NewCom International Inc.
Modification of Earth Station License

Technical Appendix

I. Radiation Hazard Analyses

II. Frequency Coordination Reports

Intellian V240MT C-band Radiation Hazard Study

This report analyzes the non-ionizing radiation levels for a 2.4-meter earth station system. The analysis and calculations performed in this report comply with the methods described in the FCC Office of Engineering and Technology Bulletin, No. 65 first published in 1985 and revised in 1997 in Edition 97-01. The radiation safety limits used in the analysis are in conformance with the FCC R&O 96-326. Bulletin No. 65 and the FCC R&O specifies that there are two separate tiers of exposure limits that are dependent on the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The Maximum Permissible Exposure (MPE) limits for persons in a General Population/ Uncontrolled environment are shown in Table 1. The General Population/Uncontrolled MPE is a function of transmit frequency and is for an exposure period of thirty minutes or less. The MPE limits for persons in an Occupational/Controlled environment are shown in Table 2. The Occupational MPE is a function of transmit frequency and is for an exposure period of six minutes or less. The purpose of the analysis described in this report is to determine the power flux density levels of the earth station in the far-field, near-field, transition region, between the subreflector or feed and main reflector surface, at the main reflector surface, and between the antenna edge and the ground and to compare these levels to the specified MPEs.

Table 1. Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	0.2
300-1500	Frequency (MHz)*(0.8/1200)
1500-100,000	1.0

Table 2. Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	1.0
300-1500	Frequency (MHz)*(4.0/1200)
1500-100,000	5.0

Table 3. Formulas and Parameters Used for Determining Power Flux Densities

Parameter	Symbol	Formula	Value	Units
Antenna Diameter	D	Input	2.4	m
Antenna Surface Area	$A_{surface}$	πD^2/4	4.524	m^2
Subreflector Diameter	D_{sr}	Input	20.00	cm
Area of Subreflector	A_{sr}	πDsr^2/4	314.159	cm^2
Frequency	F	Input	6.138	MHz
Wavelength	λ	300 / F	0.048880	m
Transmit Power	P	Input	120.2	W
Antenna Gain (dBi)	Ges	Input	41.1	dBi
Antenna Gain (factor)	G	10^(Ges/10)	12,882.496	n/a
Pi	π	Constant	3.1415927	n/a
Antenna Efficiency	η	$G\lambda^2/(\pi^2D^2)$	0.54	n/a

1. Far Field Distance Calculation

The distance to the beginning of the far field can be determined from the following equation:

Distance to the Far Field Region, $R_{ff} = 0.60\ D^2 / \lambda$ (1)

$= 70.704$ m

The maximum main beam power density in the far field can be determined from the following equation:

On-Axis Power Density in the Far Field, $S_{ff} = G\ P / (4\ \pi\ R_{ff}^2)$ (2)

$= 24.655$ W/m^2

$= 2.465$ mW/cm^2

2. Near Field Calculation

Power flux density is considered to be at a maximum value throughout the entire length of the defined Near Field region. The region is contained within a cylindrical volume having the same diameter as the antenna. Past the boundary of the Near Field region, the power density from the antenna decreases linearly with respect to increasing distance.

The distance to the end of the Near Field can be determined from the following equation:

Extent of the Near Field, $R_{nf} = D^2 / (4\ \lambda)$ (3)

$= 29.46$ m

The maximum power density in the Near Field can be determined from the following equation:

Near Field Power Density, $S_{nf} = 16.0\ \eta\ P / (\pi\ D^2)$ (4)

$= 57.555$ W/m^2

$= 5.756$ mW/cm^2

3. Transition Region Calculation

The Transition region is located between the Near and Far Field regions. The power density begins to decrease linearly with increasing distance in the Transition region. While the power density decreases inversely with distance in the Transition region, the power density decreases inversely with the square of the distance in the Far Field region. The maximum power density in the Transition region will not exceed that calculated for the Near Field region. The power density calculated in Section 1 is the highest power density the antenna can produce in any of the regions away from the antenna. The power density at a distance R_t can be determined from the following equation:

Transition Region Power Density, $S_t = S_{nf}\ R_{nf} / R_t$ (5)

$= 5.756$ mW/cm^2 when $R_t = R_nf$

4. Region between the Main Reflector and the Subreflector

Transmissions from the feed assembly are directed toward the subreflector surface, and are reflected back toward the main reflector. The most common feed assemblies are waveguide flanges, horns or subreflectors. The energy between the subreflector and the reflector surfaces can be calculated by determining the power density at the subreflector surface. This can be determined from the following equation:

Power Density at the Subreflector, $S_{sr} = 4000\ P / A_{sr}$ (6)

$= 1530.771\ mW/cm^2$

5. Main Reflector Region

The power density in the main reflector is determined in the same manner as the power density at the subreflector. The area is now the area of the main reflector aperture and can be determined from the following equation:

Power Density at the Main Reflector Surface $S_{surface} = 4\ P / A_{surface}$ (7)

$= 106.304\ W/m^2$

$= 10.630\ mW/cm^2$

6. Region between the Main Reflector and the Ground

Assuming uniform illumination of the reflector surface, the power density between the antenna and the ground can be determined from the following equation:

Power Density between Reflector and Ground, $S_g = P / A_{surface}$ (8)

$= 26.576\ W/m^2$

$= 2.658\ mW/cm^2$

7. Summary of Calculations

Table 4. Summary of Expected Radiation Levels for Uncontrolled Environment

Calculated Maximum

Radiation Power Density Level (mW/cm2)

Region	Distance	Value	Unit	Power Density Symbol	Value	Unit	Hazard Assessment
1. Far Field	R_{ff}	70.7	m	S_{ff}	2.465	mW/m^2	Exceeds Limits
2. Near Field	R_{nf}	29.5	m	S_{nf}	5.756	mW/m^2	Exceeds Limits
3. Transition Region	$R_{nf} < R_t < R_{ff}$			S_t	5.756	mW/m^2	Exceeds Limits
4. Between Main Reflector and Subreflector				S_{sr}	1530.771	mW/m^2	Exceeds Limits
5. Main Reflector				$S_{surface}$	10.630	mW/m^2	Exceeds Limits
6. Between Main Reflector and Ground				S_g	2.658	mW/m^2	Exceeds Limits

