**REQUEST FOR SPECIAL TEMPORARY AUTHORITY**

O3b Limited ("O3b"), pursuant to Section 25.120 of the Commission's rules, hereby respectfully requests special temporary authority ("STA") to operate an earth station to be located at the Oil Comm 2014 convention in Houston, TX ("Oil Comm Earth Station"). In this filing, O3b seeks a 30-day STA for the period between October 24, 2014 and November 23, 2014.

The Oil Comm Earth Station will be used for non-commercial testing and demonstration purposes, so that the capabilities of O3b's system can be exhibited at the Oil Comm 2014 trade show to a large number of representatives from the U.S. energy industry. The Oil Comm Earth Station will simulate diverse data applications on the O3b satellite system, including interactive video and audio teleconferencing, access to enterprise cloud services and very large file transfers. As discussed below, grant of the requested authority is in the public interest as it will allow O3b to test and demonstrate O3b services that could benefit the U.S. energy industry.

**Test Details and Public Interest Showing**

The Oil Comm Earth Station will communicate with O3b's Ka-band, Medium Earth Orbit, non-geostationary orbit ("NGSO") satellite system[1] and O3b's gateway earth station in Vernon, TX.[2]

The frequencies to be used by the Oil Comm Earth Station are:

- 28.35-28.4 GHz (uplink)
- 18.3-18.6 GHz (downlink)

The Oil Comm Earth Station will consist of two (2) 1.2m antennas manufactured by Orbit, and will operate with a ViaSat MEOLink modem. This Orbit 1.2m terminal is the same Orbit 1.2m terminal for which O3b has previously been granted authority to operate at the Coda Lab location in San Diego, California[3] and for which authority has been requested in the pending O3b application for a 30-day STA at the Data Technology Solution ("DTS") facility in Breaux Bridge, Louisiana.[4]

The Oil Comm Earth Station antennas will be mounted on a fixed pedestal in the parking lot of George R. Brown Convention Center in Houston. Although the pointing angle of the antennas will change as O3b's in-orbit satellites are tracked, the pedestal will remain stationary during the demonstration.

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[1] O3b's first four satellites were launched on June 25, 2013. O3b's second batch of four satellites was launched on July 10, 2014.

[2] *See* O3b Limited, Call Sign E130021, File No. SES-LIC-20130124-00089, granted June 20, 2013 ("O3b Texas License").

[3] *See* O3b Limited, File No. SES-STA-20131228-01209, filed December 23, 2013 ("O3b CODA STA Application"), and which was placed on Public Notice on April 2, 2014 and granted on April 29, 2014.

[4] *See* O3b Limited, File No. SES-STA-20140731-00627, filed July 31, 2014 ("O3b DTS STA Application").

Grant of this application will serve the public interest, convenience, and necessity by allowing O3b to show how its system can effectively deliver low latency, high throughput service to and from isolated resource extraction operations, such as offshore oil platforms.[5] This capability will allow for better connectivity and living conditions at these remote facilities while supporting the data flow for the safe and efficient extraction of important energy resources. O3b will demonstrate the system's capabilities for providing a variety of valuable communications, including voice and video conferencing and enterprise data applications.

**The O3b System**

O3b Limited operates a U.K.-authorized, non-geostationary orbit ("NGSO") Fixed-Satellite Service ("FSS") system in the Ka-band. In its initial FCC application, which sought authority for a gateway earth station located in Hawaii, O3b stated that it planned to operate eight NGSO satellites that would be spaced equally, *i.e.,* at 45° intervals.[6] The Commission granted this application.[7]

O3b filed a modification to its Hawaii application on August 14, 2014.[8] On August 15, 2014 the FCC granted O3b the flexibility to operate up to two of its eight NGSO satellites as in-orbit spares. The remaining satellites would be equally spaced in O3b's authorized orbital plane, and each in-orbit spare would be co-located with a non-spare satellite.[9]

**Technical Parameters**

O3b is attaching the following documents with the technical details of the operations proposed under the requested STA:

- Annex 1: FCC Form 312, Schedule B. O3b proposes to operate the Oil Comm Earth Station during this 30-day term in accordance with the parameters specified in the attached Schedule B.[10]
- Annex 2: Link Budgets. Representative links for the Oil Comm Earth Station are provided.

