FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

Modular Transceiver

MODEL NUMBER: 20-00001-01

FCC ID: 2AACXXCVR2
IC: 11483A-XCVR2

REPORT NUMBER: 10165600A

ISSUE DATE: October 6, 2014

Prepared for
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USA

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	October 6, 2014	Initial Issue	BM

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Green Edge Technologies
15333 Avenue of Science
San Diego, CA 92128

EUT DESCRIPTION: 902MHz-928MHz Modular Transceiver

MODEL: **20-00001-01**

SERIAL NUMBER: 010000105F

DATE TESTED: September 22, 2014 – September 23, 2014

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL LLC based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL LLC By:

Michael Ferrer
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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfingsten Road, Northbrook, IL 60062 USA.

UL NBK is accredited by NVLAP, Laboratory Code 100414-0. The full scope of accreditation can be viewed at http://ts.nist.gov/Standards/scopes/1004140.htm

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Sample Calculations
Radiated Field Strength and Conducted Emissions data contained within this report is calculated on the following basis:
Field Strength (dBuV/m) = Meter Reading (dBuV) + AF (dB/m) – Gain (dB) + Cable Loss (dB)
Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable Loss (dB) + LISN IL (dB)
Conducted Current (dBuA) = Meter Reading (dBuV) + Cable Loss (dB) – Transducer Factor (dBohms)

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test	Range	Equipment	Uncertainty k=2
Radiated Emissions	30-200MHz	Bicon 10m Horz	4.27dB
Radiated Emissions	30-200MHz	Bicon 10m Vert	4.28dB
Radiated Emissions	200-1000MHz	LogP 10m Horz	3.33dB
Radiated Emissions	200-1000MHz	LogP 10m Vert	3.39dB
Radiated Emissions	30-200MHz	Bicon 3m Horz	3.30dB
Radiated Emissions	30-130MHz	Bicon 3m Vert	4.84dB
Radiated Emissions	130-200MHz	Bicon 3m Vert	4.94dB
Radiated Emissions	200-1000MHz	LogP 3m Horz	3.46dB
Radiated Emissions	200-1000MHz	LogP 3m Vert	4.98dB
Radiated Emissions	1-6GHz	Horn	5.02dB
Radiated Emissions	6-18GHz	Horn	5.34dB
Conducted Ant Port	30MHz-26GHz	Spectrum Analyzer	2.94dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 902MHz to 928MHz transceiver module used for wireless control of specially made outlets, switches and dimmers.

The radio module is manufactured by Green Edge

5.2. MAXIMUM OUTPUT E-FIELD STRENGTH

The transmitter has a maximum output peak E-field as follows:

Frequency Range (MHz)	Mode	Output PK E-field Strength (dBuV/m)
903.6225 - 926.3025	FSK	92.50

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio module utilizes an integral trace antenna, with a maximum gain of -2.2dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was: ver10.0_FCC_BUILD

The EUT driver software installed during testing was: N/A

The test utility software used during testing was: N/A

5.5. WORST-CASE CONFIGURATION AND MODE

The worst case channel is the middle channel. The worst case axis varies between different channels. For low channel and high channel the worst case axis was the Y axis and for middle channel the worst case axis was the X axis.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Host Debug Board	Green Edge	-	-	N/A
Host Outlet	Green Edge	Outlet	-	N/A
AC to DC Supply	Apple	-	-	N/A

I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	USB	1	Mini-USB	Shielded	1	used for power
2	AC	1	AC	3 wire	1.5	used for power to host

TEST SETUP

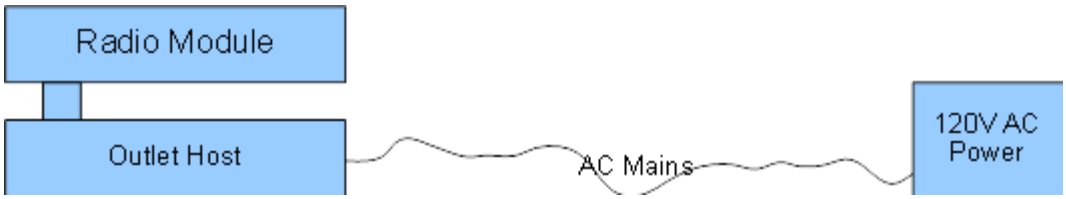
Radiated Emissions below 1GHz, Line Conducted Emissions, Bandwidth Measurement
The Radio Module was installed via connector pins onto the Host Debug Board. The host board was connected via USB cable to 5VDC supply. The radio module was set to transmit modulated signal continuously on specific channel with specific output power level.

Radiated Emissions above 1GHz
The Radio Module was installed via connector pins onto a Host Outlet. The input of the outlet was connected to 120V/60Hz AC. The radio module was set to transmit on specific channel for testing. This setup is similar to the one above except for the host used.

SETUP DIAGRAM FOR TESTS

Radio Module installed on Debug board

Radio Module installed on Outlet as host



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	20131227	20141231
Bicon Antenna	Chase	VBA6106A	EMC4078	20140401	20150401
Log-P Antenna	Chase	UPA6109	EMC4313	20131003	20141003
Spectrum Analyzer	Rhode & Schwarz	FSEK	EMC4182	20131226	20141231
Antenna Array	UL	BOMS	EMC4276	20130912	20140930
Spectrum Analyzer	Agilent	N9030A (PXA)	EMC4360	20131221	20141221
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	20131230	20141230
Transient Limiter	Electro-Metrics	EM7600-2	EMC4224	N/A	N/A
HighPass Filter	Solar Electronics	2803-150	885551	N/A	N/A
Attenuator	HP	8494B	2831A00838	N/A	N/A
LISN – L1	Solar	8602-50-TS-50-N	EMC4052	20140115	20150116
LISN – L2	Solar	8602-50-TS-50-N	EMC4064	20140115	20150116
Near Field Probe	EMCO	Generic	-	N/A	N/A

7. TEST RESULTS

7.1.1. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

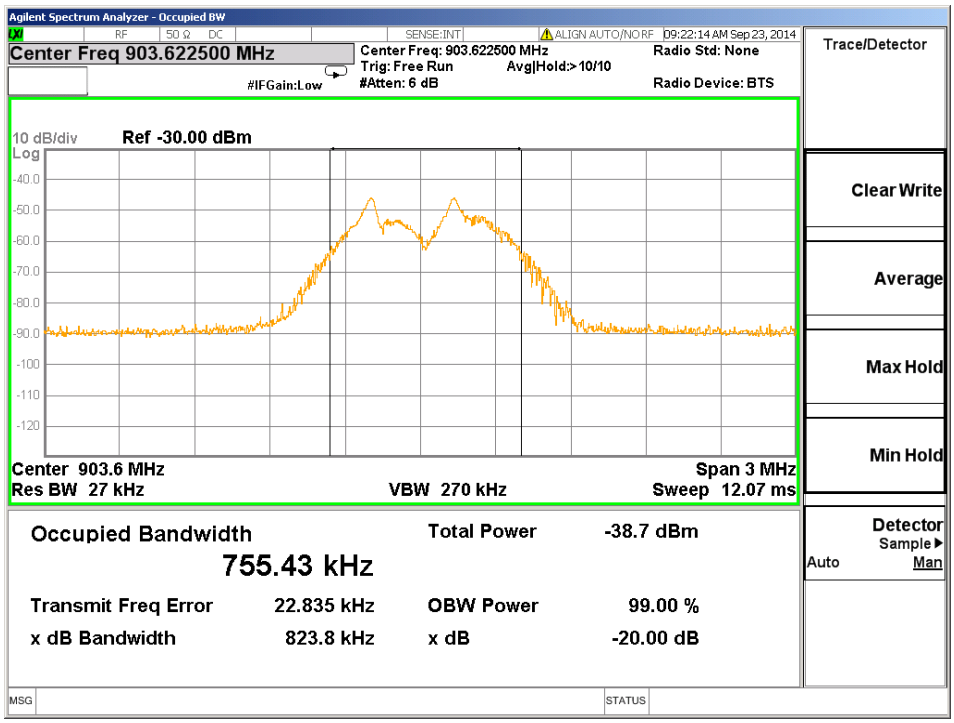
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

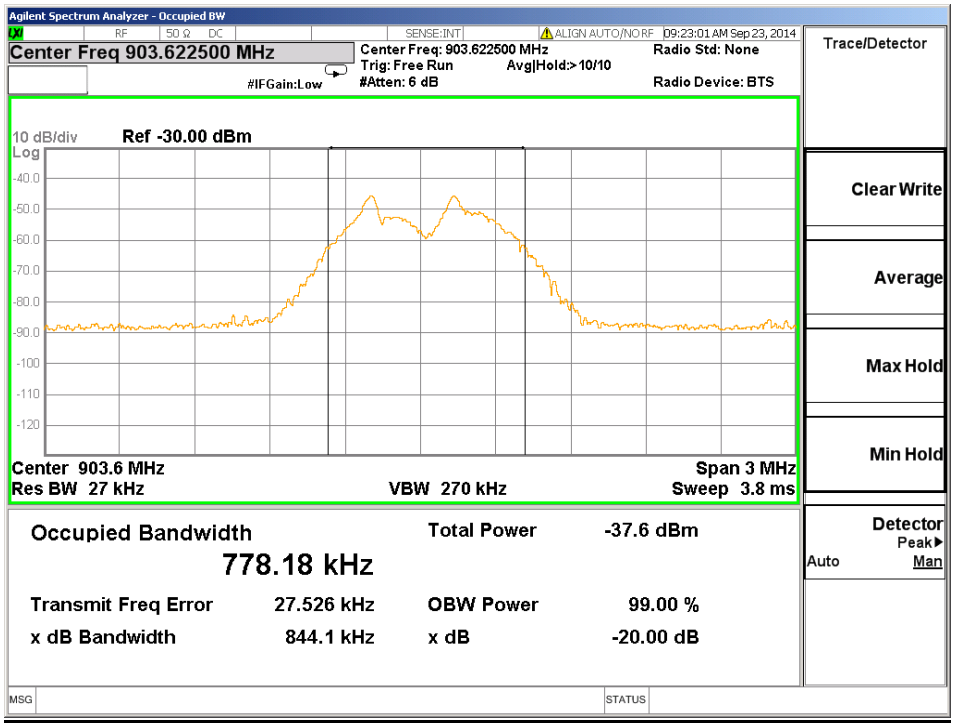
Channel	Frequency (MHz)	99% Bandwidth (MHz)	20dB Bandwidth (MHz)
Low	903.6225	0.75543	0.8441
Middle	914.7825	0.64496	0.6728
High	926.3025	0.79197	0.881.7

