Invariant Corporation
Narrative Statement
Application for Experimental Authority to Test Radar in the 15.7 – 17.2 GHz Band

Invariant Corporation seeks experimental authorization to test a short-range air defense (SHORAD) radar. The radar is designed to detect unmanned aerial system (UAS) threats.

To summarize, Invariant seeks authority to operate in the 15.7 – 17.2 GHz band at the following site:
7705 Wagner Rd, Mineral Wells, TX 76067; NL 32-52-40.1; WL 98-00-37.8: Height AGL 5M

The radar operates in the 15.7 – 17.2 GHz radiolocation band, and Invariant seeks authority to operate across this band. The radar antenna is directional and only illuminates a 90-degree sector. At most 4 radars will be used, meaning that there will be 360 degrees where the radar is radiating and another 180 degrees where the radiation is essentially zero.

The radar transmits 64 W of peak power, and has a 33% duty cycle, for 21W average power. The antenna gain is 25.6 dBi, which leads to an ERP of ~10kW. The radar waveform is a standard linear frequency modulated (LFM) pulse train with a pulse duration of 16 us and 64 us pulse repetition interval. The pulse bandwidth is 20 MHz.