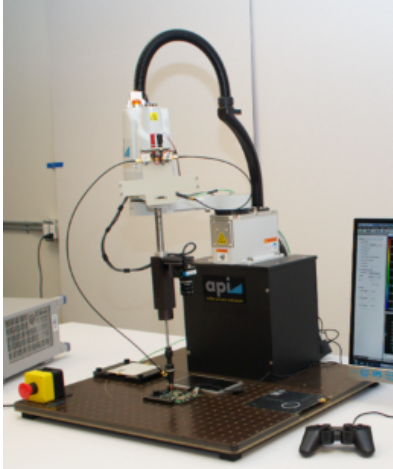
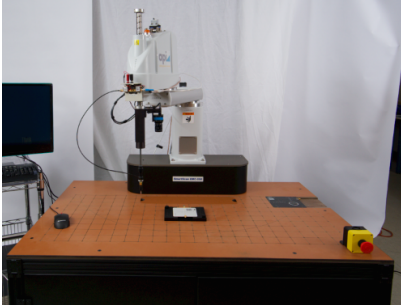


SmartScan - *350 / - 550 EMI*

API's near field scan solution is implemented using either a 350mm or 550mm 4 axis robot, offering precise control of probe landing points and high speed scan. SmartScan EMI supports standard test of IEC 61976-3 and following core features;

- Wide range of probe selection
 - EMI measurement from below 50 kHz to over 35 GHz
 - Low frequency probe set: 50 kHz ~ 50 MHz with 2mm probe dimension
 - Narrow band probes: GSM (860 MHz, 1950 MHz), WiFi (2400 MHz), etc.
 - Custom probes
- Integrated camera to take DUT pictures
 - Scan points (or areas) are defined over the DUT picture
 - Image stitching for larger DUT's
 - Scan results are displayed over the DUT picture automatically
- Layout file importing
 - ODB files can be imported, and scan points can be defined over the layout layer
- Flexible Scan Area Editor (SAE) module
 - Multiple scan areas with different scan resolutions
 - Points, lines, rectangles, any shape of scan area
- Automatic electrical X-Y offset correction
- Touch sensor to detect component heights
- Continuous run of multiple projects
- Flexible display options
 - 3D, multiple layer, cut-planes, histogram, merging multiple scan results to one display
- Customizable report generation in MS Word or Excel
- Matlab support
- Wizard to assist step by step scan condition set-up
- Optional emission scan technologies include
 - Field calculation
 - Phase measurement
 - Near field to far field transformation (available with phase measurement option)
 - Shielding effectiveness evaluation (SEE) package

Hardware Configurations:

Models	EMI-350	EMI-550
Scanner Images		
Styles	Table top	Stand-alone
Probe positioning ⁽¹⁾	350mm four axis robot	550mm four axis robot
Z-stroke	150mm	150mm
Max. scan area	1500cm ²	4150cm ²
Accuracy	100um	100um
Repeatability	< 50um	< 50um
Dimensions	27" x 25" x 37" (WxDxH)	59" x 33" x 72" (WxDxH)

Notes: (1) Contact API for other sizes of robots

Packages by Frequency Ranges

Freq. Limit	6 GHz	18 GHz	35+ GHz
Probes	Standard probe set ⁽¹⁾ : <ul style="list-style-type: none"> ● Hx-2mm (3.5 MHz to 10 GHz) ● Hx-5 (1 MHz to 4 GHz) ● d=4mm Hz (1 MHz to 4 GHz) 	Standard probe set + <ul style="list-style-type: none"> ● Hx-1mm (5 MHz to 18 GHz) ● Ez-3mm (5 MHz to 18 GHz) ● d=2mm Hz (5 MHz to 10 GHz) 	Stand probe set + 18 GHz probe set + <ul style="list-style-type: none"> ● Hx-0.1mm (up to 40 GHz) ● Ez-HF (up to 40 GHz)
Amps	20 MHz ~ 6 GHz, Gain=16dB at 2 GHz ⁽²⁾	Amps can be provided at additional costs. Contact API with specifications	
Drivers	One SA model ⁽³⁾	One SA model	One SA model
SW	EMI SW	EMI SW	EMI SW
Other HW	Cables and connectors	Cables and connectors	High frequency cables and connectors
	Standard EMI scanner	18 GHz optional package	35 GHz optional package

