Prepared for the Federal Communications Commission

Application for Modified License Authority for

Earth Stations on Board Vessels

Broadpoint Wireless License Co.

November 5, 2010

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INTRODUCTION

Broadpoint Wireless License Co. ("BROADPOINT"), pursuant to 47 C.F.R. § 25.117 of the Rules and Regulations ("Regulations") of the Federal Communications Commission ("Commission"), respectfully requests the modification of existing File No. SES-MFS-20090630-00816, Callsign E070239, to add 1,000 (one thousand) Ku-band Earth Stations on Vessels ("ESVs") throughout US channels and waterways, the Gulf of Mexico, the Caribbean Sea, the Atlantic Ocean, and the Pacific Ocean. The proposed ESVs seek to operate in the 11.7-12.2 GHz and 14.0-14.5 GHz ("Ku-Band") frequency bands to communicate with an already licensed hub station located in the United States.

The proposed antenna model is the Ku-band 85cm linear antenna, model AZU-08 ("AZU-08"), manufactured by Azimuth Unlimited, LLC ("Azimuth"). This antenna is capable of providing stabilized tracking. Azimuth has performed tests and generated the EIRP spectral density tables and plots here presented. Furthermore, Azimuth has declared that if the input power density to the feed of the Antennas is limited to -19.2dBW/4KHz, the AZU-08 will meet the requirements of Section 25.222 of the Regulations.

This report together with its attachments and exhibits addresses the requirements of Section 25.222 of the Regulations as well as the underlying ESV Order and Order on Reconsideration.[1]

§25.222 (a)(1)(i)(A-C) SPECTRAL DENSITY LIMITS

"An ESV system shall not exceed the off-axis EIRP spectral-density limits and conditions defined in paragraphs (a)(1)(i)(A) through (a)(1)(i)(D) of this section." 47 C.F.R §25.222(a)(1)(i)(A).

Spectral Density Envelopes

The spectral density envelopes specified in §25.222(a)(1)(i) are as follows:[2]

§25.222(a)(1)(i)(A) – Copole Azimuth

• *15 – 25log(θ)*	*dBW / 4KHz for*	*1.5 ° ≤ θ ≤ 7.0º*
• *-6*	*dBW / 4KHz for*	*7.0 ° ≤ θ ≤ 9.2º*
• *18 – 25log(θ)*	*dBW / 4KHz for*	*9.2 ° ≤ θ ≤ 48º*
• *-24*	*dBW / 4KHz for*	*48 ° ≤ θ ≤ 85º*
• *-14*	*dBW / 4KHz for*	*85 ° ≤ θ ≤ 180º*

The peak EIRP of an individual sidelobe may not exceed the envelope defined above for θ between 1.5 º and 7.0 º. For θ > 7º, the envelope may be exceeded by no more than 10% of the sidelobes, provided no individual sidelobe exceeds the envelope by more than 3dB.

§25.222(a)(1)(i)(B) – Copole in other directions

• *18 – 25log(θ)*	*dBW / 4KHz for*	*3.0 ° ≤ θ ≤ 48º*
• *-24*	*dBW / 4KHz for*	*48 ° ≤ θ ≤ 85º*
• *-14*	*dBW / 4KHz for*	*85 ° ≤ θ ≤ 180º*

The envelope may be exceeded by no more than 10% of the sidelobes provided no individual sidelobe exceeds the gain envelope given above by more than 6dB. The region of the main reflector spillover energy is to be determined as a single lobe and shall not exceed the enveloped by more than 6dB.

[1] *In the Matter of Procedures to Govern the Use of Satellite Earth Stations on Board Vessels in the 5925-6425 MHz/3700-4200 MHz Bands and 14.0-14.5 GHz/11.7-12.2 GHz Bands*, Report and Order, FCC 204-286, Adopted December 15, 2004, Released January 6, 2005; Order on Reconsideration, FCC 09-63, Adopted July 30, 2009, Released July 31, 2009.

[2] The actual formula in the statute includes a log(N) term which is subtracted from the spectral density. Since in this case, the system is TDMA and N=1 for TDMA, the log(1) terms goes to zero.

