

Exhibit No. 1
(See Items 4 and 13 of Form 422)

Experimental Station

1. **Frequency:** Any or all frequencies in the band from 30.0 to 31.8 GHz may be selected in a predetermined sequence.
2. **Peak Power:** 725 W or +28.6 dBW is the power generated by the transmit system.
3. **Antenna Gain:** Mid-band antenna gain of the system is +40.0 dB.
4. **Effective Radiated Power:** The Effective Radiated Power (ERP) as defined by the product of the peak power and the antenna gain minus radome loss and is +67 dBW.
5. **Average Power:** Average power for maximum radar duty cycle of 33 percent is 241 Watts.
6. **Modulation:** Emission classification was selected in accordance with the FCC Rule 2.201
Note: All FCC Rules referenced herein may be found in **47 CFR Telecommunications** (FCC Rules, 10/1/95).

The primary transmission is a sequence of pulsed RF with no modulation. If modulation is selected it will be a sequence of radar pulses with biphase modulation. The modulation has no information content and is used solely for the purpose of enhancing detectability of targets via matched filter processing, therefore emission classification is G1N. The modulation will be up to a 256-CHIP (change-in-phase) biphase modulation at no greater than 5 MHz CHIP rate.

7. **Waveform Characteristics:**
 - a.) Pulse Repetition Frequency 0.5 to 666 kHz
 - b.) Pulse Widths 0.5 to 1.5 microseconds
 - c.) Duty Cycle 1 to 33 percent
8. **Necessary Bandwidth:** Calculated in accordance with FCC Rule 2.202(g)
Bandwidth = $2 \cdot K / t$, where K depends on the ratio of the pulse duration to the pulse rise time and $t = (2 \cdot \text{range resolution} / \text{velocity of light})$. For this application, $t = 500$ nanoseconds. K is then defined to be 10.0 thus the necessary bandwidth = 40.0 MHz (40M0).

The resulting emission designation is: 40M0G1N

Exhibit No. 2
(See Items 7 of Form 442)

PROJECT DESCRIPTION

This radar is to be used as part of a program to characterize the detection and tracking capabilities of a modern technology radar system. This radar is under developed by Raytheon Systems Company on a proprietary program. This radar is designed for evaluation of Ka-band radar technology as it applies to single target detection and tracking.

The primary objective of the program is to demonstrate the radar's capability to detect and track various targets flying various flight geometries. The radar will be operated from two types of platforms. First, the radar will be mounted on the rooftop of a building for initial design verification. This will involve basic radiating tests and eventual target detection and tracking tests of predefined targets. Secondly, the radar will be installed into a test aircraft and operated within 75 miles of the Tucson, Arizona Raytheon facility. These tests will include target detection and tracking of predefined targets.

Various voice communications and UHF uplink equipment will be required to support the planned tests. Applications for this equipment will be filed separately.

The government contract number for this project is not available. If additional information is required, please contact the individual(s) identified in item 20 of Form 442.