

E160081 SES-STA-20160620-00556 IB2016001407  
UNITED TELEPORTS INC.

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:  
60-day STA Request for Gateway Earth Station Operations

I. Applicant

Name:	UNITED TELEPORTS INC.	Phone Number:	305 671 3333
DBA Name:		Fax Number:	
Street:	19000 NE 5th Avenue	E-Mail:	renatodias@unitedteleports.com
City:	Miami	State:	FL
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Attention:	Mr. Renato G Dias		



File # SES-STA-20160620-00556  
Call Sign E160081 Grant Date 6-27-16  
(or other identifier)  
Term Dates  
From: 6-29-16 To: 8-28-16  
Approved: [Signature]

United Teleports  
Call Sign E160081

File Number SES-STA-20160620-00556

United Teleports Inc. is granted Special Temporary Authority (STA) for a period of 60 days, commencing June 29, 2016, operating a 7 meter gateway earth station located in Port St. Lucie, FL at 12.75-13.25 GHz band uplink only to Eutelsat 65 West A (E65WA) satellite for distribution throughout the Caribbean and other international locations. The STA operations must comply with all operational parameters described in its pending earth station authorization. The STA operation subjects to the following conditions:

- All antennas must operate with authorized emission limits in the proposed pending license application.
- Operations shall not cause harmful interference to, and shall not claim protection from, interference caused to it by any other lawfully operating station and it shall cease transmission(s) immediately upon notice of such interference.
- Grant of this STA is without prejudice to any determination that the Commission may make regarding other pending or future applications.
- Grant of this STA does not constitute market access for any other U.S. earth station.
- If the underlying application is dismissed or denied this authorization becomes invalid and operations must cease immediately.
- Any action taken or expense incurred as a result of operations pursuant to this STA is solely at the applicant's risk.
- 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-20160620-00556  
Call Sign E160081  
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Approved: *[Signature]*

**2. Contact**

<b>Name:</b>	Carlos Nalda	<b>Phone Number:</b>	5713325626
<b>Company:</b>	LMI Advisors	<b>Fax Number:</b>	
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<b>Attention:</b>		<b>Relationship:</b>	Other

(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 SESLIC2016051300427 or Submission ID

- 4a. Is a fee submitted with this application?
- If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).
  - Governmental Entity
  - Noncommercial educational licensee
  - Other (please explain):

4b. Fee Classification CGX – Fixed Satellite Transmit/Receive Earth Station

5. Type Request
- Use Prior to Grant
  - Change Station Location
  - Other

6. Requested Use Prior Date  
06/24/2016

7. CityPort St. Lucie

8. Latitude (dd mm ss.s h)	27	16	56.5	N
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9. State FL	10. Longitude (dd mm ss.s h) 80 28 58.6 W
11. Please supply any need attachments. Attachment 1: 312/Sch B Attachment 2: Tech Appendix Attachment 3: Narrative	
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.) United Teleports respectfully seeks a 60-day STA to operate a transmit-only 7 meter gateway earth station at its teleport facility in Port St. Lucie, Florida	
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. Yes <input checked="" type="radio"/> No <input type="radio"/>	
14. Name of Person Signing Renato Dias	15. Title of Person Signing COO
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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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

In the Matter of

Application of United Teleports Inc. for  
) 60-Day Special Temporary Authorization  
) ("STA") to Conduct Fixed Transmit Earth  
) Station Operations in the 12.75-13.25 GHz  
) File No.:  
) (Earth-to-space) Frequency Band

**APPLICATION FOR SPECIAL TEMPORARY AUTHORIZATION**

United Teleports Inc. ("United Teleports"), pursuant to Section 25.120 of the

Commission's Rules, 47 C.F.R. § 25.120, respectfully seeks 60-day special temporary

authorization ("STA") for a 7 meter gateway earth station located at its teleport facility in

Port St. Lucie, Florida to transmit in the International Telecommunications Union

("ITU") Appendix 30B Ku-band frequencies at 12.75-13.25 GHz to uplink U.S. video

programming to the Eutelsat 65 West A ("E65WA") satellite<sup>1</sup> for distribution throughout

the Caribbean and other international locations. United Teleports seeks this 60-day STA

to permit near-term operation of this transmit-only earth station during the pendency of

its recently filed earth station license application for identical operations.<sup>2</sup>

United Teleports will use the gateway to support U.S. television and video

programming distribution to the Caribbean and other non-U.S. locations. As discussed

<sup>1</sup> E65WA is a Brazil-licensed geostationary satellite orbit ("GSO") fixed-satellite service ("FSS") satellite located at the nominal 65° W.L. orbital location. While nominally located at 65° W.L., the E65WA satellite currently is located physically at 65.2° W.L.

<sup>2</sup> See United Teleports, File No. SES-LIC-20160513-00427 (Call Sign E160081) ("Earth Station Application").

herein, grant of the requested STA is consistent with Commission rules and policies, will not cause harmful interference and will serve the public interest. United Teleports seeks an STA for a period of up to 60 days commencing on June 24, 2016, or as soon as practicable thereafter.

**I. BACKGROUND**

United Teleports currently works with another FCC earth station licensee, DNET Group, Inc., to provide uplink video distribution services in the United States.<sup>3</sup> In addition, United Teleports has a pending earth station license application with the Commission to operate a gateway earth station in the conventional Ku-band with Permitted List satellites.<sup>4</sup> United Teleports also recently filed an earth station application seeking authority for the identical transmit-only operations proposed herein, which serves as United Teleports' request for regular authority under Section 25.120(b)(3) of the Commission's Rules.

United Teleports seeks the present STA to operate a Scientific-Atlanta (ViaSat) Model 8010 gateway earth station (the "SA-7m gateway") – an earth station model that has been previously licensed by the Commission for similar gateway operations<sup>5</sup> – with the E65WA satellite using the 12.75-13.25 GHz band to support interim distribution of U.S. video programming to the Caribbean and other foreign points. The attached Technical Appendix and as-filed FCC Form 312 and Schedule B contain relevant

<sup>3</sup> See DNET Group, Inc., File No. SES-MFS-20140314-00140 (Call Sign E120231).

<sup>4</sup> See United Teleports, File No. SES-LIC-20160427-00386 (Call Sign E160072).

<sup>5</sup> See, e.g., Mobile Satellite Communications, Inc., File No. SES-MOD-20080507-00560 (Call Sign E070095); BFI Licenses, LLC, File No. SES-LIC-20020724-01184 (Call Sign E020201).

<sup>6</sup> See, e.g., *Amendment of the Commission's Policies to Allow Non-U.S. Licensed Space Stations Providing Domestic and International Service in the United States*, Report and Order, 12 FCC Rcd. 24094 (1997) (“DISCO II Order”).

