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 in Marianna, Florida ("FL 1.2m Earth Station") that will communicate with the O3b satellite system, which has been authorized to serve the U.S. market.[1] In this filing, O3b seeks a 30-day STA for the period between October 20, 2018 and November 19, 2018.

The FL 1.2m Earth Station will be used to enable backhaul and data services, including the provision of aerial imagery data to the Jackson County government. As discussed below, grant of the requested authority is in the public interest as it will allow O3b to provide services that will benefit the recovery effort in Florida as the region recovers from Hurricane Michael.

Operational Details and Public Interest Showing

The FL 1.2m Earth Station will communicate with O3b's UK-authorized, Ka-band, Medium Earth Orbit, non-geostationary satellite orbit ("NGSO") Fixed-Satellite Service ("FSS") system and O3b's gateway earth station in Hortlandia, Brazil.

The frequencies to be used by the FL 1.2m Earth Station are:

- 27.6-28.4 GHz (uplink)
- 17.8-18.6 GHz (downlink)

The FL 1.2m Earth Station will consist of two (2) 1.2-m AvL antennas. O3b has previously been granted a license to operate this terminal model by the Commission's Office of Engineering and Technology.[2]

In the aftermath of Hurricane Michael, significant portions of the Gulf Coast remain without wireless connectivity,[3] and local governments are conducting restoration efforts with reduced communications capacity.[4] As of mid-October, the Commission estimated that there were still counties in Florida with significant cell site outages.[5] Grant of this application will serve the public interest because the FL 1.2m Earth Station will be used to facilitate backhaul services and data connectivity, including the provision of aerial imagery data, to local government users while the terrestrial infrastructure is being repaired.

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[1] The FCC has granted market access to the current O3b 16 satellite constellation and authorized the expansion of the constellation to up to 42 satellites. *See O3b Limited*, Call Sign S2935, File Nos. SAT-AMD-20171109-00154 *et al*. (granted June 4, 2018) ("Market Access Petition and Grant").

[2] *See O3b Limited*, Experimental Call Sign WI2XKR, File No. 0349-EX-CR-2018, granted August 1, 2018.

[3] *See* Statement of Chairman Pai on Hurricane Michael Restoration Efforts, (Oct. 16, 2018), available at: https://www.fcc.gov/document/chairman-pai-statement-hurricane-michael-restoration-efforts.

[4] *See* Gov. Scott: Telecommunications Companies Should Treat Floridians Fairly, (Oct. 16, 2018), available at: https://www.flgov.com/2018/10/16/gov-scott-telecommunications-companies-should-treat-floridians-fairly/.

[5] *See* "Hurricane Michael Communications Status Report for October 16, 2018," (rel. Oct. 17, 2018), available at: https://docs.fcc.gov/public/attachments/DOC-354587A1.pdf.

Earth Station Technical Parameters

The following documents containing technical details of the operations proposed under the requested STA are attached:

- Annex 1: FCC Form 312, Schedule B. O3b proposes to operate the FL 1.2m Earth Station during this 30-day term in accordance with the parameters specified in the attached Schedule B.[6]
- Annex 2: An Office of Engineering and Technology license for this terminal model, along with the documentation submitted in support of the application.

Further, O3b incorporates by reference the information regarding the technical parameters of the O3b satellite system that O3b submitted with its U.S. Market Access Petition.[7]

Proposed Spectrum Use

Operations of O3b's proposed FL 1.2m Earth Station in shared bands will comply with Commission rules and policies. O3b addresses each of these bands below.

Uplink

27.6 - 28.35 GHz – Secondary uplink band shared with primary terrestrial stations

The 27.6 - 28.35 GHz uplink band is allocated to the Upper Microwave Flexible Use Service ("UMFUS") on a primary basis. FSS operations are allocated on a secondary basis in the same band. Accordingly, O3b's proposed operations in this band must not cause harmful interference to primary UMFUS stations.

O3b does not seek a protected interference zone for its operations in this band. O3b will operate the FL 1.2m Earth Station on a secondary basis and immediately shut down transmit operations in the event of harmful interference to UMFUS operations.

However, as noted below, O3b requests a waiver of the coordination requirements articulated in 47 C.F.R. 25.136(c)(4) and 47 C.F.R. 101.103(d). The required coordination report would take a significant amount of time to procure, and delivering the O3b service in a timely manner is critical to the emergency response effort in and around Marianna, FL. Additionally, due to the state of the terrestrial infrastructure in Florida, it is unlikely that there are any in-band terrestrial operations at this time with which the O3b service could interfere.

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

The U.S. Market Access Grant authorized the O3b satellite system to use the 28.35 - 28.4 GHz band, which has a primary allocation for GSO FSS systems, pursuant to the secondary allocation for

[6] O3b is providing a Schedule B containing technical parameters for the Commission's convenience.
[7] *See* Market Access Petition and Grant.

NGSO FSS systems. O3b's FL 1.2m Earth Station transmissions in this band will be consistent with their secondary status vis-à-vis GSO FSS transmissions.

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. O3b's uplink operations in the 28.35 - 28.4 GHz band comply with applicable ITU equivalent power flux density ("$EPFD_{up}$") limits designed to protect co-frequency GSO FSS operations from unacceptable interference from NGSO FSS systems operating in the same frequencies. O3b previously demonstrated that earth stations located north of 17.9° N.L. and 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.[8] The FL 1.2m Earth Station is located further north in latitude than 17.9° N.L.,[9] 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.

