# 6 Axis Electric and Magnetic Near-Field Scanning System


## EM-ISight-LR
## 9kHz to 40GHz Electromagnetic Scanning System
## Long Reach Model

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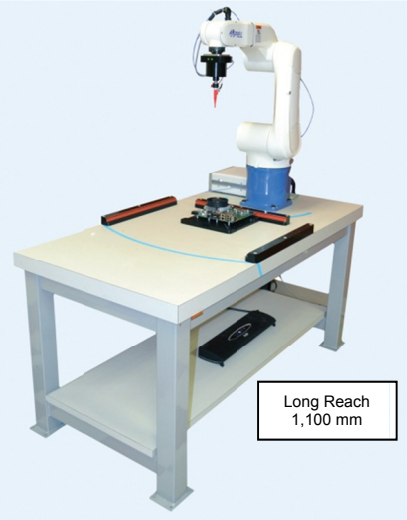


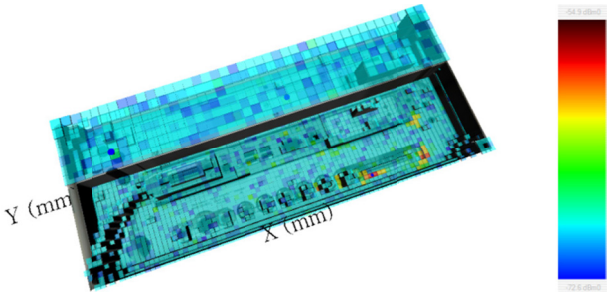

EM-ISight-LR (Long Reach) EMI/EMC measurement system built on a 6 axis articulated robot designed to support multiple applications and industries including networking, automotive, integrated circuits, aviation, military, and consumer products. Used as compliance system for IEC-61967-1-6 or a pre-compliance / development tool, the abundance of features meet most requirements for research, design and analytical needs. Customizable features allow the end user to have complete control of the solution. System includes a workstation which allows for integration of the robot and controller. Multiple work space including off axis horizontal and vertical assessments can be conducted. Multiple probe options are available for the system and the ability to upgrade for ESD measurements at a later date provides a fully flexible test platform. Near-field measurements can be executed from 9 kHz to 40GHz as standard. EM-ISight-LR has the best reach for automated near-field scanning solutions with the ability to scan systems as large as 1,000 mm x 1,000 mm Cartesian and over 2,000 mm x 600 mm off axis, this solution has the ability to conduct a scan on a complete fully assembled rack system.

EM-ISight-LR is an affordable and easy to use system with great return on investment when compared to traditional measurement solutions. Using the optional Far Field Approximation (FFA) module is an alternative to costly pre-compliance EMC chambers which have high maintenance costs and use significant floor space. Integration of high end Low Noise Amplifiers at the core of the transmission line yield low insertion loss and high unwanted field rejection of better than 25dBm. Easy setup for measurement profiles (less than 60 seconds) using the optional vison camera and touch detection allow complex topologies of a PCB to be taught in real time.

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

## Applicable Standards

IEC-61967-1-6
VCCI/CISPR 22/FCC Pt 15/22 EN55022
CISPR 12/FCC Pt 18/EN55011/
EN60555/VDE0871
EN55024/EN6100-6-4/GR-1089-CORE
ITU-T/ETS300/
IEC-6100-3




## Applications

Susceptibility / ESD Consumer products cell phone/computer devices
Integrated Circuit/Printed Circuit Board
Wireless modules
De-Sense testing (receiver circuits)
Medical devices
Automotive, aviation and satellite
Enterprise solutions
Electronic device emissions
Pre-Compliance testing (emissions/susceptibility)
Quality control/audit

## Supported Spectrum Analyzers

Tektronix
Keysight/Agilent
Anritsu
Rhode and Schwartz

**NOTE: Signal generator, spectrum analyzer is customer supplied.**
**Some applications require additional upgrades from a standard package spectrum analyzer; please confirm spectrum analyzer compatibility with APREL.**



