Description of Application & Additional Information

I. Nature of the Application and Services

Ocean Exploration Trust ("OET") respectfully requests that the Federal Communications Commission ("FCC") grant it a license to operate Earths Station on Vessels ("ESV") in the Gulf of Mexico, Caribbean Sea, Atlantic Ocean, and Pacific Ocean. The proposed ESVs will operate in the 3700-4200 MHz and 5925-6425 MHz frequency bands ("C-Band") and will communication with Hub Stations located in the United States.

OET was founded in 2008 by Dr. Robert Ballard to engage in pure ocean exploration. Dr. Ballard is best known for his 1985 discovery of the RMS *Titanic, and is also* a National Geographic Society Explorer-In-Residence, a commissioner on the U.S. Commission on Ocean Policy, and a Senior Scientist Emeritus in the Department of Applied Ocean Physics and Engineering at the Woods Hole Oceanographic Institution. Dr. Ballard received the National Geographic Society's prestigious Hubbard Medal in 1996 for "extraordinary accomplishments in coaxing secrets from the world's oceans and engaging students in the wonder of science."

OET plans to begin exploring geological, archaeological, and biological aspects of the Gulf of Mexico and Caribbean Sea, and will require the C-Band ESVs to transmit video, audio, and data to its operations center in the United States. This information will be used in part for educational programming that will be available to students and others across the country.

At this time, OET will not be operating ESVs using C-Band frequencies within 200 km from the baseline of the United States or within 200 km from a U.S.-licensed fixed service offshore installation and, therefore, coordination is not required. However, should OET desire to transmit within this 200 km range in the future, it will first file a separate coordination pursuant to FCC Rule 25.221(a)(12).

OET respectfully requests that the FCC grant this application by June 1, 2013.

II. Responses to FCC Rule 25.221

As set forth in FCC Rule 25.211 and requested by the FCC staff, below and attached is additional information regarding OET's proposed operations:

Rule 25.221 (a)(1)(i): Off-Axis Spectral Density
"(i) 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."

OET's proposed C-Band operations comply with the off-axis EIRP spectral density limits and conditions in FCC Rule 25.221(a)(1)(i). See Exhibits B and C.

Rule 25.221(a)(1)(ii)(A): 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."

OET ESV transmitters will meet this pointing error requirement. See Exhibit B.

Rule 25.221(a)(1)(iii)(A): Cessation of Operations
"For ESVs operating under paragraph (a)(1)(ii)(A) of this section, all emissions from the ESV shall automatically cease within 100 milliseconds if the 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 or equal to 0.2°."

All emissions from the OET ESVs will automatically cease within 100 milliseconds if the 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 or equal to 0.2°. See Exhibit B.

Rule 25.221(a)(4): United States Contact Information
"There shall be a point of contact in the United States, with phone number and address, available 24 hours a day, seven days a 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 United States has a bilateral agreement that enables such cessation of emissions."

The following facility is available 24 hours a day, seven days a week, and has authority and ability to cease all emissions from the ESVs.

Verizon VSATNMC
7000 Weston Parkway
Cary, NC 27513
Domestic: 888-322-1728
International: +1 919-377-7705

Rule 25.221(a)(5): 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, or the Commission within 24 hours of the request."

OET's system maintains records of the vessel's location, transmit frequency, channel bandwidth and satellite used. These records are maintained pursuant to the above rule on computers located on the vessels, at the Hub Earth Stations, and/or at the OET Operations Center. OET will make this data available within 24 hours of a request.

Rule 25.221(a)(6): 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."

In addition to communicating with U.S.-registered vessels, OET anticipates that it will communicate with a vessel registered in St Vincent and the Grenadines. The telephone number for the National Regulatory Telecommunications Commission (NTRC) of Saint Vincent and the Grenadines is (784) 457-2279. The company is investigating this country's requirements for licensing ESVs and will file updated information with the FCC if it is determined that another point of contact is more appropriate.

Rule 25.221(a)(7): 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."

The OET ESVs shall be controlled by the following Hub Earth Stations: E990175 and E010140. These earth stations can shut down the OET ESVs remotely. Contact information for both stations is included in the application.