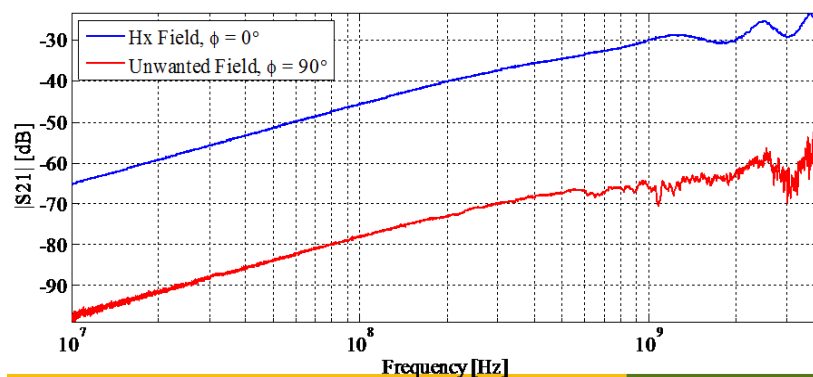
(1) Under common NF measurement set-up conditions – 100KHz RBW, at Room Temp, 60dB lower gain extrapolation from the peak of frequency response and 0dBm source power over a 50 Ohm micro-strip line. See the probe characterization report file for more details.

(2) Two 16dB (@2GHz) 20MHz ~ 6GHz amplifiers
(Other amplifiers are available upon request. Additional charges may apply)

(3) SmartScan supports most SA's from KeySight, Tek, R&S or LeCroy

Probes

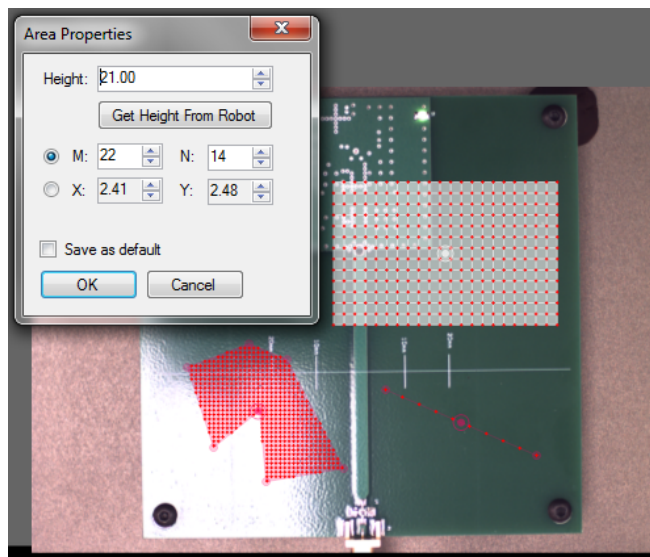
API designs, builds and characterizes each probe in house (adaptors to mount non-API-built probes can be supplied). Wide band, high sensitivity and high frequency are very important, however, suppressing unwanted component is as important. API's probes have at least 20dB separation between wanted and un-wanted components.



