



**FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-247 ISSUE 2**

CERTIFICATION TEST REPORT

**FOR
MYQ Remote LED Light Assembly**

PART NUMBER: 2D1911

**FCC ID: HBW2D1911
IC: 2666A-2D1911**

REPORT NUMBER: 11627318A

January 8, 2018

Prepared for
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NVLAB LAB CODE: 100414-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
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TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	5
3. FACILITIES AND ACCREDITATION	5
4. CALIBRATION AND UNCERTAINTY	5
4.1. MEASURING INSTRUMENT CALIBRATION	5
4.2. SAMPLE CALCULATION	5
4.3. MEASUREMENT UNCERTAINTY	5
5. EQUIPMENT UNDER TEST	6
5.1. DESCRIPTION OF EUT	6
5.2. MAXIMUM OUTPUT POWER	6
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	6
5.4. WORST-CASE CONFIGURATION AND MODE	6
5.5. DESCRIPTION OF TEST SETUP	7
6. TEST AND MEASUREMENT EQUIPMENT	9
7. ANTENNA PORT TEST RESULTS	10
8. ON TIME AND DUTY CYCLE	10
8.1. ON TIME AND DUTY CYCLE RESULTS	10
8.2. DUTY CYCLE PLOTS	11
8.3. 20 dB AND 99% BANDWIDTH	13
8.4. HOPPING FREQUENCY SEPARATION	20
8.5. NUMBER OF HOPPING CHANNELS	21
8.6. AVERAGE TIME OF OCCUPANCY	23
8.7. PEAK OUTPUT POWER	26
8.8. CONDUCTED SPURIOUS EMISSIONS	30
9. RADIATED TEST RESULTS	35
9.1. LIMITS AND PROCEDURE	35
9.2. Open Field to 10 Meter Chamber Correlation Data 9kHz-30MHz	36
9.3. TRANSMITTER RADIATED SPURIOUS EMISSIONS	37
9.4. DIGITAL/RX DEVICE EMISSIONS	48
10. AC POWER LINE CONDUCTED EMISSIONS	52
11. SETUP PHOTOS	57

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Chamberlain Group Inc.
845 Larch Av.
Elmhurst, IL 60126

EUT DESCRIPTION: MYQ Remote LED Light Assembly

PART NUMBER: 2D1911

SERIAL NUMBER: non serialized

DATE TESTED: March 8, 2017 to March 29, 2017

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-247 Issue 2	Pass
INDUSTRY CANADA RSS-Gen Issue 4	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.

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UL LLC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 15, ANSI C63.10-2013, DA 00-705 (used for FCC only), RSS-GEN Issue 4, RSS-247 Issue 2.

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/>

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
Conducted Emissions	150k-30MHz	LISN	3.65dB
Radiated Emissions	9k-30MHz	H-Field Loop	3.15dB
Radiated Emissions	30-200MHz	Bicon 3m Horz	3.64dB
Radiated Emissions	30-200MHz	Bicon 3m Vert	5.10dB
Radiated Emissions	200-1000MHz	LogP 3m Horz	4.00dB
Radiated Emissions	200-1000MHz	LogP 3m Vert	5.36dB
Radiated Emissions	30-200MHz	Bicon 10m Horz	4.48dB
Radiated Emissions	30-200MHz	Bicon 10m Vert	4.49dB
Radiated Emissions	200-1000MHz	LogP 10m Horz	3.79dB
Radiated Emissions	200-1000MHz	LogP 10m Vert	3.84dB
Radiated Emissions	1-18GHz	Horn	4.32dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT, MYQ Remote LED Light Assembly, is an LED light fixture equipped with a low power FHSS transceiver and digital device/receiver, which transmits at 902.25MHz – 926.75MHz.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
902.25 - 926.75	FHSS	15.26	33.56

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an trace antenna, with a maximum gain of +2dBi.

5.4. WORST-CASE CONFIGURATION AND MODE

The EUT was sent in the worst axis, as found in preliminary testing. The Y-Axis was determined to be the worst axis.

For radiated emissions, the worst-case configuration is determined to be the transmitting channel with the highest measured output power.

5.5. DESCRIPTION OF TEST SETUP

EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Type	FCC ID
LED Light	Chamberlain		EUT	

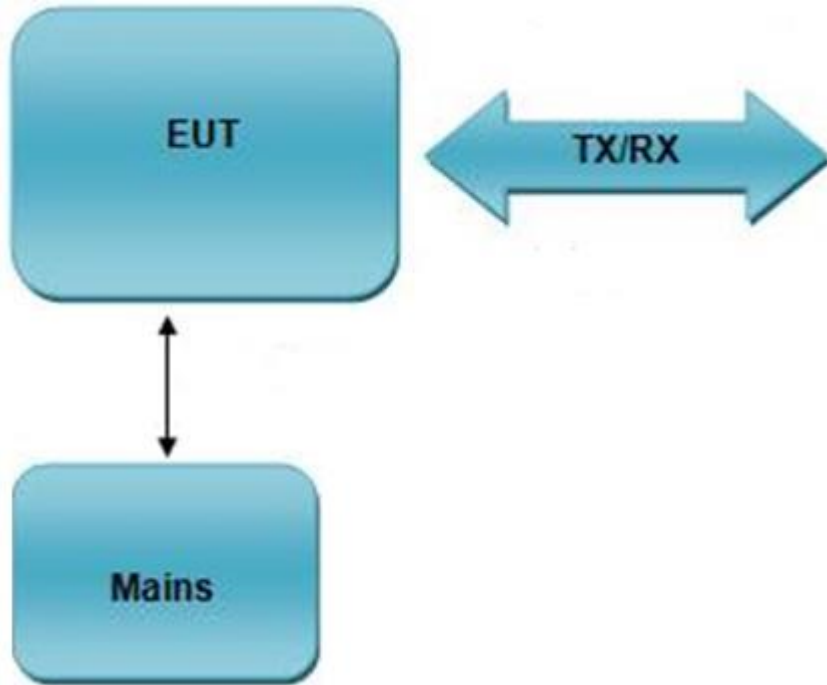
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	Standard 120V	2 wire	1.5m	none

TEST SETUP

The transmitter is part of the LED Light fixture, built into a control board and assembled as end product. The sample provided is capable to program the transmitter to single channel or channel hopping, modulated or carrier wave signal, and receiver mode to perform the various tests below.

SETUP DIAGRAM FOR TESTS



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	20161224	20171231
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	20161202	20171231
Signal Analyzer	Agilent	PXA/N9030A	EMC4360	20161227	20171231
Power Meter	Agilent	N1912A	EMC4362	20161228	20171231
Power Sensor	Agilent	N10149	EMC4364	20161229	20171231
Bicon Antenna	Chase	EM6912A	EMC4070	20161206	20171231
Log-P Antenna	Chase	UPA6109	EMC4258	20160511	20170531
Loop Antenna	EMCO	6502/1	EMC4026	20160722	20170731
Antenna Array	UL	BOMS	EMC4276	20160127	20170131
EMI Test Receiver	Rohde & Schwarz	ESR	EMC4377	20161230	20171231
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	EMC4066	20161230	20171231
LISN - L2	Solar	8602-50-TS-50-N	EMC4064	20161230	20171231

7. ANTENNA PORT TEST RESULTS

8. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

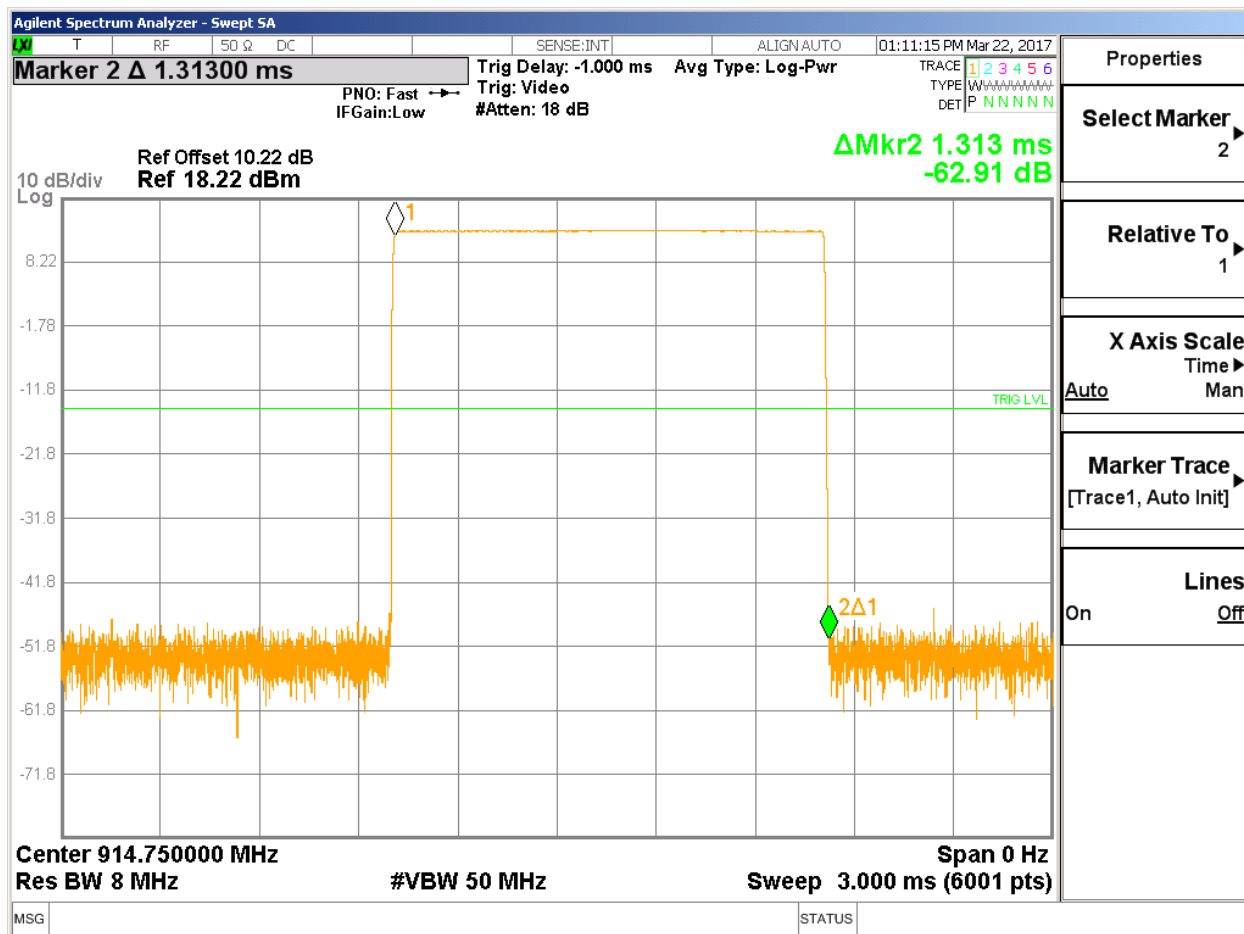
KDB 558074 Zero-Span Spectrum Analyzer Method.

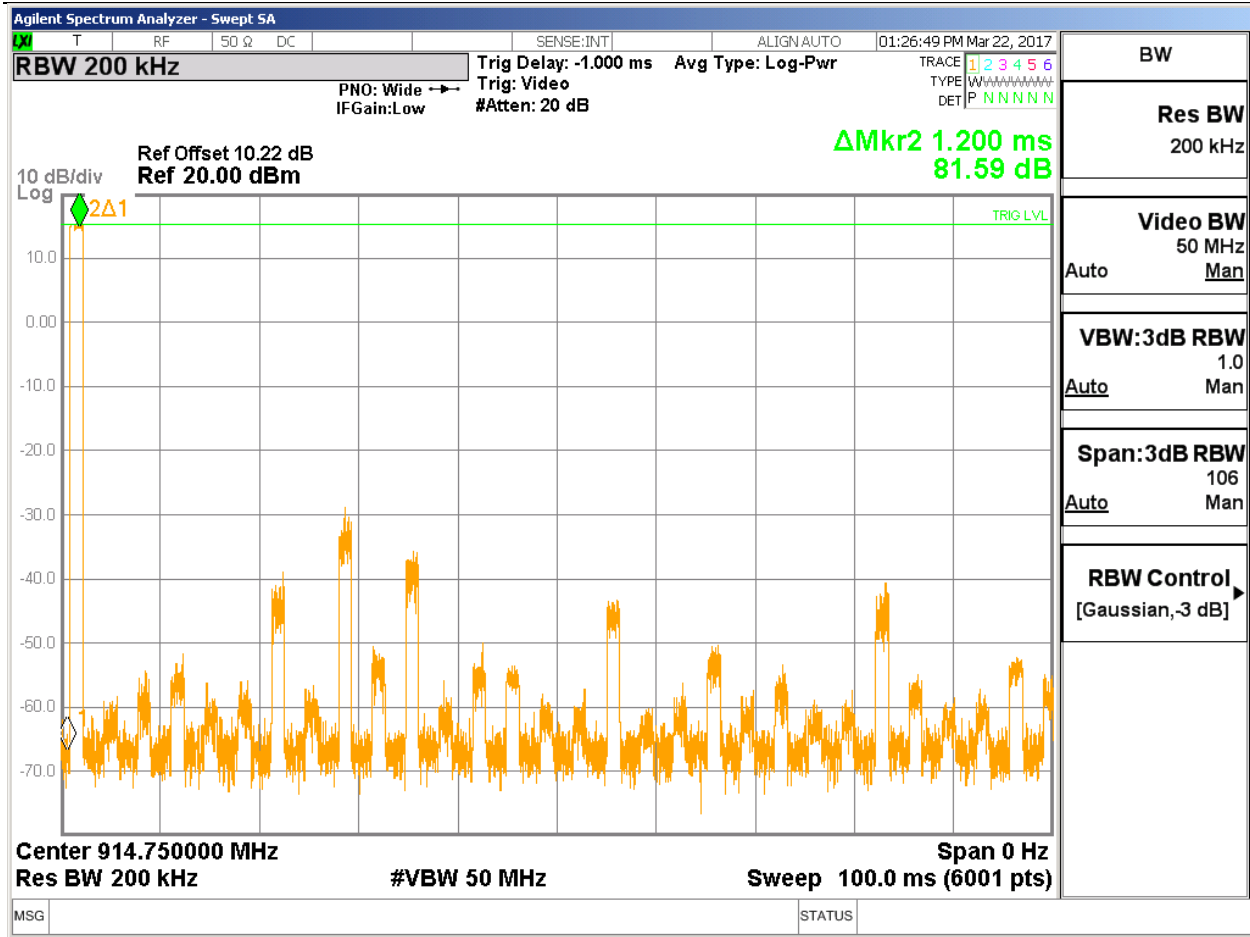
8.1. ON TIME AND DUTY CYCLE RESULTS

	B (msec)	(msec)	x (linear)	Cycle (%)	Correction Factor (dB)	Minimum VBW (kHz)
900 MHz band (Hopping ON)						
FHSS	1.313	100	0.013	1.31%	-37.63	N/A

8.2. DUTY CYCLE PLOTS

HOPPING ON





8.3. 20 dB AND 99% BANDWIDTH

LIMIT

FCC §15.247 (a) (1) (i)

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

IC RSS-247 5.1 (c)

For FHSs in the band 902-928 MHz: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping channels and the average time of occupancy on any channel shall not be greater than 0.4 seconds within a 20-second period. If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping channels and the average time of occupancy on any channel shall not be greater than 0.4 seconds within a 10-second period. The maximum 20 dB bandwidth of the hopping channel shall be 500 kHz.

TEST PROCEDURE

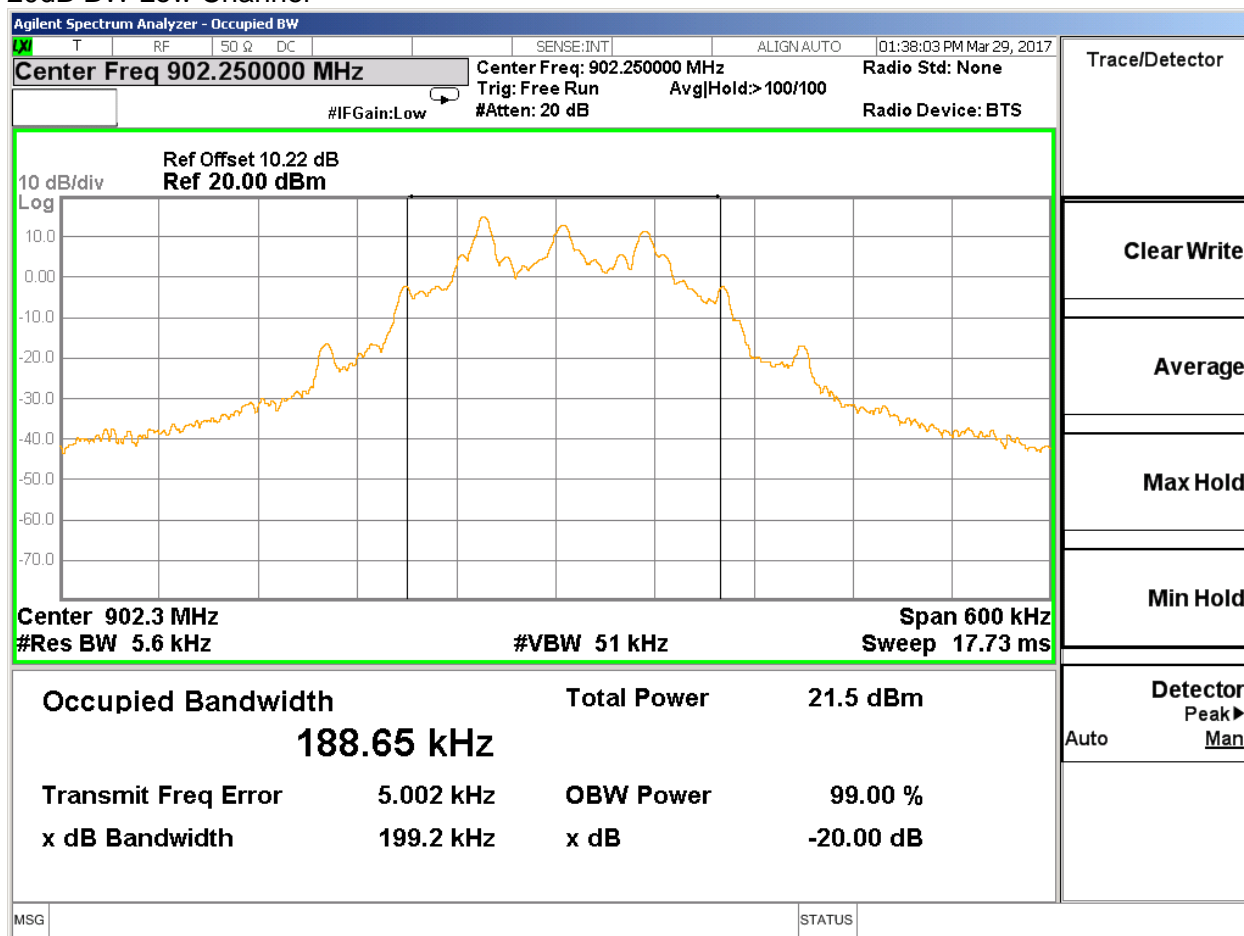
The transmitter output is connected to a spectrum analyzer. The RBW is set to $\geq 1\%$ of the 20 dB bandwidth. The VBW is set to \geq RBW. The sweep time is coupled.