Rule 25.221(a)(8): Frequency Coordination and Multiple Satellites
"ESV operators transmitting in the 5925-6425 MHz (Earth-to-space) frequency bands to GSO satellites in the fixed-satellite service (FSS) shall not seek to coordinate, in any geographic location, more than 36 megahertz of uplink bandwidth on each of no more than two GSO FSS satellites."

OET is seeking to transmit ESVs in the 5925-6425 MHz band to geostationary satellites in the fixed-satellite service. However, at this time, OET will not be operating ESVs using C-Band frequencies within 200 km from the baseline of the United States or within 200 km from a U.S.-licensed fixed service offshore installation and, therefore, coordination is not required. However, should OET desire to transmit within this 200 km range in the future, it will first file a separate coordination pursuant to FCC Rule 25.221(a)(12).

Rule 25.221(a)(9): Vessel Weight
"ESVs shall not operate in the 5925-6425 MHz (Earth-to-space) and 3700-4200 MHz (space-to-Earth) frequency bands on vessels smaller than 300 gross tons."

OET confirms that it will not operate ESVs on vessels smaller than 300 gross tons.

Rule 25.221(a)(10): Operations While Docked
"ESVs, operating while docked, that complete coordination with terrestrial stations in the 3700-4200 MHz band in accordance with § 25.251, shall receive protection from such terrestrial stations in accordance with the coordination agreements, for 180 days, renewable for 180 days."

At this time, OET will not be operating ESVs using C-Band frequencies within 200 km from the baseline of the United States or within 200 km from a U.S.-licensed fixed service offshore installation and, therefore, OET does not currently contemplate any coordination with terrestrial stations in the C-Band.

Rule 25.221(a)(11): Protection from Interference
"ESVs in motion shall not claim protection from harmful interference from any authorized terrestrial stations or lawfully operating satellites to which frequencies are either already assigned, or may be assigned in the future in the 3700-4200 MHz (space-to-Earth) frequency band."

While in motion, OET shall not claim protection from harmful interference from any authorized terrestrial stations or lawfully operating satellites to which frequencies are either already assigned, or may be assigned in the future in the 3700-4200 MHz frequency band.

Rule 25.221(a)(12): Coordination Within 200 km
"ESVs operating within 200 km from the baseline of the United States, or within 200 km from a U.S.-licensed fixed service offshore installation, shall complete coordination with potentially affected U.S.-licensed fixed service operators prior to operation. The coordination method and the interference criteria objective shall be determined by the frequency coordinator. The details of the coordination shall be maintained and available at the frequency coordinator, and shall be filed with the Commission electronically via the International Bureau Filing System (http://licensing.fcc.gov/myibfs/) to be placed on public notice. The coordination notifications must be filed in the form of a statement referencing the relevant call signs and file numbers. Operation of each individual ESV may commence immediately after the public notice is released that identifies the notification sent to the Commission. Continuance of operation of that ESV for the duration of the coordination term shall be dependent upon successful completion of the normal public notice process. If, prior to the end of the 30-day comment period of the public notice, any objections are received from U.S.-licensed fixed service operators that have been excluded from coordination, the ESV licensee shall immediately cease operation of that particular station on frequencies used by the affected U.S.-licensed fixed service station until the coordination dispute is resolved and the ESV licensee informs the Commission of the resolution."

As discussed above, at this time, OET will not operate its ESVs on the C-Band within 200 km from the baseline of the United States, or within 200 km from a U.S.-licensed fixed service offshore installation and, therefore, coordination is not required. However, should OET desire to transmit within this 200 km range in the future, it will first file a separate coordination pursuant to FCC Rule 25.221(a)(12).

Rule 25.221(a)(13): Automatic Cease of Transmissions
"ESV operators must automatically cease transmission if the ESV operates in violation of the terms of its coordination agreement, including, but not limited to, conditions related to speed of the vessel or if the ESV travels outside the coordinated area, if within 200 km from the baseline of the United States, or within 200 km from a U.S.-licensed fixed service offshore installation. Transmissions may be controlled by the ESV network. The frequency coordinator may decide whether ESV operators should automatically cease transmissions if the vessel falls below a prescribed speed within a prescribed geographic area."