Software Highlights

Scan area editor (SAE)

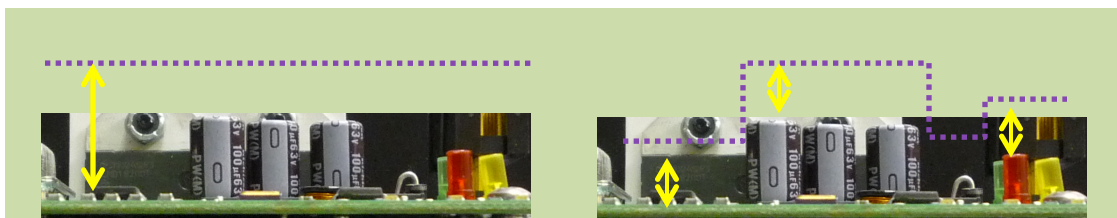
- By an integrated camera- The scan area is edited directly on the DUT picture taken by the camera. The software controls the movement of the probe to the defined scan points
- Flexible scan area selection - any shape and multiple scan areas can be defined for optimum scan time. Height of each defined scan area can be given separate.



Multiple scan areas in different shapes

Constant distance scan

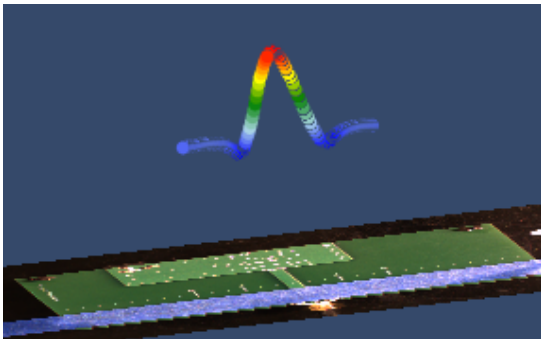
- At a fixed distance scan from a reference z-height by scan height assignment
- Constant distance scan from DUT component heights in two ways
 - Using the touch sensor – As soon as the probe touches the DUT surface, it retracts user defined height, takes the measurement, then move to next scan point
 - Defining multiple scan areas and assigning heights to each scan area – The user defines the desired scan height above the DUT surface of each scan area. The DUT height can be obtained by one click using the touch sensor.



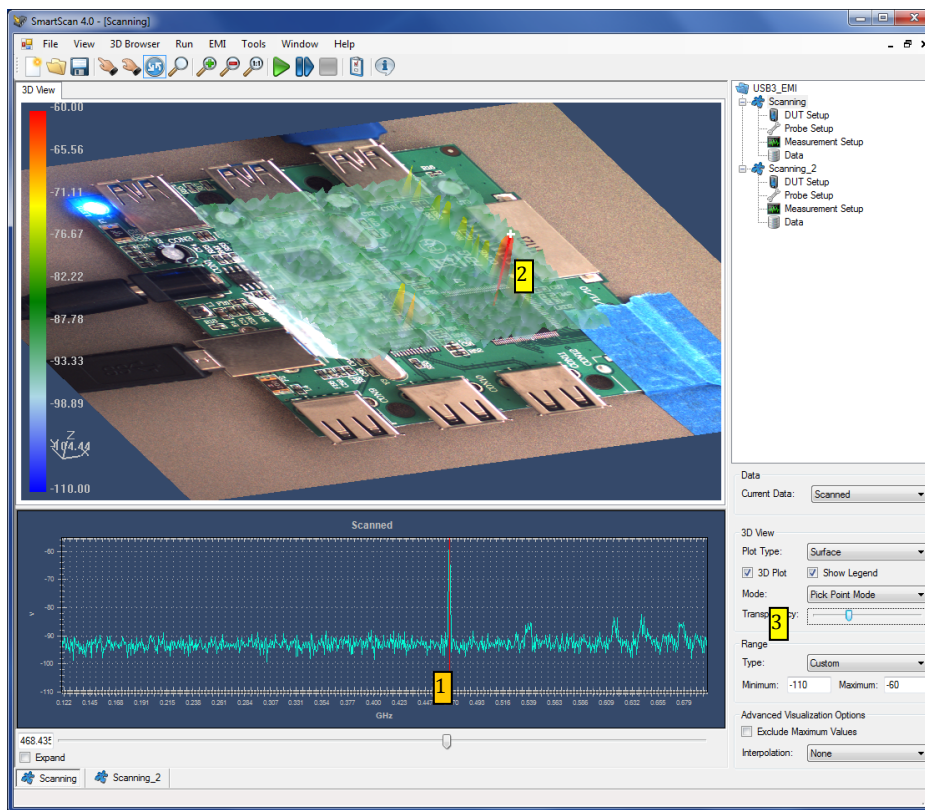
At a fixed distance from a reference surface At a constant distance from DUT surface