Low Channel

99% BANDWIDTH

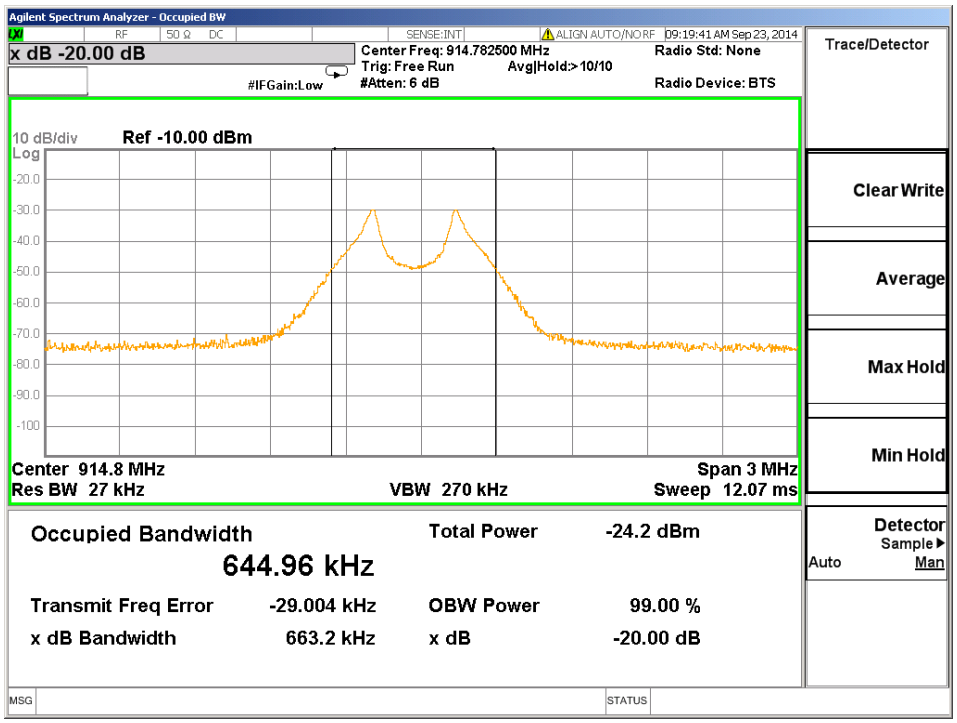


20dB BANDWIDTH

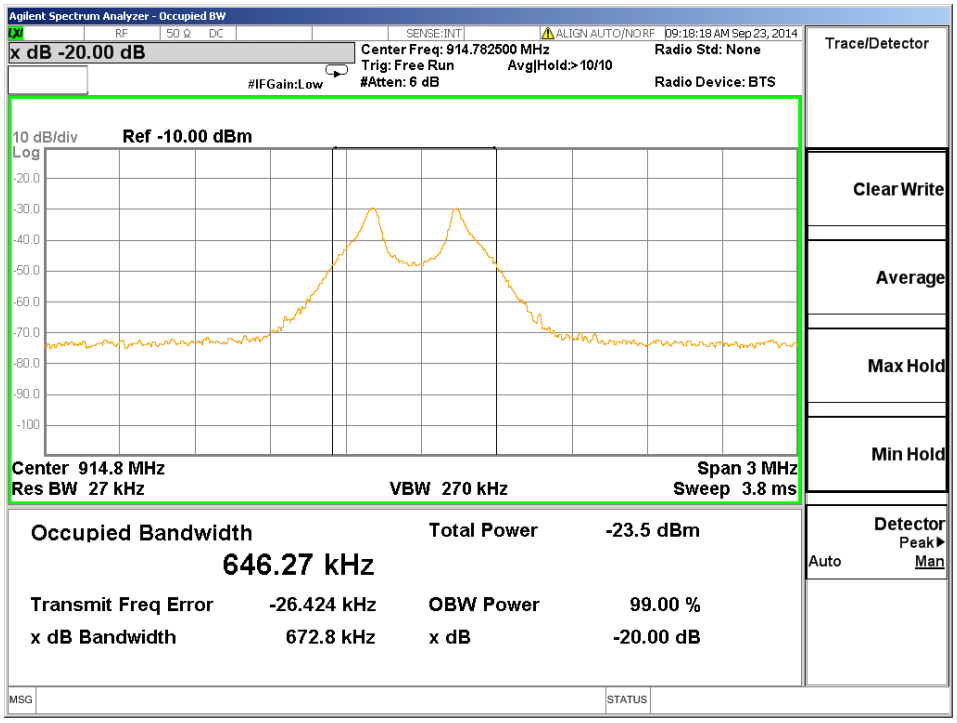


Middle Channel

99% BANDWIDTH

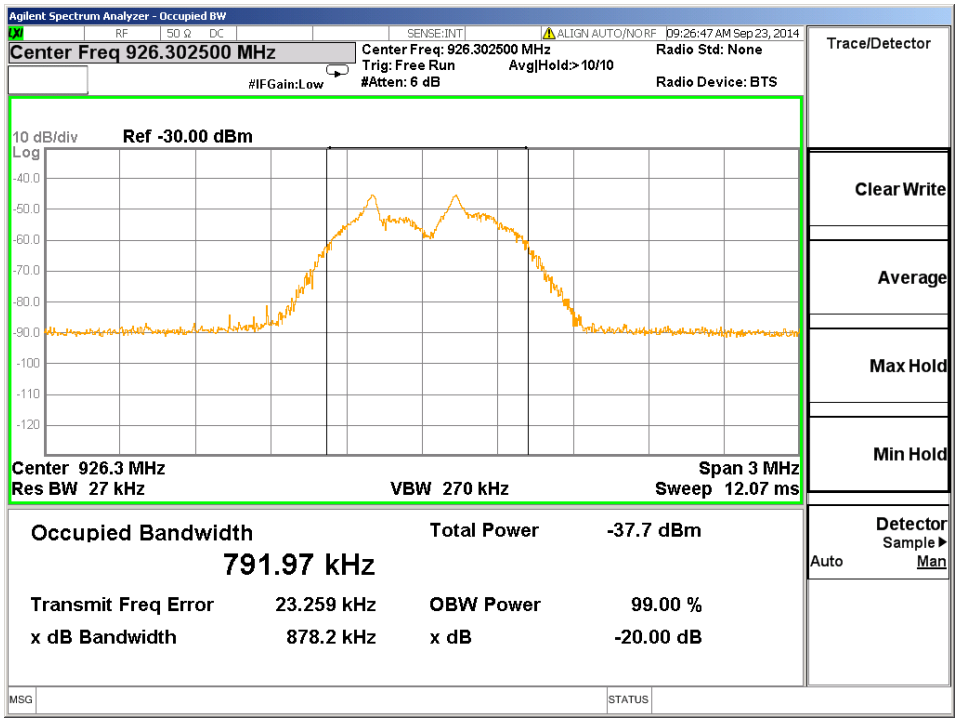


20dB BANDWIDTH

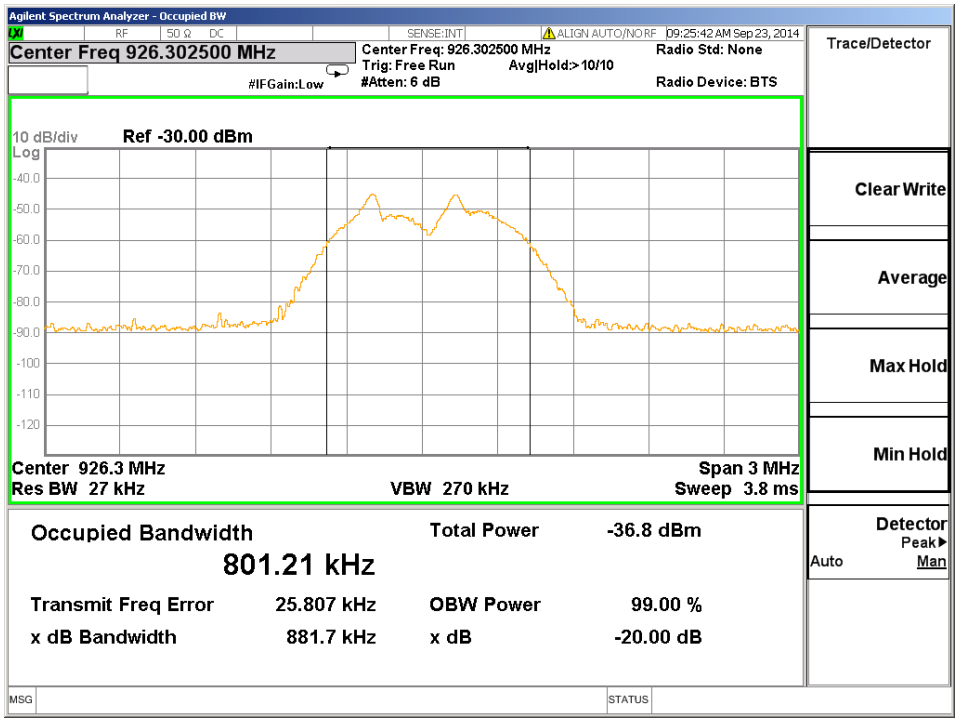


High Channel

99% BANDWIDTH



20dB BANDWIDTH



7.2. RADIATED EMISSIONS

LIMIT

IC RSS-210, A2.9
FCC 15.249

Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHZ, and 24.0–24.25 GHz.

(Z) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100 **	3
88–216	150 **	3
216–960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

7.2.1. FUNDAMENTAL FREQUENCY RADIATED EMISSION

GreenEdge
Tranceiver Module
3.3VDC From Main Board
RED:Horizontal, GREEN:Vertical
Radiated Emission Data

Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	Notes
Low Channel											
903.76007	53.76	QP	22.9	9.9	86.56	94	-7.44	123	113	H	X-Axis
903.76007	53.66	QP	22.9	9.9	86.46	94	-7.54	110	103	V	X-Axis
903.76007	53.99	QP	22.9	9.9	86.79	94	-7.21	39	109	H	Y-Axis
903.76007	56.55	QP	22.9	9.9	89.35	94	-4.65	127	102	V	Y-Axis
903.76007	53.85	QP	22.9	9.9	86.65	94	-7.35	208	160	H	Z-Axis
903.76007	53.46	QP	22.9	9.9	86.26	94	-7.74	16	112	V	Z-Axis
Middle Channel											
914.9193	57.64	QP	23	10	90.64	94	-3.36	43	101	H	X-Axis
914.9193	59.5	QP	23	10	92.5	94	-1.5	138	107	V	X-Axis
914.9193	56.03	QP	23	10	89.03	94	-4.97	40	106	H	Y-Axis
914.9193	58.58	QP	23	10	91.58	94	-2.42	126	100	V	Y-Axis
914.9193	55.69	QP	23	10	88.69	94	-5.31	123	141	H	Z-Axis
914.9193	54.9	QP	23	10	87.9	94	-6.1	21	110	V	Z-Axis
High Channel											
926.11033	56.94	QP	23.2	10.1	90.24	94	-3.76	117	108	H	X-Axis
926.11033	58.37	QP	23.2	10.1	91.67	94	-2.33	16	114	V	X-Axis
926.11033	56.68	QP	23.2	10.1	89.98	94	-4.02	41	105	H	Y-Axis
926.11033	58.39	QP	23.2	10.1	91.69	94	-2.31	120	103	V	Y-Axis
926.11033	54.94	QP	23.2	10.1	88.24	94	-5.76	275	101	H	Z-Axis
926.11033	55.77	QP	23.2	10.1	89.07	94	-4.93	14	108	V	Z-Axis

QP-Quasi Peak
All fundamental measurements, including low and high channels were done with 5dB attenuation

7.2.2. TRANSMITTER BAND EDGES

Bandedges were measured in the worst case axis and polarization determined by measuring the fundamental frequency. Some frequencies near the bottom and near the top of the band required lower output level. The level of attenuation was determined by conducting measurements on the bandedges and those attenuation levels are listed as comment. Minimum 5dB attenuation is required for most of the channels. For channels near the top and bottom attenuation levels of 7.5dB and 10dB is required.

BANDEDGE Measurements – Low Band Edge

All Band Edge data is based on the worst case fundamental orientation measured near the low end of the band

Summary of Necessary attenuation at the low Band Edge

Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	Notes
902	12.33	QP	22.9	9.9	45.13	46.02	-0.89	126	104	V	Low Ch00 Y-Axis Attn 10dB
902	13.05	QP	22.9	9.9	45.85	46.02	-0.17	126	104	V	Low Ch01 Y-Axis Attn 7.5dB
902	12.78	QP	22.9	9.9	45.58	46.02	-0.44	126	104	V	Low Ch02 Y-Axis Attn 7.5dB
902	12.52	QP	22.9	9.9	45.32	46.02	-0.7	126	104	V	Low Ch03 Y-Axis Attn 7.5dB
902	13.12	QP	22.9	9.9	45.92	46.02	-0.1	126	104	V	Low Ch04 Y-Axis Attn 7.5dB
902	12.71	QP	22.9	9.9	45.51	46.02	-0.51	126	104	V	Low Ch05 Y-Axis Attn 7.5dB
902	12.23	QP	22.9	9.9	45.03	46.02	-0.99	126	104	V	Low Ch06 Y-Axis Attn 7.5dB
902	12.78	QP	22.9	9.9	45.58	46.02	-0.44	126	104	V	Low Ch08 Y-Axis Attn 5dB

Low Band Edge with 10dB Attenuation Data - complete set of data – use for reference only. For compliance use data summary on previous page.

Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	Notes
902	12.33	QP	22.9	9.9	45.13	46.02	-0.89	126	104	V	Low Ch00 Y-Axis Attn 10dB
902	12.14	QP	22.9	9.9	44.94	46.02	-1.08	126	104	V	Low Ch01 Y-Axis Attn 10dB
902	11.9	QP	22.9	9.9	44.7	46.02	-1.32	126	104	V	Low Ch02 Y-Axis Attn 10dB
902	11.73	QP	22.9	9.9	44.53	46.02	-1.49	126	104	V	Low Ch03 Y-Axis Attn 10dB
902	12.16	QP	22.9	9.9	44.96	46.02	-1.06	126	104	V	Low Ch04 Y-Axis Attn 10dB
902	11.85	QP	22.9	9.9	44.65	46.02	-1.37	126	104	V	Low Ch05 Y-Axis Attn 10dB

Low Band Edge with 7.5dB Attenuation Data - complete set of data – use for reference only. For compliance use data summary on previous page.

Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	Notes
902	13.29	QP	22.9	9.9	46.09	46.02	0.07	126	104	V	Low Ch00 Y-Axis Attn 7.5dB
902	13.05	QP	22.9	9.9	45.85	46.02	-0.17	126	104	V	Low Ch01 Y-Axis Attn 7.5dB
902	12.78	QP	22.9	9.9	45.58	46.02	-0.44	126	104	V	Low Ch02 Y-Axis Attn 7.5dB
902	12.52	QP	22.9	9.9	45.32	46.02	-0.7	126	104	V	Low Ch03 Y-Axis Attn 7.5dB
902	13.12	QP	22.9	9.9	45.92	46.02	-0.1	126	104	V	Low Ch04 Y-Axis Attn 7.5dB
902	12.71	QP	22.9	9.9	45.51	46.02	-0.51	126	104	V	Low Ch05 Y-Axis Attn 7.5dB
902	12.23	QP	22.9	9.9	45.03	46.02	-0.99	126	104	V	Low Ch06 Y-Axis Attn 7.5dB

Low Band Edge with 5.0dB Attenuation Data - complete set of data – use for reference only. For compliance use data summary on previous page.

Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	Notes
902	15.3	QP	22.9	9.9	48.1	46.02	2.08	126	104	V	Low Ch00 Y-Axis Attn 5dB
902	14.91	QP	22.9	9.9	47.71	46.02	1.69	126	104	V	Low Ch01 Y-Axis Attn 5dB
902	14.64	QP	22.9	9.9	47.44	46.02	1.42	126	104	V	Low Ch02 Y-Axis Attn 5dB
902	15.42	QP	22.9	9.9	48.22	46.02	2.2	126	104	V	Low Ch03 Y-Axis Attn 5dB
902	15.02	QP	22.9	9.9	47.82	46.02	1.8	126	104	V	Low Ch04 Y-Axis Attn 5dB
902	14.44	QP	22.9	9.9	47.24	46.02	1.22	126	104	V	Low Ch05 Y-Axis Attn 5dB
902	14.04	QP	22.9	9.9	46.84	46.02	0.82	126	104	V	Low Ch06 Y-Axis Attn 5dB
902	13.38	QP	22.9	9.9	46.18	46.02	0.16	126	104	V	Low Ch07 Y-Axis Attn 5dB
902	12.78	QP	22.9	9.9	45.58	46.02	-0.44	126	104	V	Low Ch08 Y-Axis Attn 5dB

BANDEDGE Measurements – High Band Edge

All Band Edge data is based on the worst case fundamental orientation measured near the top end of the band

Summary of Necessary attenuation at the high Band Edge

Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	Notes
928	11.91	QP	23.3	10	45.21	46.02	-0.81	120	100	V	1 - High Ch54 Y-Axis Attn 5dB
928	12.4	QP	23.3	10	45.7	46.02	-0.32	120	100	V	2 - High Ch55 Y-Axis Attn 5dB
928	11.63	QP	23.3	10	44.93	46.02	-1.09	120	100	V	3 - High Ch56 Y-Axis Attn 7.5dB
928	11.95	QP	23.3	10	45.25	46.02	-0.77	120	100	V	4 - High Ch57 Y-Axis Attn 7.5dB
928	12.25	QP	23.3	10	45.55	46.02	-0.47	120	100	V	5 - High Ch58 Y-Axis Attn 7.5dB
928	12.59	QP	23.3	10	45.89	46.02	-0.13	120	100	V	6 - High Ch59 Y-Axis Attn 7.5dB
928	11.95	QP	23.3	10	45.25	46.02	-0.77	120	100	V	7 - High Ch60 Y-Axis Attn 10dB
928	12.13	QP	23.3	10	45.43	46.02	-0.59	120	100	V	8 - High Ch61 Y-Axis Attn 10dB
928	12.35	QP	23.3	10	45.65	46.02	-0.37	120	100	V	9 - High Ch62 Y-Axis Attn 10dB
928	12.51	QP	23.3	10	45.81	46.02	-0.21	120	100	V	10 - High Ch63 Y-Axis Attn 10dB