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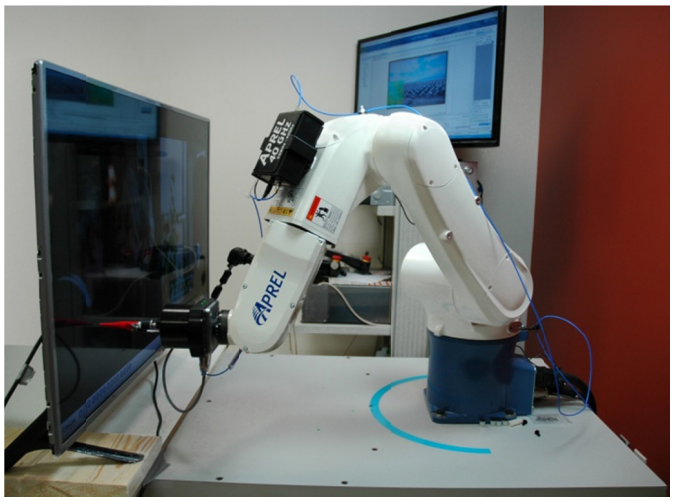
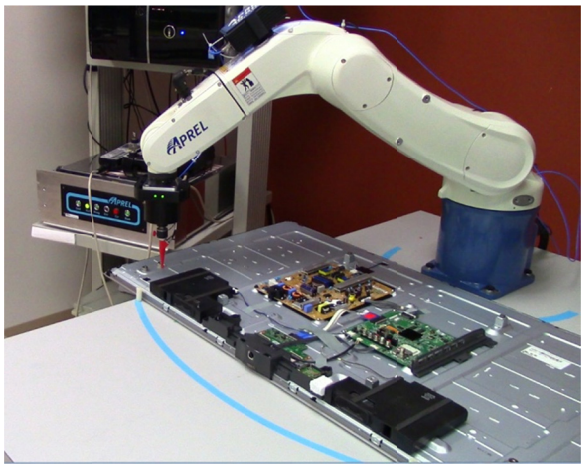


**Front Workspace Horizontal**

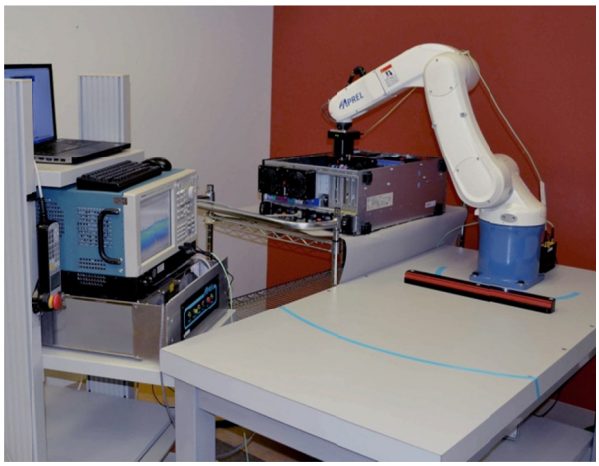
**Front Workspace Cartesian**

## System Configuration

- Denso RC8 Controller
- Configurable for 9kHz to 6GHz/20GHz/40GHz
- Single probe solution from 9kHz to 40GHz
- X/Y/Z scan areas of 1,000 mm (Cartesian)
- High resolution scan (>0.07 mm) based on repeatability error
- Coarse scan with dynamic peak search function
- Real-time topology analysis using vision and dynamic touch detection (Cartesian)
- Z height distance from 0.07 mm up to 900 mm (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
- 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 9kHz to 6GHz/20GHz/40GHz
- Quick scan setup using vision system



