Coaxial Cable 50Ω HMM Pulse Test System

BARTH Model 4702 IEC-50

Preliminary Specifications

The 4702 IEC-50 system was designed and built to eliminate the common problems that are found with gun testing. Our carefully manufactured measurement hardware maintains accurate waveforms throughout the system for precision measurements of the complete device. The test system solves the large gun tip interconnect issues and removes effects from the gun's separate ground return cable. There are also no interfering electromagnetic pulses that are induced with gun testing. The system provides a very easy connection to test fixture boards.

Barth Software

Barth's software includes: Current and Voltage DUT waveform capture; Single or multi-point leakage testing (configurable); Compare & analyze multiple tests; Multi pulsing capability (between data collection points); Scope auto-SPC (signal path compensation); and other options, such as external TDR/Parametric test connection; to provide additional "in between pulse" part functional verifications.

How It Works

To use the IEC-50, the operator enters the desired test parameters on the control computer, such as starting voltage, current and voltage limits and voltage step increments. The test then proceeds automatically, controlled by Barth software developed with National Instruments LabView®. The operator can halt and resume the testing and can view the plotted test data points as the test proceeds. The operator can also view (during testing or afterward), voltage & current waveforms, single point or multi-point leakage evolution, test set-up parameters, or numerical data information. The active test and several previous tests' data points may be viewed simultaneously on the I/V plot. Hardcopy prints are immediately available on the provided printer. This includes both the active I/V plus leakage plot, and/or the "print window" print which will print all information in that "window".

System Components

- Barth Electronics Control Box/Pulse Generator
- Tektronix Scope Model TDS3052C, 500 MHz Digitizing
- Keithley Picoammeter/Voltage Source
- Test control computer (Dell Optiplex Minitower; Dell 19" flat panel; Windows XP; Keyboard; Mouse)
- High speed business class color printer
- LabView runtime Control and Analysis Software
- One year warranty on the entire system

Accuracy

The system generates a precise IEC test pulse that is accurate and repeatable to provide the highest standards in IEC pulse integrity. The special Barth wide bandwidth pulse voltage and current sensors provide the highest standard of measurement capability for IEC test equipment. The complete system has been built with special attention paid to minimizing losses in the test circuitry and the coaxial cable connections. This results in low internal resistance at the device under test (DUT), for high accuracy measurements. The tests can be verified by the current voltage and pulse information captured by the oscilloscope, and displayed and saved on the computer.

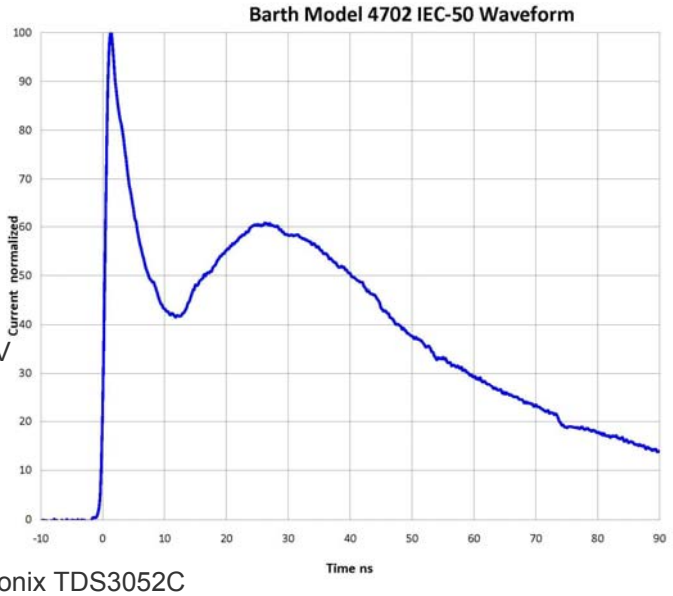
Barth Electronics, Inc. – 1589 Foothill Drive – Boulder City, NV 89005
Phone: 702-293-1576 – Fax: 702-293-7024
beisales@barthelectronics.com – www.barthelectronics.com

Connection & Operation

Tester is connected to DUT with a single 50Ω coax which provides the delivered pulse and provides connection for leakage measurements in between IEC stress pulses. This method provides a ready and convenient connection for both system type and component level IEC testing. Wafer level testing is also supported.

Pulse voltage and current delivered to the DUT are measured remotely with custom Barth wide bandwidth voltage and current probes for accurate waveform measurement. Waveforms are digitized on the included oscilloscope and downloaded to the control PC for processing. Our TDR measurement provides the ESD chip designer with detailed waveform information, providing help in determining the protection needed for the desired immunity level.

Barth 4702 IEC-50 Preliminary Specifications



Output to DUT (program driven)

Pulse Rise Time: 0.7 - 1.0 ns

I_{PEAK} 3.75 A/kV* +/-10%

I_{30ns} 2.0 A/kV* +/-20%

I_{60ns} 1.0 A/kV* +/-20%

Voltage Range: 500V-20kV*

Max Current: 100A PEAK; same as IEC gun current @ 27kV

Pulse Rate: ~10 test pulse series per minute

Leakage Voltage: 0V to 100V in 0.1V increments

Source Impedance: 50Ω

Load Impedance: Any load

Size: 19"W x 20.5"D x 11"H control unit, 18"H includes Tektronix TDS3052C

Weight: ~130lbs total system weight plus shipping materials;

(Control Box 50 lbs, Tektronix TDS3052 Oscilloscope 7 lbs, Dell Workstation 43 lbs, HP Printer 24 lbs.)

*IEC Equivalent Voltage

Accessories

Package Device Connection Fixture (Standard)

Data Storage

Data is automatically stored to hard disk in comma delimited format and can be recalled for viewing or transferring to disk. Data is automatically time/date stamped when saved.

Hardcopy Printout

Hardcopy printouts on a color printer listing data point values and showing plotted results using operator selected scaling are immediately available in a presentation ready format at the end of a test.

Barth Electronics, Inc. – 1589 Foothill Drive – Boulder City, NV 89005
Phone: 702-293-1576 – Fax: 702-293-7024
beisales@barthelectronics.com – www.barthelectronics.com