

Information Required for Experimental License Application

Below is the technical information required to properly fill out the FCC Form for Experimental License Applications. Claude Wells with EIS is responsible for filing FCC experimental license applications and can provide additional information if necessary. Supplemental information may be required.

Claude – Please put Joe Cramer down as the point of contact for this experimental application. My phone and e-mail are: 703-413-5603, Joe.Cramer@lmco.com.

1. Is this application for a new license or modification of an existing license? If existing, then please provide the call sign. **New Full Experimental**
2. Is confidentiality required for this license? If yes, then please provide a separate statement explaining why confidentiality is required. There is an additional fee associated with requesting confidentiality. **No. This is a Classified Request.**
3. Is the experimental license to be used for fulfilling a Federal government contract? If yes, then include a detailed narrative statement describing the experiment, government project, agency, and contract number. The experimental description must be answered in enough detail to explain the research project to someone not familiar with it or someone who does not have an engineering degree. **No.**
4. Is the license to be used for the exclusive purpose of developing radio equipment for export to be employed by stations under the jurisdiction of a foreign government? If YES, please provide the contract number and the name of the foreign government concerned. **Yes. See Exhibit 1 and Cover Letter.**
5. Is this license to be used for providing communications essential to a research project? No. If YES, please provide an exhibit with the following information:
 - a) A description of the nature of the research project being conducted,
 - b) A showing that the communications facilities requested are necessary for the research project involved, and
 - c) A showing that existing communications facilities are inadequate.
6. If all the answers to Numbers 3, 4, and 5 are no, then please provide a detailed narrative statement describing in detail the following items:
 - a) The complete program of research and experimentation proposed including description of equipment and theory of operations;
 - b) The specific objectives sought to be accomplished; and
 - c) How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion or utilization of the radio art.

These questions must be answered in enough detail to explain the research project to someone not familiar with it or someone who does not have an engineering degree.

This authorization is required for the RF Jammer, a component of the Falcon Edge Electronic Warfare Suite being developed by Northrop Grumman Corporation for use on the United Arab Emirates Air Force F-16 aircraft. This aircraft is being sold to the UAE AF under a direct commercial contract with US government oversight. Details of the capabilities of the Falcon Edge system are classified, therefore much of the information required for the application is being provided in a classified attachment. The Falcon Edge EW Suite consists of a Radar Warning Receiver (RWR) and an RF Jammer. The RWR detects radar signals and provides track files to the Jammer. The Jammer transmits a signal designed to confuse the incoming Radar signal - only for those Radars that it was programmed to jam and only after the pilot provides consent to jam.

This application is being submitted to obtain approval to transmit test signals that will be transmitted by the Jammer whenever it is powered up. The system performs two different tests during initialization, approximately five minutes after it is powered up. These signals are designed to (1) optimize ERP and (2) ensure that all transmit and receive antennas are functional. The first test signal is a series of pulses transmitted at 40 different frequencies. This calibration signal is performed for six different Microwave Power Modules (MPM), each of which is connected to a separate antenna. The calibration test lasts a total of five seconds (including all frequencies for all antennas). The antenna connectivity test consists of a series of pulses transmitted at three different frequencies. This test is also repeated for each MPM and the test lasts a total of 203 ms (including all frequencies for all antennas). Details of each of the test signals, pulse width, pulse repetition interval, etc., are provided in Exhibit 1.

7. Please provide an estimate of the time required to complete the experimental program – in months or years. The FCC will generally not authorize an experimental license longer than 2 years. However, in some instances experimental licenses are granted for 5 years. **2 years or 24 months**
8. The following questions must also be answered:

Will the facilities be located in a wilderness area? **No.**

Will the facilities be located in a wildlife preserve? **No.**

Will the experiment affect threatened or endangered species? **No.**

Will the facilities affect Indian religious sites? **No.**

Will the facilities be located in a flood plain? **No.**

Will construction of the facilities involve filling in wetlands, deforestation or water diversion? **No.**

If the answer is yes to any of these questions, then significant environmental assessments or impact statements are required. Please contact Claude Wells.

9. Please provide a list of all transmitting equipment that will be used in the experiment. Include the following information for each piece of equipment:
 - a) Manufacturer; Northrop Grumman
 - b) Model Number; 001-007871-0001
 - c) Number of Units; 3
 - d) Whether the equipment is experimental or unique. Yes
10. Is the transmitting equipment listed in Question 9 capable of station identification? No.