§25.222(a)(1)(i)(C) – Crosspole Azimuth

• *5 – 25log(θ)*	*dBW / 4KHz for*	*1.8°≤ θ ≤ 7°*
• *-16*	*dBW / 4KHz for*	*7°≤ θ ≤ 9.2°*

Operational Carriers

BROADPOINT plans to operate the network with the following carriers:

Emission Designator	970KG7W	1M42G7W	1M96G7W	31M2G7W
Direction of Carrier	Transmit	Transmit	Receive	Receive
Polarization	Linear	Linear	Linear	Linear
Carrier EIRP (dBW)	44.8	46.50	0	0
EIRP Density (dBW/4KHz)	20.95	20.98	0	0

The largest carrier will operate with a 20.98dBW/4KHz eirp density. Subtracting the antenna gain of 40.3dBi, the eirp density at the feed is -19.32dBW/4KHz which is 0.12dB lower than the maximum -19.2dBW/4KHz certified by Azimuth.

§25.222 (a)(1)(ii)(A) ANTENNA POINTING ERROR

"Each ESV transmitter shall maintain a pointing error of less than or equal to 0.2° between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna." 47 C.F.R §25.222(a)(1)(ii)(A).

According to Azimuth, the AZU-08 will maintain a stabilization pointing accuracy of better than 0.2 degrees under specified ship motion conditions. See Appendix A – Declaration of Azimuth Unlimited, LLC, Paragraph 4.

§25.222 (a)(1)(iii)(A) AUTOMATIC SHUT-OFF

"… all emissions from the ESV shall automatically cease within 100 milliseconds if the line angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna exceeds 0.5°, and transmission will not resume until such angle is less than 0.2°." 47 C.F.R §25.222(a)(1)(iii)(A).

According to Azimuth, the AZU-08 will automatically cease transmissions within 100 milliseconds if the pointing error should exceed 0.5 degrees and will not resume transmissions until the error drops below 0.2 degrees. See Appendix A – Declaration of Azimuth Unlimited, LLC., Paragraph 5.

§25.222 (a)(3) U.S. CONTACT INFORMATION

"There shall be a point of contact in the United States, with phone number and address included with the application, available 24 hours a day, seven days of week, with authority and ability to cease all emissions from the ESVs, either directly or through the facilities of a U.S. Hub or a Hub located in another country with which the U.S. has a bilateral agreement that enables such cessation of emissions." 47 C.F.R §25.222(a)(3).

Broadpoint Wireless License Co.
Neka Hicks, VP of Satellite Operations
711 W. Bay Area Blvd. Suite 405
Webster, TX 77598
(281) 724-2320 phone

BROADPOINT personnel, either via a network port or an out-of-band management system, have the authority and capability to remotely access equipment on the ESV to terminate emissions in case of suspected interference.

§ 25.222 (a)(4) VESSEL TRACKING

"For each ESV transmitter a record of the ship location (i.e. latitude/longitude), transmit frequency, channel bandwidth and satellite used shall be time annotated and maintained for a period of not less than 1 year. Records will be recorded at time intervals no greater than every 20 minutes while the ESV is transmitting. The ESV operator will make

this data available upon request to a coordinator, fixed system operator, fixed-satellite system operator, NTIA, or the Commission within 24 hours of the request." 47 C.F.R. §25.222 (a)(4).

Functionality of Vessel Tracking System

BROADPOINT has designed a system to record the vessel's location, transmit frequency, channel bandwidth and satellite. The system records this information every 20 minutes. This data will be stored locally and will be uploaded to BROADPOINT's Network Management System (NMS) on a regular basis. BROADPOINT can make this data available within 24 hours of a request by a coordinator, fixed system operator, fixed-satellite system operator, NTIA, or the Commission.