[5] The Oil Comm Earth Station will not, for purposes of the STA, communicate with any offshore platforms or other offsite facilities. The only other points of communication will be O3b's space stations and O3b's gateway earth station in Vernon, Texas.

[6] *See* Application for Hawaii Earth Station, File No. SES-LIC-20100723-00952, Legal Narrative, Section III and Attachment A thereto (Technical Statement), Section A.2.

[7] *See* O3b Limited, Call Sign E100088, File No. SES-LIC-20130124-00089, granted Sept. 25, 2012 ("O3b Hawaii License").

[8] *See* O3b Limited, Call Sign E100088, File No. SES-STA-20140814-00656.

[9] No changes are being sought to the technical parameters identified in the licenses and STAs held by O3b and its customers. No changes are being made to O3b's Schedule S, either, but O3b notes that the number of satellites and phase angles in Section S4 and S5 of Schedule S will vary to the extent that O3b operates one or more in-orbit spare satellites.

[10] Although O3b is not currently seeking a regular license for the Oil Comm Earth Station, O3b is providing a Schedule B containing technical parameters for the Commission's ease of reference.

- Annex 3: Characteristics of the 1.2m Orbit Antenna are provided for the Commission's convenience. O3b previously submitted this information to the Commission.[11]

Further, O3b incorporates by reference the following technical parameters previously provided by O3b:

- Schedule S. In its application for a gateway earth station in Hawaii, O3b submitted a Schedule S describing its satellite system's technical characteristics.[12] The Schedule S correctly described the O3b satellite system for that application, and numerically enveloped all of the necessary parameters for future earth station applications. In order to assist the Commission in processing present and future applications, however, O3b subsequently provided a modified Schedule S that incorporates additional information submitted to the Commission since the Hawaii application was filed.[13] O3b will operate its Oil Comm Earth Station within the parameters described in O3b's modified Schedule S.
- U.S. Government Coordination. O3b has completed all necessary coordination with U.S. government satellite networks operating in Ka-band, including GSO and non-GSO networks, as well as their associated specific earth stations filed under 9.7A and 9.7B of the ITU Radio Regulations through other administrations. O3b has also completed coordination, according to US footnote 334 of the FCC table of frequency allocations, with the U.S. government, and this US334 coordination agreement specifically provides for additional earth stations in U.S. territory operating with O3b's satellites, such as the Oil Comm Earth Station. As a result, O3b's existing US334 coordination agreement covers the use of the Oil Comm Earth Station as requested in this application.
- Antenna Patterns. O3b previously submitted measured 30 GHz band antenna performance data for the 1.2m Orbit antenna to the Commission in the Coda Lab STA request[14] and the pending DTS STA request.[15]

**Proposed Spectrum Use**

O3b's proposed operations pose no risk of harmful interference to other lawfully authorized stations. As demonstrated below, the Oil Comm Earth Station will provide the requisite protection to geostationary orbit ("GSO") FSS stations operating in the bands proposed by O3b. Transmissions by O3b under the proposed STA will occur on a secondary, non-harmful interference basis, and O3b acknowledges that it will not be entitled to interference protection.

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[11] *See* O3b maritime earth station application, File No. SES-LIC-20130528-00455, Technical Attachment at A.6. *See also* O3b DTS STA Application.
[12] *See* Hawaii License.
[13] *See* Maritime Earth Station Answers, Call Sign E130098, File No. SES-AMD-20131025-01138, answer to question 6.
[14] *See* O3b Limited, File No. SES-STA-20131228-01209, filed December 23, 2013 ("O3b CODA STA Application"), and which was placed on Public Notice on April 2, 2014 and granted on April 29, 2014.
[15] *See* O3b DTS STA Application.