<sup>7</sup> See United States Table of Frequency Allocations, 47 C.F.R. § 2.106, footnote NG52.

earth stations in the United States operating in ITU Appendix 30B frequency bands. GHz band are consistent with the Table of Allocations and similarly approved GSO FSS United Teleports’ proposed operations of the SA-7m gateway in the 12.75-13.25 GHz band and similarly approved GSO FSS operations in the 12.75-13.25 GHz band comply with the provisions of ITU Appendix 30B, and be limited to international systems, i.e., other than U.S. domestic services.<sup>7</sup>

that the 12.75-13.25 GHz band is shared on a co-primary basis with terrestrial fixed service (“FS”) and FSS operations. In addition, the Table of Allocations requires that GSO FSS operations in the 12.75-13.25 GHz band comply with the provisions of ITU Appendix 30B, and be limited to international systems, i.e., other than U.S. domestic services.<sup>7</sup>

Section 2.106 of the Commission’s Rules, 47 C.F.R. § 2.106, identifies conditions for spectrum use by FSS in the 12.75-13.25 GHz band. The Table of Allocations provides that the 12.75-13.25 GHz band is shared on a co-primary basis with terrestrial fixed service (“FS”) and FSS operations. In addition, the Table of Allocations requires that GSO FSS operations in the 12.75-13.25 GHz band comply with the provisions of ITU Appendix 30B, and be limited to international systems, i.e., other than U.S. domestic services.<sup>7</sup>

**A. Proposed Use of 12.75-13.25 GHz Uplink Band**

**II. DISCUSSION**

operations proposed herein for up to 60 days commencing on June 24, 2016. rules and policies.<sup>6</sup> Accordingly, the Commission may authorize the limited gateway not cause any harmful interference, and is otherwise consistent with other Commission As discussed herein, grant of this application will serve the public interest, will information.

performance information, a radiation hazard analysis and frequency coordination information relating to the proposed operations, including technical parameters and



United Teleports confirms that its proposed uplink operations of the SA-7m gateway in the 12.75-13.25 GHz band will be limited to international services – the gateway will support United Teleports' interim television and video distribution to foreign countries in the Caribbean and other international points.

Additionally, the Schedule S, which is incorporated by reference,<sup>8</sup> and the attached Technical Appendix confirm the technical parameters under which United Teleport will operate the SA-7m gateway with the E65WA satellite are compliant with the Commission's rules and the provisions of ITU Appendix 30B.<sup>9</sup> Because United Teleports does not seek Commission authority for downlink operations, this STA request is limited to earth station transmit authority in the 12.75-13.25 GHz uplink band and does not seek authority for E65WA to serve the U.S. market with satellite downlink operations.

There is extensive Commission precedent for United Teleports' proposed earth station uplink operations. The Commission has previously authorized gateway earth stations located in the United States to operate with both U.S.-licensed and non-U.S. licensed satellites in the ITU Appendix 30B uplink and downlink bands.<sup>10</sup> In the instant STA request, United Teleports' proposed operations are more limited in scope because it only intends to operate the SA-7m gateway earth station in the 12.75-13.25 GHz Earth-

<sup>8</sup> See Earth Station Application, Schedule S.

<sup>9</sup> *Id.* footnote 5.441.

<sup>10</sup> See, e.g., Intelsat License LLC, File No. SES-MFS-20131111-00952 (Call Sign E000063) (authorizing a gateway earth station to communicate with certain Canadian-licensed satellites in the 12750-13250 GHz band); Intelsat License LLC, File No. SES-LIC-20141124-00872 (Call Sign E140121) (granting an earth station license to operate two gateway earth stations with the IS-29E satellite in the 12.875-13.25 GHz band).

<sup>11</sup> See Technical Appendix, IV.

to-space band and does not seek to conduct earth station receive operations at the facility. Additionally, United Teleports only seeks to operate the SA-7m with E65WA for a brief period of 60 days, does not seek any waivers of the Table of Allocations and will limit its operations in the 12.75-13.25 GHz band to support international operations. The attached Technical Appendix and as-filed FCC Form 312 and Schedule B demonstrate that the SA-7m gateway earth station will conduct transmit-only operations consistent with Commission rules and precedent.

The 12.75-13.25 GHz uplink frequency band is shared on a co-primary basis with terrestrial systems and coordination with FS licensees is required. Accordingly, United Teleports has worked with Comsearch to coordinate the proposed operations. Comsearch sent a coordination notice to existing licensees in the 12.75-13.25 GHz band within the relevant coordination distance (1 km) and no objections were received from incumbent licensees. The attached frequency coordination analysis demonstrates that United Teleports may operate the SA-7m earth station within its enclosed facility in Port St. Lucie, Florida without causing harmful interference to existing authorized spectrum users in the band.<sup>11</sup>

Furthermore, United Teleports agrees not to cause harmful interference to other operations in the band. In the event that United Teleports learns that its temporary operations are causing harmful interference to other lawfully operating users, it will immediately suspend its operations until such interference is resolved. Accordingly, United Teleports' proposed temporary operations will be fully compatible with other FCC-licensed operations.

## B. Eutelsat 65 West A Satellite

The E65WA satellite (ITU Satellite Network: B-SAT-3R-1) is nominally positioned at 65° W.L. and is licensed by Brazil, a member of the World Trade

Organization (“WTO”) for services covered under the WTO Basic Telecommunications Agreement. The E65WA satellite, based on the familiar 1300-series spacecraft model manufactured by Space Systems Loral<sup>12</sup> and operated by Eutelsat do Brasil LTDA, was launched in early 2016 and has provides limited coverage of the United States that

accommodate the proposed uplink operations. United Teleports’ earth station application fully describes the particulars of the proposed operations and includes a full Schedule S and other information regarding the satellite which, to extent relevant to this request, is incorporated here by reference.<sup>13</sup>

United Teleports is not aware of any prior grant of authority to uplink to the E65WA satellite and, in its earth station application, United Teleports made the showing required by Section 25.137 of the Commission’s Rules. Still, it is not clear whether such information is material in the unique context of United Teleports’ proposed operations. Unlike applications for foreign-licensed satellites to provide service into the U.S. market, this STA request seeks authority for a U.S. earth station to conduct transmit operations

<sup>12</sup> The Commission has authorized operation of the Space System Loral 1300-series spacecraft on numerous occasions. *See, e.g.*, DISH Operating LLC, File No. SAT-LOA-20090518-00053 (Call Sign S2790); EchoStar Operating Corporation, File No. SAT-LOA-20100310-00043 (Call Sign S2811); EchoStar Operating Corporation, File No. SAT-LOA-20110902-00172 (Call Sign S2844); DISH Operating LLC, File No: SAT-LOA-20141002-00105 (Call Sign S2931).

