CERTIFICATION TEST REPORT

Report Number. : 12763178-E1V4

Applicant	:	ECOLINK INTELLIGENT TECHNOLOGY, INC. 2055 CORTE DEL NOGAL CARLSBAD, CA, 92011, U.S.A
FCC ID	:	XQC-CS732
ISED	:	9863B-CS732
Model Number	:	CS-732
EUT Description	:	Motion Sensor
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C INDUSTRY CANADA RSS 210 INDUSTRY CANADA RSS-GEN Issue 5

Date Of Issue:
May 31, 2019

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	05/13/19	Initial Issue	-
V2	05/24/19	Sec. 3: Updated Sec. 6: Updated equipment list Sec. 7.1: Updated Sec. 8: Updated test procedure statement	Kenneth Mak
V3	05/30/19	Sec. 8: Updated Results table	Kenneth Mak
V4	05/31/19	Sec. 8: Updated Results table for above 1GHz	Kenneth Mak

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

TABLE OF CONTENTS

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: MOTION SENSOR

MODEL: CS-732

SERIAL NUMBER: 08018A, 0801CE

DATE TESTED: MARCH 22, 2019; APRIL 2 & 30, 2019; May 13 & 24, 2019

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 5	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

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 the U.S. government.

Approved & Released For
UL Verification Services Inc. By:

Dan Coronia
CONSUMER TECHNOLOGY DIVISION
Operations Leader
UL Verification Services Inc.

Reviewed By:

Kenneth Mak
CONSUMER TECHNOLOGY DIVISION
Test Engineer
UL Verification Services Inc.

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

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 5, and RSS-210 Issue 9.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, 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	47658 Kato Rd
☐ Chamber A (ISED:2324B-1)	☐ Chamber D (ISED:22541-1)	☒ Chamber I (ISED:2324A-5)
☐ Chamber B (ISED:2324B-2)	☐ Chamber E (ISED:22541-2)	☐ Chamber J (ISED:2324A-6)
☐ Chamber C (ISED:2324B-3)	☐ Chamber F (ISED:22541-3)	☐ Chamber K (ISED:2324A-1)
	☐ Chamber G (ISED:22541-4)	☐ Chamber L (ISED:2324A-3)
	☐ Chamber H (ISED:22541-5)	

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code. UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

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 Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.52 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	4.88 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.24 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.37 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.17 dB

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

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a battery powered wireless transmitter for home automation/security application.

5.2. MAXIMUM FUNDAMENTAL FIELD STRENGTH

The transmitter has peak fundamental field strengths as follows:

Frequency Range (MHz)	Mode	Field Strength Peak (dBuV/m)	Field Strength Average (dBuV/m)
345	Normal	94.48	76.38

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a Loop antenna using copper wire, with a maximum peak gain of -15dBi.

5.4. SOFTWARE AND FIRMWARE

The typical factory firmware installed in the EUT during testing was ESW1157-01_FCC_continuous and ESW1157-01-A01.

5.5. 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 “Y-axis”. See photos for details.

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

NONE

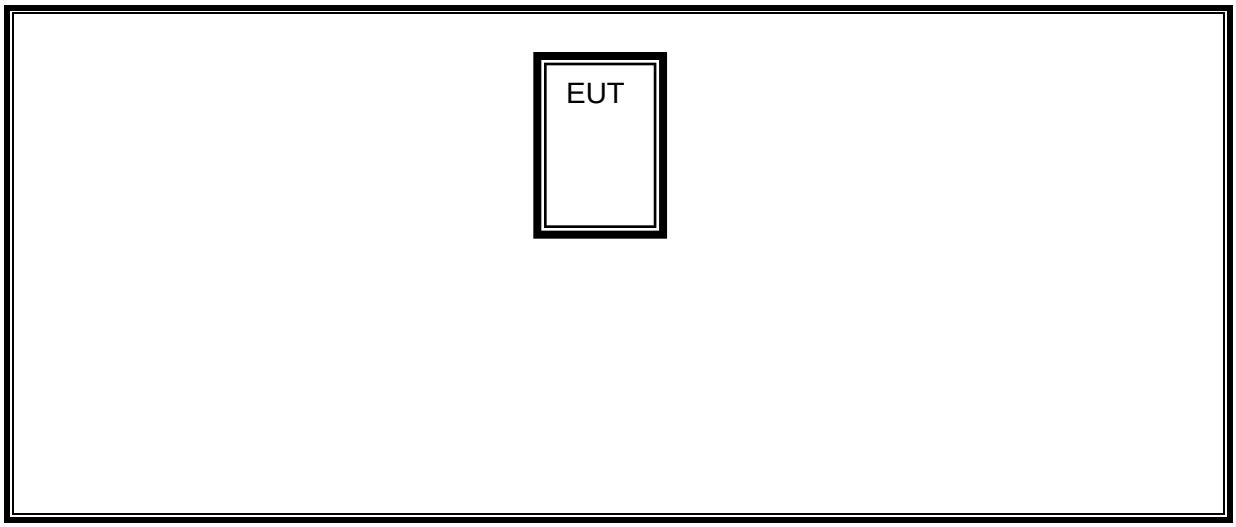
I/O CABLES

NONE

TEST SETUP

The EUT was tested as a standalone device.