RESULTS

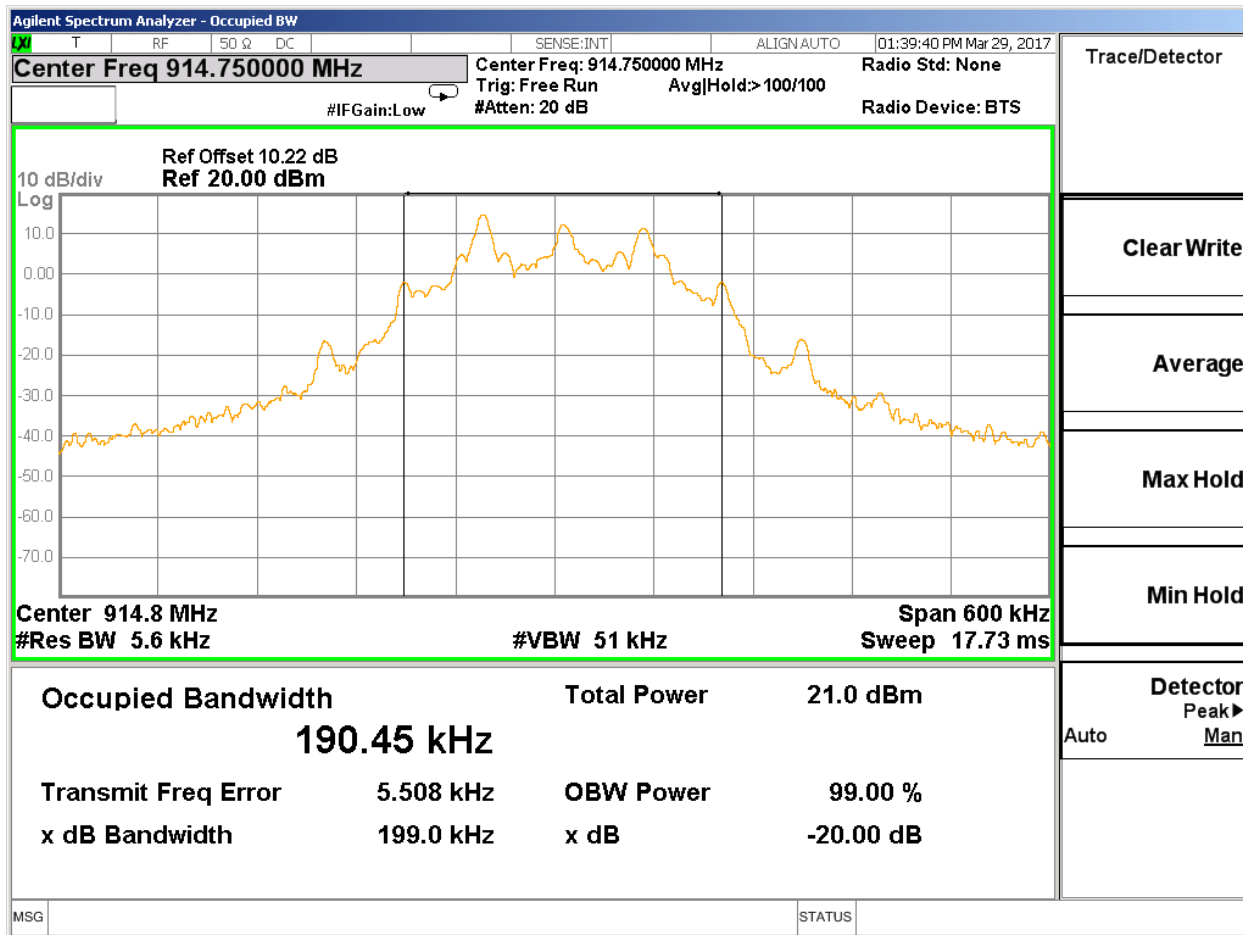
Channel	Frequency (MHz)	20 dB Bandwidth (kHz)	99% Bandwidth (kHz)
Low	902.25	199.2	189.01
Middle	914.75	199	190.94
High	926.75	196.4	177.96

20 dB AND 99% BANDWIDTH

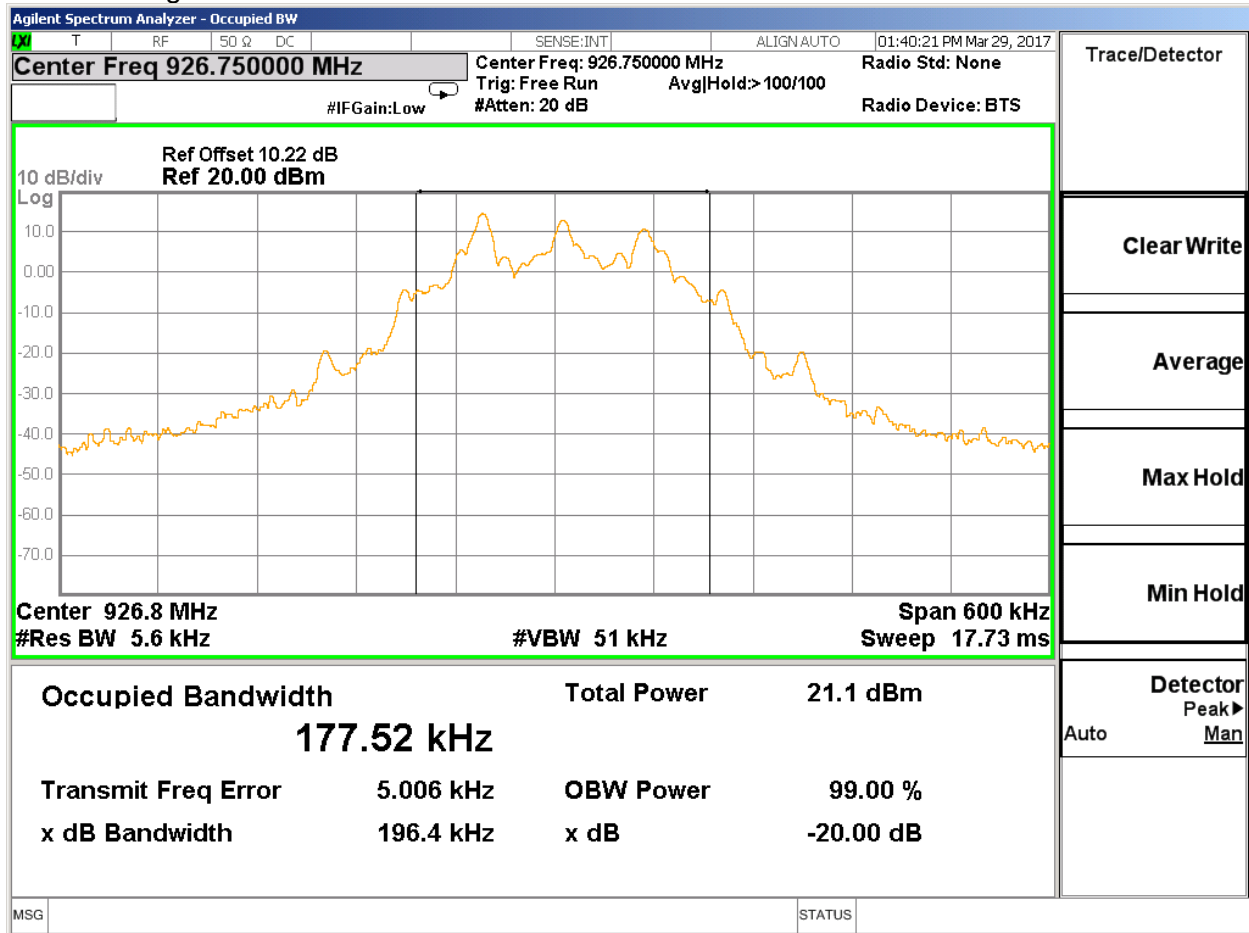
20dB BW Low Channel



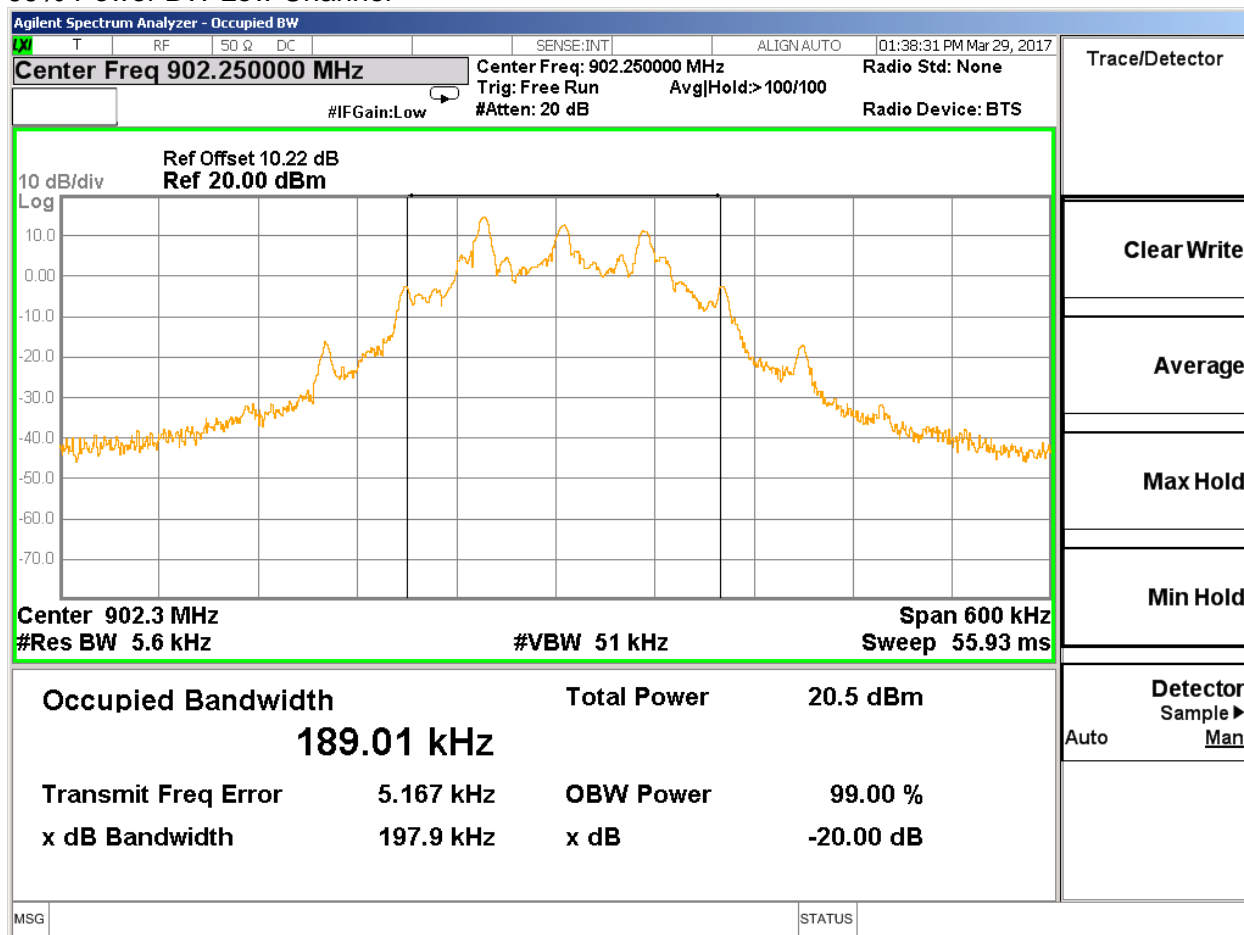
20dB BW Middle Channel



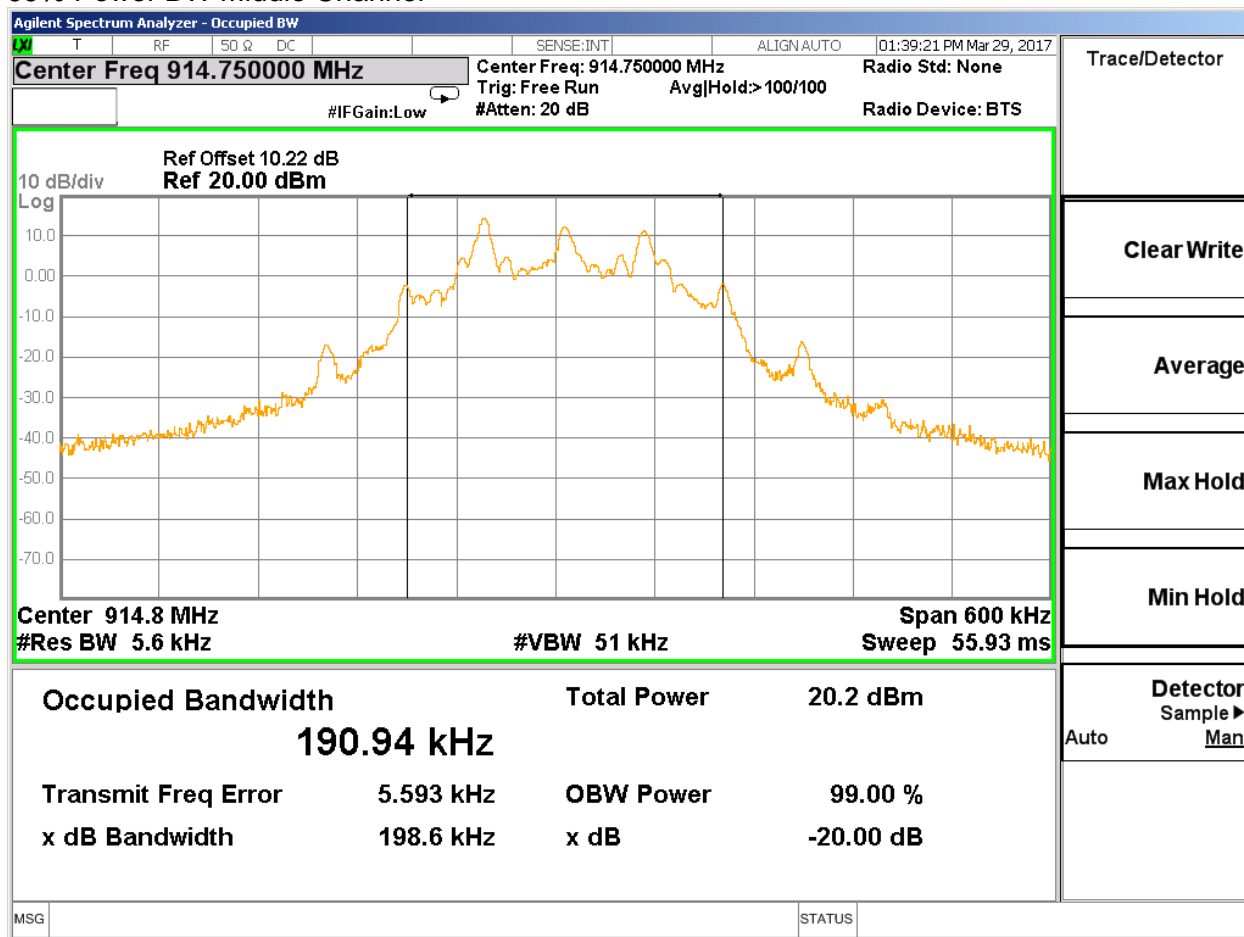
20dB BW High Channel



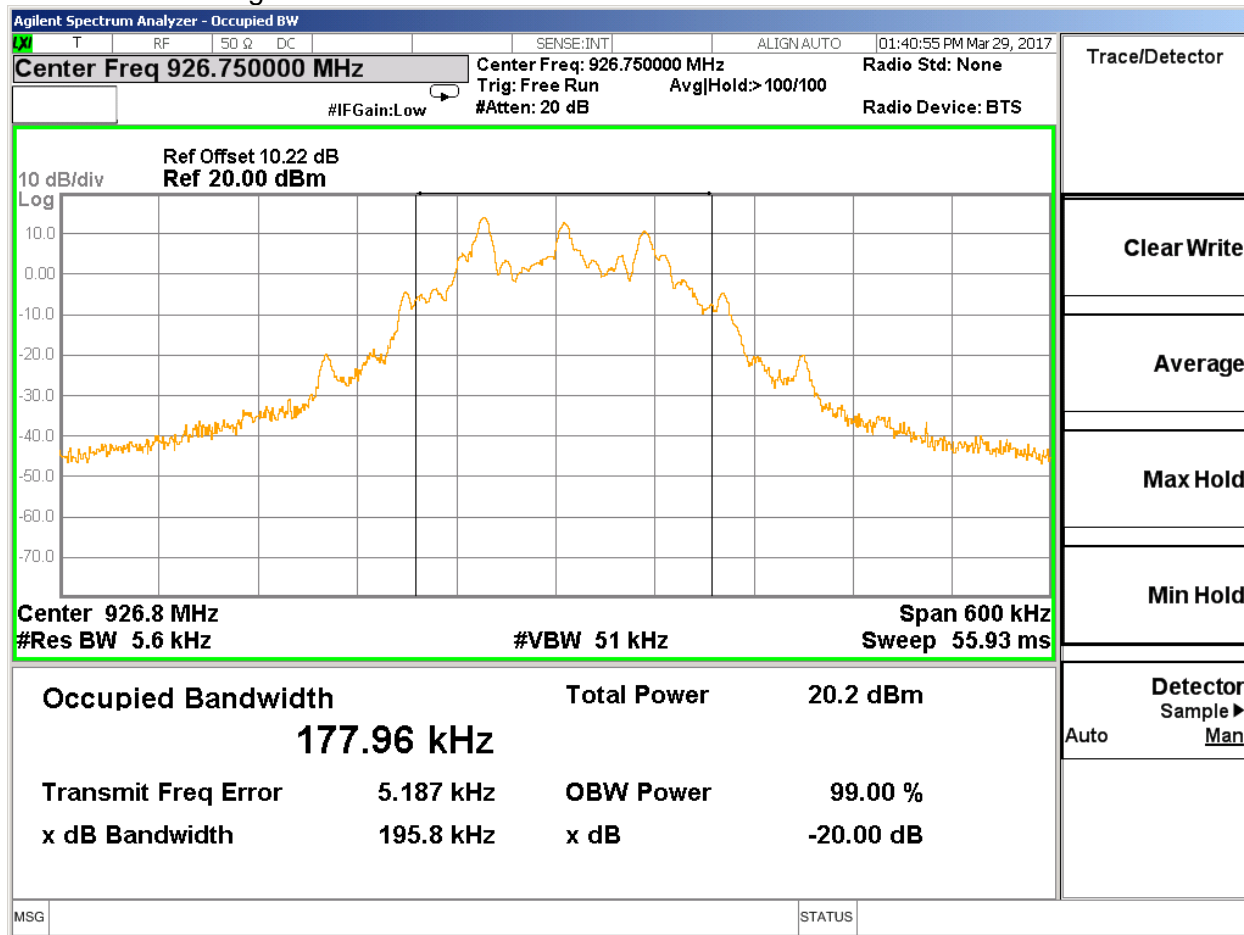
99% Power BW Low Channel



99% Power BW Middle Channel



99% Power BW High Channel



8.4. HOPPING FREQUENCY SEPARATION

LIMIT

FCC §15.247 (a) (1)

IC RSS-247 5.1 (b)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

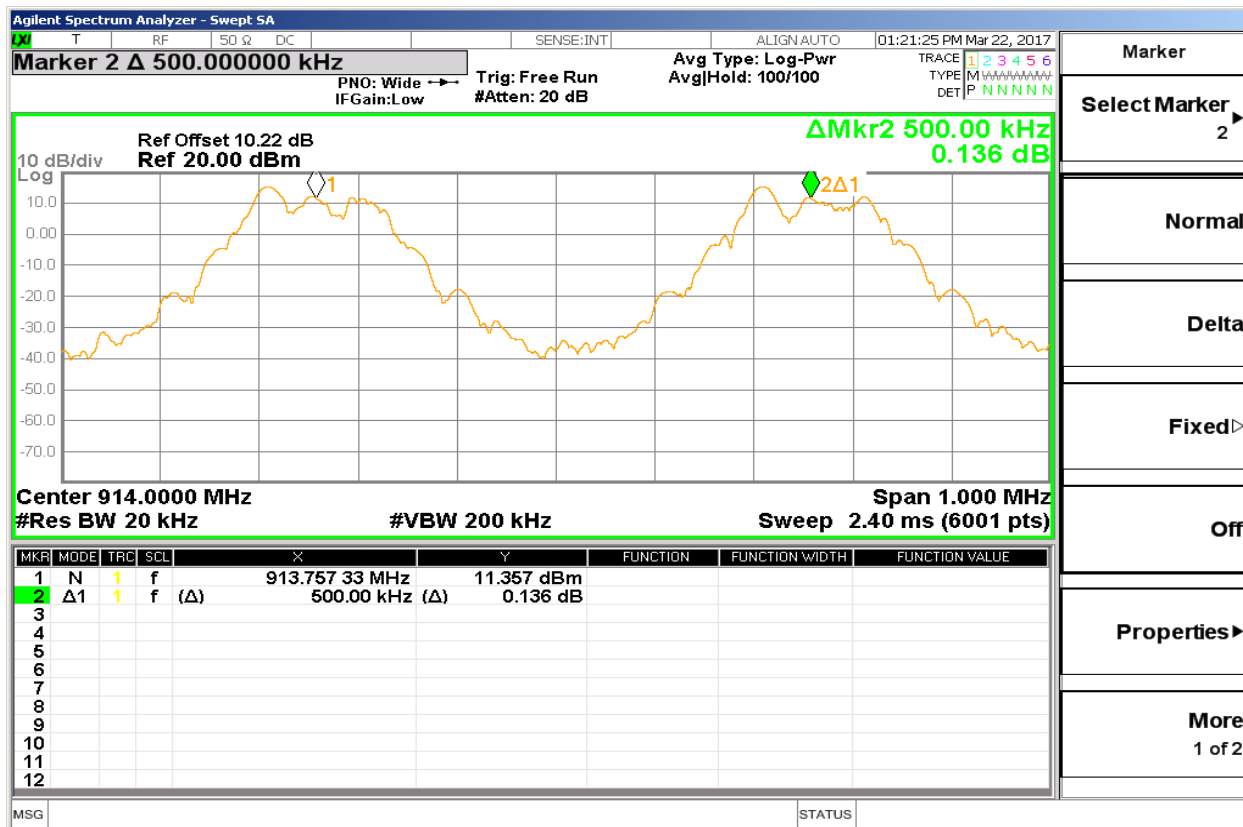
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 100 kHz. The sweep time is coupled.

RESULTS

Carrier frequencies are separated by 500kHz – see below.

HOPPING FREQUENCY SEPARATION



8.5. NUMBER OF HOPPING CHANNELS

LIMIT

FCC §15.247 (a) (1) (i)

IC RSS-247 5.1 (c)

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

TEST PROCEDURE

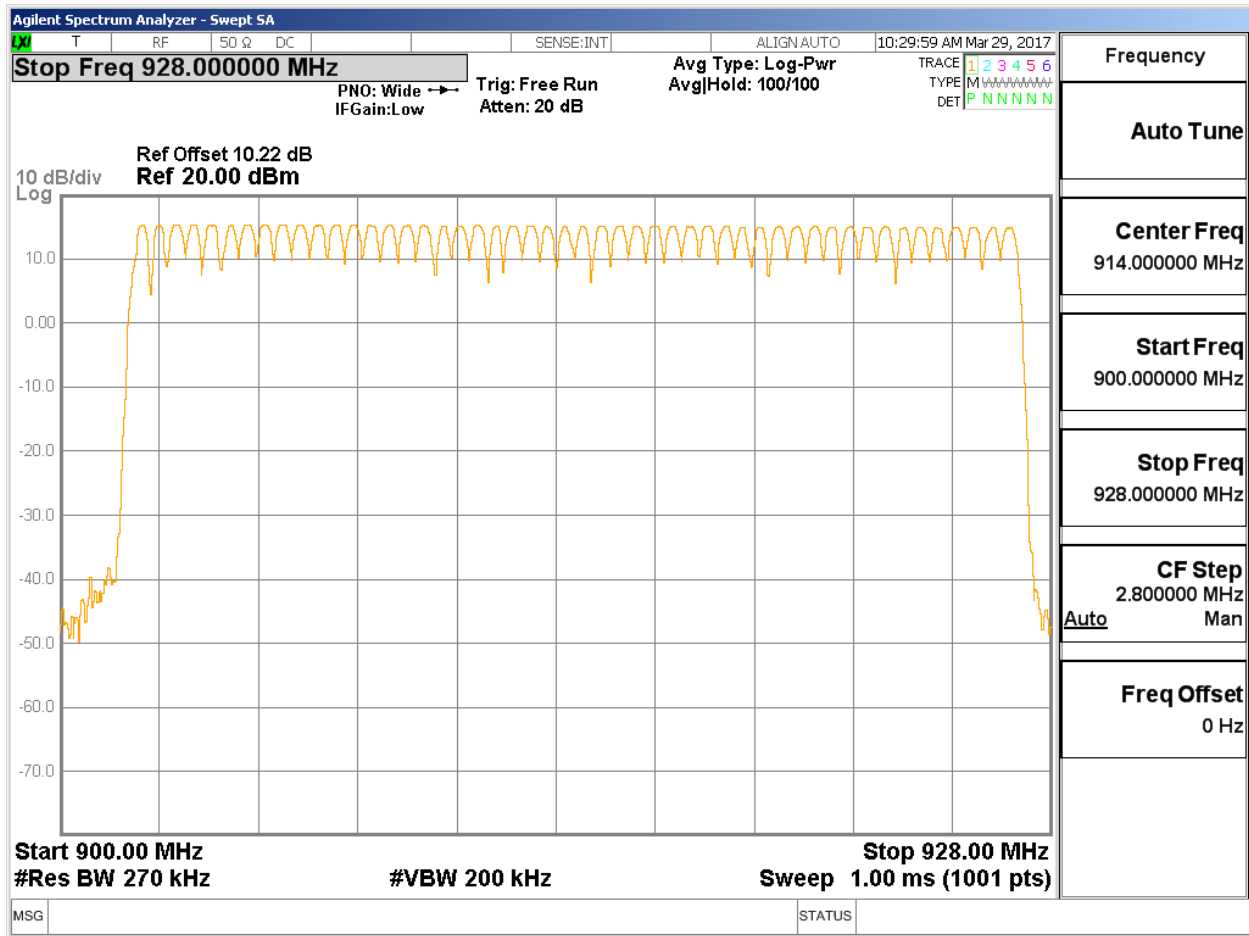
The 20dB BW was determined in section 8.3.