Calculated Maximum
Radiation Power Density Level (mW/cm2)

Region	Distance	Value	Unit	Power Density Symbol	Value	Unit	Hazard Assessment
1. Far Field	R_{ff}	70.7	m	S_{ff}	2.465	mW/m^2	Satisfies FCC MPE
2. Near Field	R_{nf}	29.5	m	S_{nf}	5.756	mW/m^2	Exceeds Limits
3. Transition Region	$R_{nf} < R_t < R_{ff}$			S_t	5.756	mW/m^2	Exceeds Limits
4. Between Main Reflector and Subreflector				S_{sr}	1530.771	mW/m^2	Exceeds Limits
5. Main Reflector				$S_{surface}$	10.630	mW/m^2	Exceeds Limits
6. Between Main Reflector and Ground				S_g	2.658	mW/m^2	Satisfies FCC MPE

It is the applicant's responsibility to ensure that the public and operational personnel are not exposed to harmful levels of radiation.

8. Conclusions

Based on the above analysis it is concluded that the FCC RF Guidelines have been exceeded in the specified region(s) of Tables 4 and 5 and have been met in the specified regions under the Controlled Environment as indicated in Table 5. The applicant proposes to comply with the Maximum Permissible Exposure (MPE) limits of 1 mW/cm^2 for the Uncontrolled areas and the MPE limits of 5 mW/cm^2 for the Controlled areas by restricting access to the antenna and posting warning signs. Access to the antenna will be restricted to the public. Only personnel with knowledge of the radiation hazards associated with the antennas at this facility will have access to those regions that exceed the MPE levels. The antenna transmitter will be turned off during maintenance in order to comply with the MPE limit of 5 mW/cm^2 at the Reflector Surface.

Intellian V240M C-band Radiation Hazard Study

This study analyzes the non-ionizing radiation levels for the Intellian v240M antenna while operating in the C-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 depending 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 feed and the antenna 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:

Parameters:	Value	Unit	Symbol
Antenna Diameter	2.4	m	*D*
Antenna Transmit Gain	41.9	dBi	*G*
Transmit Frequency	6137.5	MHz	*f*
Antenna Feed Flange diameter	20	cm	*d*
Power Input to the Antenna	222	W	*P*

Calculated Parameters:

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

Parameter	Value	Unit	Symbol	Formula
Antenna Surface Area	4.524	m^2	A	$\pi D^2/4$
Area of Antenna Flange	314.159	cm^2	a	$\pi d^2/4$
Antenna Efficiency	0.65		η	$G\lambda^2/(\pi^2 D^2)$
Gain Factor	15488.17		g	$10^{G/10}$
Wavelength	0.0489	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.

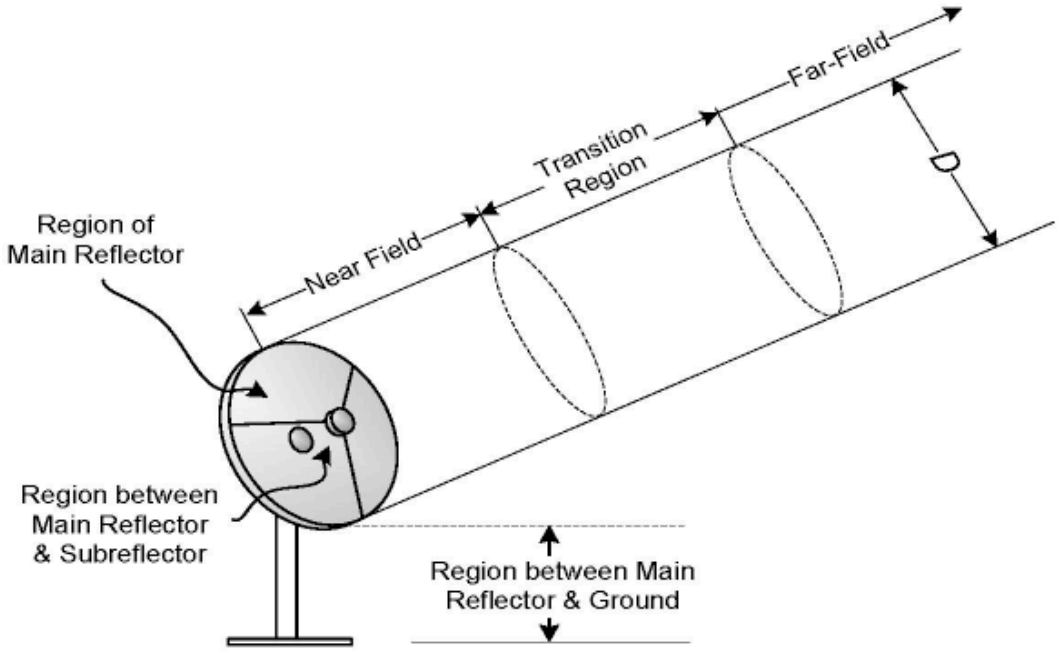

Figure 1. EM Fields as a Function of Distance

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

Parameter	Value	Unit	Formula
Near-Field Distance	29.46	m	$R_{nf} = D^2/(4\lambda)$
Distance to Far-Field	70.70	m	$R_{ff} = 0.60D^2/(\lambda)$
Distance of Transition Region	29.46	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.

