

Capabilities Statement

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1. Direct antenna modulation (DAM) transmitter theory and design

We have over 5 years of experience in modeling, designing, and characterizing direct antenna modulation (DAM) transmitters.

- Developed numerous DAM transmitters in the HF/VHF range.
- Studied several modulation types - pulsed, FSK, QAM, PSK modulations.
- Demonstrated 10 dB+ improvements in EVM.
- Demonstrated 3.5x improvements in bandwidth-efficiency product.
- Developed DC-stabilization method to improve the performance of DAM transmitters.
- Studied several metrics for comparison between LTI and non-LTI systems.

2. Direct antenna modulation (DAM) measurement testbed

We have existing capability for measurement of non-LTI antennas using direct antenna modulation (DAM) techniques.

- Flexible, wideband RF and digital waveforms up to 8 GS/s.
- Far-field OTA, near-field, and conducted measurements.
- Capable of direct comparison to identical LTI antenna with same efficiency and Tx power.
- Channel sounding to remove propagation effects and isolate antenna performance.
- GPS-DO-based Tx/Rx synchronization.
- High speed received RF digitization and offline post-processing.

3. Non-LTI antenna and circuit modeling

We have extensive experience in modeling non-LTI antennas and circuits.

- Time domain simulation including fullwave EM, hybrid EM/circuit co-simulation, and transient circuit modeling.
- S-parameter extraction.
- Equivalent lumped element modeling.
- Analytical modeling for intuition and exploration of limitations.
- Switch transient characterization and modeling.