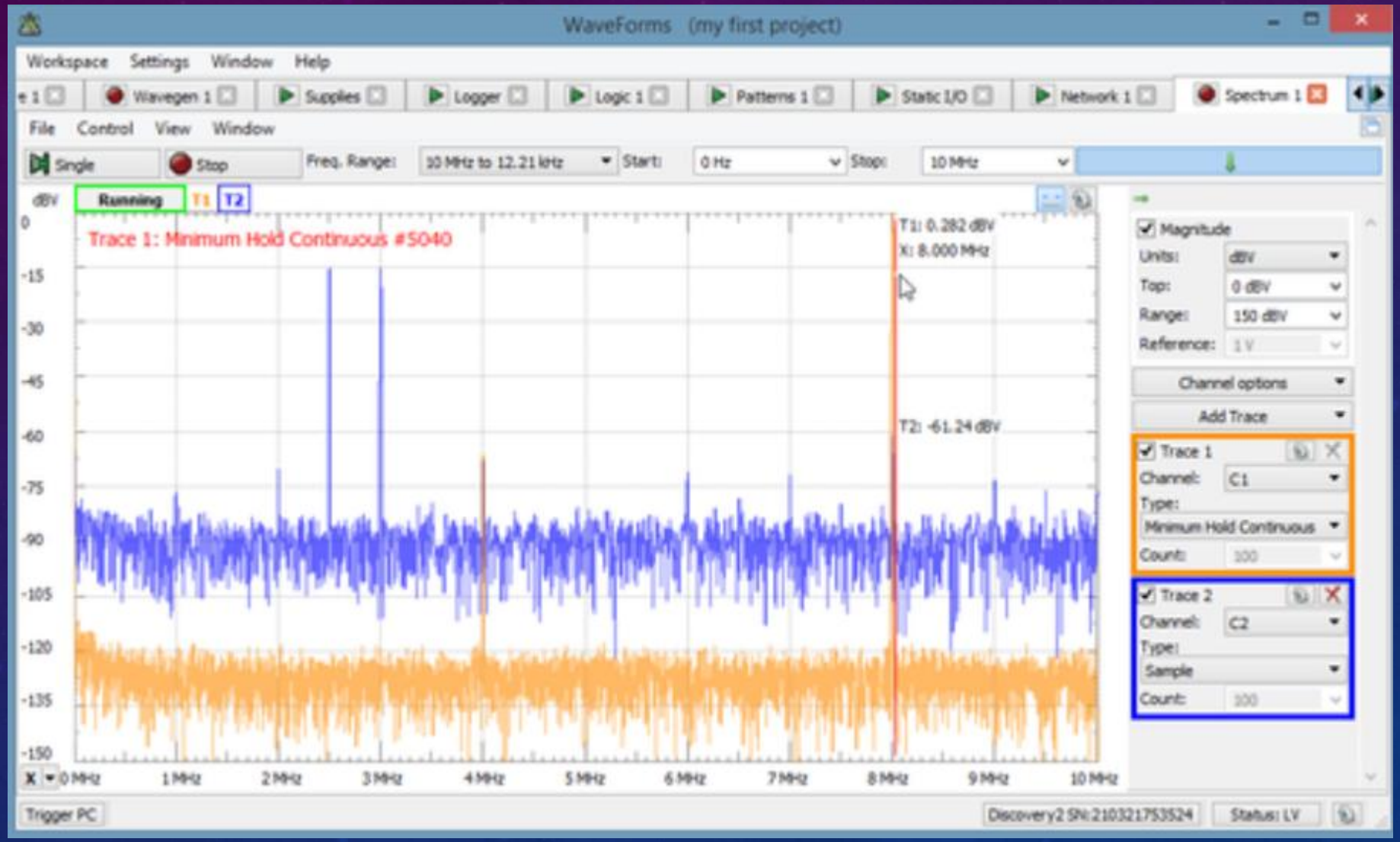
WAVEFORMS – NETWORK ANALYZER



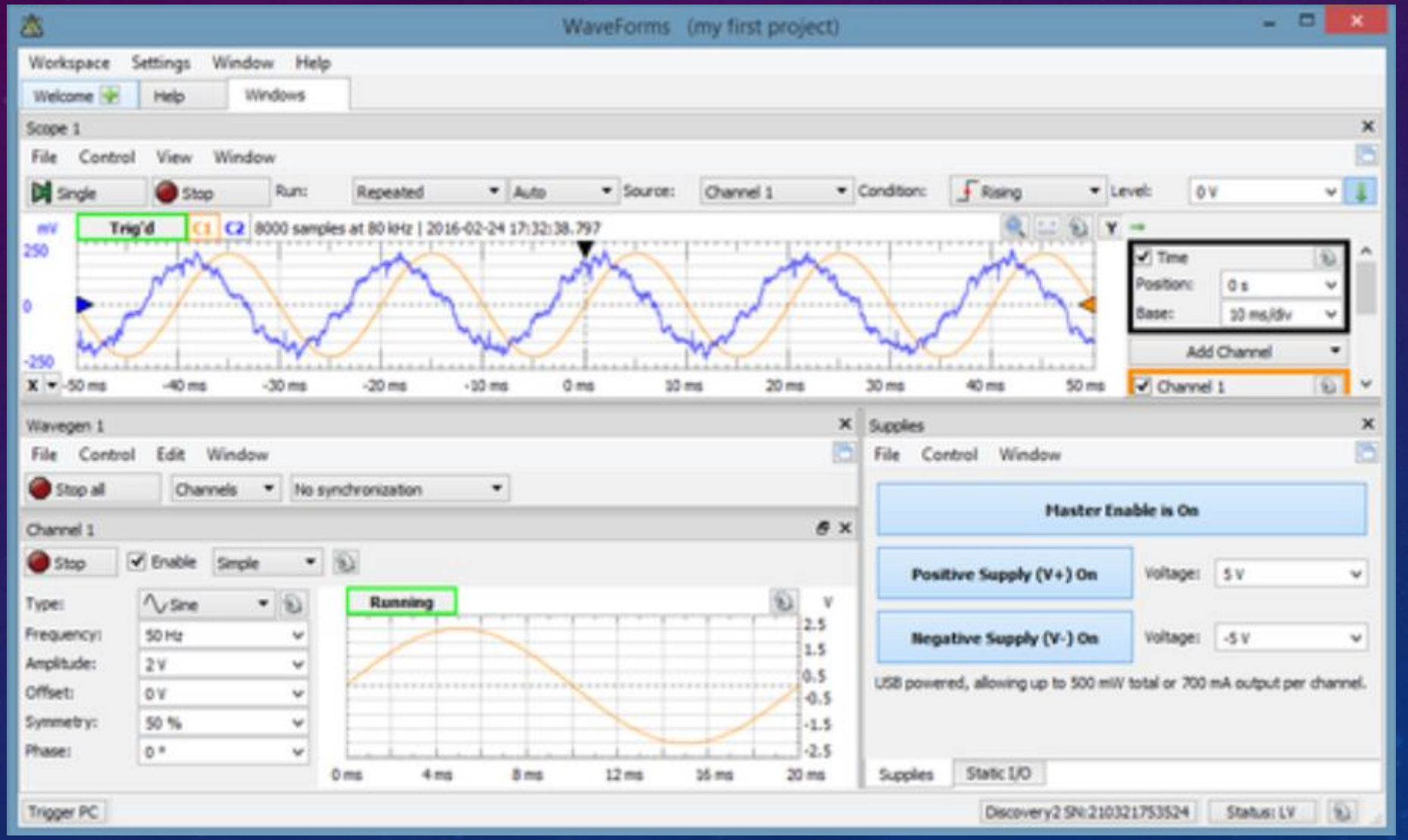
WAVEFORMS – IMPEDANCE ANALYZER



WAVEFORMS – SPECTRUM ANALYZER



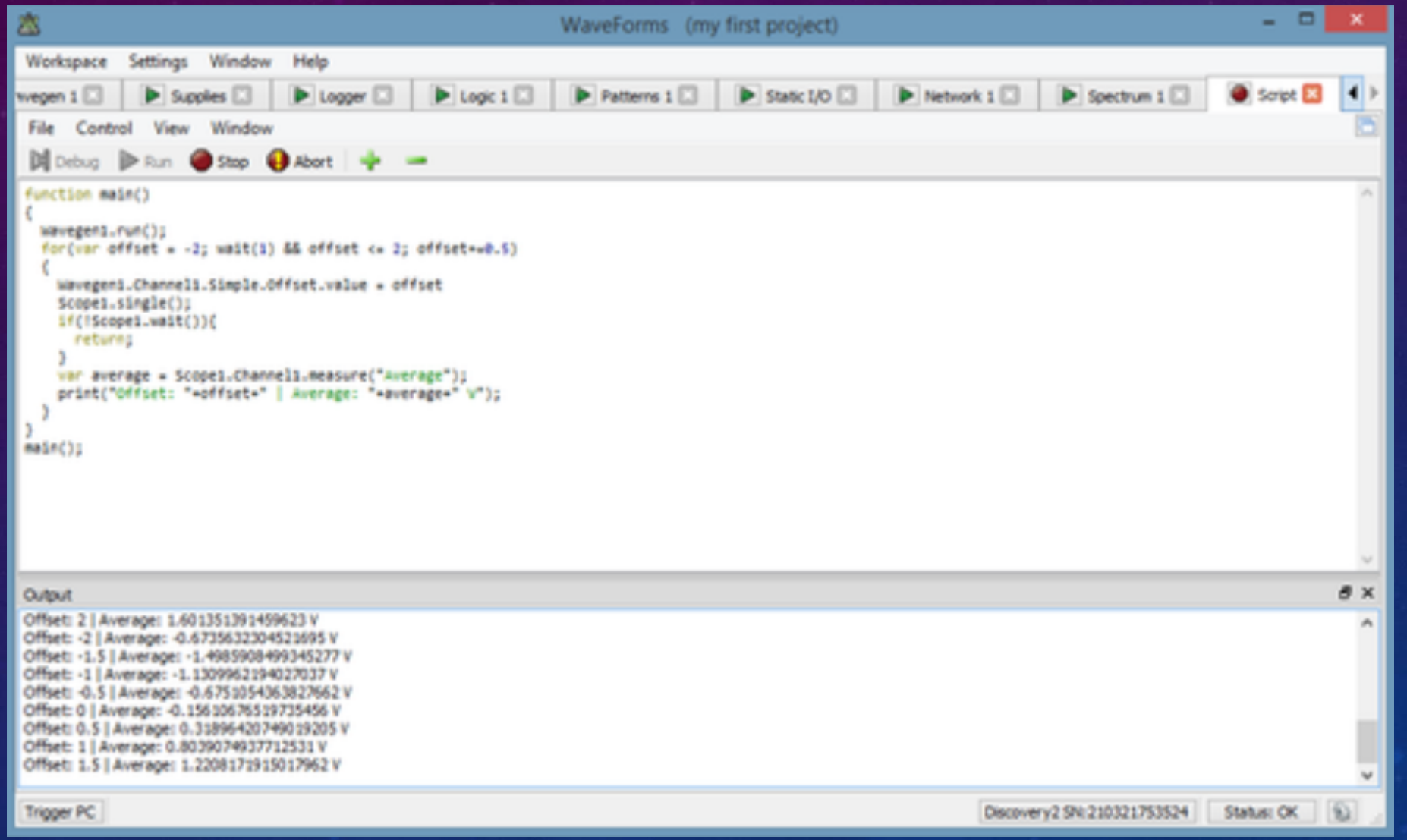
WAVEFORMS – DISPLAY MULTIPLE INSTRUMENTS



- Scope
- Wavegen
- Power Supplies

WAVEFORMS – LOGGER

WAVEFORMS – SCRIPTING



BUNDLES

- It's Lightweight! Take It With You
  - Repeater Site Trips
  - Field Day, SOTA, POTA
- Add a Connector to Your Projects
  - I have it on a module Test Board and a Repeater Controller Test Board
  - Samtec SSQ-115-02-T-D-RA
- Other Thoughts…
  - BNC Adapter Card is Worth Having – Gives You The Best Oscilloscope Bandwidth, Better Than Flywires
  - Need Scope Probes? Get the Pro Bundle

Ref: https://digilent.com/shop/analog-discovery-3-pro-bundle/

REFERENCES –

https://digilent.com/shop/analog-discovery-3/

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THANK YOU!!!