Parameter	Value	Unit	Symbol	Formula
Power Density in the Near-Field	12.76	mW/cm^2	S_{nf}	$16.0\ \eta\ P/(\pi D^2)$
Power Density in the Far-Field	5.466	mW/cm^2	S_{ff}	$GP/(4\pi\ Rff^2)$
Power Density in the Transition Region	12.76	mW/cm^2	S_t	$S_{nf}\ R_{nf}/(R_t)$

The region between the main reflector and the subreflector is confined within a conical shape defined by the feed assembly. The most common feed assemblies are waveguide flanges. This energy is determined as follows:

Parameter	Value	Unit	Symbol	Formula
Power Density at the Feed Flange	2822.69	mW/cm^2	S_{fa}	$4P / a$

The power density in the main reflector is determined similarly to the power density at the feed flange; except that the area of the reflector is used.

Parameter	Value	Unit	Symbol	Formula
Power Density at Main Reflector	19.60	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:

Parameter	Value	Unit	Symbol	Formula
Power Density b/w Reflector and Ground	4.90	mW/cm^2	S_g	P / A

The below table summarizes the calculated power flux density values for each region. In a controlled environment, the only regions that exceed FCC limitations are shown below. These regions are only accessible by trained technicians who, as a matter of procedure, turn off transmit power before performing any work in these areas.

Power Density	Value	Unit	Controlled Environment
Far Field Calculation	5.466	mW/cm^2	Exceeds Limits
Near Field Calculation	12.76	mW/cm^2	Exceeds Limits
Transition Region	12.76	mW/cm^2	Exceeds Limits
Region b/w feed iris and reflector	2822.69	mW/cm^2	Exceeds Limits
Main Reflector Region	19.60	mW/cm^2	Exceeds Limits
Region b/w Main Reflector & Ground	4.90	mW/cm^2	Satisfies FCC MPE

In conclusion, the results show that the antenna, in a controlled environment, and under the proper mitigation procedures, meets the guidelines specified in 47 C.F.R. § 1.1310.

RADIATION HAZARD STUDY – SEATEL 9797

The study in this section analyzes the potential RF human exposure levels caused by the Electro Magnetic (EM) fields of a Seatel 9797 antenna operating with the maximum power at the flange shown below. The mathematical analysis performed below complies with the methods described in the FCC Office of Engineering and Technology (OET) Bulletin No. 65 (1985 rev. 1997) R&O 96-326.[6]

Maximum Permissible Exposure

There are two separate levels of exposure limits. The first applies to persons in the general population who are in an uncontrolled environment. The second applies to trained personnel in a controlled environment. According to 47 C.F.R. § 1.1310, the Maximum Permissible Exposure (MPE) limits for frequencies above 1.5 GHz are as follows:

- General Population / Uncontrolled Exposure 1.0 mW/cm^2
- Occupational / Controlled Exposure 5.0 mW/cm^2

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 feed and the antenna 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:

Parameter	Value	Unit	Symbol
Antenna Diameter	2.4	m	*D*
Antenna Transmit Gain	42.76	dBi	*G*
Transmit Frequency	6175	MHz	*f*
Antenna Feed Flange Diam.	13.1	cm	*d*
Power Input to the Antenna	40	Watts	*P*

Calculated Parameters

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

Parameter	Value	Unit	Symbol	Formula
Antenna Surface Area	4.52	m^2	*A*	$\pi D^2/4$
Area of Antenna Flange	134.78	cm^2	*a*	$\pi d^2/4$
Antenna Efficiency	0.76		η	$G\lambda^2/(\pi^2 D^2)$
Gain Factor	18,407.7		*g*	$10^{G/10}$
Wavelength	0.0486	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 sub-reflector, the region of the main reflector area and the region between the main reflector and ground.

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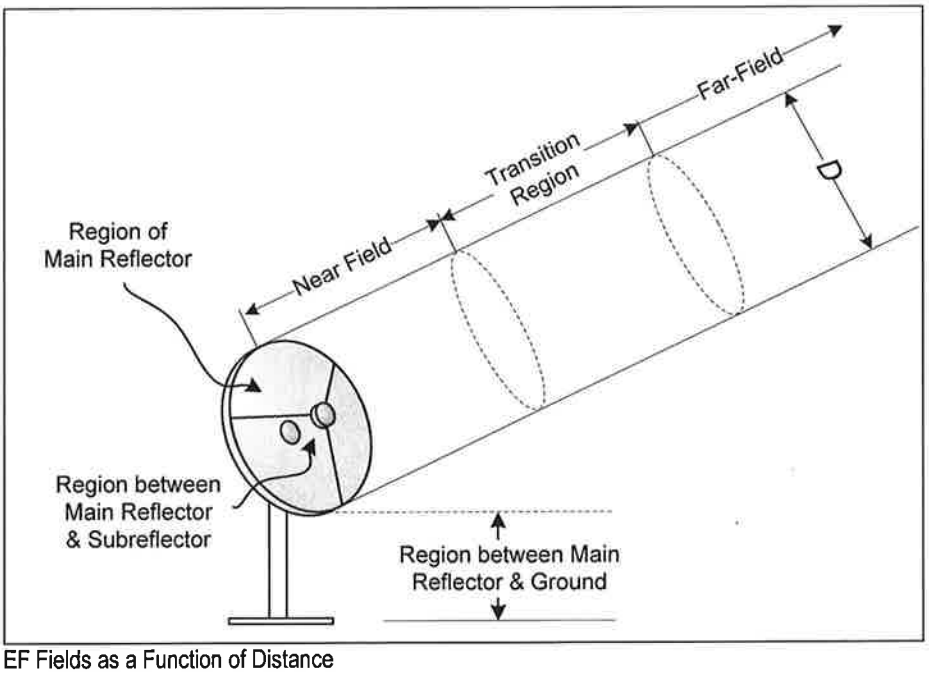
[6] *Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields*, OET Bulletin 65 (Edition 97-01), Supplement B, FCC Office of Engineering & Technology, November 1997.



EF 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:

Near-Field Distance	$R_{nf} = D^2/(4\lambda)$	= 29.640 m
Distance to Far-Field	$R_{ff} = 0.60D^2/(\lambda)$	= 71.136 m
Distance of Transition Region	$R_t = R_{nf}$	= 29.640 m

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.