The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

RESULTS

Normal Mode: 50 Channels Observed

NUMBER OF HOPPING CHANNELS



8.6. AVERAGE TIME OF OCCUPANCY

LIMIT

FCC §15.247 (a) (1) (i)

IC RSS-247 5.1 (c)

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. Resolution BW was decreased to 200kHz to filter out adjacent channels. Sweep was set to 20 seconds and number of pulses during the time was counted.

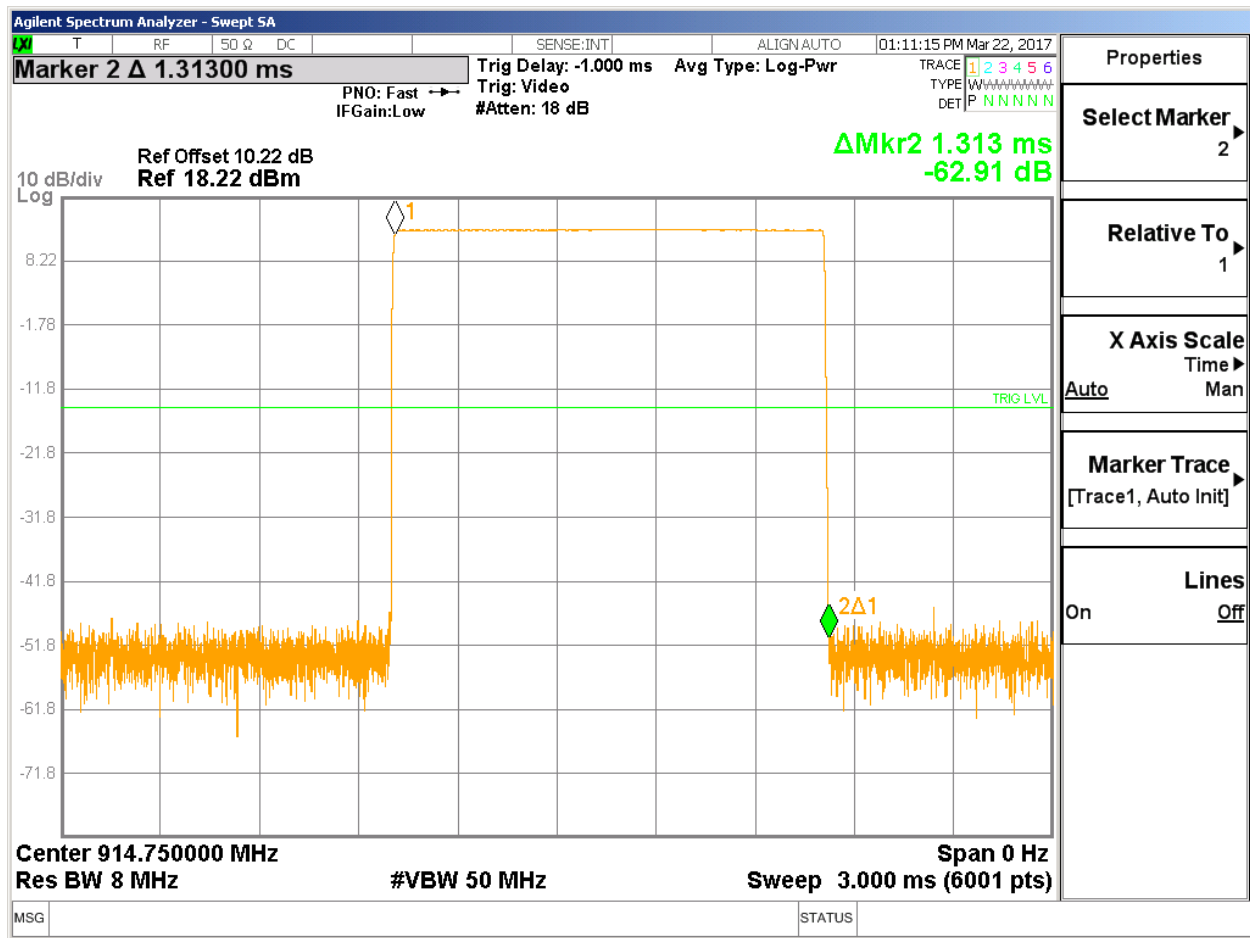
RESULTS

Single pulse width: 1.313mS

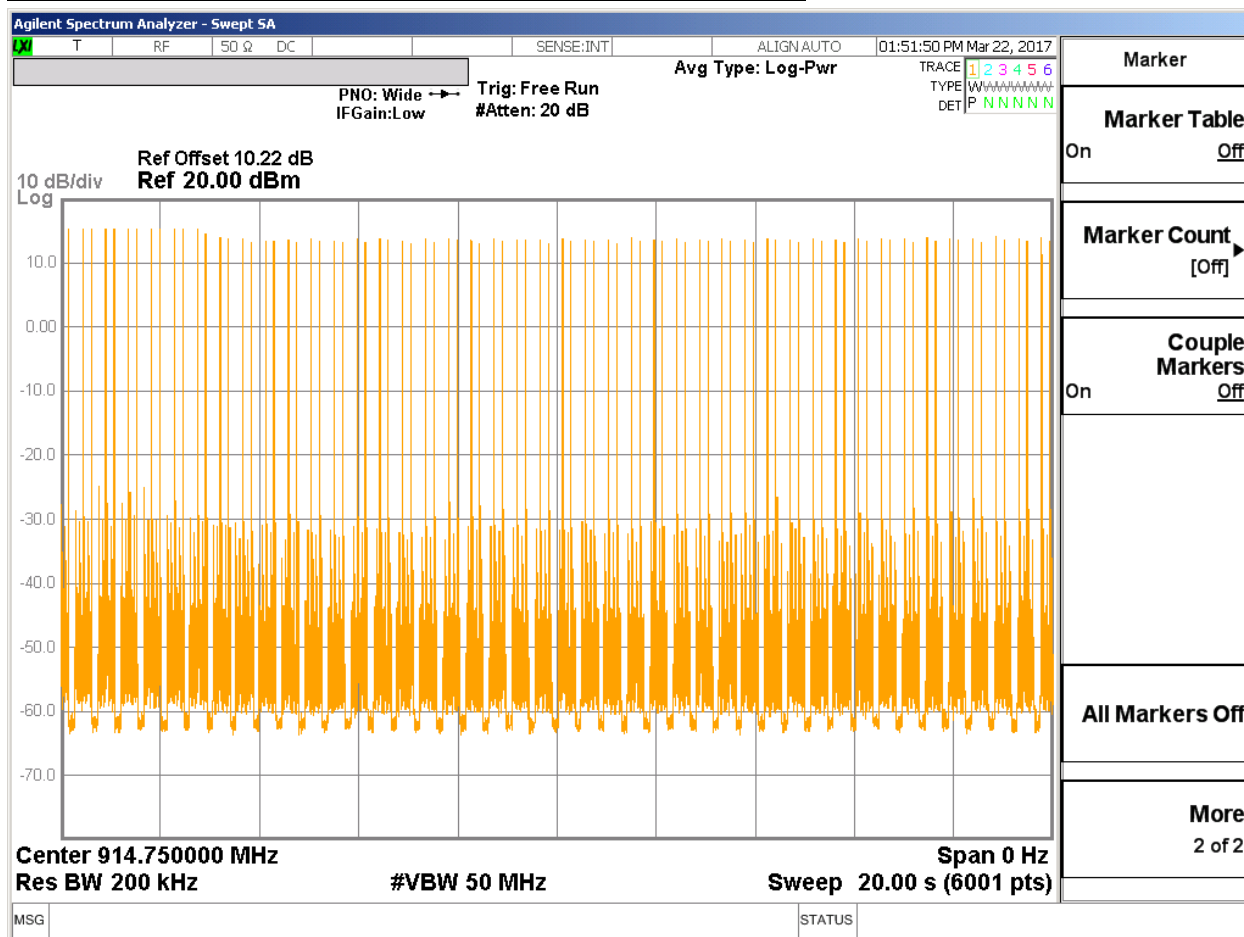
Number of Pulses in 20 seconds: 87

Total TX time in 20s: 114.2mS

PULSE WIDTH



NUMBER OF PULSES IN 20 SECONDS OBSERVATION PERIOD



8.7. PEAK OUTPUT POWER

LIMIT

§15.247 (b) (2)

For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of 15.247.

RSS-247 5.4 (a)

For FHSs operating in the band 902-928 MHz, the maximum peak conducted output power shall not exceed 1.0 W, and the e.i.r.p. shall not exceed 4 W if the hopset uses 50 or more hopping channels; the maximum peak conducted output power shall not exceed 0.25 W and the e.i.r.p. shall not exceed 1 W if the hopset uses less than 50 hopping channels.

TEST PROCEDURE

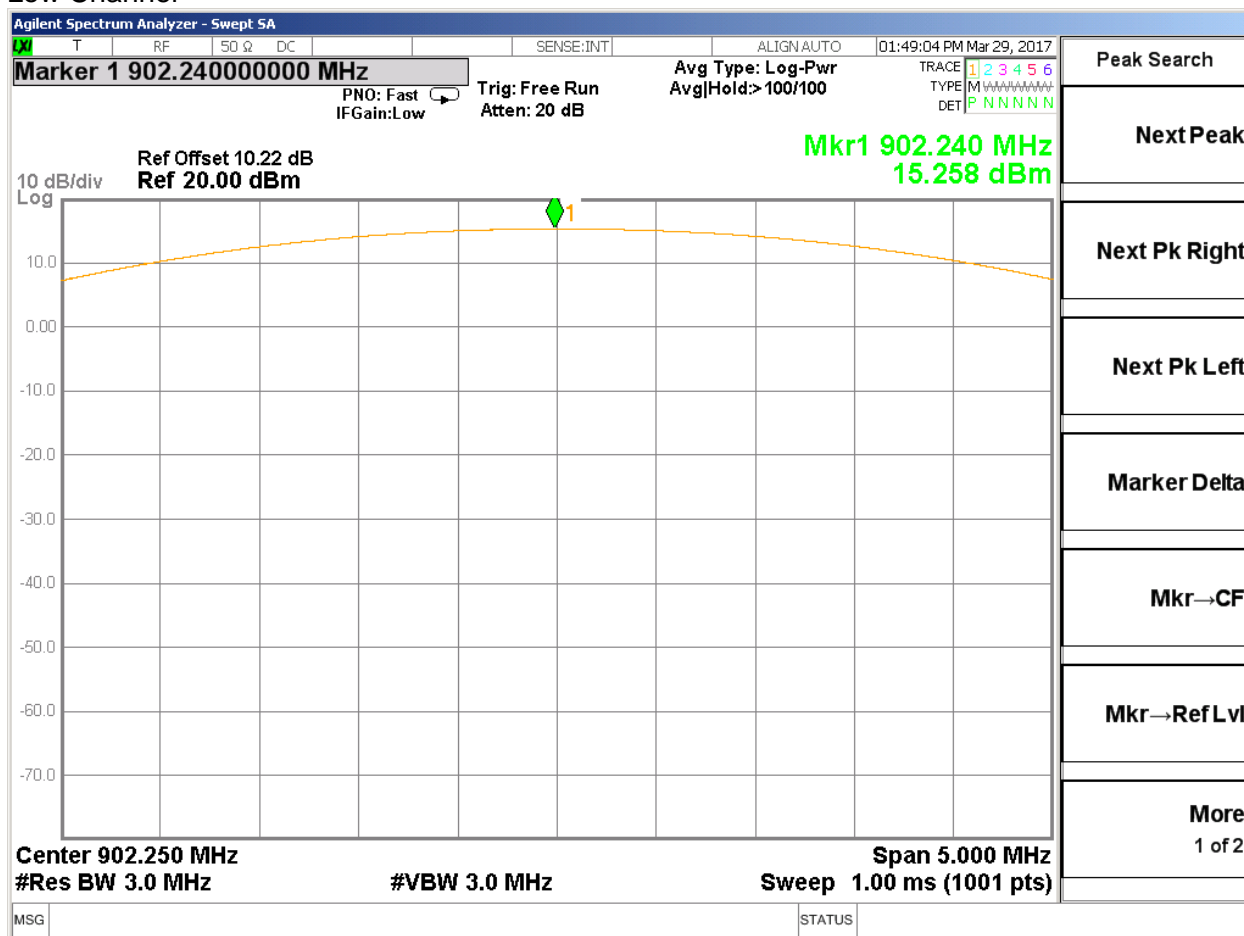
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

RESULTS

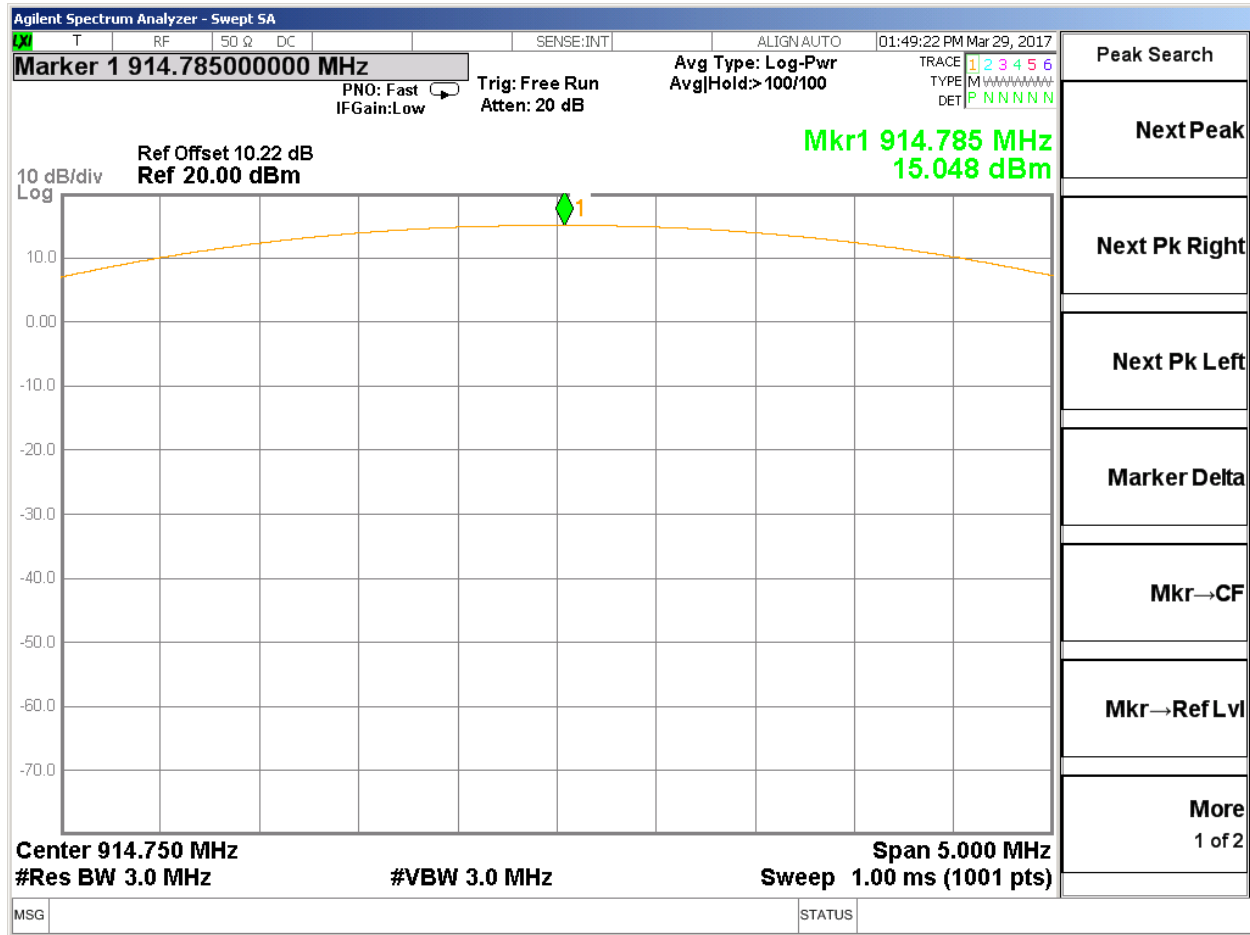
Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	902.25	15.26	30	-14.74
Middle	914.75	15.05	30	-14.95
High	926.75	14.80	30	-15.20

OUTPUT POWER

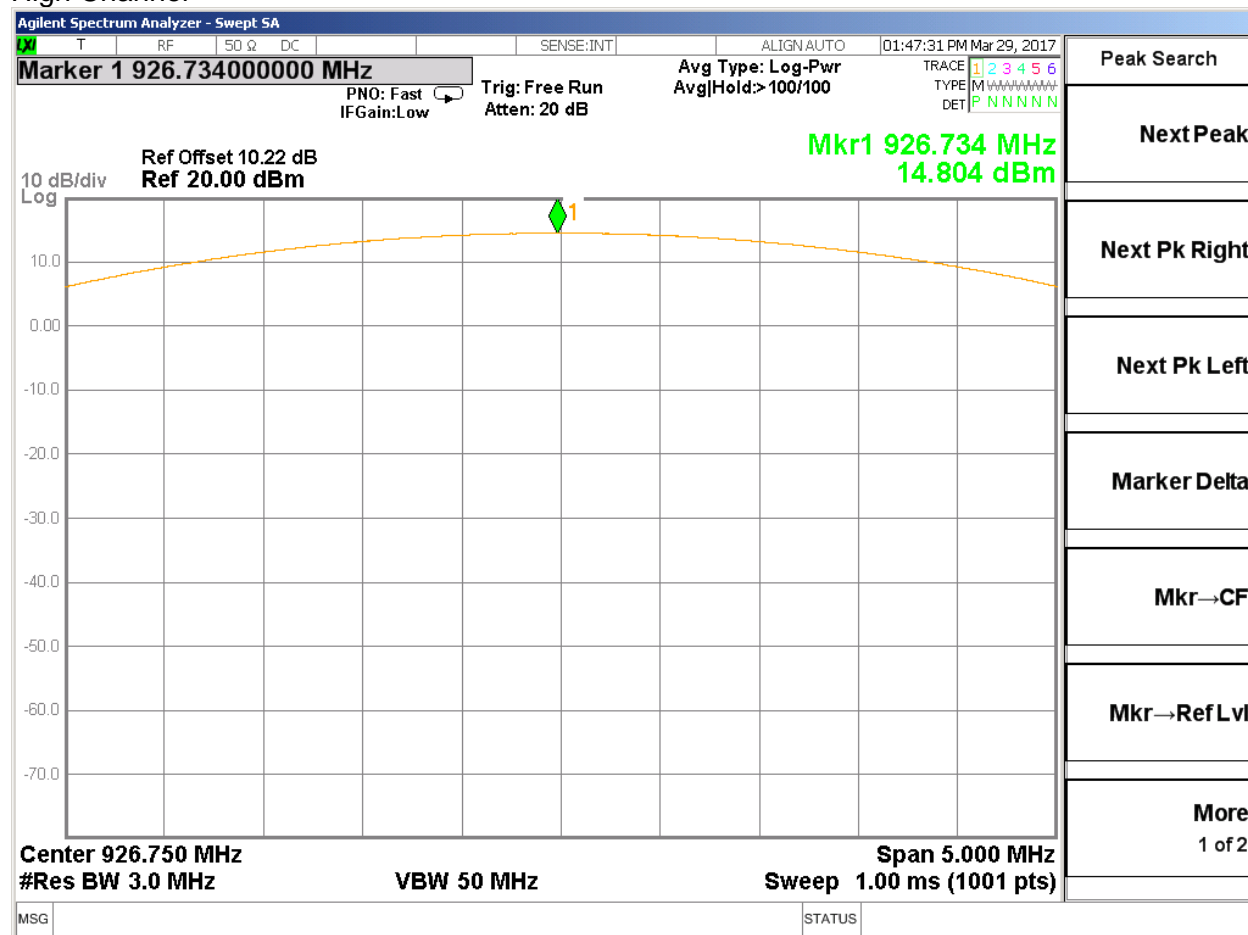
Low Channel



Middle Channel



High Channel



8.8. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

IC RSS-247 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section A8.4 (4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

TEST PROCEDURE

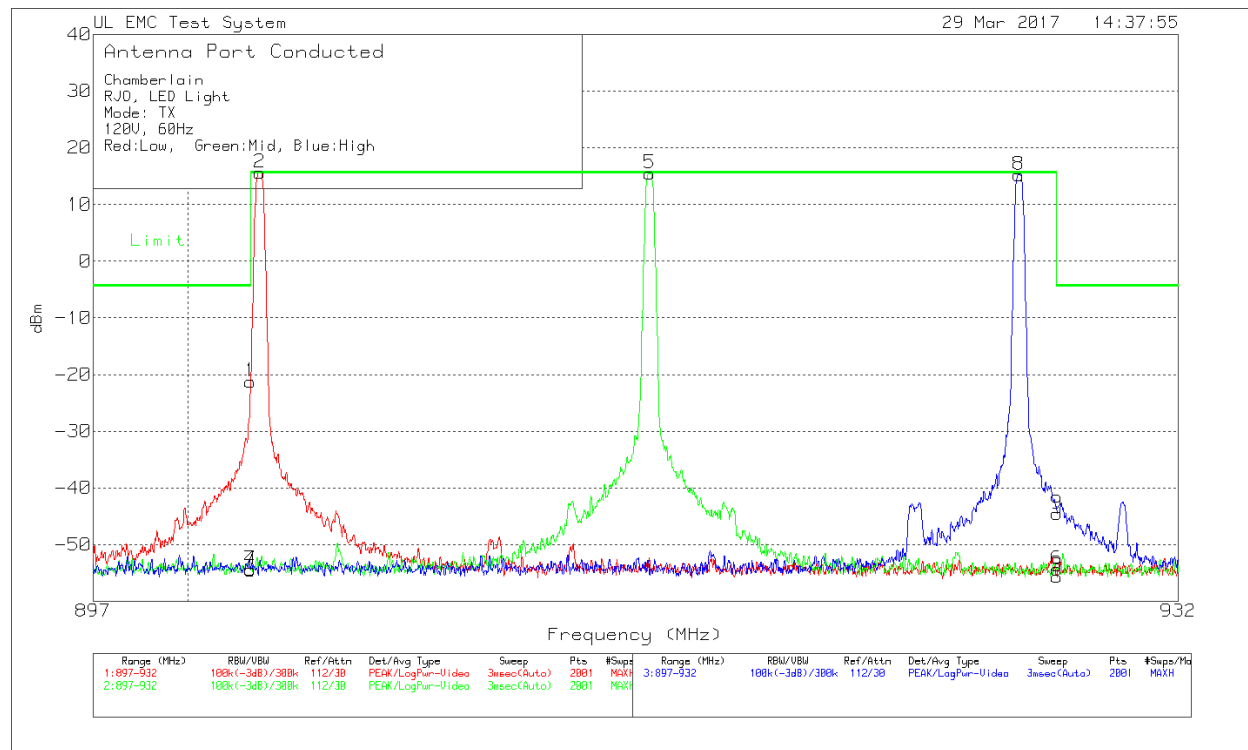
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 10 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The bandedges at 902 and 928 GHz are investigated with the transmitter set to the normal hopping mode.

