FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS 210

CERTIFICATION TEST REPORT

FOR

WIRELESS PET IMMUNE MOTION SENSOR

MODEL NUMBER: TX-E721

FCC ID: XQC-TXE721
IC: 9863B-TXE721

REPORT NUMBER: 11621140-E1V4

ISSUE DATE: 3/10/17

Prepared for
ECOLINK INTELLIGENT TECHNOLOGY, INC.
2055 CORTE DEL NOGAL
CARLSBAD
CA, 92011, U.S.A

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	02/27/17	Initial Issue	C. Vergonio
V2	03/06/17	Updated Section 5.2. Added Section 7.3 & 7.4. Updated title in page 31.	C. Vergonio
V3	03/09/17	Removed QPK limit in page 26 & 27. Updated tabular data with correct limit in page 29. Updated the note statement for below 30MHz data in page 30.	C. Vergonio
V4	03/10/17	Updated tabular data in Page 27.	C. Vergonio

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: ECOLINK INTELLIGENT TECHNOLOGY, INC.
2055 CORTE DEL NOGAL
CARLSBAD, CA, 92011, U.S.A

EUT DESCRIPTION: PET IMMUNE MOTION SENSOR

MODEL: TX-E721

SERIAL NUMBER: 1 (Radiated) and 4 (Conducted)

DATE TESTED: FEBRUARY 23 – MARCH 6, 2017

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	Pass
INDUSTRY CANADA RSS-210 Issue 9, Annex A	Pass
INDUSTRY CANADA RSS-GEN Issue 4	Pass

UL Verification Services Inc 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 Verification Services Inc. 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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc 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 Verification Services Inc By:

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Prepared By:

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LAB ENGINEER
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 4, and RSS-210 Issue 9.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☒ Chamber A (IC:2324B-1)	☐ Chamber D (IC:2324B-4)
☒ Chamber B (IC:2324B-2)	☐ Chamber E (IC:2324B-5)
☐ Chamber C (IC:2324B-3)	☐ Chamber F (IC:2324B-6)
	☐ Chamber G (IC:2324B-7)
	☐ Chamber H (IC:2324B-8)

The above test sites and facilities are covered under FCC Test Firm Registration # 208313.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.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

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

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

Parameter	Uncertainty
Worst Case Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.24 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Wireless Pet Immune Motion Sensor.

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a small loop antenna, with approximately -13dBi gain. The antenna consists of a copper clad steel wire soldered to the PCB. The antenna is not replaceable or adjustable by the user.

5.3. SOFTWARE AND FIRMWARE

The typical factory firmware installed in the EUT during testing was ESW1127-01-003.

The firmware installed in the EUT to allow continuous transmit during testing was ESW1127-01-const_tx.

5.4. WORST-CASE CONFIGURATION AND MODE

The EUT was investigated in each of its three orthogonal axes. All radiated testing was performed in the worse-case axis, which was found to be the “Z-axis”. See photos for details.

5.5. MODIFICATIONS

No modifications were made during testing.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

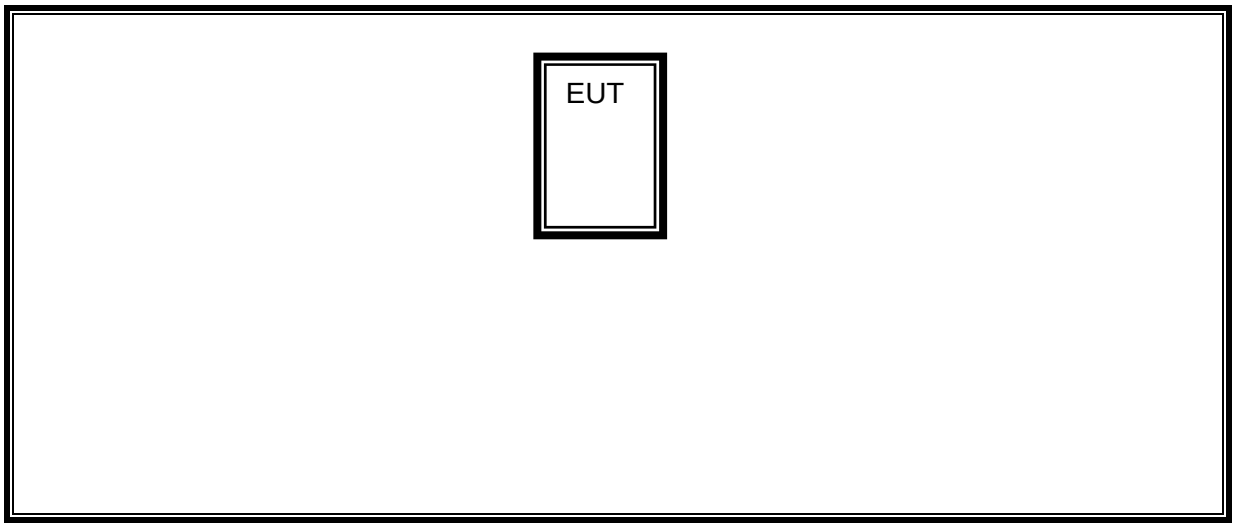
Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Battery	Panasonic	CR-123A	N/A	N/A

I/O CABLES

NONE

TEST SETUP

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List					
Description	**Manufacturer**	**Model**	**T Number**	**Cal Date**	**Cal Due**
Amplifier, 1 to 18GHz	Miteq	AFS42-00101800-25-S-42	1165	8/1/2016	8/1/2017
Amplifier, 1 to 8 GHz	Miteq	AMF-4D-01000800-30-29P	1170	4/28/2016	4/28/2017
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310	300	11/10/2016	11/10/2017
Antenna, Horn 1-18GHz	ETS Lindgren	3117	711	1/30/2017	1/30/2018
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB1	130	9/23/2016	9/23/2017
Loop Antenna	ETS Lindgren	6502	757	12/22/16	12/22/17
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	907	06/06/16	06/06/17
Spectrum Analyzer, PXA 3Hz to 44GHz	Agilent	N9030A	1450	01/10/17	01/10/18

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Ver 9.5, Apr 26, 2016
Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015
Antenna Port Software	UL	UL RF	Ver 5.1.1, July 15, 2016

7. ANTENNA PORT TEST RESULTS

7.1. 20 dB AND 99% BW

LIMITS

FCC §15.231 (c)
The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

IC A1.1.3
For the purpose of Section A1.1, the 99% Bandwidth shall be no wider than 0.25% of the center frequency for devices operating between 70-900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency.