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**	**Asset**	**Cal Due**
Amplifier, 1 to 8GHz, 30dB gain	L3 Narda	AMF-4D-01000800-30-29P	PRE0176602	08/01/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T862	05/24/2019
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	PRE0180175	07/09/2019
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179376	02/14/2020
Hybrid Antenna, 30MHz to 3GHz	SunAR rf motion	JB3	PRE0184971	11/13/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1450	01/23/2020
Loop Antenna, 100KHz - 30MHz	ELECTRO METRICS	EM-6872	PRE0179467	05/22/2019
Loop Antenna, 30Hz - 1MHz	ELECTRO METRICS	EM-6871	PRE0179465	05/22/2019
UL AUTOMATION SOFTWARE				
Radiated Software	UL	UL EMC	Ver 9.5, June 22, 2018	

NOTE: *testing was completed before equipment calibration expiration date.

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

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.

RSS-210 A.1.3
The 99% bandwidth of monetarily operated devices shall be less or equal to 0.25% of the center frequency for devices operating between 70MHz and 900MHz. For devices operating above 900MHz, the 99% bandwidth shall be less or equal to 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 5% 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.

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

RESULTS

No non-compliance noted:

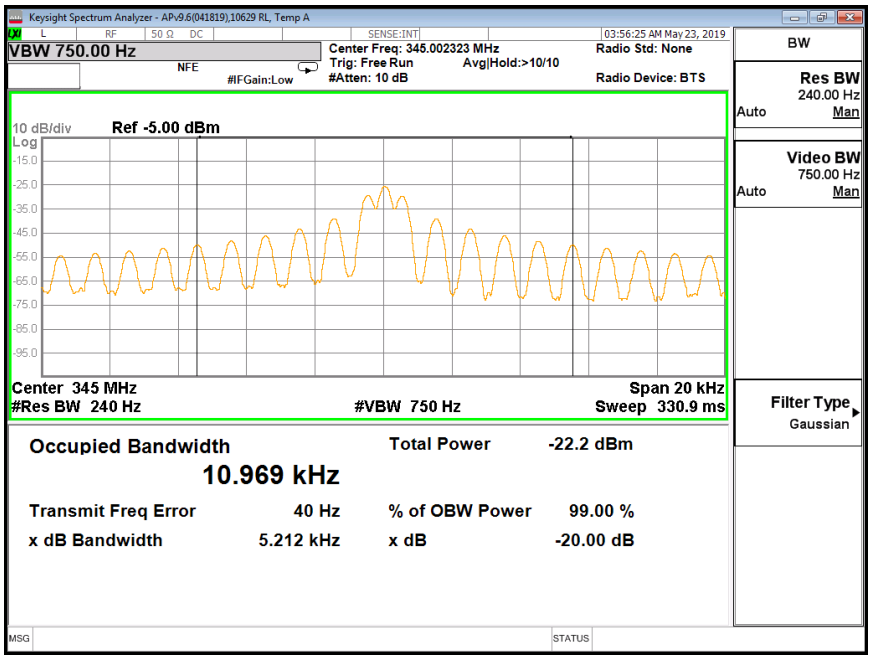
20dB Bandwidth

Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
345	5.212	862.5	-857.288

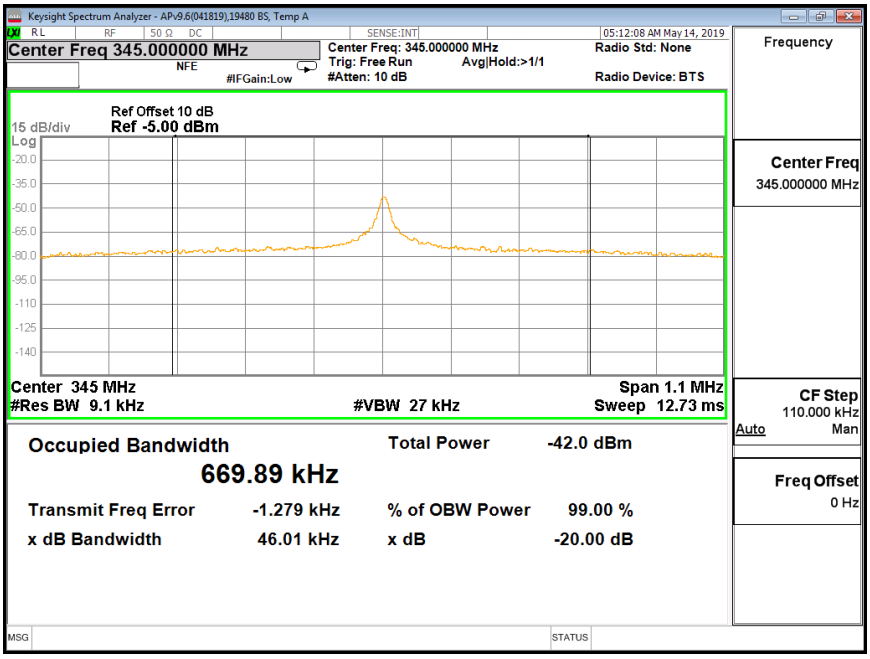
99% Bandwidth

Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
345	669.89	862.5	-192.61

20dB BANDWIDTH



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 pulses 1 * pulse width 1) + (# of pulses 2 * pulse width 2) + (# of pulses 3 * pulse width 3) / 100 or T