According to the FCC rules, each experimental station must, unless specifically exempted, transmit its assigned call sign at the end of each complete transmission. The transmission of the call sign at the end of each transmission is not required for projects requiring continuous, frequent, or extended use of the transmitting apparatus, if, during such periods, the call sign is transmitted at least once every thirty minutes. The station identification must be transmitted in clear voice or Morse code. All digital encoding and digital modulation must be disabled during station identification.

Technical Information: Claude – If the Web-based form will allow the non-Classified information to be input without their corresponding frequencies, output power, or tolerance information, then please input that information. Please let Ed Deady and me know what you were able to do. Also, please send to Ed Deady and myself the FCC file number so we can input that information on the Classified document we will fax to the FCC.

Thanks!

Technical Information is Classified. Our Cover letter explains that the Classified information will be provided under separate cover.

All questions must be answered completely.

Antenna Information: For EACH antenna, please provide the following information -

1. Is the antenna fixed/base, mobile, or base and mobile? **Mobile.**
2. Please indicate the geographical location where the experiment(s) will take place. Specify the datum used in determining the geographical coordinates. The latitude and longitude for locations in the US must be referenced to either the North American Datum of 1927 (NAD 27) or 1983 (NAD 83). Topographical maps should indicate which datum is used (or websites).

Claude, please put in the application: Mobile, states of Texas and New Mexico. For our benefit, if we have to utilize “fixed” locations, the locations where we will need to do testing are contained below:

All are NAD 83:

Fort Worth, Texas: N 32° 46'26", W 97° 26'.67"

Greenville, Texas: N 33° 4'24", W 96° 3'39"

Holloman AFB: N 32° 51'41", W 106° 5'74"

McGregor Range: N 32° 23'42", W105° 59'94"

3. If part of the entire operation will be conducted at a fixed site, please provide the state, county, and city of the location.
4. For base and mobile operations, where there is a wide area of operation, provide the approximate area of operation. For example, “approximately 10 km around a fixed location.”

5. If the antenna is directional, provide the beamwidth, horizontal orientation and the vertical orientation. **Omnidirectional.**
6. Will the antenna extend more than 6 meters above the ground or above an existing building? Will the proposed antenna be mounted on an existing structure or a structure other than a building? If yes, then coordination with the FAA will be necessary. **No.**

Frequency Information: For EACH antenna, the following information is required:

1. Frequency range (or frequency(ies)): Provide the lower and upper frequencies in MHz. **Classified – See Exhibit #1.**
2. Power Output: Provide the maximum RF power at the transmitter terminals. **Classified – See Exhibit #1.**
3. Effective Radiated Power: Provide the maximum ERP from the antenna. If pulsed emission, specify the Peak Power. **Classified – See Exhibit #1.**
4. Mean or Peak Power: Is the Power the mean or peak power? **Peak. Not Classified – See Exhibit #1.** Understand – However, FCC web-based form may not allow for this input without corresponding ERP, frequency, tolerance, etc. Therefore, it may be “safer” to put all technical information in the Classified Exhibit.

Question: Why are the frequencies classified, but not the emissions or power level over which the device transmits?

5. Tolerance: Provide the applicable level of tolerance as a percentage of carrier frequency. **Classified – See Exhibit #1. Yes.**

Emissions Information: For EACH antenna, the following information is also needed:

1. Emission Designator. Provide the three symbols necessary to determine the emission designator. Emission designators can be found in Section 2.201 of the FCC rules. See http://www.access.gpo.gov/nara/cfr/waisidx_01/47cfr2_01.html for assistance. (W, 1, N)
2. Modulating Signal. Provide, as appropriate for the type of modulation, the:
 - a) Maximum speed for keying in bauds; N/A
 - b) Maximum audio modulating frequency; N/A
 - c) Frequency deviation of carrier; N/A and
 - d) Pulse duration and repetition rate.

For complex emissions, provide detailed information describing the modulating signal and indicate the frequency range that it is associated with.

3. Necessary Bandwidth. Provide the necessary bandwidth measurement and the units. Provide how the necessary bandwidth was calculated for all indicated frequencies. (The bandwidth for each frequency is less than 1 MHz according to the specification of the voltage-controlled oscillators used.)