MIMO OTA in a Small Anechoic Chamber

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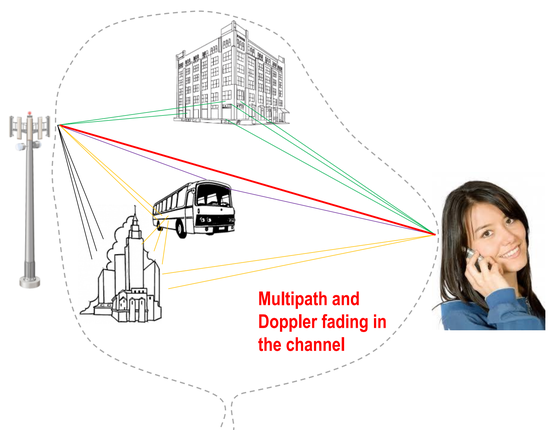
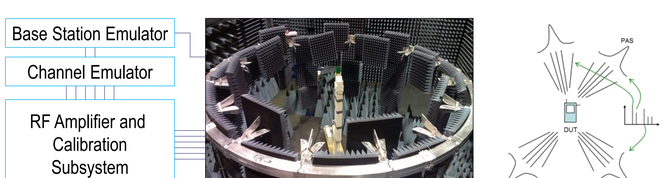
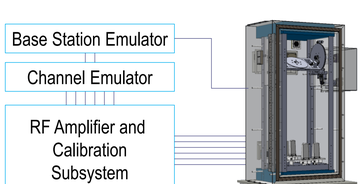
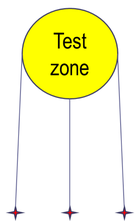


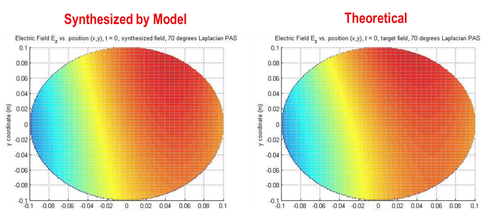




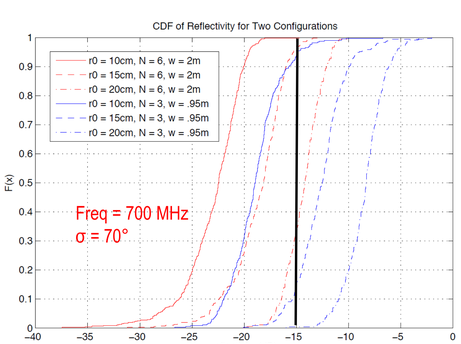
Single cluster UMa/UMi models

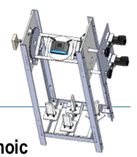
- Widely used *spherical wave theory* models 3D antenna radiation
- *Plane wave synthesis* technique is based on spherical wave theory and enables synthesis of Laplacian PAS cluster field
- Team created synthesis algorithm to generate Laplacian PAS





Synthesized electric field levels across the test zone agree with the theoretical field levels for the desired Laplacian PAS.





Full sized anechoic	Reverberation chamber	Single cluster anechoic
• Provides 2D performance information with 360° multi-cluster propagation • Requires a lot of space	• Less expensive and smaller than full sized anechoic chamber • No information on where the nulls are in the antenna field	• Provides 3D performance information • Supports single cluster anechoic and 2-stage methods • Takes little space

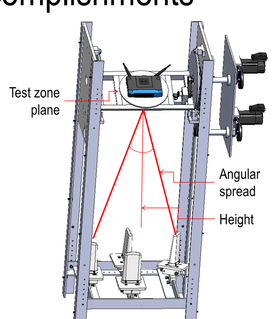
Phase I: Accomplishments

Analyze accuracy of measurement as a function of angular spread of test antennas and number of antennas

Developed synthesis algorithm to produce Laplacian PAS clusters in the test zone based on:

- The wavelength used in the measurement
- Test zone radius
- Geometry of chamber and probe locations
- Shape of probe field

Algorithm calculates error of synthesized field vs. theory – Reflectivity [8]



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