<sup>13</sup> *See* Earth Station Application, Technical Appendix & Schedule S. Out of an abundance of caution, United Teleports included data regarding the downlink capabilities of the E65WA satellite and other legal and technical information not directly related to the limited uplink operations for which authority is presently sought.

only and associated downlinks will occur only outside the United States.<sup>14</sup> Because authorization of earth station uplink transmissions consistent with FCC rules is essentially independent of the receiving satellite point of communication, this limited earth station STA request can be considered separate from any request for authority to serve the U.S. market.

### **C. STA Request and Public Interest Considerations**

Section 25.120(a) of the Commission's Rules require that an STA request "must contain the full particulars of the proposed operation including all facts sufficient to justify the temporary authority sought and the public interest therein."<sup>15</sup> United Teleports has submitted the full particulars of its proposed transmit-only operations establishing compliance with the Commission's rules and policies, as well as substantial additional information that may not be directly relevant to this limited STA request.

United Teleports' seeks interim 60-day temporary authority to facilitate near-term commencement of international distribution of television and video programming during the pendency of its earth station application. Grant of this request would allow United Teleports to distribute U.S. coverage of important world news events and domestic programming to other countries in the Caribbean and the Americas, enhancing international public awareness and understanding of issues that may have significant regional and global impact. Under this STA, United Teleports would provide diverse U.S. programming, including coverage of political developments in the United States and noteworthy events around the world, such as reporting leading up to the 2016 Summer

<sup>14</sup> See *DISCO II Order* at ¶7.

<sup>15</sup> See 47 C.F.R. § 25.120(a).

In view of the foregoing, including the unique and limited scope of the request, the public interest would be served by a grant of a 60-day STA to allow United Teleports to conduct uplink operations using its gateway earth station at the Port St. Lucie, Florida teleport in the 12.75-13.25 GHz band commencing June 24, 2016, or at the earliest practicable time thereafter.

### III. CONCLUSION

United Teleports may operate the SA-7m earth station without causing harmful interference to existing authorized spectrum users in the band.<sup>16</sup> In addition, United Teleports' commitment to suspend operations in the event of harmful interference provides additional assurance of non-interfering operations on an interim basis. Thus, grant of this unique, uplink-only STA request will not undermine the FCC's earth station licensing rules or other policies.

As discussed, the attached frequency coordination analysis demonstrates that United Teleports may operate the SA-7m earth station without causing harmful interference to existing authorized spectrum users in the band.<sup>16</sup> In addition, United Teleports' commitment to suspend operations in the event of harmful interference provides additional assurance of non-interfering operations on an interim basis. Thus, grant of this unique, uplink-only STA request will not undermine the FCC's earth station licensing rules or other policies.

Olympic Games. Additionally, United Teleports' interim operations will support U.S. content providers, news outlets and other customers in distributing their programming internationally. All of these benefits will accrue consistent with Commission rules and policies regarding U.S. earth station transmit operations in the 12.75-13.25 GHz band.

**United Teleports 7-meter Gateway STA Request**

**Technical Appendix**

- I. Supplemental Schedule S Technical Information
- II. Scientific-Atlanta 7 Meter Gateway Earth Station Radiation Hazard Study
- III. FCC Letter to ANATEL
- IV. Comsearch Frequency Coordination Analysis
- V. Engineer Certification

# I. Supplemental Schedule S Technical Information

## 1. PURPOSE AND SCOPE

The purpose of this Attachment is to provide the Commission with the technical characteristics of the EUTELSAT 65 WEST A ("E65WA") satellite in support of the earth station application filed by United Teleports. This attachment, prepared with the cooperation of the satellite operator Eutelsat do Brasil LTDA ("Eutelsat"), contains information required by the Commission that cannot be entered online into the Schedule S submission.

## 2. GENERAL DESCRIPTION

Eutelsat operates the E65WA satellite at the nominal 65° W.L. location. The satellite is capable of providing a wide range of FSS services using the C-, Ku- and Ka-bands. For purposes of the instant application, U.S. market access is being sought only for Ku-band uplink frequencies. Accordingly, only the characteristics of the Ku-band payload are described herein and in the Schedule S submission.

The Ku-band frequencies used by the satellite are the International Telecommunications Union ("ITU") Appendix 30B bands: 12.75-13.25 GHz uplink band and the 10.7-10.95 GHz and 11.2-11.45 GHz downlink bands. The satellite employs twenty-four 36 MHz Ku-band transponders. There are two Ku-band beams in both the uplink and downlink directions: the "South American" beam, which includes coverage of southern Florida, and the Brazil beam. Twelve transponders are switchable between the South American and Brazil beams.

## 3. FREQUENCY PLAN AND POLARIZATION

The E65WA satellite's Ku-band frequency and polarization plan, including beam connectivity options, are provided in the associated Schedule S submission. The satellite

provides full frequency reuse as required by Section 25.210(f) of the Commission's rules, 47 C.F.R. § 25.210(f)

#### 4. SPACE STATION TRANSMIT & RECEIVE CAPABILITIES

The transmit and receive antenna gain contours of the satellite's Ku-band beams are provided in GXT format and are embedded in the associated Schedule S submission. The maximum EIRP and EIRP densities for each of the downlink beams are listed in Table 1. Also listed are the maximum and minimum saturating flux-density ("SFD") levels, referenced at the beam peak, for each of the uplink beams.

**Table 1. Maximum Downlink EIRP and EIRP Densities. Maximum and Minimum SFD's.**

Beam	Maximum Downlink EIRP (dBW)	Maximum Downlink EIRP Density (dBW/Hz)	Maximum SFD (dBW/m <sup>2</sup> )	Minimum SFD (dBW/m <sup>2</sup> )
Brazil	51.9	-23.0	-70	-92
South America	50.4	-23.0	-70	-92

In addition, authorized uplink transmissions towards the E65WA satellite will not exceed an input power density of -47 dBW/Hz. The E65WA satellite network will be operated in a manner consistent with ITU coordination agreements reached by Brazil.

#### 5. ARRANGEMENT FOR TELEMETRY, TRACKING & COMMUNICATIONS

Telemetry, tracking and communications ("TT&C") will not be conducted from U.S. territory. The satellite control center and primary TT&C site is located in Brazil. The backup TT&C site is located in Portugal.

Information for the satellite control center and TT&C stations is provided below:  
 Satellite Control Center and Primary TT&C Station:

Avenida Valville, 450 – Sítio Tanquinho – Santana do Parnaíba



SP CEP 06532-010, Brazil  
24/7 contact phone numbers: +55 11 2110-3365 / +55 11 2110-3353 / +55 11 4196-5594

Backup TT&C Station Location:

Zona Franca Industrial da Madeira – Lote 27 B/C 9200-047 Canical, Madeira,  
Portugal

Contact phone number: +351 291 969 905

## 6. POWER FLUX DENSITY ANALYSIS

The Commission's Part 25 rules do not contain power flux density ("PFD") limits applicable to the ITU Appendix 30B downlink bands at 10.7-10.95 GHz and 11.2-11.45 GHz. However, it is noted that Article 21 of the ITU Radio Regulations includes PFD limits that are applicable to GSO satellites using these bands. The ITU limits are identical to those of Section 25.208(b) of the Commission's rules, 47 C.F.R. § 25208(b).

