



6 Axis ESD/EMC Near-Field Scanning System



EM-ISight ESD
Electromagnetic Scanning System
Single Probe Solution 9kHz – 6GHz

EM-ISight - ESD

APREL **EM-ISight - ESD** is a fully integrated test system designed to measure a test subject exposed to an ESD source. This system is an industry first where certified ESD events can be measured in real-time for Frequency, Time and Spatial Location on a device exposed to a controlled ESD event. APREL support third party ESD source generators to ensure that the end user has confidence in the high speed event being generated. Through developing the measurement methodologies needed to capture an ESD event in a spatial location the time and frequency can be resolved through the integration of high BW Oscilloscopes. By combining measurement functions in to one single capture the EM-ISight-ESD system will re-define how EMC engineers measure and determine the best practice for ESD measurement and subsequent circuit design. Developed to support multiple test applications the EM-ISight-ESD is the complete system solution for near-field analysis.



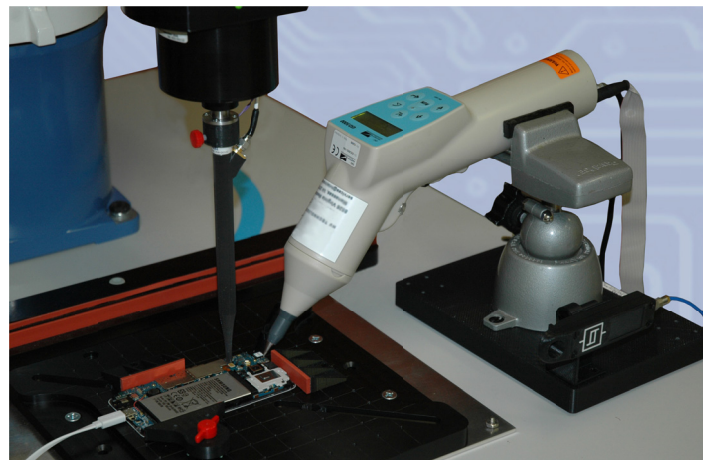
APREL's magnetic H-Field probes employ an advanced design; these highly shielded magnetic probes set the standard for electric field rejection capturing ESD events in line with IEC-61000-4 standard. Magnetic probes used on the EM-ISight-ESD incorporate our proprietary substrate technology along with composite isolators. This allows for extremely high spatial accuracy in X, Y and Z allowing for a clean transition of the signal to the acquisition unit while rejecting any unwanted arcing (spark) from the ESD source.

Through the use of the APREL ESD Validation Device a unique method for verification of the source is achieved allowing users to easily validate the ESD event to ensure proper gun setting. The APREL ESD Validation Device has been fully modeled using simulation software and validated through experimental measurements. Magnetic ESD-Probes are tested and calibrated to measure events up to +/- 8kV conducted. This allows for unparalleled measurements of an ESD event to provide spatially sound results for the frequency and time domain.

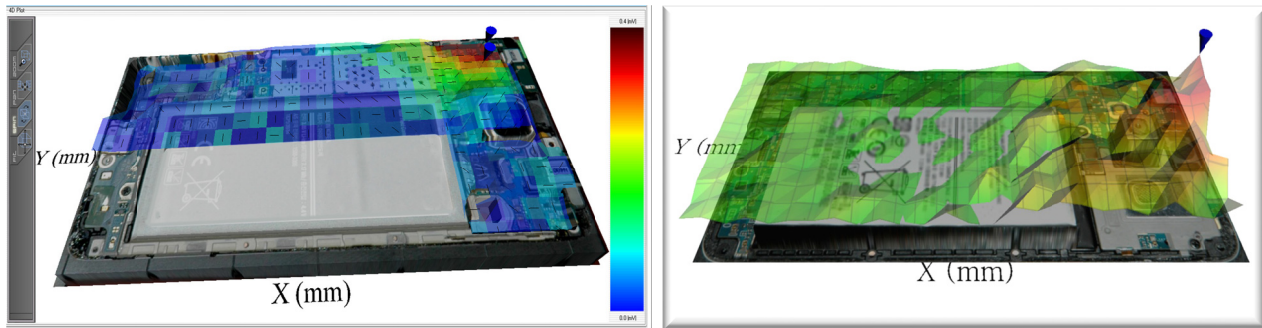
Synchronization of the ESD event to the acquisition of the resultant data is achieved by implementing a broadband trigger probe; the ESD event is captured from the very start and recorded throughout the time period in which the event occurs until the discharge point.

EM-ISight-ESD captures the real ESD event for viewing in time or frequency and animation videos can be generated for viewing the results for each measurement space. ESD can be observed from the initial pulse all the way to the end of the event; using our proprietary mapping software. In addition the user can select specific periods in time or frequency to map where the physical field has formed, this coupled with a spatial accuracy of less than 30 μm allows for greater understanding of an ESD event and the effect it may have on a circuit design. Using the software is easy and by employing the EM-ISight-ESD repetition of testing can be solved easily and conveniently without positioning errors or user fatigue.

The utilization of a Denso 6 axis robots and RC8 Controller allow for precision positioning of the probe used to capture the ESD event and return spatial data relevant to the location where the event has been recorded on the device under test. Options for the robot are available to support the volume and size of scans needed by the user with a reach from 850 mm up to 1,290 mm (robot dependent). The robot is supported using a custom workstation, which allows for complete flexibility of use and deployment. Workstation options allow for the removal of a ground plane (user selected) and routing of ground, optimizing the measurement profile executed by the user. All robots used on EM-ISight-ESD have been tested in the most extreme electromagnetic environments. APREL offer the option for further expansion by allowing multiple robots to be configured to support additional test operations, further details on how APREL can customize a solution are available on request.



