

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
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- 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 ²)	Minimum SFD (dBW/m ²)
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 Caniçal, 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.

Table 2. Maximum PFD Levels of Beam SADH

Angle of Arrival	Applicable PFD Limit for Angle of Arrival (dBW/m²/4 kHz)	Spreading Loss (dBW/m²)	Gain Contour (dB)	Worst Case PFD Level at Angle of Arrival (dBW/m²/4 kHz)	PFD Margin (dB)
0°	-150.0	-163.4	-20	-170.4	20.4
5°	-150.0	-163.3	-19	-169.3	19.3
10°	-147.5	-163.2	-17	-167.1	19.6
15°	-145.0	-163.0	-14.8	-164.8	19.8
20°	-142.5	-162.9	-14.6	-164.5	22.0
25°	-140.0	-162.8	-14.2	-164.0	24.0
72.4° (Peak)	-140.0	-162.1	0.0	-149.1	9.1

Table 3. Maximum PFD Levels of Beams BDH and BDV

Angle of Arrival	Applicable PFD Limit for Angle of Arrival (dBW/m²/4 kHz)	Spreading Loss (dBW/m²)	Gain Contour (dB)	Worst Case PFD Level at Angle of Arrival (dBW/m²/4 kHz)	PFD Margin (dB)
0°	-150.0	-163.4	-20	-170.4	20.4
5°	-150.0	-163.3	-19	-166.1	19.3
10°	-147.5	-163.2	-19	-165.3	21.6
15°	-145.0	-163.0	-18	-164.2	23.0
20°	-142.5	-162.9	-17	-163.1	24.4
25°	-140.0	-162.8	-16	-160.0	25.8
66.4° (Peak)	-140.0	-162.2	0.0	-149.2	9.2

This information is provided for completeness; United Teleports does not seek to downlink from the E65WA satellite in the United States.

7. TWO-DEGREE COMPATIBILITY ANALYSIS

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.

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.

Table 4. Typical Transmission Parameters

Carrier ID	Emission Designator	Bandwidth h (MHz)	Tx E/S Gain (dBi)	Uplink EIRP (dBW)	Downlink EIRP (dBW)	Rx E/S Gain (dBi)	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 5. Summary of the overall link C/I margins (dB).

		Interfering Carriers				
Carrier ID		1	2	3	4	5
Wanted Carriers	1	5.4	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

8. ORBITAL DEBRIS MITIGATION PLAN

8.1 Spacecraft Hardware Design

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.

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.

The EW65A 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

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.

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.

8.2 Minimizing Accidental Explosions

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 the satellite.

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 fragmentation.

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

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 ± 0.2 degrees of 65.2° W.L. have also been reviewed.

The Brazilian satellite operator Star One operates the STAR ONE C1 satellite at the 65.0° 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° 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° 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:

$$\text{Total Solar Pressure Area "A"} = 97.5 \text{ m}^2$$

$$\text{"M"} = \text{Dry Mass of Satellite} = 2757.5 \text{ kg}$$

$$\text{"C}_R\text{"} = \text{Solar Pressure Radiation Coefficient} = 1.24$$

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 nominal 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^2) 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^2) 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:

<u>Parameters:</u>	<u>Value</u>	<u>Unit</u>	<u>Symbol</u>
<i>Antenna Diameter</i>	7	m	<i>D</i>
<i>Antenna Transmit Gain</i>	57.3	dB _i	<i>G</i>
<i>Transmit Frequency</i>	13000	MHz	<i>f</i>
<i>Subreflector Diameter</i>	61	cm	<i>d</i>
<i>Power Input to the Antenna</i>	1000	W	<i>P</i>

Calculated Parameters:

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

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

Behavior of 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.