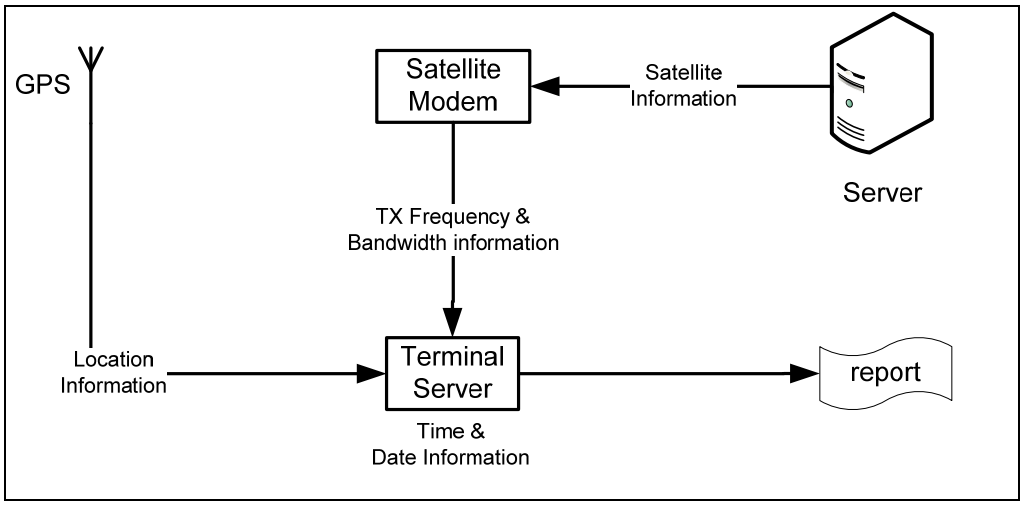


Figure 1. Vessel Tracking Network Configuration

§25.222 (a)(5) VESSELS OF FOREIGN REGISTRY

"ESV operators communicating with vessels of foreign registry must maintain detailed information on each vessel's country of registry and a point of contact for the relevant administration responsible for licensing ESVs." 47 C.F.R. §25.222 (a)(5).

In the event BROADPOINT must operate foreign-registered ESVs, it will maintain detailed information on each vessel as well as a point of contact for the relevant administration responsible for licensing the ESV.

§25.222 (a)(6) U.S. CONTROL OF ESV HUB EARTH STATION

"ESV operators shall control all ESVs by a Hub earth station located in the United States, except that an ESV on U.S.-registered vessels may operate under control of a Hub earth station location outside the United States provided the ESV operator maintains a point of contact within the United States that will have the capability and authority to cause an ESV on a U.S.-registered vessel to cease transmitting if necessary." 47 C.F.R. §25.222 (a)(6).

The Antennas operated by BROADPOINT will be controlled by the following earth station:

Callsign	Diameter	Location	Antenna ID
E920639[3]	5.6m	New Orleans*	1

*5901 Earhart Expressway, New Orleans, LA

[3] This 5.6m antenna is licensed for Ku ESV operations. See file number SES-MFS-20090619-00767.

