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Frequency Information

MOBILE: Spacecraft-350km altitude-51.6 degrees inclination

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2287.5 MHz	MO	3M00G1D	3.77 W (ERP)	0.00003 %

Special Conditions:

- (1) 1. All Orbital-ATK Inc. operations granted on an experimental basis shall be on an unprotected, non-interference basis to authorized federal stations.
2. This STA is limited to a single OA-5 Cygnus spacecraft for orbit raising maneuvers, approaching and berthing with the International Space Station (ISS), unberthing and departure from the ISS, orbit maneuvering, and destructive re-entry into the Earth atmosphere. This STA will expire at ISS separation + 8 days or 26 November 2016, whichever occurs first. Any future missions will need to submit applications to the FCC to be re-coordinated with the NTIA.
3. All transmissions in the band 2200-2290 MHz shall comply with national and international power flux density limits, unless otherwise coordinated and agreed to. PFD analysis and exceedances shall be provided in the FCC application and provided to the NTIA for US Government review.
4. Orbital-ATK Inc. shall be aware that future non-federal in-orbit operations in the band 2200-2290 MHz will be considered on a case-by-case basis and Orbital-ATK Inc. shall have no expectations that future in-orbit operations in the 2200-2290 MHz band will be approved.
5. During prelaunch/launch operations at Wallops Flight Facility, Orbital-ATK, Inc. shall coordinate and schedule their operations through NASA POC's as specified in NASA/Orbital-ATK, Inc. service agreements and copy WFF Spectrum Manager, Felipe Arroyo, felipe.arroyo-1@nasa.gov, 757-824-1623.
6. As soon as possible, but no later than 20 business days prior to the planned launch, Orbital-ATK is required to provide, as a minimum, launch date/time/window/duration and planned first- and second-stage trajectory, transmission frequencies with associated duration/cut-off time to Jimmy Nguyen (jimmy.nguyen@us.af.mil, AFSMO), Felipe Arroyo (felipe.arroyo-1@nasa.gov, NASA/WFF), Scott Galbraith (vincent.s.galbraith@nasa.gov, NASA/GSFC), Vip Vipavetz (keven.g.vipavetz@nasa.gov, NASA/LaRC), NOAA Satellite Operations Control Center (philip.l.whaley@noaa.gov), Johnnie Best, (johnnie.w.best1@navy.mil, NMSC) and Cathy Sham (catherine.c.sham@nasa.gov). In the event of last-minute changes, 48-hour notice is required.
7. Due to potential harmful interference to naval activities, Orbital-ATK, Inc. RF operations plan shall be submitted, at least 60 days prior to planned launch date, to the Naval Surface Warfare Center, Dahlgren Division (NSWCDD), Mr. James Moneyhon (540)653-3477, or james.moneyhon@navy.mil, for assessment. A blackout zone of 1500 nautical mile radius, centered at 22N160W, shall be assumed, unless otherwise coordinated with, and agreed to, by the NSWCDD. Orbital ATK, Inc. must also comply with any and all restrictions that may be levied by the Naval Surface Warfare Center, Dahlgren Division (NSWCDD). Coordination of the schedule and timeline, and imposition and implementation of a BOZ (and any other restrictions that may be required) will be coordinated through NASA/C. Sham.
8. Due to expected harmful interference on 2287.5 MHz downlink, downlink is prohibited to any western U.S. ground stations when in line-of-sight of the Goldstone Deep Space Network in California..
9. Cygnus 2287.5 MHz transmission (to relay or direct-to-ground) is not permitted when in view of the following deep space earth stations: Goldstone Deep Space Communications Complex (GDSCC), Madrid DSCC, Canberra DSCC and New Norcia Station, from horizon to horizon.
10. At least seven (7) business days prior to launch, and updated two (2) hours after orbit insertion, a communications plan which precludes use of 2287.5 MHz

Special transmission when in view of the deep space stations, as specified, shall be provided to Farzin.manshadi-1@nasa.gov, catherine.c.sham@nasa.gov and jimmy.nguyen@us.af.mil. Updates to this communications plan shall be provided at least (3) business days before a planned flight trajectory deviation from the post-orbit insertion plan.

11. During Cygnus on-orbit mission phase (free flight and attached to the International Space Station), the radio frequency plan shall be provided to NASA/JSC Spectrum Manager, Cathy Sham (catherine.c.sham@nasa.gov) for coordination with authorized users prior to scheduling. Requests shall be provided at least seven (7) business days prior to any planned transmission.

12. During Cygnus departure/re-entry support, including pre-departure checkout, requests shall be provided to JSC Spectrum Manager at least 14 business days prior to communications activation related to pre-departure checkout, departure preparation and operation. Communications timelines, with start/end time, receiving station location, transmit/receive parameters/power/bandwidth and spacecraft trajectory/orbital locations, shall be provided at the time of initiating a coordination request.

13. The STOP BUZZER POC information for operations shall be provided to NTIA (bmitchell@ntia.doc.gov). This phone shall be manned 24/7.

14. Orbital-ATK, Inc. shall keep a log of all transmissions in the band 2200-2290 MHz and provide to the NTIA after the mission. This log shall include, as a minimum, date, time, frequency, eirp density, pointing direction of all antennas. The log shall be provided to the following NTIA personnel no later than three (3) weeks after completing the mission: bmitchell@ntia.doc.gov and edrocella@ntia.doc.gov.

(2) This license supersedes previous grant to revise the license effective dates.