Power Density in the Near-Field	S_{nf}	$= 16.0\,\eta\, P/(\pi D^2)$	= 2.703 mW/cm^2
Power Density in the Far-Field	S_{ff}	$= GP/(4\pi R_{ff}^2)$	= 1.158 mW/cm^2
Power Density in the Transition Region S_t		$= S_{nf} R_{nf}/(R_t)$	= 2.703 mW/cm^2

The region between the main reflector and the subreflector is confined to within a conical shape defined by the feed assembly. The most common feed assemblies are waveguide flanges. This energy is determined as follows:

Power Density at the Feed Flange	S_{fa}	$= 4P / a$	= 1187.101 mW/cm^2

The power density in the main reflector is determined similarly to the power density at the feed flange; except that the area of the reflector is used.

Power Density at Main Reflector $S_{surface} = 4P / A$ = 3.537mW/cm^2

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

Power Density b/w Reflector and Gnd $S_g = P / A$ = 0.884 mW/cm^2

Summary of Calculations

Table 1 summarizes the calculated power flux density values for each region. In a controlled environment, the only region that exceeds FCC limitations is the region between the main reflector and the feed. This region is only accessible by trained technicians who, as a matter of procedure, turn off transmit power before performing any work in this area. In addition, the antenna operates in an enclosed radome that is locked during normal operation.

Power Densities	**(mW/cm²)**	**Controlled Environment (5 mW/cm²)**
Far Field Calculation	1.158	Satisfies FCC MPE
Near Field Calculation	2.703	Satisfies FCC MPE
Transition Region	2.703	Satisfies FCC MPE
Region b/w Main Reflector and Feed	1187.101	Exceeds limitations
Main Reflector Region	3.537	Satisfies FCC MPE
Region b/w Main Reflector & Ground	0.884	Satisfies FCC MPE

Table 1. Power Flux Density for Each Region

In conclusion, the results show that the Seatel 9797 antenna, in a controlled environment, and under the proper mitigation procedures, meets the guidelines specified in § 1.1310 of the Regulations.

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Newcom International
MIAMI, FL
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
January 24, 2019

TABLE OF CONTENTS

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.

The following companies reported potential great circle interference conflicts that did not meet the objectives on a line-of-sight basis. When over-the-horizon losses are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

Company

Entercom License, LLC
HiQ Data Corporation
Miami-Dade County
Verizon Wireless Personal Comm, LP(S FL)

No other carriers reported potential interference cases.

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 12/14/2018.

Company
Broward County Board of Commissioners
Broward County Telecommuncations Div
COLLIER, COUNTY OF
Computer Office Solutions, Inc.
Embarq Florida, Inc.
Entercom License, LLC
Florida Power and Light Company
Florida Rural Broadband Alliance, LLC
Florida State
HiQ Data Corporation
Martin County Sheriffs Office
Miami-Dade County
New Cingular Wireless PCS LLC - N FL
New Cingular Wireless PCS LLC - S FL
Olympic Wireless, LLC
Palm Beach, County of
SES Americom, Inc.
Saint Lucie, County of
South Florida Water Management District
Sprint Spectrum L.P.
T-Mobile License LLC
Verizon Wireless (VAW) LLC - S Florida
Verizon Wireless Personal Comm, LP(S FL)

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:	01/24/2019
Job Number:	181214COMSGE10

Administrative Information

Status	ENGINEER PROPOSAL
Call Sign	E050018
Licensee Code	NCOMIN
Licensee Name	Newcom International

Site Information — MIAMI, FL

Venue Name	
Latitude (NAD 83)	25° 54' 59.3" N
Longitude (NAD 83)	80° 13' 29.2" W
Climate Zone	B
Rain Zone	1
Ground Elevation (AMSL)	1.83 m / 6.0 ft

Link Information

Satellite Type	Geostationary
Mode	TR - Transmit-Receive
Modulation	Digital
Satellite Arc	15° W to 143° West Longitude
Azimuth Range	101.4° to 257.3°
Corresponding Elevation Angles	13.7° / 15.9°
Antenna Centerline (AGL)	2.74 m / 9.0 ft

Antenna Information		Receive - FCC32		Transmit - FCC32	
Manufacturer		Intellian		Intellian	
Model		V240M		V240M	
Gain / Diameter		38.3 dBi / 2.4 m		41.9 dBi / 2.4 m	
3-dB / 15-dB Beamwidth		2.30° / 4.60°		1.00° / 2.00°	
Max Available RF Power	(dBW/4 kHz)			-17.0	
	(dBW/MHz)			7.0	
Maximum EIRP	(dBW/4 kHz)			24.9	
	(dBW/MHz)			48.9	
Interference Objectives:	Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
	Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%

Frequency Information	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	1M00G7D - 20M0G7D / 3700.0 - 4200.0	1M00G7D - 20M0G7D / 5925.0 - 6425.0
Max Great Circle Coordination Distance	618.3 km / 384.1 mi	196.4 km / 122.0 mi
Precipitation Scatter Contour Radius	605.3 km / 376.1 mi	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	**MIAMI, FL**			
Licensee Name	Newcom International			
Latitude (NAD 83)	25° 54' 59.3" N			
Longitude (NAD 83)	80° 13' 29.2" W			
Ground Elevation (AMSL)	1.83 m / 6.0 ft			
Antenna Centerline (AGL)	2.74 m / 9.0 ft			
Antenna Model	Intellian V240M			
Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz	
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power			-17.0 (dBW/4 kHz)	