High Band Edge with 5dB attenuation – complete set of data – use for reference only. For compliance use data summary on previous page

Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	Notes
928	11.91	QP	23.3	10	45.21	46.02	-0.81	120	100	V	1 - High Ch54 Y-Axis Attn 5dB
928	12.4	QP	23.3	10	45.7	46.02	-0.32	120	100	V	2 - High Ch55 Y-Axis Attn 5dB
928	12.89	QP	23.3	10	46.19	46.02	0.17	120	100	V	3 - High Ch56 Y-Axis Attn 5dB
928	13.37	QP	23.3	10	46.67	46.02	0.65	120	100	V	4 - High Ch57 Y-Axis Attn 5dB
928	13.88	QP	23.3	10	47.18	46.02	1.16	120	100	V	5 - High Ch58 Y-Axis Attn 5dB
928	14.18	QP	23.3	10	47.48	46.02	1.46	120	100	V	6 - High Ch59 Y-Axis Attn 5dB
928	14.57	QP	23.3	10	47.87	46.02	1.85	120	100	V	7 - High Ch60 Y-Axis Attn 5dB
928	14.84	QP	23.3	10	48.14	46.02	2.12	120	100	V	8 - High Ch61 Y-Axis Attn 5dB
928	15.25	QP	23.3	10	48.55	46.02	2.53	120	100	V	9 - High Ch62 Y-Axis Attn 5dB
928	15.5	QP	23.3	10	48.8	46.02	2.78	120	100	V	10 - High Ch63 Y-Axis Attn 5dB

High Band Edge with 7.5dB attenuation – complete set of data – use for reference only. For compliance use data summary on previous page

Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	Notes
928	11	QP	23.3	10	44.3	46.02	-1.72	120	100	V	1 - High Ch54 Y-Axis Attn 7.5dB
928	11.31	QP	23.3	10	44.61	46.02	-1.41	120	100	V	2 - High Ch55 Y-Axis Attn 7.5dB
928	11.63	QP	23.3	10	44.93	46.02	-1.09	120	100	V	3 - High Ch56 Y-Axis Attn 7.5dB
928	11.95	QP	23.3	10	45.25	46.02	-0.77	120	100	V	4 - High Ch57 Y-Axis Attn 7.5dB
928	12.25	QP	23.3	10	45.55	46.02	-0.47	120	100	V	5 - High Ch58 Y-Axis Attn 7.5dB
928	12.59	QP	23.3	10	45.89	46.02	-0.13	120	100	V	6 - High Ch59 Y-Axis Attn 7.5dB
928	12.84	QP	23.3	10	46.14	46.02	0.12	120	100	V	7 - High Ch60 Y-Axis Attn 7.5dB
928	13.12	QP	23.3	10	46.42	46.02	0.4	120	100	V	8 - High Ch61 Y-Axis Attn 7.5dB
928	13.4	QP	23.3	10	46.7	46.02	0.68	120	100	V	9 - High Ch62 Y-Axis Attn 7.5dB
928	13.57	QP	23.3	10	46.87	46.02	0.85	120	100	V	10 - High Ch63 Y-Axis Attn 7.5dB

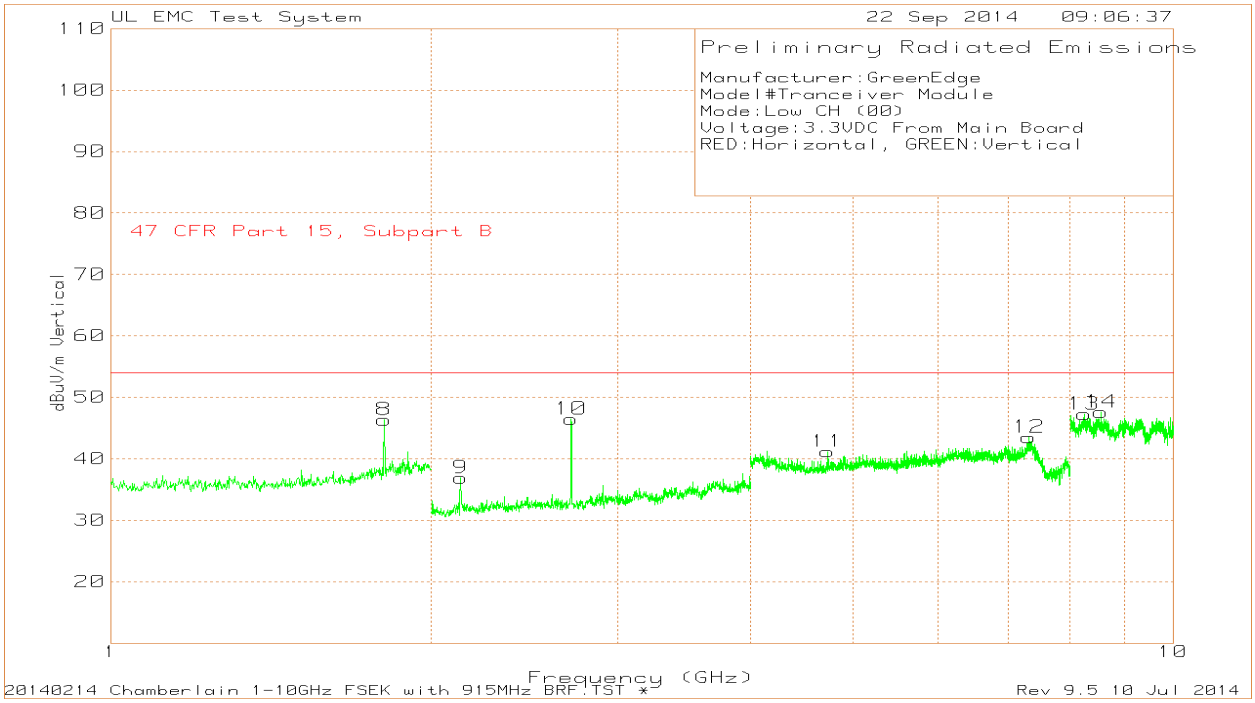
High Band Edge with 10dB attenuation – complete set of data – use for reference only. For compliance use data summary on previous page.

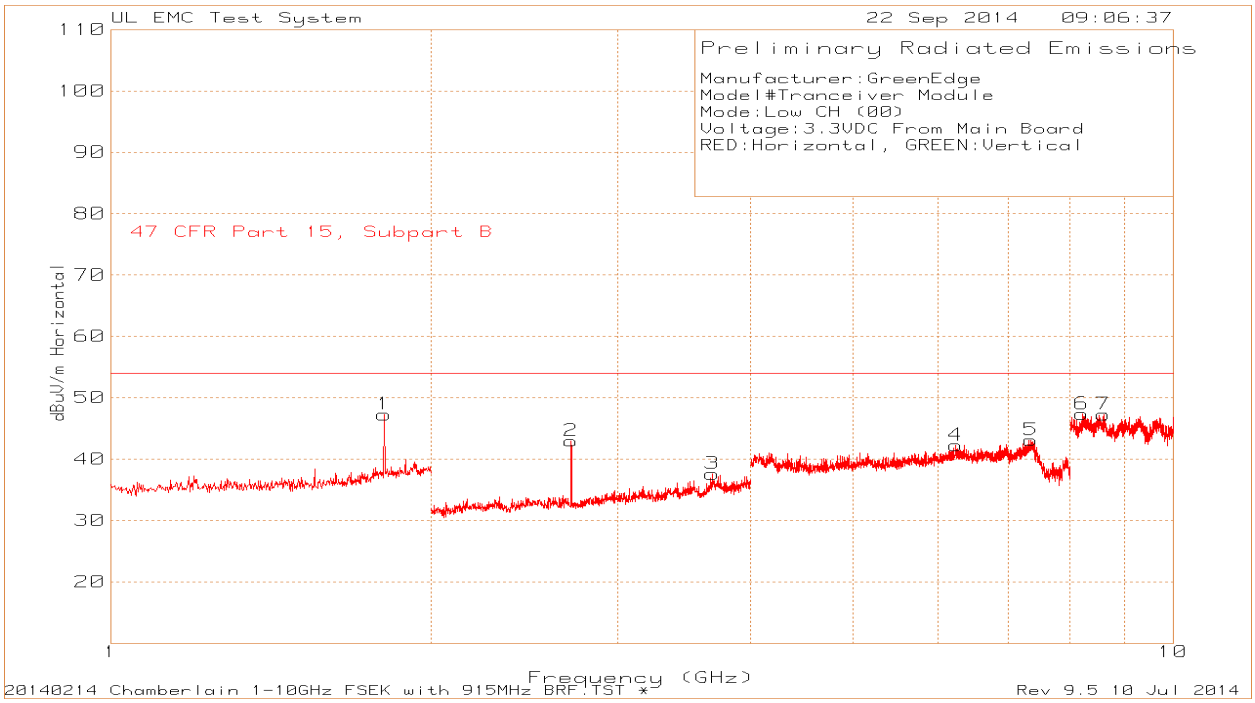
Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	Notes
928	10.57	QP	23.3	10	43.87	46.02	-2.15	120	100	V	1 - High Ch54 Y-Axis Attn 10dB
928	10.77	QP	23.3	10	44.07	46.02	-1.95	120	100	V	2 - High Ch55 Y-Axis Attn 10dB
928	11.05	QP	23.3	10	44.35	46.02	-1.67	120	100	V	3 - High Ch56 Y-Axis Attn 10dB
928	11.28	QP	23.3	10	44.58	46.02	-1.44	120	100	V	4 - High Ch57 Y-Axis Attn 10dB
928	11.57	QP	23.3	10	44.87	46.02	-1.15	120	100	V	5 - High Ch58 Y-Axis Attn 10dB
928	11.75	QP	23.3	10	45.05	46.02	-0.97	120	100	V	6 - High Ch59 Y-Axis Attn 10dB
928	11.95	QP	23.3	10	45.25	46.02	-0.77	120	100	V	7 - High Ch60 Y-Axis Attn 10dB
928	12.13	QP	23.3	10	45.43	46.02	-0.59	120	100	V	8 - High Ch61 Y-Axis Attn 10dB
928	12.35	QP	23.3	10	45.65	46.02	-0.37	120	100	V	9 - High Ch62 Y-Axis Attn 10dB
928	12.51	QP	23.3	10	45.81	46.02	-0.21	120	100	V	10 - High Ch63 Y-Axis Attn 10dB