As discussed above, OET will not operate these ESVs on the C-Band within 200 km from the baseline of the United States, or within 200 km from a U.S.-licensed fixed service offshore installation and, therefore, is not required to coordinate pursuant to FCC Rule 25.221(a)(12) and is not subject to a coordination agreement. Nonetheless, OET constantly tracks the location of the vessels and ESVs will cease C-Band transmissions before any vessel comes within 200 km from the

baseline of the United States, or within 200 km from a U.S.-licensed fixed service offshore installation.

Rule 25.221(b)(1): Spectral Density, Pointing Error, and Cessation of Emission
"An ESV applicant proposing to implement a transmitter under paragraph (a)(1) of this section must demonstrate that the transmitter meets the off-axis EIRP spectral-density limits contained in paragraph (a)(1)(i) of this section. To provide this demonstration, the application shall include the tables described in paragraph (b)(1)(i) of this section or the certification described in paragraph (b)(1)(ii) of this section. The ESV applicant also must provide the value N described in paragraph (a)(1)(i)(A) of this section. An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(A) of this section must provide the certifications identified in paragraph (b)(1)(iii) of this section. An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(B) of this section must provide the demonstrations identified in paragraph (b)(1)(iv) of this section."

Table and certifications demonstrating OET's compliance with the spectral density, pointing error and cessation of emission requirements of FCC Rule 25.221(a)(1)(i), (a)(1)(ii)(A) and (a)(1)(iii)(A) are attached as Exhibits B and C. The value N described in FCC Rule 25.221(a)(1)(i)(A) is "1".

Rule 25.221(b)(4): Geographic Areas
"There shall be an exhibit included with the application describing the geographic area(s) in which the ESVs will operate."

The OET ESVs will operate in the Gulf of Mexico, Caribbean Sea, Atlantic Ocean, and Pacific Ocean.

Rule 25.221(b)(5): Contact Information
"The point of contact information referred to in paragraph (a)(3) of this section and, if applicable, paragraph (a)(6) of this section, must be included in the application."

See above.

Rule 25.221(b)(6): Antenna Radiation Guidelines
"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."

See Radiation Hazard Study attached to his application as Exhibit D.

Declaration of Mike J. Durbin Ph.D. E.E.

I, Mike Durbin, and do hereby declare that the following statements are true and correct:

1. I am an engineer for the Ocean Exploration Trust's ("OET") and have a close working knowledge of OET's C-Band Earth Station on Vessel ("ESV") system.

2. The OET's ESV system employees the AvL Technologies 2.4 Meter Stabilized Antenna System, Model 2440C. Technical specifications are enclosed with this declaration.

3. OET's ESV system will not exceed the off-axis EIRP spectral-density limits and conditions defined in paragraphs (a)(1)(i)(A) through (a)(1)(i)(D) of § 25.221. See Exhibit C.

4. The antenna tracking system employed with the OET ESV 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. The antenna tracking system also will cease emissions within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna exceeds 0.5°. Technical specifications for the AvL Technologies equipment are enclosed with this declaration. In addition, enclosed is a description of the multiple methods used by the OET ESV system to confirm accurate tracking and verification of the proper satellite before the transmit chain can be energized.

Executed on April 16, 2013

Michael J. Durbin Ph.D.

Mike.durbin@mci.com
214-801-7721

Description/Certification of tracking accuracy

The antenna uses multiple methods to confirm accurate tracking and verification of the proper satellite before the transmit chain can be energized. If any one of these parameters is not correct the transmitter is inhibited within 100 ms.

1. Ship location via GPS and ships heading via a magnetic flux gate compass. This information is then used to calculate the precise azimuth and elevation to the satellite. This information is used to acquire the satellite and allow the beacon, or other signal available for tracking to be acquired. The calculated angles are then compared to actual angles of the antenna. If the angles are more than 0.5 degrees off the calculated values, the acquisition cycle is reinitiated. NO TRANSMISSION IS ENABLED UNTIL proper satellite is verified.
2. The antenna system is also gyro stabilized and all ship movement is counteracted which allows tracking stabilization within 0.2 degrees. Any error in the gyro system is also used to inhibit transmission. The antenna system utilizes a step track system to verify precise tracking at a rate of 60 times a minute.
3. The system data modems will ONLY lock to the proper inbound signal when frequency, data rate, and Forward error correction value are decoded. Until this occurs the transmit system will be inhibited.