			Receive 4.0 GHz		Transmit 6.1 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	101.08	-10.00	412.20	-10.00	134.97
5	0.00	96.22	-10.00	412.20	-10.00	134.97
10	0.00	91.37	-10.00	412.20	-10.00	134.97
15	0.00	86.51	-10.00	412.20	-10.00	134.97
20	0.00	81.65	-10.00	412.20	-10.00	134.97
25	0.00	76.80	-10.00	412.20	-10.00	134.97
30	0.00	71.95	-10.00	412.20	-10.00	134.97
35	0.00	67.12	-10.00	412.20	-10.00	134.97
40	0.00	62.29	-10.00	412.20	-10.00	134.97
45	0.00	57.48	-10.00	412.20	-10.00	134.97
50	0.00	52.70	-10.00	412.20	-10.00	134.97
55	0.00	47.94	-10.00	412.20	-10.00	134.97
60	0.00	43.22	-8.89	426.18	-8.89	138.91
65	0.00	38.56	-7.65	442.40	-7.65	143.53
70	0.00	33.98	-6.28	461.09	-6.28	148.79
75	0.00	29.52	-4.75	482.19	-4.75	155.14
80	0.00	25.24	-3.05	507.62	-3.05	162.65
85	0.00	21.25	-1.18	537.03	-1.18	171.42
90	0.00	17.75	0.77	569.45	0.77	181.19
95	0.00	15.09	2.53	600.19	2.53	190.53
100	0.00	13.76	3.53	618.25	3.53	196.43
105	0.00	14.15	3.23	612.81	3.23	194.39
110	0.00	16.12	1.81	587.51	1.81	186.67
115	0.00	19.20	-0.08	555.07	-0.08	176.85
120	0.00	22.95	-2.02	523.69	-2.02	167.43
125	0.00	27.08	-3.82	496.01	-3.82	159.21
130	0.00	31.32	-5.39	472.94	-5.39	152.43
135	0.00	35.46	-6.74	454.70	-6.74	147.07
140	0.00	39.48	-7.91	438.99	-7.91	142.55
145	0.00	43.35	-8.92	425.76	-8.92	138.79
150	0.00	47.01	-9.81	414.62	-9.81	135.65
155	0.00	50.41	-10.00	412.20	-10.00	134.97
160	0.00	53.45	-10.00	412.20	-10.00	134.97
165	0.00	56.03	-10.00	412.20	-10.00	134.97
170	0.00	58.02	-10.00	412.20	-10.00	134.97
175	0.00	59.28	-10.00	412.20	-10.00	134.97
180	0.00	59.71	-10.00	412.20	-10.00	134.97
185	0.00	59.28	-10.00	412.20	-10.00	134.97

COMSEARCH

Earth Station Data Sheet

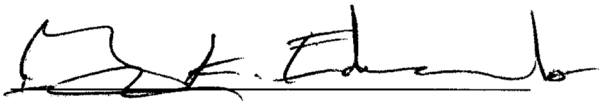
19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 http://www.comsearch.com

Coordination Values	**MIAMI, FL**			
Licensee Name	Newcom International			
Latitude (NAD 83)	25° 54' 59.3" N			
Longitude (NAD 83)	80° 13' 29.2" W			
Ground Elevation (AMSL)	1.83 m / 6.0 ft			
Antenna Centerline (AGL)	2.74 m / 9.0 ft			
Antenna Model	Intellian V240M			
Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz	
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power			-17.0 (dBW/4 kHz)	

			Receive 4.0 GHz		Transmit 6.1 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	58.01	-10.00	412.20	-10.00	134.97
195	0.00	56.03	-10.00	412.20	-10.00	134.97
200	0.00	53.45	-10.00	412.20	-10.00	134.97
205	0.00	50.41	-10.00	412.20	-10.00	134.97
210	0.00	47.02	-9.81	414.61	-9.81	135.64
215	0.00	43.35	-8.92	425.76	-8.92	138.79
220	0.00	39.48	-7.91	438.98	-7.91	142.55
225	0.00	35.46	-6.74	454.71	-6.74	147.07
230	0.00	31.32	-5.40	472.93	-5.40	152.43
235	0.00	27.19	-3.86	495.36	-3.86	159.02
240	0.00	23.37	-2.22	520.54	-2.22	166.49
245	0.00	20.05	-0.55	547.33	-0.55	174.52
250	0.00	17.50	0.92	572.11	0.92	182.00
255	0.00	16.10	1.83	587.77	1.83	186.75
260	0.00	16.15	1.79	587.15	1.79	186.56
265	0.00	17.64	0.83	570.57	0.83	181.53
270	0.00	20.26	-0.67	545.46	-0.67	173.95
275	0.00	23.63	-2.33	518.71	-2.33	165.95
280	0.00	27.47	-3.97	493.70	-3.97	158.53
285	0.00	31.62	-5.50	471.46	-5.50	152.00
290	0.00	35.96	-6.90	452.61	-6.90	146.47
295	0.00	40.44	-8.17	435.56	-8.17	141.57
300	0.00	45.01	-9.33	420.56	-9.33	137.32
305	0.00	49.65	-10.00	412.20	-10.00	134.97
310	0.00	54.34	-10.00	412.20	-10.00	134.97
315	0.00	59.06	-10.00	412.20	-10.00	134.97
320	0.00	63.81	-10.00	412.20	-10.00	134.97
325	0.00	68.58	-10.00	412.20	-10.00	134.97
330	0.00	73.36	-10.00	412.20	-10.00	134.97
335	0.00	78.16	-10.00	412.20	-10.00	134.97
340	0.00	82.96	-10.00	412.20	-10.00	134.97
345	0.00	87.76	-10.00	412.20	-10.00	134.97
350	0.00	92.57	-10.00	412.20	-10.00	134.97
355	0.00	97.38	-10.00	412.20	-10.00	134.97

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: January 28, 2019

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Newcom International
MIAMI, FL
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
January 24, 2019

TABLE OF CONTENTS

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.

The following companies reported potential great circle interference conflicts that did not meet the objectives on a line-of-sight basis. When over-the-horizon losses are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

Company

Entercom License, LLC
HiQ Data Corporation
Miami-Dade County
Verizon Wireless Personal Comm, LP(S FL)

No other carriers reported potential interference cases.

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 12/14/2018.