7.2.3. HARMONICS AND SPURIOUS EMISSIONS ABOVE 1GHz

X-Axis Data

Low Channel Plot





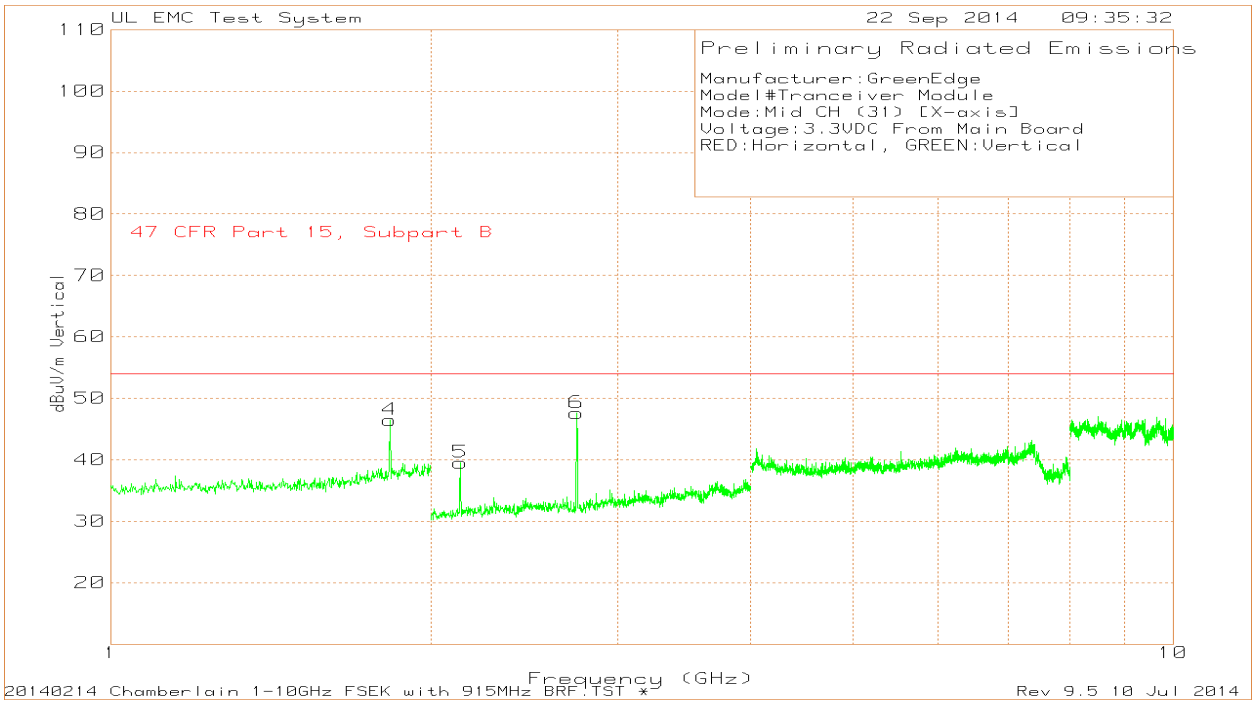
Low Channel Data

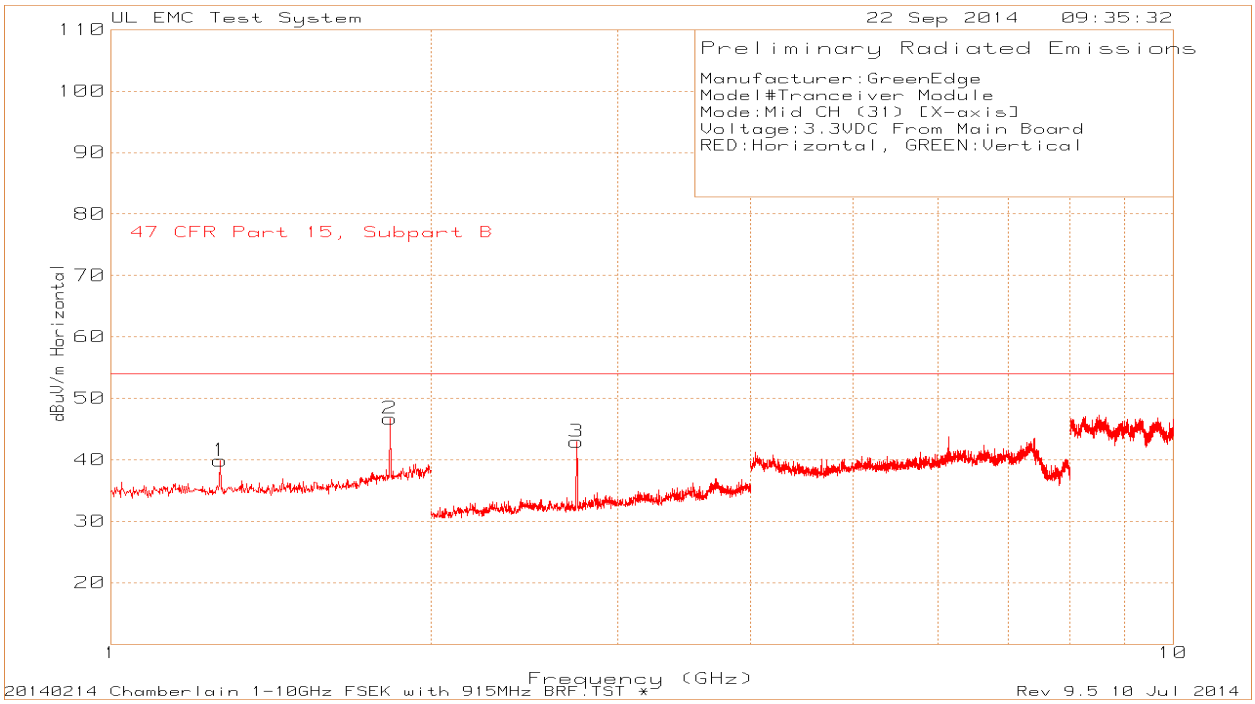
Manufacturer:GreenEdge
Model#Tranceiver Module
Mode:Low CH (00)
Voltage:3.3VDC From Main Board
RED:Horizontal, GREEN:Vertical
Trace Markers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	915MHz BRF Factor dB	Path Factor dB	Corrected Reading dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.8076	73.4	PK	27	0.4	-53.51	47.29	54	-6.71	0-360	150	H
2	2.7107	71.57	PK	22.1	0	-50.7	42.97	54	-11.03	0-360	150	H
3	3.6837	62.84	PK	23.5	0	-48.72	37.62	54	-16.38	0-360	150	H
4	6.2431	60.01	PK	29.2	0	-46.99	42.22	54	-11.78	0-360	150	H
5	7.3477	58.11	PK	30.8	0	-45.81	43.1	54	-10.9	0-360	150	H
6	8.2082	58.4	PK	36.3	0	-47.35	47.35	54	-6.65	0-360	150	H
7	8.6006	59.88	PK	36.5	0	-49.1	47.28	54	-6.72	0-360	150	H
8	1.8076	72.45	PK	27	0.4	-53.51	46.34	54	-7.66	0-360	150	V
9	2.1341	67.45	PK	21.5	0	-52.06	36.89	54	-17.11	0-360	150	V
10	2.7107	75.05	PK	22.1	0	-50.7	46.45	54	-7.55	0-360	150	V
11	4.7284	64.68	PK	27.7	0	-51.21	41.17	54	-12.83	0-360	150	V
12	7.3137	58.58	PK	30.6	0	-45.71	43.47	54	-10.53	0-360	150	V
13	8.2462	57.89	PK	36.4	0	-47.05	47.24	54	-6.76	0-360	150	V
14	8.5546	59.48	PK	36.6	0	-48.51	47.57	54	-6.43	0-360	150	V

PK - Peak detector

Middle Channel Plot





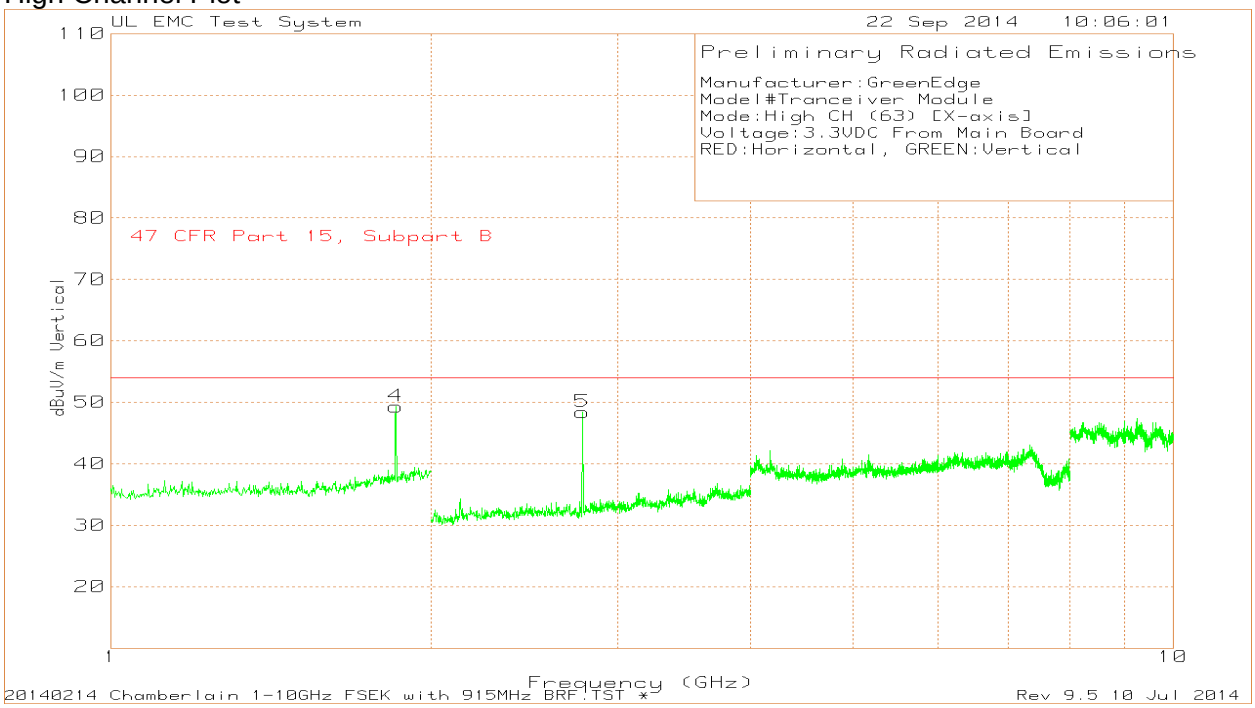
Middle Channel Data

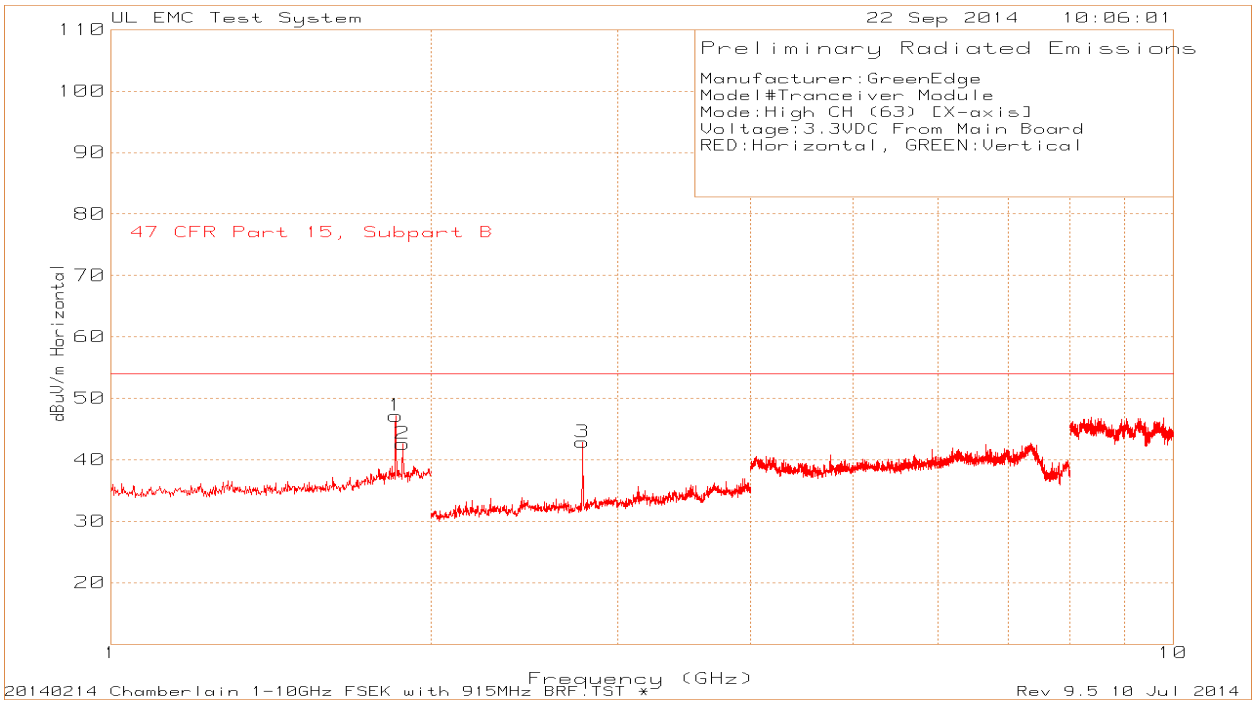
Manufacturer:GreenEdge
Model#Tranceiver Module
Mode:Mid CH (31) [X-axis]
Voltage:3.3VDC From Main Board
RED:Horizontal, GREEN:Vertical
Trace Markers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	915MHz BRF Factor dB	Path Factor dB	Corrected Reading dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.2665	69.73	PK	25.2	0.3	-55.4	39.83	54	-14.17	0-360	102	H
2	1.8317	72.72	PK	27.1	0.4	-53.52	46.7	54	-7.3	0-360	150	H
3	2.7447	71.5	PK	22.1	0	-50.67	42.93	54	-11.07	0-360	150	H
4	1.8297	72.48	PK	27.1	0.4	-53.52	46.46	54	-7.54	0-360	150	V
5	2.1321	70.12	PK	21.5	0	-52.09	39.53	54	-14.47	0-360	150	V
6	2.7447	76.17	PK	22.1	0	-50.67	47.6	54	-6.4	0-360	150	V

