

Request for Special Temporary Authority

O3b Limited (“O3b”), pursuant to Section 25.120 of the Commission’s rules,¹ hereby requests special temporary authority (“STA”), covering the 60-day period between August 9, 2013, and October 8, 2013, to conduct tests at a facility in Melbourne, Florida, of up to three 2.2m earth stations on vessels (“ESVs”) antennas. These tests will be conducted with the O3b medium Earth orbit satellites, the first batch of which is scheduled to be launched on June 24, 2013.

Test Details. O3b previously submitted an application seeking a blanket license permitting it to operate up to one hundred 2.2m and one hundred 1.2m ESVs on U.S.-flagged ships that will communicate with O3b’s system (the “Blanket ESV Application”).² By way of the instant STA request, O3b proposes to test, on land, up to three of the 2.2m ESV units for which it has separately sought regular authority.

The tests will enable O3b to establish performance standards and operational requirements for the ESVs. The tests will be conducted in accordance with the technical parameters for 2.2m ESV units that are specified in the Blanket ESV Application. A copy of the Schedule B from the Blanket ESV Application is attached to this filing.³ During the tests, the ESV units will be pointed at elevation angles ranging from 10 degrees to 43 degrees.

Public Interest Showing. O3b’s STA request is supported by good cause, because the proposed tests will facilitate the introduction of O3b’s competitive ESV service. The Commission has recognized the many benefits associated with ESVs. Authorizing ESVs, it has found, “advances the Commission’s goals and objectives for market-driven deployment of broadband technologies,” which “are becoming a fundamental component of modern communications.”⁴ The Commission also determined that the “maritime market for broadband via satellite-based communications continues to expand,” and that authorizing ESVs makes it possible to “deploy increasingly innovative broadband services ... to businesses and consumers on the high seas, coastlines, and inland waterways.”⁵ Grant of O3b’s STA request will advance these important objectives.

Interference Analysis. O3b will conduct its ESV tests in the 18.8-19.3 GHz and 28.6-29.1 GHz bands with the soon-to-be launched O3b satellites. Under the

¹ 47 C.F.R. § 25.120.

² See FCC File No. SES-LIC-20130528-00455 (filed May 28, 2013).

³ Only that information in the Schedule B that addresses the 2.2m ESV antennas is applicable to this STA request.

⁴ *In the Matter of Procedures to Govern the Use of Satellite Earth Stations on Board Vessels in the 5925-6425 MHz/3700-4200 MHz Bands and 14.0-14.5 GHz/11.7-12.2 GHz Bands*, 20 FCC Rcd 674, ¶ 4 (2004) (“ESV R&O”).

⁵ *Id.*

Commission's Ka-band frequency plan, these bands may be used on a primary basis by licensed NGSO FSS systems.⁶ O3b recognizes, however, that operations under the STA for the ESV tests will be on a secondary, non-harmful interference basis. As demonstrated below, the ESV tests will provide the requisite protection to terrestrial stations and geostationary orbit ("GSO") FSS stations operating in these bands.

1. Avoidance of interference to GSO FSS systems. The proposed testing will not cause any interference into, or require protection from, any co-frequency GSO satellites. As previously shown, there is an inherent angular separation between the O3b and GSO arcs from the perspective of O3b earth stations located away from the equator. The O3b ESV test antennas at the Melbourne, Florida facility will be located above 28 degrees latitude, which is further north than the Hawaii gateway previously approved by the Commission.⁷ This means that the angular separation between the O3b and GSO arcs from the O3b ESV test location will be greater than the 7 degree separation accepted by the Commission when it approved O3b's Hawaii gateway. In addition, and as discussed in the Technical Statement that accompanied O3b's Blanket ESV Application, the uplink and downlink power density levels of O3b's ESVs will be within the limits specified in Section 25.138 of the rules for blanket licensing of GSO FSS earth stations.⁸ These factors ensure that GSO FSS systems will be adequately protected.