TEST PROCEDURE

ANSI C63.10

The transmitter output is connected to the spectrum analyzer.

20dB Bandwidth: The RBW is set to 1% to 5% of OBW. The VBW is set to 3 times the RBW. The sweep time is coupled. Bandwidth is determined at the points 20 dB down from the modulated carrier.

99% Bandwidth: 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

No non-compliance noted:

20dB Bandwidth

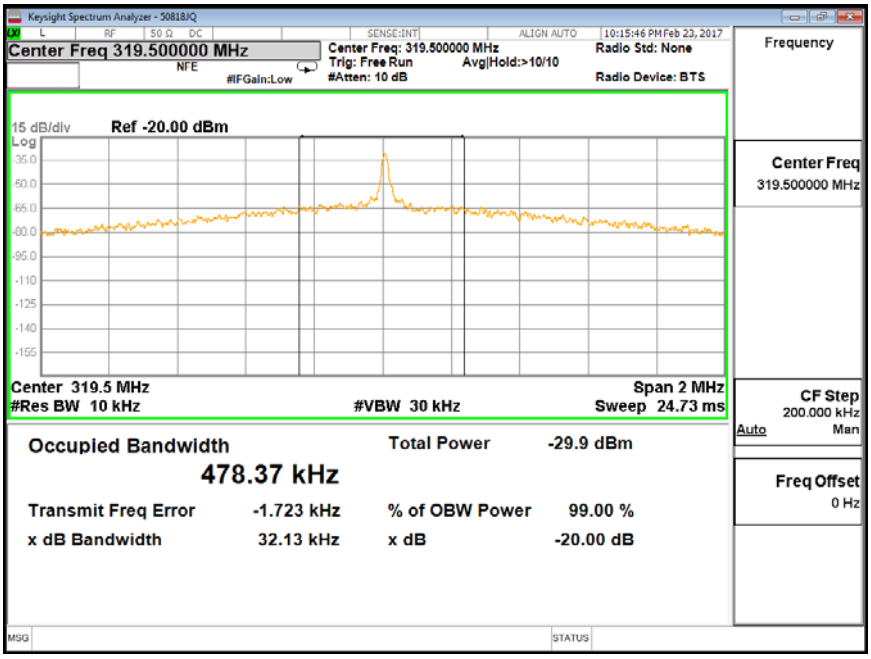
Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
319.5	32.13	798.75	-766.62

99% Bandwidth

Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
319.5	478.37	798.75	-320.38

20dB & 99% BANDWIDTH

20dB & 99% BANDWIDTH



7.2. DUTY CYCLE

LIMITS

FCC §15.35 (c)
The measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW is set to 1MHz and the VBW is set to 1MHz. The sweep time is coupled and the span is set to 0 Hz. The number of pulses is measured and calculated in a 100 ms scan.

CALCULATION

Average Reading = Peak Reading (dBuV/m) + 20log (Duty Cycle), Where Duty Cycle is (# of long pulses * long pulse width) + (# of short pulses * short pulse width) / 100 or T

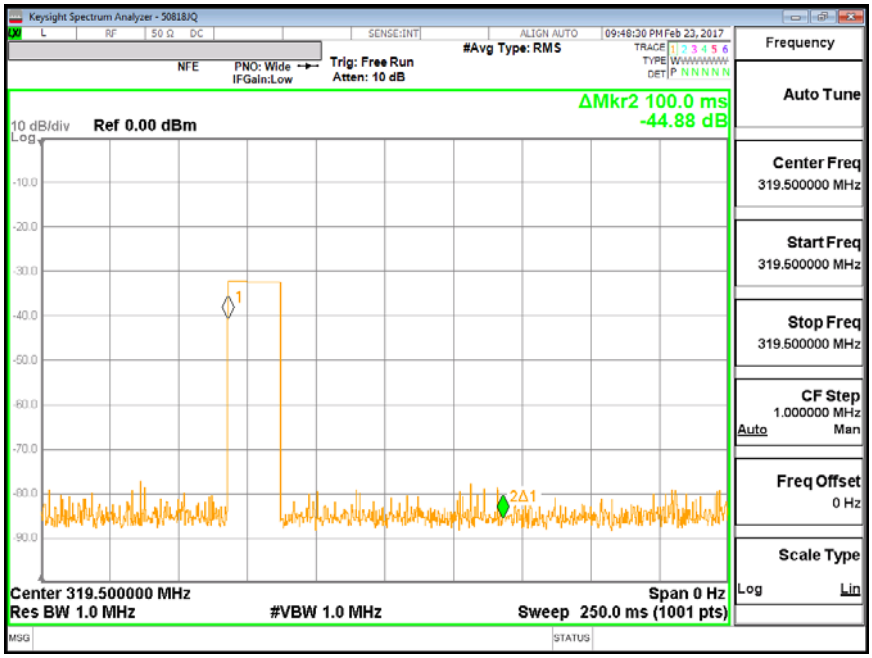
RESULTS

No non-compliance noted:

One Period (ms)	Long Pulse Width (ms)	# of Long Pulses	Medium Pulse Width (ms)	# of Medium Pulses	Short Pulse Width (ms)	# of Short Pulses	Duty Cycle	20*Log Duty Cycle (dB)
100	0.488	1	0.12	58	0.064	1	0.075	-22.48