PK - Peak detector

High Channel Plot



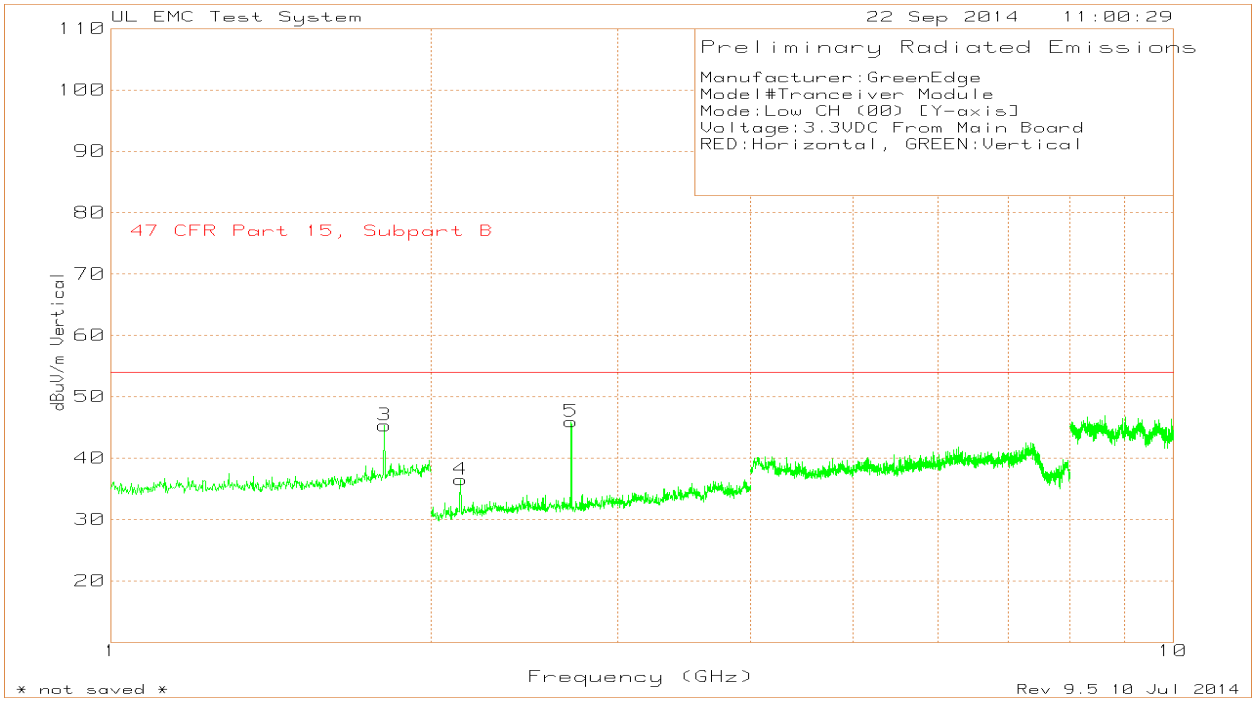


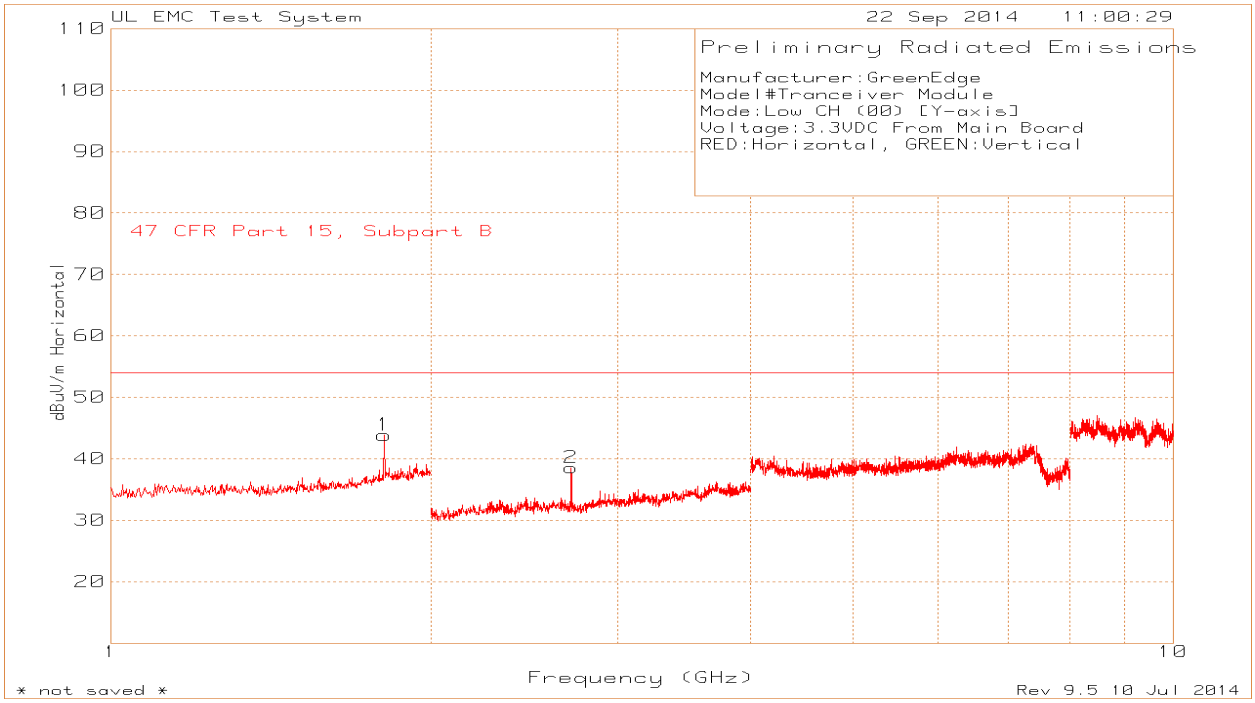
High Channel Data

Manufacturer:GreenEdge												
Model#Tranceiver Module												
Mode:High CH (63) [X-axis]												
Voltage:3.3VDC From Main Board												
RED:Horizontal, GREEN:Vertical												
Trace Markers												
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	915MHz BRF Factor dB	Path Factor dB	Corrected Reading dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.8537	72.87	PK	27.3	0.4	-53.41	47.16	54	-6.84	0-360	150	H
2	1.8818	67.9	PK	27.5	0.4	-53.21	42.59	54	-11.41	0-360	101	H
3	2.7788	71.18	PK	22.2	0	-50.51	42.87	54	-11.13	0-360	150	H
4	1.8537	75.04	PK	27.3	0.4	-53.41	49.33	54	-4.67	0-360	150	V
5	2.7788	76.72	PK	22.2	0	-50.51	48.41	54	-5.59	0-360	150	V
PK - Peak detector												

Y-Axis Data

Low Channel Plot





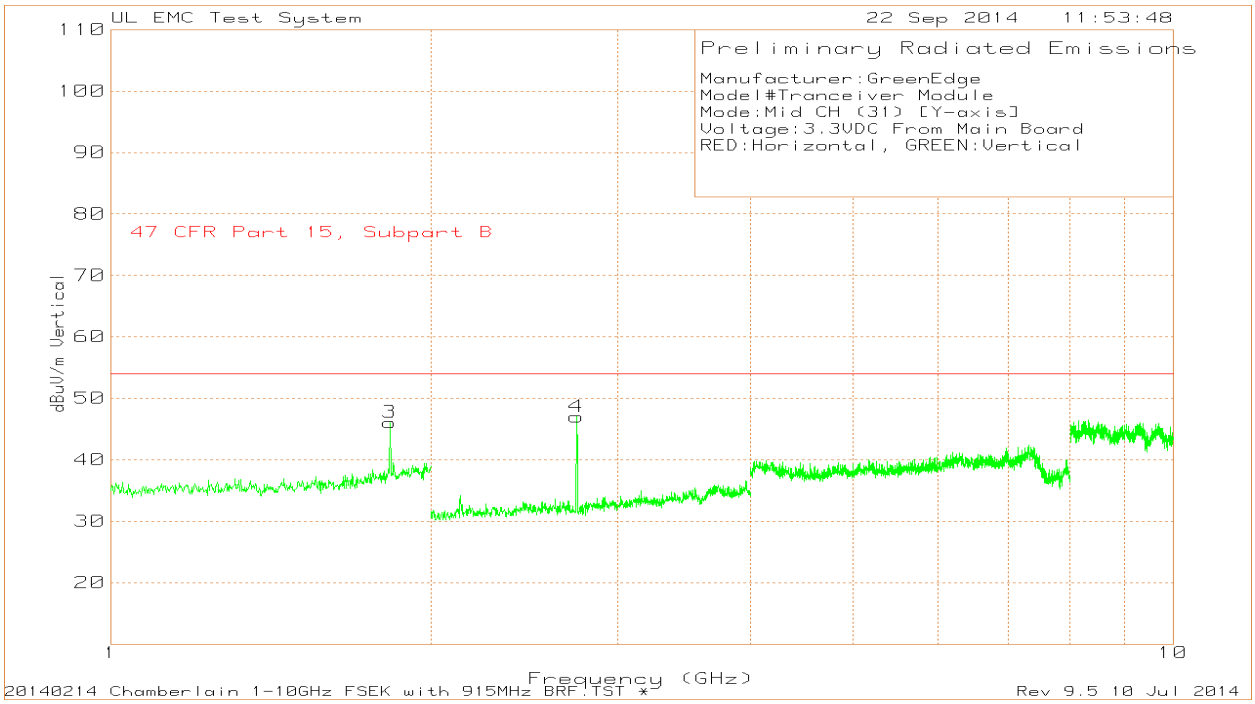
Low Channel Data

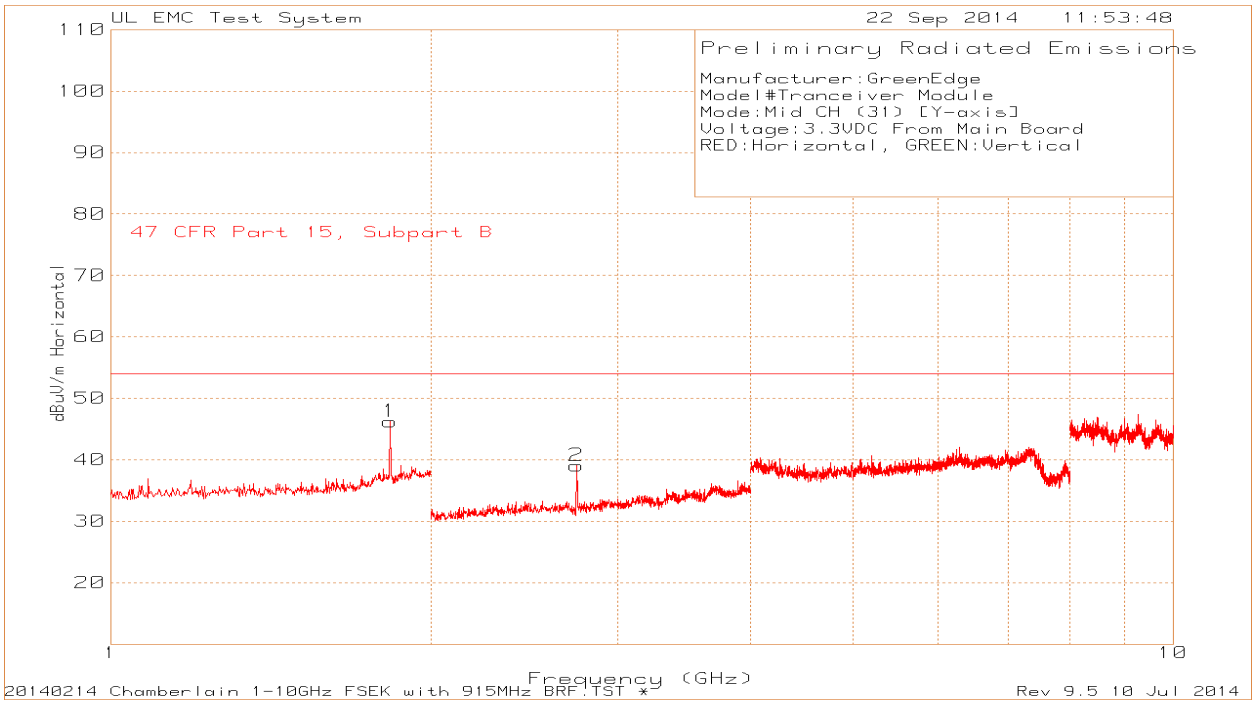
Manufacturer: GreenEdge
Model#Tranceiver Module
Mode: Low CH (00) [Y-axis]
Voltage: 3.3VDC From Main Board
RED: Horizontal, GREEN: Vertical
Trace Markers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	915MHz BRF Factor dB	Path Factor dB	Corrected Reading dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.8076	69.93	PK	27	0.4	-53.51	43.82	54	-10.18	0-360	150	H
2	2.7107	67.16	PK	22.1	0	-50.7	38.56	54	-15.44	0-360	150	H
3	1.8096	71.46	PK	27	0.4	-53.52	45.34	54	-8.66	0-360	150	V
4	2.1341	67.08	PK	21.5	0	-52.06	36.52	54	-17.48	0-360	150	V
5	2.7107	74.56	PK	22.1	0	-50.7	45.96	54	-8.04	0-360	150	V

PK - Peak detector

Middle Channel Plot

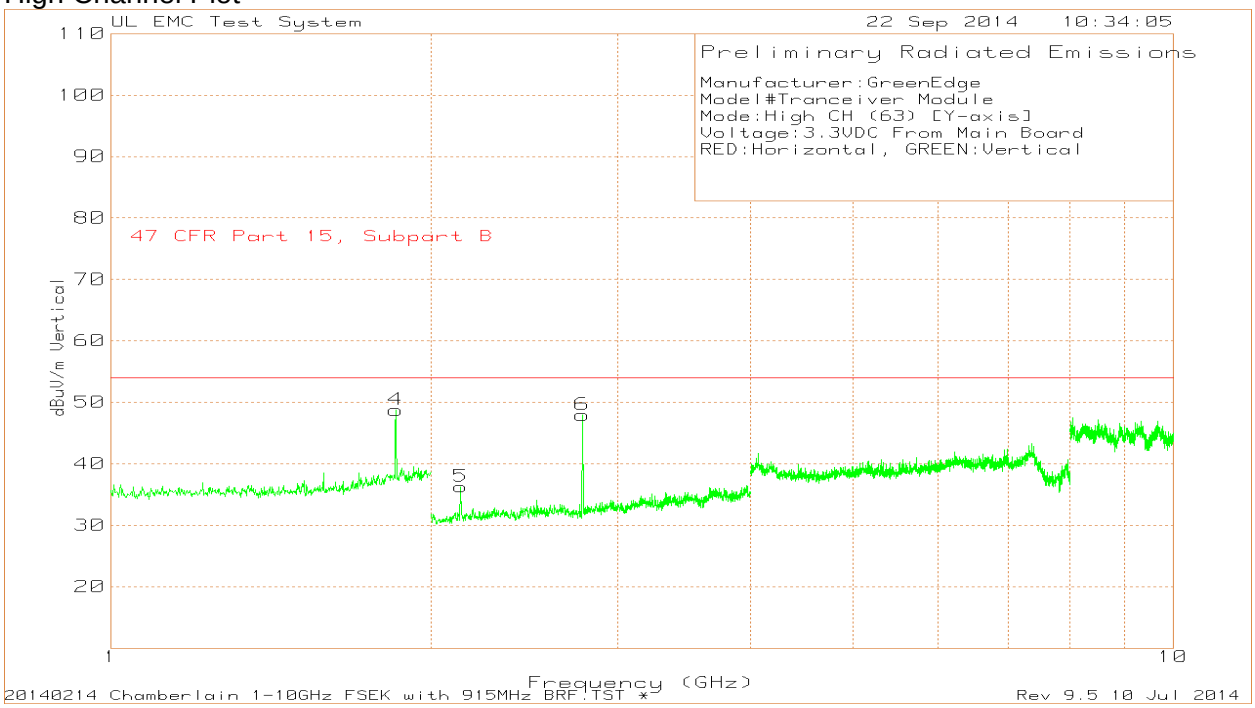


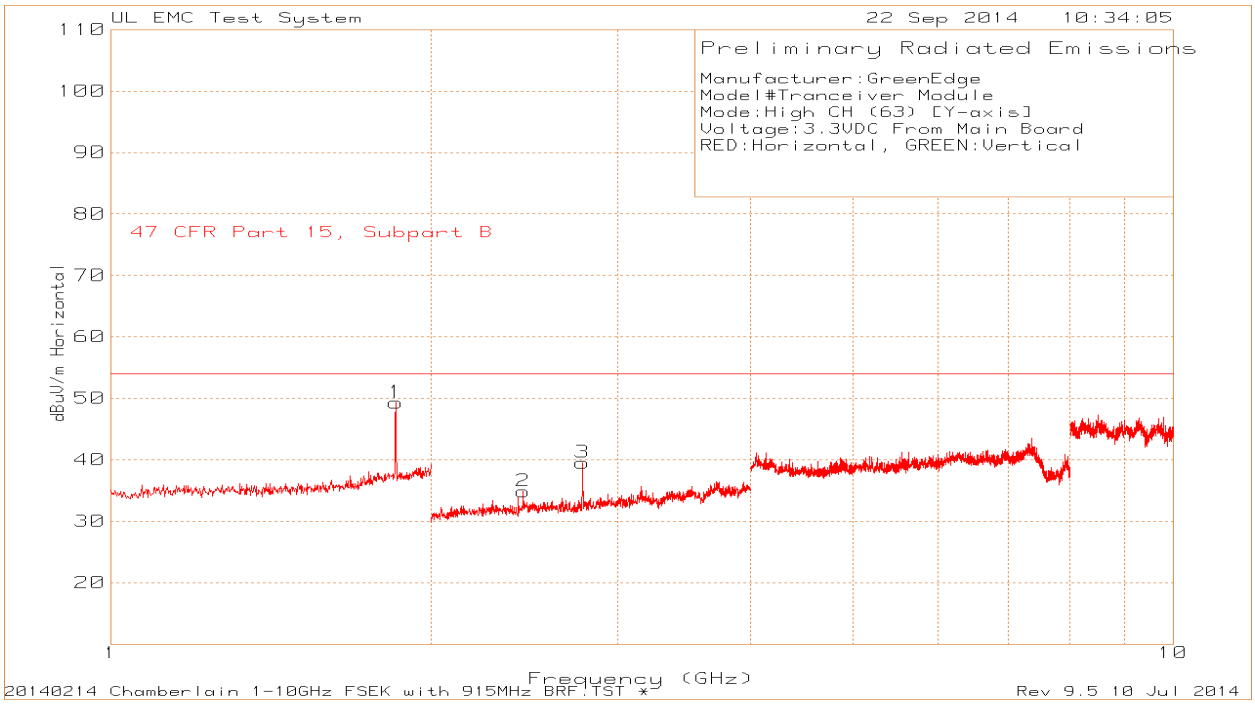


Middle Channel Data

Manufacturer:GreenEdge												
Model#Tranceiver Module												
Mode:Mid CH (31) [Y-axis]												
Voltage:3.3VDC From Main Board												
RED:Horizontal, GREEN:Vertical												
Trace Markers												
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	915MHz BRF Factor dB	Path Factor dB	Corrected Reading dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.8317	72.22	PK	27.1	0.4	-53.52	46.2	54	-7.8	0-360	96	H
2	2.7447	67.6	PK	22.1	0	-50.67	39.03	54	-14.97	0-360	150	H
3	1.8297	72.09	PK	27.1	0.4	-53.52	46.07	54	-7.93	0-360	150	V
4	2.7447	75.56	PK	22.1	0	-50.67	46.99	54	-7.01	0-360	150	V
PK - Peak detector												