UPLINK

28.35-28.4 GHz – Secondary uplink band shared with primary GSO FSS stations.

In the 28.35–28.4 GHz band, there is a primary allocation for GSO FSS systems and a secondary allocation for NGSO FSS systems. O3b's Oil Comm Earth Station transmissions in this band will be consistent with their secondary status vis-à-vis GSO FSS transmissions. The Commission has allowed similar secondary use of frequencies in the Ka-band uplink allocated to GSO FSS on a primary basis where applicants are prepared to accept interference from primary operations and can demonstrate that their proposed operations are not likely to cause harmful interference to primary operations.[16] O3b agrees to both of these standards.

As a secondary user of the 28.35-28.4 GHz band in the United States, O3b makes no claim of protection from interference from U.S.-licensed GSO FSS networks in this band segment. Regarding O3b's uplink operations in the 28.35-28.4 GHz band, the ITU has developed uplink equivalent power flux density limits ("$EPFD_{up}$") limits to protect co-frequency GSO FSS operations from unacceptable interference from NGSO FSS systems operating in the same frequencies. Specifically, in accordance with Article 22 of the ITU Radio Regulations, if the applicable $EPFD_{up}$ limits are met, the NGSO FSS satellite system is considered to have met its obligations to protect GSO FSS networks from unacceptable interference. O3b demonstrated that its gateway located at Hawaii operating at the authorized power levels will meet the applicable ITU $EPFD_{up}$ limits in all frequency ranges where these limits apply, due to the inherent angular separation between the O3b and geostationary orbits when viewed from the Earth at latitudes away from the equator.[17]

The Oil Comm Earth Station is located further north in latitude than the Hawaii gateway,[18] which results in an even greater angular separation between the O3b and geostationary orbits as viewed from the Earth and an even greater assurance that the applicable ITU $EPFD_{up}$ limits will be met by O3b's proposed operations. The proposed Oil Comm Earth Station operations, therefore, also will meet the applicable ITU $EPFD_{up}$ limits. In any event, O3b confirms that its operations will be on a secondary basis relative to U.S.-licensed GSO FSS networks in the same band.

DOWNLINK

18.3-18.6 GHz – Non-conforming downlink band shared with primary GSO FSS stations.

The 18.3-18.6 GHz band is allocated in the United States on a primary basis to GSO FSS. In the 18.3-18.6 GHz downlink band, the ITU has developed downlink equivalent power flux density ("$EPFD_{down}$") limits to protect GSO FSS networks from unacceptable interference from NGSO FSS systems operating in the same frequencies. Specifically, in accordance with Article 22 of the ITU Radio Regulations, if the applicable $EPFD_{down}$ limits are met, the NGSO FSS satellite system is considered to

[16] *Northrop Grumman Space & Missions Systems Corporation*, 24 FCC Rcd 2330, at ¶¶ 72-73 (Int'l Bur. 2009); *contactMEO Communications*, LLC, 21 FCC Rcd 4035, at ¶¶ 23-24, (Int'l Bur., 2006).
[17] O3b Hawaii License Application, FCC File No. SES-LIC-20100723-00952, *Technical Attachment* at A.10.1.
[18] The O3b Hawaii gateway latitude is 21° 40' 17.8" N; the Oil Comm Earth Station latitude is 29° 45'0.14" N.

have met its obligations to protect GSO FSS networks from unacceptable interference. O3b confirms that its system will meet the applicable ITU $EPFD_{down}$ limits in all frequency ranges where these limits apply.[19]

As an example of how these limits will be satisfied, O3b provided $EPFD_{down}$ calculations for transmissions to its Hawaii gateway earth station.[20] O3b also showed how the $EPFD_{down}$ limits can be satisfied at all latitudes.[21] Compliance with the $EPFD_{down}$ limits is more easily achieved in the case of transmissions to O3b's Oil Comm Earth Station than it is in the case of transmissions to O3b's Hawaii earth station. O3b is able to satisfy the limits by taking advantage of the inherent angular separation between the O3b and GSO orbits when viewed from the surface of the Earth at latitudes away from the equator,[22] and O3b's Oil Comm Earth Station will be located further from the equator than O3b's Hawaii earth station. The Oil Comm Earth Station location, therefore, presents an even stronger case for non-interference to GSO FSS networks than the Hawaii gateway location.

