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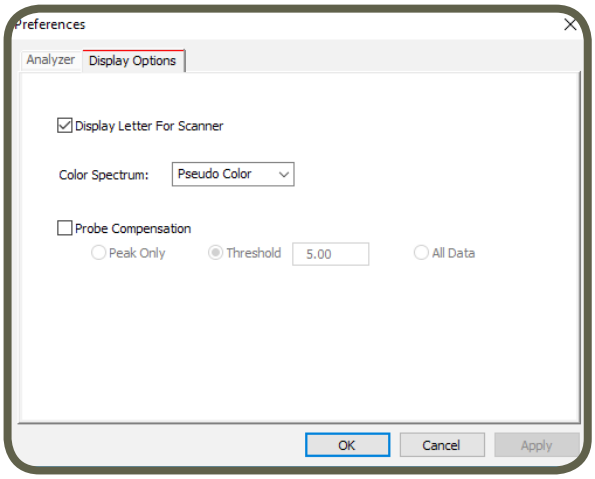
TECHNICAL BULLETIN # 13 March 31, 2016

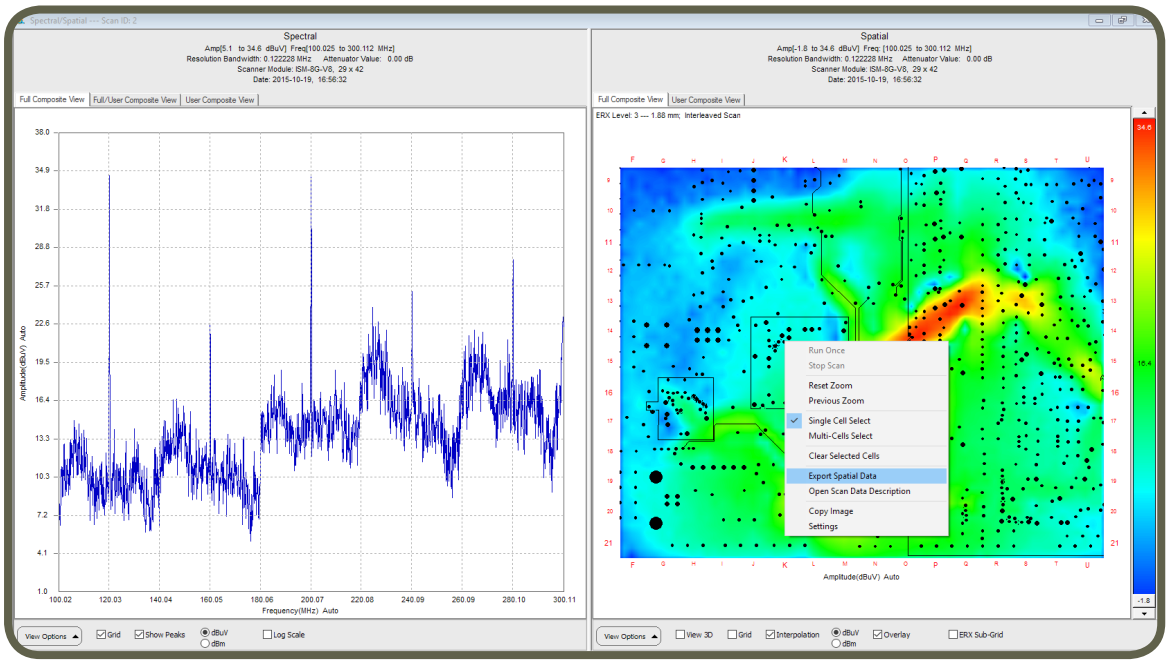
To: All Far-Field Application users with EMxpert

Re: How to use the Far-Field Application

1. Place the large absorber pad on the EMxpert scanner: EMX, EHX, EHX+ or ERX+.
2. Run a Spectral/Spatial from 30 MHz to 1 GHz with Probe Compensation unselected; which is the case by default in the Preferences settings.



