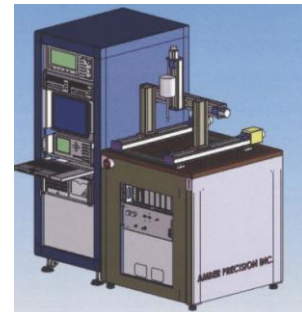


## SmartScan Susceptibility Testers

Susceptibility scanning is a new and innovative method for performing root cause analysis of EMC immunity problems at the system level. Scanning itself isn't new: there are commercial scanners for detecting near field radiation to analyze the radiation from a board or system or understand the way currents are flowing in a system. Even crude methods of scanning to localize sensitive circuits has been done and advocated for some time [1], but what *is* new is the ability to perform susceptibility scanning in a controlled, quantifiable and repeatable way.

**SmartScan** is the only commercially available system *specifically* designed for susceptibility scanning and is available in three configurations:

- **SmartScan *BASIC*** – A manual system providing basic scanning capabilities
- **SmartScan *AUTOSCAN*** – An automated robotic tester including software analysis
- **SmartScan *PROFESSIONAL*** – The ultimate automated system with the most sophisticated analysis software



**SmartScan** is also available as the **SmartScan *AUTOSCAN EMI***, an automated stand-alone EMI test system for boards and systems. ***AUTOSCAN EMI*** includes complete EMI analysis software and is unique in that it can be configured with very large scan tables to accommodate products such as large LCD or Plasma displays. ***AUTOSCAN EMI*** can be expanded at a later date to include fully automatic susceptibility scanning as test requirements expand.

All three susceptibility scanners use a pulse generator specifically designed to produce a fast rising pulse simulating the E and H fields produced by an ESD (Electrostatic Discharge) event. The pulse is coupled via E and H field probes and either manually or automatically scanned over the surface of a suspect circuit. Once the susceptibility effect is localized, direct injection probes and software analysis can be used to identify specific IC pins or nodes that are the root cause of a susceptibility problem.

Additionally, both ***AUTOSCAN*** and ***PROFESSIONAL*** models include the ability to add additional scanning capability, including the use of sine waves or EFT (Electrically Fast Transients) as the stimulus, and EMI scanning to identify RF emissions problems. The ***PROFESSIONAL*** model also includes Resonance Scanning to identify resonances on a board or within a system that are likely to cause problems during system level immunity testing. Both EMI scanning and Resonance Scanning are available as options to the ***AUTOSCAN***.

## Equipment Configurations

### SmartScan **BASIC**

The **BASIC** is manually operated system for performing susceptibility scanning at the system level. This system includes:

- 4kV pulse generator for ESD susceptibility testing
- 4kV Probes
  - 5mm Flat H Field Probe
  - 1mm Vertical H Field Probe
  - 5mm E Field Probe

Available Options for the **BASIC** include:

- 8kV pulse generator and 8kV probe set for ESD susceptibility testing
- Calibration board for field probes
- High Voltage power attenuator

### SmartScan **AUTOSCAN**

The **AUTOSCAN** is an automated scanner providing both control and analysis capability to identify susceptibility problems and includes:

- 4kV pulse generator for ESD susceptibility testing
- Full 3 dimensional scanner table under software control
- Basic analysis software
- Internal controller and display
- Alignment Probe
- 4kV Probes
  - 5mm Flat H Field Probe
  - 1mm Vertical H Field Probe
  - 5mm E Field Probe

Available Options **AUTOSCAN** include:

- 8kV pulse generator for ESD susceptibility testing
- 8kV probe set
- Calibration board for field probes
- High Voltage power attenuator
- Resonance Scanning
- EMI Scanning<sup>1</sup>
- Sine Wave Scanning to 6GHz
- EFT Scanning
- Phi<sup>2</sup> axis control
- Expanded scan table for large systems
- On site installation and training

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<sup>1</sup> Requires Agilent Model N1996A or equivalent Spectrum Analyzer

<sup>2</sup> Phi axis control adds the ability to control the probe orientation during scanning for optimal resolution.

