

**STA REQUEST**

**1. Introduction**

By the instant application ("STA Request"), General Dynamics Armament and Technical Products, Inc. (GDATP) requests that the Commission grant Special Temporary Authority ("STA") to permit GDATP to operate the facilities (the "Facilities") specified in the instant STA Request.

**As the Commission is aware, the Commission previously granted to GDATP Special Temporary Authority ("STA") under File No. 0840-EX-ST-2006 for certain test range testing activities at the company's facilities in Marion, VA. The frequencies and associated facilities previously authorized under that STA will be referred to as the "Prior Granted Facilities". This STA Request is being submitted in order to obtain approval for operation of those same precise Prior Granted Facilities in connection with the following additional contract ("Additional Contract"):**

**Customer/Agency: Galileo Avionica/Brazil Air Force  
Point of Contact: Mario Zucchelli (39 02 357901)  
P.O. Number: 4521000052**

**Upon grant of this STA Request, the operations under these portions of the Additional Contracts will be conducted pursuant to precisely the same technical and operational parameters specified in the Prior Granted Facilities. That means that - among other things - (i) no ungranted frequencies are required; (ii) the operation will be within the same power levels and emissions and will not result in the licensee exceeding the authorized maximum emissions envelope nor in any operations inconsistent with any terms of the outstanding authorization for the station involved; (iii) any antennas and transmitting equipment employed will be from the list of equipment specified in the Prior Granted Facilities and any subsequent notifications, and will have the same height limits, directionality, gain and orientation/beamwidth as specified in the Prior Granted Facilities; (iv) any signal amplification equipment employed will be from the list of equipment specified in the Prior Granted Facilities; (v) transmissions will be limited to the same area of operation specified in the Prior Granted Facilities; and (vi) all of the Special Conditions issued by the Commission for the Prior Granted Facilities will apply to these additional operations.**

## **2. Purpose of the Operation**

The testing specified in this STA Request will be conducted by General Dynamics Armament and Technical Products (GDATP), a business unit of General Dynamics. GDATP, a major producer of radomes for the Armed Forces of the United States, manufactures radomes for varied customers.

In general, the testing performed at the Marion Test Range Facilities in Marion, VA will involve active, radiating testing related to GDATP's contracts with various defense contractors and the United States Government for the development, manufacture, characterization, and acceptance testing of military and commercial radomes. The testing at the Marion Test Facilities is a critical part of the development and manufacture of military radomes supplied to the Armed Forces of the United States.

This specific STA Request applies to the characterization and acceptance testing of radomes for the F-5 aircraft.

As explained above, the Commission previously granted to GDATP Special Temporary Authority ("STA") under File No. 0840-EX-ST-2006 for certain test range testing activities at the company's facilities in Marion, VA ("the "Prior Granted Facilities"). This STA Request is being submitted in order to obtain approval for operation of those same precise Prior Granted Facilities in connection with the following additional contract ("Additional Contract"):

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## **3. Why Grant of STA is in the Public Interest**

Grant of an STA is requested in this case to permit the required near-term acceptance testing of radomes, in connection with the manufacture of F-5 aircraft radomes for the above-specified purchase order which calls for the manufacturing and testing of a small number of radomes over the course of six months. Testing under the contract is requested to begin on approximately June 1, 2007 and finish by December 1, 2007. Accordingly, the grant of an STA is appropriate in this case.

It is highly important that the STA be granted to support current, ongoing military operations. As stated above, the testing at the Marion Test Range Facilities is a critical part of the manufacture and delivery of military radomes provided to the Armed Forces in support of current war efforts.

For the foregoing reasons, review and approval of this STA Request is in the public interest, convenience and necessity.

#### 4. Other Issues

##### A. Transmitting Equipment

| Manufacturer          | Model                                | Frequency Band | Quantity | Experimental |
|-----------------------|--------------------------------------|----------------|----------|--------------|
| Microwave Power, Inc. | L0618-32                             | 6.0 to 18 GHz  | 1        | Yes          |
| Agilent               | E8257D<br>Analog Signal<br>Generator | 6.0 to 18 GHz  | 1        | No           |

##### B. Directionality/Orientation of Antenna

| Frequency Band | Elevation<br>(Vertical) | Azimuth<br>(Horizontal) |
|----------------|-------------------------|-------------------------|
| 8.0 to 18 GHz  | 0°                      | 40° NE                  |

3dB Beamwidth of Antenna (widest beam/worst case)

| Frequency Band | 3dB BW E<br>(Vertical) | 3dB BW H<br>(Horizontal) |
|----------------|------------------------|--------------------------|
| 8.0 to 18 GHz  | 4.5°                   | 4.5°                     |

##### C. Prevention of Interference

GDATP hereby advises the Commission that the tests to be conducted under the requested Commission authorization are to be conducted on GDATP's Marion, Virginia facilities. The test range is designed such that the transmitting antenna is pointed directly at the radome under test which is located 180 feet away on an elevated roofed porch with three walls. The walls have 6 inch broadband pyramidal RF absorber on them to absorb the RF energy from the transmitting antenna. Additional RF absorber covered panels will be used to further absorb the RF energy. The majority of the 3 dB beamwidth of the transmit antenna is contained within the porch area over all of the requested frequency ranges. The range is located in a low area surrounded mostly by hills and trees. The range configuration is designed to minimize RF energy propagation outside of the actual test area. Please refer to the attached diagram of the range (Figure 1).

In addition it is noted that although the ERP specified in the instant STA Request gives the impression of high power, the actual power into the transmit antenna is about 1 watt (less than many walkie-talkies). The stated ERP, therefore, is deceptive because GDATP employs an antenna with a very narrow beamwidth (35 dBi gain at 18 GHz). The ERP is the Equivalent or Effective Radiated Power. It is how much power would have to be input into a dipole antenna (very broad beamwidth) to equal the power density in the peak of the beam of the applicant's very narrow beam antenna. 1600 watts into a dipole would melt most dipoles. By using such a narrow beam antenna, GDATP is greatly reducing the emissions in all directions except where we it is measuring. Additionally, as explained above, GDATP's receive area contains large amounts of RF absorber with over 35 dB of attenuation. The narrow beam of our antenna and

the absorber in the receive area reduce GDATP's stray emissions greatly. GDATP's test range is a very contained environment, and probably has significantly lower stray emission levels than if the applicant connected its 1 Watt transmitter to a dipole and had an ERP of 1 Watt. It should be noted also that the ERP entered in our submission is for the worst case of the highest frequency/narrowest beamwidth.

D. GDATP has confirmed that the proposed experiment is in compliance with the Commission's RF exposure limits. As such, the preparation of an environmental assessment in this context is not required.

E. Stop Buzzer

The range shift supervisor, Gerald Hicks, will be personally supervising the testing and will be available by telephone at (276) 783-3121 x 1392. Mr. Hicks will act as a "stop buzzer" if any issues regarding interference arise during testing. The range operator will also be available by telephone at (276) 783-3121 x 1393 if Mr. Hicks cannot be reached.