ONE PERIOD

ONE PERIOD

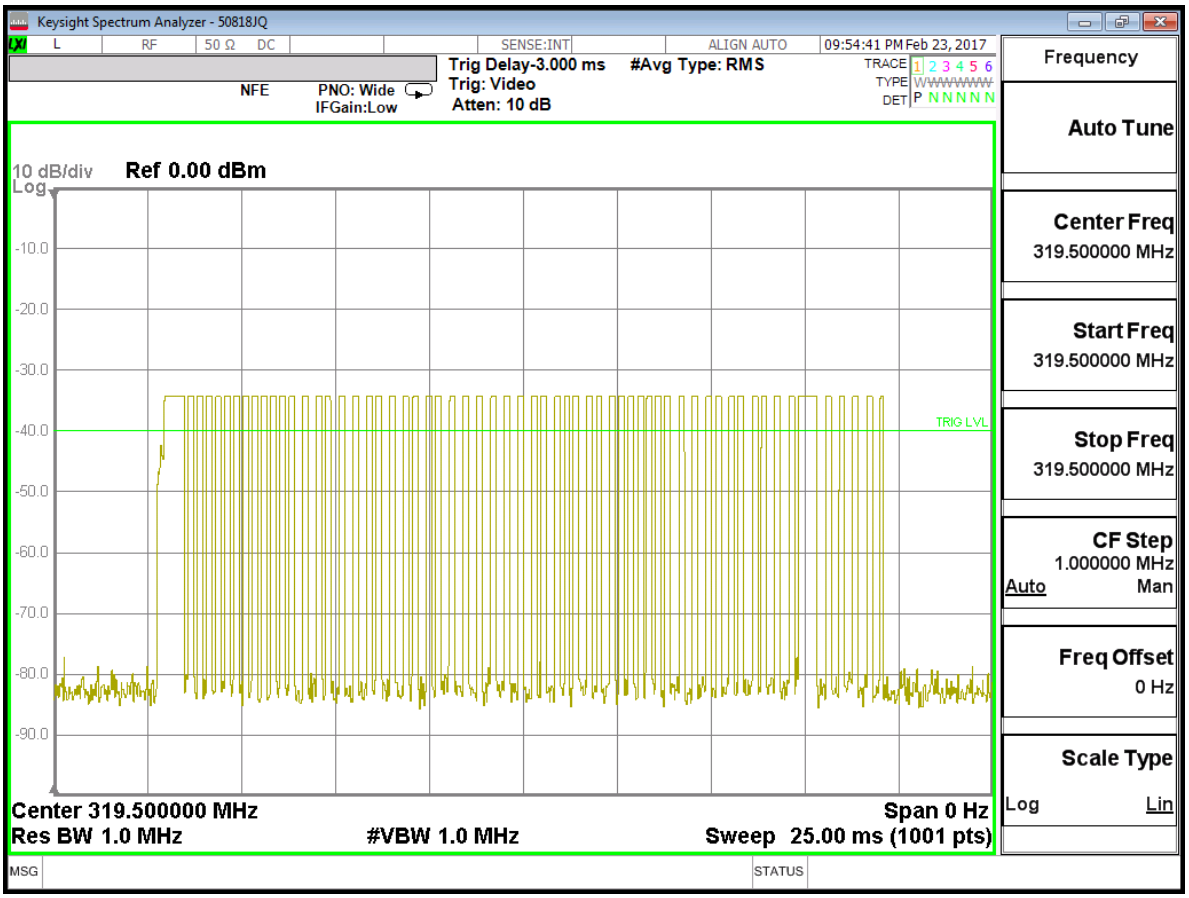


LONG PULSE WIDTH

LONG PULSE WIDTH

NUMBER OF LONG PULSES

NUMBER OF LONG PULSES

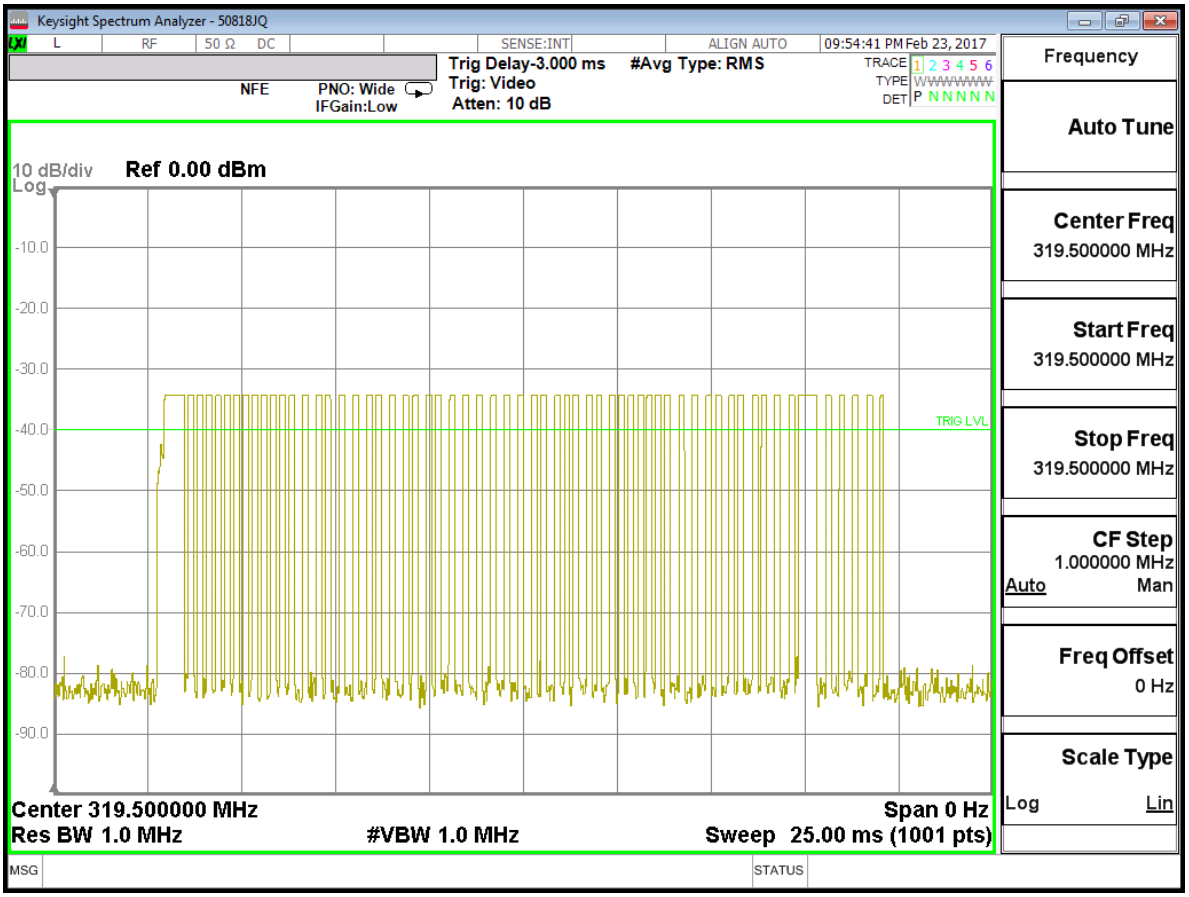


MEDIUM PULSE WIDTH

MEDIUM PULSE WIDTH

NUMBER OF MEDIUM PULSES

NUMBER OF MEDIUM PULSES

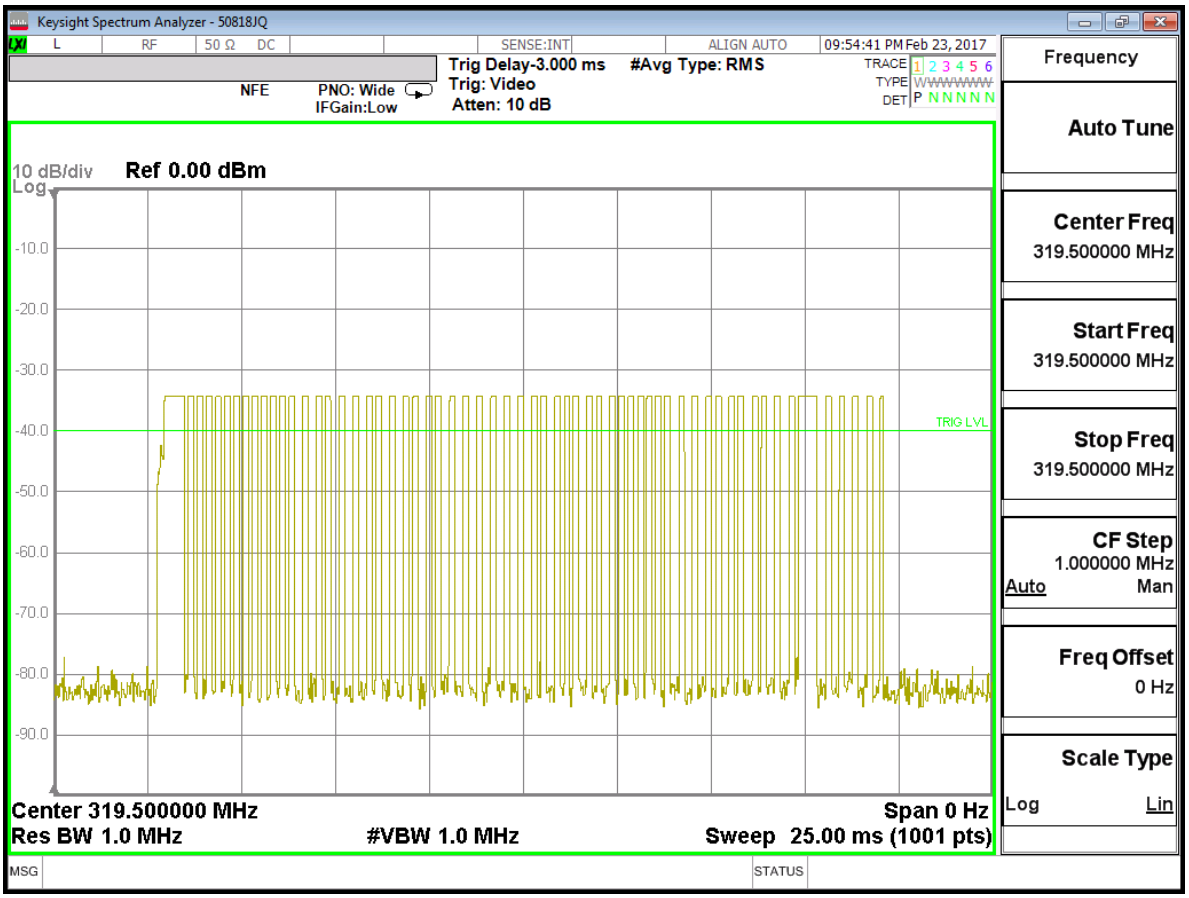


SHORT PULSE WIDTH

SHORT PULSE WIDTH

NUMBER OF SHORT PULSES

NUMBER OF SHORT PULSES



7.3. SUPERVISION TRANSMISSIONS

LIMITS

FCC §15.35 (a) (3)

Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour

Results

1. According to manufacturer technical description, the device transmits brief supervisory signal at approximately 65 minutes intervals.

2. One pulse stream is 0.488ms*1 + 0.064* 1 + 0.12ms*58 = 7.51ms. Base on section 7.4 test plot, one transition contain 8 pulse streams which is 7.51ms * 8 = 60.08ms

7.4. TRANSMISSION TIME

LIMITS

FCC §15.231 (a) (2)

IC A1.1.1 (b)

A transmitter activated automatically shall cease transmission within 5 seconds after activation.