Flexible scan results display

- 3D
- Max amplitude vs. frequency
- Frequency spectrum of each scan point

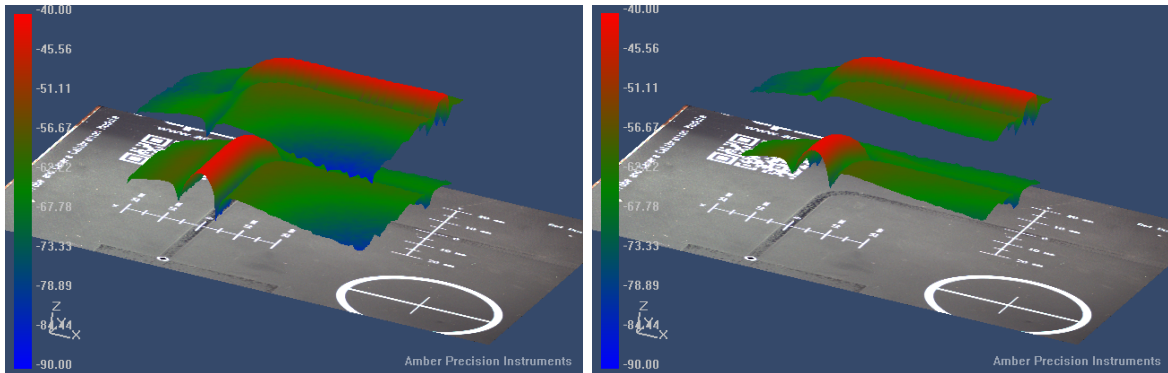


Hx crossing a trace showing peak and mins



- (1) The frequency indication bar that upper plot shows
- (2) It shows where the peak magnitude measured on the DUT
- (3) The display transparency bar enables view of the DUT image under the measured field magnitude

- Multiple layer display and 'cut-planes'



- Multiple layers can be displayed together
- Left – no 'cut-plane' applied; right – after XZ 'cut-plane' applied

Options

Low frequency probe set

The lower the frequency to measure, the larger the probe size becomes. However, API has developed low frequency probe sets that are capable of measuring down to 50 kHz with only 2 ~ 3 mm probe sizes.

- Hx-2mm-LF: 50 kHz ~ 10 MHz
- Hz-2mm-LF: 50 kHz ~ 50 MHz
- Ex-2mm-LF: 50 kHz ~ 50 MHz
- Ez-2mm-LF: 50 kHz ~ 50 MHz

Narrow band probes

API's narrow band probes have 7~10 dB higher gain at narrow band compared with similar size conventional probes

- GSM-860M: Centered at 860 MHz
- GSM-1950M: Centered at 1950 MHz
- WiFi-2400M: Centered at 2400 MHz

* Contact API for custom probes *

Field calculation

SA gives the scan results in dBm or dBV unit. In order to expand the utilization of the near field information, converting dBm or dBV to fields (A/m or V/m) is a must-have EMI scanner capability. API provides required SW and HW kits for system factor extraction and calculation of fields.

Freq. Limit	6 GHz	18 GHz	35 GHz
Drivers	One SA model & one VNA model	One SA model & one VNA model	One SA model & one VNA model
SW	EMI SW	EMI SW	EMI SW
Other HW	50 Ohm micro-strip	Coplanar Waveguide	High frequency Coplanar Waveguide
	Cables and connectors	Cables and connectors	High frequency cables and connectors