UNTIL ALL THREE REQUIREMENTS ARE MET THE TRANSMITTER SYSTEM IS INHIBITED.

Michael Durbin Ph. D.

System engineer

AvL TECHNOLOGIES

MODEL 2440C and 2440K ANTENNA
2.4 METER STABILIZED ANTENNA SYSTEM

Reflector	2.4M Offset, Optional 1.8 to 3.8M
Feed	C or Ku (S, L, X or Ka Available)
Optics	Offset, Prime Focus
Drive System	Robotic, DC Servo
Mount Geometry	Pitch, Roll, Yaw and Polarization
Architecture	Non-Critically Balanced, No Radome Required

Tracking System Features

Stabilized Tracking Capability of 10 degrees/sec. with 20 degrees/sec. optional
Built In Inertial Monitoring Unit (IMU) Eliminates Requirement to Connect to Ship Gyro
Built In Tracking Receiver with Frequency and Bandwidth Selectivity
Tracking and RF Signal Statistics Maintained and Displayed
Full Function Remote Monitoring and Control via Internet
Built in Signal Strength Analyzer
Proven Tracking Capability while on or near Equator
Precision GPS Vector Compass for Fast Initial and Reacquisition of Satellite
Communication from Indoor Controller to Antenna Based ODU via 100base-T Ethernet CAT 5
Parallel Processing Allowing 10ms Sampling Rates of Sensors
Software Being Converted to Operate On Linux Open Platform
Pitch, Roll and Yaw Controlled with Precision Robotic PID Motor Controllers
Real Time Alarm Monitoring
Software Ready for Various Antenna Apertures and Operating Frequency Bands

Controller Specifications

Indoor/Below Deck Unit		
	Size	Two Rack Units
	Beacon Receiver	L-Band 950-1750 Mhz or IF 50-210 Mhz Input
	Indoor Environment	Below Deck Radio or Control Room Isolated from Ship Vibration
	Input Power	110 VAC, 1 ph, 50/60 Hz, 15 amp service
	Electrical Connection	CAT-5 to Outdoor Unit
Outdoor Unit		
	Input Power	110 VAC, 1 ph, 50/60 Hz, 15 amp service for 10°/sec 240 VAC, 1 ph, 50/60 Hz, 15 amp service for 20°/sec
	Environment	Same as Antenna System, Mounted in Positioner Base

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Specifications based on SOLA ELSP specifications furnished by Broadpoint Communications

AvL TECHNOLOGIES

MODEL 2440C and 2440K ANTENNA SPECIFICATIONS

Electrical RF

C-Band	Receive	Transmit
Frequency	3.40-4.20 Ghz	5.85 -6.65 Ghz
Polarization	Linear or circular, convertible to either RCP or LHCP	
Gain (Midband)	35.7dBi	47.5 dBi
Radiation Pattern Compliance	IESS-601 and FCC 47CFR25.209	
Axial Ratio within Tracking Cone		1.3 dB
Linear Polarization with Tracking Cone		>30 dB

Ku-Band	Receive	Transmit
Frequency	10.95-12.75 Ghz	13.75-14.5 Ghz
Polarization	Orthogonal Linear, Optional Co-pol Linear	
Gain (Midband)	45.7dBi	47.5 dBi
Radiation Pattern Compliance	IESS-601 Std. G and FCC 47CFR25.209	
Cross Pol Isolation	35 dB within cone of tracking error	

Mechanical

Pitch/Roll Drive System	Sumitomo Robotic
Yaw Drive System	Internal Bull Spur Gear with Pinion Drive
Travel	
Azimuth-Yaw	
Without Cable Unwrap	Continuous
With Cable Unwrap	±1800° Standard, ±1080°, ±2500°
Elevation	
Mechanical	-10° to 90° of Reflector Boresight
Electrical	Adjustable between -10° to 90°
Polarization	±95°
Stabilization Tracking Capability	10°/sec. standard, 20°/sec optional
Pointing Stabilization	±0.2° rms, 0.5° Peak with Tx Shut Off Command
RF Interface	
HPA Mounting	Feed Boom, Rear of Reflector
Axis Transition	Twist-Flex or Rotary Joints
Electrical Interface	25 ft. (8 m) Cable with Connectors for Controller
Weight	1500 lbs. (681kg) depending on options selected
Deck Space Interface Dimensions	x L x x W x 1x H inches (xxL x 1xx W x xx H cm)
Deck Space Envelope Dimensions	123 H inches X 121 D inches (2.4M system)

