

## EM-ISight Electromagnetic Scanning System

# EM-ISight



APREL Laboratories is a pioneer in the area of automated system solutions. EM-ISight has been developed as an automated tool for detecting the source of electromagnetic noise and improving electronic circuits. This near field detection system can be correlated to far field measurements and the dynamic software settings allows a user to incorporate limits based on previous assessed data or international standards.

EM-ISight is a portable EM-Measurement System which presents resultant data from 5 or 6 dimensions of kinematical scanning of a test sample. The measurement system can be used in support of VCCI (Voluntary Control Council for Interference with Information) activities at PCB

level and allows for standardized testing to JIS T060-1-1-2 / IEC 60601-1-1-2 and IEC 61967. EM-ISight is ideal as a primary EM test instrument for conformity testing, research, development or as a production audit system. Product approval of Integrated Circuits, LCD, GPS, Video Controllers, connectors, wireless modules, antennas and electrical/electronic interfaces can be conducted on the EM-ISight using the fully flexible test application software. The integration of 5 or 6 axis robots as supplied by DENSO means that this system can measure in traditional Cartesian or advanced horizontal plains.

The EM-ISight is a fully flexible measurement system designed to support multiple applications and industries including consumer products, automotive, integrated circuits, aviation, printed circuit boards and wireless development. Used as either a pre-compliance or development tool the power of features will meet most requirements for modern design and analysis methods. Custom applications can be added to this truly unique flexible test platform. The footprint of the system means that it can be introduced to most measurement environments with little effort. The system can be located into a controlled environment and allow for a sensitivity testing of below -140dBm.

APREL EM-ISight is an affordable and easy to use system for beginners or experienced EM engineers. Designed for small, medium or large organizations that develop, certify or improve on product design it is a fully expandable system that can grow with the needs of the user.

## Standard Functions

- H Field assessments
- 2D Measurements at fixed height
- 3D Measurements
- Collision detection on X, Y and Z
- Rotation around centre probe axis
- JPG Graphic Plotting
- 2D & 3D Plots
- Mobile Handset LCD analysis

**Standard Function**  
Requires Spectrum Analyzer

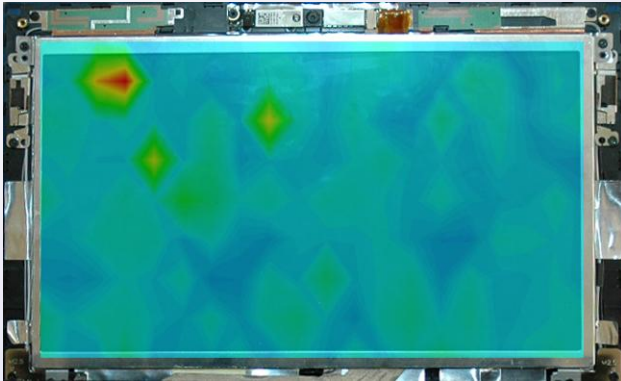
**Upgrade Function**  
Requires Signal Generator and Amplifier

## Upgrade Functions

- E Field assessments
- 2D Measurements at fixed height
- 3D Measurements using Z axis touch
- Collision detection on X, Y and Z
- Rotation around centre probe axis
- Wave Form analysis
- 2 Stage amplifier module  
100 Hz - 6 GHz 42 dBm gain
- Rosenberger Micro-Coax probes
- Rosenberger Micro-Coax probe interface

**NOTE: Signal generator, spectrum analyzer are customer supplied**

## Magnetic Field Scan of Integrated Circuit or PCB using IEC 61967 MP or Custom Probe



LCD Scan

- Magnetic Field Scans of an active PCB utilizing an LCD is easily done with the EM-ISight.
- User defined area scan parameters are defined using the teach pendant for X & Y with a Z-Axis boundary detection system.
- Gradient fields are assessed using the third party spectrum analyzer and the frequency and magnitude of the source is displayed. Data can be exported to a Microsoft Word document along with the physical coordinates and location of the gradients fields.

Gradient field cutoff values and non specific frequencies can be defined by the user in the measurement profile. This reduces measurement time and allows for a higher detail in identifying problem locations.

- Fields can be determined using accepted limits for the VCCI program or IEC 61967.
- High values can be accurately located by dynamically changing the field distribution graphs through the user interface.
- Two dimensional scans can be run rapidly and plotted using a scatter graph. Scatter graph data can then be used to pinpoint the location of the high gradient field and the user can then define a 4D scan of either the PCB or IC.
- Leakage from RF sources can be detected to determine the effectiveness of RF shielding.
- Mobile handset LCD approval.