Tables 2 and 3 show the PFD levels that will occur at various angles of arrival for the two downlink beams when transmitting with a maximum downlink EIRP density of -23 dBW/Hz. These two tables demonstrate compliance with the ITU's Article 21 PFD limits.

downlink from the E65WA satellite in the United States.

This information is provided for completeness; United Teleports does not seek to

Angle of Arrival	Applicable PFD Limit for Angle of Arrival (dBW/m <sup>2</sup> /4 KHz)	Spreading Loss (dBW/m <sup>2</sup> )	Gain Contour (dB)	Worst Case PFD Level at Angle of Arrival (dBW/m <sup>2</sup> /4 KHz)	PFD Margin (dB)
66.4° (Peak)	-140.0	-162.2	0.0	-149.2	9.2
25°	-140.0	-162.8	-16	-160.0	25.8
20°	-142.5	-162.9	-17	-163.1	24.4
15°	-145.0	-163.0	-18	-164.2	23.0
10°	-147.5	-163.2	-19	-165.3	21.6
5°	-150.0	-163.3	-19	-166.1	19.3
0°	-150.0	-163.4	-20	-170.4	20.4

Table 3. Maximum PFD Levels of Beams BDH and BDV

Angle of Arrival	Applicable PFD Limit for Angle of Arrival (dBW/m <sup>2</sup> /4 KHz)	Spreading Loss (dBW/m <sup>2</sup> )	Gain Contour (dB)	Worst Case PFD Level at Angle of Arrival (dBW/m <sup>2</sup> /4 KHz)	PFD Margin (dB)
72.4° (Peak)	-140.0	-162.1	0.0	-149.1	9.1
25°	-140.0	-162.8	-14.2	-164.0	24.0
20°	-142.5	-162.9	-14.6	-164.5	22.0
15°	-145.0	-163.0	-14.8	-164.8	19.8
10°	-147.5	-163.2	-17	-167.1	19.6
5°	-150.0	-163.3	-19	-169.3	19.3
0°	-150.0	-163.4	-20	-170.4	20.4

Table 2. Maximum PFD Levels of Beam SADH

Carrier ID	Emission Designator	Bandwidth (MHz)	Tx E/S Gain (dB)	Uplink EIRP (dBW)	Downlink EIRP (dBW)	Rx E/S Gain (dB)	C/I Criterion (dB)
1	49K0G7W	0.0486	42.4	41.0	12.3	56.5	16.5
2	1M34G7W	1.34	53.9	59.7	30.8	47.2	16.5
3	6M33G7W	6.33	53.9	67.1	38.2	44.7	17.7
4	10M0G7W	10.0	57.3	70.1	40.9	44.7	16.5
5	36M0G7W	36.0	57.3	79.1	48.9	41.1	20.5

Table 4. Typical Transmission Parameters

Table 5 shows the results of the interference calculations in terms of the overall C/I margins. The interference calculations assume a 1 dB advantage for topocentric-to-geocentric conversion, all wanted and interfering carriers are co-polarized and all earth station antennas conform to a sidelobe pattern of  $29-25 \log(\theta)$ . The C/I calculations were performed on a per Hz basis.

These tables indicate that all the C/I margins are positive, thereby demonstrating the two-degree compatibility of the E65WA satellite network.

This section demonstrates that the E65WA satellite network's operations are two-degree compatible.

Currently there are no operational Ku-band satellites two degrees away from the nominal 65° W.L. location using the Appendix 30B bands, nor are there any pending applications before the Commission requesting to use the Ku-band at a location two degrees or less from the nominal 65° W.L. location. In order to demonstrate two-degree compatibility, the transmission parameters of the E65WA satellite network have been used as both the wanted and interfering transmissions.

Table 4 provides a summary of the typical transmission parameters used by the E65WA satellite network and which were used in the interference analysis.

## 7. TWO-DEGREE COMPATIBILITY ANALYSIS

The E65WA satellite includes separate TT&C and propulsion subsystems that are necessary for end-of-life disposal. The spacecraft TT&C system, vital for orbit raising, is extremely rugged with regard to meteoroids smaller than 1 cm, by virtue of its redundancy, shielding, separation of components and physical characteristics. Omni-directional antennas are mounted on opposite sides of the spacecraft. These antennas are

In conjunction with Space Systems Loral, Eutelsat has assessed and limited the probability of the satellite becoming a source of debris by collisions with small debris or meteoroids of less than one centimeter in diameter that could cause loss of control and prevent post-mission disposal. Eutelsat has taken steps to limit the effects of such collisions through shielding, the placement of components, and the use of redundant systems.

Eutelsat confirms that the E65WA satellite, based on the Space Systems Loral 1300 series spacecraft, will not undergo any planned release of debris during its operation. Furthermore, all separation and deployment mechanisms, and any other potential source of debris, will be retained by the spacecraft.

### 8.1 Spacecraft Hardware Design

## 8. ORBITAL DEBRIS MITIGATION PLAN

Carrier ID		Interfering Carriers					
1	5	4	5	10.9	10.2	11.3	8.3
2	8	5	9.4	8.8	8.4	5.9	
3	7	2	6.7	6.1	5.6	3.1	
4	9	3	8.8	8.1	7.5	5.1	
5	6	3	3.9	3.3	2.6	0.1	

Table 5. Summary of the overall link C/I margins (dB).

Corrective action, if not automatically undertaken, will be immediately undertaken by the spacecraft operator to avoid destruction and fragmentation. Thruster temperatures, impulse and thrust duration are carefully monitored, and any thruster may be turned off via redundant valves. Consequently, there is no possibility of explosion during the

fragmentation.

In particular, the satellite manufacturer advises that burst tests are performed on all pressure vessels during qualification testing to demonstrate a margin of safety against burst. Bipropellant mixing is prevented by the use of valves that prevent backwards flow in propellant lines and pressurization lines. All batteries and fuel tanks are monitored for pressure and temperature. Excessive battery charging or discharging is limited by a monitoring and control system which will automatically limit the possibility of

the satellite.