**Front Workspace**



**Side workspace**



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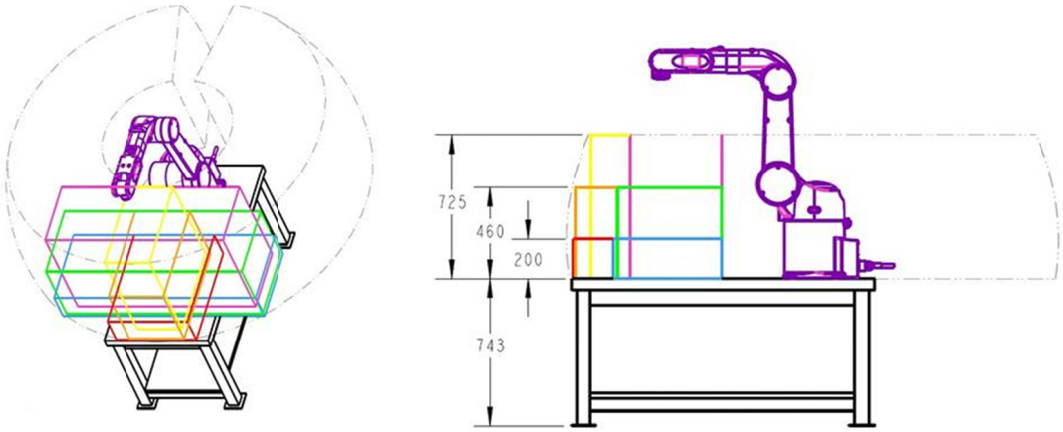
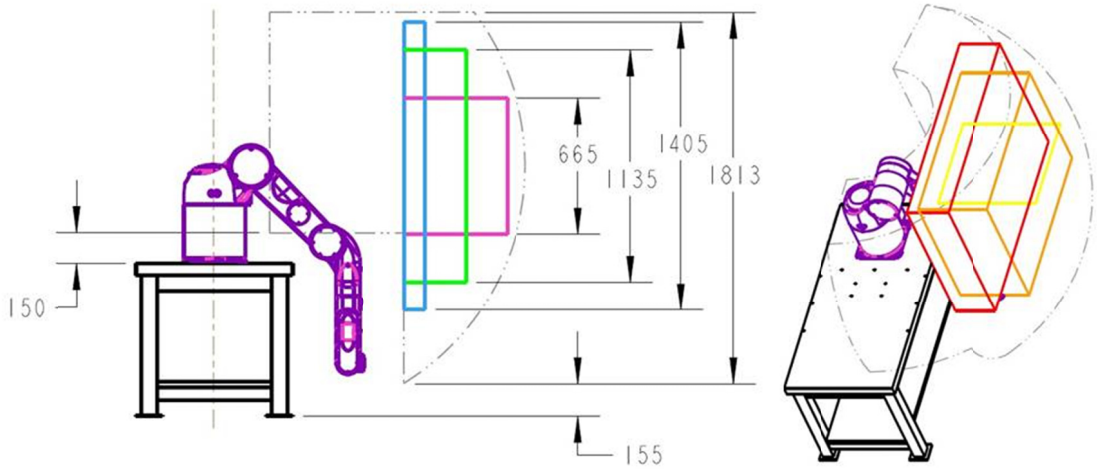
# Optional Workstation Configurations




**Cartesian Scans**




**Horizontal Scans**

**Values presented are nominal for single axis motion.**

**NOTE: Workstation must be secured to the floor with the Long Reach system.**



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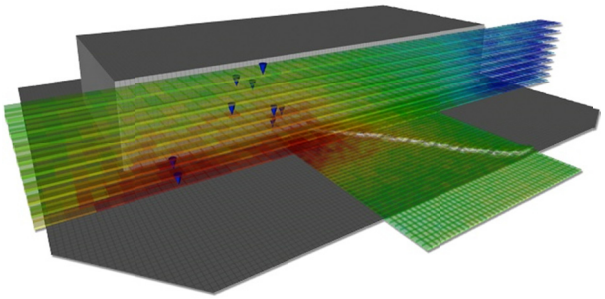
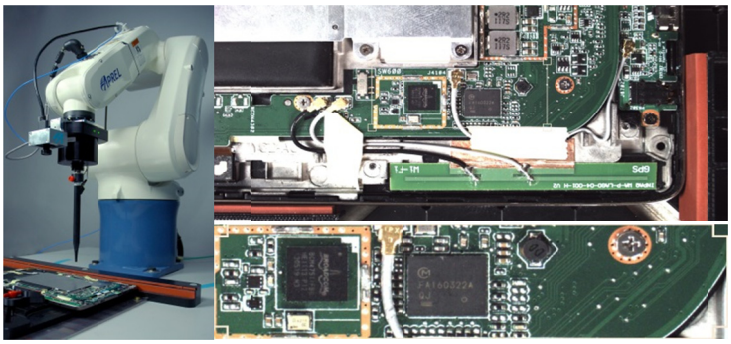
## Optional Accessories/Software

- 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
- ESD/Susceptibility Test Suite
- Advanced device positioner
- 7 Axis ESD Device Positioner
- 3 x 4 Meter EMC Shield Room



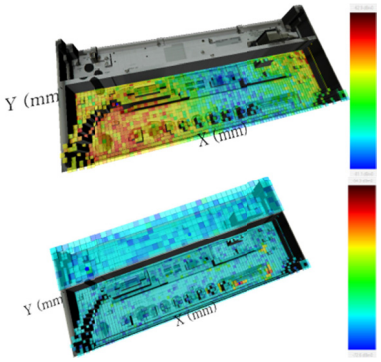
**4D Plot with Interpolation**



**Vision System Zoom Function**

## Standard System Configuration

- Denso VM-60B1G with RC8 Controller
- Single probe solution for measurements from 9kHz to 6GHz/20GHz/40GHz
- Low Noise Amplifier 9kHz to 6GHz
    - Optional Low Noise Amplifier 100MHz – 20GHz
    - Optional Low Noise Amplifier 100MHz – 40GHz
- Calibrated H-Field antenna probe to ISO/IEC-17025 standards to IEC-61967-1-6
- Software platform with 1 year fully comprehensive support and feature updates
- Software supports user defined parametric settings, user defined pass/fail graphing, and graphical measurement data for statistical readout full 3/4D graphic package for visualization and manipulation of measured fields, storage and retrieval of measurement results
- Remote access to measurement database
- Dynamic process control
- Z-Axis device topology surface detection system
- Standard workstation L = 152 cm x W =76 cm x H = 30cm (larger options available) 230 cm robot mounted
- Collision detection system for user/DUT safety
- Device Positioning fixture
- Vision System



