

**United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
SPECIAL TEMPORARY AUTHORIZATION**

EXPERIMENTAL

(Nature of Service)

WS9XCI

(Call Sign)

XT MO

(Class of Station)

0653-EX-ST-2021

(File Number)

NAME Northrop Grumman Systems Corporation

This Special Temporary Authorization is granted upon the express condition that it may be terminated by the Commission at any time without advance notice or hearing if in its discretion the need for such action arises. Nothing contained herein shall be construed as a finding by the Commission that the authority herein granted is or will be in the public interest beyond the express terms hereof.

This Special Temporary Authorization shall not vest in the grantee any right to operate the station nor any right in the use of the frequencies designated in the authorization beyond the term hereof, nor in any other manner than authorized herein. Neither the authorization nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934. This authorization is subject to the right of use of control the Government of the United States conferred by Section 706 of the Communications Act of 1934.

Special Temporary Authority is hereby granted to operate the apparatus described below:

Purpose Of Operation:

The Antares Launch Vehicle will be utilized to deliver the Cygnus NG-16 Spacecraft to Low Earth Orbit. Radio Frequency emitters on the launch vehicle serve two purposes for operation. One

Station Locations

- (1) MOBILE: WFF Wallops Island VA launch into low earth orbit., centered around NL 37-50-02; WL 75-29-16
- (2) MOBILE: WFF Wallops Island VA launch into low earth orbit., centered around NL 37-50-02; WL 75-29-16
- (3) MOBILE: WFF Wallops Island VA launch into low earth orbit., centered around NL 37-50-02; WL 75-29-16

Frequency Information

MOBILE: WFF Wallops Island VA launch into low earth orbit., centered around NL 37-50-02; WL 75-29-16

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2239.76-2243.24 MHz	MO	3M48F1D	6.3 W (ERP)	0.002 %
2267.55-2271.45 MHz	MO	3M90G1D	5.4 W (ERP)	0.002 %

This authorization effective July 01, 2021 and
will expire 3:00 A.M. EST January 02, 2022

**FEDERAL
COMMUNICATIONS
COMMISSION**



Frequency Information

MOBILE: WFF Wallops Island VA launch into low earth orbit., centered around NL 37-50-02; WL 75-29-16

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2285.55-2289.45 MHz	MO	3M90G1D	4.7 W (ERP)	0.002 %

MOBILE: WFF Wallops Island VA launch into low earth orbit., centered around NL 37-50-02; WL 75-29-16

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5758-5772 MHz	MO	14M0P0N	389.1 W (ERP)	0.05 %

Special Conditions:

- (1) This STA is limited to telemetry and tracking operations for a single Antares launch to support the delivery of Cygnus NG-16 capsule to Low Earth Orbit, as part of the NASA Commercial Orbital Transportation Services (COTS) program. This STA will expire as soon as the launch has been completed or 1 January 2022, whichever occurs first. Any future launches shall submit applications to the FCC to be re-coordinated with the NTIA.
- (2) All transmissions in the band 2200-2290 MHz shall comply with national and international power flux density limits, unless otherwise coordinated and agreed. PFD analysis and exceedances shall be provided in the FCC application and provided to the NTIA for US Government review.
- (3) Northrop Grumman Innovation Systems, Inc. shall be aware that future non-federal launches will be considered on a case-by-case basis, especially for requests in the band 2200-2290 MHz, and Northrop Grumman Innovation Systems, Inc. shall have no expectations that future launches will be approved.

Special Conditions:

