

O3b Limited

Approved by OMB  
3060-0678

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:  
DTA STA to 30 days (Jul 2014)

1. Applicant

|                   |                           |                      |                             |
|-------------------|---------------------------|----------------------|-----------------------------|
| <b>Name:</b>      | O3b Limited               | <b>Phone Number:</b> | 202-352-5985                |
| <b>DBA Name:</b>  |                           | <b>Fax Number:</b>   |                             |
| <b>Street:</b>    | 900 17th Street, NW, #300 | <b>E-Mail:</b>       | joslyn.read@o3bnetworks.com |
| <b>City:</b>      | Washington                | <b>State:</b>        |                             |
| <b>Country:</b>   | USA                       | <b>Zipcode:</b>      |                             |
| <b>Attention:</b> | Ms Joslyn Read            |                      |                             |

30 days "with conditions"

File # SES-STA-20140731-00627



Call Sign N/A Grant Date 09/16/2014  
(or other identifier)

Term Dates  
From 09/16/2014 To: 10/15/2014

Approved: *[Signature]*

Applicant: O3b Limited  
No Call Sign  
File No.: SES-STA-20140731-00627

O3b Limited is granted special temporary authority (STA), for 30 days, to operate a fixed earth station located at the Data Technology Solutions' Breaux Bridge, LA, facility at 30° 16' 54.12" N, 91° 54' 51.84" W, to communicate with the its NGSO FSS system licensed by the United Kingdom. Operations pursuant to the STA are limited to testing and demonstration purposes only and are subject to the terms of its application, the Commission's Rules, and the following conditions.

1. Operations are limited to the following frequency bands and emissions:

| Frequency Band | Emissions | Maximum E.I.R.P. | Maximum E.I.R.P. Density |
|----------------|-----------|------------------|--------------------------|
| 28.35-28.4 GHz | 54MG7D    | 61.5 dBW         | 21 dBW/4kHz              |
| 18.3-18.6 GHz  | 54MG7D    |                  |                          |

2. Operations are on a secondary basis and O3b must not cause harmful interference to stations operating on a primary basis and must not claim protection from stations operating on a primary basis.
3. Grant of this authorization is without prejudice to any determination that the Commission may make regarding any pending or future application to communicate with O3b's NGSO FSS system.
4. Any action taken or expense incurred as a result of operations pursuant to this special temporary authority is solely at O3b's risk.
5. This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective immediately.



File # SES-STA-20140731-00627

Call Sign N/A Grant Date 09/16/2014  
(or other identifier)

Term Dates  
From 09/16/2014 To: 10/15/2014

Approved: Paul E. Blair

|   |  |
|---|--|
| <b>2. Contact</b>   |  |
| <b>Name:</b> Joseph A. Godles   | <b>Phone Number:</b> 202-429-4900  |
| <b>Company:</b> Goldberg Godles Wiener & Wright LLP   | <b>Fax Number:</b> 202-429-4912  |
| <b>Street:</b> 1229 19th Street, NW   | <b>E-Mail:</b> jgodles@g2w2.com  |
| <b>City:</b> Washington   | <b>State:</b> DC   |
| <b>Country:</b> USA   | <b>Zipcode:</b> 20036 -2413  |
| <b>Attention:</b>   | <b>Relationship:</b> Legal Counsel   |
| (If your application is related to an application filed with the Commission, enter either the file number or the IB Submission ID of the related application. Please enter only one.) |  |
| 3. Reference File Number or Submission ID   |  |
| 4a. Is a fee submitted with this application?   |  |
| <input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).                                   |  |
| <input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee  |  |
| <input type="radio"/> Other (please explain):   |  |
| 4b. Fee Classification CGX - Fixed Satellite Transmit/Receive Earth Station   |  |
| 5. Type Request   |  |
| <input type="radio"/> Use Prior to Grant  | <input type="radio"/> Change Station Location <input checked="" type="radio"/> Other |
| 6. Requested Use Prior Date   |  |
| 09/15/2014  |  |

|  |   |
|--|---|
| 7. City<br>Breaux Bridge   | 8. Latitude<br>(dd mm ss.s h) 30 16 54.12 N                       |
| 9. State LA  | 10. Longitude<br>(dd mm ss.s h) 91 54 51.84 W                     |
| 11. Please supply any need attachments.<br>Attachment 1: STA request Attachment 2: Attachment 3:   |   |
| 12. Description. (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)<br><div style="border: 1px solid black; padding: 5px;">O3b Limited hereby requests special temporary authority to operate an earth station to be located at the Data Technology Solutions facility in Breaux Bridge, Louisiana that will communicate with the satellite system operated by O3b for non-commercial testing and demonstration purposes.</div>       |   |
| 13. By checking Yes, the undersigned certifies that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes.<br>Yes <input checked="" type="radio"/> No <input type="radio"/> |   |
| 14. Name of Person Signing<br>Joslyn Read  | 15. Title of Person Signing<br>Vice President, Regulatory Affairs |
| WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).  |   |

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**THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.**

## 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 Data Technology Solutions (“DTS”) facility in Breaux Bridge, Louisiana (“DTS Earth Station”) that will communicate with the satellite system operated by O3b. In this filing, O3b seeks a 30-day STA for the period between September 15, 2014 and October 14, 2014.<sup>1</sup>

The DTS Earth Station will be used for non-commercial testing and demonstration purposes, exhibiting O3b’s system to the U.S. energy industry. The DTS 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 DTS Earth Station will communicate with O3b’s Ka-band, Medium Earth Orbit, non-geostationary orbit (“NGSO”) satellite system<sup>2</sup> and O3b’s gateway earth station in Vernon, TX.<sup>3</sup>

The frequencies to be used by the DTS Earth Station are:

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

The DTS 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.<sup>4</sup>

The DTS Earth Station antennas will be mounted on a fixed pedestal at the DTS facility. 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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<sup>1</sup> O3b will be filing a second STA request, which it understands the International Bureau will put on Public Notice, covering the 30-day period between October 15, 2014, and November 13, 2014.

