Satellite Based Active Arrays

- 37 elements per satellite
- 7 elements will produce one distinct spot beam
- 19 possible beams per satellite

Example of one beam:

1. Decide which beam to send down
2. Which elements compose the beams
3. Weights for each element
4. Each element corresponds to a specific port on one of ten MPA’s

The power amplifier (PA) sub-system architecture employs linear, multicarrier, multiport UHF power amplifiers (MPA). Ten MPAs drive 37 transmit antenna elements. Each MPA is composed of four high-efficiency, ultra-linear PAs. The multi-port architecture provides an even distribution of power dissipation on the spacecraft.

Input: -7.9521 dBm

Project Goal:

...to employ a combination of lab measurements and extensive mathematical modeling to characterize the operation of a satellite based system that relies on beam steering.

To make beam 10, these 7 elements are utilized.

Each multi-port power amplifier (MPA) is composed of four amplifiers arranged so that each of the four input signals is distributed across all four amplifiers. Outputs are combined to reconstitute four inputs into four isolated outputs.

Superposition of 7 beams to make one spot beam.

% % Object name: Cluster10

Excitation coefficients:

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