

O3b Networks
Application for Experimental License to Operate Earth Stations Manufactured by Orbit and General Dynamics

Narrative Statement

(1) Name, address, phone number (also e-mail address and facsimile number, if available) of the applicant.

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(2) Description of why an experimental license is needed

O3b is a satellite startup with a unique non-geostationary satellite system¹ that orbits the earth in a medium earth orbit 8,062 km above the earth. The system uses high powered spot beams to transmit between earth station terminals and O3b's satellites. Because O3b's system architecture differs from that of other satellite operators, manufacturers are developing earth stations to suit the O3b system. O3b and potential customers are in the process of determining which applications the system may be able to support.

O3b needs to conduct tests on a regular basis to evaluate the performance characteristics of earth station equipment that has been developed for use with its satellite system and to determine whether these earth stations can support applications of potential interest to defense, energy and maritime interests in the government and commercial sectors. In order to facilitate these tests and to reduce the administrative burden on the Commission, O3b seeks an experimental license to cover these operations.

(3) Description of the operation to be conducted and its purpose

O3b Networks seeks experimental authority to test the earth stations that are identified below and to evaluate their capabilities from fixed locations throughout the contiguous United States, Hawaii, Puerto Rico, and the U.S. Virgin Islands. The tests will enable O3b to evaluate the performance characteristics of the earth stations and to determine whether they can support applications of potential interest to defense, energy and maritime interests in the government and commercial sectors.

¹ The FCC has granted market access to the O3b 12 satellite constellation. See O3b Limited, Call Sign S2935, File No. SAT-LOI-20141029-00118 (granted Jan. 22, 2015).

(4) Time and dates of proposed operation

O3b requests a blanket license for two years, from March 23, 2015 to March 23, 2017. O3b will notify ViaSat, Inc., Hughes/EchoStar, Inmarsat, SES and any other U.S. authorized co-channel Ka-band satellite operators at least one week prior to any transmit testing, and provide emergency contact information. In the event that there is harmful interference, O3b will immediately cease transmissions.

(5) Class(es) of station (fixed, mobile, fixed and mobile) and call sign of station (if applicable).

The transmitting stations will operate in fixed mode.

(6) Description of the location(s) and, if applicable, geographical coordinates of the proposed operation.

Although O3b selected “United States & Territories” on the OET application form, O3b only requests authority to operate in the contiguous United States, Hawaii, Puerto Rico, and the U.S. Virgin Islands, mimicking the area of operations it requested in its FCC blanket license application.² O3b will notify the FCC of the geographical coordinates of the test site at least seven days prior to testing. In addition, when the earth stations will transmit in spectrum bands shared with terrestrial operators, O3b will complete frequency coordination prior to testing.

(7) Transmit equipment to be used, including name of manufacturer, model and number of units.

General Dynamics GDST1.8M 1.8 meter, 5 units
General Dynamic GDST2.4M 2.4 meter, 5 units
Orbit AL-7103-Ka 1.2 meter, 10 units
Orbit AL-7107-Ka 2.2 meter, 5 units

Please note that each earth station terminal unit will include two (2) technically identical antennas.

(8) Frequencies desired.

Transmit:
27.6 – 28.4 GHz

Receive:
17.8 – 18.6 GHz

(9) Maximum effective radiated power (ERP) or equivalent isotropically radiated power (EIRP).

The maximum transmitted ERP will be:

General Dynamics 1.8m	62.0 dBW
General Dynamic 2.4m	70.4 dBW
Orbit 1.2m	63.5 dBW
Orbit 2.2m	69.5 dBW

² See O3b Limited, Call Sign E140101, File No. SES-LIC-20141001-00781 (accepted for Filing Public Notice on January 7, 2015).

For all operations, O3b will comply with the radiofrequency radiation exposure limits in 47 C.F.R. 1.1310 and apply the measures recommended in the FCC's OET Bulletin 65 to ensure compliance.

(10) Emission designator (see §2.201 of this chapter) or describe emission (bandwidth, modulation, etc.)

1M00G7D to 216MG7D

(11) Overall height of antenna of antenna structure above the ground (if greater than 6 meters above the ground or an existing structure, see part 17 of this Chapter concerning notification to the FAA).

The overall height of the antennas above ground level and above existing structures will not exceed 6 meters.

Exhibit 1: Directional Antenna Information

	Orbit 1.2m	Orbit 2.2m	General Dynamics 1.8m	General Dynamics 2.4m
Is a directional antenna (other than radar) used?	Yes	Yes	Yes	Yes
Width of the beam in degrees at the half power point	0.93° @ 18 GHz 0.60° @ 28 GHz	0.51° @ 18 GHz 0.33° @ 28 GHz	0.62° @ 18 GHz 0.40° @ 28 GHz	0.46° @ 18 GHz 0.30° @ 28 GHz
Orientation in horizontal plane (degrees)	TX = RHCP/LHCP RX = RHCP/LHCP	TX = RHCP/LHCP RX = RHCP/LHCP	TX = RHCP/LHCP RX = RHCP/LHCP	TX = RHCP/LHCP RX = RHCP/LHCP
Orientation in vertical plane (degrees)	TX = RHCP/LHCP RX = RHCP/LHCP	TX = RHCP/LHCP RX = RHCP/LHCP	TX = RHCP/LHCP RX = RHCP/LHCP	TX = RHCP/LHCP RX = RHCP/LHCP