Environmental

Wind	
Survival	
Deployed	50 mph Std. (121 kmph), 80mph Optional
Stowed	100 mph (161 kmph)
Operational	50mph (83 kmph), 80 mph (133 kmph) Optional
Temperature	
Operational	+5° to 125°F (-15° to 52° C)
Survival	-40° to 140°F (-40° to 60° C)

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Specifications based on SOLA ELSP specifications furnished by Broadpoint Communications

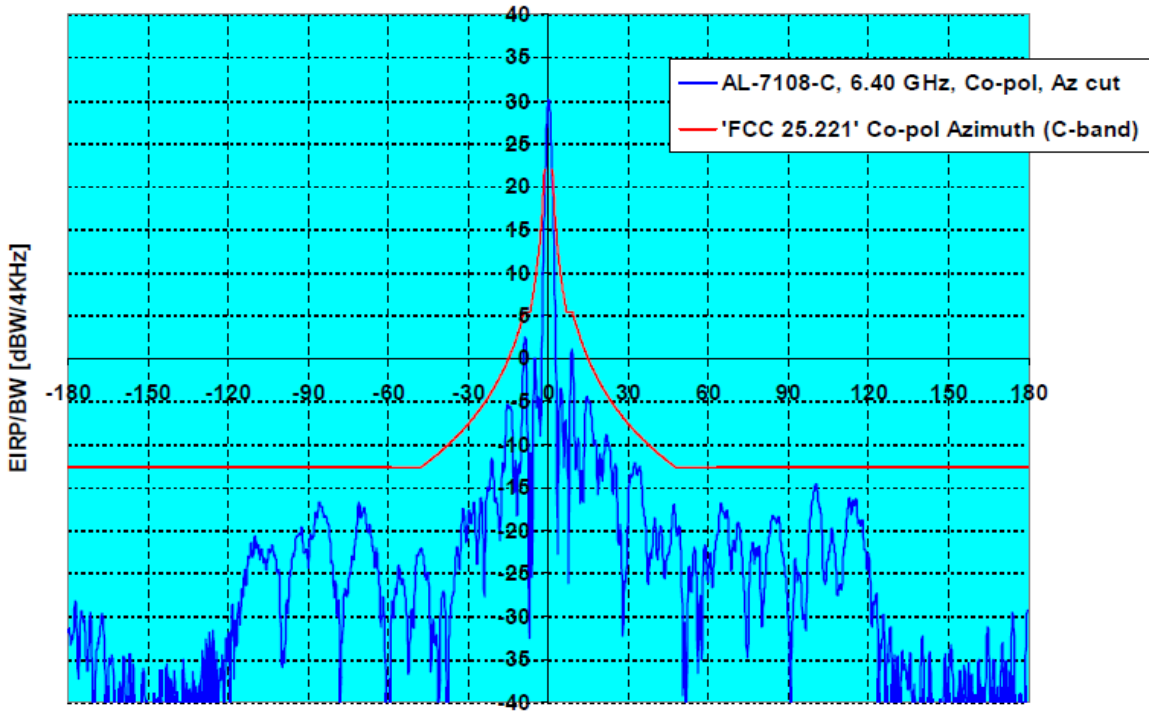
10 degrees from main beam
WORSE CASE DENSITY MAX EIRP DENSITY PER 4 Khz
Based on 2 Mhz QPSK on Axis EIRP 31.98 dBw