RESULTS

Low and High Bandedge Spurious



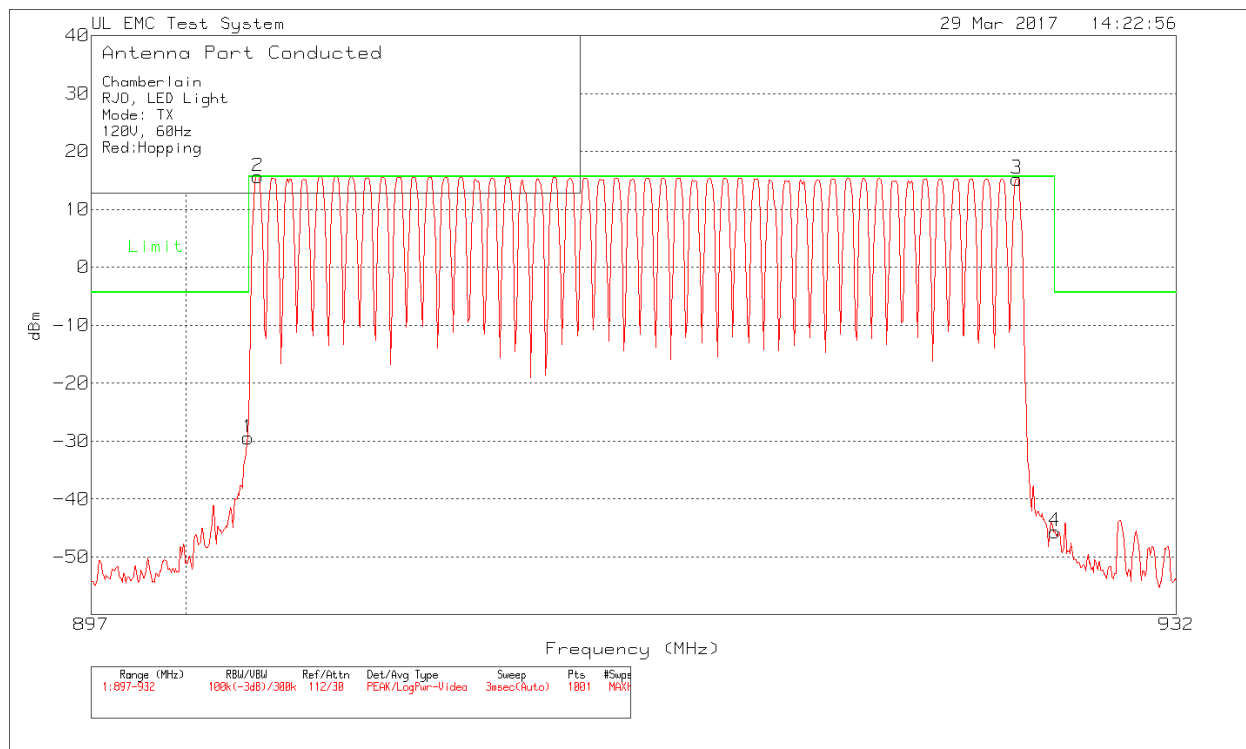
Chamberlain
 RJO, LED Light
 Mode: TX
 120V, 60Hz

Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	dBuV to dBm	Path dB	Corrected Reading dBm	Limit dBm	Margin (dB)	TX
1	902	75.57 Pk		-107	10.2	-21.23	-4.36	-16.87	Low
2	902.2763	112.44 Pk		-107	10.2	15.64	15.64	0	Low
3	928	41.11 Pk		-107	10.2	-55.69	-4.36	-51.33	Low
4	902	42.32 Pk		-107	10.2	-54.48	-4.36	-50.12	Mid
5	914.7713	112.24 Pk		-107	10.2	15.44	15.64	-0.2	Mid
6	928	42.46 Pk		-107	10.2	-54.34	-4.36	-49.98	Mid
7	902	42.42 Pk		-107	10.2	-54.38	-4.36	-50.02	High
8	926.7675	112.03 Pk		-107	10.2	15.23	15.64	-0.41	High
9	928	52.24 Pk		-107	10.2	-44.56	-4.36	-40.2	High

Pk - Peak detector

Hopping Band Edge Spurious

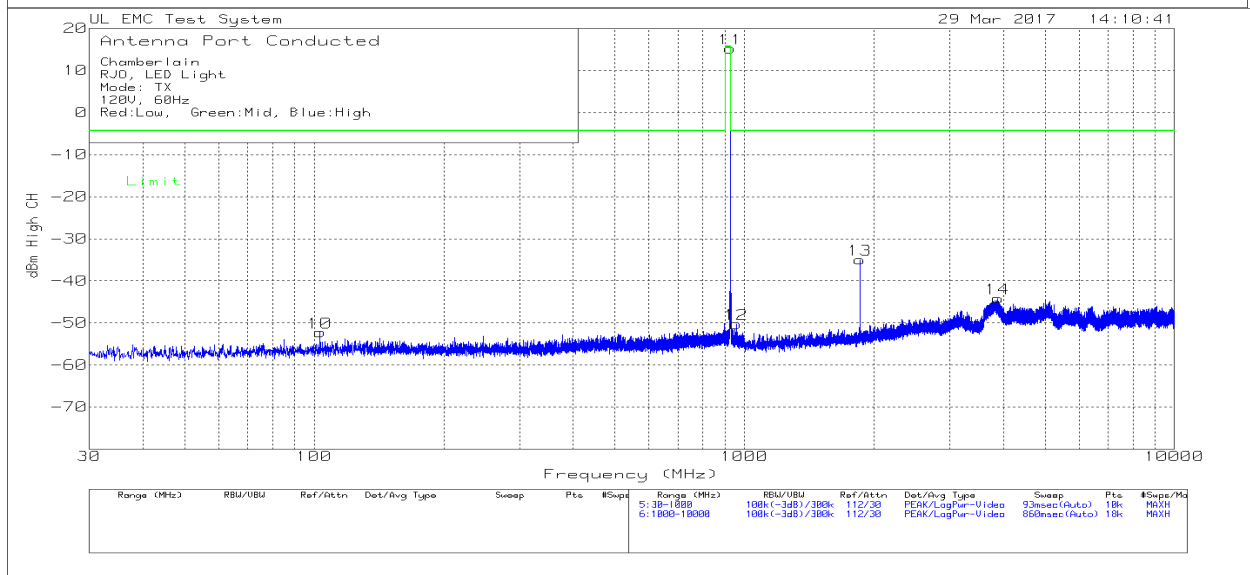
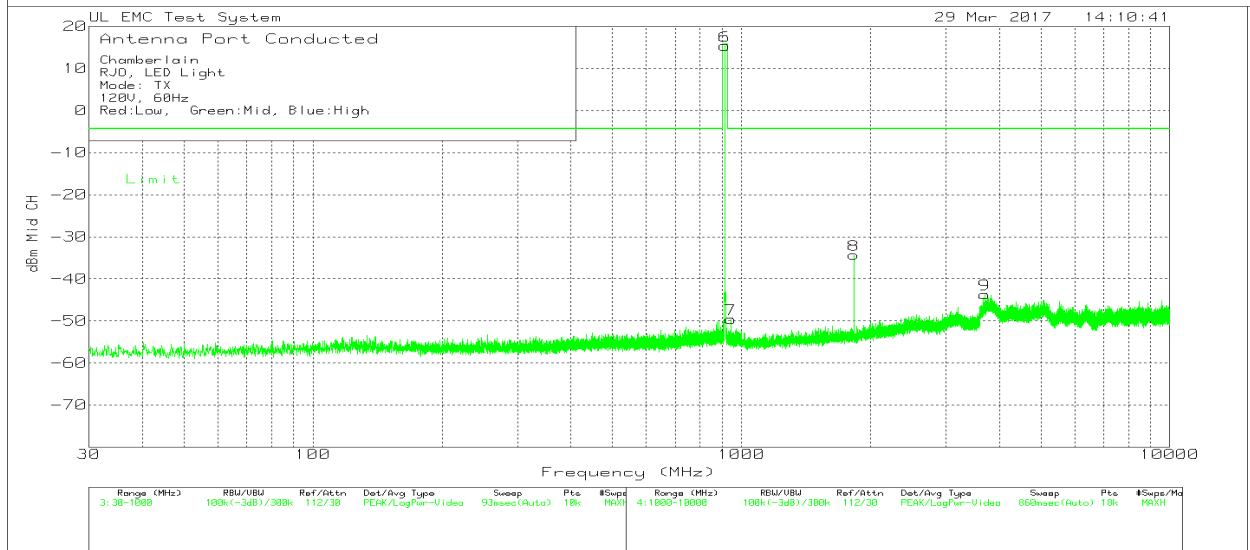
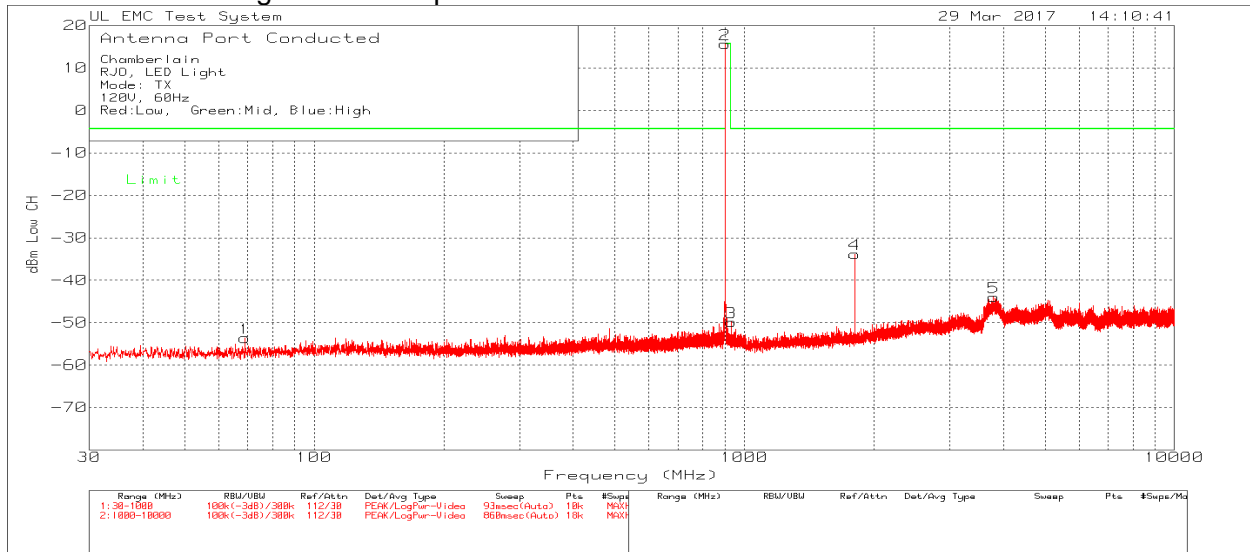


Chamberlain
 RJO, LED Light
 Mode: TX
 120V, 60Hz
 Red:Hopping

Marker No.	Test Frequency (MHz)	Meter Reading (dBUV)	Detector	Corrected		Limit (dBm)	Margin (dB)
				Path dB	Path dB		
1	902	67.37 Pk		-107	10.2	-29.43	-4.35 -25.08
2	902.285	112.45 Pk		-107	10.2	15.65	15.65 0.00
3	926.7675	112.02 Pk		-107	10.2	15.22	15.65 -0.43
4	928	51.16 Pk		-107	10.2	-45.64	-4.35 -41.29

Pk - Peak detector

Low Middle and High Channel Spurious



Chamberlain
 RJO, LED Light
 Mode: TX
 120V, 60Hz
 Red:Low, Green:Mid, Blue:High

Marker No.	Test Frequency (MHz)	Meter		Path dB	Path dB	Corrected		
		Reading (dBUV)	Detector			Reading dBm	Limit dBm	Margin (dB)
Low CH								
1	68.994	43.88	Pk	-107	9.5	-53.62	-4.35	-49.27
2	902.321	112.45	Pk	-107	10.2	15.65	15.65	0.00
3	932.2455	46.84	Pk	-107	10.3	-49.86	-4.35	-45.51
4	1804.455	62.88	Pk	-107	10.3	-33.82	-4.35	-29.47
5	3794.843	52.22	Pk	-107	10.8	-43.98	-4.35	-39.63
Mid CH								
6	914.737	112.17	Pk	-107	10.2	15.37	15.65	-0.28
7	944.613	47.11	Pk	-107	10.3	-49.59	-4.35	-45.24
8	1829.454	62.31	Pk	-107	10.4	-34.29	-4.35	-29.94
9	3700.849	52.62	Pk	-107	10.7	-43.68	-4.35	-39.33
High CH								
10	103.041	45.09	Pk	-107	9.7	-52.21	-4.35	-47.86
11	926.765	112.02	Pk	-107	10.2	15.22	15.65	-0.43
12	956.738	46.45	Pk	-107	10.3	-50.25	-4.35	-45.90
13	1853.452	61.67	Pk	-107	10.4	-34.93	-4.35	-30.58
14	3879.839	52.05	Pk	-107	10.8	-44.15	-4.35	-39.80

Pk - Peak detector

9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

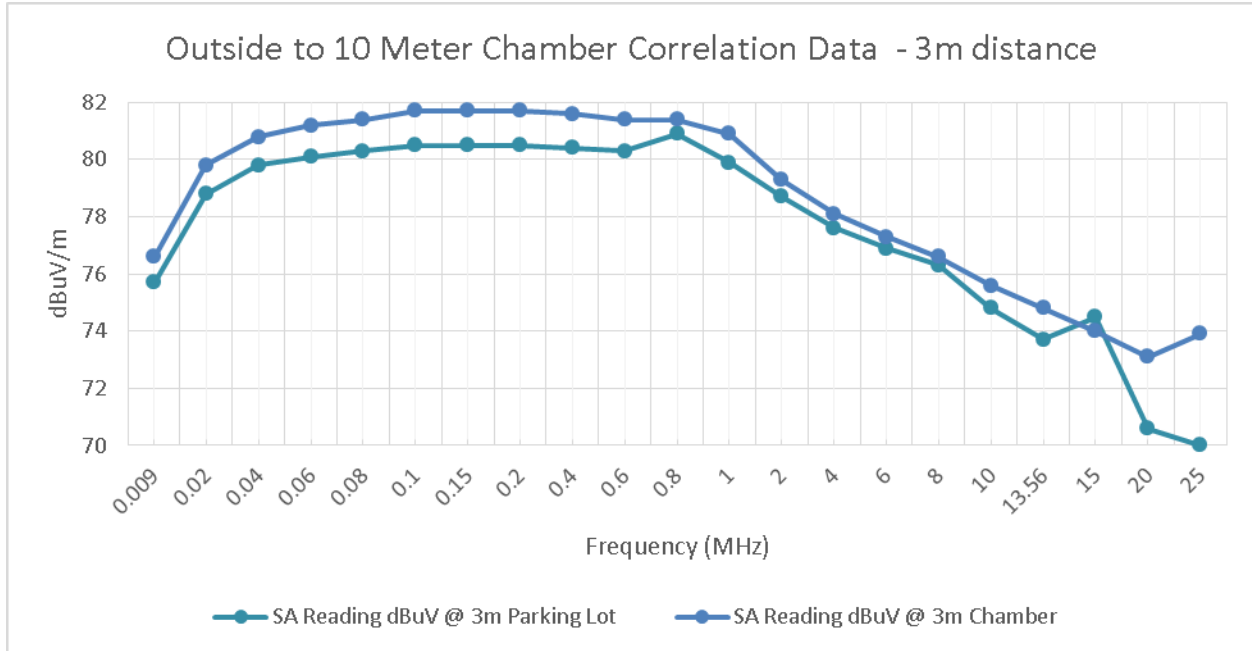
IC RSS-GEN Clause 8.9 (Transmitter)

IC RSS-GEN Clause 7.1.2 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009 – 0.49	2,660,725 – 48,978	128.5 – 93.8
0.49 – 1.705	4,8978 – 1,407.6	73.8 – 62.97
1.705 - 30	3000	69.54
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

9.2. OPEN FIELD TO 10 METER CHAMBER CORRELATION DATA 9KHZ-30MHZ

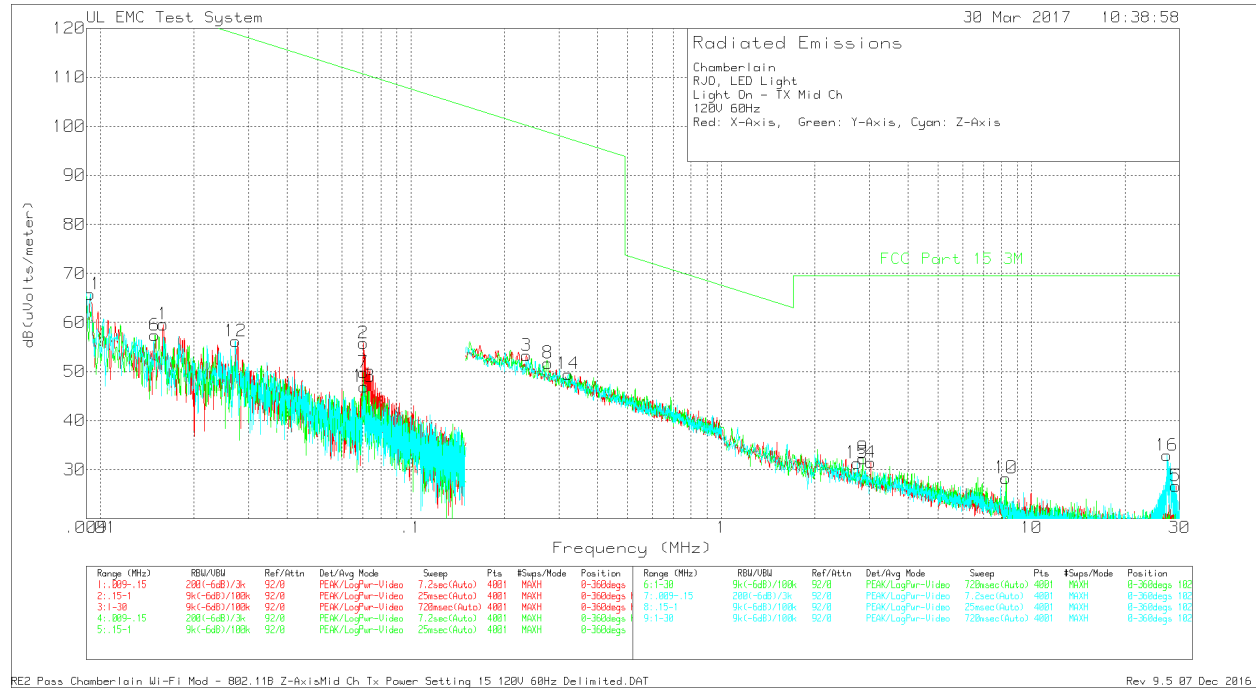
Correlation Data for measurements 9kHz-30MHz between Outside and 10m semi-anechoic chamber in at Underwriter Laboratories in Northbrook, IL.



Correlation measurements were conducted using a signal source with an antenna outside in open area (parking lot). Immediately following the measurements the same setup was moved inside the 10 meter semi-anechoic chamber and the measurements were repeated. The above plot shows the difference in levels measured between outside and the 10 meter semi anechoic chamber.