Company
Broward County Board of Commissioners
Broward County Telecommuncations Div
COLLIER, COUNTY OF
Computer Office Solutions, Inc.
Embarq Florida, Inc.
Entercom License, LLC
Florida Power and Light Company
Florida Rural Broadband Alliance, LLC
Florida State
HiQ Data Corporation
Martin County Sheriffs Office
Miami-Dade County
New Cingular Wireless PCS LLC - N FL
New Cingular Wireless PCS LLC - S FL
Olympic Wireless, LLC
Palm Beach, County of
SES Americom, Inc.
Saint Lucie, County of
South Florida Water Management District
Sprint Spectrum L.P.
T-Mobile License LLC
Verizon Wireless (VAW) LLC - S Florida
Verizon Wireless Personal Comm, LP(S FL)

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:	01/24/2019
Job Number:	181214COMSGE09

Administrative Information

Status	ENGINEER PROPOSAL
Call Sign	E050018
Licensee Code	NCOMIN
Licensee Name	Newcom International

Site Information — MIAMI, FL

Venue Name	
Latitude (NAD 83)	25° 54' 59.3" N
Longitude (NAD 83)	80° 13' 29.2" W
Climate Zone	B
Rain Zone	1
Ground Elevation (AMSL)	1.83 m / 6.0 ft

Link Information

Satellite Type	Geostationary
Mode	TR - Transmit-Receive
Modulation	Digital
Satellite Arc	15° W to 143° West Longitude
Azimuth Range	101.4° to 257.3°
Corresponding Elevation Angles	13.7° / 15.9°
Antenna Centerline (AGL)	2.74 m / 9.0 ft

Antenna Information		Receive - FCC32		Transmit - FCC32	
Manufacturer		Intellian		Intellian	
Model		V240MT		V240MT	
Gain / Diameter		37.3 dBi / 2.4 m		41.0 dBi / 2.4 m	
3-dB / 15-dB Beamwidth		2.30° / 4.60°		1.00° / 2.00°	
Max Available RF Power	(dBW/4 kHz)			-16.1	
	(dBW/MHz)			7.9	
Maximum EIRP	(dBW/4 kHz)			24.9	
	(dBW/MHz)			48.9	
Interference Objectives:	Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
	Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%

Frequency Information	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	1M00G7D - 20M0G7D / 3700.0 - 4200.0	1M00G7D - 20M0G7D / 5925.0 - 6425.0
Max Great Circle Coordination Distance	618.3 km / 384.1 mi	201.5 km / 125.2 mi
Precipitation Scatter Contour Radius	605.3 km / 376.1 mi	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	**MIAMI, FL**			
Licensee Name	Newcom International			
Latitude (NAD 83)	25° 54' 59.3" N			
Longitude (NAD 83)	80° 13' 29.2" W			
Ground Elevation (AMSL)	1.83 m / 6.0 ft			
Antenna Centerline (AGL)	2.74 m / 9.0 ft			
Antenna Model	Intellian V240MT			
Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz	
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power			-16.1 (dBW/4 kHz)	

			Receive 4.0 GHz		Transmit 6.1 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	101.08	-10.00	412.20	-10.00	138.15
5	0.00	96.22	-10.00	412.20	-10.00	138.15
10	0.00	91.37	-10.00	412.20	-10.00	138.15
15	0.00	86.51	-10.00	412.20	-10.00	138.15
20	0.00	81.65	-10.00	412.20	-10.00	138.15
25	0.00	76.80	-10.00	412.20	-10.00	138.15
30	0.00	71.95	-10.00	412.20	-10.00	138.15
35	0.00	67.12	-10.00	412.20	-10.00	138.15
40	0.00	62.29	-10.00	412.20	-10.00	138.15
45	0.00	57.48	-10.00	412.20	-10.00	138.15
50	0.00	52.70	-10.00	412.20	-10.00	138.15
55	0.00	47.94	-10.00	412.20	-10.00	138.15
60	0.00	43.22	-8.89	426.18	-8.89	142.24
65	0.00	38.56	-7.65	442.40	-7.65	147.03
70	0.00	33.98	-6.28	461.09	-6.28	152.49
75	0.00	29.52	-4.75	482.19	-4.75	159.06
80	0.00	25.24	-3.05	507.62	-3.05	166.81
85	0.00	21.25	-1.18	537.03	-1.18	175.85
90	0.00	17.75	0.77	569.45	0.77	185.90
95	0.00	15.09	2.53	600.19	2.53	195.49
100	0.00	13.76	3.53	618.25	3.53	201.52
105	0.00	14.15	3.23	612.81	3.23	199.82
110	0.00	16.12	1.81	587.51	1.81	191.53
115	0.00	19.20	-0.08	555.07	-0.08	181.43
120	0.00	22.95	-2.02	523.69	-2.02	171.74
125	0.00	27.08	-3.82	496.01	-3.82	163.26
130	0.00	31.32	-5.39	472.94	-5.39	156.25
135	0.00	35.46	-6.74	454.70	-6.74	150.57
140	0.00	39.48	-7.91	438.99	-7.91	146.02
145	0.00	43.35	-8.92	425.76	-8.92	142.12
150	0.00	47.01	-9.81	414.62	-9.81	138.86
155	0.00	50.41	-10.00	412.20	-10.00	138.15
160	0.00	53.45	-10.00	412.20	-10.00	138.15
165	0.00	56.03	-10.00	412.20	-10.00	138.15
170	0.00	58.02	-10.00	412.20	-10.00	138.15
175	0.00	59.28	-10.00	412.20	-10.00	138.15
180	0.00	59.71	-10.00	412.20	-10.00	138.15
185	0.00	59.28	-10.00	412.20	-10.00	138.15

COMSEARCH

Earth Station Data Sheet

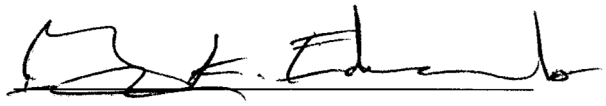
19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 http://www.comsearch.com