Co-pol Azimuth 2.4 Meter AVL 2440C			
Antenna Angle	EIRP dBw/4kHz	Mask dBW/4kHz	Mask Difference
0.0	31.98		
0.1	31.98		
0.2	31.98		
0.3	31.98		
0.4	30.70		
0.5	30.40		
0.6	30.00		
0.7	29.50		
0.8	28.90		
0.9	28.10		
1.0	27.30		
1.1	26.40		
1.2	25.40		
1.3	24.30		
1.4	23.10		
1.5	21.80	21.9	-0.1
1.6	20.40	21.2	-0.8
1.7	19.10	20.5	-1.4
1.8	17.80	19.9	-2.1
1.9	16.30	19.3	-3.0
2.0	14.80	18.8	-4.0
2.1	13.40	18.2	-4.8
2.2	11.90	17.7	-5.8
2.3	10.40	17.3	-6.9
2.4	8.80	16.8	-8.0
2.5	7.10	16.4	-9.3
2.6	5.10	15.9	-10.8
2.7	3.00	15.5	-12.5
2.8	0.70	15.1	-14.4
2.9	-1.90	14.7	-16.6
3.0	-4.70	14.4	-19.1
3.1	-7.70	14.0	-21.7
3.2	-10.80	13.7	-24.5
3.3	-14.00	13.3	-27.3
3.4	-18.00	13.0	-31.0
3.5	-21.80	12.7	-34.5
3.6	-18.90	12.4	-31.3
3.7	-14.30	12.1	-26.4
3.8	-10.80	11.8	-22.6
3.9	-8.30	11.5	-19.8
4.0	-6.50	11.2	-17.7
4.1	-5.20	11.0	-16.2
4.2	-4.20	10.7	-14.9
4.3	-3.50	10.5	-14.0
4.4	-3.10	10.2	-13.3
4.5	-2.70	10.0	-12.7
4.6	-2.60	9.7	-12.3
4.7	-2.50	9.5	-12.0

X-pol Azimuth 2.4 Meter AVL 2440C			
Antenna Angle	EIRP dBw/4kHz	Mask dBW/4kHz	Mask Difference
0.0	-6.4		
0.1	-11.5		
0.2	-9.8		
0.3	-4.8		
0.4	-1.6		
0.5	0.6		
0.6	2.2		
0.7	3.4		
0.8	4.2		
0.9	4.7		
1.0	5.0		
1.1	5.1		
1.2	5.0		
1.3	4.7		
1.4	4.2		
1.5	3.5		
1.6	2.6		
1.7	1.5		
1.8	0.1	9.9	-9.8
1.9	-1.7	9.3	-11.0
2.0	-3.8	8.8	-12.6
2.1	-6.4	8.2	-14.6
2.2	-9.4	7.7	-17.1
2.3	-12.3	7.3	-19.6
2.4	-12.8	6.8	-19.6
2.5	-11.4	6.4	-17.8
2.6	-9.8	5.9	-15.7
2.7	-8.6	5.5	-14.1
2.8	-8.0	5.1	-13.1
2.9	-7.9	4.7	-12.6
3.0	-8.1	4.4	-12.5
3.1	-8.7	4.0	-12.7
3.2	-9.6	3.7	-13.3
3.3	-10.9	3.3	-14.2
3.4	-12.8	3.0	-15.8
3.5	-15.2	2.7	-17.9
3.6	-18.4	2.4	-20.8
3.7	-22.6	2.1	-24.7
3.8	-27.9	1.8	-29.7
3.9	-27.2	1.5	-28.7
4.0	-23.0	1.2	-24.2
4.1	-20.2	0.7	-20.9
4.2	-18.4	0.5	-18.9
4.3	-17.0	0.2	-17.2
4.4	-16.0	0.0	-16.0
4.5	-15.1	0.0	-15.1
4.6	-14.4	-0.3	-14.1
4.7	-13.7	-0.5	-13.2