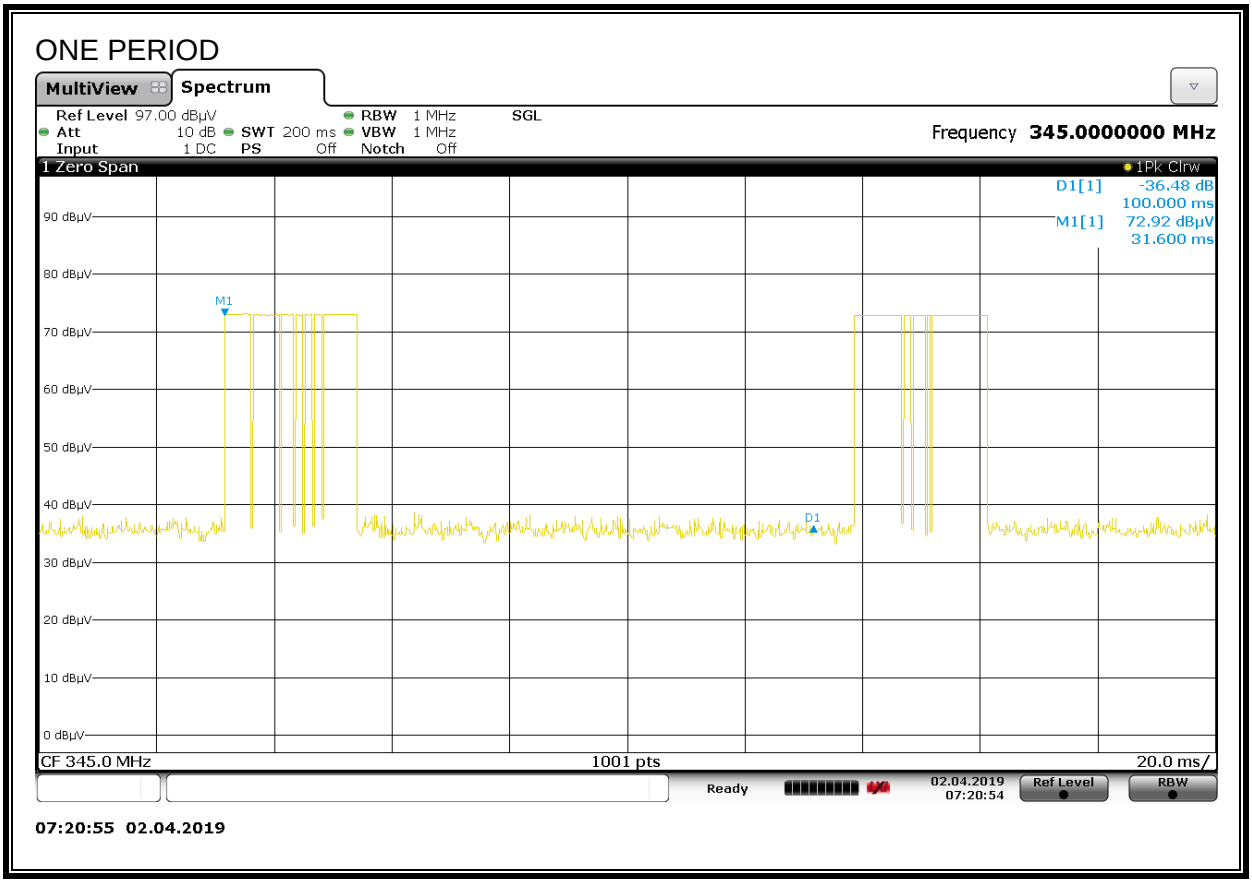
RESULTS

No non-compliance noted:

One Period (ms)	Pulse Width 1 (ms)	# of Pulses 1	Pulse Width 2 (ms)	# of Pulses 2	Pulse Width 3 (ms)	# of Pulses 3	Duty Cycle	20*Log Duty Cycle (dB)
100	0.14	54	0.27	13	1.38	1	0.125	-18.10