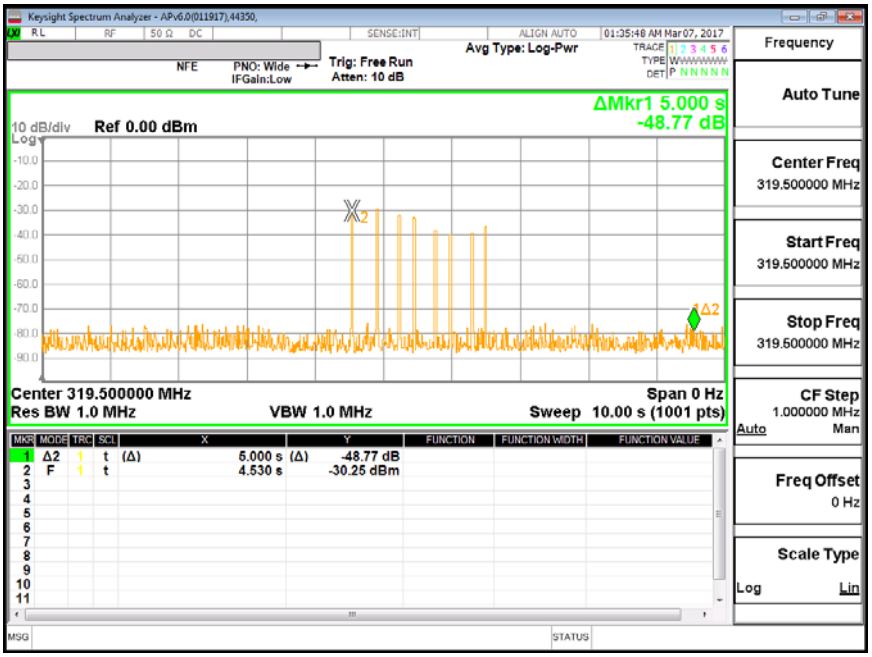
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW is set to 1MHz and the VBW is set to 1MHz. The sweep time is set to 10 seconds and the span is set to 0 Hz.

RESULTS

No non-compliance noted:

LESS THAN 5 SECONDS



8. RADIATED EMISSION TEST RESULTS

8.1. TX RADIATED SPURIOUS EMISSION

LIMITS

FCC §15.231 (b)
IC A1.1.2
In addition to the provisions of § 15.205, the field strength of emissions from Intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	[1]1,250 to 3,750	[1]125 to 375
174-260	3,750	375
260-470	[1]3,750 to 12,500	[1]375 to 1,250
Above 470	12,500	1,250

[1]Linear interpolation

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	([2])
13.36 – 13.41	322 - 335.4		

1 Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
2 Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

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., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

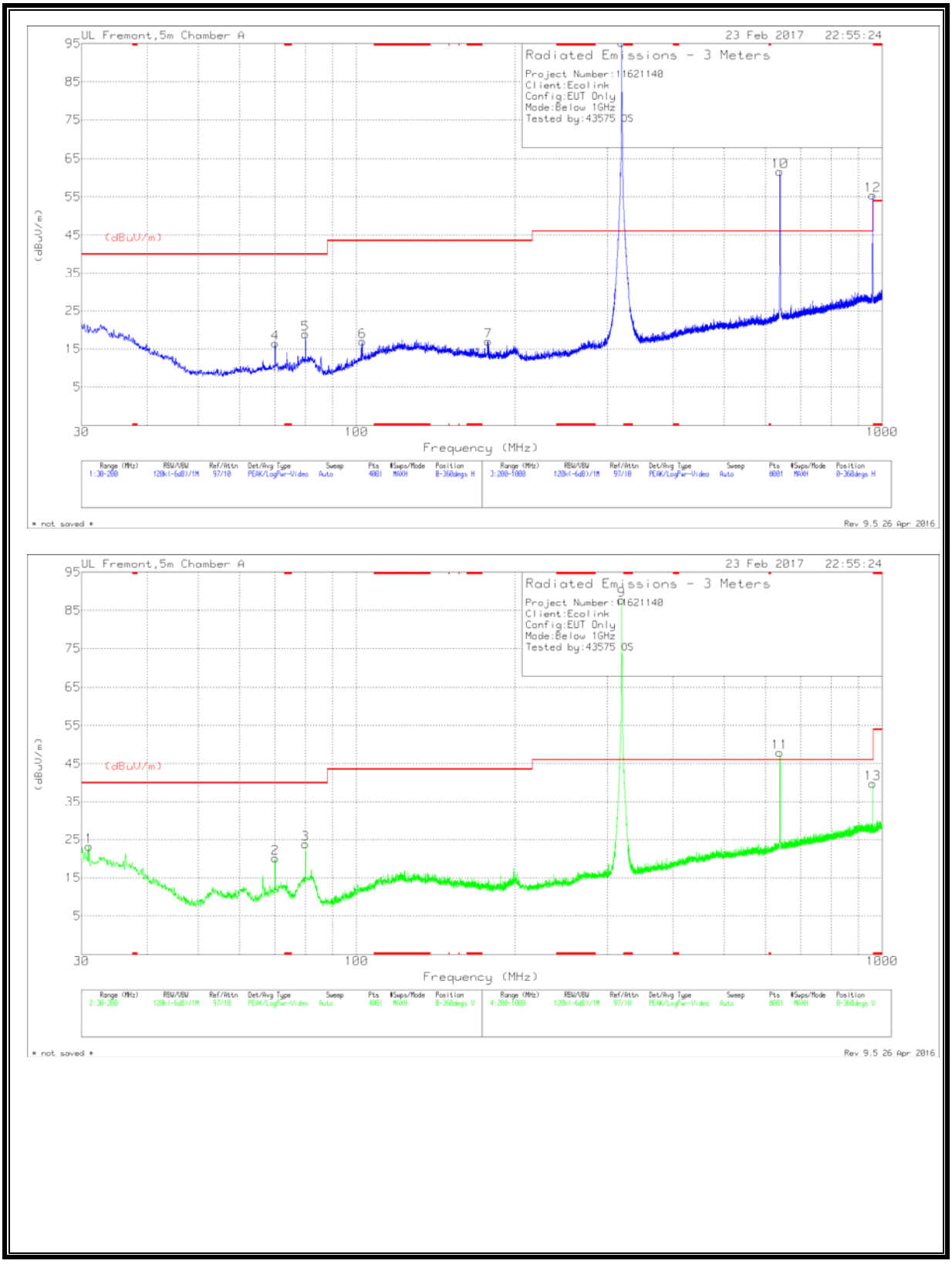
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. Please refer to test report section 7.2 for duty cycle factor information. Note: The pre-scan measurements above 1GHz the VBW is set to 30 kHz.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

RESULTS

No non-compliance noted:

FUNDAMENTAL, HARMONICS AND TX SPURIOUS EMISSION (30 – 1000 MHz)