In conjunction with Space Systems/Loral, Eutelsat has assessed and limited the probability of accidental explosions during and after completion of mission operations. The satellite manufacturer has taken steps to ensure that debris generation will not result from the conversion of energy sources on board the satellite into energy that fragments

## 8.2 Minimizing Accidental Explosions

The redundant command receivers and decoders and redundant telemetry encoders and transmitters are located within a shielded area. A single rugged thruster and shielded propellant tank provides the energy for orbit-raising. Otherwise, there are no single points of failure in the system.

extremely rugged and capable of providing adequate coverage even if struck, bent or otherwise damaged by a small or medium sized particle. Either one of the two omnidirectional antennas, for both command and telemetry, will be sufficient to enable orbit raising.

operating mission. Space Systems/Loral has also conducted a failure mode effects and criticality analysis as part of the design process.

In order to ensure that the spacecraft has no explosive risk after it has been successfully de-orbited, all stored energy onboard the spacecraft will be removed. Upon successful de-orbit of the spacecraft, all propulsion lines and latch valves will be vented and left open. Battery chargers will be turned off and all batteries will be left in a permanent discharge state.

### 8.3 Safe Flight Profiles

In considering current and planned satellites that may have a station-keeping volume that overlaps the E65WA satellite, Eutelsat has reviewed the lists of FCC licensed satellite networks, as well as those that are currently under consideration by the FCC. In addition, satellite networks for which a request for coordination has been published by the ITU within  $\pm 0.2$  degrees of  $65.2^\circ$  W.L. have also been reviewed.

The Brazilian satellite operator Star One operates the STAR ONE C1 satellite at the  $65.0^\circ$  W.L orbital location. The satellite operates with an east-west station-keeping tolerance of  $\pm 0.05^\circ$ . The E65WA satellite operates at  $65.2^\circ$  W.L, and with an east-west station-keeping tolerance of  $\pm 0.05^\circ$ , thereby eliminating the possibility of any station-keeping volume overlap with the STAR ONE C1 satellite.

There are no pending applications before the Commission requesting authorization to use an orbital location within  $\pm 0.2^\circ$  of  $65.2^\circ$  W.L. and Eutelsat is not aware of any satellite with an overlapping station-keeping volume with the E65WA satellite that is the subject of an ITU filing and that is either in orbit or progressing towards launch.

Based on the preceding discussion, Eutelsat concludes that physical coordination of the E65WA satellite with another party is not required at the present time.

**8.4 Post-Mission Disposal Plan**

At the end of the operational life of the E65WA satellite, it will be maneuvered to a disposal orbit with a minimum perigee of 300 km above the normal GSO operational orbit. This proposed disposal orbit altitude is based on the following calculation, as required by Section 25.283:

$$\begin{aligned} \text{Total Solar Pressure Area "A"} &= 97.5 \text{ m}^2 \\ \text{"M"} &= \text{Dry Mass of Satellite} = 2757.5 \text{ kg} \\ \text{"C}_R\text{"} &= \text{Solar Pressure Radiation Coefficient} = 1.24 \end{aligned}$$

Therefore, the Minimum Disposal Orbit Perigee Altitude is:

$$\begin{aligned} &= 36,021 \text{ km} + 1000 \times C_R \times A/M \\ &= 36,021 \text{ km} + 1000 \times 1.24 \times 97.5/2757.5 \\ &= 36,035 \text{ km} \\ &= 279 \text{ km above GSO (35,786 km)} \end{aligned}$$

To provide margin, the normal disposal orbit will be increased to 300 km. This will require 10.8 kg of propellant that will be reserved, taking account of all fuel measurement uncertainties, to perform the final orbit-raising maneuvers.

**9. ITU Filings**

The E65WA satellite network operates under the following two ITU Appendix 30B filings:

- B-SAT-3R – AP30B/A6A/254 published in IFIC 2744.
- B-SAT-3R-1 – AP30B/A6A/333 published in IFIC 2774.

## II. Radiation Hazard Study

Scientific-Atlanta 7 Meter Gateway Earth Station

This study analyzes the non-ionizing radiation levels for a Scientific-Atlanta 7 meter gateway earth station antenna transmitting in the 12.75-13.25 GHz band. This report is developed in accordance with the prediction methods contained in OET Bulletin No. 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields, Edition 97-01.

Bulletin No. 65 specifies that there are two separate tiers of exposure limits that are dependent on the area of exposure and/or the status of the individuals who are subject to the exposure -- the General Population/Uncontrolled Environment and the Controlled Environment, where the general population cannot access.

The maximum level of non-ionizing radiation to which individuals may be exposed is limited to a power density level of 5 milliwatts per square centimeter (5 mW/cm<sup>2</sup>) averaged over any 6 minute period in a controlled environment, and the maximum level of non-ionizing radiation to which the general public is exposed is limited to a power density level of 1 milliwatt per square centimeter (1 mW/cm<sup>2</sup>) averaged over any 30 minute period in a uncontrolled environment.

In the normal range of transmit powers for satellite antennas, the power densities at or around the antenna surface are expected to exceed safe levels. The purpose of this study is to determine the power flux density levels for the earth station under study as compared with the MPE limits. This comparison is done in each of the following regions:

1. Far-field region
2. Near-field region
3. Transition region
4. The region between the subreflector or feed and main reflector surface
5. The main reflector region
6. The region between the antenna edge and the ground

### Input Parameters

The following input parameters were used in the calculations:

Symbol	Unit	Value	Parameters:
$D$	m	7	Antenna Diameter
$G$	DBi	57.3	Antenna Transmit Gain
$f$	MHz	13000	Transmit Frequency
$d$	cm	61	Subreflector Diameter
$P$	W	1000	Power Input to the Antenna



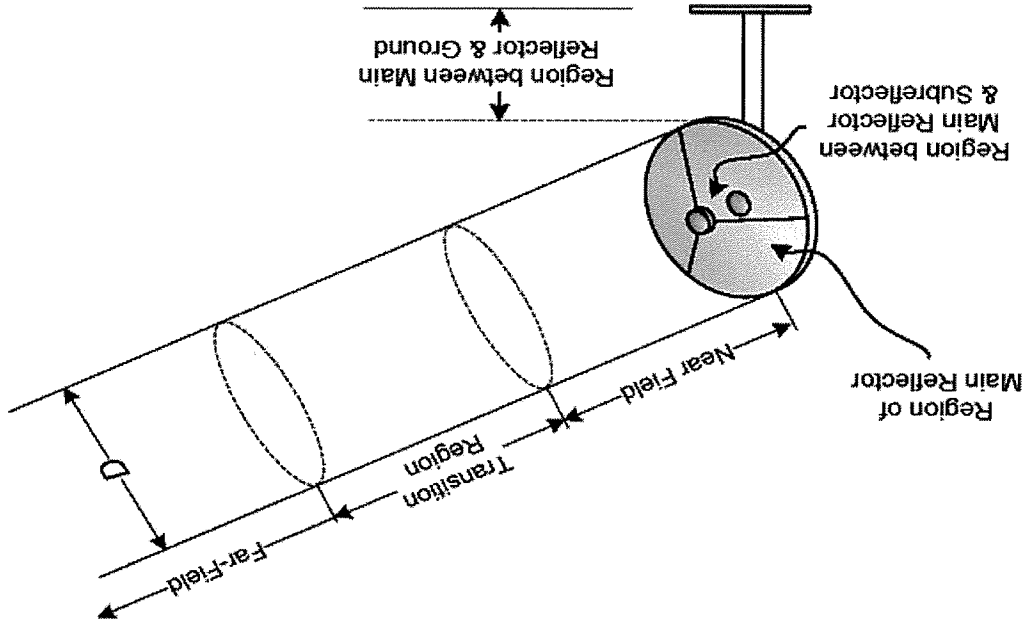


Figure 1. EM Fields as a Function of Distance

The behavior of the characteristics of EM fields varies depending on the distance from the radiating antenna. These characteristics are analyzed in three primary regions: the near-field region, the far-field region and the transition region. Of interest also are the region between the antenna main reflector and the subreflector, the region of the main reflector area and the region between the main reflector and ground.