Digital plots make it easy for the user to locate and identify the area of high magnetic field. A perfect ISO plan of the device tested is imported using the EM Sight camera which is located near the probe interface electronics.

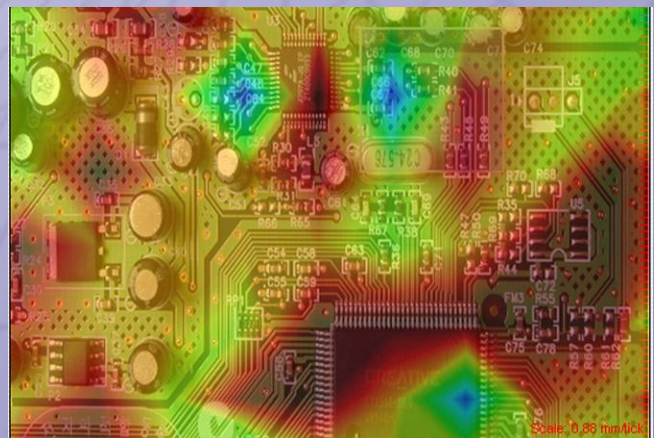
Export frequency span to AVI format allows real time gradient field analysis.

Batch file process allows for E and H Field analysis to be combined in one plot.

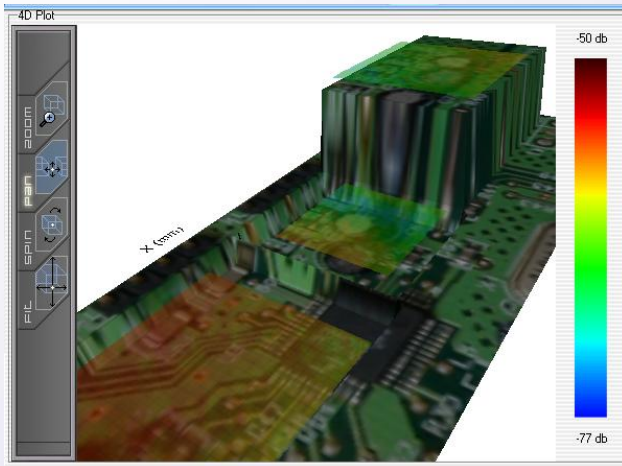
Limit line functionality. Peak search based on limit line.

Probe calibration traceable to IEC 61967-6

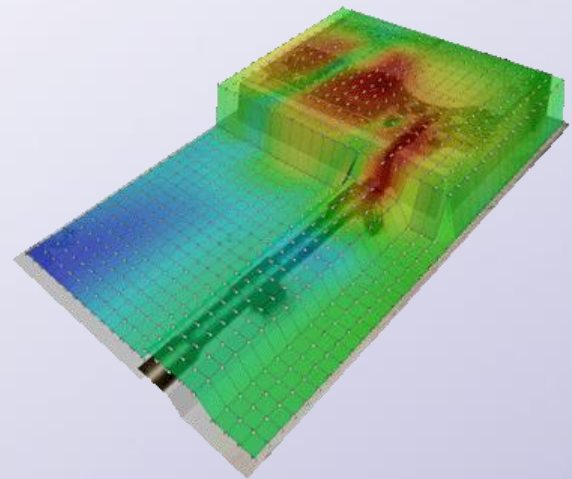
ISO IEC 17025 probe calibration.



Low Resolution Scan 2D Plot



**4D High Resolution Scan**



**4D High Resolution Flux Scan**

### 3 / 4D Measurement Plot

- High resolution scan of problem area can be made (>0.05mm)
- Coarse scan function with larger steps can be utilized (>10mm) to speed up measurement
- Z height distance can be set from 0.05mm up to 250mm
- 4D Measurements of a PCB are achieved using X, Y, Z and PHI movements
- Complete distribution of the fields are presented in a 3D or 4D plot
- High gradient fields are identified in red
- Values can be presented in the frequency domain
- Fully configurable test report where user defines data exported into MS Word
- Runs on Windows XP/Vista/Windows 7 and MAC Boot Camp

### Standard system configuration

- ✓ Software platform with 1 year fully comprehensive support and feature updates
- ✓ Software includes features for IEC 61967 MP (Magnetic Probe) or E or H-Field Probe movement control (based on user or standard requirements), automated measuring system control (based on real time data analysis), user defined parametric settings, user defined pass/fail graphing, and graphical measurement data for statistical readout
- ✓ Automated precision antenna probe movement using DENSO robotics
- ✓ Full 3/4D graphic package for visualization and manipulation of measured fields
- ✓ Mobile handset LCD and chipset analysis
- ✓ Video LCD and chipset analysis
- ✓ Storage and retrieval of measurement results
- ✓ Remote access to measurement database
- ✓ Dynamic process control
- ✓ Probe options of IEC 61967 Magnetic Probe, single channel wideband H FAP(Field Antenna Probe) with single user selected in band frequency calibration or Rosenberger Loop Probes
- ✓ Z-Axis surface detection system
- ✓ Collision detection system
- ✓ DENSO 5 or 6 Axis VP robot and controller
- ✓ Device Positioning fixture
- ✓ Optional training and support packages available
- ✓ World Wide DENSO support