BELOW 1GHZ RADIATED EMISSIONS

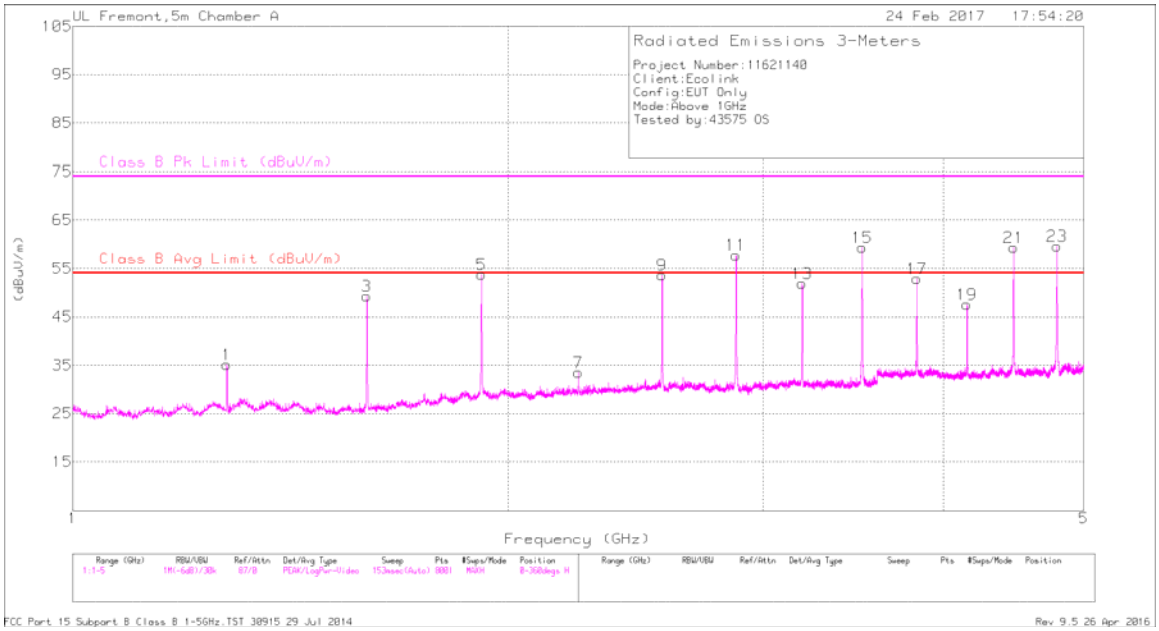
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	31.02	31.36	Pk	23	-31.2	23.16	40	-16.84	0-360	100	V
4	70.035	34.8	Pk	12.5	-30.8	16.5	40	-23.5	0-360	100	H
2	70.035	38.39	Pk	12.5	-30.8	20.09	40	-19.91	0-360	100	V
5	79.98	37.73	Pk	11.8	-30.7	18.83	40	-21.17	0-360	200	H
3	79.98	42.75	Pk	11.8	-30.7	23.85	40	-16.15	0-360	100	V
6	102.6325	32.6	Pk	14.9	-30.5	17	43.52	-26.52	0-360	300	H
7	177.9425	31.69	Pk	15.4	-30.1	16.99	43.52	-26.53	0-360	200	H
8	319.5	106.63	Pk	18	-29.3	95.33	-	-	0-360	100	H
9	319.5	98.92	Pk	18	-29.3	87.62	-	-	0-360	200	V
**10	639	66.25	Pk	23.8	-28.4	61.65	-	-	0-360	100	H
**11	639	52.55	Pk	23.8	-28.4	47.95	-	-	0-360	200	V
**12	958.5	55.87	Pk	26.5	-26.9	55.47	-	-	0-360	100	H
**13	958.5	40.25	Pk	26.5	-26.9	39.85	-	-	0-360	200	V

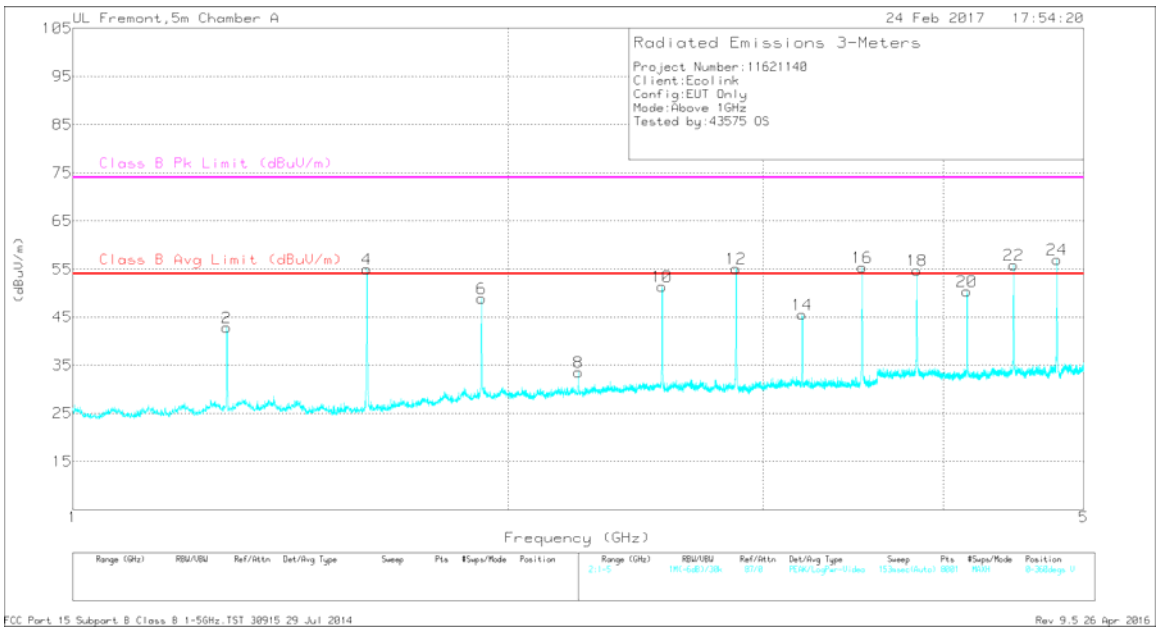
FUNDAMENTAL AND HARMONICS SPURIOUS EMISSIONS

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
319.5072	106.64	Pk	18	-29.3	95.34	95.89	-0.55	307	101	H
		Av			72.86	75.89	-3.03	307	101	H
319.5077	100.02	Pk	18	-29.3	88.72	95.89	-7.17	301	180	V
		Av			66.24	75.89	-9.65	301	180	V
**639.013	53.7	Pk	23.8	-28.4	49.1	75.89	-26.79	294	189	V
		Av			26.62	55.89	-29.27	294	189	V
**639.0149	66.15	Pk	23.8	-28.4	61.55	75.89	-14.34	314	101	H
		Av			39.07	55.89	-16.82	314	101	H
**958.5072	41.08	Pk	26.5	-26.9	40.68	75.89	-35.21	321	193	V
		Av			18.2	55.89	-37.69	321	193	V
**958.5202	55.33	Pk	26.5	-26.9	54.93	75.89	-20.96	293	101	H
		Av			32.45	55.89	-23.44	293	101	H