High Channel Plot



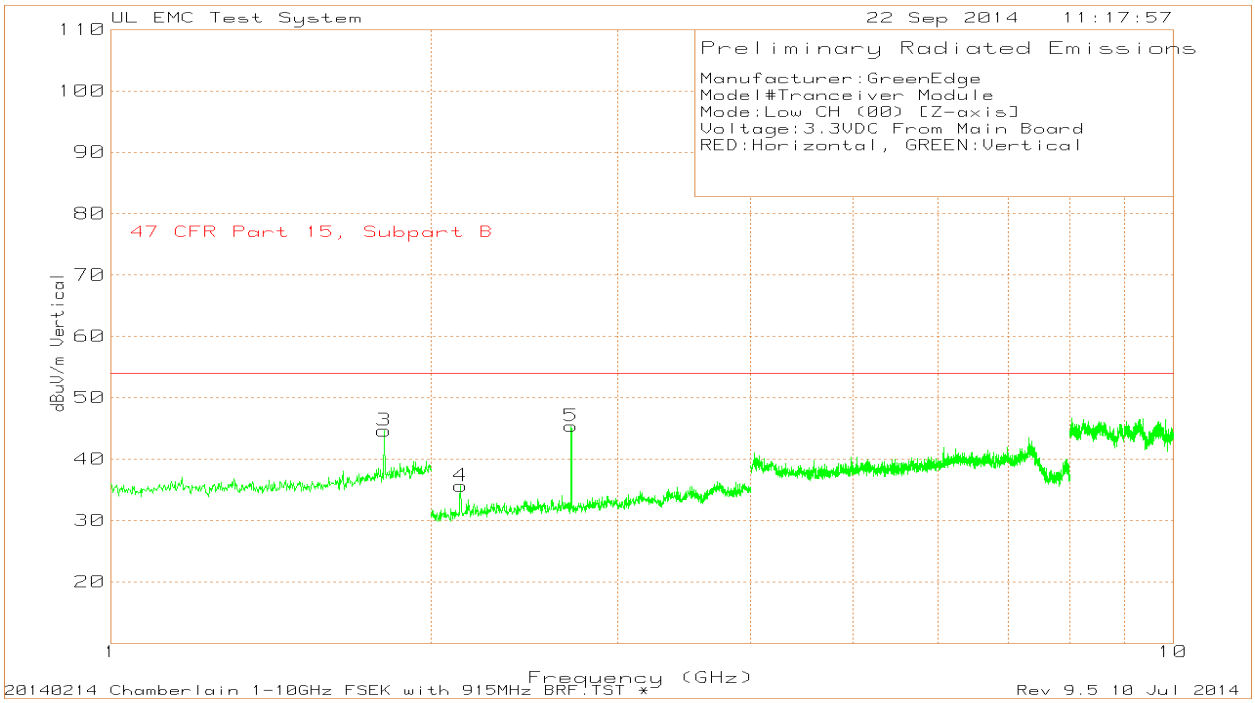


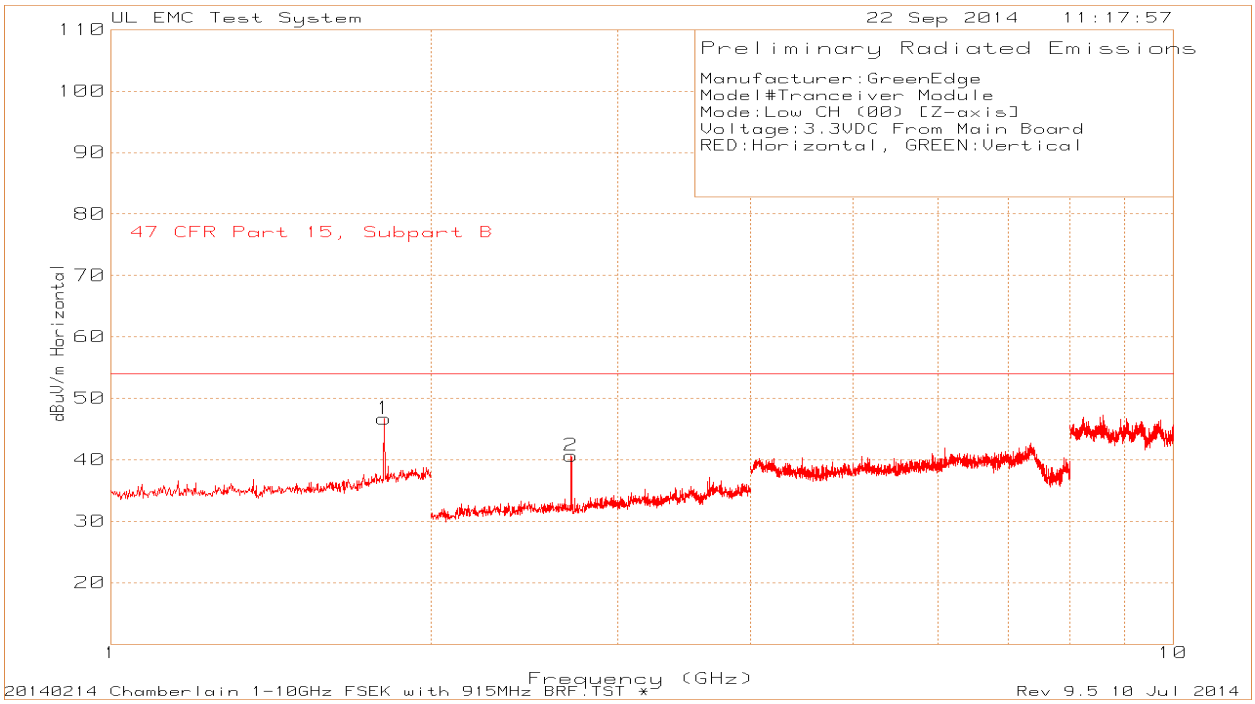
High Channel Data

Manufacturer:GreenEdge												
Model#Tranceiver Module												
Mode:High CH (63) [Y-axis]												
Voltage:3.3VDC From Main Board												
RED:Horizontal, GREEN:Vertical												
Trace Markers												
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	915MHz BRF Factor dB	Path Factor dB	Corrected Reading dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.8537	75	PK	27.3	0.4	-53.41	49.29	54	-4.71	0-360	150	H
2	2.4444	63.49	PK	21.9	0	-50.53	34.86	54	-19.14	0-360	150	H
3	2.7788	67.84	PK	22.2	0	-50.51	39.53	54	-14.47	0-360	150	H
4	1.8537	74.47	PK	27.3	0.4	-53.41	48.76	54	-5.24	0-360	150	V
5	2.1341	66.84	PK	21.5	0	-52.06	36.28	54	-17.72	0-360	150	V
6	2.7788	76.28	PK	22.2	0	-50.51	47.97	54	-6.03	0-360	150	V
PK - Peak detector												

Z-Axis Data

Low Channel Plot





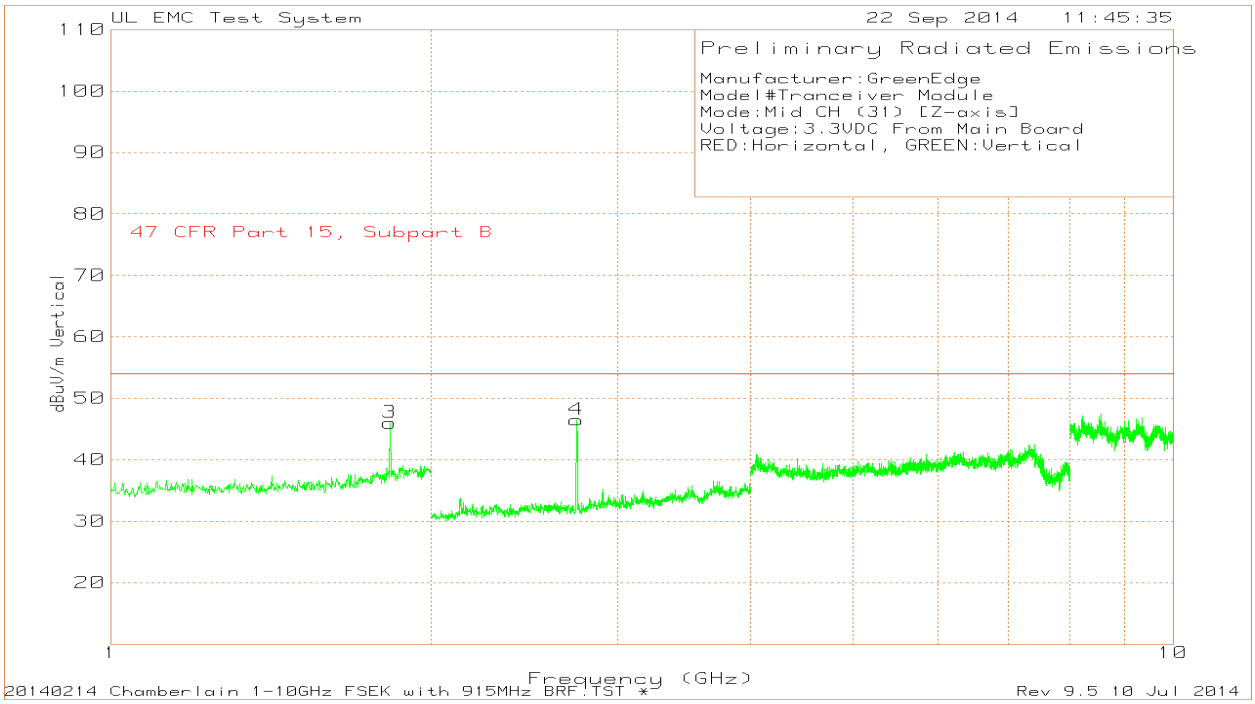
Low Channel Data

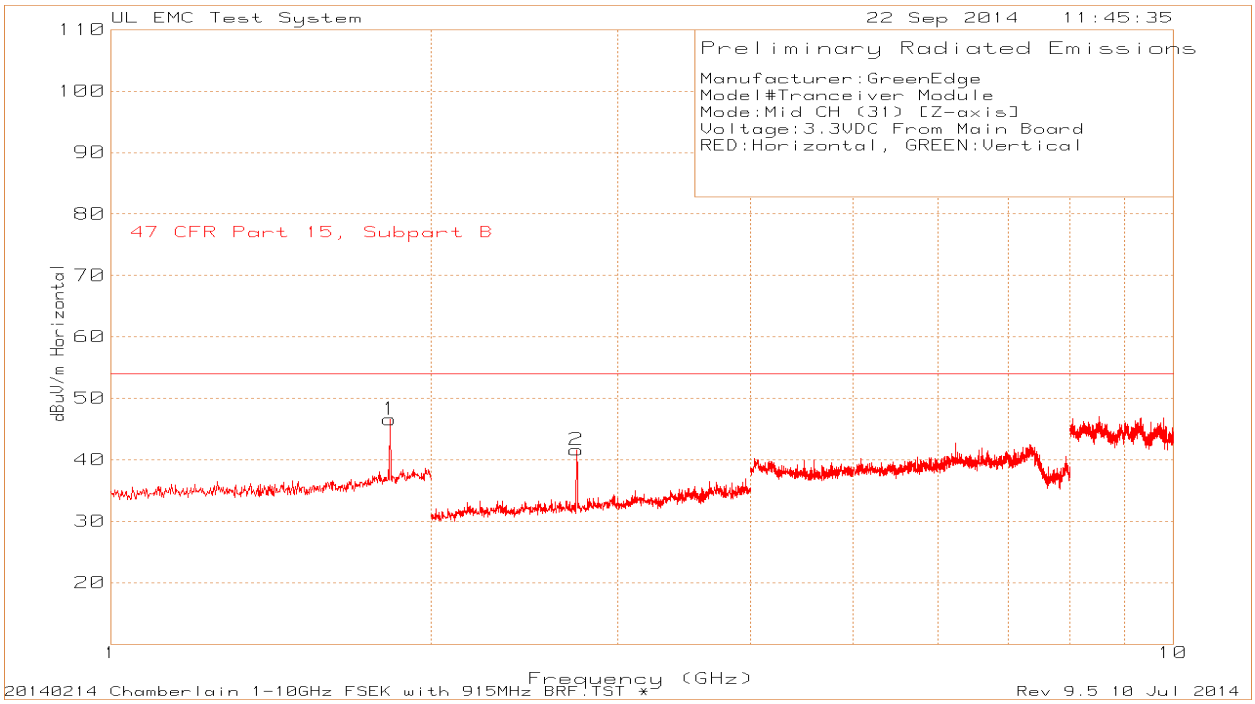
Manufacturer: GreenEdge
Model#Tranceiver Module
Mode: Low CH (00) [Z-axis]
Voltage: 3.3VDC From Main Board
RED: Horizontal, GREEN: Vertical
Trace Markers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	915MHz BRF Factor dB	Path Factor dB	Corrected Reading dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.8076	72.79	PK	27	0.4	-53.51	46.68	54	-7.32	0-360	99	H
2	2.7107	69.29	PK	22.1	0	-50.7	40.69	54	-13.31	0-360	150	H
3	1.8076	70.78	PK	27	0.4	-53.51	44.67	54	-9.33	0-360	150	V
4	2.1341	66.2	PK	21.5	0	-52.06	35.64	54	-18.36	0-360	150	V
5	2.7107	73.98	PK	22.1	0	-50.7	45.38	54	-8.62	0-360	150	V

