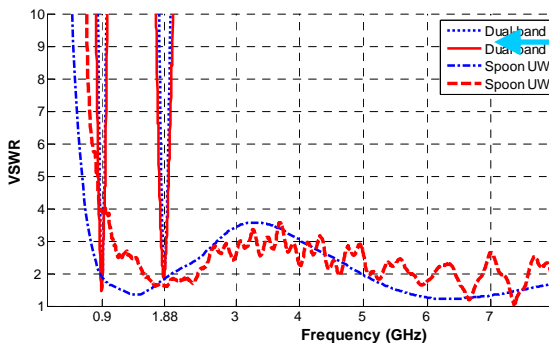


Wideband Antennas



- Small size limitations
- Band Performance vs size
- UWB Concepts
- Frequency-Indep. Concepts
- Pole Distribution

Operational and Performance Capabilities - Summary

Relate the antenna size to bandwidth, specifically evaluating the related upper and lower frequency limits (Note: typical UWB antenna is a high-pass filter)

- Obtain lower frequency bound, with/without tuning
- Obtain upper frequency bound, with/without tuning
- Pole structure types for frequency description
- UWB versus Freq.-indep. Design: performance and pole structure

Technical Approach:

- Task 1: Based on fundamental limits, develop a characteristic lower bound for frequency, with/without tuning
- Task 2: Based on fundamental limits, develop a characteristic upper bound for frequency, with/without tuning
- Task 3: Relate pole residue structure of antenna to antenna type: narrowband, UWB, and frequency-independent
- Task 4: Relate structural properties that denote narrowband, UWB, and frequency-independent structures
- Task 5: Develop and measure prototypes to demonstrate concepts and improved performance Naval applications

To Be Developed:

- New methods for estimating minimum and maximum frequency limits on antennas
- Structural relationship to pole response
- Sample antennas and measurements

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