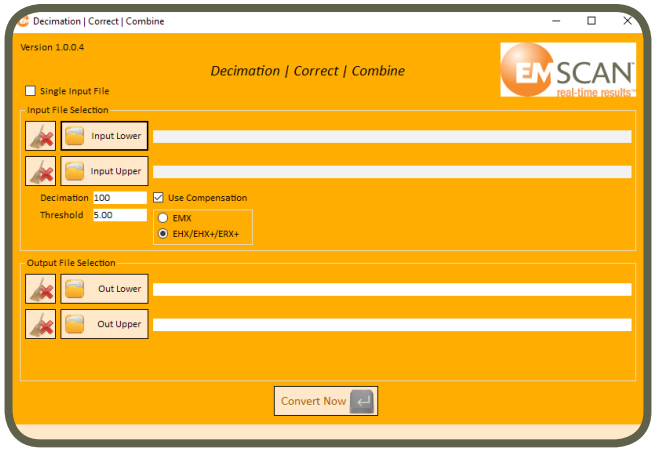
3. Export data by right clicking on the spatial scan and select Export Spatial Scan. You will end up with a text file.



4. Modify the data.

   N2FConvert is a small program that corrects, decimates and converts the exported near-field data into the Far-Field Application format. This is where an offset is applied to account for the absorber pad loss and where the data is compensated for probe response, air loss, switch loss and path loss.

   a. Run “N2FConvert.exe” and you will see the following screen:



   b. Select *Single Input File* if you only have scanned one side of the PCB or exported only the data set of one side. Click on *Input Lower* and select the Spectral/Spatial data file you exported in text format.
      P.S.: You will notice that the *Out Lower* path and file name has been created automatically.

   c. Select *Use Compensation*. It is selected by default. If for some reason, you selected Probe Compensation in Preferences as shown in Item 1 above when you ran the Spectral/Spatial scan, then deselect *Use Compensation*.

   d. Select whether you used an EMX scanner or an EHX/EHX+/ERX+ scanner when running the Spectral/Spatial scan. The hardware design and thus the probe compensation factor is different between the two families of products. The probes are oriented differently and the switches are from different suppliers.

   e. If the Input file is much bigger than 10 MB, reduce the file size by entering 10, 100, 1000 etc. in the Decimation field to cut the number of points by approximately 10, 100, 1000 or more. Enter 1 if the file is the file is less than 10 MB.

      VERY IMPORTANT: The Far-Field Application can only process ten thousand data points (10,000). The number of data points left after the conversion will be shown on the lower left once you click on *Convert Now*. There are two parameters to reduce the number of points: *Decimation and Threshold*.

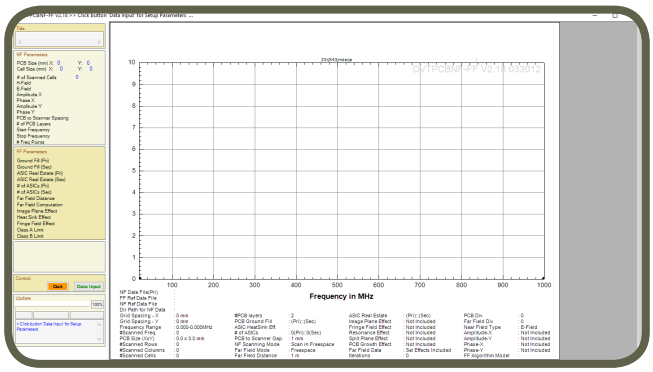
   f. Click on *Out Lower* (and/or *Out Upper* as required) to select a new Destination File and name if the default path and name needs to be changed.

   g. Click on *Convert Now*. The number of data points will only show up while the conversion takes place.

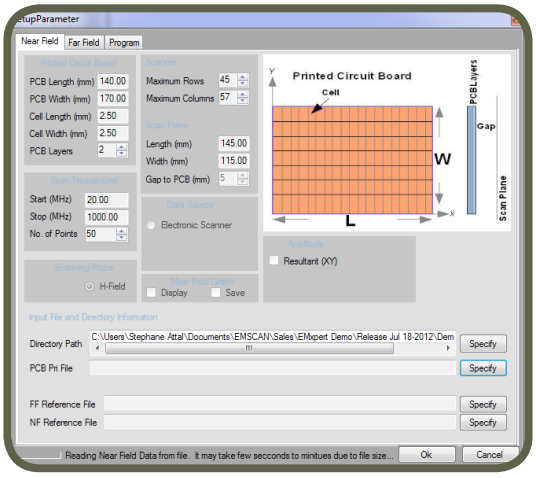
      Once it says *Conversion Completed Successfully* at the bottom left, move to the next step.