9.3. TRANSMITTER RADIATED SPURIOUS EMISSIONS

9kHz – 30MHz – TX Mid CH Mode – Graph



9kHz – 30MHz – TX Mid CH Mode – Graph

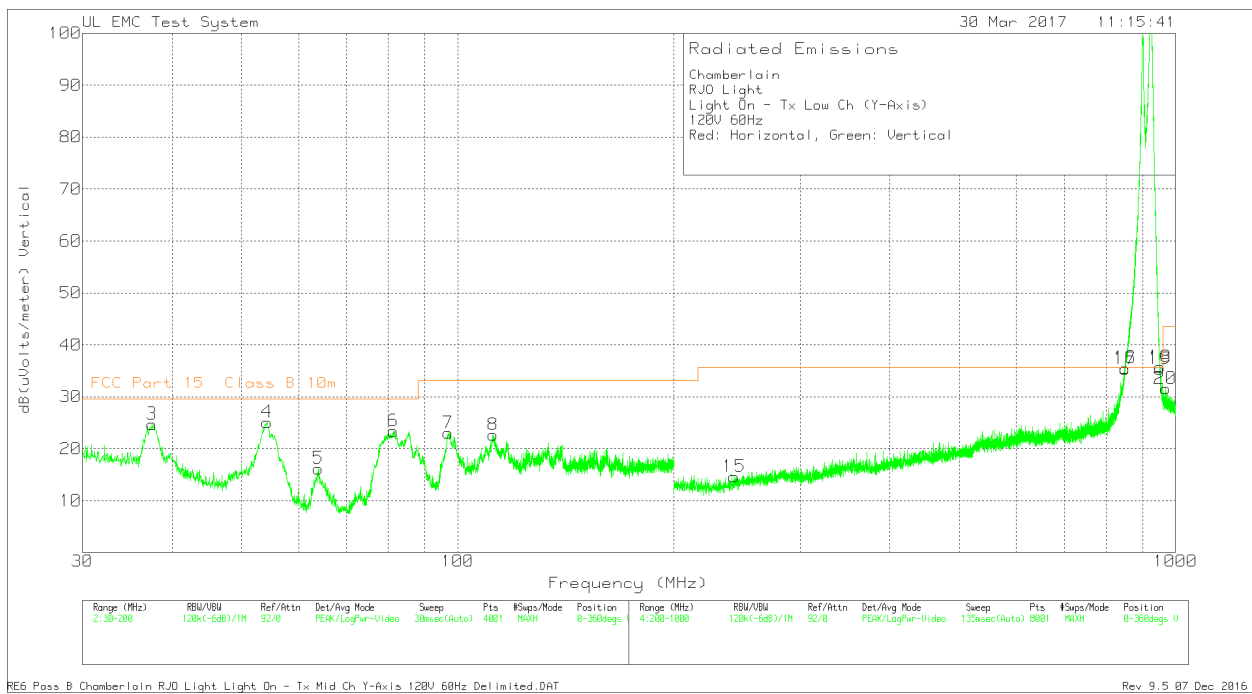
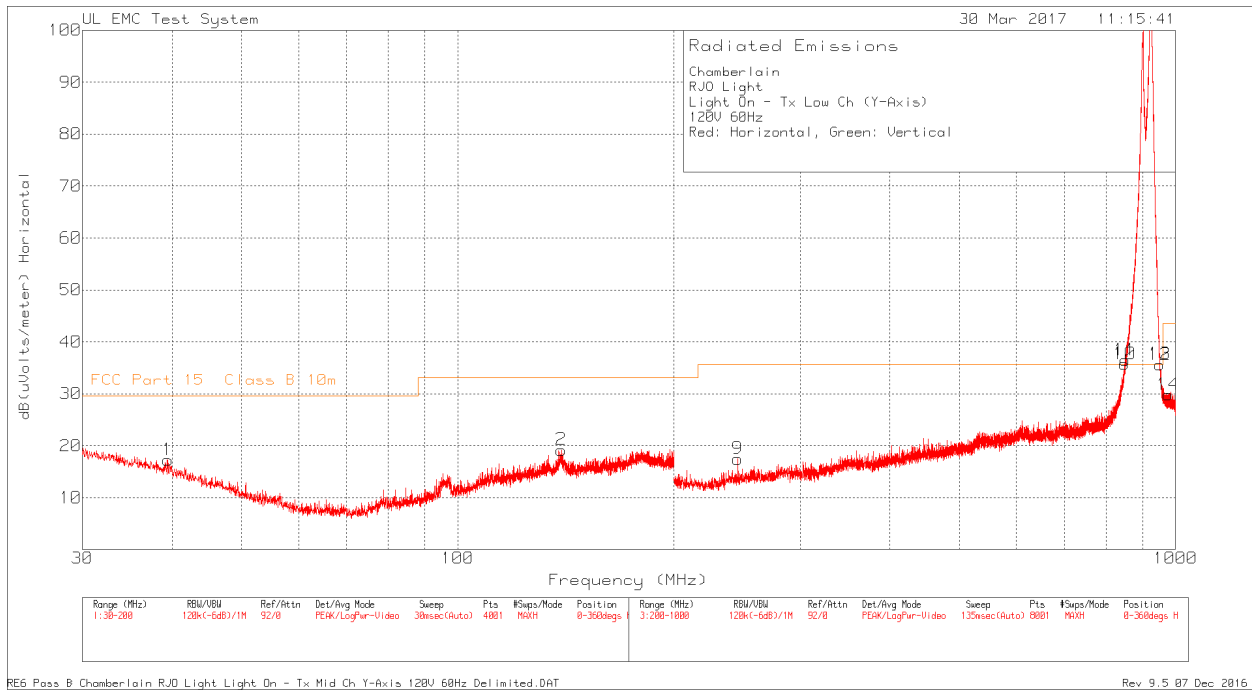
Chamberlain
 RJO, LED Light
 Light On - TX Mid Ch
 120V 60Hz
 Red: X-Axis, Green: Y-Axis, Cyan: Z-Axis

Trace Markers

Marker No	Test Freq	Meter Rea	Detector	loop01 E	Factor	9k-3 Corrected	IFCC Part 1	Margin (dB	Azimuth	D Height	cm	Polarity
1	0.015895	41.09	Pk	18.5	0	59.59	123.56	-63.97	0-360	102	X	
2	0.07018	43.86	Pk	11.9	0	55.76	110.67	-54.91	0-360	102	X	
3	0.23563	41.93	Pk	11.3	0	53.23	100.16	-46.93	0-360	102	X	
4	3.03	19.83	Pk	11.5	0.1	31.43	69.54	-38.11	0-360	102	X	
5	29.159	18.25	Pk	8.1	0.3	26.65	69.54	-42.89	0-360	102	X	
6	0.01495	38.4	Pk	19	0	57.4	124.09	-66.69	0-360	102	Y	
7	0.07018	37.89	Pk	11.9	0	49.79	110.67	-60.88	0-360	102	Y	
8	0.2761	40.41	Pk	11.3	0	51.71	98.78	-47.07	0-360	102	Y	
9	2.86325	20.68	Pk	11.5	0.1	32.28	69.54	-37.26	0-360	102	Y	
10	8.279	17.18	Pk	10.9	0.2	28.28	69.54	-41.26	0-360	102	Y	
11	0.009245	43.6	Pk	22.2	0	65.8	128.27	-62.47	0-360	102	Z	
12	0.0272	40.72	Pk	15.5	0	56.22	118.9	-62.68	0-360	102	Z	
13	0.070565	35.03	Pk	11.9	0	46.93	110.62	-63.69	0-360	102	Z	
14	0.32178	38.17	Pk	11.3	0	49.47	97.45	-47.98	0-360	102	Z	
15	2.74	19.75	Pk	11.5	0.1	31.35	69.54	-38.19	0-360	102	Z	
16	27.332	24.42	Pk	8.2	0.3	32.92	69.54	-36.62	0-360	102	Z	

Pk - Peak detector

30MHz – 1000MHz – TX Low CH Mode – Graph



*The area between 850MHz and 950MHz is a result of a band reject filter factor. There is no limit for radiated emissions in this frequency band. The lower restricted band ends at 613MHz and the upper restricted starts at 960MHz.

30MHz – 1000MHz – TX Low CH Mode – Data

Chamberlain
 RJO Light
 Light On - Tx Low Ch (Y-Axis)
 120V 60Hz
 Red: Horizontal, Green: Vertical

Trace Markers

Marker No.	Test Frequency (MHz)	Meter		Antenna		900 BRF (dB)	Corrected Reading dB(uVolts/meter)	QP			Height [cm]	Polarity
		Reading (dBuV)	Detector	Factor (dBm)	Path (dB)			QP Limit dBuV/m	Margin (dB)	Azimuth [Degs]		
1	39.4775	32.77	Pk	14.5	-30		17.27	29.55	-12.28	0-360	102	H
2	139.395	34.31	Pk	14.5	-29.6		19.21	33.07	-13.86	0-360	398	H
3	37.5225	39.42	Pk	15.3	-30		24.72	29.55	-4.83	0-360	101	V
4	54.2675	46.71	Pk	8.4	-30		25.11	29.55	-4.44	0-360	101	V
5	63.9575	39.69	Pk	6.5	-30		16.19	29.55	-13.36	0-360	251	V
6	81.2975	45.87	Pk	7.4	-29.9		23.37	29.55	-6.18	0-360	101	V
7	96.9375	42.64	Pk	10.2	-29.8		23.04	33.07	-10.03	0-360	101	V
8	111.9825	40.09	Pk	12.4	-29.8		22.69	33.07	-10.38	0-360	101	V
9	245.7	34.87	Pk	11.7	-29.3	0.2	17.47	35.57	-18.1	0-360	299	H
10	849.5	30.64	Pk	22.6	-27.7	10.2	35.74	35.57	0.17	0-360	99	H
11	850.4	30.86	Pk	22.6	-27.7	10.7	36.46	35.57	0.89	0-360	199	H
12	950.9	29.98	Pk	23.3	-27.4	9.7	35.58	35.57	0.01	0-360	299	H
13	950.6	29.67	Pk	23.3	-27.4	10.1	35.67	35.57	0.1	0-360	199	H
14	975.7	30.96	Pk	24.3	-27.1	1.7	29.86	43.52	-13.66	0-360	199	H
15	242.7	32.31	Pk	11.5	-29.3	0.1	14.61	35.57	-20.96	0-360	299	V
16	849.9	30.25	Pk	22.6	-27.7	10.4	35.55	35.57	-0.02	0-360	199	V
17	850.2	29.86	Pk	22.6	-27.7	10.6	35.36	35.57	-0.21	0-360	299	V
18	951.3	30.53	Pk	23.3	-27.3	9.2	35.73	35.57	0.16	0-360	99	V
19	951	29.84	Pk	23.3	-27.4	9.6	35.34	35.57	-0.23	0-360	398	V
20	967.6	32.15	Pk	24.1	-27	2.3	31.55	43.52	-11.97	0-360	398	V

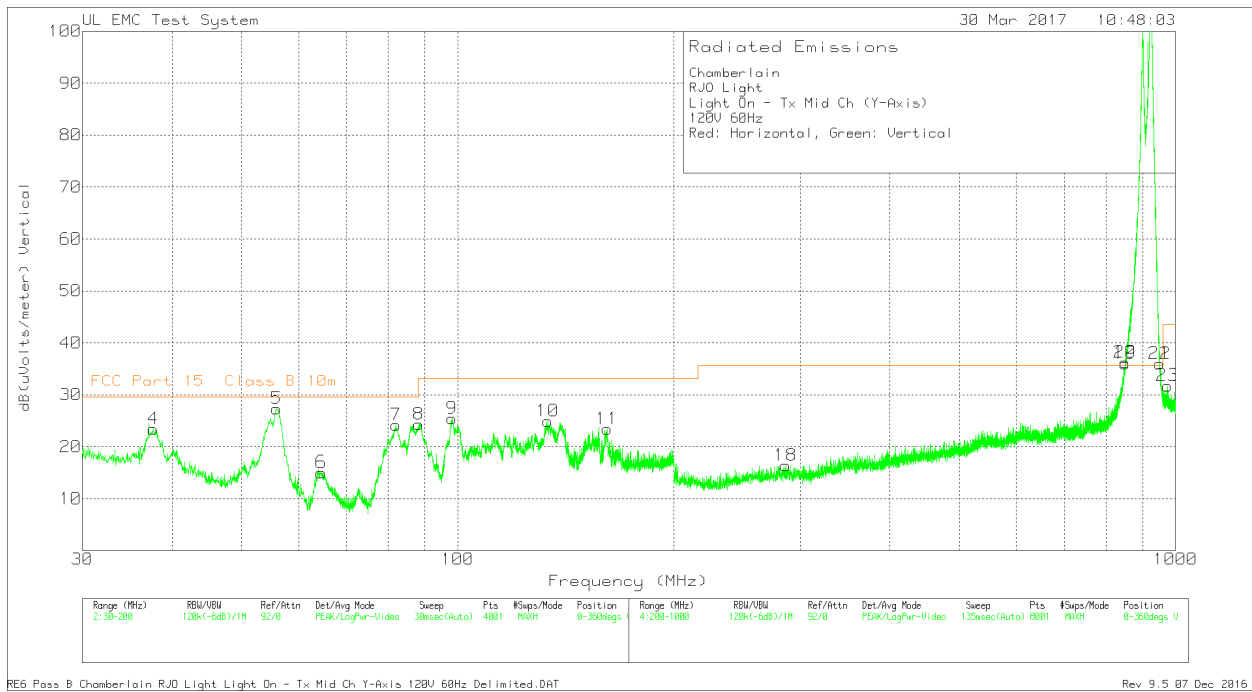
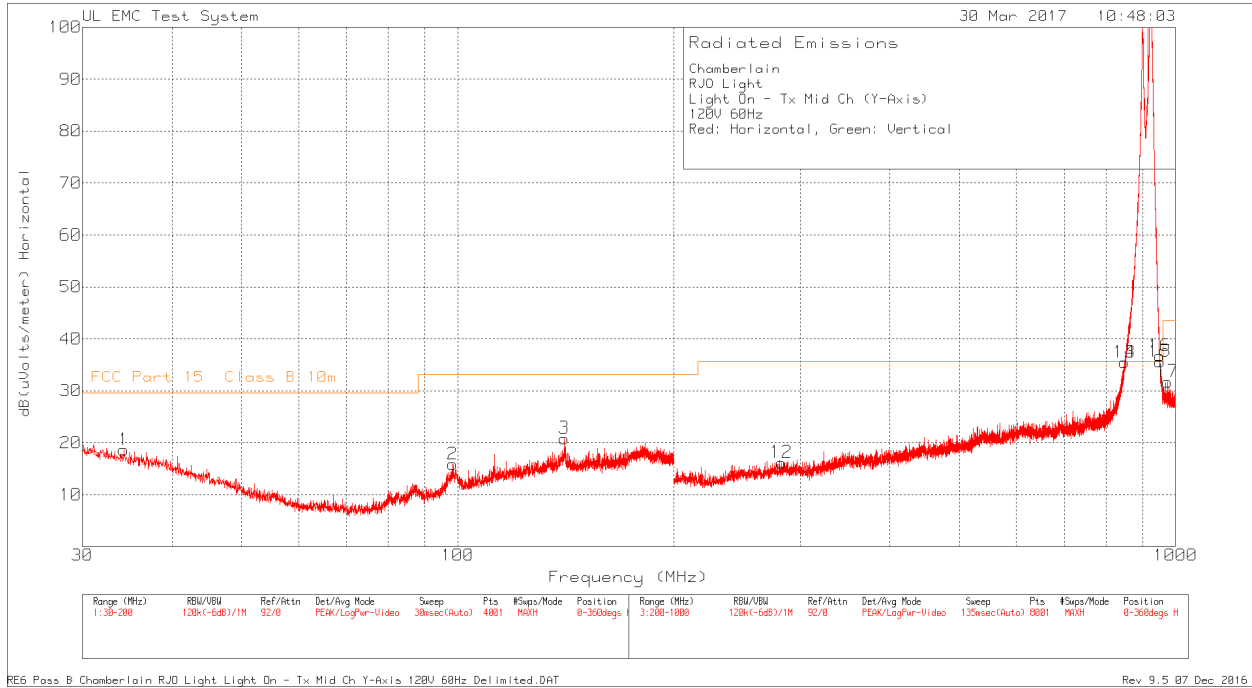
Pk - Peak detector

Radiated Emission Data

Test Frequency (MHz)	Meter		Antenna		900 BRF (dB)	Corrected Reading dB(uVolts/meter)	QP			Height [cm]	Polarity
	Reading (dBuV)	Detector	Factor (dBm)	Path (dB)			QP Limit dBuV/m	Margin (dB)	Azimuth [Degs]		
37.665	34.51	Qp	15.2	-30		19.71	29.55	-9.84	346	103	V
54.0845	41.46	Qp	8.5	-30		19.96	29.55	-9.59	78	248	V

Qp - Quasi-Peak detector

30MHz – 1000MHz – TX Mid CH Mode – Graph



*The area between 850MHz and 950MHz is a result of a band reject filter factor. There is no limit for radiated emissions in this frequency band. The lower restricted band ends at 613MHz and the upper restricted starts at 960MHz.

30MHz – 1000MHz – TX Mid CH Mode – Data

Chamberlain
 RJO Light
 Light On - Tx Mid Ch (Y-Axis)
 120V 60Hz
 Red: Horizontal, Green: Vertical

Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Antenna Factor (dBm)	900 Path (dB)	Corrected BRF (dB)	Reading dB(uVolts/meter)	QP		Azimuth [Degs]	Height [cm]	Polarity
							Limit dBuV/m	Margin (dB)			
1	34.25	32.04 Pk	16.6	-30		18.64	29.55	-10.91	0-360	102	H
2	98.3825	35.25 Pk	10.4	-29.8		15.85	33.07	-17.22	0-360	248	H
3	140.84	35.84 Pk	14.6	-29.6		20.84	33.07	-12.23	0-360	398	H
4	37.6925	38.24 Pk	15.2	-30		23.44	29.55	-6.11	0-360	102	V
5	55.9675	49.4 Pk	7.9	-30		27.3	29.55	-2.25	0-360	252	V
6	64.5525	38.64 Pk	6.4	-30		15.04	29.55	-14.51	0-360	252	V
7	82.02	46.6 Pk	7.5	-29.9		24.2	29.55	-5.35	0-360	398	V
8	88.31	45.39 Pk	8.8	-29.9		24.29	33.07	-8.78	0-360	102	V
9	98.2125	44.86 Pk	10.4	-29.8		25.46	33.07	-7.61	0-360	102	V
10	133.445	40.41 Pk	14.2	-29.7		24.91	33.07	-8.16	0-360	102	V
11	161.5375	37.59 Pk	15.3	-29.5		23.39	33.07	-9.68	0-360	102	V
12	282.5	31.98 Pk	13	-29	0.2	16.18	35.57	-19.39	0-360	99	H
13	848.5	31 Pk	22.5	-27.7	9.7	35.5	35.57	-0.07	0-360	99	H
14	849.2	30.49 Pk	22.6	-27.7	10.1	35.49	35.57	-0.08	0-360	99	H
15	951.2	30.27 Pk	23.3	-27.3	9.3	35.57	35.57	0	0-360	299	H
16	950.9	31.15 Pk	23.3	-27.4	9.7	36.75	35.57	1.18	0-360	99	H
17	974.7	32.76 Pk	24.3	-27.1	1.8	31.76	43.52	-11.76	0-360	299	H
18	286.3	32.17 Pk	13	-29	0.2	16.37	35.57	-19.2	0-360	198	V
19	849.9	30.73 Pk	22.6	-27.7	10.4	36.03	35.57	0.46	0-360	99	V
20	850.6	30.56 Pk	22.6	-27.7	10.8	36.26	35.57	0.69	0-360	399	V
21	951	30.51 Pk	23.3	-27.4	9.6	36.01	35.57	0.44	0-360	299	V
22	950.7	30.19 Pk	23.3	-27.4	9.9	35.99	35.57	0.42	0-360	299	V
23	974.7	32.76 Pk	24.3	-27.1	1.8	31.76	43.52	-11.76	0-360	299	V

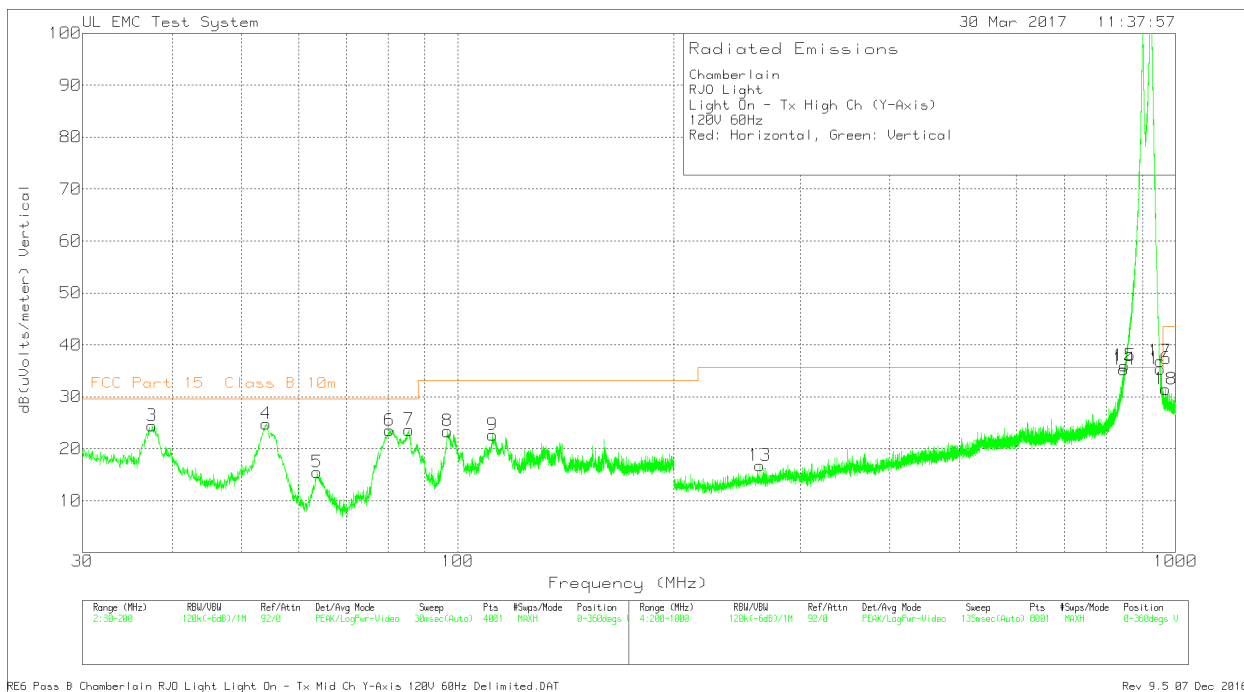
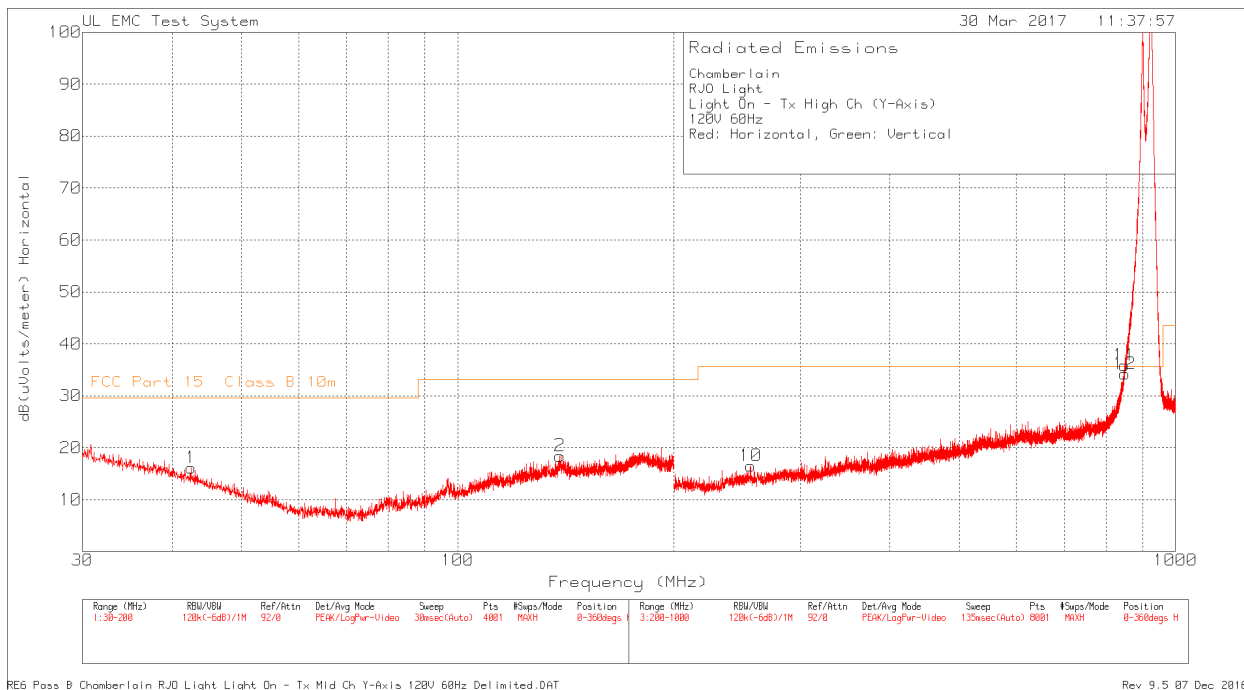
Pk - Peak detector

Radiated Emission Data

Test Frequency (MHz)	Meter Reading (dBuV)	Antenna Factor (dBm)	900 Path (dB)	Corrected BRF (dB)	Reading dB(uVolts/meter)	QP		Azimuth [Degs]	Height [cm]	Polarity
						Limit dBuV/m	Margin (dB)			
55.75825	43.54 Qp	8	-30		21.54	29.55	-8.01	146	225	V
81.57675	41.29 Qp	7.5	-29.9		18.89	29.55	-10.66	144	145	V

Qp - Quasi-Peak detector

30MHz – 1000MHz – TX High CH Mode – Graph



*The area between 850MHz and 950MHz is a result of a band reject filter factor. There is no limit for radiated emissions in this frequency band. The lower restricted band ends at 613MHz and the upper restricted starts at 960MHz.

