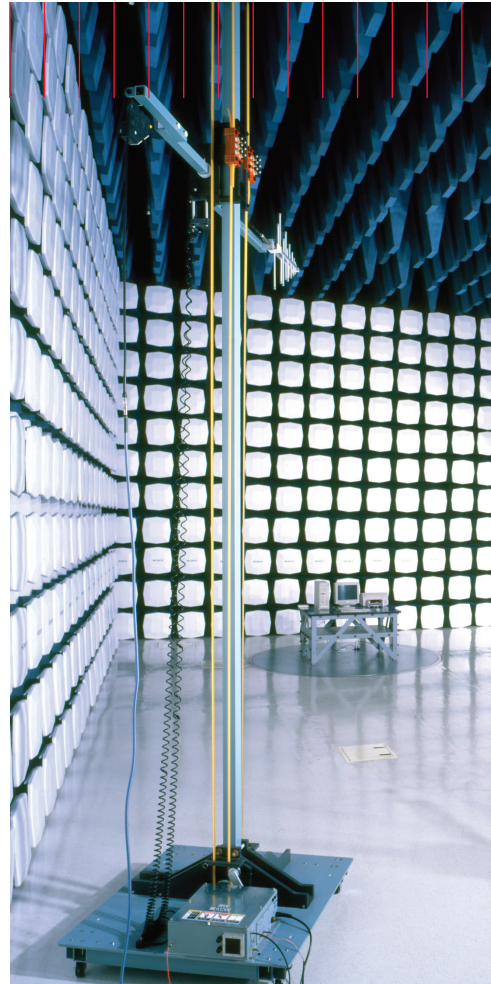


# Keysight Technologies Solutions for EMC Test

Keysight Technologies and ETS-Lindgren

## Technical Overview





## Solutions for EMC Test

### EMC Solutions – wherever you are in your development cycle

Wherever you are in your development cycle, Keysight Technologies, Inc. and ETS-Lindgren have an EMC measurement solution for you.

The combination of world-class EMI instrumentation from Keysight and EMC chambers, antennas, towers, turntables, accessories and software from ETS-Lindgren means you get the optimum solution to meet your exact needs.

ETS-Lindgren's TILE! (Total Integrated Lab Environment) software automates complex EMC tests with a simple drag-and-drop visual interface. With more than 200 installations in private and commercial EMC test labs world-wide, TILE! is a well-established solution that supports a wide range of Keysight instrumentation, including the CISPR-compliant MXE EMI receiver.

The Keysight MXE is more than an EMI receiver, it features X-Series signal analysis and graphical measurement tools for easier examination of signal details. The MXE is fully compliant with CISPR 16-1-1 2010 and provides outstanding accuracy and sensitivity, extensive built-in diagnostic tools for EMI troubleshooting, two RF inputs, one hardened, and all required detectors.