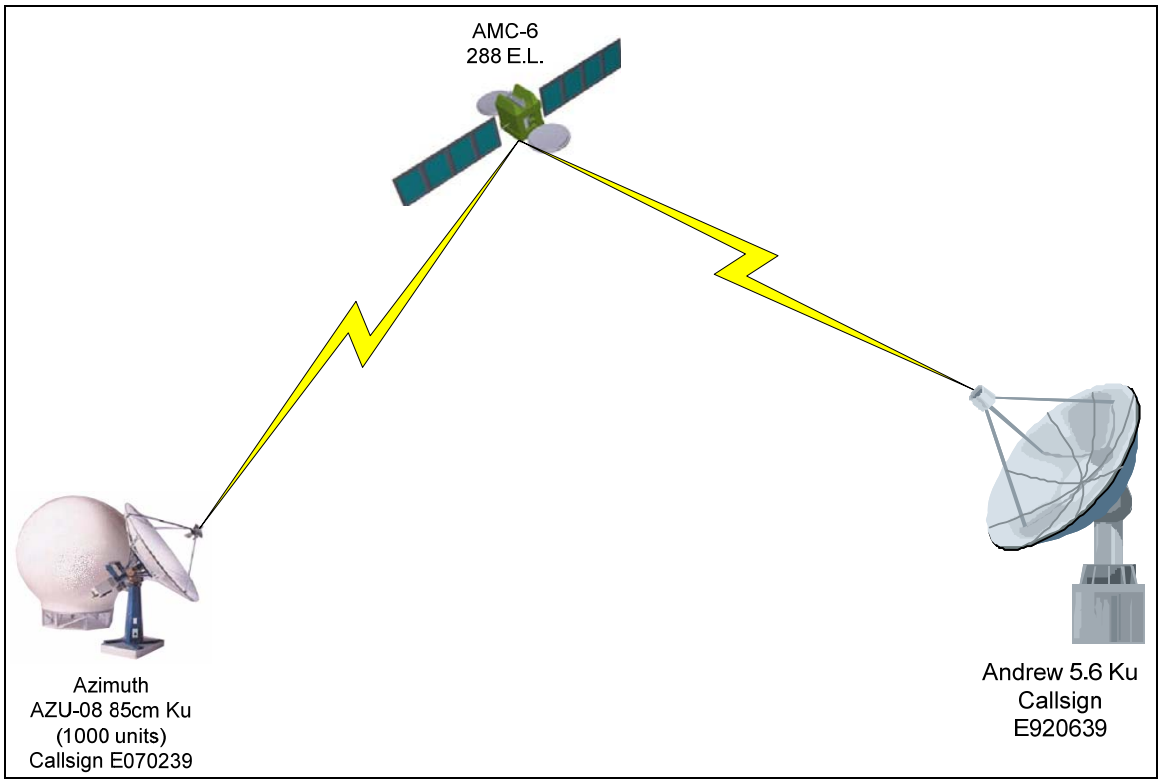


Figure 2. Network Diagram

§25.222 (a)(7) 10.95-11.2 GHz

"In the 10.95-11.2 GHz (Earth-toSpace) frequency bands ESVs shall not claim protection from interference from any authorized terrestrial stations to which frequencies are either already assigned, or may be assigned in the future."

BROADPOINT will not claim protection from interference in the 10.95-11.2GHz from any authorized terrestrial stations to which frequencies are already assigned or may be assigned in the future.

§25.222 (b)(1)(i) EIRP DENSITY TABLES

"Any ESV applicant filling an application pursuant to paragraph (a)(1) of this section must file three tables showing the off-axis EIRP level of the proposed earth station antenna in the direction of the place of the GSO; the co-polarized EIRP in the elevation plane, that is, in the place perpendicular to the plane of the GSO; and cross-polarized EIRP. In each table, the EIRP level must be provided at increments of 0.1° for angles between 0° and 10° off-axis, and at increments of 5° for angles between 10° and 180° off-axis. ." 47 C.F.R §25.222(b)(1)(i).

BROADPOINT has provided spectral density tables as well as charts as exhibits to Form 312 of the underlying application. Such tables and charts were generated by Azimuth for the AZU-08 antenna.

§25.222 (b)(1)(ii) BROADPOINT CERTIFICATION

"A certification, in Schedule B, that the ESV antenna conforms to the gain pattern criteria of §25.209 (a) and (b), that, combined with the maximum input power density calculated from the EIRP density less the antenna gain, which is entered in Schedule B, demonstrates that the off-axis EIRP density envelope set forth in paragraphs (a)(1)(i)(A) through (a)(1)(i)(C) of this section will be met under the assumption that the antenna is pointed to the target satellite." 47 C.F.R §25.222(b)(1)(ii).

See Appendix E– Certification of BROADPOINT

§25.222 (b)(1)(iii) MANUFACTURER CERTIFICATION

"An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(A) of this section, must provide a certification from the equipment manufacturer stating that the antenna tracking system will maintain a pointing error of less than or equal to 0.2° between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna and the antenna tracking system is capable of ceasing emissions within100 milliseconds in the angle between the orbital location of the satellite and the axis of the main lobe of the ESV antenna exceeds 0.5°." 47 C.F.R §25.222(b)(1)(iii).

According to Azimuth, the AZU-08 will automatically cease transmissions within 100 milliseconds if the pointing error should exceed 0.5 degrees and will not resume transmissions until the error drops below 0.2 degrees. See Appendix A – Declaration of Azimuth Unlimited, LLC, Paragraph 5.

§25.222 (b)(3) ESV GEOGRAPHIC AREA OF OPERATION

"There shall be an exhibit included with the application describing the geographic area(s) in which the ESVs will operate." 47 C.F.R §25.222(b)(3).

The geographic area where the ESVs will operate is in US channels and waterways, the Gulf of Mexico, Caribbean Sea, Atlantic Ocean, and Pacific Ocean.

Figure 3. US channels and waterways, the Gulf of Mexico, Caribbean Sea, Atlantic Ocean, and Pacific Ocean

§25.222 (b)(4) POINT OF CONTACT

"The point of contact referred to in paragraph (a)(3) of this section and, if applicable paragraph (a)(6) of this section must be included in the application." 47 C.F.R §25.222(b)(4).

Included

§25.222 (b)(5) RADIATION EXPOSURE LIMITS

"ESVs that exceed the radiation guidelines of 1.1310 of this chapter, Radiofrequency radiation exposure limits, must provide, with their environmental assessment, a plan for mitigation of radiation exposure to the extent required to meet those guidelines." 47 C.F.R §25.222(b)(5).

See Appendix D – Radiation Hazard Study – Azimuth AZU-08 Antenna.

§25.222 (c) FREQUENCY COORDINATION

"Operations of ESVs in the 14.0-14.2 GHz (Earth-to-space) frequency band within 125 Km of the NASA TDRSS facilities in Guam … or White Sands, New Mexico… are subject to coordination through the National Telecommunications and Information Administration (NTIA) Interdependent Radio Advisory Committee (IRAC). [U]pon public notice from the Commission, all Ku-band ESV operators must cease operations…." 47 C.F.R. §25.222 (c).