**Conclusion**

The requested STA will allow O3b to evaluate and demonstrate the O3b system's operational capabilities and will not result in harmful interference to other authorized spectrum users. Accordingly, and for good cause shown, O3b respectfully requests that its STA be granted in time for it to commence testing under this 30-day STA request on October 24, 2014.

[19] *See* ITU Radio Regulations, Article 22. *See* also O3b Hawaii License Application, FCC File No. SES-LIC-20100723-00952, *Technical Attachment* at A.10.1 for a discussion of O3b's compliance with the operational limits in Article 22 of the ITU Radio Regulations. *See* also Letter from Brian D. Weimer, to Marlene H. Dortch, in re O3b Application for Hawaii Earth Station, File No. SES-LIC-20100723-00952 (Apr. 22, 2011), Annex A.

[20] O3b Hawaii License Application, FCC File No. SES-LIC-20100723-00952, *Technical Attachment* at A.10.1.

[21] *See id*.

[22] *See id*.

**ANNEX 1 – Form 312, Schedule B**

The Form 312, Schedule B is provided on the following pages.

# SATELLITE EARTH STATION AUTHORIZATIONS
## FCC Form 312 - Schedule B:(Technical and Operational Description)

Location of Earth Station Site

| | | | |
|---|---|---|---|
| E1: Site Identifier: George R. Brown Convention Center Parking Lot | | E5. Call Sign: N/A | |
| E2: Contact Name: Mike Quiroz | | E6. Phone Number: 337-332-4347 | |
| E3. Street:1300 Chenevert Street | | E7. City: Houston | |
| | | E8. County: Harris | |
| E4. State | TX | E9. Zip Code: 77010 | |
| E10. Area of Operation: | Fixed | | |
| E11. Latitude: | 29 ° 45 ' 0.14 " N | | |
| E12. Longitude: | 95 ° 21 ' 37.74 " W | | |
| E13. Lat/Lon Coordinates are: | | ○ NAD-27 | ◉ NAD-83 |
| E14. Site Elevation (AMSL): | | 14 meters | N/A |

| | | | |
|---|---|---|---|
| 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 a technical analysis showing compliance with two-degree spacing policy. | ○ Yes | No | N/A |
| 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? | ◉ Yes | No | N/A |
| E17. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point. | ○ Yes | ◉ No | |
| E18. Is frequency coordination required? If YES, attach a frequency coordination report as | Yes | ◉ No | |
| E19. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as | Yes | ◉ No | |
| **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.** | ○ Yes | ◉ No | |

**POINTS OF COMMUNICATION**

| Satellite Name:O3B-A \| O3B-A \| Eq. NGSO If you selected OTHER, please enter the following: | |
|---|---|
| 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 | E41/42. Antenna Gain Transmit and/or Receive (___dBi at_____GHz) |
|---|---|---|---|---|---|---|
| Oil Comm Convention | Orbit 1.2m | 2 | Orbit Communications | AL-7103-Ka | 1.2 | 45 dBi at 19.2 |
| | | | | | | 48.0 dBi at 28.3 GHz |

| 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) |
|---|---|---|---|---|---|---|---|
| Orbit 1.2m | 1.2/1.2 | 14 | 16 | 0.0 | 20.0 | 2.0 | 60.5 |

