The accurate and rapid identification of radio frequency and signal integrity issues is critical in the development of advanced electronics systems. As circuit design becomes more complex, the early diagnosis of performance or interoperability problems is essential to ensure a robust product design.

Near-field scanning techniques allow the RF and current characteristics of a PCB, system, or sub-system to be assessed in order to highlight potential problem areas. A new single probe articulated robotic system from APREL, when combined with RF instrumentation from Keysight Technologies, allows the rapid and accurate identification of RF or current hot spots without the need for full pre-compliance EMC systems and test chambers.

APREL EM-ISight comprises a fully automated 5 or 6 axes robotic arm fitted with a single H-Field probe. By manipulating the robotic arm across and around the device under test (DUT), current and RF emissions can be captured in 2, 3 or 4 dimensions (x, y, z, phi). The system can initially perform a coarse scan and then refine this with a spatial resolution of >0.02mm to identify problem areas. For the standard system, z height is programmable from 0.05mm to 250mm to support complex DUT topologies. Extended or long reach arms are available for larger DUT sizes of up to 1m in size.

APREL H-field probes utilize a scientifically developed sensor arrangement that allows high sensitivity and directivity detection of magnetic near-field. Infinitely small elements within the probe are designed to allow detection of intentional or unintentional electromagnetic fields emitted by electronic systems, when the probe is connected to a receiver/spectrum analyzer.

A separate LNA (Low Noise Amplifier) allows for greater sensitivity and can be connected between the probe and the test instrument to increase the dynamic range. The probes have been fully characterized and assessed for sensitivity in air from 10 kHz up to 40 GHz.

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**Articulated Robotic Near-Field Electromagnetic Scanning**

**Keysight Technologies and APREL**

Cost-effective, flexible near-field scanning with correlation to far field measurements.

- Single probe, articulated robotic arm electromagnetic scanning
- Captures near-field data from PCBs, systems and sub-systems
- Measurement probes from 10 kHz to 40 GHz
- Data in 2, 3 and 4 dimensions, easily exported for analysis
- Options for DUT sizes of 300 mm, 550 mm and 1,000 mm
- Used with Keysight spectrum analyzers, receivers and wireless communications test sets
The EM-ISight system can be connected to a range of Keysight spectrum analyzers, receivers and wireless communications test sets for advanced measurement performance and system customization. Measurement applications include receiver sensitivity, noise, susceptibility, radiated emissions and ESD.

The system is provided with software that allows the easy export of 2D, 3D and 4D results to a textual report format. Additional options include Far-Field Approximation software that can be used to complement existing chamber facilities or as an alternative to pre-test/compliance. For custom applications, software modules are available that support the easy integration of Keysight test equipment.

When used with Keysight RF test instrumentation the APREL EM-ISight system is a cost-effective, flexible and rapid approach to near-field scanning of pcb’s, systems and sub-systems, with correlation to far-field measurements.

Keysight and its Solutions Partners work together to help customers meet their unique challenges, in design, manufacturing, installation or support. To learn more about the program, our partners and solutions go to www.keysight.com/find/solutionspartner

APREL is an independent research driven engineering company specialized in automated near-field test solutions for a wide range of technologies. www.aprel.com

For information on Keysight Technologies’ products, applications and services, go to www.keysight.com

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