



Microsoft  
Partner

## 3110A

Up to 1 MHz EMC Testing

### Key Features

- 3,400+ Automotive & Industry Standards' Tests Included
- Free life time standards updates
- Very intuitive user interface
- Easily modify existing tests or create entirely new test sequences
- Supports send or receive of GPIO or LAN triggers
- Multiple waveforms can be placed in queue for sequential or triggered playback
- Can be controlled locally or over network with remote client software

**AE Techron's 3110A** is a simple-to-use yet powerful standards waveform generator. It can be combined with other AE Techron products to quickly create a wide range of powerful, intelligent EMC test solutions.

The 3110A outputs a standard analog signal that can work with any AE Techron amplifier or other LF amplifiers that you already have. When coupled with the AE Techron model 7234 amplifier, the 3110A can create virtually all waveforms, DC offsets, dropouts and surges needed for EMC tests with rise/fall times of 2  $\mu$ s or greater and frequencies from DC to 1 MHz.

The 3110A software is built around the concept of a waveform segment. Each waveform segment can have a unique waveform, (sine, square, triangle, and/or DC offset). Frequency, amplitude and DC offset can be clipped, fixed, variable or swept. Segments can be calibrated (as required in CS101) and set to continue on to the next segment or to hold for an external trigger.

The power of the system occurs when waveform segments are linked to create test sequences. These test sequences can be of any length and can be run as a single sequence, looped, or looped with multiple variables changing within the test sequence (as required in multiple Toyota and GM standards). Finally, multiple sequences can be combined to create a single customized extended test.

An extensive library of 3,400+ tests for many automotive, aviation and industry Standards makes it possible for the 3110A to save time from day one. And, for customers that require over-testing or testing for products that have no predefined standard, tests from the Standards Library can be easily modified and saved for later use.

The 3110A delivers extensive capabilities for LF EMC testing with very short training-time requirements. Plus, it easily automates repetitive and labor-intensive tasks, making the 3110A a very efficient and cost-effective solution for EMC testing.



## HOW TO BUILD A TEST

Tests are created by combining wave segments together with other wave segments and/or control segments.

**WAVE SEGMENTS** (including sine, ripple, square, triangle, sawtooth, and DC offset) are the basic building blocks of each test.

The frequency, amplitude, and DC offset of each wave segment can be easily adjusted using the Wave Properties window and defined as fixed or linear, logarithmic or exponential sweep, with wave segment durations as short as 50  $\mu$ s.

**CONTROL SEGMENTS** like Fixed Loop, Variable Loop, and Trigger make the 3110A able to reproduce very complex standards. The test shown below highlights several key abilities made possible by these control segments.

A multi-step waveform can start at one level/condition, then be repeated, with up to four variables changing during the wave segment duration. Single or multi-step waveforms can be made to repeat (or loop) and these repeating waveforms can be nested within a larger simple or repeating waveform.

At any point during a waveform sequence, the program can be automatically paused (either holding the previous condition or muting) and wait for an external trigger before resuming.

**THE RESULT** is a complex waveform sequence that takes only minutes to setup, saving hours in both training and programming time compared to alternative EMC test generators.



## Technical Details - Hardware

**Output channels:** 1

**Output Voltage:** 10 Vp

**Signal Generation:**

**DAC:**

18 bit

DC – 20 kHz (any wave form)

3  $\mu$ s full scale (includes settling time)

**Minimum pulse duration,**

**Burst:** <15  $\mu$ s

**Continuous:** 30  $\mu$ s

**Sine:**

14 bit

DC – 1 MHz

400 Msps

0.01 Hz or better frequency resolution

.0002 degree phase granularity

**Amplitude:**

76  $\mu$ V resolution

**Frequency,**

**Stability:**  $\pm$ 50 ppm

**Accuracy:**  $\pm$ 0.1%

## Control, Status, I/O

**Front Panel:**

**On/Off/Breaker**

**Signal Output:** BNC (analog - 10Vp)

**LED Displays:** Power, System Fault,  
Signal-In Enabled

**Back Panel:**

**Power Connection:**

120VAC: IEC cable with NEMA 5-15

230VAC: IEC cable with CEE 7/7

**Fuse:** 2A, 250V slow blow (5 mm)

## Physical Characteristics

**Chassis:**

The 3110A is designed for table-top or rack-mounted operation. The chassis is aluminum with a black powder-coat finish. The unit occupies two EIA 19-inch-wide units.

**Weight:** 9.5 lbs (4.31 kg)

**Shipping Weight:** 19.5 lbs (8.85 kg)

**AC Power:** Single-phase, 120 VAC, 50/60 Hz, 2A service; 230 VAC, 50/60 Hz, 2A model available

**Dimensions:** 19 in. x 11.75 in. x 3.5 in.  
(48.3 cm x 29.8 cm x 8.9 cm)

## Technical Highlights – Software

**Waveforms Supported:**

Sine, Ripple, DC, Triangle, Square, Rectangle, Sawtooth

**Waveform Modifiers:**

Amplitude, frequency and DC offset (fixed or linear, logarithmic\* or exponential sweep); phase angle; duration; clipped amplitude; and ripple on AC

**Waveform Controls:**

Trigger (user, GPIO, LAN), Fixed Loop, Variable Loop, Scripted Variable Loop, Template Playback, GPIO Output, LAN Output

**Minimum Step Size (isolated):**

25  $\mu$ s  $\pm$ 3  $\mu$ s

**DC Quiescent Noise:**

5 mV<sub>p-p</sub>

**Test Capabilities,**

**Minimum Waveform Duration:** 50  $\mu$ s

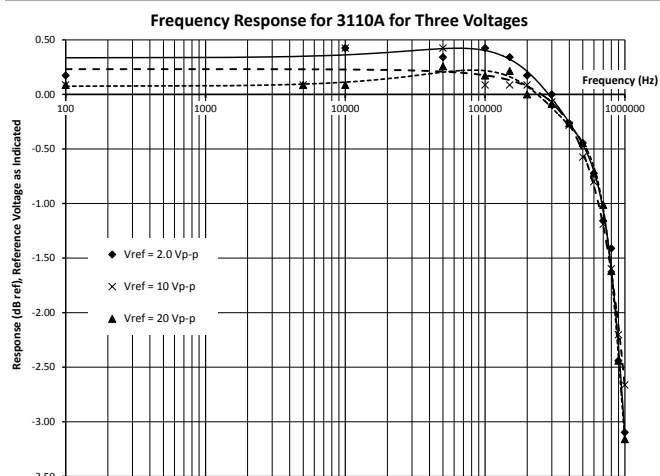
**Maximum Number of Loop Repeats:** >1 million

**Storage Capabilities, Number of Tests:**

300,000 (expandable to 1 million)

See Capabilities sheet for loop characteristics

\*Logarithmic sweep available for sine, ripple and DC offset waveforms only.



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