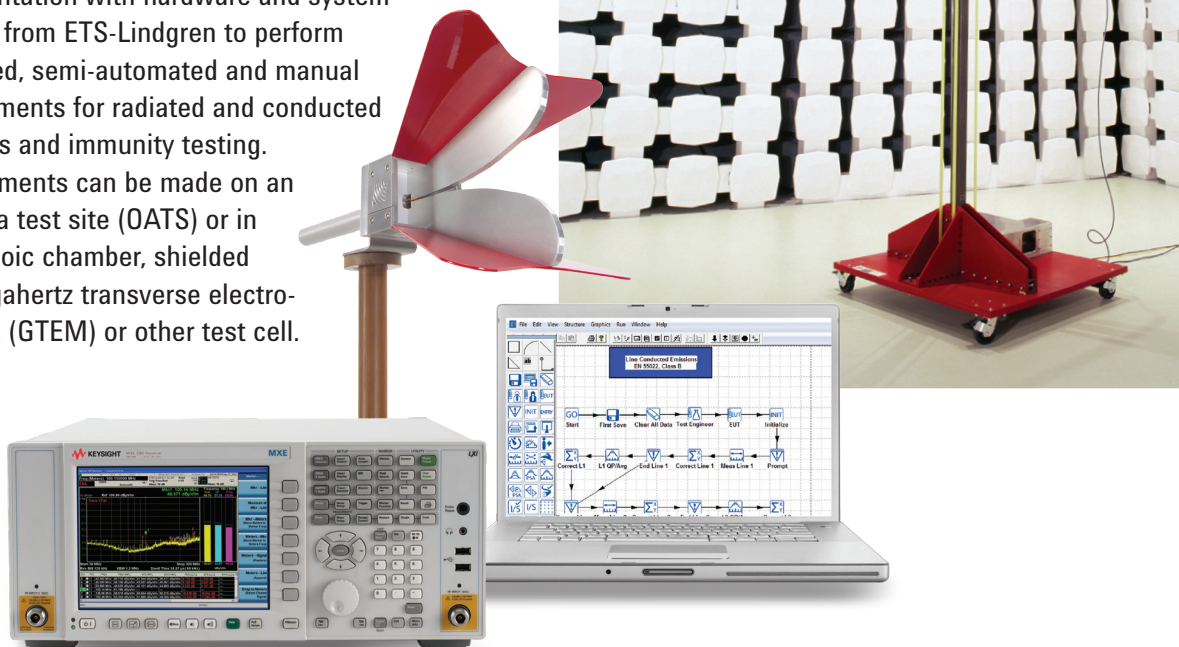
When integrated with EMC chambers, antennas, towers, turntables and test accessories from ETS-Lindgren, TILE! and the MXE provide the foundation of a comprehensive test system to meet all of your EMC measurement needs.



### EMC Emissions and Immunity Test Solutions

Keysight and ETS-Lindgren can configure solutions to meet your exact requirements for EMS and EMI testing. All of our systems are designed to help you test according to the established standards for electromagnetic compatibility including ANSI, ETSI, IEC, CISPR, MIL-STD and other industry-specific requirements. Keysight and ETS-Lindgren have representation on EMC standards committees, ensuring that the latest revisions are incorporated in both companies' products as rapidly as possible.

Our EMC test solutions integrate Keysight's test instrumentation with hardware and system software from ETS-Lindgren to perform automated, semi-automated and manual measurements for radiated and conducted emissions and immunity testing. Measurements can be made on an open area test site (OATS) or in an anechoic chamber, shielded room, gigahertz transverse electromagnetic (GTEM) or other test cell.