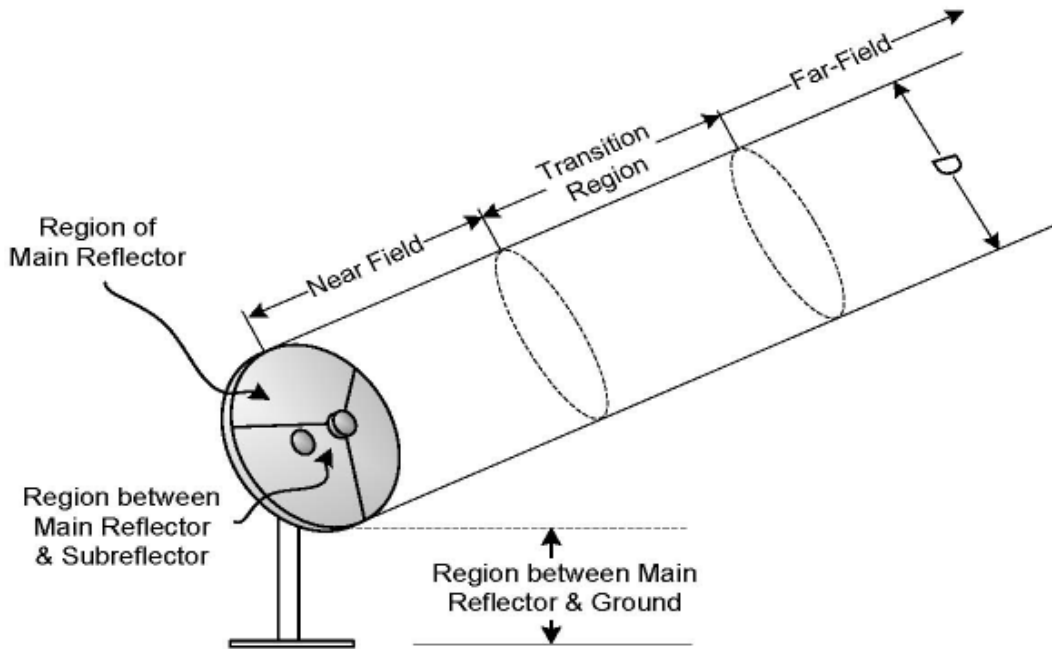


Figure 1. EM Fields as a Function of Distance

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:

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

The distance in the transition region is between the near and far fields. Thus, $R_{nf} \leq R_t \leq R_{ff}$. 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.

Power Flux Density Calculations

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.

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

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.

<u>Parameter</u>	<u>Value</u>	<u>Unit</u>	<u>Symbol</u>	<u>Formula</u>
<i>Power Density at the Subreflector</i>	1369	mW/cm ²	S_{fa}	$4P / a$

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.

<u>Parameter</u>	<u>Value</u>	<u>Unit</u>	<u>Symbol</u>	<u>Formula</u>
<i>Power Density at Main Reflector</i>	10.4	mW/cm ²	$S_{surface}$	$4P / A$

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

<u>Parameter</u>	<u>Value</u>	<u>Unit</u>	<u>Symbol</u>	<u>Formula</u>
<i>Power Density b/w Reflector and Ground</i>	2.60	mW/cm ²	S_g	P / A

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

Region	Radiation Power Density Level (mW/cm²)	Occupational/Controlled Environment (5.0 mW/cm²)
Near Field ($R_{nf} = 531.2$ m)	6.15	Exceeds Limits
Far Field ($R_{ff} = 1275$ m)	2.63	Satisfies FCC MPE
Transition Region ($R_{nf} \leq R_t \leq R_{ff}$)	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 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.

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.

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 BRASILIA, 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

**Authorized: J. Payton
International Bureau/SD**

*** * * * ***

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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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 Comnet Corp
Cincinnati Bell Wireless LLC
Citywide News Network, Inc.
Cohen, Elena
Comcast of CO/FL//MI/NMX/PAWA, 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
Hallco Unlimited, Inc.
Hawaiian Telcom, 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
Radiofone, 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
WPEC Licensee, LLC
WTVX Licensee, 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.

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

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

Administrative Information

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

Site Information

PORT ST LUCIE, FL

Venue Name
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

Transmit - FCC32

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

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Coordination Values		PORT ST LUCIE, FL	
Licensee Name		United Teleports	
Latitude (NAD 83)		27° 16' 56.5" N	
Longitude (NAD 83)		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)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 13.0 GHz	
			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

COMSEARCH

Earth Station Data Sheet

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Coordination Values

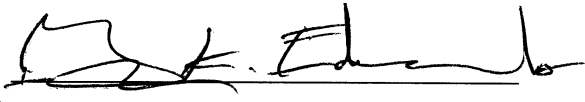
PORT ST LUCIE, FL

Licensee Name United Teleports
Latitude (NAD 83) 27° 16' 56.5" N
Longitude (NAD 83) 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)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 13.0 GHz	
			Horizon Gain (dBi)	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 Janelia 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