Coordination Values	**MIAMI, FL**			
Licensee Name	Newcom International			
Latitude (NAD 83)	25° 54' 59.3" N			
Longitude (NAD 83)	80° 13' 29.2" W			
Ground Elevation (AMSL)	1.83 m / 6.0 ft			
Antenna Centerline (AGL)	2.74 m / 9.0 ft			
Antenna Model	Intellian V240MT			
Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz	
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power			-16.1 (dBW/4 kHz)	

			Receive 4.0 GHz		Transmit 6.1 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	58.01	-10.00	412.20	-10.00	138.15
195	0.00	56.03	-10.00	412.20	-10.00	138.15
200	0.00	53.45	-10.00	412.20	-10.00	138.15
205	0.00	50.41	-10.00	412.20	-10.00	138.15
210	0.00	47.02	-9.81	414.61	-9.81	138.86
215	0.00	43.35	-8.92	425.76	-8.92	142.12
220	0.00	39.48	-7.91	438.98	-7.91	146.02
225	0.00	35.46	-6.74	454.71	-6.74	150.57
230	0.00	31.32	-5.40	472.93	-5.40	156.25
235	0.00	27.19	-3.86	495.36	-3.86	163.06
240	0.00	23.37	-2.22	520.54	-2.22	170.77
245	0.00	20.05	-0.55	547.33	-0.55	179.03
250	0.00	17.50	0.92	572.11	0.92	186.73
255	0.00	16.10	1.83	587.77	1.83	191.61
260	0.00	16.15	1.79	587.15	1.79	191.42
265	0.00	17.64	0.83	570.57	0.83	186.25
270	0.00	20.26	-0.67	545.46	-0.67	178.46
275	0.00	23.63	-2.33	518.71	-2.33	170.21
280	0.00	27.47	-3.97	493.70	-3.97	162.55
285	0.00	31.62	-5.50	471.46	-5.50	155.80
290	0.00	35.96	-6.90	452.61	-6.90	149.95
295	0.00	40.44	-8.17	435.56	-8.17	145.00
300	0.00	45.01	-9.33	420.56	-9.33	140.59
305	0.00	49.65	-10.00	412.20	-10.00	138.15
310	0.00	54.34	-10.00	412.20	-10.00	138.15
315	0.00	59.06	-10.00	412.20	-10.00	138.15
320	0.00	63.81	-10.00	412.20	-10.00	138.15
325	0.00	68.58	-10.00	412.20	-10.00	138.15
330	0.00	73.36	-10.00	412.20	-10.00	138.15
335	0.00	78.16	-10.00	412.20	-10.00	138.15
340	0.00	82.96	-10.00	412.20	-10.00	138.15
345	0.00	87.76	-10.00	412.20	-10.00	138.15
350	0.00	92.57	-10.00	412.20	-10.00	138.15
355	0.00	97.38	-10.00	412.20	-10.00	138.15

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: January 28, 2019

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Newcom International
MIAMI, FL
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
January 24, 2019

TABLE OF CONTENTS

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.

The following companies reported potential great circle interference conflicts that did not meet the objectives on a line-of-sight basis. When over-the-horizon losses are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

Company

Entercom License, LLC
HiQ Data Corporation
Miami-Dade County
Verizon Wireless Personal Comm, LP(S FL)

No other carriers reported potential interference cases.

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 12/14/2018.

Company
Broward County Board of Commissioners
Broward County Telecommuncations Div
COLLIER, COUNTY OF
Computer Office Solutions, Inc.
Embarq Florida, Inc.
Entercom License, LLC
Florida Power and Light Company
Florida Rural Broadband Alliance, LLC
Florida State
Harris Corporation - Florida
HiQ Data Corporation
Martin County Sheriffs Office
Miami-Dade County
New Cingular Wireless PCS LLC - N FL
New Cingular Wireless PCS LLC - S FL
Olympic Wireless, LLC
Palm Beach, County of
SES Americom, Inc.
Saint Lucie, County of
South Florida Water Management District
Sprint Spectrum L.P.
T-Mobile License LLC
Verizon Wireless (VAW) LLC - S Florida
Verizon Wireless Personal Comm, LP(S FL)

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: 01/24/2019
Job Number: 181214COMSGE11

Administrative Information

Status	ENGINEER PROPOSAL
Call Sign	E050018
Licensee Code	NCOMIN
Licensee Name	Newcom International

Site Information — MIAMI, FL

Venue Name	
Latitude (NAD 83)	25° 54' 59.3" N
Longitude (NAD 83)	80° 13' 29.2" W
Climate Zone	B
Rain Zone	1
Ground Elevation (AMSL)	1.83 m / 6.0 ft

Link Information

Satellite Type	Geostationary
Mode	TR - Transmit-Receive
Modulation	Digital
Satellite Arc	15° W to 143° West Longitude
Azimuth Range	101.4° to 257.3°
Corresponding Elevation Angles	13.7° / 15.9°
Antenna Centerline (AGL)	2.74 m / 9.0 ft

Antenna Information		Receive - FCC32		Transmit - FCC32	
Manufacturer		SeaTel		SeaTel	
Model		9797B		9797B	
Gain / Diameter		38.5 dBi / 2.4 m		41.7 dBi / 2.4 m	
3-dB / 15-dB Beamwidth		2.30° / 4.60°		1.00° / 2.00°	
Max Available RF Power	(dBW/4 kHz)			-10.7	
	(dBW/MHz)			13.3	
Maximum EIRP	(dBW/4 kHz)			31.0	
	(dBW/MHz)			55.0	
Interference Objectives:	Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
	Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%

