

[illegible]

EXHIBIT NO. 2

The nature of the developmental work proposed in connection with this application makes it difficult to give simple specific answers to a number of the questions on the application. The following is a narrative description of the work proposed, and should give a clearer picture of the various parameters involved.

The development of microwave antennas at Bedford Laboratories, Missile Systems Division, Raytheon Company requires a facility for the measurement of the radiation characteristics of such antennas that are mounted on towers in the far field of the developmental antenna under test. The frequencies covered may run from 100 MHz up to about 20 GHz. For a specific antenna being tested an appropriate far-field distance is defined and a selection made as to which of several existing towers at the site will be appropriate. There are several towers of up to 75 ft. in height at the facility. Source antennas of various size of up to 8' in diameter may be placed upon these towers to direct the transmitted signal at the antenna under test.

The power radiated has to be sufficient to provide an appropriate signal level at a test receiver attached to the antenna under test to allow accurate measurement of the radiation pattern including, generally, very low sidelobe levels. The transmitters to be used are laboratory signal generators running into laboratory Traveling Wave Tube amplifiers providing up to 20 watts of cw signal at the frequency of interest. Losses in transmission lines to the transmitting source antenna are 20 dB or greater resulting in radiated power of 200 milliwatts or less which is a sufficient source level to make the necessary measurements.

The effective radiated power (ERP) from the source antenna, that is, the source power times the antenna gain, will vary according to the specific requirements of the developmental tests. The maximum gain of a source antenna will be no greater than 40 dB resulting in a ERP of 2 Kilowatt maximum. In this case the radiating source antenna will radiate a pencil beam of about 1.6° beamwidth. Generally, the ERP will be much lower with a broader radiating beam.

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As mentioned above, each of the towers to be used have been in place for a number of years and, since the facility is next to an existing aircraft landing area (Hanscom Field), each of the towers has been equipped with flashing red warning lights.