**Behavior of EM Fields as a Function of Distance**

Parameter	Value	Unit	Symbol	Formula
Antenna Surface Area	38.48	m <sup>2</sup>	A	$\pi D^2/4$
Area of Subreflector	2922.5	cm <sup>2</sup>	a	$\pi a^2/4$
Antenna Efficiency	0.59		$\eta$	$G\lambda^2/(\pi^2 D^2)$
Gain Factor	537232		g	$10^{G/10}$
Wavelength	0.02306	m	$\lambda$	$300/f$

The following values were calculated using the above input parameters and the corresponding formulas:

**Calculated Parameters:**

Parameter	Value	Unit	Symbol	Formula
Power Density b/w Reflector and Ground	2.60	mW/cm <sup>2</sup>	S <sub>g</sub>	P / A

The power density between the reflector and ground, assuming uniform illumination of the reflector surface, is calculated as follows:

Parameter	Value	Unit	Symbol	Formula
Power Density at Main Reflector	10.4	mW/cm <sup>2</sup>	S <sub>surface</sub>	4P / A

The power density in the main reflector is determined similarly to the power density calculation at the subreflector, except that the area of the reflector is used.

Parameter	Value	Unit	Symbol	Formula
Power Density at the Subreflector	1369	mW/cm <sup>2</sup>	S <sub>fa</sub>	4P / a

Transmissions from the feed assembly are directed towards the subreflector surface and are reflected back towards the main reflector. The energy between the subreflector and main reflector can be determined by calculating the power density at the subreflector surface.

Parameter	Value	Unit	Symbol	Formula
Power Density in the Near-Field	6.15	mW/cm <sup>2</sup>	S <sub>mf</sub>	$16.0 \eta P / (\pi D^2)$
Power Density in the Far-Field	2.63	mW/cm <sup>2</sup>	S <sub>ff</sub>	$GP / (4\pi R_{ff}^2)$
Power Density in the Transition Region	6.15	mW/cm <sup>2</sup>	S <sub>t</sub>	$S_{mf} R_{mf} / (R_t)$

The power flux density is considered to be at a maximum through the entire length of the near-field. This region is contained within a cylindrical volume with a diameter, D, equal to the diameter of the antenna. In the transition region and the far-field, the power density decreases inversely with the square of the distance. The following equations are used to calculate power density in these regions.

### Power Flux Density Calculations

The distance in the transition region is between the near and far fields. Thus,  $R_{mf} \leq R_t \leq R_{ff}$ . However, the power density in the transition region will not exceed the power density in the near-field. Therefore, for purposes of the present analysis, the distance of the transition region can equate the distance to the near-field.

Parameter	Value	Unit	Formula
Near-Field Distance	531.2	m	$R_{mf} = D^2 / (4\lambda)$
Distance to Far-Field	1275	m	$R_{ff} = 0.60D^2 / (\lambda)$
Minimum Transition Region Distance	531.2	m	$R_t = R_{mf}$

For parabolic aperture antennas with circular cross sections, such as the antenna under study, the near-field, far-field and transition region distances are calculated as follows:

Specifically, the antenna is installed at the United Teleports facility in Port St. Lucie, Florida, and is an occupational/controlled environment. The facility is located within an enclosed walled courtyard, which restricts any public access. The earth station is marked with the standard radiation hazard warnings, as is the area in the vicinity of the antenna. The applicant will ensure that the main beam of the antenna will be pointed at least one diameter away from any building, or other obstacles in those areas that exceed the MPE limits. Since one diameter removed from the center of the main beam the levels are down at least 20 dB, or by a factor of 100, public safety will be ensured.

Finally, the earth station's operational personnel will not have access to the regions where the MPE levels are exceeded when the earth station is in operation. As a matter of procedure, the transmitter will be turned off during periods of antenna maintenance, thereby eliminating any potential radiation hazard.

The results show that a potential radiation hazard exists in the regions noted above. The applicant has taken proper measures to ensure that it meets the requirements specified in 47 C.F.R. § 1.1310.

Region	Radiation Power Density Level (mW/cm <sup>2</sup> )	Occupational/Controlled Environment (5.0 mW/cm <sup>2</sup> )
Near Field ( $R_{nf} = 531.2 \text{ m}$ )	6.15	Exceeds Limits
Far Field ( $R_{ff} = 1275 \text{ m}$ )	2.63	Satisfies FCC MPE
Transition Region ( $R_{nf} < R_t \leq R_{ff}$ )	6.15	Exceeds Limits
Region between Subreflector and Main Reflector	1369	Exceeds Limits
Main Reflector Surface	10.4	Exceeds Limits
Region between Main Reflector and Ground	2.60	Satisfies FCC MPE

The table below summarizes the calculated power density levels for each region and compares those levels to those allowed in an occupational/controlled environment.

### III. FCC Letter to ANATEL

FEDERAL COMMUNICATIONS COMMISSION  
INTERNATIONAL BUREAU  
WASHINGTON, D.C. 20554  
fax: +1 202 418 1208; TWX: 710 822 0160



In reply, refer to:  
800C2/SEB16174

Telefax message:

To: Agência Nacional de Telecomunicações - ANATEL  
Assessoria Internacional  
SAUS-Quadra 6 - Bloco H - 4th Floor  
70070-940 BRASÍLIA, DF  
Brazil  
TELEFAX NO.: 011 + 55 61 23122244 C

CC: ITU Radiocommunication Bureau  
Geneva, Switzerland  
Telefax no.: 41 22 730 5785

Date: 27 April 2016

Subject: Agreement under §6.6 of Article 6 of Appendix 30B

References: 1) Special Section AP30B/A6A/333, BRIFIC 2744 dated 22.07.2014, concerning the

- B-SAT-3R-1 satellite network.
- 2) Our letter 800C2/SEB14393, dated 30.10.2014
- 3) Your letter CT. n°163/ORER-Anatel dated 25.09.2015

The US administration thanks the administration of Brazil for its request for agreement regarding the operation of the B-SAT-3R-1 satellite network in the 6725-7025 MHz (Earth to space) and 4500-4800 MHz (space to Earth), 10.70-10.95 GHz (space to Earth), 11.20-11.45 GHz (space to Earth) and 12.75-13.25 GHz (Earth to space) planned bands of APP30B. The US administration is pleased to provide its agreement under the provision §6.6 of Appendix 30B for inclusion of its territory in the service area of the B-SAT-3R-1 satellite network. However, this agreement does not guarantee market access to the US. Any earth station located within US territory seeking to communicate with the B-SAT-3R-1 satellite network must first be licensed in accordance with US laws and regulations. Any operation of the satellites would be in accordance with international Radio Regulations and relevant provisions. Any such license application may or may not be granted.