PK - Peak detector

Middle Channel Plot





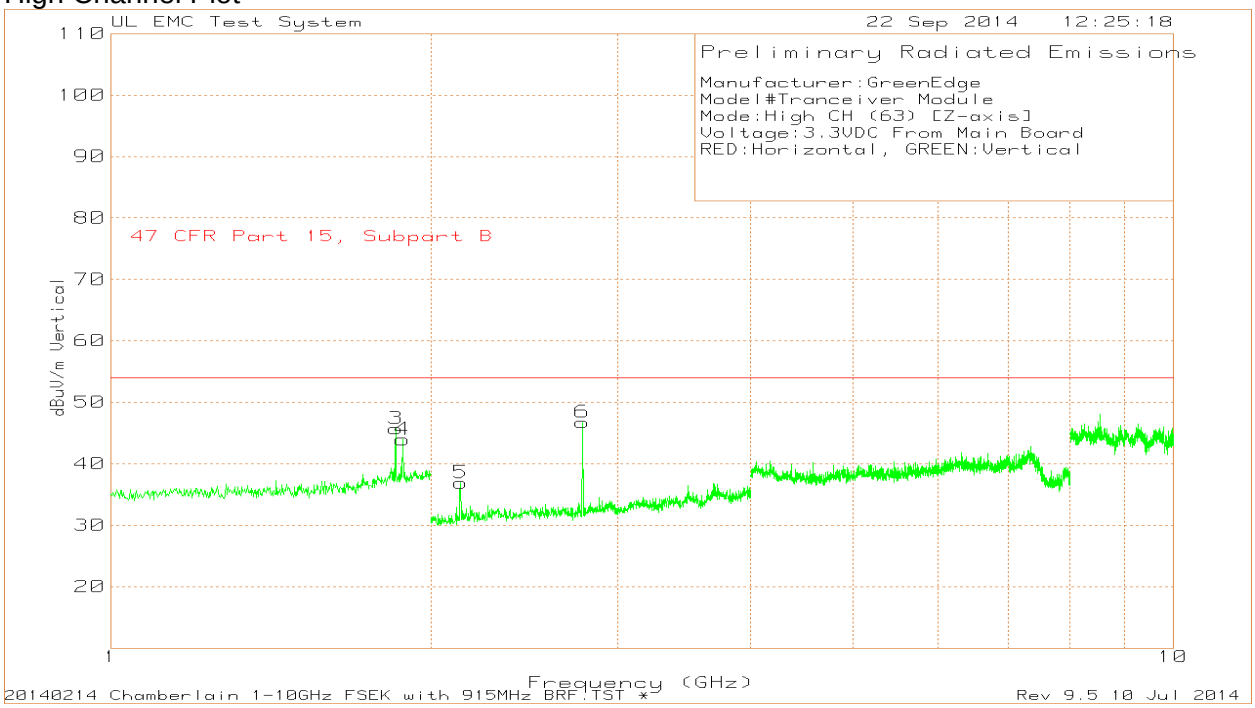
Middle Channel Data

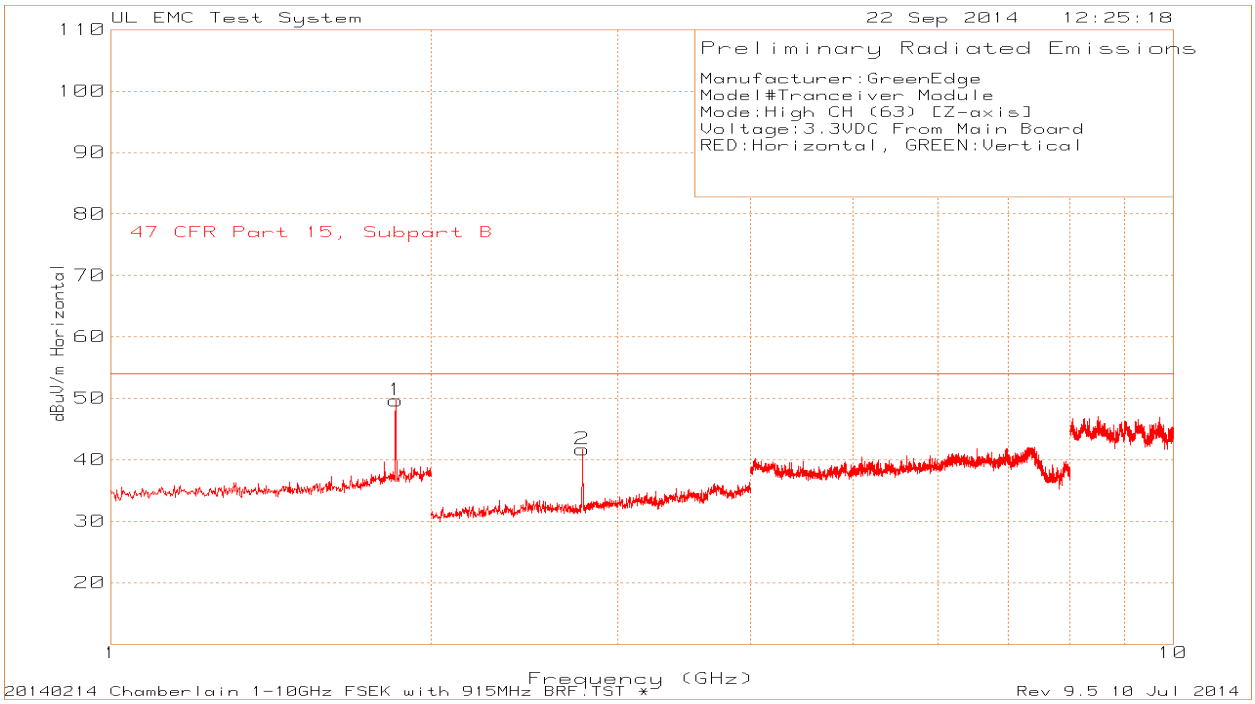
Manufacturer:GreenEdge
Model#Tranceiver Module
Mode:Mid CH (31) [Z-axis]
Voltage:3.3VDC From Main Board
RED:Horizontal, GREEN:Vertical
Trace Markers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	915MHz BRF Factor dB	Path Factor dB	Corrected Reading dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.8297	72.59	PK	27.1	0.4	-53.52	46.57	54	-7.43	0-360	150	H
2	2.7447	70.18	PK	22.1		-50.67	41.61	54	-12.39	0-360	150	H
3	1.8297	72.06	PK	27.1	0.4	-53.52	46.04	54	-7.96	0-360	150	V
4	2.7447	75.07	PK	22.1		-50.67	46.5	54	-7.5	0-360	150	V

PK - Peak detector

High Channel Plot





High Channel Data

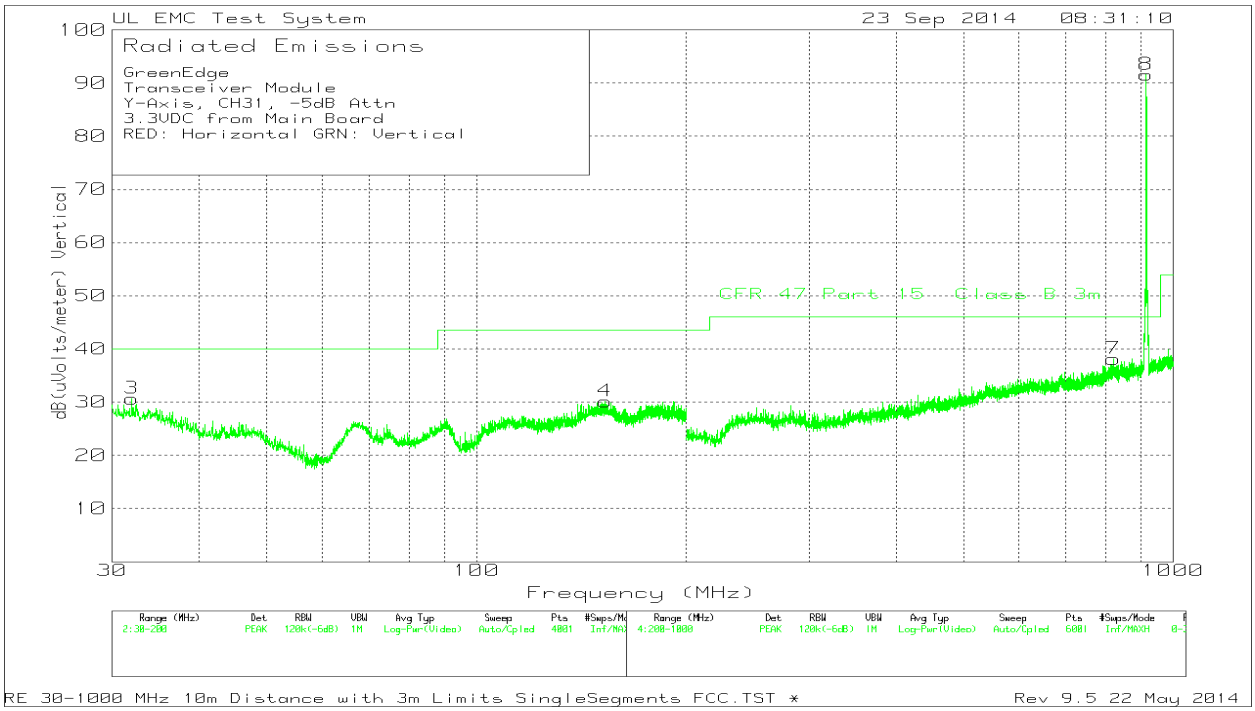
Manufacturer:GreenEdge
Model#Tranceiver Module
Mode:High CH (63) [Z-axis]
Voltage:3.3VDC From Main Board
RED:Horizontal, GREEN:Vertical
Trace Markers

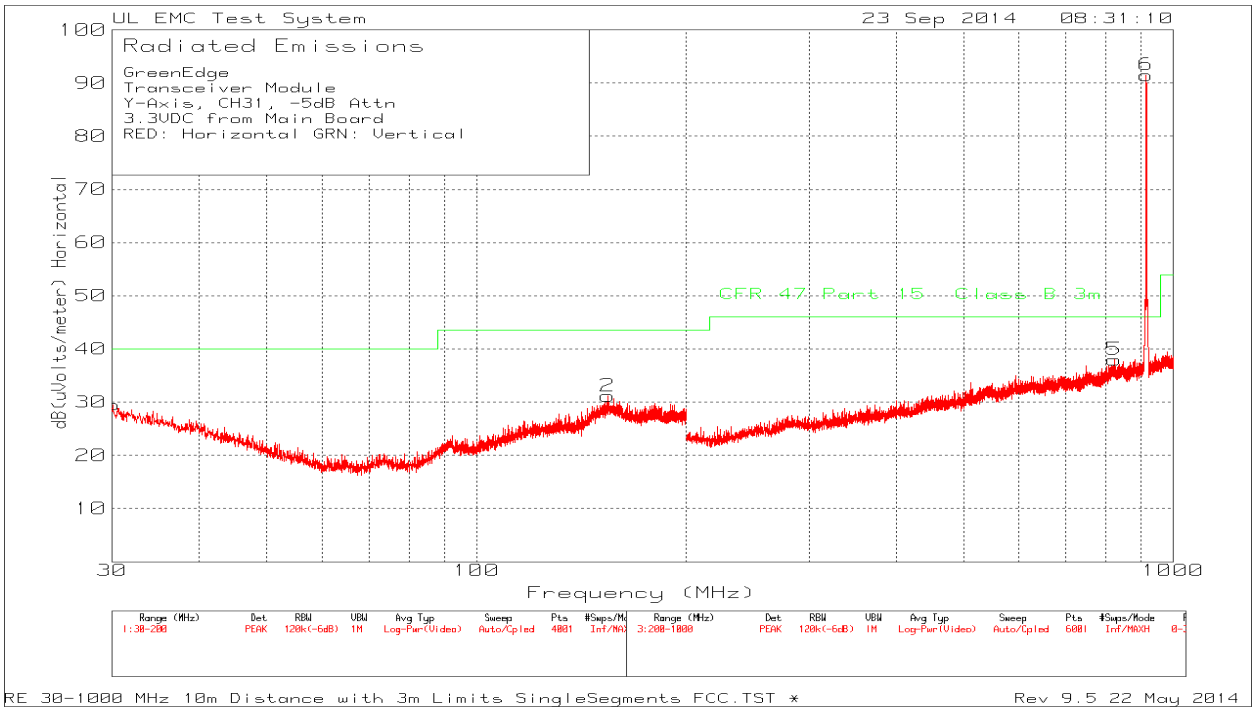
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	915MHz BRF Factor dB	Path Factor dB	Corrected Reading dBuV/m	Limit 47 CFR Part 15.249 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.8537	75.37	PK	27.3	0.4	-53.41	49.66	54	-4.34	0-360	150	H
2	2.7788	70	PK	22.2	0	-50.51	41.69	54	-12.31	0-360	150	H
3	1.8537	71.44	PK	27.3	0.4	-53.41	45.73	54	-8.27	0-360	150	V
4	1.8818	69.25	PK	27.5	0.4	-53.21	43.94	54	-10.06	0-360	150	V
5	2.1341	67.45	PK	21.5	0	-52.06	36.89	54	-17.11	0-360	150	V
6	2.7788	75.05	PK	22.2	0	-50.51	46.74	54	-7.26	0-360	150	V

PK - Peak detector

7.2.4. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz





GreenEdge
Transceiver Module
Y-Axis, CH31, -5dB Attn
3.3VDC from Main Board
RED: Horizontal GRN: Vertical
Trace Markers

Marker No.	Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	30.0425	31.23	PK	17.9	-30.1	10.5	29.53	40	-10.47	0-360	249	H
2	154.355	35.46	PK	14.8	-29.6	10.5	31.16	43.52	-12.36	0-360	400	H
3	31.9975	33.25	PK	17	-30.1	10.5	30.65	40	-9.35	0-360	99	V
4	152.995	34.47	PK	14.8	-29.6	10.5	30.17	43.52	-13.35	0-360	99	V
5	822.9318	29.56	PK	22.6	-24.7	10.5	37.96	46.02	-8.06	0-360	100	H
6	*914.9315	82.49	PK	23.1	-24.6	10.5	91.49	-	-	0-360	100	H
7	820.2651	29.67	PK	22.8	-24.8	10.5	38.17	46.02	-7.85	0-360	299	V
8	*914.6649	82.55	PK	23.1	-24.6	10.5	91.55	-	-	0-360	199	V

PK - Peak detector * - Fundamental Emission, see fundamental emissions section of this report

8. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207 (a)
IC RSS-GEN, Section 7.2.2

Frequency of emission (MHz)	Conducted Limit (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50
* Decreases with the logarithm of the frequency.		

