

STA Exhibit

The purpose of this test is to evaluate the performance of a Wi-Fi band experimental radar system, developed at Duke University, against small, Unmanned Aerial Systems (sUAS) as part of the upcoming MITRE Challenge competition. The sUAS will be flown by professional pilots through a controlled area with dimensions of approximately 300m by 400m on the Marine Corps base at Quantico, Virginia. The radar will be used for detection and tracking of the sUAS that are flown. The radar will be in operation for approximately 90 minutes at a time for a few time blocks during a 1-day period.

The radar equipment consists of a low-gain, patch antenna (Gain $\sim 8\text{dBi}$), a laptop computer, and a transmitter base unit. The transmitter base unit has a 100mW output and emits a Linear Frequency Modulated (LFM) chirp waveform. The bandwidth of the transmission is controllable by the laptop computer anywhere between 2.1 GHz and 2.7 GHz.

As it appears the initial request for 600 MHz bandwidth from 2.1 to 2.7 GHz is unlikely to be granted, we have revised our request to consist only of the 2.4GHz ISM band, which is 100 MHz of bandwidth from 2.4 GHz to 2.5 GHz. The performance of the radar will be decreased by the reduced bandwidth, but will still be acceptable for the test. If this updated requested band is not suitable, we will gladly modify the request further until an acceptable solution can be found.