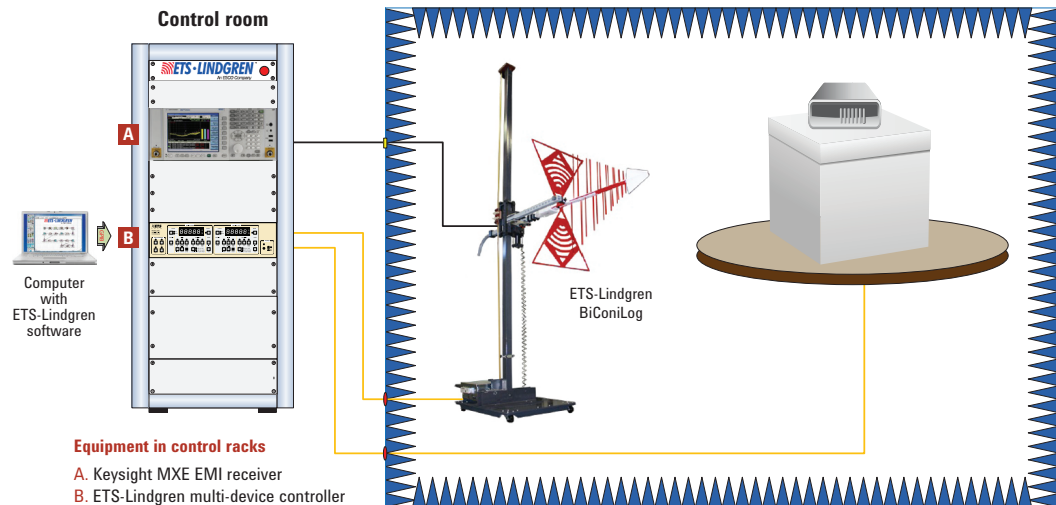
## Solutions for EMC Test continued

### Typical Emissions and Immunity Systems

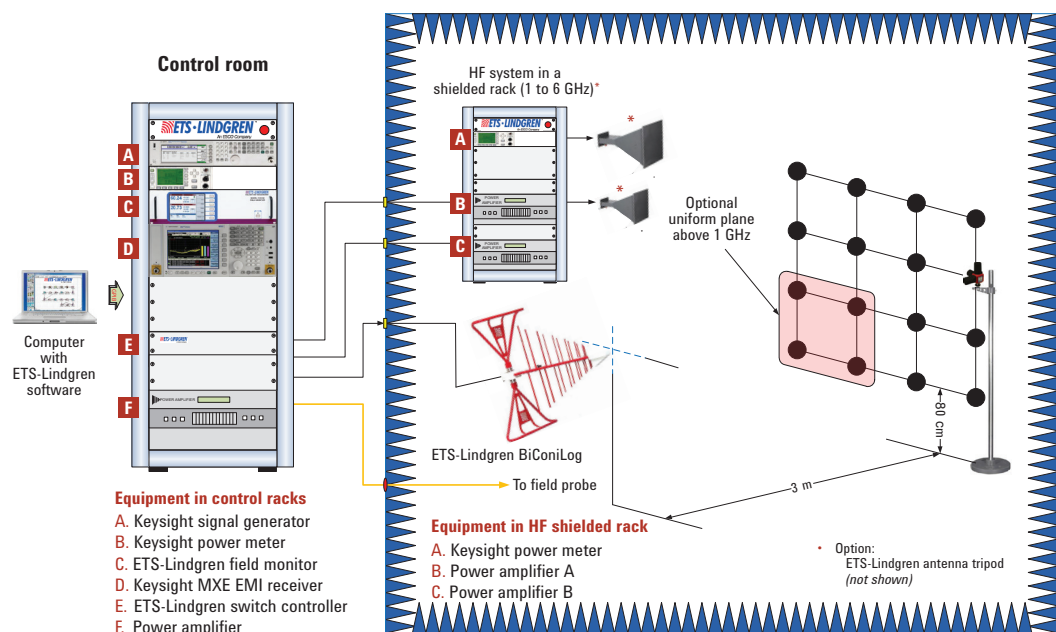
A typical radiated emissions test system incorporates one or more antennas (dipole or biconical, log periodic or hybrid), an antenna tower, positioning turntable and LISN connected to a Keysight MXE receiver. The instrumentation, positioning hardware, test accessories and the test routines are managed by ETS-Lindgren's TILE! software.

A typical radiated immunity test system incorporates a Keysight MXG signal generator, amplifier, field strength meter, antenna (horn or log periodic), an E-field probe, and a Keysight MXE receiver. The E-field probe is part of a feedback to the amplifier to maintain the field strength required for the test (i.e. 10 V per meter). All of the instrumentation and testing are managed by ETS-Lindgren's TILE! software.

#### Emissions Test



#### Immunity Test





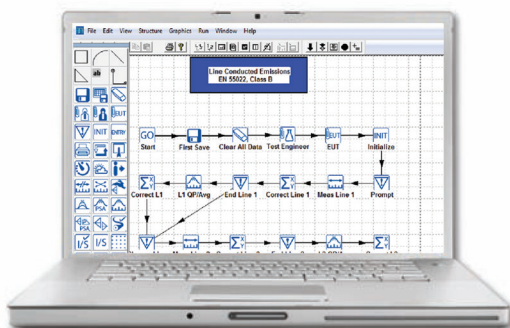
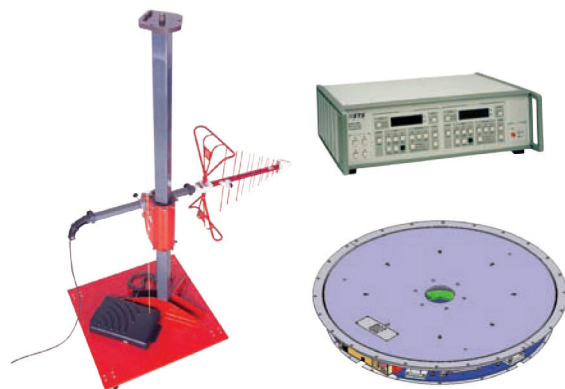
## Solutions for EMC Test continued

