Rev 1.2, 07/23/2018

Request for Special Temporary Authority

Virgin Orbit, LLC
File Number:

Explanation of Experiment:

Virgin Orbit LLC ("Virgin Orbit") is requesting "Special Temporary Authority (STA)" to operate an S-Band Transmitter in 2200-2290 MHz band. The request is for the ability to sweep across the 2200-2290MHz band. Virgin Orbit is designing a satellite launch vehicle ("Launcher One") that will be air launched from a modified 747 airplane ("Cosmic Girl"). The purpose of requesting an STA license is to analyze the effects of Launcher One's S-Band Telemetry transmitter on 747 radios.

Frequencies Requested
2200-2290 MHz

Table 1: Frequencies requested

S-Band transmitter will be turned on along with 747 radios and the performance of all the radios will be measured. Antennas different from the one listed in Table 2 could be used for this test. The output power of the transmitter will be adjusted so as not to exceed the EIRP listed in Table 2 regardless of which antenna is used.

Virgin Orbit is requesting a license to run the test at Long Beach Airport. Testing will be performed either inside a hangar or in an open area. All testing will be performed on the ground, the aircraft will not be flown during this test.

Testing could be conducted anytime between Aug 7th, 2018 and Feb 5th, 2019. The test will take a few days to complete, S-Band Transmitter will be turned on for a few hours every day during the test. This test might not be performed on consecutive days and testing could be scattered over a period of six months. The transmitter will not be turned on without prior coordination with DoD Western Area Frequency Coordinator (WAFC).

	Data Rate	
Transmitter Output Power	20 Watts	20 Watts
EIRP	49 dBm	49 dBm
Bandwidth	4.21 MHz	2.11 MHz
Modulation Scheme	SOQPSK-TG	SOQPSK-TG
Emissions Designator	4M21G1W	2M11G1W
Carrier Frequency Tolerance	+/- 20 ppm	+/- 20 ppm
Transmitter Manufacturer	Quasonix	
Transmitter Partnumber	QSX-VSR4-1111-20-80-04AB-VP-WV	
Antenna Manufacturer	Haigh Farr	

Table 2: Transmitter Specs

Location	
Long Beach Airport (LGB) (33.82, -118.151)	All testing will be performed on the ground, the aircraft will **NOT** be flown during this test.

Table 3: Test Locations

Stop Buzzer Point of Contact:

Umer Qureshi
RF Systems Engineer
(562)-706-5295
umer.qureshi@virginorbit.com