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97 OCT 24 AM 10:55

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TELECOPIER COVER PAGE

DATE: October 24, 1997

TO: Carl Huie COMPANY NAME: OET - Experimental Licensing Branch

FROM: Tom Keller ORIGINATOR'S TEL. NO.: (202) 371-6060

TELECOPIER NO.: (202) 418-1918 TOTAL NO. OF PAGES 04
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CONFIRMATION TEL. NO.: (202) 418-2430 CLIENT/MATTER NO.: 03544.0034

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SPACE FOR ADDITIONAL MESSAGE

Dear Carl- Regarding Northrop Grumman's pending Form 442 application (File No.5823-EX-PL-97): we attach the corrected page 1 and amended Exhibits 1 and 2 which you requested from Steven Balaz, Northrop Grumman's RF Licensing Specialist.

I will be out of the country for the next month. If you or your staff require additional information in this matter, please call Susan Clark, a Legal Assistant in this office at (202) 371-6061. Thank you for your assistance.

Attachments: (3)

FOR TELECOPIER OPERATOR ONLY

TRANSMITTED: DATE: _____ TIME: _____ OPERATOR: ____

TELECOPIER CANNON FAX L-910 (202) 371-6279
FOR ASSISTANCE CALL TELECOPIER OPERATOR AT (202) 371-6245

FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

APPROVED BY OMB
3060-0065
Expires 9/30/98

APPLICATION FOR NEW OR MODIFIED RADIO STATION AUTHORIZATION UNDER PART 5 OF FCC RULES - EXPERIMENTAL RADIO SERVICE (OTHER THAN BROADCAST)

1. Applicant's Name and Post Office address (Street address, city, state, and ZIP Code. See instruction No. 4)	DO NOT WRITE IN THIS BLOCK File No.
Northrop Grumman Corporation 1840 Century Park East Los Angeles, CA 90067	

2(a). Application for (check only one box)	2(b). For Modification indicate below:
☒ New station ☐ Modification of existing authorization	File No.: Call Sign:

Application for Modification: Check the box beside all particulars to be modified. Check either addition or replacement to indicate whether the change is an addition or a replacement of parameters in the current authorization.

☐ FREQUENCY - ☐ addition or ☐ replacement?
☐ EMISSION - ☐ addition or ☐ replacement?
☐ POWER - ☐ addition or ☐ replacement?
☐ LOCATION - ☐ addition or ☐ replacement?

☐ OTHER PARTICULARS - addition or replacement? (Describe below or in attached EXHIBIT No. _____)

4. Particulars of Operation (see instruction below)

Frequency (state whether kHz or MHz) (A)	POWER (B)	(C)	(D)	EMISSION (E)	MODULATING SIGNAL (F)	NECESSARY BANDWIDTH (kHz) (G)
5-20 GHz	125 W	500 kW	PEAK	5M66P0N	1uS, 10KHz Pulse	5.66 MHz

(A) List each frequency or frequency band separately. (If more space is required, attach as EXHIBIT No. 1)
(B) Insert maximum R.F. output power at the transmitter terminals. Specify units.
(C) Insert maximum effective radiated power from the antenna (If pulsed emission, specify peak power). Specify units.
(D) Insert "MEAN" or "PEAK" (See definitions in Part 5).
(E) List each type of emission separately for each frequency. (See Section 2.201 of FCC Rules.)
(F) Insert as appropriate for the type of modulation:
  (1) the maximum speed of keying in bauds;
  (2) maximum audio modulating frequency;
  (3) frequency deviation of carrier;
  (4) pulse duration and repetition rate.
  For complex emissions, describe in detail in the space provided below.
(G) Describe how the necessary bandwidth was determined in space provided below.

Exhibit 1
FCC Form 442
Item 4a-g

Although the band 5-20 GHz was requested, this experiment requires only 1 or 2 frequencies per GHz, (5-6, 6-7, 7-8, etc.) spaced somewhat evenly across the entire band. This large range of frequencies is necessary to evaluate the antenna across its entire operating band. The transmitter uses a multiple-element, electronically scanned, phased array antenna.

The 500 kW output level is required only for a limited amount (>10%) of test time to establish the transmitter's sustained high-power performance. High power transmissions can be limited to the following frequencies (in GHz):

5.3 5.75 8.75 9.4 9.9 13.5 13.9 15.8 16.3 16.8 17.25 17.65

The balance of testing will require an ERP of 125 W. The power will be reduced by changing the PRF from 10 kHz to 250 Hz. The following additional frequencies are requested in order to characterize the antenna over its frequency range. Transmissions on these frequencies will be limited to low power (125 W).

6.2 6.7 7.1 7.8 8.1 10.4 11.0 11.5 12.0 12.8 14.6 15.0 18.1 18.7 19.2

The bandwidth was determined using the formula $Bn=1.79/(\sqrt{t_r t})$, where t_r = 100 nS and t = 1 µS.

Exhibit 2
FCC Form 442
Item 7

Northrop Grumman Corporation's Electronic Sensors & Systems Division (ESSD) has been under Naval Research Laboratory (NRL) contract N00014-96-C-2016 to develop an Advanced Technology Demonstration (ATD) ECM transmitter and antenna for shipboard defense use. This ATD transmitter will allow the insertion of emerging technology into other Navy advanced systems. The ATD transmitter will demonstrate the enhanced performance necessary for ship defense requirements in the next century.

It is anticipated that beginning in January 1998, ESSD will begin antenna system functional performance testing at their outdoor antenna range facility. This testing is essential to verify the operational effectiveness of the ATD Transmitter prior to acceptance by NRL and subsequent delivery for further Navy evaluation. The ECM Transmitter will be operated at ESSD for approximately 20 hours per week.

The NRL point of contact is Mr. Jim Talley (202) 767-5934.