* Average Reading = Peak Reading (dBuV/m) + 20log (Duty Cycle), Where Duty Cycle is -22.48dB
(# of long pulses * long pulse width) + (# of ,medium pulses * medium pulse width) + (# of short pulses * short pulse width) / 100 or T
Refer to section 7.2 for duty cycle factor calculation (-22.48 dB)
Note: Radiated peak result is based on 100% duty cycle sample; average reading = peak reading + DCCF
** Harmonics of fundamental 319.5MHz

HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz



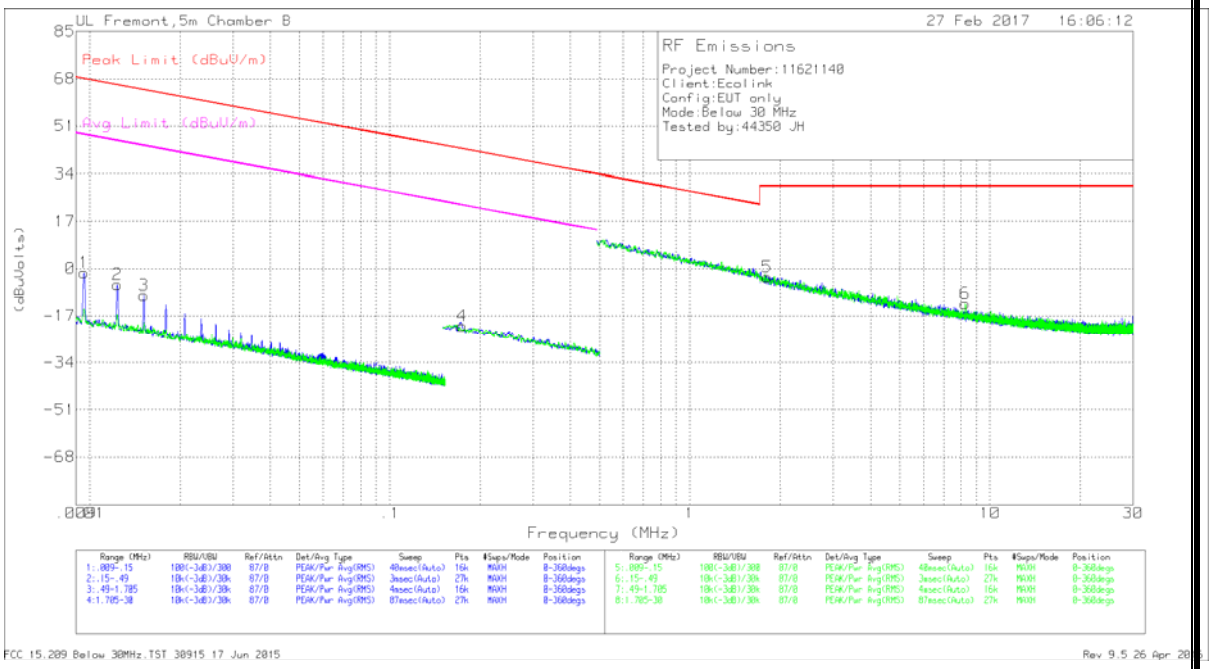


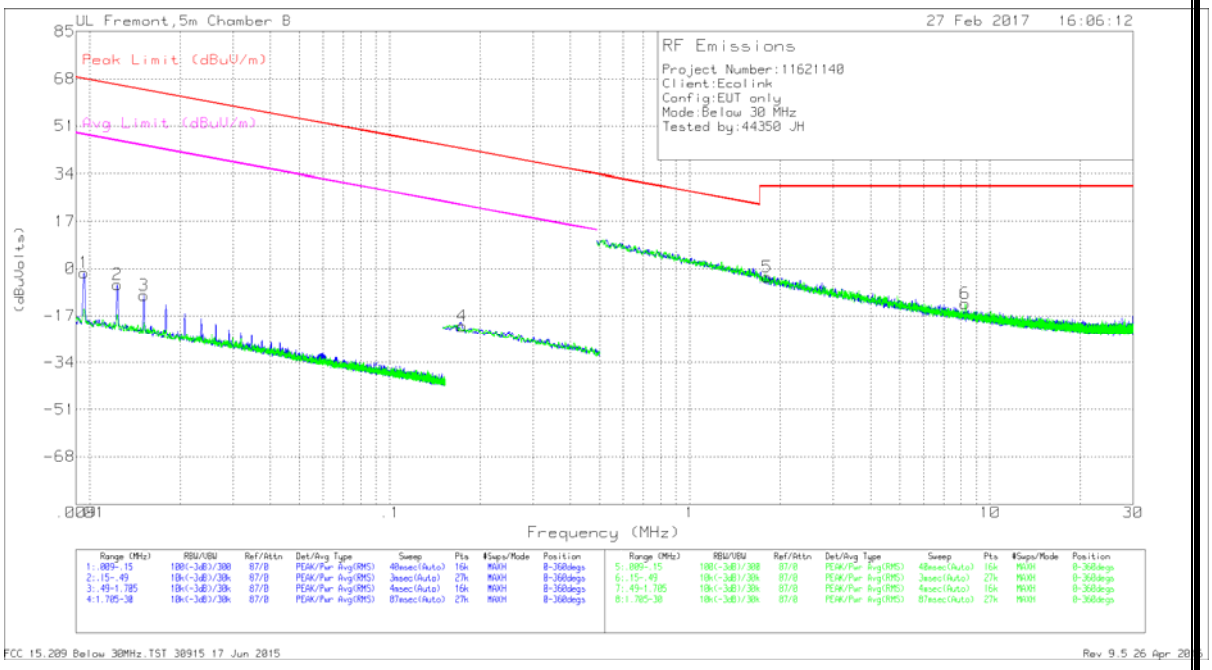
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Av Limit (dBuV/m)	Peak Margin (dB)	Av Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
**1.278	44.49	Pk	29.4	-34.2	39.69	74	-	-37.31	-	150	360	H
		Av			17.21	-	54	-	-36.79	150	360	H
**1.278	50.02	Pk	29.4	-34.2	45.22	74	-	-28.78	-	57	135	V
		Av			22.74	-	54	-	-31.26	57	135	V
**1.597	57.41	Pk	28.2	-33.7	51.91	74	-	-22.09	-	141	299	H
		Av			29.43	-	54	-	-24.57	141	299	H
**1.597	60.86	Pk	28.2	-33.7	55.36	74	-	-18.64	-	55	148	V
		Av			32.88	-	54	-	-21.12	55	148	V
**1.917	57.05	Pk	31.3	-33.2	55.15	74	-	-18.85	-	304	201	H
		Av			32.67	-	54	-	-21.33	304	201	H
**1.917	55	Pk	31.3	-33.2	53.1	74	-	-20.9	-	163	263	V
		Av			30.62	-	54	-	-23.38	163	263	V
**2.237	44.27	Pk	31.7	-32.8	43.17	74	-	-30.83	-	3	286	H
		Av			20.69	-	54	-	-33.31	3	286	H
**2.237	42.7	Pk	31.7	-32.8	41.6	74	-	-32.4	-	36	328	V
		Av			19.12	-	54	-	-34.88	36	328	V
**2.556	55.65	Pk	32.6	-32.7	55.55	74	-	-18.45	-	39	274	H
		Av			33.07	-	54	-	-20.93	39	274	H
**2.556	53.73	Pk	32.6	-32.7	53.63	74	-	-20.37	-	45	321	V
		Av			31.15	-	54	-	-22.85	45	321	V
**2.875	60.53	Pk	32.1	-32	60.63	74	-	-13.37	-	49	133	H
		Av			38.15	-	54	-	-15.85	49	133	H
**2.876	58.03	Pk	32.1	-32	58.13	74	-	-15.87	-	47	286	V
		Av			35.65	-	54	-	-18.35	47	286	V
**3.193	56.52	Pk	33	-31.6	57.92	74	-	-16.08	-	225	145	H
		Av			35.44	-	54	-	-18.56	225	145	H
**3.193	50.55	Pk	33	-31.6	51.95	74	-	-22.05	-	47	264	V
		Av			29.47	-	54	-	-24.53	47	264	V
**3.514	59.16	Pk	33	-31.1	61.06	74	-	-12.94	-	18	102	H
		Av			38.58	-	54	-	-15.42	18	102	H