REGARDS  
FEDCOMCOM  
SATELLITE DIVISION  
Direct Fax No.: +1 202 418 1208 (preferred)  
or +1 202 418 0398 (alternative)  
Email: [IBmail@fcc.gov](mailto:IBmail@fcc.gov)

Authorized: J. Payton  
International Bureau/SD  
\*\*\*\*\*  
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#### IV. Comsearch Frequency Coordination Analysis

### FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
United Teleports  
PORT ST LUCIE, FL  
Satellite Earth Station

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
May 19, 2016

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4. EARTH STATION COORDINATION DATA ..... 7  
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## 1. CONCLUSIONS

An interference study considering all existing, proposed and prior coordinated microwave facilities within the coordination contours of the proposed earth station demonstrates that this site will operate satisfactorily with the common carrier microwave environment. Further, there will be no restrictions of its operation due to interference considerations.

## 2. SUMMARY OF RESULTS

A number of great circle interference cases were identified during the interference study of the proposed earth station. Each of the cases, which exceeded the interference objective on a line-of-sight basis, was profiled and the propagation losses estimated using NBS TN101 (Revised) techniques. The losses were found to be sufficient to reduce the signal levels to acceptable magnitudes in every case.



### 3. SUPPLEMENTAL SHOWING

Pursuant to Part 25.203(c) of the FCC Rules and Regulations, the satellite earth station proposed in this application was coordinated by Comsearch using computer techniques and in accordance with Part 25 of the FCC Rules and Regulations.

Coordination data for this earth station was sent to the below listed carriers with a letter dated 05/03/2016.

- Company
- 3G Wireless, LLC
- AERIAL VIDEO SYSTEMS
- Alascom Inc
- Ascent Media Network Services, LLC
- Bellsouth Telecommunications, Inc.
- Borgeson, Tom R.
- Broadcast Sports Inc.
- CBS OPERATIONS INC.
- Carolina Telephone and Telegraph Co
- Casper, John
- CenturyTel of the Southwest, Inc.
- Chicago Comet Corp
- Cincinnati Bell Wireless LLC
- Citywide News Network, Inc.
- Cohen, Elena
- Comcast of CO/FL/MI/NM/X/PA/WA, LLC
- Cowboys Stadium LP
- DCI II, INC.
- Direct Broadcast Services, Inc.
- GSN News, Inc
- Global Telecom & Technology Americas, In
- Goodyear Tire & Rubber Company
- HF Enterprises, Inc
- Halico Unlimited, Inc.
- Hawaiian Telecom, Inc.
- Heiden, William
- Illinois Bell Telephone Company
- Indiana Bell Telephone Company
- Information & Display Systems, Inc.
- Information Super Station, LLC
- International Communications Group, Inc.
- Kentucky RSA #3 Cellular General Partner
- Kentucky RSA #4 Cellular General Partner
- MERCURY COMMUNICATIONS
- Metro Networks Communications, Inc.
- Michigan Bell Telephone Company
- Moreen, Steven K
- NEW ENGLAND DIGITAL DISTRIBUTION, INC.
- NEW ENGLAND SATELLITE SYSTEMS INC
- NSM Surveillance

Navajo Communications Company  
NorthWest Suburbs Community Access Corp  
OHIO BELL TELEPHONE COMPANY  
Onboard Images  
Pacific Bell Tel Com dba AT&T California  
Penn Service Microwave Co., Inc.  
Plateau Telecommunications, Inc.  
Plum TV, LLC  
Production & Satellite Services, Inc.  
QUICK LINK CONNECTIONS INC  
Qwest Corporation  
RCC Minnesota Inc. - MN NE ND SD  
REMOTE FACILITIES CONSULTING SERVICES  
RF Central, LLC  
RF Film, Inc.  
Raditone, Inc.  
Randy Hermes Production  
Remote Broadcasts, Inc.  
SBE Coordinator – Florida Region  
Scripps Media, Inc. - WPTV  
Southwestern Bell Telephone L.P.  
Speedshotz, Inc  
Total RF Marketing Inc  
Unisat, Inc.  
United Telephone - Southeast  
VERIZON SOUTH INC.  
Verizon California Inc.  
Verizon Maryland, Inc.  
Verizon New England Inc.  
Verizon New Jersey, Inc.  
Verizon New York, Inc.  
Verizon North Inc.  
Verizon Northwest Inc.  
Verizon Pennsylvania, Inc.  
Verizon Virginia, Inc.  
Verizon Washington DC, Inc.  
Village Video Productions Inc  
Vyvx, LLC  
WFLX License Subsidiary, LLC  
WPFC License, LLC  
WTVX License, LLC  
Westar Satellite Services LP  
Western Technical Services  
Wexler Video, Inc.  
Winged Vision Inc  
Wisconsin Bell Telephone Company  
Wolfe Air Aviation

#### **4. EARTH STATION COORDINATION DATA**

This section presents the data pertinent to frequency coordination of the proposed earth station that was circulated to all carriers within its coordination contours.