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

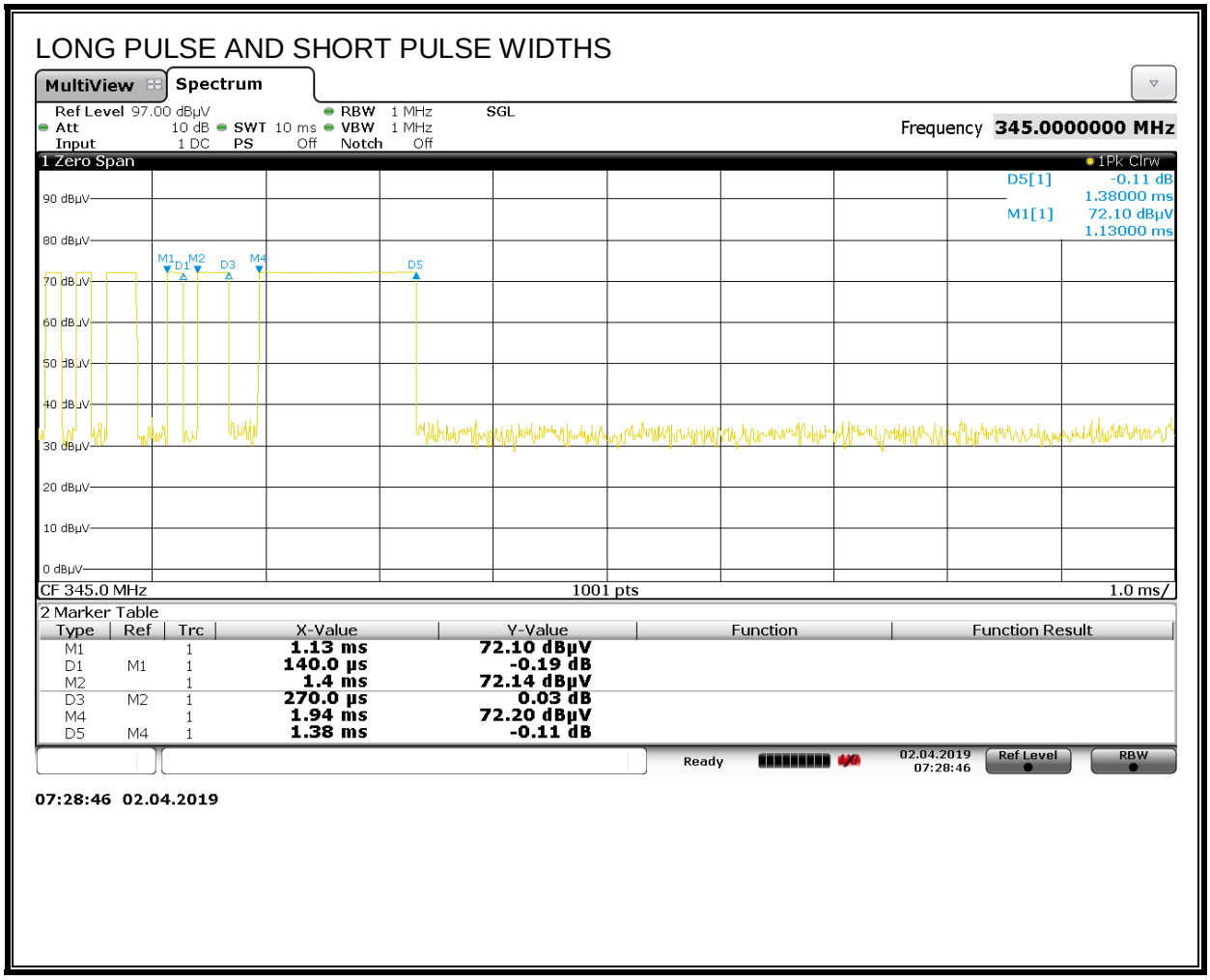
ONE PERIOD



UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

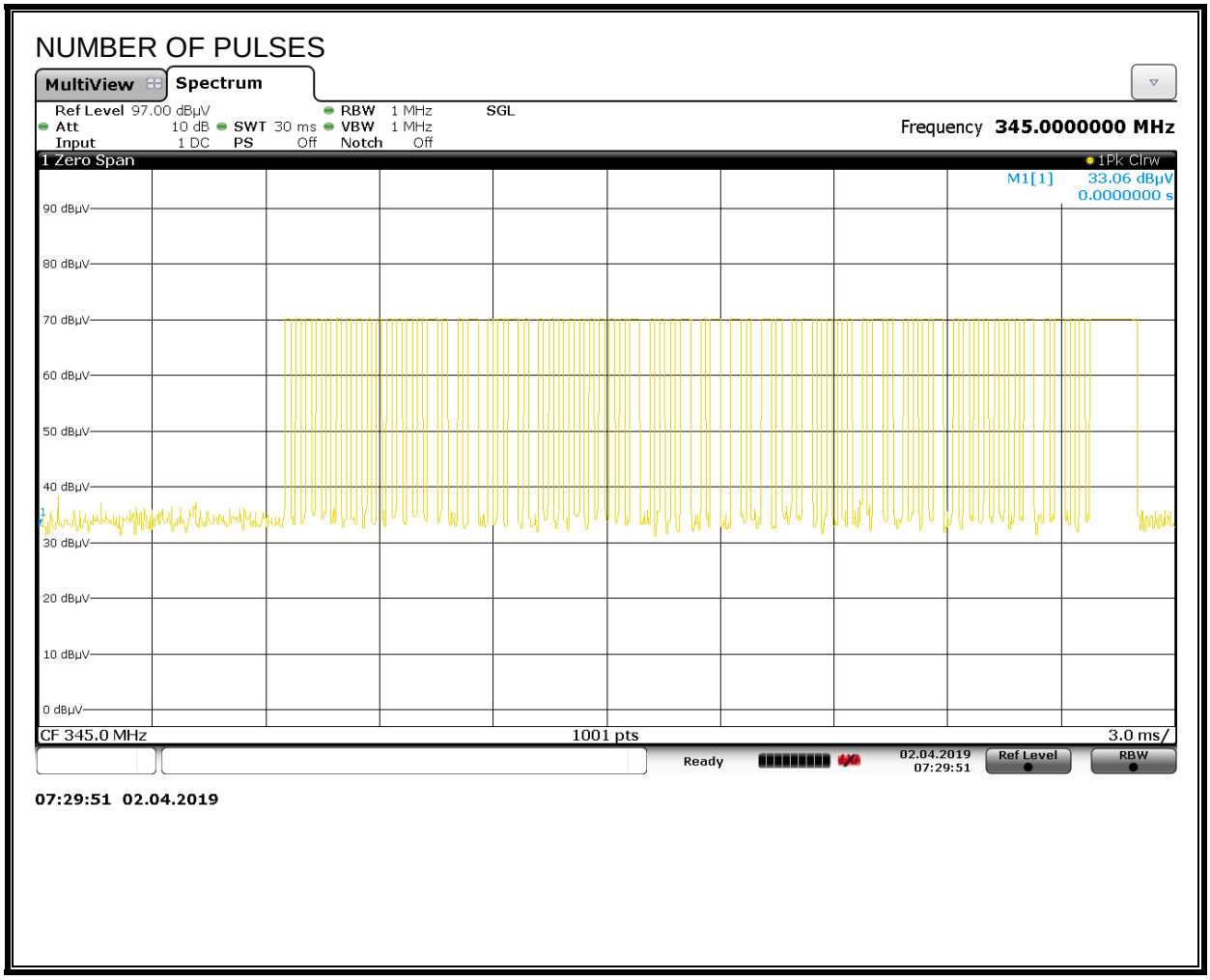
PULSE WIDTHS

LONG PULSE AND SHORT PULSE WIDTHS



UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

NUMBER OF PULSES



UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

8. RADIATED EMISSION TEST RESULTS

LIMITS

FCC §15.231 (b)
RSS-210 A.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		

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

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.