## SmartScan **AUTOSCAN EMI**

The **AUTOSCAN EMI** is an automated EMI scanner providing both control and analysis capability to identify sources of EMI from boards and systems. This unit includes:

- Full 3 dimensional scanner table under software control
- EMI analysis software
- Internal controller and display
- Alignment Probe
- EMI Probes
  - 5mm Flat H Field Probe
  - 1mm Vertical H Field Probe
  - 5mm E Field Probe

Available Options **AUTOSCAN** include:

- 4kV and 8kV pulse generators for ESD susceptibility testing
- 4kV and 8kV susceptibility probe set
- Calibration board for field probes
- High Voltage power attenuator
- Resonance Scanning
- Sine Wave Scanning to 6GHz<sup>3</sup>
- EFT Scanning
- Phi<sup>4</sup> axis control
- Expanded scan table for large systems
- On site installation and training

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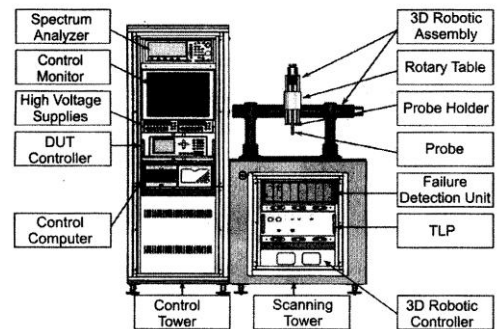
<sup>3</sup> Requires additional sine wave generators and amplifier

<sup>4</sup> Phi axis control adds the ability to control the probe orientation during scanning for optimal resolution.

## SmartScan **PROFESSIONAL**

The **PROFESSIONAL** is the most sophisticated automatic scanning system for susceptibility with the highest level of control and analysis. Included with this system:

- 8kV pulse generator using dual supplies for ESD susceptibility testing
- Full 3 dimensional scanner table under computer control including Phi control
- Failure Detection Unit for monitoring EUT voltage and current
- Software monitoring of the EUT
- Resonance Scanning to identify resonant circuits and nodes
- EUT Reset control to re-boot the EUT if necessary following system upset
- Camera for monitoring probe locations and software analysis of sensitive sites.
- EMI Scanning<sup>5</sup>
- On site installation and training
- Alignment Probe
- 8kV Probe Set
  - 5mm Flat H Field Probe
  - 50mm H Field Loop Probe
  - 1mm Vertical H Field Probe
  - 5mm E Field Probe
  - 50mm E Field probe
- Resonance Scanning Probe



Available **PROFESSIONAL** Options include:

- High Voltage power attenuator
- Calibration board for field probes
- Sine Wave immunity scanning to 6GHz
- EFT Scanning

Additional special probes are available for all the above systems.

<sup>5</sup> Requires Agilent model N1996A or equivalent Spectrum Analyzer

**SmartScan** system configurations in tabular form:

	<i><b>BASIC</b></i>	<i><b>AUTO SCAN</b></i>	<i><b>AutoScan EMI</b></i>	<i><b>PROFESSIONAL</b></i>
4kV generator	Included	Included	Optional	
4kV Basic Probe Set (1mm and 5mm E&H probes)	Included	Included	Included	
3 Dimensional Scanner Table w/o Phi control		Included	Included	
Basic Analysis Software		Included		
EMI Analysis Software		Optional	Included	Included
Internal Controller and Display		Included	Included	Included
Alignment Probe		Included	Included	Included
8kV single supply generator		Optional	Optional	
8kV dual supply generator				Included
3 Dimensional Scanner Table with Phi control		Optional	Optional	Included
Failure Detection Unit for monitoring EUT V&I			Optional	Included
Software monitoring of EUT				Included
Resonance Scanning		Optional	Optional	Included
EUT Rest control to re-boot EUT				Included
Camera for monitoring Probe locations in software				Included
EMI Scanning w/optional Agilent Analyzer		Optional	Included	Included
On site installation and training		Optional	Optional	Included
8kV Basic Probe Set (1mm and 5mm E&H probes)	Optional	Optional	Optional	Included
8kV Basic Probe Set (1mm and 5mm E&H probes)	Optional	Optional	Optional	Included
8kV Expanded Probe set (adds 50mm probes)	Optional	Optional	Optional	Optional
Calibration Board for field probes		Optional	Optional	Optional
High Voltage Power Attenuator	Optional	Optional	Optional	Optional
Sine Wave scanning to 6GHz		Optional	Optional	Optional
EFT Scanning		Optional	Optional	Optional
Expanded 3 Dimensional scanner for large systems		Optional	Optional	Optional