Measurements can be conducted in traditional Cartesian and off axis Horizontal scan configurations.



Data review options

System Highlights

- Denso RC8 Controller
- Single ESD probe solution from DC to 4GHz with built in spark isolation
- Single EMC probe solution from 10kHz to 6GHz
- Measure near field coupling of an ESD event
- Plot ESD event in frequency
- Plot ESD event in time and space
- Export frequency or time domain data into real-time movie format for advanced visualization
- Universal ESD gun positioner with multiple circuit discharge options
- ESD validation target for event normalization
- Full suite of standard near-field software and hardware
- X/Y/Z scan areas of 600mm (Cartesian)
- High resolution scan (>0.03mm)
- Coarse scan with dynamic peak search function
- Real-time topology analysis using dynamic touch detection (Cartesian or Horizontal)
- Z height distance from 0.05mm up to 600mm (Cartesian)
- 4D Measurements of DUT by integrating X/Y/Z & Phi
- Field distribution presented in 2D, 3D or 4D plotting with quick snap image processing @ 30µm
- Source direction plots (vector)
- Customizable reports based on user requirements automatically exported to MS Word
- Delta plot measurement function (compare before/after measurements)
- Frequency distribution plots based on span and trace with added limit lines
- AVI export function for real-time visualization of field and frequency distribution
- Advanced measurement functions, single point analysis, quick check, free move and point delta
- Micro Strip Line 10kHz to 6GHz
- Quick scan setup using vision system

Optional Accessories/Software

- Exy 1.5mm E-Field Antenna Probe
- Hz-Field Antenna Probe
- 10Hz to 1MHz low Frequency H-Field Probe
- Dual Stage Low Noise Amplifiers DC to 6/20/40 GHz
- FFA Far Field Approximation Software
- USA Ubiquitous Server Application
- Frequency Upgrades for EMC measurements 9kHz to 20GHz/40GHz
- Advanced device positioner
- 7 Axis ESD Device Positioner
- 4 x 5 Meter EMC Shield Room

Vision System	Custom designed software for Vision Integration 10.7 MP CCD camera, Low distortion lens, real-time image capture, Permanent Robot mount +/- 180 rotation, Lens and Robot Calibration in X/Y, Autofocus and Zoom Feature, control Brightness, Contrast and Saturation and export file to XML	
Software	Windows 7, 8, 10 and MAC Boot Camp User friendly GUI that allows for easy setup and data retrieval Automatic antenna probe movement control synchronized to ESD event Automatic system control or user definable parametric setup incorporating vision system Visual display including storage and retrieval of measured results in full 3/4D Data tracking for project improvement/quality control Importation of previous measurement profiles to track design/quality improvements Vision system control for real-time DUT capture	
Analytical Tools	Perform EM Test - measurements of (near-field) magnetic fields resultant from an ESD event and near field emissions Record and plot time domain of and ESD event Record and plot frequency domain of an ESD event Record and plot spatial data of and ESD event Visualize in either time or frequency through AVI movie	
Typical Measuring Units	H-Field Probe: Probe frequency range: Sensitivity ESD: Pulse: Time Domain: Frequency & Time: Trigger: ESD Capture: Spatial Resolution: Measurement Uc: Optional probes:	High E-Field rejection Magnetic Field Probe (Hxy) or (Hz) Frequency sweep, in band discreet value from 10KHz to 6GHz/40GHz 200V – 8kV contact, 200V – 8kV air, BODE in Fx 20dB decade 0.6nS – 1.0nS Typical (optional of >0.4nS with scope upgrade) Sample rate 20GSs, 4GHz analog BW, min time step 0.05pS Simultaneous time capture = 0-200nS, Frequency = 1MHz – 4GHz Air event up to 30cm Speed = 2 seconds per point 20um X,Y 50um Z with Dynamic Touch Detection 0.05dBm @ 0.05mm Z and 0.1dBm @ 0.2mm X & Y E and H standard Near Field Probes
Measuring Reach and Movement	NO. of axes: Typical reach*: Along X & Y axes: Along Z axis: Rotation θ axis: Resolution: X and Y axes: Z axis: θ axis: Voltage	6 (X, Y, Z and θ) 3 Horizontal and 3 Vertical Workspaces 600 x 600 mm (factory set) option to change on installation 500mm 360° 0.03mm 0.03mm 0.1° 220 single phase
DUT Orientation	Typical:	Horizontal(off axis) Vertical (Cartesian) Custom
System Control	Controller for overall control: Operating system: Motor controller: Measuring interface:	PC with Intel i5 or better processor and 8GB RAM Windows 7/8/10 Denso RC8 GPIB/LAN/Serial port
General	Custom drivers to support Keysight and other test equipment manufacturers APREL ESD Validation Device (supports 8kV direct) ESD gun holder, 360 degree PHY positioning with 180 degree YAW Broadband ESD event trigger probe Multiple Workstation options to suit specific customer needs	
Additional Features SW	Multiple plots recorded in single report including layers, rotations and frequency distribution Automated peak search DUT teaching using Vison System along with XML data exportation Dynamic touch detection and vision control for 3D DUT teaching User defined plotting for multiple scan locations Limit exceed search function & User defined limit function Optional Far Field Approximation for EMC test equivalent sites of 3M and 10M Ubiquitous Server Application for custom development of test applications Automated data summary reporting AVI plotting over device or in 3/4D mode Multiple driver support for Anritsu, Agilent/Keysight, Rhode & Schwarz Spectrum Analyzers	