**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 EIRP Density per Carrier(dBW/4kHz) |
|---|---|---|---|---|---|---|
| Orbit 1.2m | 18300 - 18600 | R | Left and Right Circular | 54MG7D | 45.6 | 4.3 |
| E50. Various Modulations up to 32APSK; Digital Data Link | | | | | | |
| Orbit 1.2m | 28350 - 28400 | T | Left and Right Circular | 54MG7D | 61.5 | 21 |
| E50. 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) |
|---|---|---|---|---|---|---|---|---|
| Orbit 1.2 | Non-Geostationary | 18300 - 18600 | NON-GEO | 118.7 | 10.0 | 205.5 | 10 | -- |
| Orbit 1.2 | Non-Geostationary | 28350 - 28400 | NON-GEO | 118.7 | 10.0 | 205.5 | 10 | -39.8 |

**REMOTE CONTROL POINT LOCATION**

| E61. Call Sign<br><br>NOTE: Please enter the callsign of the controlling station, not the callsign for which this application is being filed. | | | E65. Phone Number |
|---|---|---|---|
| E62. Street Address | | | |
| E63. City | E67. County | E64/68. State/Country | E66. Zip Code |

**ANNEX 2 – Link Budgets**

Representative link budgets for the 1.2m Orbit antenna at the DTS Earth Station are provided on the following two pages. Please see the chart below for reference.

| Link Description | **Carrier** | **MODCOD** | **Table #** |
|---|---|---|---|
| 1.2m in Houston | 54MHz by 54 MHz | 16APSK 2/3rds FWD<br>QPSK 2/3rds RTN | 1,2 |

| O3b Network Link Analysis - Tier 1 Service For Houston, United States | | | |
|---|---|---|---|
| **Link Budget Creator - Rev 3.2.9: July 17, 2014** | | **Tier 1** | **Tier 1** |
| **Ground Parameter** | | **Teleport** | **Telco** |
| Location | | Vernon (RHCP), United States | Houston, United States |
| Latitude | (°) | 34.2 | 29.8 |
| Longitude (East) | (°) | 260.7 | 264.6 |
| E/S Range to SV | (km) | 10824.6 | 10792.4 |
| E/S Elevation to SV | (°) | 21.5 | 21.9 |
| E/S Altitude | (km) | 0.3 | 0.0 |
| SV Beam Identifier | (#) | 14 | |
| Minutes Into Pass (Sample #1) | (Min) | 0:0 | |
| Telco Spot Beam Off-Angle | (°) | 0.20 | |
| Telco Spot Beam Diameter | (km) | 66.00 | |
| Maximum Roundtrip Latency | (msec) | 144.21 | |
| **Modulation Parameters** | | **Forward** | **Return** |
| Enter Receiver | Type | DVB-S2 | |
| Modem Overhead | (%) | 1.0% | |
| Number of Carriers per Channel | (#) | 1 | |
| Available Bandwidth | (Hz) | 54,000,000 | |
| Channel Symbol Rate | (sps) | 45,000,000 | |
| Channel Modulation Type | | 16APSK | |
| Channel FEC Rate | | 0.75 | |
| Channel Spectral Efficiency | (bits/Sym) | 3.00 | |
| Channel Throughput (100% / 100% of Full Rate) | (bps) | 133,650,000 | |
| **Uplink** | | **Forward** | **Return** |
| E/S Tx Channels per HPA | (#) | 5 | |
| E/S Tx Carrier Frequency | (MHz) | 28,709 | |
| E/S Tx HPA Power Level | (W) | 125 | |
| E/S Tx OBO | (dB) | -14.00 | |
| E/S Tx Post-HPA Losses | (dB) | -2.24 | |
| E/S Tx Antenna Gain (7.3 m / 1.2 m) | (dB) | 65.03 | |
| E/S Tx EIRP Per Channel | (dBW) | 62.77 | |
| E/S Tx Pointing Loss | (dB) | -0.50 | |
| E/S Tx RF Link Availability | (%) | 75.000 | |
| E/S Tx Atmospheric Losses | (dB) | -1.66 | |
| E/S Tx Spreading Loss | (dB) | -151.68 | |
| **Satellite** | | **Forward** | **Return** |
| SV Number of Channels per HPA | (#) | 1 | |
| SV Rx G/T | (dB/K) | 5.58 | |
| SV Rx Power Per Tier | (dBW) | -136.12 | |
| SV Rx Flux Density Per Tier | ($dBW/m^2$) | -91.08 | |
| SV Tx OBO (ALC / FGM) | (dB) | -3.80 | |
| SV Tx Post-TWTA Losses | (dB) | -1.50 | |
| SV Tx Antenna Gain | (dBi) | 31.92 | |
| SV Tx EIRP Per Channel/Carrier | (dBW) | 44.75 | |
| SV Tx Pointing Loss | (dB) | 0.00 | |
| **Downlink** | | **Forward** | **Return** |
| E/S Rx Carrier Frequency | (MHz) | 18,909 | |
| E/S Rx Wavelength | (m) | 0.015854 | |
| E/S Rx RF Link Availability | (%) | 70 | |
| E/S Rx Atmospheric Losses | (dB) | -1.35 | |
| E/S Rx Pointing Loss | (dB) | -1.00 | |
| E/S Rx Antenna Gain (1.2 m / 7.3 m) | (dBi) | 42.7 | |
| E/S Rx Effective G/T | (dB/K) | 18.8 | |
| E/S Rx Power Per Channel | (dBW) | -113.5 | |
| E/S Rx Flux Density Per Channel | ($dBW/m^2$) | -109.3 | |
| **Total Link** | | **Forward** | **Return** |
| Carrier / Noise Bandwidth | (dB) | 76.53 | |
| Carrier / Noise Uplink | (dB) | 15.95 | |
| Carrier / Noise Downlink | (dB) | 14.67 | |
| Carrier / Intermodulation Im (C/Im) | (dB) | 29.35 | |
| (C/N) - Total Actual | (dB) | 11.95 | |
| (C/N) - Total Required | (dB) | 11.40 | |
| $(E_b/N_o)$ - Total Actual | (dB) | 7.18 | |
| $(E_b/N_o)$ - Total Required | (dB) | 6.63 | |
| **Excess Margin** | **(dB)** | **0.55** | |
| **Fade Margin** | **(dB)** | **14.55** | |