5. Transform to Far-Field

   a. Open the Far-Field Application named DVTPCBNF-FF.



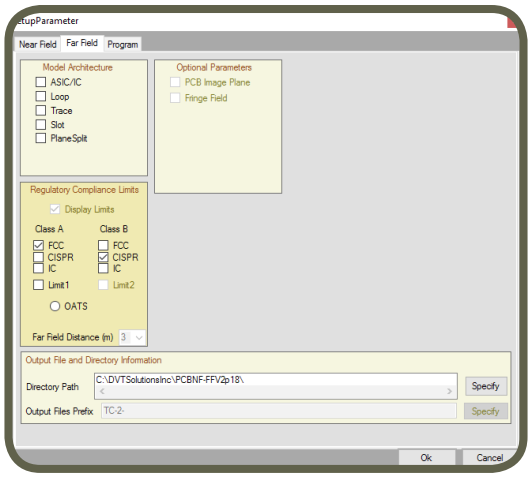
   b. Click on Data Input.



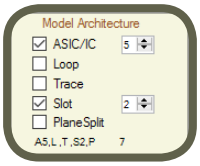
   c. Click on *Specify* next to the Directory Path box to point to the folder where all the Destination Files created in step 4 above have been stored.

   d. Click on *Specify* next to the PCB Pri File box to select one of “Destination Files” as the PCB primary data file to transform.

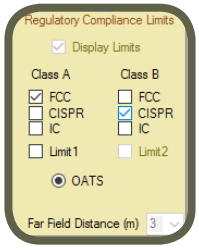
   e. Click on the Far-Field tab.



i. Model your PCB in the Model Architecture section.



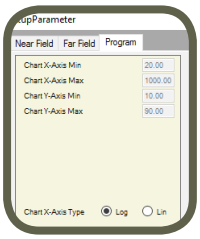
ii. Select your standards' limit lines and distance (1, 3 or 10 meters) in the Regulatory Compliance Limits section.



iii. In the Output File and Directory Information section, specify the path where you want the JPG and csv copy of the far-field results to be saved.

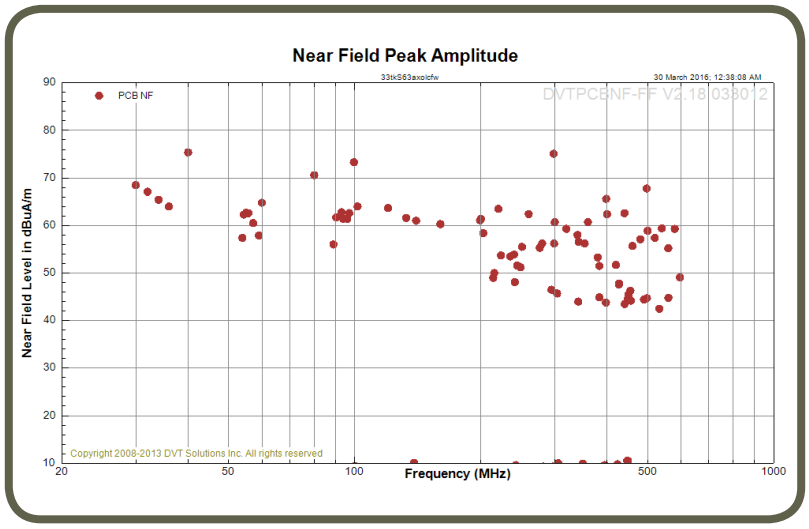
f. Click on Program tab.

i. Select Log instead of Lin (Linear) for a logarithmic scale display as used in chamber results.



g. Click OK.

i. The near-field data peaks will be displayed.



h. Click on Transform button.

i. The far-field data will be calculated and overlaid with the limit lines.