30MHz – 1000MHz – TX High CH Mode – Data

Chamberlain
 RJO Light
 Light On - Tx High Ch (Y-Axis)
 120V 60Hz
 Red: Horizontal, Green: Vertical

Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Antenna Factor (dBm)	Path (dB)	900 BRF (dB)	Corrected		QP		Height [cm]	Polarity
						Reading dB(uVolts/meter)	QP Limit dBuV/m	Margin (dB)	Azimuth [Degs]		
1	42.495	32.8 Pk	13.3	-30		16.1	29.55	-13.45	0-360	248 H	
2	138.8	33.53 Pk	14.5	-29.6		18.43	33.07	-14.64	0-360	398 H	
3	37.5225	39.12 Pk	15.3	-30		24.42	29.55	-5.13	0-360	101 V	
4	54.055	46.29 Pk	8.5	-30		24.79	29.55	-4.76	0-360	101 V	
5	63.7025	38.99 Pk	6.5	-30		15.49	29.55	-14.06	0-360	251 V	
6	80.3625	46.16 Pk	7.3	-29.9		23.56	29.55	-5.99	0-360	398 V	
7	85.4625	45.22 Pk	8.2	-29.8		23.62	29.55	-5.93	0-360	251 V	
8	96.725	42.97 Pk	10.2	-29.8		23.37	33.07	-9.7	0-360	251 V	
9	111.855	40.03 Pk	12.4	-29.8		22.63	33.07	-10.44	0-360	101 V	
10	256.1	33.27 Pk	12.3	-29.2	0.1	16.47	35.57	-19.1	0-360	199 H	
11	849.2	30.84 Pk	22.6	-27.7	10.1	35.84	35.57	0.27	0-360	399 H	
12	849.6	29.05 Pk	22.6	-27.7	10.3	34.25	35.57	-1.32	0-360	399 H	
13	263.4	33.43 Pk	12.3	-29.1	0.1	16.73	35.57	-18.84	0-360	102 V	
14	847.7	31.19 Pk	22.5	-27.7	9.3	35.29	35.57	-0.28	0-360	399 V	
15	848.9	31.2 Pk	22.6	-27.7	9.9	36	35.57	0.43	0-360	298 V	
16	952	30.91 Pk	23.3	-27.2	8.4	35.41	35.57	-0.16	0-360	399 V	
17	951.5	31.83 Pk	23.3	-27.3	9	36.83	35.57	1.26	0-360	298 V	
18	969.2	31.98 Pk	24.2	-26.9	2.2	31.48	43.52	-12.04	0-360	202 V	

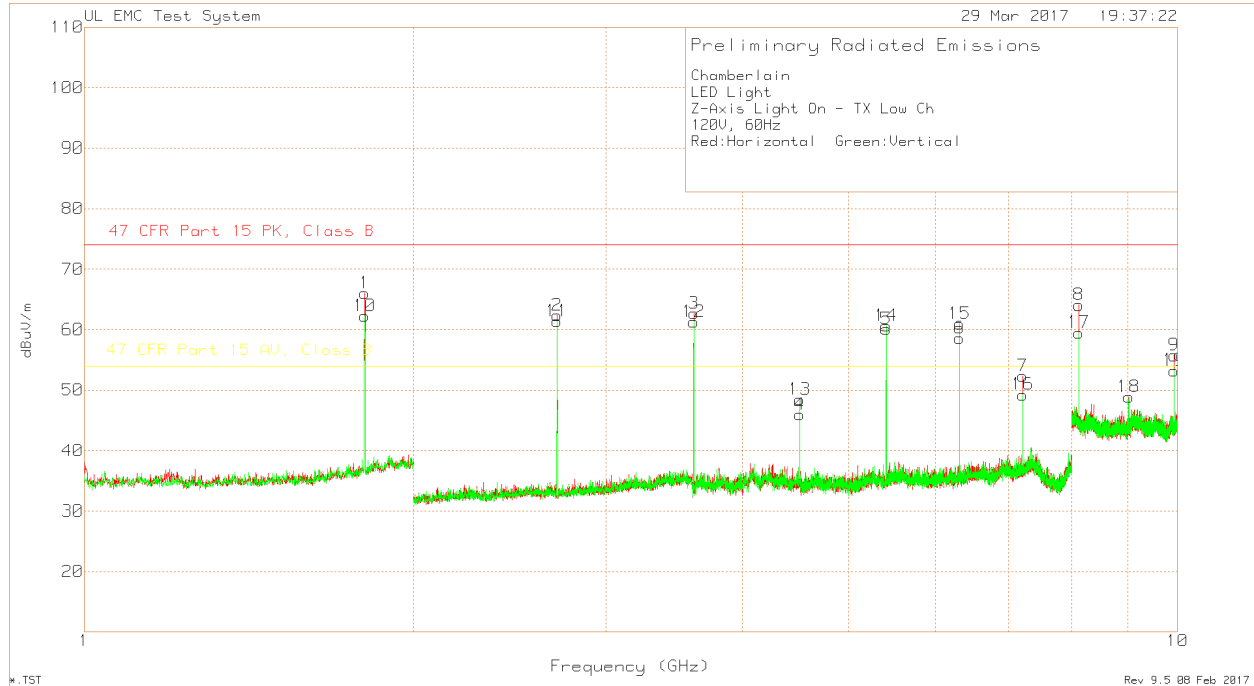
Pk - Peak detector

Radiated Emission Data

Test Frequency (MHz)	Meter Reading (dBuV)	Antenna Factor (dBm)	Path (dB)	900 BRF (dB)	Corrected		QP		Height [cm]	Polarity
					Reading dB(uVolts/meter)	QP Limit dBuV/m	Margin (dB)	Azimuth [Degs]		
37.72325	34.42 Qp	15.2	-30		19.62	29.55	-9.93	327	106 V	
54.144	41.18 Qp	8.5	-30		19.68	29.55	-9.87	87	279 V	
80.1285	41.23 Qp	7.2	-29.9		18.53	29.55	-11.02	53	154 V	
85.30125	41.1 Qp	8.2	-29.8		19.5	29.55	-10.05	108	161 V	

Qp - Quasi-Peak detector

1GHz – 10GHz, Low channel – Graph



Chamberlain
 RIO Light
 Light On - Tx Low Ch (Y-Axis)
 120V 60Hz

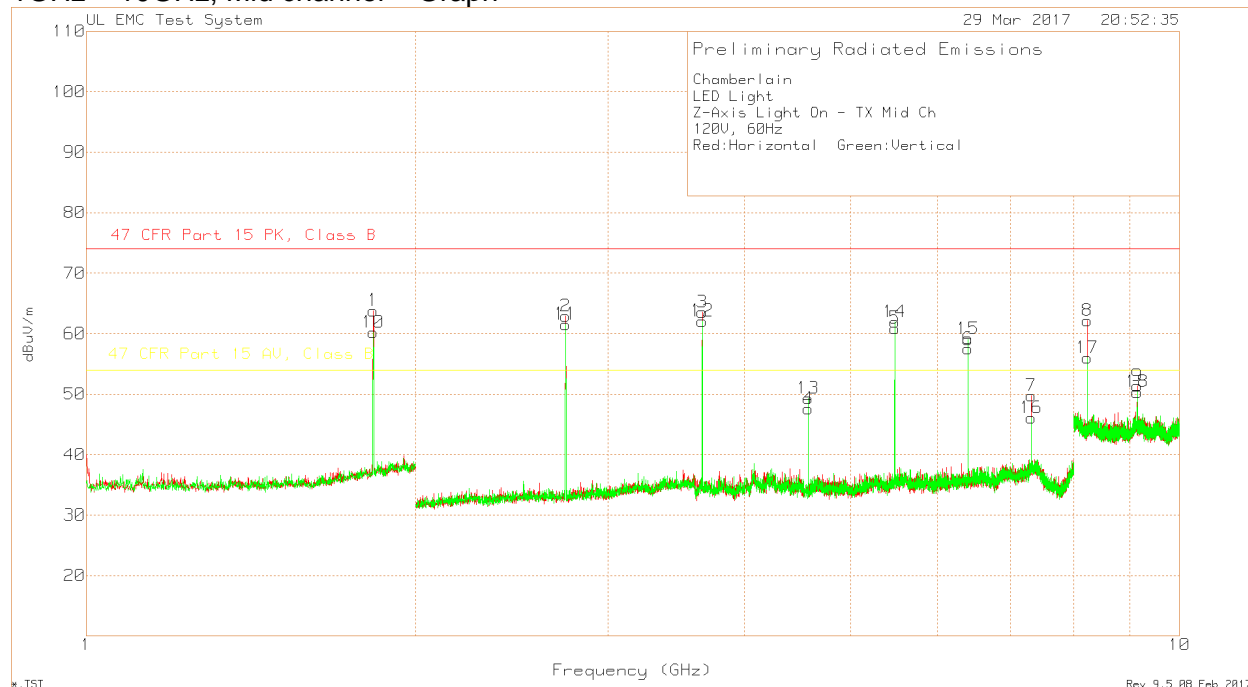
Trace Markers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV) Detector	Antenn Factor (dBm)	BRF 900 Factor (dB)	Path (dB)	Corrected Reading (dBuV/m)	PK Limit (dBuV/m)	PK Margin (dB)	Hopping		AV		Azimuth [Degs]	Height [cm]	Polarity
									Duty Cycle	Correction (dB)	AV Level (dBuV/m)	AV Limit (dBuV/m)			
1	1.805	93.69 Pk	26.8	0.4	-54.88	66.01	74	-7.99	-37.63	28.38	54	-25.62	0-360	152 H	
2	2.707	91.22 Pk	22.1	-	-50.95	62.37	74	-11.63	-37.63	24.74	54	-29.26	0-360	152 H	
3	3.61	89.78 Pk	23.2	-	-50.33	62.65	74	-11.35	-37.63	25.02	54	-28.98	0-360	152 H	
4	4.511	70.01 Pk	27.8	-	-51.86	45.95	74	-28.05	-37.63	8.32	54	-45.68	0-360	152 H	
5	5.413	82.42 Pk	27.9	-	-50.26	60.06	74	-13.94	-37.63	22.43	54	-31.57	0-360	152 H	
6	6.316	77.14 Pk	29.2	-	-47.74	58.6	74	-15.4	-37.63	20.97	54	-33.03	0-360	152 H	
7	7.218	68.84 Pk	29.8	-	-46.35	52.29	74	-21.71	-37.63	14.66	54	-39.34	0-360	152 H	
8	8.12	75.63 Pk	36.2	-	-47.78	64.05	74	-9.95	-37.63	26.42	54	-27.58	0-360	152 H	
9	9.926	67.63 Pk	36.4	-	-48.29	55.74	74	-18.26	-37.63	18.11	54	-35.89	0-360	152 H	
10	1.805	89.9 Pk	26.8	0.4	-54.88	62.22	74	-11.78	-37.63	24.59	54	-29.41	0-360	152 V	
11	2.707	90.24 Pk	22.1	-	-50.95	61.39	74	-12.61	-37.63	23.76	54	-30.24	0-360	152 V	
12	3.609	88.4 Pk	23.2	-	-50.34	61.26	74	-12.74	-37.63	23.63	54	-30.37	0-360	152 V	
13	4.511	72.47 Pk	27.8	-	-51.86	48.41	74	-25.59	-37.63	10.78	54	-43.22	0-360	152 V	
14	5.413	82.98 Pk	27.9	-	-50.26	60.62	74	-13.38	-37.63	22.99	54	-31.01	0-360	152 V	
15	6.316	79.48 Pk	29.2	-	-47.74	60.94	74	-13.06	-37.63	23.31	54	-30.69	0-360	152 V	
16	7.219	65.79 Pk	29.8	-	-46.34	49.25	74	-24.75	-37.63	11.62	54	-42.38	0-360	152 V	
17	8.12	71.06 Pk	36.2	-	-47.78	59.48	74	-14.52	-37.63	21.85	54	-32.15	0-360	152 V	
18	9.0233	62.56 Pk	36.1	-	-49.77	48.89	74	-25.11	-37.63	11.26	54	-42.74	0-360	152 V	
19	9.9247	65.1 Pk	36.4	-	-48.28	53.22	74	-20.78	-37.63	15.59	54	-38.41	0-360	152 V	

Pk - Peak detector

Average measurements were not conducted, however per DA 00-705, FCC 15.35(c) and RSS-Gen 6.10a, duty cycle factor was measured and it was added to peak level. Because of duty cycle factor is larger than the average to peak limit delta and since all peaks are under the peak limit the device is deemed to comply without any further measurements.

1GHz – 10GHz, Mid channel – Graph



Chamberlain
 RJO Light
 Light On - Tx Low Ch (Y-Axis)
 120V 60Hz

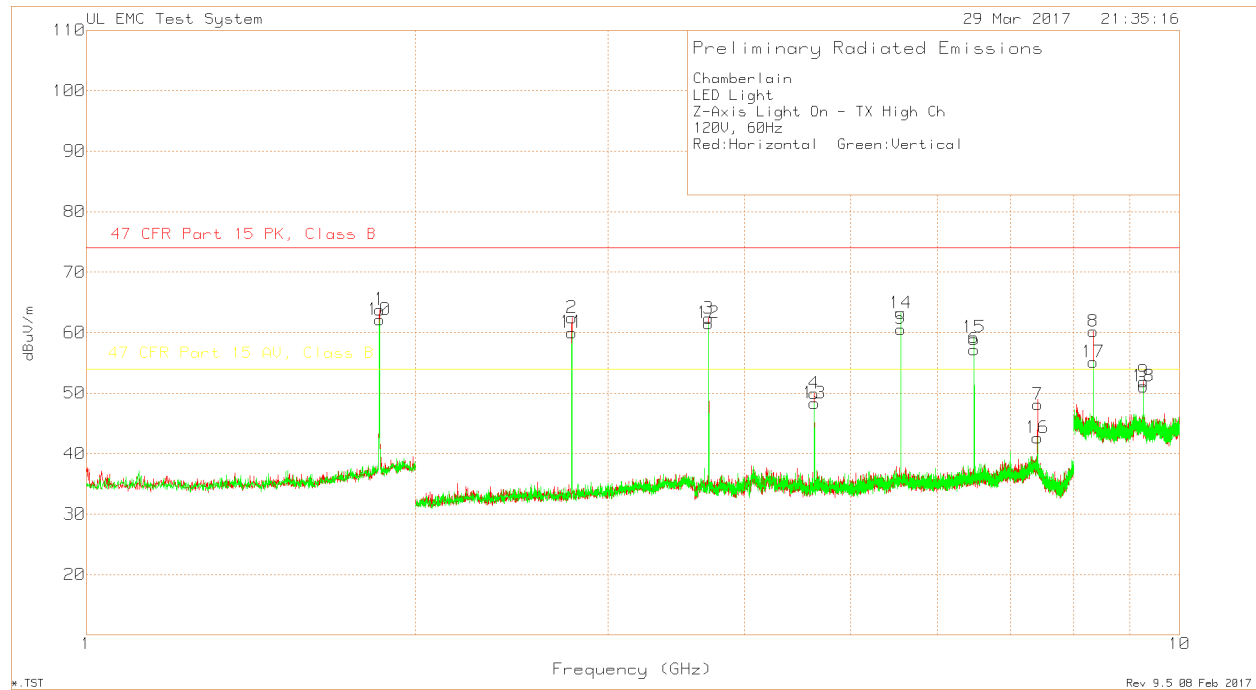
Trace Markers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV) Detector	Antenn Factor (dBm)	BRF 900 Factor (dB)	Path (dB)	Corrected Reading (dBuV/m)	PK Limit (dBuV/m)	PK Margin (dB)	Hopping Duty Cycle Correction (dB)	AV		Azimuth [Degs]	Height [cm]	Polarity
										AV Level (dBuV/m)	AV Limit (dBuV/m)			
1	1.83	91.07 Pk	27	0.4	-54.66	63.81	74	-10.19	-37.63	26.18	54	-27.82	0-360	150 H
2	2.744	91.68 Pk	22.1	-	-50.89	62.89	74	-11.11	-37.63	25.26	54	-28.74	0-360	150 H
3	3.659	89.53 Pk	23.4	-	-49.39	63.54	74	-10.46	-37.63	25.91	54	-28.09	0-360	150 H
4	4.574	71.76 Pk	27.7	-	-51.86	47.6	74	-26.4	-37.63	9.97	54	-44.03	0-360	150 H
5	5.489	82.83 Pk	28.1	-	-50.04	60.89	74	-13.11	-37.63	23.26	54	-30.74	0-360	150 H
6	6.403	75.95 Pk	29.2	-	-47.68	57.47	74	-16.53	-37.63	19.84	54	-34.16	0-360	150 H
7	7.318	65.11 Pk	30.6	-	-46.01	49.7	74	-24.3	-37.63	12.07	54	-41.93	0-360	150 H
8	8.2327	74.43 Pk	36.4	-	-48.69	62.14	74	-11.86	-37.63	24.51	54	-29.49	0-360	150 H
9	9.1473	63.45 Pk	36.3	-	-48.38	51.37	74	-22.63	-37.63	13.74	54	-40.26	0-360	150 H
10	1.83	87.45 Pk	27	0.4	-54.66	60.19	74	-13.81	-37.63	22.56	54	-31.44	0-360	150 V
11	2.744	90.33 Pk	22.1	-	-50.89	61.54	74	-12.46	-37.63	23.91	54	-30.09	0-360	150 V
12	3.659	88.06 Pk	23.4	-	-49.39	62.07	74	-11.93	-37.63	24.44	54	-29.56	0-360	150 V
13	4.574	73.45 Pk	27.7	-	-51.86	49.29	74	-24.71	-37.63	11.66	54	-42.34	0-360	150 V
14	5.488	83.86 Pk	28.1	-	-50.06	61.9	74	-12.1	-37.63	24.27	54	-29.73	0-360	150 V
15	6.404	77.54 Pk	29.2	-	-47.67	59.07	74	-14.93	-37.63	21.44	54	-32.56	0-360	150 V
16	7.318	61.47 Pk	30.6	-	-46.01	46.06	74	-27.94	-37.63	8.43	54	-45.57	0-360	150 V
17	8.2333	68.27 Pk	36.4	-	-48.68	55.99	74	-18.01	-37.63	18.36	54	-35.64	0-360	150 V
18	9.1473	62.42 Pk	36.3	-	-48.38	50.34	74	-23.66	-37.63	12.71	54	-41.29	0-360	150 V

Pk - Peak detector

Average measurements were not conducted, however per DA 00-705 duty cycle factor was measured and it was added to peak level. Because of duty cycle factor is larger than the average to peak limit delta and since all peaks are under the peak limit the devices is deemed to comply without any further measurements.