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement 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.

2D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

Base 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.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

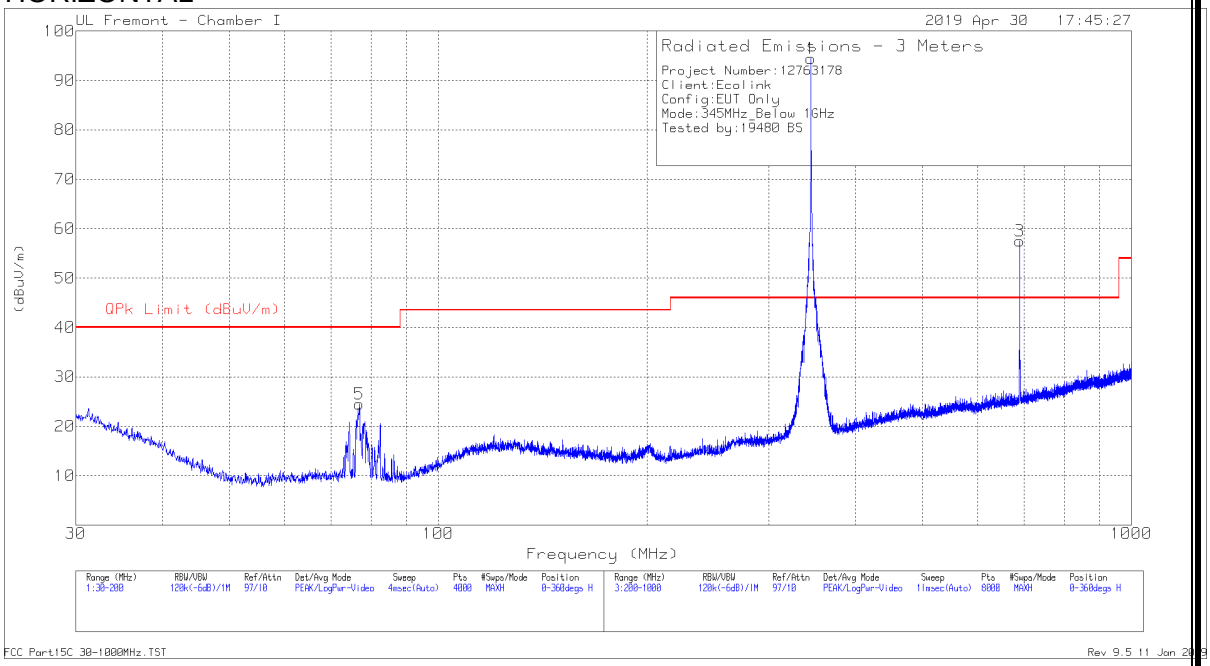
RESULTS

No non-compliance noted:

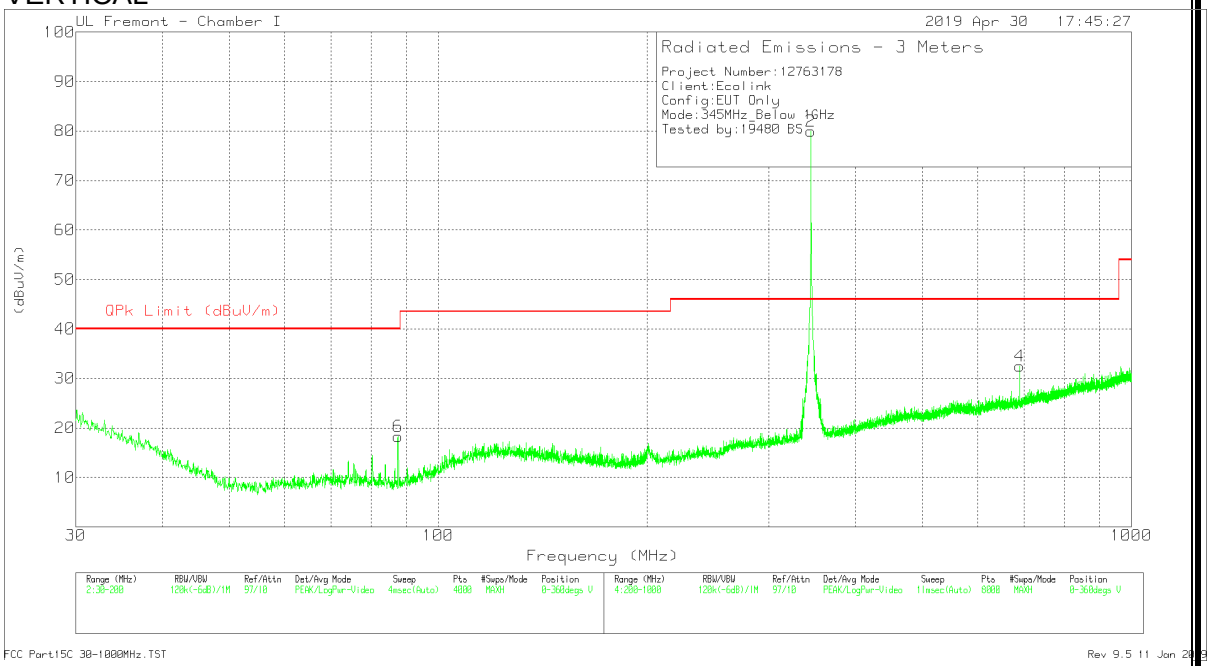
UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