Downlink

17.8 - 18.6 GHz

The 17.8-18.3 GHz frequency band is allocated on a primary basis to the terrestrial fixed service, and on a secondary basis for NGSO FSS.[10] The 18.3 - 18.6 GHz band is allocated in the United States on a primary basis to GSO FSS. O3b's space stations transmit in this band pursuant to the Market Access Grant, and operations of the space stations with the FL 1.2m Earth Station will comply with the conditions specified in that authorization.[11]

Waivers Requested

Waiver of Coordination Requirements in Sections 25.136(c)(4) and 101.103(d)

FSS earth stations in the 27.6-28.35 GHz band are typically required to coordinate with primary terrestrial licensees pursuant to 47 C.F.R. §§ 25.136 and 101.103(d). O3b requests a temporary waiver of this requirement in order to provide its service in the above-mentioned time frame.

It is in the public interest for the Commission to waive the coordination requirement for short-term O3b operations in Florida in the 27.5-28.35 GHz band. Local terrestrial operators are not likely to be providing service in Florida during the term of this STA under the current circumstances. O3b can

[8] *See O3b Limited,* Call Sign E140101, File No. SES-LIC-20141001-00781 (granted June 8, 2015) ("O3b Blanket License Application"), Technical Annex at A7 (demonstrating that earth stations communicating with the O3b system can protect GSO systems down to 17.9° N.L.).
[9] The FL 1.2m Earth Station latitude is 30° 47' 29" N.L.
[10] *See Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, Report and Order and Further Notice of Proposed Rulemaking, FCC 16-170, IB Docket No. 16-408, rel. Sept. 27, 2017 at ¶7, Appendix B.
[11] Market Access Petition and Grant, ¶ 46 (g) & (h).

informally communicate with local licensees to ensure that these emergency operations do not cause harmful interference to licensees, and in the interim, will cease transmissions in the event that it receives a complaint of harmful interference.

Conclusion

The requested STA will allow O3b to provide much needed data connectivity as the local terrestrial networks are being repaired. 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 on October 20, 2018.

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: Marianna Earth Station	E5. Call Sign:	
E2: Contact Name: Network Operations Center	E6. Phone Number: 703-366-1500	
E3. Street: 4487 Longhouse Ct	E7. City: Marianna	
E4. State: Florida	E8. County: Jackson County E9. Zip Code: 32446	
E10. Area of Operation: Fixed		
E11. Latitude: 30° 47' 29" N		
E12. Longitude: 85° 13' 46" W		
E13. Lat/Lon Coordinates are:	○ NAD-27	◉ NAD-83
E14. Site Elevation (AMSL): 51 m		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: | | Eq. 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)
Marianna	AvL 1.2m	2	AvL	1.2m	1.2m	Receive Gain (45.86 dBi at 18.48 GHz)
						Transmit Gain (49.0 dBi at 28.28 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)
AvL 1.2m	1.2/1.2	2	51	NA	20	NA	65.91

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)
AvL .2m	17800 18600	R	Left and Right Circular	216MG7D	0.0	0.0
E50. Modulation and Services QPSK, 8PSK, 16PSK, 32PSK and Internet						
GetSat .2m	27600 28400	T	Left and Right Circular	216MG7D	65.91	-9.40
E50. Modulation and Services QPSK, 8PSK, 16PSK, 32PSK and Internet						

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)
AvL 1.2m	Non-Geostationary	17800 18600	0.0	119.0	13.0	157.0	13.0	0.0
AvL .2m	Non-Geostationary	27600 28400	0.0	119.0	13.0	157.0	13.0	-9.40

REMOTE CONTROL POINT LOCATION

E61. Call Sign 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 – Blanket License, Office of Engineering and Technology, AvL 1.2m Terminal

United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
RADIO STATION CONSTRUCTION PERMIT
AND LICENSE

EXPERIMENTAL	WI2XKR
(Nature of Service)	(Call Sign)
XT FX	0349-EX-CR-2018
(Class of Station)	(File Number)

NAME O3b Limited

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions and requirements set forth in this license, the licensee hereof is hereby authorized to use and operate the radio transmitting facilities hereinafter described for radio communications in accordance with the program of experimentation described by the licensee in its application for license.

Operation: In accordance with Sec. 5.3(j) of the Commission's Rules

Station Locations

(1) Nationwide, US

Frequency Information

Nationwide, US

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
27.6-28.4 GHz	FX	216MG7D 1M00G7D	1.59 MW (ERP)	0.0003 %
28.6-29.1 GHz	FX	216MG7D 1M00G7D	1.59 MW (ERP)	0.0003 %

Special Conditions:

(1) Licensee should be aware that other stations may be licensed on these frequencies and if any interference occurs, the licensee of this authorization will be subject to immediate shut down.

(2) Prior to operation, licensee must successfully coordinate with the existing and future Fixed Microwave Service licensees in accordance with 47 CFR, Part 101.103(d).

This authorization effective August 01, 2018 and
will expire 3:00 A.M. EST August 01, 2020

FEDERAL COMMUNICATIONS COMMISSION

Special Conditions:

(3) Prior to operation, the experimental licensee must notify all authorized satellite earth station operators within 25-mile radius of the testing, seven days in advanced for each test perform and provide a stop buzzer contact person. Consult MyIBFS database to identify all existing authorized earth stations within a 25-mile radius.

(4) Operations to this authorization, the experimental licensee earth station antenna(s) are limited between 7 and 50 degrees' north latitude.

(5) Licensee must complete coordination with the National Spectrum Managers Association (NSMA) spectrum manager coordinators prior to operating a demonstration/testing terminal at any location. The spectrum manager coordinators contact information can be found in the website: http://wireless.fcc.gov/services/index.htm?job=licensing_1&id=microwave.

(6) This license supersedes previous grant to revise condition 5.