Date: 05/19/2016  
 Job Number: 160503COMSGE06

**Administrative Information**

Status: ENGINEER PROPOSAL  
 Call Sign: UNTELE  
 License Code: United Teleports  
 Licensee Name:

**Site Information**

Venue Name: PORT ST LUCIE, FL  
 Latitude (NAD 83): 27° 16' 56.5" N  
 Longitude (NAD 83): 80° 28' 58.6" W  
 Climate Zone: B  
 Rain Zone: 1  
 Ground Elevation (AMSL): 7.46 m / 24.5 ft

**Link Information**

Satellite Type: Geostationary  
 Mode: TO - Transmit-Only  
 Modulation: Digital  
 Satellite Arc: 64° W to 66° West Longitude  
 Azimuth Range: 147.2° to 150.6°  
 Corresponding Elevation Angles: 53.3° / 54.3°  
 Antenna Centerline (AGL): 3.66 m / 12.0 ft

**Antenna Information**

Manufacturer: Scientific-Atlanta  
 Model: 7 Meter  
 Gain / Diameter: 57.3 dBi / 7.0 m  
 3-dB / 15-dB Beamwidth: 0.22° / 0.38°

Max Available RF Power: (dBW/4 KHz) -17.7

(dBW/MHz) 6.3

Maximum EIRP: (dBW/4 KHz) 39.6

(dBW/MHz) 63.6

Interference Objectives:

Long Term: -151.0 dBW/4 KHz 20%  
 Short Term: -128.0 dBW/4 KHz 0.0025%

**Frequency Information**

**Transmit 13.0 GHz**  
 Emission / Frequency Range (MHz): 10M0G7W - 36M0G7W / 12750.0 - 13250.0

Max Great Circle Coordination Distance: 117.2 km / 72.8 mi

Precipitation Scatter Contour Radius: 100.0 km / 62.1 mi

**PORT ST LUCIE, FL**

**Coordination Values**

Licensee Name  
 Latitude (NAD 83)  
 Longitude (NAD 83)  
 Ground Elevation (AMSL)  
 Antenna Centerline (AGL)  
 Antenna Model  
 Antenna Mode  
 Interference Objectives: Long Term  
 Short Term  
 Max Available RF Power

Transmit 13.0 GHz  
 Antenna  
 Horizon  
 Elevation (°)  
 Antenna  
 Discrimination (°)  
 Horizon  
 Gain (dBi)  
 Coordination  
 Distance (km)

0	0.00	120.17	-10.00	117.17
5	0.00	118.19	-10.00	117.17
10	0.00	116.01	-10.00	117.17
15	0.00	113.67	-10.00	117.17
20	0.00	111.18	-10.00	117.17
25	0.00	108.56	-10.00	117.17
30	0.00	105.84	-10.00	117.17
35	0.00	103.04	-10.00	117.17
40	0.00	100.16	-10.00	117.17
45	0.00	97.24	-10.00	117.17
50	0.00	94.27	-10.00	117.17
55	0.00	91.29	-10.00	117.17
60	0.00	88.30	-10.00	117.17
65	0.00	85.32	-10.00	117.17
70	0.00	82.36	-10.00	117.17
75	0.00	79.44	-10.00	117.17
80	0.00	76.58	-10.00	117.17
85	0.00	73.78	-10.00	117.17
90	0.00	71.07	-10.00	117.17
95	0.00	68.48	-10.00	117.17
100	0.00	66.00	-10.00	117.17
105	0.00	63.68	-10.00	117.17
110	0.00	61.53	-10.00	117.17
115	0.00	59.58	-10.00	117.17
120	0.00	57.85	-10.00	117.17
125	0.00	56.36	-10.00	117.17
130	0.00	55.15	-10.00	117.17
135	0.00	54.22	-10.00	117.17
140	0.00	53.60	-10.00	117.17
145	0.00	53.30	-10.00	117.17
150	0.00	53.32	-10.00	117.17
155	0.00	53.67	-10.00	117.17
160	0.00	54.33	-10.00	117.17
165	0.00	55.30	-10.00	117.17
170	0.00	56.55	-10.00	117.17
175	0.00	57.91	-10.00	117.17
180	0.00	59.46	-10.00	117.17
185	0.00	61.23	-10.00	117.17

**PORT ST LUCIE, FL**

**Coordination Values**

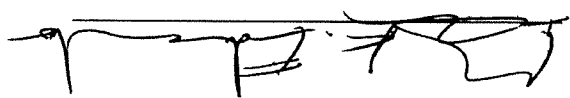
Licensee Name  
 United Teleports  
 Latitude (NAD 83)  
 27° 16' 56.5" N  
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 80° 28' 58.6" W  
 Ground Elevation (AMSL)  
 7.46 m / 24.5 ft  
 Antenna Centerline (AGL)  
 3.66 m / 12.0 ft  
 Antenna Model  
 Scientific-Atlanta 7 meter  
 Antenna Mode  
 Transmit 13.0 GHz  
 Interference Objectives: Long Term  
 -151.0 dBW/4 KHz 20%  
 Short Term  
 -128.0 dBW/4 KHz 0.0025%  
 Max Available RF Power  
 -17.7 (dBW/4 KHz)

Horizon Elevation (°)  
 Antenna  
 Horizon Gain (dBi)  
 Transmit 13.0 GHz  
 Coordination  
 Distance (km)

190	0.00	63.21	-10.00	117.17
195	0.00	65.37	-10.00	117.17
200	0.00	67.69	-10.00	117.17
205	0.00	70.15	-10.00	117.17
210	0.00	72.73	-10.00	117.17
215	0.00	75.40	-10.00	117.17
220	0.00	78.16	-10.00	117.17
225	0.00	80.97	-10.00	117.17
230	0.00	83.84	-10.00	117.17
235	0.00	86.74	-10.00	117.17
240	0.00	89.65	-10.00	117.17
245	0.00	92.56	-10.00	117.17
250	0.00	95.47	-10.00	117.17
255	0.00	98.34	-10.00	117.17
260	0.00	101.17	-10.00	117.17
265	0.00	103.94	-10.00	117.17
270	0.00	106.64	-10.00	117.17
275	0.00	109.24	-10.00	117.17
280	0.00	111.73	-10.00	117.17
285	0.00	114.09	-10.00	117.17
290	0.00	116.29	-10.00	117.17
295	0.00	118.31	-10.00	117.17
300	0.00	120.14	-10.00	117.17
305	0.00	121.74	-10.00	117.17
310	0.00	123.10	-10.00	117.17
315	0.00	124.18	-10.00	117.17
320	0.00	124.99	-10.00	117.17
325	0.00	125.49	-10.00	117.17
330	0.00	125.68	-10.00	117.17
335	0.00	125.56	-10.00	117.17
340	0.00	125.13	-10.00	117.17
345	0.00	124.40	-10.00	117.17
350	0.00	123.38	-10.00	117.17
355	0.00	121.93	-10.00	117.17

## 5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

BY: 

Gary K. Edwards  
Senior Manager  
COMSEARCH  
19700 Janella Farm Boulevard  
Ashburn, VA 20147

DATED: May 19, 2016

**V. CERTIFICATION OF PERSON RESPONSIBLE FOR PREPARING  
ENGINEERING INFORMATION**

I hereby certify that I am the technically qualified person responsible for preparation of the engineering information contained in this STA request, that I am familiar with Part 25 of the Commission's rules that I have either prepared or reviewed the engineering information submitted in this application, and that it is complete and accurate to the best of my knowledge and belief.

\_\_\_\_\_  
/s/

Stephen D. McNeil  
Telecomm Strategies  
Canada, Inc.  
Ottawa, Ontario,  
Canada  
(613) 270-1177

June 15, 2016