MV-Echo

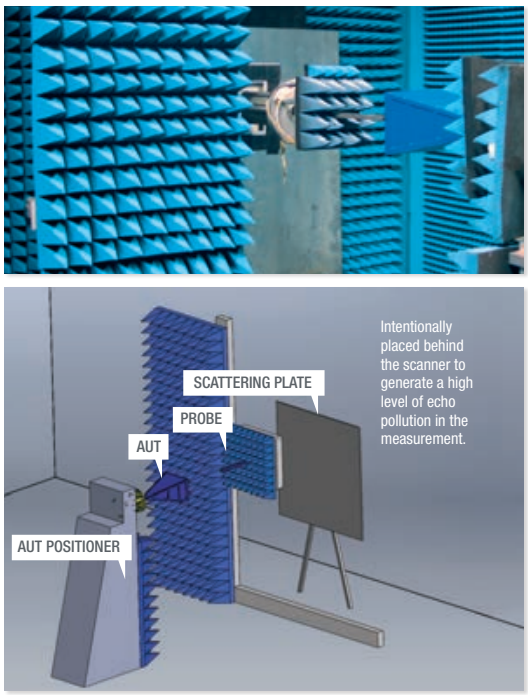

Figure 1 – Measurement of a SGH in Planar Near-Field Range with a reflecting plate as an interferer

MV-Echo

Spurious error signals from absorbers and other structures in the measurement set-up can significantly decrease the measurement accuracy in standard antenna measurement configurations.

MV-Echo, the echo reduction toolbox, attenuates the effects of such undesired signals and significantly improves measurement accuracy. The algorithm of the module is based on the modal filtering of the fields in the Spherical Wave Harmonics domain. It is compatible with MVG software suites: SatEnv, MiDAS and 959 Spectrum.

MV-Echo allows the users to:

1. Filter out echoes in near-field (spherical, cylindrical and planar) and far-field measurement systems
2. Optimize the AUT minimum sphere, thus the toolbox improves the filtering effectiveness
3. Improve accuracy in the estimation of antenna performances:
   - 3D-Radiation Pattern
   - Directivity / Gain
   - Side Lobe Level (SLL)
   - Cross-Polar Discrimination (XPD)
4. Apply to standard measurement set-up and AUT configurations in an easy post-processing step

   The Spherical Wave Harmonics application is based on a well documented and proven methodology that allows:
   - Fast computation
   - Optimization of used memory
   - Robustness against noise

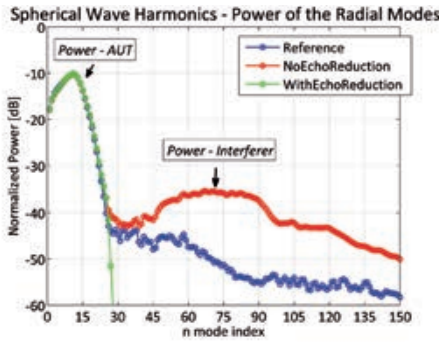

Figure 2a Spherical Wave Harmonics

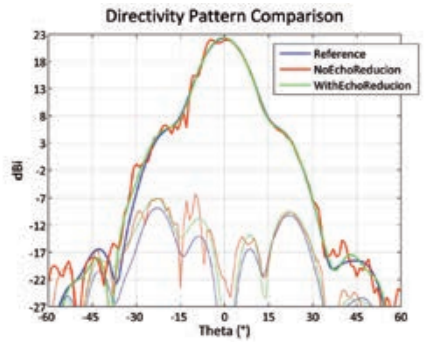

Figure 2b Estimated Directivity Pattern

Figure 2: Comparison between reference measurement (blue) and measurement without/with Echo Reduction (red/green).

In Figure 2a, the presence of the reflecting plate is seen in the Spherical Wave Harmonics domain at higher order modes. The deleterious effect of the reflecting plate is clearly visible in the directivity pattern comparison drawn in Figure 2b (in red curve). The improvement of results after the application of the MV-Echo to the raw data is clearly reflected in the radiation pattern cut in green.

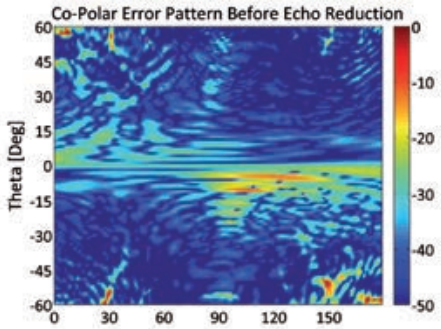

Figure 3a Before MV-Echo

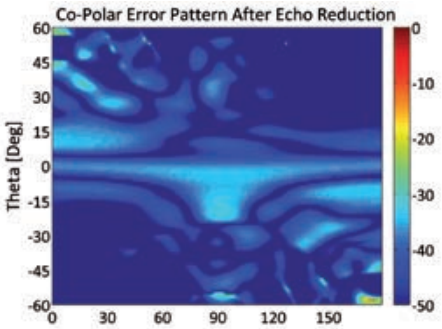

Figure 3b After MV-Echo

Figure 3: 2D-map of the co-polar error pattern.

The improvement derived from the application of the MV-Echo is seen from the 2D-map of the error pattern in Figure 3a (Before MV-Echo) and Figure 3b (After MV-Echo).

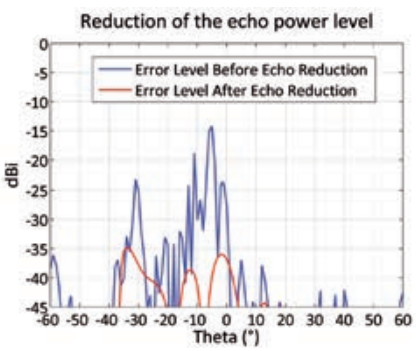

Figure 4: Reduction of the echo power level at φ=135°.

Figure 4 shows a significant reduction of 15-20 dB of the error fields in the affected zones has been achieved.