Kristi Key, 1 Rocket Road, Hawthorne, CA 90250,

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

| EXPERIMENTAL | WP9XLD |
|---|---|
| (Nature of Service) | (Call Sign) |
| XT FX MO | 0748-EX-ST-2021 |
| (Class of Station) | (File Number) |

NAME Space Exploration Technologies Corp. (SpaceX)

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:
Experimental orbital demo and recovery test of the Starship test vehicle from Boca Chica TX.

Station Locations

(1) MOBILE: Launch Vehicle Starship, Orbital, centered around NL 25-59-50; WL 97-09-25
(2) Boca Chica (CAMERON), TX - NL 25-59-52; WL 97-09-26
(3) MOBILE: Boca Chica TX Orbital Pad; Launch Vehicle Booster, centered around NL 25-59-50; WL 97-09-25

Frequency Information

MOBILE: Launch Vehicle Starship, Orbital, centered around NL 25-59-50; WL 97-09-25

| Frequency | Station Class | Emission Designator | Authorized Power | Frequency Tolerance (+/-) |
|---|---|---|---|---|
| 2211 MHz | MO | | 10.84 W (ERP) | 0.000225 % |
| | | 4M84F1D | | |
| | | 4M88G1D | | |
| | | 5M00G1D | | |
| 2247.5 MHz | MO | | 10.84 W (ERP) | 0.000225 % |
| | | 4M84F1D | | |
| | | 4M88G1D | | |

This authorization effective June 20, 2021 and
will expire 3:00 A.M. EST December 20, 2021

**FEDERAL COMMUNICATIONS COMMISSION**

## Frequency Information

MOBILE: Launch Vehicle Starship, Orbital, centered around NL 25-59-50; WL 97-09-25

| Frequency | Station Class | Emission Designator | Authorized Power | Frequency Tolerance (+/-) |
|---|---|---|---|---|
| 2247.5 MHz | MO | 5M00G1D | 10.84 W (ERP) | 0.000225 % |
| 2272.5 MHz | MO | 4M84F1D<br>4M88G1D<br>5M00G1D | 10.84 W (ERP) | 0.000225 % |
| 2287.5 MHz | MO | 4M80G1D<br>4M80G1D<br>4M80G1D | 10.84 W (ERP) | 0.000225 % |

Boca Chica (CAMERON), TX - NL 25-59-52; WL 97-09-26

| Frequency | Station Class | Emission Designator | Authorized Power | Frequency Tolerance (+/-) |
|---|---|---|---|---|
| 2090 MHz | FX | 800KG1D | 3 W (ERP) | 0.000225 % |
| 2093 MHz | FX | 800KG1D | 3 W (ERP) | 0.000225 % |

MOBILE: Boca Chica TX Orbital Pad; Launch Vehicle Booster, centered around NL 25-59-50; WL 97-09-25

| Frequency | Station Class | Emission Designator | Authorized Power | Frequency Tolerance (+/-) |
|---|---|---|---|---|
| 2364.5 MHz | MO | 4M84F1D<br>4M88G1D<br>5M00G1D | 10.84 W (ERP) | 0.000225 % |

## Frequency Information

MOBILE: Boca Chica TX Orbital Pad; Launch Vehicle Booster, centered around NL 25-59-50; WL 97-09-25

| Frequency | Station Class | Emission Designator | Authorized Power | Frequency Tolerance (+/-) |
|---|---|---|---|---|
| 2370.5 MHz | MO | | 10.84 W (ERP) | 0.000225 % |
| | | 4M84F1D | | |
| | | 4M88G1D | | |
| | | 5M00G1D | | |
| 2382.5 MHz | MO | | 10.84 W (ERP) | 0.000225 % |
| | | 4M84F1D | | |
| | | 4M88G1D | | |
| | | 5M00G1D | | |

Special Conditions:

(1) Operation is subject to prior coordination with the local Society of Broadcast Engineers, Inc. (SBE) frequency coordinator. Consult the list at http://sbe.org/wp-content/uploads/freqcoor.pdf to find the appropriate coordinator.

(2) All operations shall be limited to telemetry, tracking, and launch vehicle communications for SpaceX Starship test vehicle from Boca Chica, TX launch pad, and the experimental uplink supporting recovery operations for a single Starship launch. This STA will expire as soon as launch has been completed or 10 December 2021, whichever occurs first.

(3) SpaceX 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 SpaceX shall have no expectations that future launches will be approved.

(4) As soon as possible, but no later than 60 business days prior to the planned launch, SpaceX is required to provide operations and spaceflight trajectories 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; (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 this SpaceX mission will ultimately determine which, if any BOZ will be implemented. The primary contacts for 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.

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

Special Conditions:

(6) 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.

(7) All SpaceX operations granted on an experimental basis shall be on an unprotected, non-interference basis to authorized federal stations.

(8) SpaceX 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, at least 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: ravery@ntia.doc.gov and edrocella@ntia.doc.gov.

(9) 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).

(10) As soon as possible, but no later than 60 business days prior to the planned launch, SpaceX is required to provide, as a minimum, launch date/time/window and planned first- and second-stage trajectory, transmission frequencies with associated duration/cut-off time, the launch coordination Memo, and copy of FCC granted (STA) that will be used for the launch to Air Force (Email: Jimmy.Nguyen@us.af.mil, Shaobei.Xu.1@us.af.mil, pedro.mendoza.1@us.af.mil) and US Space Force (david.pooley@spaceforce.mil), Felipe Arroyo (felipe.arroyo-1@nasa.gov, NASA/WFF), NASA GSFC Spectrum Office (NASA-DL-GSFC-Spectrum-Management@mail.nasa.gov), Stephen Horan (stephen.j.horan@nasa.gov, NASA/LaRC), NOAA Satellite Operations Control Center (Matt.G.Sullivan@noaa.gov), Richard Ontiveros, (richard.ontiveros1@navy.mil, NMSC), and NASA JSC Spectrum Office (JSC-DL-Spectrum-Management@mail.nasa.gov). In the event of last-minute changes, 48-hour notice is required.