2. Avoidance of interference to or from Fixed Service (i.e., terrestrial) stations.

28.6-29.1 GHz band (ESV uplink frequencies). There is no allocation in the Commission's Ka-band Band Plan for Fixed Service stations operating in the 28.6-29.1 GHz band in the United States.⁹

18.8-19.3 GHz band (ESV downlink frequencies). Fixed Service stations operating in the 18.8-19.3 GHz band are no longer co-primary with FSS users in this band.¹⁰ However, because the tests O3b proposes in this STA request will be conducted on a secondary basis, O3b agrees to accept any interference that its ESVs may receive from

⁶ See *In the Matter of Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, 11 FCC Rcd. 19005, ¶¶59-62 and 79 (1996). See also *In the Matter of Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use*, 15 FCC Rcd 13430, ¶ 28 (2000).

⁷ See FCC File No. SES-LIC-20100723-00952 (granted Sep. 25, 2012).

⁸ See *id.*, Section A.6, Annex 1, and Annex 2.

⁹ See *In the Matter of Verizon Washington D.C., Application for Renewal of License for Common Carrier Fixed Point to Point Microwave Station KGC79*, 26 FCC Rcd 13511, 13516 (WTB 2011).

¹⁰ See 47 C.F.R. § 101.85(b)(2).

18.8-19.3 GHz band Fixed Service stations. As stated in O3b's Blanket ESV Application, O3b will protect 18.8-19.3 GHz band Fixed Service stations by complying with the space station PFD limits specified in Section 25.208 of the rules.

Conclusion

Accordingly, and for good cause shown, O3b respectfully requests that its STA be granted.

SATELLITE EARTH STATION AUTHORIZATIONS
 FCC Form 312 – Schedule B:(Technical and Operational Description)
 FOR OFFICIAL USE ONLY

Location of Earth Station Site

E1. Site Identifier:	O3b ESV-1	E5. Call Sign:	
E2. Contact Name	Steve Birrell	E6. Phone Number:	202-421-7122
E3. Street:	8000 Gainsford Court	E7. City:	Bristow
		E8. County:	Prince William
E4. State	VA	E9. Zip Code	20136
E10. Area of Operation:	See Narrative		
E11. Latitude:	0 °0 '0.0 "		
E12. Longitude:	0 °0 '0.0 "		
E13. Lat/Lon Coordinates are:	<input type="radio"/> NAD-27	<input type="radio"/> NAD-83	<input checked="" type="radio"/> N/A
E14. Site Elevation (AMSL):	0.0 meters		

<p>E15. If the proposed antenna(s) operate in the Fixed Satellite Service (FSS) with geostationary satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a) and (b) as demonstrated by the manufacturer's qualification measurement? If NO, provide as a technical analysis showing compliance with two-degree spacing policy.</p>	<p><input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A</p>
<p>E16. If the proposed antenna(s) do not operate in the Fixed Satellite Service (FSS), or if they operate in the Fixed Satellite Service (FSS) with non-geostationary satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a2) and (b) as demonstrated by the manufacturer's qualification measurements?</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A</p>
<p>E17. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No</p>

<p>E18. Is frequency coordination required? If YES, attach a frequency coordination report as</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> No</p>
<p>E19. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> No</p>
<p>E20. FAA Notification – (See 47 CFR Part 17 and 47 CFR part 25.113(c)) Where FAA notification is required, have you attached a copy of a completed FCC Form 854 and or the FAA's study regarding the potential hazard of the structure to aviation? FAILURE TO COMPLY WITH 47 CFR PARTS 17 AND 25 WILL RESULT IN THE RETURN OF THIS APPLICATION.</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> No</p>

POINTS OF COMMUNICATION

<p>Satellite Name: O3B-A O3B-A Eq. NGSO If you selected OTHER, please enter the following:</p>

E21. Common Name:	E22. ITU Name:
E23. Orbit Location:	E24. Country:

POINTS OF COMMUNICATION (Destination Points)

E25. Site Identifier:	
E26. Common Name:	E27. Country:

ANTENNA

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size<meters>	E41/42. Antenna GainTransmint and/or Recieve (____ dBi at ____ GHz)
O3b ESV-1	Orb1.2	100	Orbit Communications	AL-7103-Ka	1.2	42.91 dBi at 17.8
						48.5 dBi at 29.1
	Orb2.2			AL-7107-Ka	2.2	48.4 dBi at 19.2
						54.5 dBi at 29.1