### ETS-Lindgren EMC Products



BiConiLogs

Double ridged waveguide horns



*ETS-Lindgren has a comprehensive portfolio of products to support your EMC testing needs.*

#### Antennas

Antennas have been at the center of ETS-Lindgren's business for over 30 years. All of our EMC antennas are calibrated on-site at our A2LA accredited laboratory.

#### Towers, turntables and controllers

ETS-Lindgren antennas towers, turntables and positioning controllers are designed for seamless integration. Their advanced features, rugged, dependable design and good value make them an excellent choice for any EMC measurement application,

#### Broadband EMC Probes

In order to meet or exceed the requirements for automotive, MIL-STD and EMC immunity test standards ETS-Lindgren provides the HI series of broadband E-field EMC probes.

#### Software

TILE! (Total Integrated Lab Environment) software is an integrated environment for designing, performing, reporting and archiving EMC measurements. TILE!'s unique visual interface eliminates the need for programming. Everything is managed in a Windows environment with drag and drop simplicity.

## Solutions for EMC Test continued

### ETS-Lindgren EMC Test Chambers

The design of EMC test chambers has to incorporate the requirements of the EMC test standards, the dimensions of the products to be tested and your specific needs in terms of size and location. ETS-Lindgren can provide a wide range of chamber configurations to meet your exact needs. Standard models include FACT3, 5 and 10 meter, SpaceSaver compact chambers, SMART reverb chambers, MIL-STD chambers, and GTEM cells.

#### Hands-on EMC training from ETS-Lindgren

With ETS-Lindgren's hands-on EMC training courses you learn first-hand how to perform radiated and conducted emissions and immunity tests according to published standards.

The instructors are all experienced EMC experts with practical lab experience. You are taught exactly what to do, and know why you're doing it. Then, you'll apply what you've learned by making actual measurements in a 3 meter EMC chamber. By taking this course, you'll avoid costly, time consuming trial-and-error methods, and learn practical, proven techniques to help you become productive more quickly.

Class sizes are restricted to 12 students and are ideal for EMC engineers or lab technicians who are new to EMC or who want to expand their knowledge of EMC testing; design engineers or business analysts who need to understand the fundamentals of EMC testing, anyone preparing a lab for ISO/IEC 17025 accreditation or anyone preparing themselves for the iNARTE personnel certification exam.



GTEM

The GTEM is a test cell that can be used for both radiated emissions and immunity testing, for both pre- and final compliance measurements.



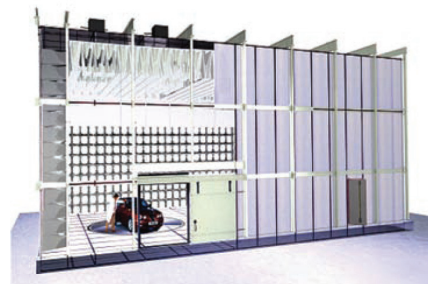
SpaceSaver

SpaceSaver chambers are compact in size with quiet zones up to 1.5 meter diameter. They are ideal for pre-compliance measurements.



FACT 3

Fact 3 chambers have quiet zones up to 2.0 meter diameter, and can be used for both pre- and final compliance measurements.



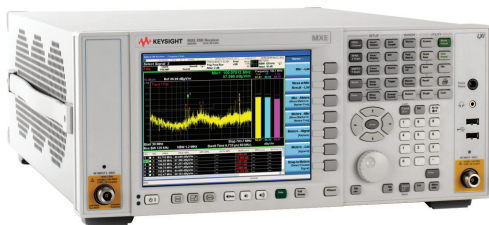
FACT 10

Fact 10 chambers have quiet zones up to 6.0 meter diameter, and can be used for both pre- and final compliance measurements.