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

HORIZONTAL



VERTICAL



BELOW 1GHZ RADIATED EMISSIONS

FUNDAMENTAL FIELD STRENGTH AND HARMONICS SPURIOUS EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE0184971 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	76.9892	28.82	Pk	13.7	-30.9	11.62	77.26	-65.64	3	312	H
	*76.9892	--	Av	--	--	-6.48	57.26	-63.74	3	312	H
6	87.2879	29.74	Pk	13.3	-30.8	12.24	77.26	-65.02	250	324	V
	*87.2879	--	Av	--	--	-5.86	57.26	-63.12	250	324	V
1	345.0027	103.98	Pk	20.1	-29.6	94.48	97.26	-2.78	34	100	H
	*345.0027	--	Av	--	--	76.38	77.26	-0.88	34	100	H
2	345.0017	92.55	Pk	20.1	-29.6	83.05	97.26	-14.21	297	139	V
	*345.0017	--	Av	--	--	64.95	77.26	-12.31	297	139	V
3	**690.0049	61.13	Pk	25.8	-28.8	58.13	77.26	-19.13	38	100	H
	*690.0049	--	Av	--	--	40.03	57.26	-17.23	38	100	H
4	**689.9973	38.33	Pk	25.8	-28.8	35.33	77.26	-41.93	131	142	V
	*689.9973	--	Av	--	--	17.23	57.26	-40.03	131	142	V

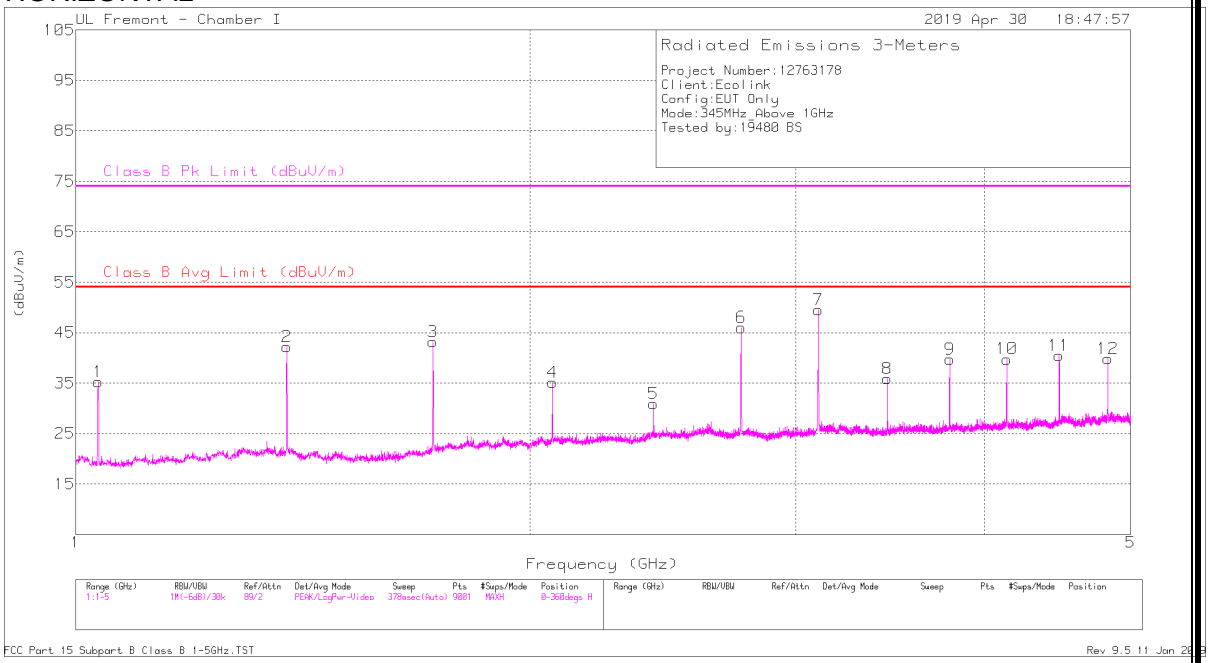
Pk - Peak detector
Av – Average detector

* Average Reading = Peak Reading (dBuV/m) + 20log (Duty Cycle), Where Duty Cycle is
(# of pulses 1 * pulse width 1) + (# of pulses 2 * pulse width 2) + (# of pulses 3 * pulse width 3) / 100 or T
Refer to section 7.1 for Duty Cycle Correction Factor calculation (-18.1dB)
Note: Radiated peak result is based on 100% duty cycle sample; average reading = peak reading + DCCF
** Harmonics of fundamental 345MHz