E28. Antenna Id	E33/34. Diameter Minor/Major (meters)	E35. Above Ground Level (meters)	E36. Above Sea Level (meters)	E37. Building Height Above Ground Level (meters)	E38. Total Input Power at antenna flange (Watts)	E39. Maximum Antenna Height Above Rooftop (meters)	E40. Total EIRP for al carriers (dBW)
Orb1.2	0.0/0.0	0.0	0.0	0.0	40.0	0.0	64.52
Orb2.2	0.0/0.0	0.0	0.0	0.0	40.0	0.0	70.52

FREQUENCY

E28. Antenna Id	E43/44. Frequency Bands (MHz)	E45. T/R Mode	E46. Antenna Polarization(H,V, L,R)	E47. Emission Designator	E48. Maximum EIRP per Carrier (dBW)	E49. Maximum ERIP Density per Carrier (dBW/4kHz)
Orb1.2	18800 19300	R	Left and Right Circular	216MG7D	0.0	0.0
<p>E50. Modulation and Services (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)</p> <div data-bbox="254 561 1856 735" style="border: 1px solid black; padding: 5px;"> <p>Various Modulations up to 32APSK; Digital Data Link</p> </div>						
Orb1.2	18800 19300	R	Left and Right Circular	5M12G7D	0.0	0.0
<p>E50. Modulation and Services (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)</p> <div data-bbox="254 951 1856 1125" style="border: 1px solid black; padding: 5px;"> <p>Various Modulations up to 32APSK; Digital Data Link</p> </div>						
Orb1.2	28600 29100	T	Left and Right Circular	216MG7D	64.52	17.2

E50. Modulation and Services (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)						
Various Modulations up to 32APSK; Digital Data Link						
Orb1.2	28600 29100	T	Left and Right Circular	5M12G7D	57.53	26.46
E50. Modulation and Services (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)						
Various Modulations up to 32APSK; Digital Data Link						
Orb2.2	18800 19300	R	Left and Right Circular	216MG7D	0.0	0.0
E50. Modulation and Services (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)						
Various Modulations up to 32APSK; Digital Data Link						
Orb2.2	18800 19300	R	Left and Right Circular	5M12G7D	0.0	0.0

E50. Modulation and Services (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

Various Modulations up to 32APSK; Digital Data Link

Orb2.2	28600 29100	T	Left and Right Circular	216MG7D	70.52	23.2
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E50. Modulation and Services (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

Various Modulations up to 32APSK; Digital Data Link

Orb2.2	28600 29100	T	Left and Right Circular	5M12G7D	61.49	30.42
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E50. Modulation and Services (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

Various Modulations up to 32APSK; Digital Data Link

FREQUENCY COORDINATION

E28. Antenna Id	E51. Satellite Orbit Type	E52/53. Frequency Limits(MHz)	E54/55. Range of Satellite Arc E/W Limit	E56. Earth Station Azimuth Angle Eastern Limit	E57. Antenna Elevation Angle Eastern Limit	E58. Earth Station Azimuth Angle Western Limit	E59. Antenna Elevation Angle Western Limit	E60. Maximum EIRP Density toward the Horizon (dBW/4kHz)
Orb1.2	Non-Geostationary	18800 19300	0.0/ 0.0	0.0	10.0	0.0	10.0	0.0
	Non-Geostationary	28600 29100	0.0/ 0.0	0.0	10.0	0.0	10.0	-11.05
Orb2.2	Non-Geostationary	18800 19300	0.0/ 0.0	0.0	10.0	0.0	10.0	0.0
	Non-Geostationary	28600 29100	0.0/ 0.0	0.0	10.0	0.0	10.0	-11.05

REMOTE CONTROL POINT LOCATION

<p>E61. Call Sign</p> <p>NOTE: Please enter the callsign of the controlling station, not the callsign for which this application is being filed.</p>		<p>E65. Phone Number</p> <p>202-421-7122</p>	
<p>E62. Street Address</p> <p>8000 Gainsford Court</p>			
<p>E63. City</p> <p>Bristow</p>		<p>E67. County</p> <p>Prince William</p>	
		<p>E64/68. State/Country</p> <p>VA/ USA</p>	<p>E66. Zip Code</p> <p>20136</p>

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