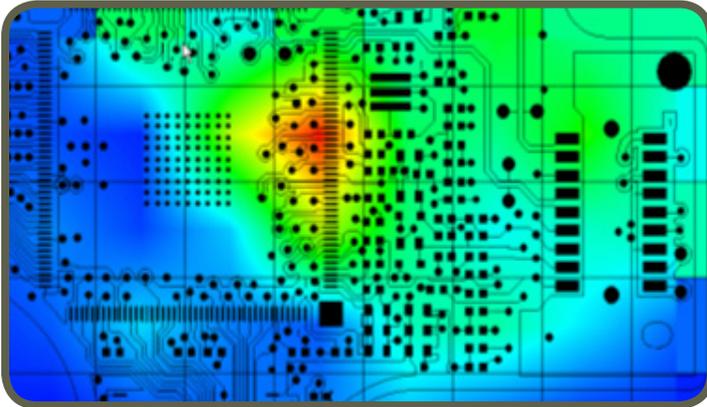


Real-time EMC and EMI diagnostic tool: Test ultra-high speed (> 2 GHz) PCBs in real-time on your lab-bench



EMC and signal integrity are major concerns in the design of ultra-high speed (>2 GHz) PCBs. EHX enables the design engineers to diagnose EMC/EMI problems between 150 kHz and 8 GHz.

The EHX provides unique pre- and post-EMC compliance testing that images **real-time emissions**. EHX allows engineers to visualize the root causes of potential EMC and EMI problems.

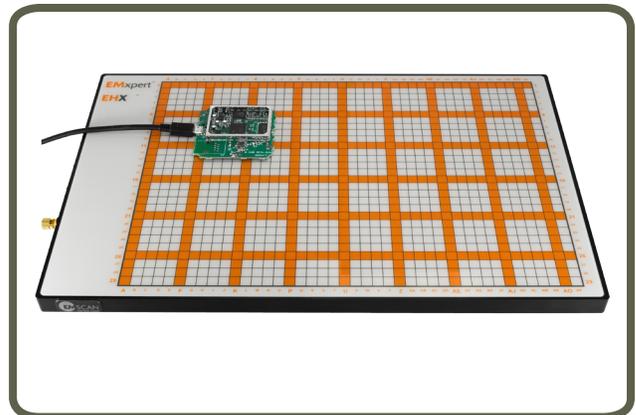
During any new PCB development process, design engineers must find, characterize, and address unintended radiators or RF leakage to pass compliance testing. EHX allows board designers to pre-test and resolve EMC and EMI problems early on, thus avoiding unexpected EMC compliance test results.

EHX delivers **repeatable** and **reliable** results that pinpoint in less than a second the cause of a design failure. As a result, the user can personally test the design without having to rely on another department, test engineer, or time-consuming off-site testing. After diagnosing even an intermittent problem, the engineer can implement a design change and retest. The results provide concrete verification of the effectiveness (or not) of the design change.

EHX consists of a patented scanner and compact adaptor, and of a customer-supplied spectrum analyzer and PC running EHX software. EHX diagnostic capabilities allow design teams to **reduce testing time** by more than two orders of magnitude. Users have also documented fifty percent reductions in design cycle times. This allows the design team to immediately analyze and compare design iterations.

Ideal PCB projects for EHX are boards designed for high speed, high power, and/or high density/complexity. Any PCB that places a premium on board real-estate also qualifies as an excellent candidate.

The compact, flat scanner provides PCB design teams with an **easy-to-use, cost-effective, and proven tabletop solution**. Emission, immunity, filtering, EMI shielding, broadband noise and Common Mode testing are some of the applications that the EHX system addresses in mere seconds.



EHX Features

Capability	Spectral scan, spatial scan, peak-hold, continuous scanning, spectral and spatial comparison, scripting, limit lines, report generation, notes
Spatial scan time	Continuous real-time or sub-second single scan for entire scan area Dependent on spectrum analyzer performance
Spectral scan time	45 seconds for L 10 cm x W 10 cm (L 4" x W 4") PCB with a 100 MHz span and 100 kHz RBW. Scanning area, span and RBW are user selectable within spectrum analyzer specifications
Supported spectrum analyzers	List at https://www.emscan.com/products/emc-emi-testing/ehx/ If your analyzer is not listed, please contact EMSCAN for custom driver PC can connect to the spectrum analyzer via USB or Ethernet (cross-over cable and static IP addresses for PC and spectrum analyzer)
Supported operating systems	Windows 10®
Supported CAD overlays	Standard Gerber® RS274x format and HPGL format