1GHz – 10GHz, High channel – Graph



Chamberlain
 RIO Light
 Light On - Tx High Ch (Y-Axis)
 120V 60Hz

Trace Markers

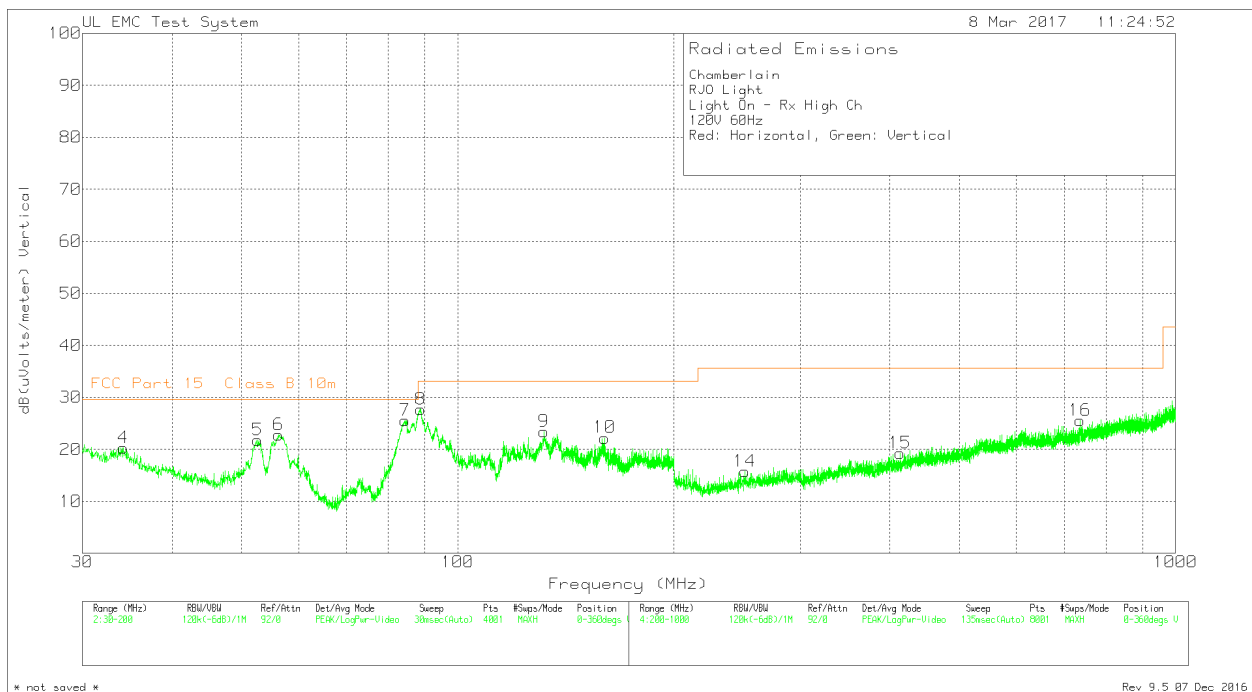
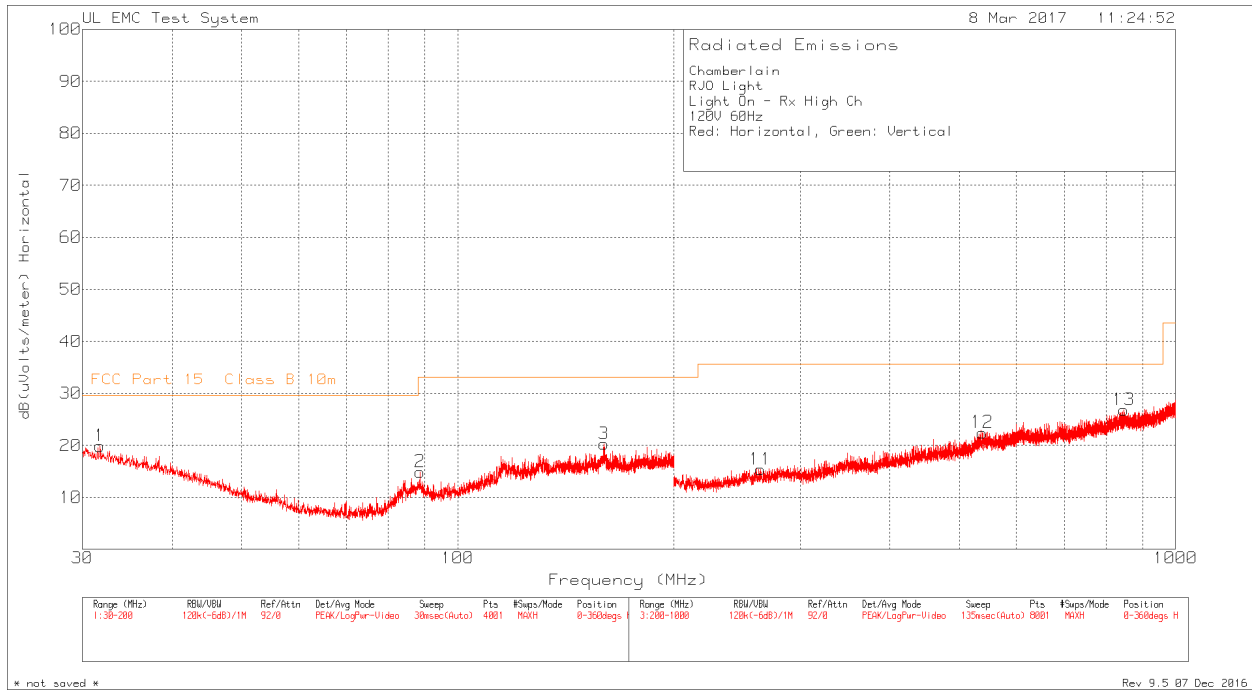
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV) Detector	Antenn			Corrected Reading (dBuV/m)	PK Limit (dBuV/m)	PK Margin (dB)	Hopping		AV Level (dBuV/m)	AV Limit (dBuV/m)	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
			Factor (dBm)	Factor (dB)	Path (dB)				Duty Cycle Factor (dB)	Correction (dB)						
1	1.854	90.76 Pk	27.3	0.4	-54.65	63.81	74	-10.19	-37.63	26.18	54	-27.82	0-360	151	H	
2	2.78	90.97 Pk	22.2	-	-50.73	62.44	74	-11.56	-37.63	24.81	54	-29.19	0-360	151	H	
3	3.708	88.45 Pk	23.5	-	-49.62	62.33	74	-11.67	-37.63	24.7	54	-29.3	0-360	151	H	
4	4.633	74 Pk	27.7	-	-51.74	49.96	74	-24.04	-37.63	12.33	54	-41.67	0-360	151	H	
5	5.56	81.76 Pk	28.3	-	-49.48	60.58	74	-13.42	-37.63	22.95	54	-31.05	0-360	151	H	
6	6.488	75.47 Pk	29.1	-	-47.41	57.16	74	-16.84	-37.63	19.53	54	-34.47	0-360	151	H	
7	7.415	64.27 Pk	31	-	-47.18	48.09	74	-25.91	-37.63	10.46	54	-43.54	0-360	151	H	
8	8.3413	70.97 Pk	36.5	-	-47.25	60.22	74	-13.78	-37.63	22.59	54	-31.41	0-360	151	H	
9	9.2673	64.08 Pk	36.4	-	-48.61	51.87	74	-22.13	-37.63	14.24	54	-39.76	0-360	151	H	
10	1.854	89.08 Pk	27.3	0.4	-54.65	62.13	74	-11.87	-37.63	24.5	54	-29.5	0-360	151	V	
11	2.78	88.55 Pk	22.2	-	-50.73	60.02	74	-13.98	-37.63	22.39	54	-31.61	0-360	151	V	
12	3.707	87.65 Pk	23.5	-	-49.6	61.55	74	-12.45	-37.63	23.92	54	-30.08	0-360	151	V	
13	4.634	72.33 Pk	27.7	-	-51.73	48.3	74	-25.7	-37.63	10.67	54	-43.33	0-360	151	V	
14	5.561	84.38 Pk	28.3	-	-49.47	63.21	74	-10.79	-37.63	25.58	54	-28.42	0-360	151	V	
15	6.487	77.54 Pk	29.1	-	-47.42	59.22	74	-14.78	-37.63	21.59	54	-32.41	0-360	151	V	
16	7.414	58.8 Pk	31	-	-47.18	42.62	74	-31.38	-37.63	4.99	54	-49.01	0-360	151	V	
17	8.3413	65.9 Pk	36.5	-	-47.25	55.15	74	-18.85	-37.63	17.52	54	-36.48	0-360	151	V	
18	9.2687	63.31 Pk	36.4	-	-48.61	51.1	74	-22.9	-37.63	13.47	54	-40.53	0-360	151	V	

Pk - Peak detector

Average measurements were not conducted, however per DA 00-705 duty cycle factor was measured and it was added to peak level. Because of duty cycle factor is larger than the average to peak limit delta and since all peaks are under the peak limit the device is deemed to comply without any further measurements.

9.4. DIGITAL/RX DEVICE EMISSIONS

30MHz – 1GHz, Digital/RX - Graph



30MHz – 1GHz, Digital/RX - Data

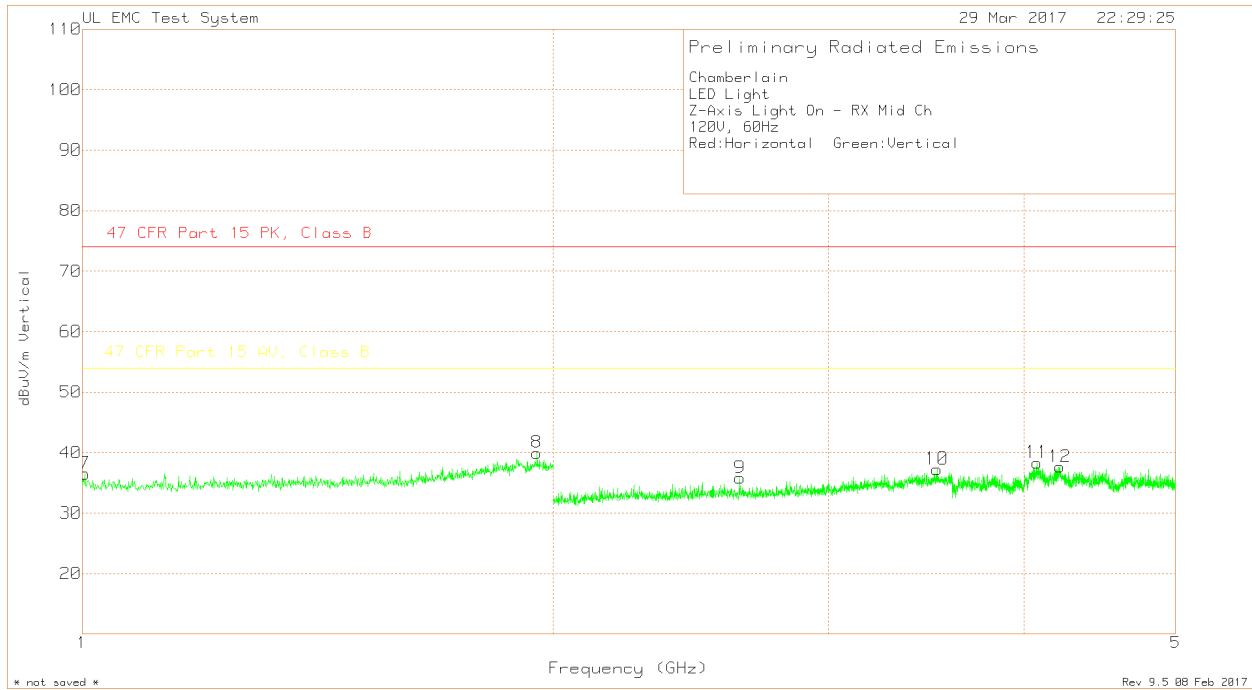
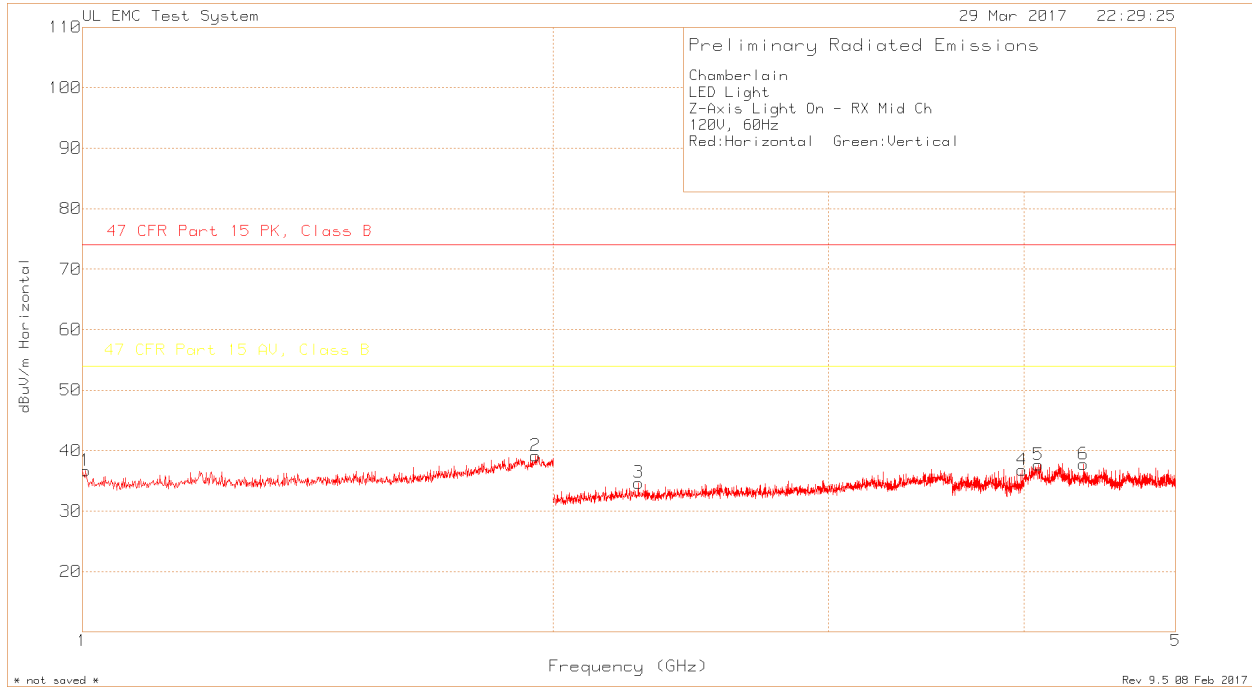
Chamberlain
 RJO Light
 Light On - Rx High Ch
 120V 60Hz
 Red: Horizontal, Green: Vertical

Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Antenna Factor (dBm)	Path (dB)	Corrected Reading dB(uVolts/ meter)	QP Limit (dBuV/m)	QP Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	31.7425	32.16 Pk	17.7	-30	19.86	29.55	-9.69	0-360	398	H
2	88.6075	36.02 Pk	8.8	-29.9	14.92	33.07	-18.15	0-360	248	H
3	159.8375	34.49 Pk	15.3	-29.5	20.29	33.07	-12.78	0-360	398	H
4	34.2075	33.69 Pk	16.6	-30	20.29	29.55	-9.26	0-360	101	V
5	52.6525	42.76 Pk	9	-30	21.76	29.55	-7.79	0-360	101	V
6	56.265	45.02 Pk	7.8	-30	22.82	29.55	-6.73	0-360	101	V
7	84.4425	47.48 Pk	8	-29.9	25.58	29.55	-3.97	0-360	101	V
8	88.735	48.8 Pk	8.8	-29.9	27.7	33.07	-5.37	0-360	101	V
9	131.9575	39.02 Pk	14.1	-29.7	23.42	33.07	-9.65	0-360	101	V
10	160.305	36.43 Pk	15.3	-29.5	22.23	33.07	-10.84	0-360	101	V
11	264.2	32.21 Pk	12.3	-29.1	15.41	35.57	-20.16	0-360	299	H
12	538	31.06 Pk	19.1	-27.7	22.46	35.57	-13.11	0-360	299	H
13	847.2	32.14 Pk	22.5	-27.8	26.84	35.57	-8.73	0-360	399	H
14	251	32.86 Pk	12.1	-29.2	15.76	35.57	-19.81	0-360	302	V
15	413.4	31.75 Pk	15.8	-28.3	19.25	35.57	-16.32	0-360	399	V
16	736.3	32.74 Pk	20.3	-27.5	25.54	35.57	-10.03	0-360	198	V

Pk - Peak detector

1GHz – 10GHz, Digital/RX - Graph



1GHz – 10GHz, Digital/RX - Data

Chamberlain
 RJO, LED Light
 Light On - RX
 120V 60Hz

Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dBm)	BRF 900 Factor (dB)	Path (dB)	Corrected Reading (dBuV/m)	PK Limit (dBuV/m)	PK Margin (dB)	AV Limit (dBuV/m)	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.005	68.93 Pk	24	1	-57.26	36.67	74	-37.33	54	-17.33	0-360	152	H
2	1.949	65.24 Pk	27.7	0.5	-54.28	39.16	74	-34.84	54	-14.84	0-360	152	H
3	2.267	64.21 Pk	21.7	-	-51.23	34.68	74	-39.32	54	-19.32	0-360	152	H
4	3.988	63.36 Pk	24.3	-	-50.89	36.77	74	-37.23	54	-17.23	0-360	152	H
5	4.084	60.81 Pk	28.4	-	-51.58	37.63	74	-36.37	54	-16.37	0-360	152	H
6	4.365	61.67 Pk	28.1	-	-51.99	37.78	74	-36.22	54	-16.22	0-360	152	H
7	1.004	68.68 Pk	24	1.1	-57.26	36.52	74	-37.48	54	-17.48	0-360	152	V
8	1.953	66.03 Pk	27.7	0.5	-54.26	39.97	74	-34.03	54	-14.03	0-360	152	V
9	2.633	64.62 Pk	22.2	-	-51.02	35.8	74	-38.2	54	-18.2	0-360	152	V
10	3.519	63.76 Pk	23.4	-	-49.9	37.26	74	-36.74	54	-16.74	0-360	152	V
11	4.079	61.54 Pk	28.4	-	-51.6	38.34	74	-35.66	54	-15.66	0-360	152	V
12	4.217	60.93 Pk	28.3	-	-51.58	37.65	74	-36.35	54	-16.35	0-360	152	V

Pk - Peak detector

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

TEST PROCEDURE

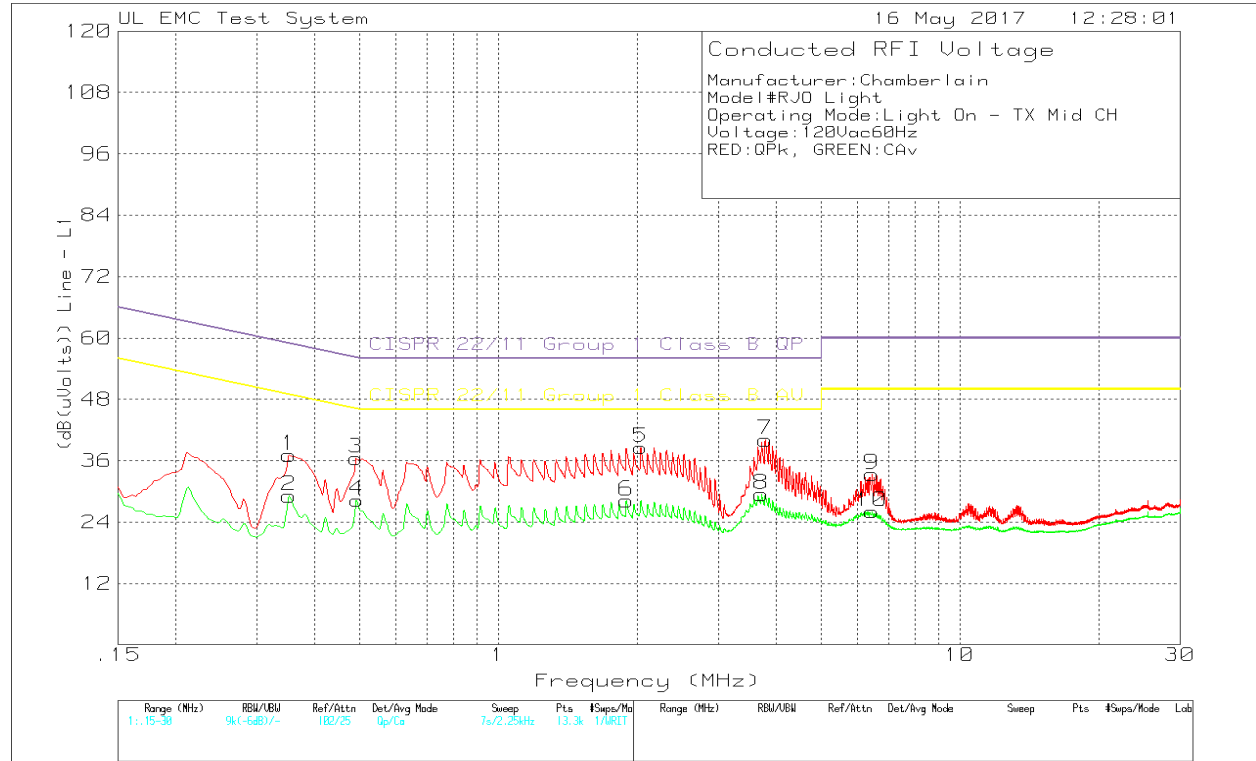
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

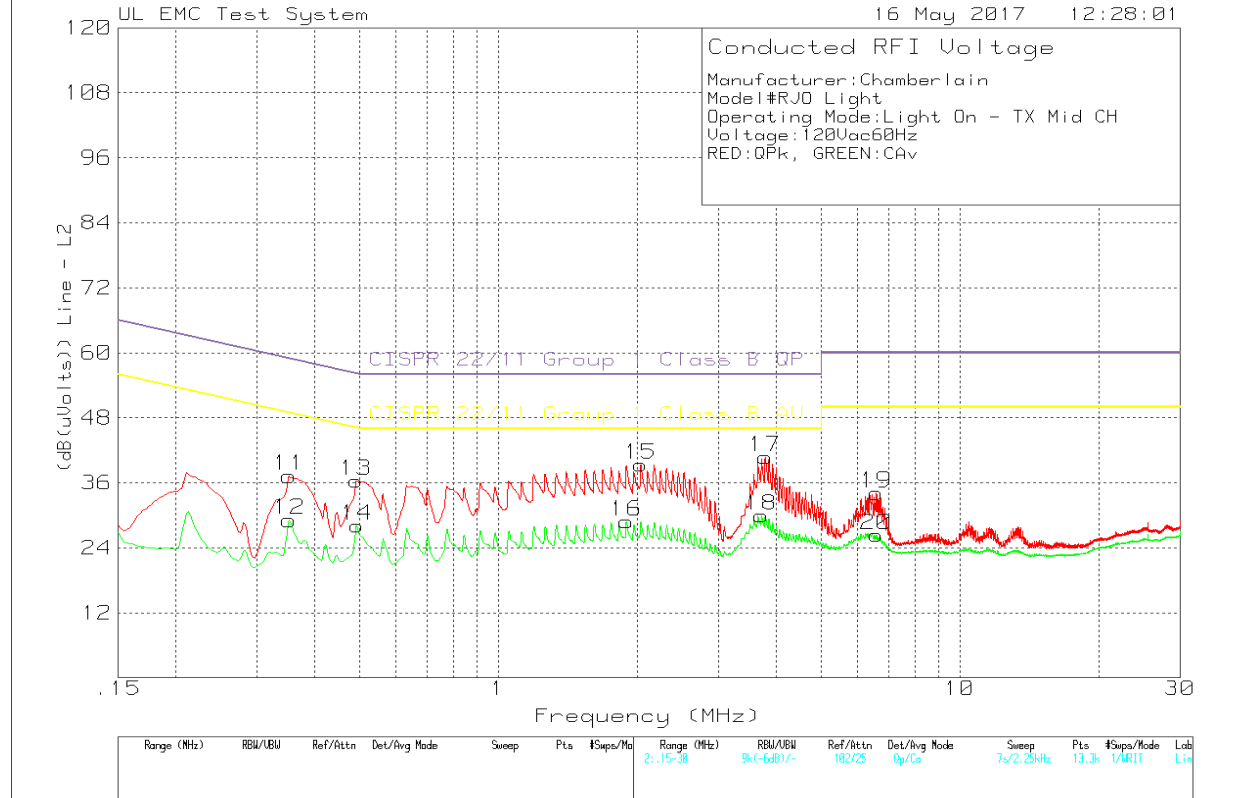
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

