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Next Generation High Power Dual-Frequency Transmitter For Space Borne and/or Air Borne Doppler Radar Precipitation Measurements¹ STEPHANIE VASICEK, Ohio Wesleyan University, EDWIN WINTUCKY, NASA Glenn Research Center — Data analysis was performed using a Tektronix RSA 3303A Real-Time Spectrum Analyzer with the objective of demonstrating that an approach using Ka-band Differential Frequency Precipitation Radar (DFPR) works when operating a single Boeing Traveling Wave Tube (TWT) Model 999H to amplify two pulses. This approach is being studied to replace a current model using two separate TWTs at two separate frequencies. Applicability of MATLAB, Tektronix, and Agilent software was explored to investigate and refine pulse analysis techniques. Vector Signal Analysis software used with an Agilent Performance Spectrum Analyzer observed modulated signals at Ka-band in the time domain and is being further investigated to enable more detailed quantitative comparisons. MATLAB Signal Processing Toolbox is being explored as a possible analysis tool. A staggered pulse method of study was determined to be more advantageous than a simultaneous pulse study in that full peak power at each frequency can be viewed and intermodulation products can be avoided.

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