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| | |
|---|---|
| **Vision System** | Custom designed software for Vision Integration<br>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<br>User friendly GUI that allows for easy setup and data retrieval<br>Automatic antenna probe movement control<br>Automatic system control or user definable parametric setup incorporating optional vision camera<br>Visual display including storage and retrieval of measured results in full 3/4D<br>Data tracking for project improvement/quality control<br>Importation of previous measurement profiles to track design/quality improvements<br>Vision system control for real-time DUT capture |
| **Applications** | Advanced measurement platform for Large Device Under Test 1,000 x 1,000 mm<br>○ EMI noise emission analysis<br>○ Shielding placement/optimization<br>○ PCB board or IC design optimization/placement<br>○ Antenna design optimization<br>○ RF-Immunity/emitted radiation analysis of mobile handset LCD or LCD controllers<br>○ Optional Susceptibility and ESD test modules<br>Far Field Approximation (additional software required) |
| **Typical Probe Measuring Unit** | Antenna: E or H-field with 0.02mm spatial resolution<br>Typical frequency range: Frequency sweep, in band discreet value from 10KHz to 40GHz<br>Sensitivity: Probe Dependent<br>VSWR: <1:2<br>Input impedance: 50Ω Normalized<br>Linearity: <0.1dB<br>LNA (standard): 100MHz to 40GHz, Gain 31dBm NF 4.0dB<br>LNA (Optional) 30dB Preamplifier for EM Measurements from 10kHz to 6GHz<br>Noise floor: Measured with MSL @ 1GHz = -139dB with *preamplifier module<br>Optional GPS Probe @ 1.6GHz = -151dBm*<br>Measurement Uc: 0.05dBm @ 0.05mm Z and 0.1dBm @ 0.2mm X & Y<br>Optional probes: Rosenberger Micro-Coax rectangular and small loop and interface |
| **Measuring Reach and Movement** | NO. of axes: 6 (X, Y, Z and θ)<br>Typical reach*:<br>Along X & Y axes: 1,000 mm x 1,000 mm (Cartesian) up to 2,200 mm off Axis<br>Along Z axis: 900mm (Cartesian) up to 750mm off Axis<br>Rotation θ axis: 360°<br>Resolution:<br>X and Y axes: 0.07mm<br>Z axis: 0.07mm<br>θ axis: 0.1°<br>Alignment accuracy:<br>X and Y axes: 0.07mm<br>Z axis: 0.07mm<br>θ axis: ± 1°<br>**Options to increase measurement space (reach) are available.** |
| **DUT Orientation** | Typical: Horizontal<br>Vertical<br>Custom |
| **System Control** | Controller for overall control: PC with Intel i5 or better processor and 8GB RAM<br>Operating system: Windows 7/8/10<br>Motor controller: Denso RC8<br>Measuring interface: GPIB/LAN/Serial port |
| **General** | Operating requirement:<br>Temperature: 0° C to +28°C<br>humidity: 40% or less<br>AC power input: Three phase 200V ~ 230V, 50Hz/60Hz*<br>Power consumption: 1.8 kVA<br>Weight: Controller = 22kg, Robot = 88kg, Workstation 70kg<br>Workstation Dimension: L = 1,500 mm x W = 760 mm x H = 300 mm |
| **Additional Features SW** | Multiple plots recorded in single report including layers, rotations and frequency distribution<br>Automated peak search<br>DUT teaching using Vison System along with XML data exportation<br>Dynamic touch detection and vision control for 3D DUT teaching<br>User defined plotting for multiple scan locations<br>Limit exceed search function & User defined limit function<br>Optional Far Field Approximation for EMC test equivalent sites of 3M and 10M<br>Ubiquitous Server Application for custom development of test applications<br>Automated data summary reporting<br>AVI plotting over device or in 3/4D mode<br>Multiple driver support for Anritsu, Agilent/Keysight, Rhode & Schwarz Spectrum Analyzers |



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