Line Conducted Emissions 150kHz – 30MHz – TX Mid CH – Graph



CISPR 22.11 Dongle Line 1 2 3 4 TimeDomain QP_CaU.TST Rev 9.5 23 Nov 2015



CISPR 22.11 Dongle Line 1 2 3 4 TimeDomain QP_CaU.TST Rev 9.5 23 Nov 2015

Line Conducted Emissions 150kHz – 30MHz – TX Mid CH – Data

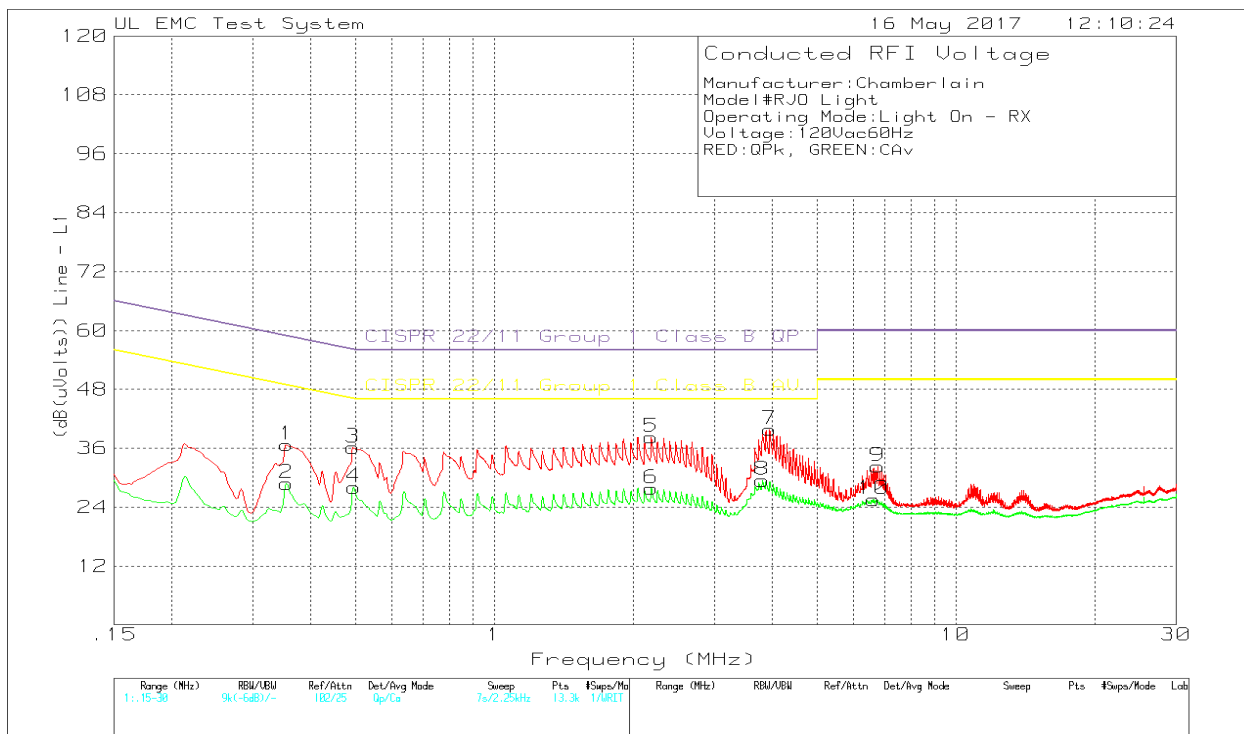
Manufacturer:Chamberlain
 Model#RJO Light
 Operating Mode:Light On - TX Mid CH
 Voltage:120Vac60Hz
 RED:QPk, GREEN:CAV

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	LISN Factor (dBm)	Corrected Path (dB)	QP Reading (dB(uVolts))	QP Limit (dBuV)	QP Margin (dB)	AV Limit (dBuV)	AV Margin (dB)
Range 1: Line - L1 .15 - 30MHz										
1	0.3525	26.27	Qp	0	10.8	37.07	58.9	-21.83	-	-
2	0.3525	18.35	Ca	0	10.8	29.15	-	-	48.9	-19.75
3	0.492	25.78	Qp	0	10.7	36.48	56.13	-19.65	-	-
4	0.49425	17.57	Ca	0	10.7	28.27	-	-	46.1	-17.83
5	2.03438	28	Qp	0	10.6	38.6	56	-17.4	-	-
6	1.89375	17.58	Ca	0	10.6	28.18	-	-	46	-17.82
7	3.78825	29.4	Qp	0	10.7	40.1	56	-15.9	-	-
8	3.7185	18.71	Ca	0	10.7	29.41	-	-	46	-16.59
9	6.45	22.42	Qp	0	10.9	33.32	60	-26.68	-	-
10	6.45338	15.17	Ca	0	10.9	26.07	-	-	50	-23.93

Range 2: Line - L2 .15 - 30MHz										
11	0.3525	25.96	Qp	0	11.3	37.26	58.9	-21.64	-	-
12	0.3525	17.84	Ca	0	11.3	29.14	-	-	48.9	-19.76
13	0.492	25.2	Qp	0	11.2	36.4	56.13	-19.73	-	-
14	0.49425	16.91	Ca	0	11.2	28.11	-	-	46.1	-17.99
15	2.03438	28.25	Qp	0	11.1	39.35	56	-16.65	-	-
16	1.896	17.77	Ca	0	11.1	28.87	-	-	46	-17.13
17	3.786	29.54	Qp	0	11.2	40.74	56	-15.26	-	-
18	3.7185	18.76	Ca	0	11.2	29.96	-	-	46	-16.04
19	6.59175	22.62	Qp	0	11.5	34.12	60	-25.88	-	-
20	6.59288	14.91	Ca	0	11.5	26.41	-	-	50	-23.59

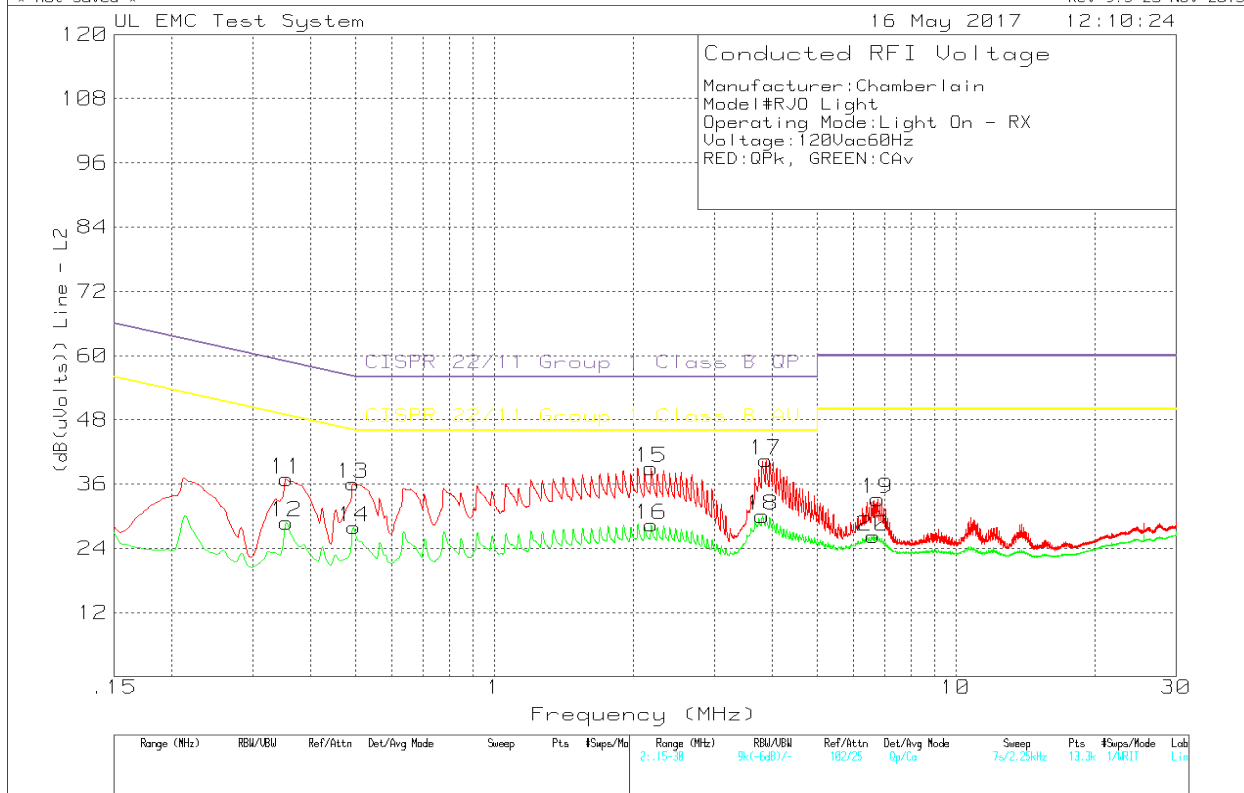
Qp - Quasi-Peak detector
 Ca - CISPR Average detection

Line Conducted Emissions 150kHz – 30MHz – RX Mode – Graph



* not saved *

Rev 9.5 23 Nov 2015



* not saved *

Rev 9.5 23 Nov 2015

Line Conducted Emissions 150kHz – 30MHz – RX Mode – Data

Manufacturer:Chamberlain
 Model#RJO Light
 Operating Mode:Light On - RX
 Voltage:120Vac60Hz

Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBUV)	Detector	LISN Factor (dBm)	Path (dB)	Corrected Reading (dB(uVolts))	QP Limit (dBUV)	QP Margin (dB)	AV Limit (dBUV)	AV Margin (dB)
Range 1: Line - L1 .15 - 30MHz										
1	0.35475	25.9	Qp	0	10.8	36.7	58.85	-22.15	-	-
2	0.35475	18.03	Ca	0	10.8	28.83	-	-	48.85	-20.02
3	0.49425	25.45	Qp	0	10.7	36.15	56.1	-19.95	-	-
4	0.4965	17.34	Ca	0	10.7	28.04	-	-	46.06	-18.02
5	2.18625	27.65	Qp	0	10.6	38.25	56	-17.75	-	-
6	2.1885	17.22	Ca	0	10.6	27.82	-	-	46	-18.18
7	3.95025	29.02	Qp	0	10.8	39.82	56	-16.18	-	-
8	3.8085	18.77	Ca	0	10.7	29.47	-	-	46	-16.53
9	6.7695	21.41	Qp	0	10.9	32.31	60	-27.69	-	-
10	6.63225	14.67	Ca	0	10.9	25.57	-	-	50	-24.43

Range 2: Line - L2 .15 - 30MHz

11	0.35475	25.61	Qp	0	11.3	36.91	58.85	-21.94	-	-
12	0.35475	17.53	Ca	0	11.3	28.83	-	-	48.85	-20.02
13	0.49425	24.9	Qp	0	11.2	36.1	56.1	-20	-	-
14	0.4965	16.75	Ca	0	11.2	27.95	-	-	46.06	-18.11
15	2.18625	27.88	Qp	0	11.1	38.98	56	-17.02	-	-
16	2.1885	17.3	Ca	0	11.1	28.4	-	-	46	-17.6
17	3.87825	29.24	Qp	0	11.2	40.44	56	-15.56	-	-
18	3.81075	18.88	Ca	0	11.2	30.08	-	-	46	-15.92
19	6.7695	21.7	Qp	0	11.5	33.2	60	-26.8	-	-
20	6.63	14.76	Ca	0	11.5	26.26	-	-	50	-23.74

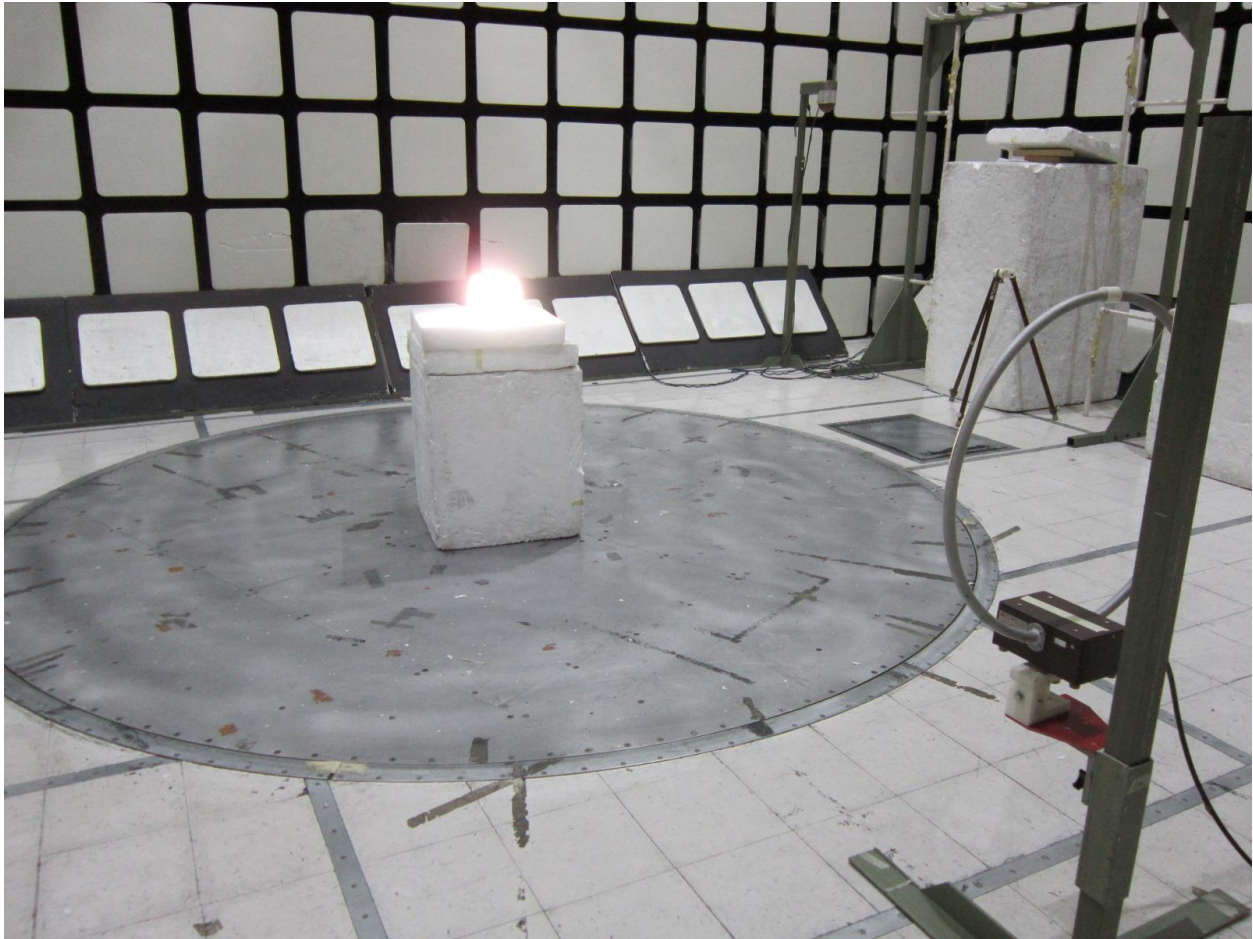
Qp - Quasi-Peak detector
 Ca - CISPR Average detection

11. SETUP PHOTOS

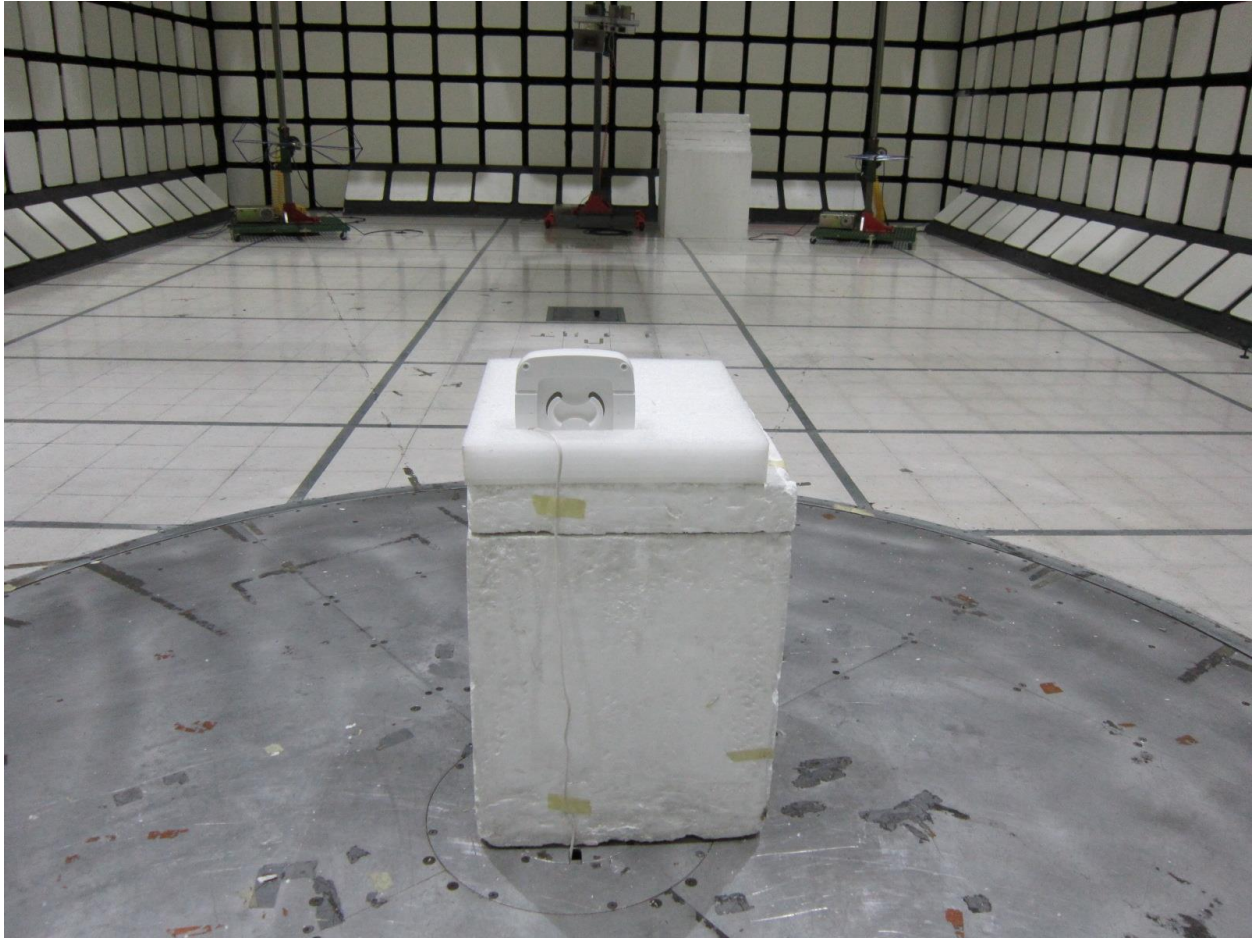
Line conducted emissions



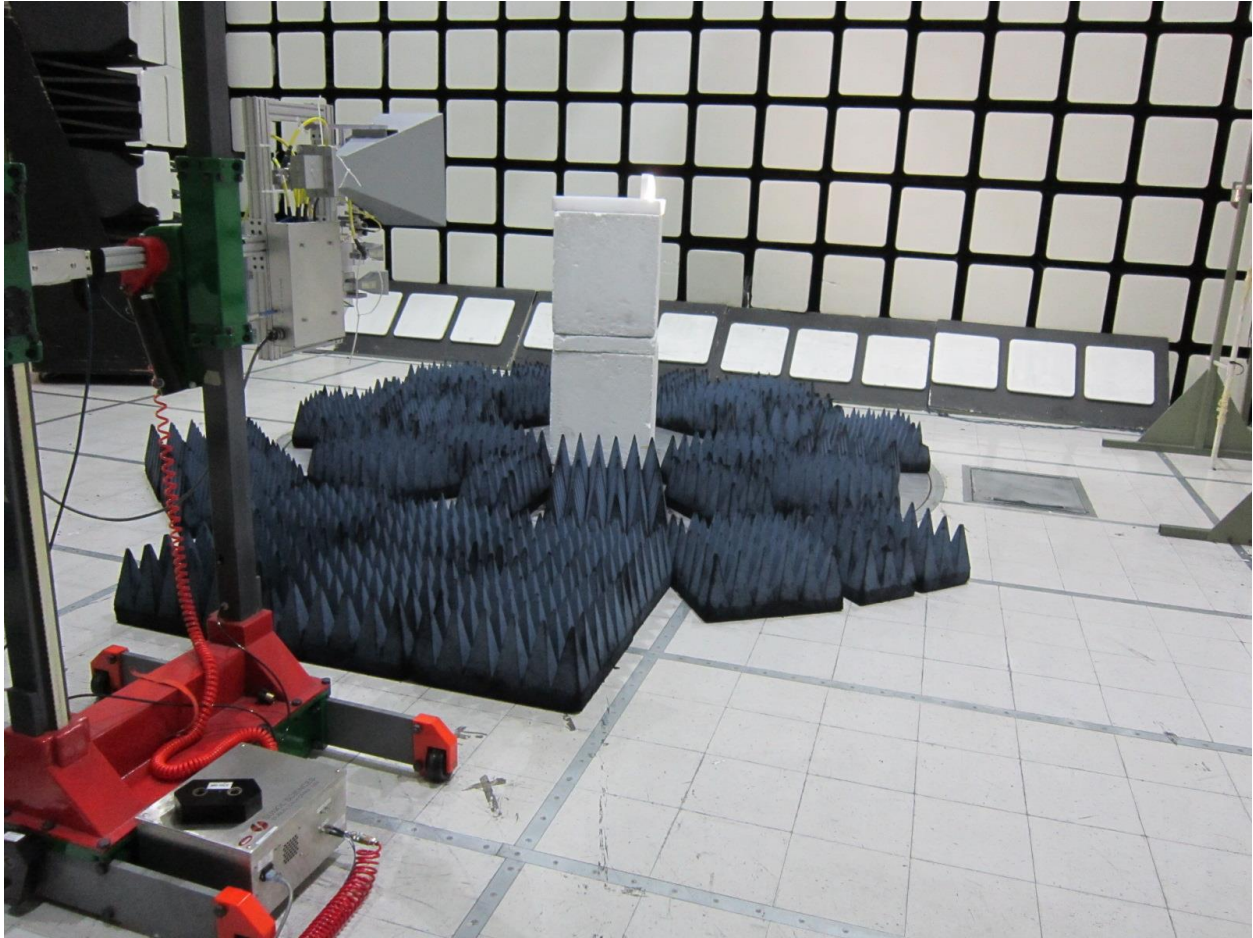
Radiated Emissions 9kHz – 30MHz



Radiated Emissions below 1GHz



Radiated Emissions above 1GHz



Antenna Port Conducted Emissions



END OF REPORT