The Antennas operated by BROADPOINT will not operate within 125 Km of the NASA TDRSS facilities in Guam or White Sands, New Mexico.

§25.222 (d) FREQUENCY COORDINATION

"Operations of ESVs in the 14.47-14.5 GHz (Earth-to-space) frequency band within a) 45Km of the radio observatory on St. Croix, Virgin Islands…; b) 125 Km of the radio observatory on Mauna Kea, Hawaii …; and c) 90 Km of the Arecibo Observatory on Puerto Rico … are subject to coordination through the National Telecommunications and Information Administration (NTIA) Interdepartment Radio Advisory Committee (IRAC)." 47 C.F.R. §25.222 (d).

The ESVs operated by BROADPOINT will not operate within 48 Km of the radio observatory on St. Croix; within 125 Km of the radio observatory on Mauna Kea; or within 90 Km of the Arecibo observatory on Puerto Rico. ESVs operated by BROADPOINT will operate in the Gulf of Mexico, US channels and waterways, the Caribbean Sea, Atlantic Ocean and Pacific Ocean as described above.

APPENDIX A – DECLARATION OF AZIMUTH UNLIMITED. LLC

Declaration of Azimuth Unlimited, LLC

1) Azimuth Unlimited, LLC designs, manufactures, and resells/distributes stabilized VSAT terminals, which are then used by our customers for their ESV networks.

2) This declaration is for 47 C.F.R §25.222 for blanket licensing of ESV antenna operating in Ku-band. It covers the requirement of §25.222(a)(1) and the rest of requirement in §25.222 are left to the applicant who operates ESV networks with our product.

3) Azimuth Unlimited hereby declares the antenna listed below will meet §25.222(a)(1)(i) with the specified operating condition with demonstration of (b)(1)(i) and (b)(1)(iii).

Model	Operating condition
0.85 Meter Ku-band, Model AZU-08	N=1 Max. input power spectral density = -19.2 dBW/4KHz

4) Azimuth Unlimited hereby declares a pointing error will be less than or equal to 0.2 degree between the orbital location of the target satellite and the axis of the main lobe of the antenna referenced in paragraph 3) above, thus meeting the requirements of § 25.222(a)(1)(ii).

5) Azimuth Unlimited hereby declares all emission from the antenna referenced in paragraph 3) above will automatically be ceased within 100 milliseconds if the pointing error exceeds 0.5 degrees for any reason and will not be resumed until the error is less than or equal to 0.2 degree, thus meeting the requirements of § 25.222(a)(1)(iii).

Date: 10-09-2010

By: Digitally signed by Jongsoo Kim DN: cn=Jongsoo Kim, o=Azimuth Unlimited, LLC, ou, email=jongsoo.kim@azultd.com, c=US Date: 2010.10.09 15:44:37 -04'00'

Jongsoo Kim
Chief Executive Officer
Azimuth Unlimited, LLC

APPENDIX B – USE OF NON-U.S. SATELLITES

BROADPOINT specifies, pursuant to § 25.137(a) of the Commission's Rules, that the only non-U.S. licensed satellites to be accessed by the earth station proposed in the instant application are those included on the FCC's Permitted List and eligible for ALSAT designation.

APPENDIX C – FAA NOTIFICATION

Pursuant to 47 C.F.R. § 17.14 (b) of the Regulations, Federal Aviation Administration (FAA) notification is not required because all the antenna structures in this application will be less than 6.1m in height.

APPENDIX D – RADIATION HAZARD STUDY – AZIMUTH AZU-08 ANTENNA

The study in this section analyzes the potential RF human exposure levels caused by the Electro Magnetic (EM) fields of an Azimuth AZU-08 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.[4]

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	0.85	m	D
Antenna Transmit Gain	40.3	dBi	G
Transmit Frequency	14250	MHz	f
Antenna Feed Flange Diam.	0.17	cm	d
Power Input to the Antenna	8.0	Watts	P