**3.515	55.74	Pk	33	-31.1	57.64	74	-	-16.36	-	93	107	V
		Av			35.16	-	54	-	-18.84	93	107	V
**3.834	53.01	Pk	33.2	-30.5	55.71	74	-	-18.29	-	19	103	H
		Av			33.23	-	54	-	-20.77	19	103	H
**3.834	55.45	Pk	33.2	-30.5	58.15	74	-	-15.85	-	71	103	V
		Av			35.67	-	54	-	-18.33	71	103	V
**4.154	48.4	Pk	33.3	-30.4	51.3	74	-	-22.7	-	39	159	H
		Av			28.82	-	54	-	-25.18	39	159	H
**4.154	50.16	Pk	33.3	-30.4	53.06	74	-	-20.94	-	64	163	V
		Av			30.58	-	54	-	-23.42	64	163	V
**4.473	58.16	Pk	33.6	-30.1	61.66	74	-	-12.34	-	114	102	H
		Av			39.18	-	54	-	-14.82	114	102	H
**4.473	55.91	Pk	33.6	-30.1	59.41	74	-	-14.59	-	51	124	V
		Av			36.93	-	54	-	-17.07	51	124	V
**4.792	58.64	Pk	34	-29.3	63.34	74	-	-10.66	-	94	262	H
		Av			40.86	-	54	-	-13.14	94	262	H
**4.792	55.27	Pk	34	-29.3	59.97	74	-	-14.03	-	34	265	V
		Av			37.49	-	54	-	-16.51	34	265	V

* Average Reading = Peak Reading (dBuV/m) + 20log (Duty Cycle), Where Duty Cycle is -22.48dB
(# of long pulses * long pulse width) +(# of ,medium pulses * medium pulse width) + (# of short pulses * short pulse width) / 100 or T
Refer to section 7.2 for duty cycle factor calculation (-22.48dB)
Note: Radiated peak result is based on 100% duty cycle sample; average reading = peak reading + DCCF
** Harmonics of fundamental 319.5MHz

BELOW 30MHz





NOTE: KDB 937606 OATS and Chamber Correlation Justification

- Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.
- OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

BELOW 30MHz RADIATED EMISSIONS

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.00957	58.75	Pk	18.3	1.4	-80	-1.55	67.99	-69.54	47.99	-49.54	0-360
2	.01236	55.9	Pk	17	1.4	-80	-5.7	65.77	-71.47	45.77	-51.47	0-360
3	.01515	53.15	Pk	15.8	1.4	-80	-9.65	64	-73.65	44	-53.65	0-360
4	.17418	46.99	Pk	10.8	1.5	-80	-20.71	42.78	-63.49	22.78	-43.49	0-360

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 30m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
5	1.80718	24.56	Pk	10.8	1.5	-40	-3.14	29.54	-32.68	-	-	0-360
6	8.28277	15.13	Pk	10.8	1.5	-40	-12.57	29.54	-42.11	-	-	0-360

Pk - Peak detector
FCC 15.209 Below 30MHz.TST 30915 17 Jun 2015
Rev 9.5 26 Apr 2016