## Solutions for EMC Test continued

### Keysight Instrumentation

*Keysight is the world's largest supplier of test and measurement equipment. Keysight provides a range of instrumentation that can be incorporated into your EMC measurement solution.*



N9038A MXE EMI Receiver



N5183A MXG Signal Generator



N9000A CXA Signal Analyzer



E4419B EPM Power Meter

### MXE EMI Receiver

The Keysight MXE is more than just a CISPR-compliant EMI receiver, it features X-Series signal analysis and graphical measurement tools for easier examination of signal details. The MXE is fully compliant with CISPR 16-1-1 2010 and provides outstanding accuracy and sensitivity, extensive built-in diagnostic tools for EMI troubleshooting, two frequency ranges and all required detectors. The MXE allows you to move seamlessly between receiver and spectrum analyzer modes to speed the evaluation of your signal data.

### MXG Signal Generator

Microwave signal generators from Keysight are optimized for manufacturing, maximizing uptime with simplified self-maintenance. The Keysight N5183A MXG microwave analog signal generators deliver the performance needed for broadband component manufacturing up to 40 GHz. Excellent power and level accuracy make the MXG microwave a reliable stimulus for driving high power devices. The MXG microwave can be configured to meet your test needs today, and is easily upgraded to meet your needs in the future.

### X-Series Analyzers

The X-Series is an evolutionary approach to signal analysis that spans instrumentation, measurements and software. Each instrument is identical in terms of its user interface, programming code and test results, which means that you can maintain measurement integrity across your organization with increased levels of productivity.

The analyzers have access to a library of over 25 measurement applications including the N6141A EMC measurement application. The N6141A application transforms the X-Series into a pre-compliance solution, providing excellent sensitivity, accuracy and test margins.

### Power Meters

Every power meter from Keysight consistently delivers great results. Code-compatibility between power meters reduces the need for re-coding. The Keysight E4419B EPM series dual-channel power meter is designed for bench and automatic test equipment use with two simultaneous power readings, fast measurement speed (up to 100 readings per second over the GPIB with E-series sensors), GPIB and RS232 connector for remote control of all functions, and internal rechargeable battery option that offers up to 4 hours continuous use.

## Solutions for EMC Test continued

### Keysight and ETS-Lindgren

*Keysight and ETS-Lindgren have had a cooperative relationship since the 1980s. Today the cooperation continues as the two companies combine their experience, expertise and specialization to create total system solutions for EMC test and measurement.*



Extending our solutions to meet your needs.  
[www.keysight.com/find/solutionpartner](http://www.keysight.com/find/solutionpartner)

Keysight provides instrumentation to meet your EMC measurement needs from pre-compliance and prototype evaluation to full compliance testing of your completed product. Keysight (NYSE:A) is the world's premier measurement company and a technology leader in chemical analysis, life sciences, electronics and communications. The company's 18,500 employees serve customers in more than 100 countries.

[www.keysight.com](http://www.keysight.com)



ETS-Lindgren is the largest integrated manufacturer of EMC test equipment world-wide and is an innovator of systems and components for the detection, measurement and management of electromagnetic, magnetic, and acoustic energy. The company employs more than 800 professionals at locations in the Americas, Europe and Asia. Through these locations, and our independent distributor network spanning more than 30 countries, we provide local product support, program management, training and installation services. ETS-Lindgren is a subsidiary of ESCO Technologies Corporation. ESCO's stock trades on the New York Stock Exchange with the symbol "ESE."

[www.ets-lindgren.com](http://www.ets-lindgren.com)



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### myKeysight

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A personalized view into the information most relevant to you.



### Three-Year Warranty

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Keysight's commitment to superior product quality and lower total cost of ownership. The only test and measurement company with three-year warranty standard on all instruments, worldwide.



### Keysight Assurance Plans

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Up to five years of protection and no budgetary surprises to ensure your instruments are operating to specification so you can rely on accurate measurements.



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### Keysight Channel Partners

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Get the best of both worlds: Keysight's measurement expertise and product breadth, combined with channel partner convenience.

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: [www.keysight.com/find/contactus](http://www.keysight.com/find/contactus)

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