

TECHNICAL BULLETIN # 16

November 05, 2012

To: All EMxpert users

Re: Far-Field Application and Antenna Scan Module

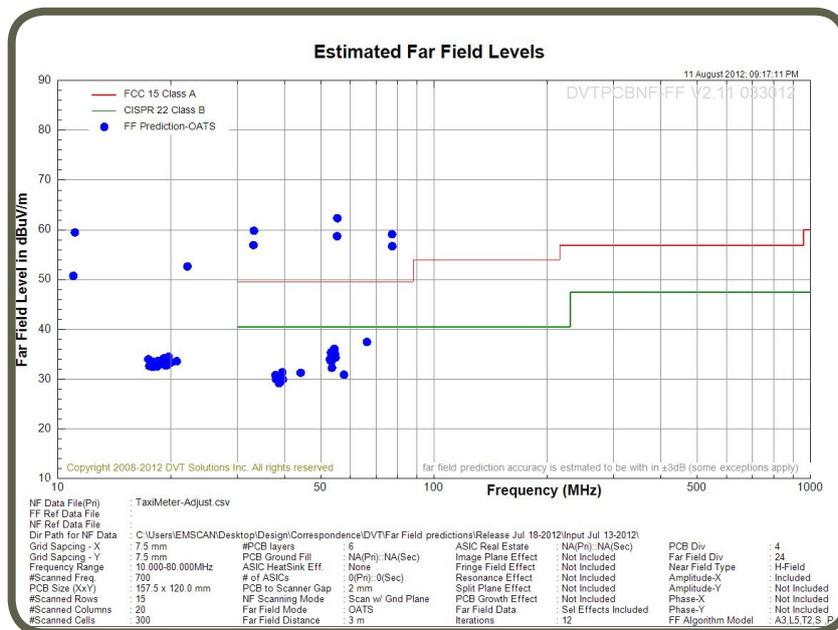
EMxpert assists design engineers in understanding where the emissions are coming from and whether the corrective actions they are taking are actually decreasing emissions. The Far-Field Application option or the Antenna Scan Module turns EMxpert, an EMC/EMI trouble-shooting tool, into a full pre-compliance solution for radiated emissions.

Far-Field Application - 30 MHz to 1 GHz

This is an option that can be purchased separately (Part #: 3000-0304). An absorber pad (Part #: 3000-0820) to control possible resonance is included in the package for free.

Far-Field Application enables EMxpert users to predict the Open Area Test Site (OATS) or Semi Anechoic Chamber (SAC) radiated EMI levels of a printed circuit board (PCB) between 30 MHz and 1 GHz. This application supports regulatory compliance limits Class A or Class B FCC, CISPR 22 and Industry Canada, 10m, 3m and 1m test distances. Far-Field Application predicts electrical far-field levels from existing EMxpert very-near-field magnetic measurements in seconds once the user selects among the available far-field models which closely matches the physical design of their PCB. These models consist of physical design features which are commonly found in PCBs such as ASICs, plane splits, traces, loops and slots.

Run a spectral/spatial scan with EMxpert on your device using the special absorber pad. Export the data from this spectral/spatial scan and apply a compensation factor for the absorber pad using our custom application. Import the adjusted data into the Far-Field Application, select your models and transform to EMC pre-compliance results. It takes 0.3 second per emission peak.



Far-Field Application requires only EMxpert. It doesn't require a mast, antenna or a rotating table. This application is a perfect fit if you don't have an OATS or a SAC at your facility or if you have limited access to these sites. With EMxpert and Far-Field Application, you can change the clock circuit, add or change filter and/or ferrite, shield to your design and verify EMC performance of final products quickly and then go to the chamber for final certification requirements.

The accuracy of Far-Field Application is estimated to be +/- 3 dB (subject to changes). This application is suitable for PCB level predictions.

Antenna Scan Module - 150 kHz to 3 GHz

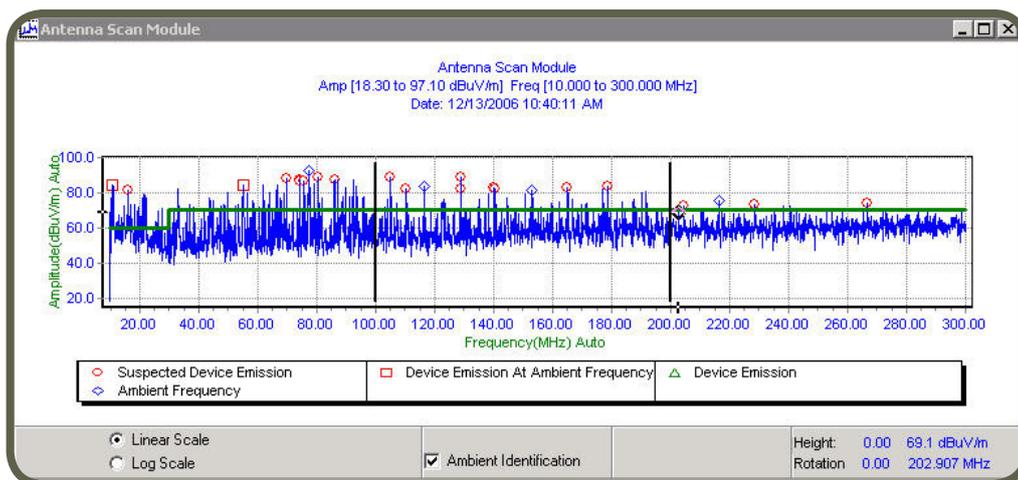
This feature comes standard with the EMxpert client software. It is designed to control the measurement, storage, viewing, and analysis of data from 3rd party antennas.

Antenna Scan Module gives results comparable to a compliance test. It allows you to gather far-field data and to determine if emissions are coming from the DUT, ambient or from the cable across a broad frequency range, from 150 kHz to 3 GHz. Then you can explore the DUT further using the EMxpert spatial scan to locate the source of these emissions and effect changes.

Antenna Scan Module requires a mast, an antenna, a roundtable, and almost a test site. This module is a perfect fit if you want to collect radiated emission results from a site such as your office but want or more exactly have to address the ambient signals interfering with your test results.

This module guides the user to set up a series of antenna measurements using varying antenna heights and varying DUT orientations. The user may use any antenna suited for a far-field measurement in the presence of a ground plane and by limiting reflective surfaces without the need to rent chamber time or visit an OATS.

If you have the mast, antenna and roundtable but no software the Antenna Scan Module is a perfect fit. It can be used to simplify the collection and analysis of the data from the spectrum analyzer.



The aggregated data in the Antenna Scan will have the following markings on various peaks.

- a.  Device Emission - It shows up in the near-field scan, far-field position scans but not in far-field ambient (see Ambient Interferer in d).
- b.  Device Emission Suspected at an Ambient Frequency - This signal shows as ambient in the far-field ambient scan but shows as a marked peak in the near-field scan therefore it is suspected to be a legitimate peak that happens to occur very close to an ambient signal. To confirm, a separate near-field scan with the DUT un-powered would be required to see if the amplitudes of two near-field scans at the frequency in question are different.
- c.  Suspected Device Emission - This indicates a signal that is not in the far-field ambient or in the near-field device scan but appears in the far-field position scans - it is a suspected cable emission.
- d.  Ambient "Interferer" - A signal that shows up in the far-field ambient scan and nowhere else.