<sup>2</sup> O3b’s first four satellites were launched on June 25, 2013. O3b’s next four satellites were launched on July 10, 2014.

<sup>3</sup> See O3b Limited, Call Sign E130021, File No. SES-LIC-20130124-00089, granted June 20, 2013 (“O3b Texas License”).

<sup>4</sup> 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.

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.<sup>5</sup> This capability will allow for better connectivity and living conditions at these remote facilities while enhancing 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.

### 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 DTS Earth Station during this 30-day term in accordance with the parameters specified in the Schedule B.<sup>6</sup>
- Annex 2: Link Budgets. Representative links for the DTS Earth Station are provided.
- Annex 3: Characteristics of the 1.2m Orbit Antenna are provided for the Commission's convenience. O3b previously submitted this information to the Commission.<sup>7</sup>
- Annex 4: Antenna Patterns. Measured 30 GHz band antenna performance data for the 1.2m antenna is provided for the Commission's convenience. O3b previously submitted this data to the Commission.<sup>8</sup>

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.<sup>9</sup> 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

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

<sup>6</sup> Although O3b is not currently seeking a regular license for the DTS Earth Station, O3b is providing a Schedule B containing technical parameters for the Commission's convenience.

<sup>7</sup> See O3b maritime earth station application, File No. SES-LIC-20130528-00455, Technical Attachment at A.6.

<sup>8</sup> See O3b maritime earth station answers (Oct. 25, 2013) ("Maritime Earth Station Answers"), File No. SES-AMD-20131025-01138, answer to Question 10.

<sup>9</sup> See O3b Limited, Call Sign E100088, File No. SES-LIC-20100723-00952, granted Sept. 25, 2012 ("O3b Hawaii License").

modified Schedule S that incorporates additional information submitted to the Commission since the Hawaii application was filed.<sup>10</sup> O3b will operate its DTS Earth Station within the parameters described in O3b's modified Schedule S.

- U.S. Government Coordination. O3b has completed all necessary coordination with US 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 US government, and this US334 coordination agreement specifically provides for additional earth stations in US territory operating with O3b's satellites, such as the DTS Earth Station. As a result, O3b's existing US334 coordination agreement covers the use of the DTS Earth Station as requested in this application.

### **Proposed Spectrum Use**

O3b's proposed operations pose no risk of harmful interference to other lawfully authorized stations. As demonstrated below, the DTS 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.

### 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 DTS 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.<sup>11</sup> 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

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<sup>10</sup> See Maritime Earth Station Answers, Call Sign E130098, File No. SES-AMD-20131025-01138, answer to question 6.

<sup>11</sup> *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).



density limits (“EPFD<sub>up</sub>”) 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<sub>up</sub> 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<sub>up</sub> 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.<sup>12</sup>

The DTS Earth Station is located further north in latitude than the Hawaii gateway,<sup>13</sup> 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<sub>m</sub> limits will be met by O3b’s proposed operations. The proposed DTS Earth Station operations, therefore, also will meet the applicable ITU EPFD<sub>up</sub> 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<sub>down</sub>”) 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<sub>down</sub> limits are met, the NGSO FSS satellite system is considered to have met its obligations to protect GSO FSS networks from unacceptable interference. O3b confirms that its system will meet the applicable ITU EPFD<sub>down</sub> limits in all frequency ranges where these limits apply.<sup>14</sup>

As an example of how these limits will be satisfied, O3b provided EPFD<sub>down</sub> calculations for transmissions to its Hawaii gateway earth station.<sup>15</sup> O3b also showed how the EPFD<sub>down</sub> limits can be satisfied at all latitudes.<sup>16</sup> Compliance with the EPFD<sub>down</sub> limits is more easily achieved in the case of transmissions to O3b’s DTS Earth Station than it is in the case of transmissions to O3b’s Hawaii earth

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<sup>12</sup> O3b Hawaii License Application, FCC File No. SES-LIC-20100723-00952, *Technical Attachment* at A.10.1.

<sup>13</sup> The O3b Hawaii gateway latitude is 21° 40' 17.8" N; the DTS Earth Station latitude is 30° 16' 54.3" N.

<sup>14</sup> 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.

<sup>15</sup> O3b Hawaii License Application, FCC File No. SES-LIC-20100723-00952, *Technical Attachment* at A.10.1.

<sup>16</sup> See *id.*

station. O3b is able to satisfy the limits by taking advantage of the inherent angular separation of the O3b and the GSO orbits when viewed from the surface of the Earth at latitudes away from the equator,<sup>17</sup> and O3b's DTS Earth Station will be located further from the equator than O3b's Hawaii earth station. The DTS 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 September 15, 2014.

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<sup>17</sup> *See id.*