#2

**ANNEX 3 – Antenna Terminal Characteristics**

The O3b 1.2 meter ("1.2m") terminals offers service data rates of up to 150 Mbps. The figure below shows this terminal.

**Figure: O3b's 1.2 meter ESV terminal**

The 1.2m antenna is fully stabilized to account for the movement of the O3b satellite in its orbit. Each antenna is enclosed within a radome to protect it from the environment.

The Commission's rules for C-band and Ku-band ESVs include a pointing accuracy requirement and a shut-off requirement. In these bands, there must be a pointing error of less than 0.2° between the orbital location of the target satellite and the axis of the main lobe of each ESV antenna.[23] O3b observes these requirements with its 1.2m Orbit Antenna operations, and the manufacturer of O3b's 1.2m antennas has certified that the terminals comply with these requirements.

The internal controller software continuously monitors the instantaneous antenna tracking error and will cease transmissions within 100ms if an unexpected event occurs that causes the tracking error to exceed 0.5 degrees. Transmissions will not restart until the tracking error, relative to the target O3b satellite, is less than 0.2 degrees.

The 1.2m antennas are no smaller in antenna size than the range of antenna sizes that O3b has previously described to the Commission as its "Tier 2" service.[24] Therefore these 1.2m antennas present no new technical issues in terms of interference with respect to GSO or other non-GSO satellite networks.

[23] *See* 47 C.F.R. §§ 25.221(a)(6) and 25.222(a)(6).

[24] See O3b's Hawaii application, FCC File No. SES-LIC-20100723-00952, technical narrative at Section A.5.