EHX Scanner Specifications

Broadband frequency coverage	<p>150 kHz to 1 GHz Base configuration 150 kHz to 1 GHz (3-yr warranty Part #: 3000-1700)</p> <p>150 kHz to 8 GHz enabled with software keys Base configuration 150 kHz to 4 GHz (3-yr warranty Part #: 3000-1805, 5-yr warranty Part #: 3000-1807) Upgrade 4 GHz to 8 GHz (Part #: 3000-1801; 3000-1805 pre-requisite) Alternate configuration 150 kHz to 8 GHz (3-yr warranty Part #: 3000-1806, 5-yr warranty Part #: 3000-1808)</p>																																																																				
Antenna array	1,218 (42 x 29) H-field probes																																																																				
Measurement sensitivity	<p>Dependent on spectrum analyzer performance</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #f4a460;"> <th>Frequency (MHz)</th> <th>0.15</th> <th>0.5</th> <th>1</th> <th>10</th> <th>50</th> <th>300</th> <th>1000</th> <th>1500</th> <th>2000</th> </tr> </thead> <tbody> <tr> <td>Internal Preamp (dBm)</td> <td>-15</td> <td>-25</td> <td>-35</td> <td>-55</td> <td>-65</td> <td>-85</td> <td>-85</td> <td>-90</td> <td>-90</td> </tr> <tr> <td>with 50x Averaging (dBm)*</td> <td>-20</td> <td>-35</td> <td>-45</td> <td>-65</td> <td>-75</td> <td>-95</td> <td>-95</td> <td>-100</td> <td>-100</td> </tr> <tr> <td>with 50x Averaging and preamp (dBm)*</td> <td>-25</td> <td>-40</td> <td>-45</td> <td>-70</td> <td>-85</td> <td>-100</td> <td>-100</td> <td>-105</td> <td>-105</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #f4a460;"> <th>Frequency (MHz)</th> <th>3000</th> <th>4000</th> <th>5000</th> <th>6000</th> <th>7000</th> <th>8000</th> </tr> </thead> <tbody> <tr> <td>Internal Preamp (dBm)</td> <td>-90</td> <td>-85</td> <td>-80</td> <td>-80</td> <td>-80</td> <td>-70</td> </tr> <tr> <td>with 50x Averaging (dBm)**</td> <td>-100</td> <td>-95</td> <td>-90</td> <td>-90</td> <td>-90</td> <td>-90</td> </tr> <tr> <td>with 50x Averaging and preamp (dBm)**</td> <td>-106</td> <td>-105</td> <td>-105</td> <td>-102</td> <td>-98</td> <td>-97</td> </tr> </tbody> </table> <p>* 40 dB LNA; ** 20 dB Power amplifier (Please refer to Technical Bulletin #15 for the test setup)</p>	Frequency (MHz)	0.15	0.5	1	10	50	300	1000	1500	2000	Internal Preamp (dBm)	-15	-25	-35	-55	-65	-85	-85	-90	-90	with 50x Averaging (dBm)*	-20	-35	-45	-65	-75	-95	-95	-100	-100	with 50x Averaging and preamp (dBm)*	-25	-40	-45	-70	-85	-100	-100	-105	-105	Frequency (MHz)	3000	4000	5000	6000	7000	8000	Internal Preamp (dBm)	-90	-85	-80	-80	-80	-70	with 50x Averaging (dBm)**	-100	-95	-90	-90	-90	-90	with 50x Averaging and preamp (dBm)**	-106	-105	-105	-102	-98	-97
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Spatial resolution	Probe spacing of 7.5 mm with an 'effective' resolution of 3.75 mm																																																																				
Scan area	L 31.6 cm x W 21.8 cm (L 12.44" x W 8.58")																																																																				
Frequency accuracy of peaks	Peak marking accuracy of spectrum analyzer																																																																				
Probe to probe uniformity	Calibrated before shipment. Firmware correction factors adjust for frequency dependant probe responses with +/- 3 dB accuracy																																																																				
Measurement plane isolation	> 20 dB																																																																				
Maximum radiated power load	10 W / 40 dBm																																																																				
Enclosure	Anodized non-conductive metal																																																																				
Maximum DUT voltage	Glass Cover: 4kV DC; 2.6kV AC Metal Case: 260V DC; 200V AC (measured as dielectric withstanding voltage - DWV)																																																																				
Operating temperature	From 15° C to 40° C (continuous spectral and spatial scans at 50 MHz)																																																																				
In situ scanning	6U Size C scanner fits into VXI and VME chassis																																																																				
Scanner connections	Spectrum analyzer: RF SMA to type N coaxial cable Adaptor: Proprietary DB25																																																																				
Dimensions of the scanner	L 39.2 cm x W 24.4 cm x H 1.7 cm (L 15.43" x W 9.61" x H 0.67")																																																																				
Weight	2.80 Kg / 6.17 lb (including cables and the adaptor)																																																																				

EHX Adaptor Specifications

Adaptor connections	Spectrum analyzer: SMB PC: USB B Scanner: Proprietary DB25
Power requirements	Powered over USB link
Dimensions	L 8.5 cm x W 7.00 cm x H 2.00 cm (L 3.35" x W 2.76" x H 0.78")



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