Frequency Information	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	200KG7W - 1M85G7D / 3700.0 - 4200.0	200KG7W - 1M85G7D / 5925.0 - 6425.0
Max Great Circle Coordination Distance	618.3 km / 384.1 mi	234.3 km / 145.6 mi
Precipitation Scatter Contour Radius	605.3 km / 376.1 mi	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	**MIAMI, FL**			
Licensee Name	Newcom International			
Latitude (NAD 83)	25° 54' 59.3" N			
Longitude (NAD 83)	80° 13' 29.2" W			
Ground Elevation (AMSL)	1.83 m / 6.0 ft			
Antenna Centerline (AGL)	2.74 m / 9.0 ft			
Antenna Model	SeaTel 2.4 meter			
Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz	
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power			-10.7 (dBW/4 kHz)	

			Receive 4.0 GHz		Transmit 6.1 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	101.08	-10.00	412.20	-10.00	159.73
5	0.00	96.22	-10.00	412.20	-10.00	159.73
10	0.00	91.37	-10.00	412.20	-10.00	159.73
15	0.00	86.51	-10.00	412.20	-10.00	159.73
20	0.00	81.65	-10.00	412.20	-10.00	159.73
25	0.00	76.80	-10.00	412.20	-10.00	159.73
30	0.00	71.95	-10.00	412.20	-10.00	159.73
35	0.00	67.12	-10.00	412.20	-10.00	159.73
40	0.00	62.29	-10.00	412.20	-10.00	159.73
45	0.00	57.48	-10.00	412.20	-10.00	159.73
50	0.00	52.70	-10.00	412.20	-10.00	159.73
55	0.00	47.94	-10.00	412.20	-10.00	159.73
60	0.00	43.22	-8.89	426.18	-8.89	164.75
65	0.00	38.56	-7.65	442.40	-7.65	170.60
70	0.00	33.98	-6.28	461.09	-6.28	177.37
75	0.00	29.52	-4.75	482.19	-4.75	185.26
80	0.00	25.24	-3.05	507.62	-3.05	194.48
85	0.00	21.25	-1.18	537.03	-1.18	205.47
90	0.00	17.75	0.77	569.45	0.77	217.06
95	0.00	15.09	2.53	600.19	2.53	227.94
100	0.00	13.76	3.53	618.25	3.53	234.30
105	0.00	14.15	3.23	612.81	3.23	232.38
110	0.00	16.12	1.81	587.51	1.81	223.46
115	0.00	19.20	-0.08	555.07	-0.08	211.93
120	0.00	22.95	-2.02	523.69	-2.02	200.67
125	0.00	27.08	-3.82	496.01	-3.82	190.27
130	0.00	31.32	-5.39	472.94	-5.39	181.90
135	0.00	35.46	-6.74	454.70	-6.74	175.05
140	0.00	39.48	-7.91	438.99	-7.91	169.37
145	0.00	43.35	-8.92	425.76	-8.92	164.60
150	0.00	47.01	-9.81	414.62	-9.81	160.60
155	0.00	50.41	-10.00	412.20	-10.00	159.73
160	0.00	53.45	-10.00	412.20	-10.00	159.73
165	0.00	56.03	-10.00	412.20	-10.00	159.73
170	0.00	58.02	-10.00	412.20	-10.00	159.73
175	0.00	59.28	-10.00	412.20	-10.00	159.73
180	0.00	59.71	-10.00	412.20	-10.00	159.73
185	0.00	59.28	-10.00	412.20	-10.00	159.73

COMSEARCH

Earth Station Data Sheet

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

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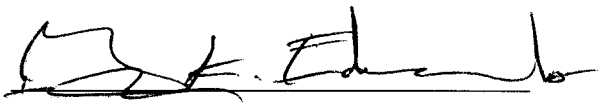
Max Available RF Power			-10.7 (dBW/4 kHz)	

			Receive 4.0 GHz		Transmit 6.1 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	58.01	-10.00	412.20	-10.00	159.73
195	0.00	56.03	-10.00	412.20	-10.00	159.73
200	0.00	53.45	-10.00	412.20	-10.00	159.73
205	0.00	50.41	-10.00	412.20	-10.00	159.73
210	0.00	47.02	-9.81	414.61	-9.81	160.60
215	0.00	43.35	-8.92	425.76	-8.92	164.60
220	0.00	39.48	-7.91	438.98	-7.91	169.37
225	0.00	35.46	-6.74	454.71	-6.74	175.05
230	0.00	31.32	-5.40	472.93	-5.40	181.89
235	0.00	27.19	-3.86	495.36	-3.86	190.03
240	0.00	23.37	-2.22	520.54	-2.22	199.53
245	0.00	20.05	-0.55	547.33	-0.55	209.17
250	0.00	17.50	0.92	572.11	0.92	218.00
255	0.00	16.10	1.83	587.77	1.83	223.56
260	0.00	16.15	1.79	587.15	1.79	223.34
265	0.00	17.64	0.83	570.57	0.83	217.46
270	0.00	20.26	-0.67	545.46	-0.67	208.50
275	0.00	23.63	-2.33	518.71	-2.33	198.87
280	0.00	27.47	-3.97	493.70	-3.97	189.43
285	0.00	31.62	-5.50	471.46	-5.50	181.36
290	0.00	35.96	-6.90	452.61	-6.90	174.30
295	0.00	40.44	-8.17	435.56	-8.17	168.13
300	0.00	45.01	-9.33	420.56	-9.33	162.73
305	0.00	49.65	-10.00	412.20	-10.00	159.73
310	0.00	54.34	-10.00	412.20	-10.00	159.73
315	0.00	59.06	-10.00	412.20	-10.00	159.73
320	0.00	63.81	-10.00	412.20	-10.00	159.73
325	0.00	68.58	-10.00	412.20	-10.00	159.73
330	0.00	73.36	-10.00	412.20	-10.00	159.73
335	0.00	78.16	-10.00	412.20	-10.00	159.73
340	0.00	82.96	-10.00	412.20	-10.00	159.73
345	0.00	87.76	-10.00	412.20	-10.00	159.73
350	0.00	92.57	-10.00	412.20	-10.00	159.73
355	0.00	97.38	-10.00	412.20	-10.00	159.73

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: January 28, 2019