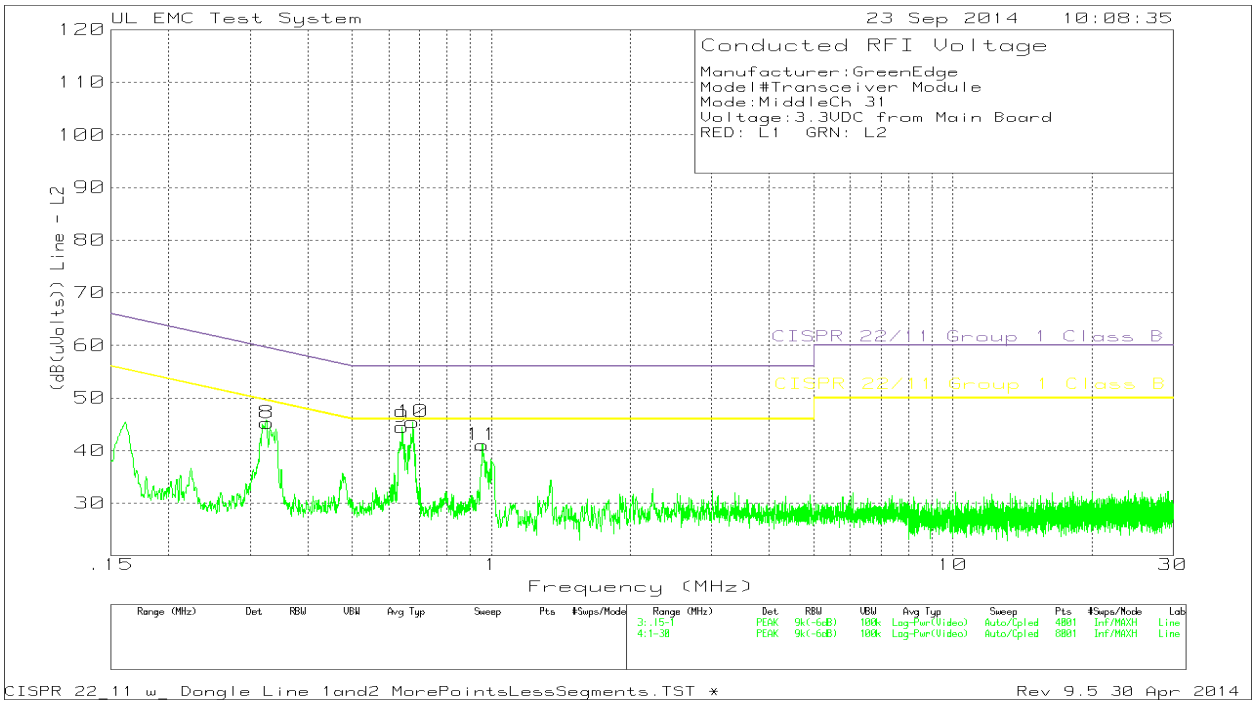
TEST PROCEDURE

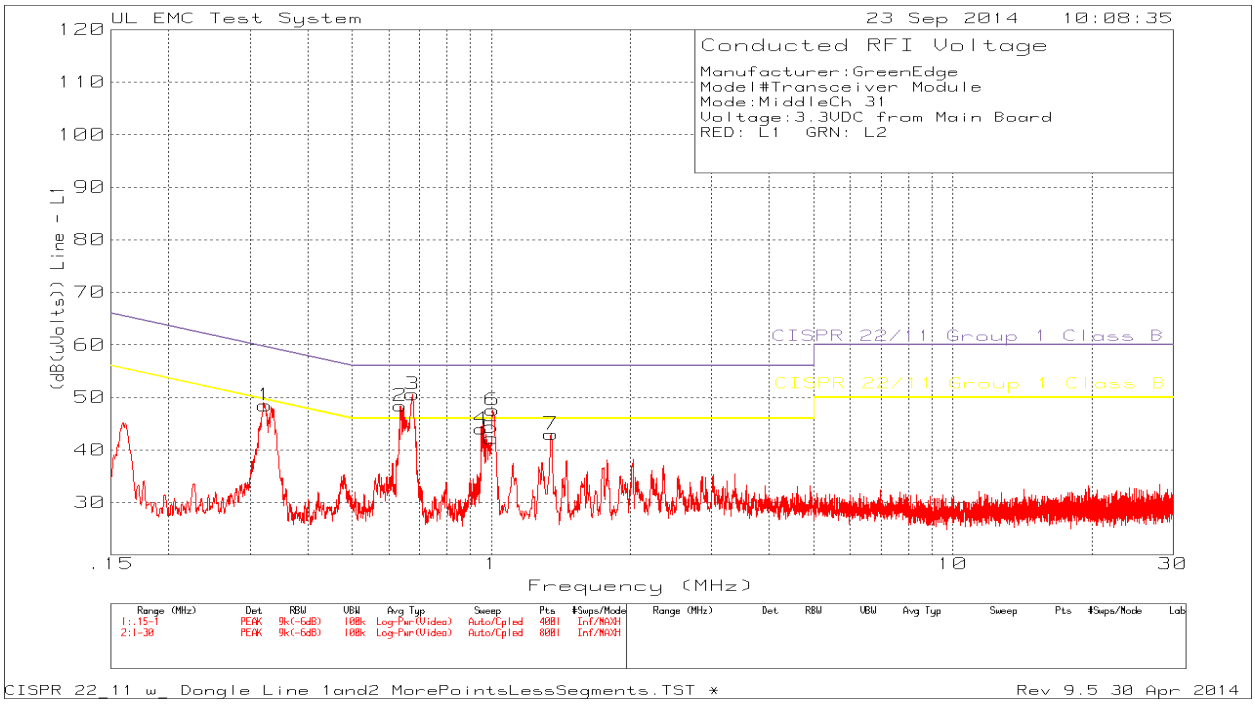
ANSI C63.4

RESULTS

No non-compliance noted:

Mid Channel – with Representative Supply - Graph





Mid Channel – with Representative Supply – Tabular Results

Manufacturer:GreenEdge
Model#Transceiver Module
Mode:MiddleCh 31
Voltage:3.3VDC from Main Board
RED: L1 GRN: L2

Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading (dB(uVolts))	Limit:1	2	3	4	5	6
Line - L1 .15 - 1MHz											
1	.32328	37.6dBuV PK	.1	10.8	48.5	-	-	59.62	49.62	-	-
					Margin (dB)	-	-	-11.12	-1.12	-	-
2	.63521	37.71dBuV PK	.1	10.6	48.41	-	-	56	46	-	-
					Margin (dB)	-	-	-7.59	2.41	-	-
3	.67505	39.89dBuV PK	.1	10.6	50.59	-	-	56	46	-	-
					Margin (dB)	-	-	-5.41	4.59	-	-
4	.95131	33.3dBuV PK	.1	10.6	44	-	-	56	46	-	-
					Margin (dB)	-	-	-12	-2	-	-
5	1	31.51dBuV PK	.1	10.6	42.21	-	-	56	46	-	-
					Margin (dB)	-	-	-13.79	-3.79	-	-
Line - L1 1 - 30MHz											
6	1.00725	36.89dBuV PK	.1	10.6	47.59	-	-	56	46	-	-
					Margin (dB)	-	-	-8.41	1.59	-	-
7	1.348	32.27dBuV PK	.1	10.6	42.97	-	-	56	46	-	-
					Margin (dB)	-	-	-13.03	-3.03	-	-
Line - L2 .15 - 1MHz											
8	.32636	34.34dBuV PK	.1	10.8	45.24	-	-	59.54	49.54	-	-
					Margin (dB)	-	-	-14.3	-4.3	-	-
9	.64054	33.79dBuV PK	.1	10.6	44.49	-	-	56	46	-	-
					Margin (dB)	-	-	-11.51	-1.51	-	-
10	.67547	34.71dBuV PK	.1	10.6	45.41	-	-	56	46	-	-
					Margin (dB)	-	-	-10.59	-.59	-	-
11	.95599	30.37dBuV PK	.1	10.6	41.07	-	-	56	46	-	-
					Margin (dB)	-	-	-14.93	-4.93	-	-

LIMIT 3: CISPR 22/11 Group 1 Class B QP
LIMIT 4: CISPR 22/11 Group 1 Class B AV

PK - Peak detector

Manufacturer:GreenEdge
Model#Transceiver Module
Mode:MiddleCh 31
Voltage:3.3VDC from Main Board
RED: L1 GRN: L2

Quais-peak Data

Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading (dB(uVolts))	Limit:1	2	3	4	5	6
Line - L1 .15 - 1MHz										
.32263	35.15dBuV QP	.1	10.8	46.05	-	-	59.64	49.64	-	-
				Margin (dB):	-	-	-13.59	-3.59	-	-
.6393	34.07dBuV QP	0	10.6	44.67	-	-	56	46	-	-
				Margin (dB):	-	-	-11.33	-1.33	-	-
.67175	36.57dBuV QP	.1	10.6	47.27	-	-	56	46	-	-
				Margin (dB):	-	-	-8.73	1.27	-	-
.95439	30.84dBuV QP	.1	10.6	41.54	-	-	56	46	-	-
				Margin (dB):	-	-	-14.46	-4.46	-	-
.99928	27.44dBuV QP	.1	10.6	38.14	-	-	56	46	-	-
				Margin (dB):	-	-	-17.86	-7.86	-	-
Line - L1 1 - 30MHz										
1.01008	33.84dBuV QP	.1	10.6	44.54	-	-	56	46	-	-
				Margin (dB):	-	-	-11.46	-1.46	-	-
1.34612	28.51dBuV QP	.1	10.6	39.21	-	-	56	46	-	-
				Margin (dB):	-	-	-16.79	-6.79	-	-
Line - L2 .15 - 1MHz										
.32323	28.98dBuV QP	.1	10.8	39.88	-	-	59.62	49.62	-	-
				Margin (dB):	-	-	-19.74	-9.74	-	-
.64129	25.67dBuV QP	.1	10.6	36.37	-	-	56	46	-	-
				Margin (dB):	-	-	-19.63	-9.63	-	-
.67193	27.97dBuV QP	.1	10.6	38.67	-	-	56	46	-	-
				Margin (dB):	-	-	-17.33	-7.33	-	-
.95654	23.41dBuV QP	.1	10.6	34.11	-	-	56	46	-	-
				Margin (dB):	-	-	-21.89	-11.89	-	-

LIMIT 3: CISPR 22/11 Group 1 Class B QP
LIMIT 4: CISPR 22/11 Group 1 Class B AV

NOTE: "+" - Indicates an emission level in excess of the applicable limit(s).

QP - Quasi-Peak detector

Manufacturer:GreenEdge
Model#Transceiver Module
Mode:MiddleCh 31
Voltage:3.3VDC from Main Board
RED: L1 GRN: L2

Average Data

Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading (dB(uVolts))	Limit:1	2	3	4	5	6
Line - L1 .15 - 1MHz										
.32263	28.7dBuV Av	.1	10.8	39.6	-	-	59.64	49.64	-	-
				Margin (dB):	-	-	-20.04	-10.04	-	-
.6393	26.57dBuV Av	0	10.6	37.17	-	-	56	46	-	-
				Margin (dB):	-	-	-18.83	-8.83	-	-
.67175	30.41dBuV Av	.1	10.6	41.11	-	-	56	46	-	-
				Margin (dB):	-	-	-14.89	-4.89	-	-
.95439	22.43dBuV Av	.1	10.6	33.13	-	-	56	46	-	-
				Margin (dB):	-	-	-22.87	-12.87	-	-
.99928	22.19dBuV Av	.1	10.6	32.89	-	-	56	46	-	-
				Margin (dB):	-	-	-23.11	-13.11	-	-
Line - L1 1 - 30MHz										
1.01008	26.93dBuV Av	.1	10.6	37.63	-	-	56	46	-	-
				Margin (dB):	-	-	-18.37	-8.37	-	-
1.34612	21.68dBuV Av	.1	10.6	32.38	-	-	56	46	-	-
				Margin (dB):	-	-	-23.62	-13.62	-	-
Line - L2 .15 - 1MHz										
.32323	22.43dBuV Av	.1	10.8	33.33	-	-	59.62	49.62	-	-
				Margin (dB):	-	-	-26.29	-16.29	-	-
.64129	20.41dBuV Av	.1	10.6	31.11	-	-	56	46	-	-
				Margin (dB):	-	-	-24.89	-14.89	-	-
.67193	23.7dBuV Av	.1	10.6	34.4	-	-	56	46	-	-
				Margin (dB):	-	-	-21.6	-11.6	-	-
.95654	16.82dBuV Av	.1	10.6	27.52	-	-	56	46	-	-
				Margin (dB):	-	-	-28.48	-18.48	-	-

LIMIT 3: CISPR 22/11 Group 1 Class B QP
LIMIT 4: CISPR 22/11 Group 1 Class B AV

NOTE: "+" - Indicates an emission level in excess of the applicable limit(s).

Av - CISPR average detection