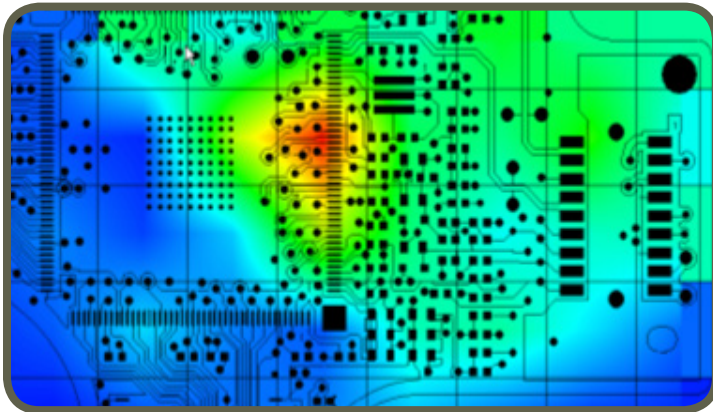


## Real-time EMC and EMI diagnostic tool: Test ultra-high speed (> 2 GHz) PCBs in real-time on your lab-bench



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.

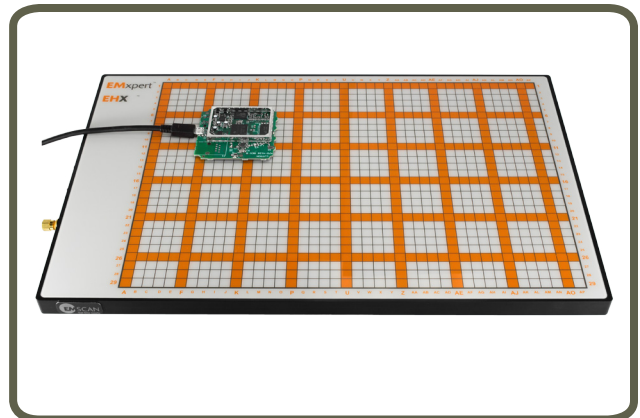
During any new PCB development process, design engineers must find, characterize, and address unintended radiators or RF leakage to pass compliance testing. EHX allows board designers to pre-test and resolve EMC and EMI problems early on, thus avoiding unexpected EMC compliance test results.

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

<b>Capability</b>	Spectral scan, spatial scan, peak-hold, continuous scanning, spectral and spatial comparison, scripting, limit lines, report generation, notes
<b>Spatial scan time</b>	Continuous real-time or sub-second single scan for entire scan area Dependent on spectrum analyzer performance
<b>Spectral scan time</b>	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
<b>Supported spectrum analyzers</b>	List at <a href="https://www.emscan.com/products/emc-emi-testing/ehx/">https://www.emscan.com/products/emc-emi-testing/ehx/</a> 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)
<b>Supported operating systems</b>	Windows 10®
<b>Supported CAD overlays</b>	Standard Gerber® RS274x format and HPGL format

## EHX Scanner Specifications

<b>Broadband frequency coverage</b>	<p><b>150 kHz to 1 GHz</b> Base configuration 150 kHz to 1 GHz (3-yr warranty Part #: 3000-1700)</p> <p><b>150 kHz to 8 GHz enabled with software keys</b> 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>																																																																				
<b>Antenna array</b>	1,218 (42 x 29) H-field probes																																																																				
<b>Measurement sensitivity</b>	<p>Dependent on spectrum analyzer performance</p> <table border="1"> <thead> <tr> <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"> <thead> <tr> <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 <a href="#">Technical Bulletin #15</a> 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
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																																																															
<b>Spatial resolution</b>	Probe spacing of 7.5 mm with an 'effective' resolution of 3.75 mm																																																																				
<b>Scan area</b>	L 31.6 cm x W 21.8 cm (L 12.44" x W 8.58")																																																																				
<b>Frequency accuracy of peaks</b>	Peak marking accuracy of spectrum analyzer																																																																				
<b>Probe to probe uniformity</b>	Calibrated before shipment. Firmware correction factors adjust for frequency dependant probe responses with +/- 3 dB accuracy																																																																				
<b>Measurement plane isolation</b>	> 20 dB																																																																				
<b>Maximum radiated power load</b>	10 W / 40 dBm																																																																				
<b>Enclosure</b>	Anodized non-conductive metal																																																																				
<b>Maximum DUT voltage</b>	Glass Cover: 4kV DC; 2.6kV AC   Metal Case: 260V DC; 200V AC (measured as dielectric withstanding voltage - DWV)																																																																				
<b>Operating temperature</b>	From 15° C to 40° C (continuous spectral and spatial scans at 50 MHz)																																																																				
<b>In situ scanning</b>	6U Size C scanner fits into VXI and VME chassis																																																																				
<b>Scanner connections</b>	Spectrum analyzer: RF SMA to type N coaxial cable   Adaptor: Proprietary DB25																																																																				
<b>Dimensions of the scanner</b>	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")																																																																				
<b>Weight</b>	2.80 Kg / 6.17 lb (including cables and the adaptor)																																																																				

## EHX Adaptor Specifications

<b>Adaptor connections</b>	Spectrum analyzer: SMB   PC: USB B   Scanner: Proprietary DB25
<b>Power requirements</b>	Powered over USB link
<b>Dimensions</b>	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")



#1, 1715-27 Avenue NE  
Calgary, AB T2E 7E1  
Canada

Tel: +1-403-291 0313  
Fax: +1-403-250 8786

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