- (4) As soon as possible, but no later than 60 business days prior to the planned launch, Northrop Grumman Innovation Systems, Inc. is required to provide, as a minimum, launch date/time/window and planned first- and second-stage trajectories, transmission frequencies with associated earth stations and duration/cut-off time to Jimmy Nguyen (jimmy.nguyen@us.af.mil, AFSMO), Shaobei Xu (shaobei.xu.1@us.af.mil, AFSMO), Pedro Mendoza (pedro.mendoza.1@us.af.mil, AFSMO), Felipe Arroyo (felipe.arroyo-1@nasa.gov, NASA/WFF), NASA GSFC Spectrum Office (NASA-DL-GSFC-Spectrum-Management@mail.nasa.gov), Stephen Horan and Kenneth Dudley (stephen.j.horan@nasa.gov and kenneth.l.dudley@nasa.gov, NASA/LaRC), Matt Sullivan (Matt.G.Sullivan@noaa.gov, NOAA Satellite Operations Control Center), Richard Ontiveros, (richard.ontiveros1@navy.mil, NMSC), Cathy Sham (catherine.c.sham@nasa.gov, NASA JSC SMO), and NASA JSC Spectrum Office (JSC-DL-Spectrum-Management@mail.nasa.gov). In the event of last-minute changes, 48-hour notice is required.
- (5) The STOP BUZZER POC information for launch operations shall be provided to NTIA (ravery@ntia.gov). This phone shall be manned 24/7.
- (6) During Cygnus on-orbit mission phase (after lift-off/ascent, free flight, or attached to the International Space Station), Northrop Grumman Systems Corporation shall provide the radio frequency operation plan to Cathy Sham (catherine.c.sham@nasa.gov, NASA JSC SMO) for coordination with authorized users at least 7 business days prior to any planned transmission operation. For Cygnus departure/re-entry operations, including pre-departure checkout, requests for coordination shall be provided to Cathy Sham (catherine.c.sham@nasa.gov, NASA JSC SMO) for coordination with authorized users at least 14 business days prior to communications activation related to pre-departure checkout.
- (7) Northrop Grumman Innovation Systems, Inc. shall keep a log of all transmissions in the band 2200-2290 MHz that shall be provided to the NTIA after the mission. This log shall include, at a minimum, the date, time, frequency, e.i.r.p density, pointing direction of the antennae. The log shall be provided to the following NTIA personnel no later than three (3) weeks after completion of the mission: Rob Avery at ravery@ntia.gov, Ed Drocella at edrocella@ntia.gov.
- (8) Commercial launch service providers should be aware that a satellite integrated into a launch vehicle or deployment device without a current FCC authorization may need to be removed from that vehicle or deployment device if the satellite operator's application for an FCC authorization is not acted upon favorably, or for various reasons cannot be granted within a time frame consistent with the launch schedule. Commercial launch providers should exercise due diligence to verify satellite operator's regulatory approvals prior to launch (FCC Enforcement Advisory DA 18-368).

Special Conditions:

- (9) Naval Surface Warfare Center, Dahlgren Division (NSWCDD) NSWCDD/E3 requires operations and spaceflight trajectories to be submitted NLT 60 days prior to launch to the Naval Surface Warfare Center, Dahlgren Division (NSWCDD). One (1) or more of six (6) blackout zones (BOZs) MAY be imposed as follows: (1) 1500 nautical mile radius centered at 22N160W; (2) 1500 nautical mile radius centered at 33.25N119.57W; (3) 1500 nautical mile radius centered at 4.11N175.2W; and (4) 1500 nautical mile radius centered at 57.46N152.38W; (5) 1500 nautical mile radius centered at 32.37N106.47W. (6) 1500 nautical mile radius centered at 57.34N7.35W. The final launch schedule for NGSC NASA NG-16 will ultimately determine which, if any BOZ will be implemented. In addition, NGSC MUST also comply with any and all restrictions that may be levied by NSWCDD. Coordination of the NGSC operations' schedule and timeline, and all restrictions levied by NSWCDD, including imposition and implementation of any BOZs, shall be coordinated through NASA JSC Spectrum Manager, Cathy Sham (catherine.c.sham@nasa.gov). The primary contacts for NSWCDD/E3 frequency coordination: Mr. James Moneyhon, (540) 653-3477- james.moneyhon@navy.mil, Mr. A. Jason Verdugo, (540) 653-9590 – Anthony.J.Verdugo@navy.mil, and/or Mr. Phillip B. Scyphers, (540) 653-6071 – Phillip.scyphers@navy.mil. Group email box - W_DLGR_NSWC_FTMA_FM@navy.mil. “
- (10) S-band (2200 - 2290 MHz) frequency usage is scheduled and deconflicted regionally by the Real Time Telemetry Processing Station (RTPS) located at the Navy's NAWCAD Facility per agreement between the MIDLANTAFC office and NASA Wallops Spectrum management. A minimum 7 days in advance of each and every planned use of the S-band, NGC or NASA Spectrum Management personal must notify RTPS and the MIDLANTAFC office of these planned S-band operations to effectively deconflict S-band usage regionally and ensure interference free operations for multiple users. This notification must include a PRIMARY POC to contact with name, telephone # (land line and cell phone) and email in case of scheduling concerns. Please reference STA 0653-EX-ST-2021 when notifying the MIDLANTAFC and RTPS offices.
- a.RTPS Office: PAXRTPSSCHED.fct@navy.mil, (301) 342-1542
- b.Middle Atlantic Area Frequency Coordination Office (MIDLANTAFC)
23013 CEDAR POINT RD
BLDG 2118
PATUXENT RIVER, MD 20670
scott.hoschar@navy.mil
robert.n.goddard@navy.mil
shauntrea.landrum.ctr@navy.mil
midlantafo_paxriver@navy.mil