4.8		-2.50		9.3		-11.8		4.8		-12.9		-0.7		-12.2
4.9		-2.60		9.0		-11.6		4.9		-12.1		-1.0		-11.1
5.0		-2.80		8.8		-11.6		5.0		-12.5		-1.2		-11.3
5.1		-3.30		8.6		-11.9		5.1		-10.9		-1.4		-9.5
5.2		-3.90		8.4		-12.3		5.2		-10.2		-1.6		-8.6
5.3		-4.70		8.2		-12.9		5.3		-9.5		-1.8		-7.7
5.4		-5.90		8.0		-13.9		5.4		-9.0		-2.0		-7.0
5.5		-7.50		7.8		-15.3		5.5		-8.5		-2.2		-6.3
5.6		-9.30		7.6		-16.9		5.6		-8.0		-2.4		-5.6
5.7		-10.80		7.4		-18.2		5.7		-7.6		-2.6		-5.0
5.8		-11.60		7.2		-18.8		5.8		-7.2		-2.8		-4.4
5.9		-10.90		7.0		-17.9		5.9		-7.0		-3.0		-4.0
6.0		-9.60		6.8		-16.4		6.0		-6.8		-3.2		-3.6
6.1		-8.30		6.7		-15.0		6.1		-6.8		-3.3		-3.5
6.2		-7.20		6.5		-13.7		6.2		-6.9		-3.5		-3.4
6.3		-6.50		6.3		-12.8		6.3		-7.1		-3.7		-3.4
6.4		-6.20		6.1		-12.3		6.4		-7.3		-3.9		-3.4
6.5		-6.20		6.0		-12.2		6.5		-7.6		-4.0		-3.6
6.6		-6.50		5.8		-12.3		6.6		-8.0		-4.2		-3.8
6.7		-7.00		5.6		-12.6		6.7		-8.3		-4.4		-3.9
6.8		-7.70		5.5		-13.2		6.8		-8.5		-4.5		-4.0
6.9		-8.50		5.3		-13.8		6.9		-8.6		-4.7		-3.9
7.0		-9.50		5.3		-14.8		7.0		-8.5		-4.7		-3.8
7.1		-10.60		5.3		-15.9		7.1		-8.3		-4.7		-3.6
7.2		-11.80		5.3		-17.1		7.2		-8.1		-4.7		-3.4
7.3		-13.20		5.3		-18.5		7.3		-7.9		-4.7		-3.2
7.4		-15.40		5.3		-20.7		7.4		-7.6		-4.7		-2.9
7.5		-19.20		5.3		-24.5		7.5		-7.3		-4.7		-2.6
7.6		-25.20		5.3		-30.5		7.6		-7.3		-4.7		-2.6
7.7		-21.60		5.3		-26.9		7.7		-7.3		-4.7		-2.6
7.8		-15.90		5.3		-21.2		7.8		-7.2		-4.7		-2.5
7.9		-9.60		5.3		-14.9		7.9		-7.3		-4.7		-2.6
8.0		-6.50		5.3		-11.8		8.0		-7.4		-4.7		-2.7
8.1		-4.30		5.3		-9.6		8.1		-7.5		-4.7		-2.8
8.2		-2.40		5.3		-7.7		8.2		-7.7		-4.7		-3.0
8.3		-0.90		5.3		-6.2		8.3		-7.9		-4.7		-3.2
8.4		0.10		5.3		-5.2		8.4		-8.0		-4.7		-3.3
8.5		0.90		5.3		-4.4		8.5		-8.2		-4.7		-3.5
8.6		1.50		5.3		-3.8		8.6		-8.5		-4.7		-3.8
8.7		1.90		5.3		-3.4		8.7		-8.8		-4.7		-4.1
8.8		2.00		5.3		-3.3		8.8		-9.1		-4.7		-4.4
8.9		2.00		5.3		-3.3		8.9		-9.4		-4.7		-4.7
9.0		1.80		5.3		-3.5		9.0		-9.7		-4.7		-5.0
9.1		1.30		5.3		-4.0		9.1		-10.0		-4.7		-5.3
9.2		0.80		5.2		-4.4		9.2		-10.2		-4.7		-5.5
9.3		0.00		5.1		-5.1		9.3		-10.3		-4.7		-5.6
9.4		-1.00		5.0		-6.0		9.4		-10.4		-4.7		-5.7
9.5		-2.10		4.9		-7.0		9.5		-10.2		-4.7		-5.5
9.6		-3.30		4.7		-8.0		9.6		-10.1		-4.7		-5.4
9.7		-4.80		4.6		-9.4		9.7		-9.9		-4.7		-5.2
9.8		-6.30		4.5		-10.8		9.8		-9.7		-4.7		-5.0
9.9		-7.90		4.4		-12.3		9.9		-9.5		-4.7		-4.8
10.0		-9.40		4.3		-13.7		10.0		-9.4		-4.7		-4.7

As shown below all Required Mask are below FCC requirement



X-pol patterns