<b>Description</b>	Perform EM Near-field scanning on a PCB, IC, LCD, RFID tag, wireless module, or antenna's for quality control and design optimization
<b>Software</b>	Windows XP, Vista, Win 7 and MAC Boot Camp User friendly GUI that allows for easy setup and data retrieval Automatic antenna probe movement control Automatic system control or user definable parametric setup Visual display including storage and retrieval of measured results in full 3/4D Data tracking for project improvement/quality control Automated LCD analysis of mobile devices
<b>Applications</b>	Perform EM Test - measurements of (near-field) magnetic fields emitted by a PCB, populated board, LCD or IC in X, Y, Z and $\theta$ (probe antenna rotation angle), measure feed current uniformity for antenna design EM field values measured using an optional spectrum analyzer and presented in 2D/3D form via PC Typical applications include, EMI noise emission analysis Shielding placement/optimization PCB board or IC design optimization/placement Antenna design optimization RF-Immunity (optional upgrade module available end 2008) Emitted radiation analysis of mobile handset LCD Video LCD monitors
<b>Typical Probe Measuring Unit</b>	Antenna: H-field Typical frequency range: Frequency sweep, in band discreet value from 100KHz to 6GHz Sensitivity: Probe Dependent VSWR: <1:2 Input impedance: 50 $\Omega$ Linearity: <0.1dB Pre Amplifier (optional): 42dB Preamplifier for EM Measurements from 100MHz to 6GHz Noise floor: -140dB with preamplifier module Optional probes: Rosenberger Micro-Coax rectangular and small loop and interface
<b>Measuring Reach and Movement</b>	NO. of axes: 5/6 (X, Y, Z and $\theta$ ) Typical reach*: Along X & Y axes: 450mm x 450mm or 650mm x 650mm Along Z axis: 300mm Rotation $\theta$ axis: 360° Resolution: X and Y axes: 0.05mm Z axis: 0.05mm $\theta$ axis: 0.1° Alignment accuracy: X and Y axes: 0.05mm Z axis: 0.05mm $\theta$ axis: $\pm 1^\circ$ Optional interface for Rosenberger Micro-Coax probes
<b>DUT Orientation</b>	Typical: Horizontal Vertical Custom
<b>System Control</b>	Controller for overall control: IBM PC compatible machine, at least Pentium 4 and 512 RAM Operating system: Windows XP/Vista/Win 7 Motor controller: Denso Measuring interface: GPIB/LAN/Serial port
<b>General</b>	Operating requirement: Temperature: 0° C to +60°C humidity: 60% or less AC power input: Single phase 100V ~ 230V, 50Hz/60Hz Power consumption: less than 15A @ 100V Weight: 25kg Dimension: 80cmx50cmx70cm
<b>Additional Features SW</b>	Multiple plots recorded in single report Multiple layers on single measurement process Automated peak search User defined plotting Limit exceed search function User defined limit function Automated data summary reporting AVI plotting over device or in 3/4D mode Remote access for database data retrieval Multiple driver support for Anritsu, Agilent and Rhode & Schwarz Spectrum Analyzers

**Some applications require additional upgrades from the standard package  
spectrum analyzer is customer supplied.**

APREL Laboratories, founded in 1981, is the wireless industry resource for,

- ✓ Specific Absorption Rate (SAR), MPE and RF Safety
- ✓ Acoustics and Hearing Aid Compatibility (HAC)
- ✓ RF and wireless, antennas and shielding
- ✓ EMC measurement systems

APREL provides expert services, consulting, training, standards development, compliance/certification, custom systems and research programs, as well as SAR and HAC instrumentation systems to the wireless telecommunications industry and government.

APREL Laboratories employees hold senior and executive positions in multiple international standards organizations, including IEEE and IEC and work closely with international and national regulators.

***APREL is a member of Spectrum Sciences Institute, a not-for-profit research and education organization.***

To order EM-ISight™, or any of our other product offerings please contact your local representative ([www.aprel.com/representatives](http://www.aprel.com/representatives)) or contact us directly at +1 613 435-8300  
APREL Laboratories welcome enquiries from groups looking to represent our products and systems.  
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