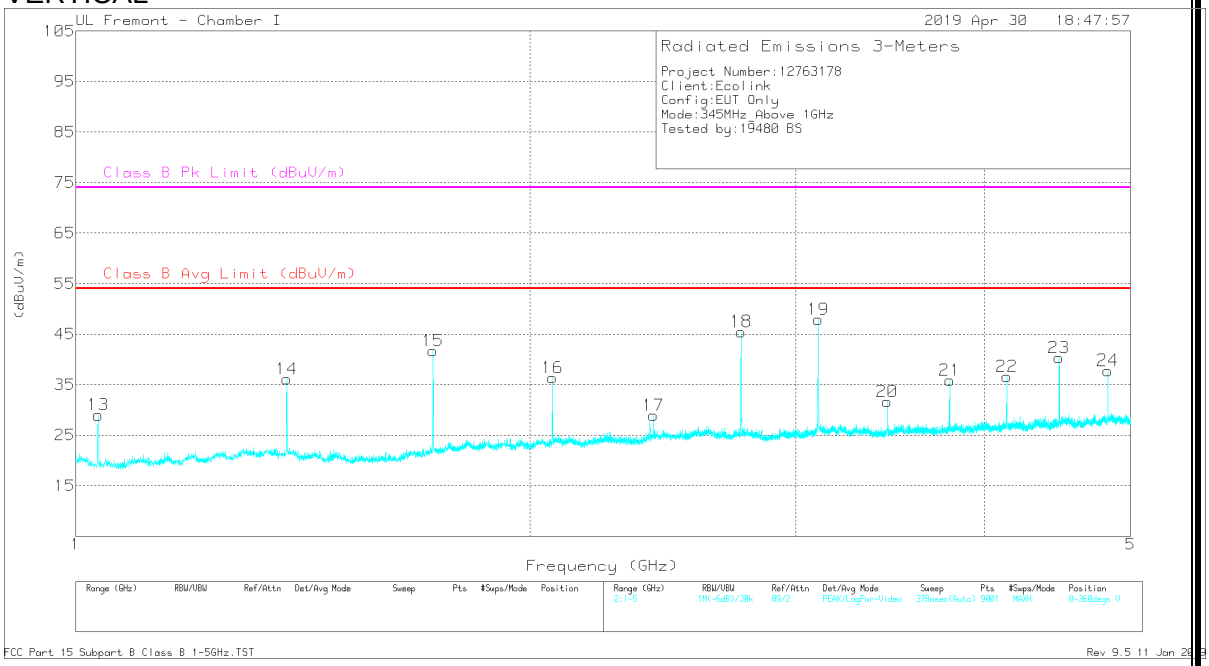
UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz

HORIZONTAL



VERTICAL



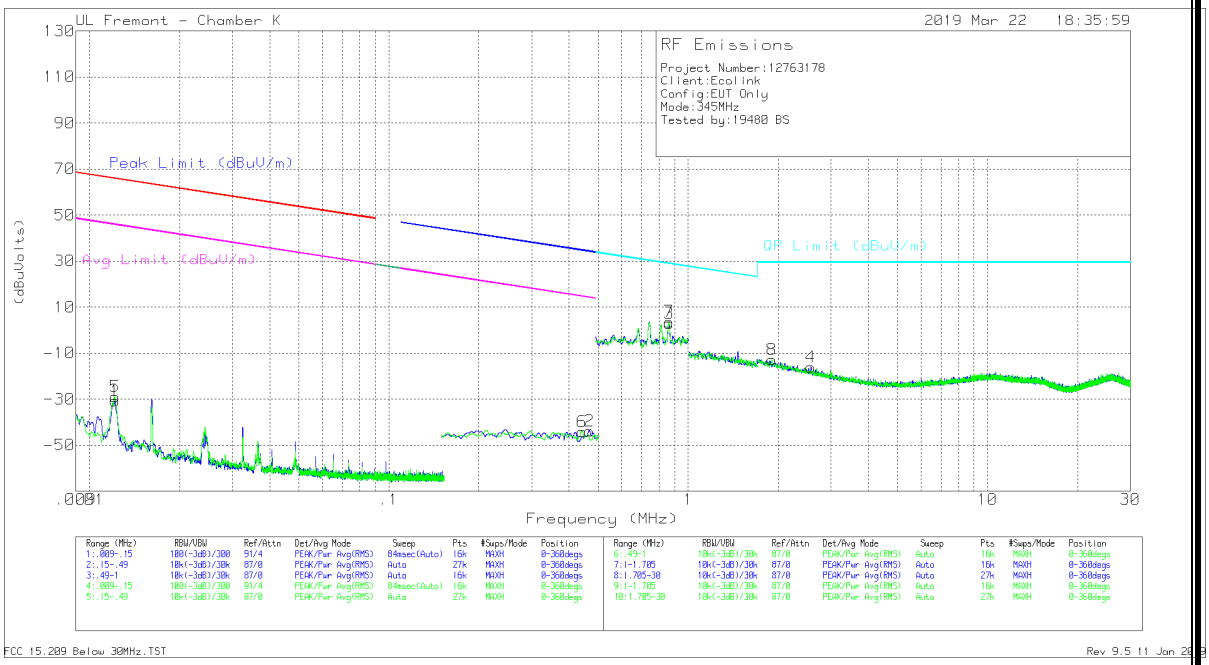
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	FCC Avg Limit (dBuV/m)	Margin (dB)	FCC Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
**1.035	44.4	Pk	27.2	-34.6	37	-	-	74	-37	312	130	H
		Av			18.9	54	-35.1	-	-			
**1.38	47.32	Pk	29.4	-33.8	42.92	-	-	74	-31.08	330	118	H
		Av			24.82	54	-29.18	-	-			
**1.725	48.44	Pk	29.4	-33.1	44.74	-	-	77.26	-32.52	330	173	H
		Av			26.64	57.26	-30.62	-	-			
**2.07	37.6	Pk	31.2	-32.5	36.3	-	-	77.26	-40.96	174	134	H
		Av			18.2	57.26	-39.06	-	-			
**2.415	32.36	Pk	32.1	-32.1	32.36	-	-	77.26	-44.9	3	348	H
		Av			14.26	57.26	-43	-	-			
**2.76	45.26	Pk	32.4	-31.4	46.26	-	-	74	-27.74	189	165	H
		Av			28.16	54	-25.84	-	-			
**3.105	48.62	Pk	32.7	-30.8	50.52	-	-	77.26	-26.74	334	159	H
		Av			32.42	57.26	-24.84	-	-			
**3.45	34.71	Pk	32.7	-30.8	36.61	-	-	77.26	-40.65	286	131	H
		Av			18.51	57.26	-38.75	-	-			
**3.795	37.46	Pk	33.1	-29.9	40.66	-	-	74	-33.34	308	151	H
		Av			22.56	54	-31.44	-	-			
**4.14	38.02	Pk	33.4	-29.3	42.12	-	-	74	-31.88	282	145	H
		Av			24.02	54	-29.98	-	-			
**4.485	38.43	Pk	33.6	-29.5	42.53	-	-	77.26	-34.73	275	114	H
		Av			24.43	57.26	-32.83	-	-			
**4.83	35.87	Pk	34.2	-29	41.07	-	-	74	-32.93	274	107	H
		Av			22.97	54	-31.03	-	-			
**1.035	38.99	Pk	27.2	-34.6	31.59	-	-	74	-42.41	2	140	V
		Av			13.49	54	-40.51	-	-			
**1.38	44.22	Pk	29.4	-33.8	39.82	-	-	74	-34.18	9	117	V
		Av			21.72	54	-32.28	-	-			
**1.725	47.66	Pk	29.4	-33.1	43.96	-	-	77.26	-33.3	5	104	V
		Av			25.86	57.26	-31.4	-	-			
**2.07	42.13	Pk	31.2	-32.5	40.83	-	-	77.26	-36.43	351	193	V
		Av			22.73	57.26	-34.53	-	-			
**2.415	36.7	Pk	32.1	-32.1	36.7	-	-	77.26	-40.56	9	127	V
		Av			18.6	57.26	-38.66	-	-			
**2.76	46.69	Pk	32.4	-31.4	47.69	-	-	74	-26.31	202	110	V
		Av			29.59	54	-24.41	-	-			
**3.105	48.74	Pk	32.7	-30.8	50.64	-	-	77.26	-26.62	137	126	V
		Av			32.54	57.26	-24.72	-	-			
**3.45	36.24	Pk	32.7	-30.8	38.14	-	-	77.26	-39.12	344	205	V
		Av			20.04	57.26	-37.22	-	-			
**3.795	40.17	Pk	33.1	-29.9	43.37	-	-	74	-30.63	290	333	V
		Av			25.27	54	-28.73	-	-			
**4.141	38.43	Pk	33.4	-29.3	42.53	-	-	74	-31.47	310	153	V
		Av			24.43	54	-29.57	-	-			
**4.485	41.04	Pk	33.6	-29.5	45.14	-	-	77.26	-32.12	86	102	V
		Av			27.04	57.26	-30.22	-	-			
**4.83	37.82	Pk	34.2	-29	43.02	-	-	74	-30.98	181	111	V
		Av			24.92	54	-29.08	-	-			

Pk - Peak detector
Av – Average detector

* Average Reading = Peak Reading (dBuV/m) + 20log (Duty Cycle), Where Duty Cycle is
(# of pulses 1 * pulse width 1) + (# of pulses 2 * pulse width 2) + (# of pulses 3 * pulse width 3) / 100 or T
Refer to section 7.1 for Duty Cycle Correction Factor calculation (-18.1dB)
Note: Radiated peak result is based on 100% duty cycle sample; average reading = peak reading + DCCF
** Harmonics of fundamental 345MHz

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

BELOW 30MHz



NOTE: KDB 414788 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 (ACF)	Cables w/ PRE0186650	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.01217	21.14	Pk	60	-31.8	-80	-30.66	65.88	-96.54	45.88	-76.54	-	-	-	-	0-360
2	.46804	12.19	Pk	56.2	-32.1	-80	-43.71	-	-	-	-	34.2	-77.91	14.2	-57.91	0-360
5	.01217	23.05	Pk	60	-31.8	-80	-28.75	65.88	-94.63	45.88	-74.63	-	-	-	-	0-360
6	.44294	11.76	Pk	56.2	-32.1	-80	-44.14	-	-	-	-	34.68	-78.82	14.68	-58.82	0-360

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (ACF)	Cables w/ PRE0186650	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.86267	18.77	Pk	56.3	-32.1	-40	2.97	28.9	-25.93	0-360
7	.86182	19.47	Pk	56.3	-32.1	-40	3.67	28.91	-25.24	0-360
4	2.57274	16.26	Pk	39.6	-32	-40	-16.14	29.5	-45.64	0-360
8	1.90098	17.59	Pk	41.7	-32	-40	-12.71	29.5	-42.21	0-360

Pk - Peak detector