Calculated Parameters

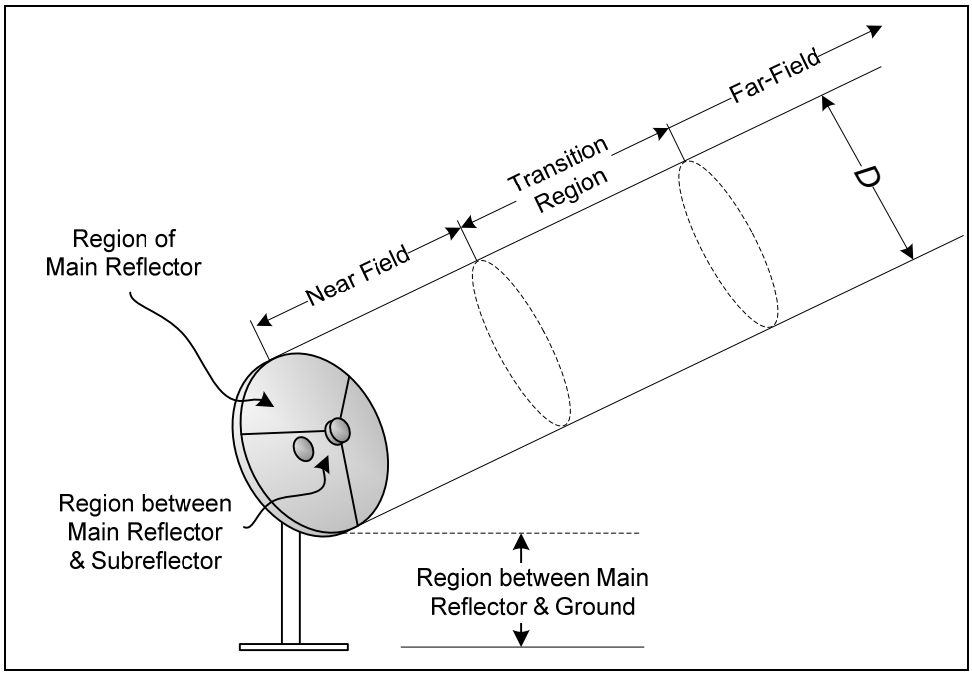
The following values were calculated using the above input parameters and the corresponding formula:

Parameter	Value	Unit	Symbol	Formula
Antenna Surface Area	0.57	m^2	A	$\pi D^2/4$
Area of Antenna Flange	0.02	cm^2	a	$\pi d^2/4$
Antenna Efficiency	0.67		η	$G\lambda^2/(\pi^2 D^2)$
Gain Factor	10715.2	g	$10^{G/10}$	
Wavelength	0.0211	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.

[4] *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	$R_{nf} = D^2/(4\lambda)$	= 8.580 m
Distance to Far-Field	$R_{ff} = 0.60D^2/(\lambda)$	= 20.591 m
Distance of Transition Region	$R_t = R_{nf}$	= 8.580 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}	$= 16.0\ \eta\ P/(\pi D^2)$	= 1.609 mW/cm^2
Power Density in the Far-Field	S_{ff}	$= GP/(4\pi\ R_{ff}^2)$	= 3.756 mW/cm^2
Power Density in the Transition Region S_t		$= S_{nf}\ R_{nf}\ /(R_t)$	= 3.756 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}	$= 4P\ /\ a$	= 1409815.392 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 $S_{surface} = 4P / A$ = 5.639 mW/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 $S_g = P / A$ = 1.410 mW/cm^2

Summary of Calculations

Table 1 summarizes the calculated power flux density values for each region. In a controlled environment, only the region between the main reflector and feed as well as the region in the main reflector exceed FCC limitations. It is important to note that this antenna will only be accessed by trained technicians who, as a matter of procedure, turn off transmit power before performing any work in this area. The antenna operates in an enclosed radome that is locked during normal operation.

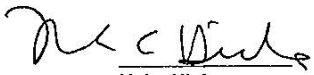
Power Densities	(mW/cm^2)	Controlled Environment (5mW/cm^2)
Far Field Calculation	1.609	Satisfies FCC MPE
Near Field Calculation	3.756	Satisfies FCC MPE
Transition Region	3.756	Satisfies FCC MPE
Region b/w Main Reflector and Feed	1409815.4	Exceeds limitations
Main Reflector Region	5.639	Exceeds limitations
Region b/w Main Reflector & Ground	1.410	Satisfies FCC MPE

Table 1. Power Flux Density for Each Region

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

APPENDIX E – DECLARATION OF BROADPOINT

"My name is Neka Hicks, VP of Satellite Operations for Broadpoint Wireless License Co. I certify that the engineering calculations described in this report are true and correct and satisfactory in light of the Regulations specified in 47 C.F.R. 25.222."



Neka Hicks

11/3/10

Date