



FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

HANDHELD BARCODE READER WITH BT AND RFID

MODEL NUMBER: INFINEAX-M

FCC ID: YRWINFINEAX-M

REPORT NUMBER: 11477761-E1V4

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Prepared for
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NVLAP LAB CODE 200065-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	01/18/17	Initial Issue	D. Coronia
V2	01/27/17	Added 20dB BW and updated frequency stability section	D. Coronia
V3	03/10/17	Updated Section 7.1	D. Coronia
V4	03/15/17	Updated Section 8.1.1	D. Coronia

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: DATECS Ltd.
DEPARTMENT OF INNOVATIVE TECHNOLOGIES
4 "Datecs" Str.
1592 SOFIA, BULGARIA

EUT DESCRIPTION: Handheld Barcode Reader with BT and RFID

MODEL: INFINEAX-M

SERIAL NUMBER: MAR000084UN1116

DATE TESTED: January 03 to February 01, 2017

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	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, or any agency of the U.S. Government.

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UL Verification Services Inc.

Prepared By:



LIONEL LARA
WISE LAB ENGINEER
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2. TEST METHODOLOGY

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

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
<input checked="" type="checkbox"/> Chamber A	<input type="checkbox"/> Chamber D
<input type="checkbox"/> Chamber B	<input type="checkbox"/> Chamber E
<input type="checkbox"/> Chamber C	<input type="checkbox"/> Chamber F
	<input type="checkbox"/> Chamber G
	<input type="checkbox"/> Chamber H

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively

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:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
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 handheld barcode reader with RFID and Bluetooth which is operated by 3.70Vdc Li-Ion battery.

This device is designed to operate with an iPad Mini. Voice capability is supported.

5.2. MAXIMUM OUTPUT POWER

The testing was performed at 3 meter. The transmitter maximum E-field at 30 meter distance is 17.94 dBuV/m which is converted from the 3 meter data.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an Chip antenna (Integral), with a maximum gain of 0 dBi.

5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was FTDI, rev. 2.8.28.0.

The test utility software used during testing was LineaRFControl, rev. 2.

5.5. WORST-CASE CONFIGURATION AND MODE

The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z. It was determined that the Y-orientation was the worst-case orientation, therefore, all final radiated testing was performed with the EUT in the Y-orientation while generating continuous emissions.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	T420	PB-FBKHK 12/07	-
AC/DC Adapter	Lenovo	ADLX65NCC2A	-	-

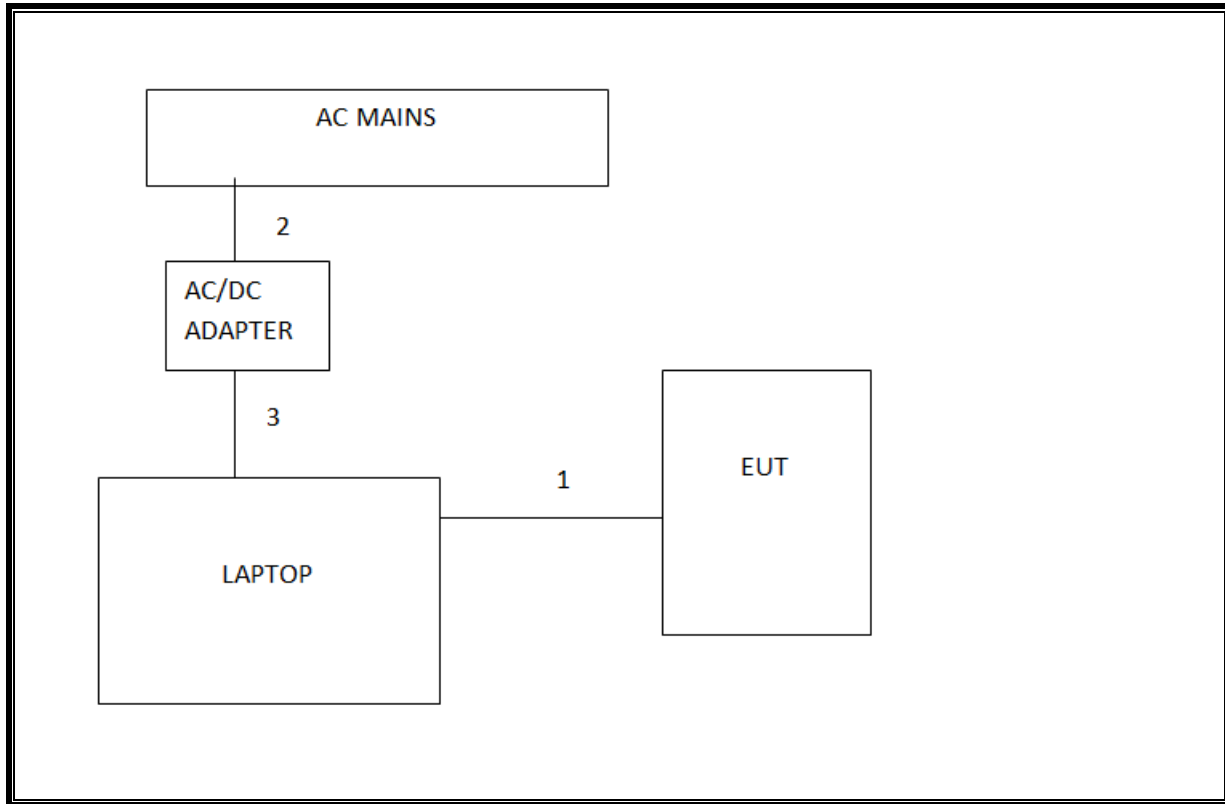
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	USB	Unshielded	1	EUT to Laptop
2	AC Power	1	AC	Unshielded	1	
3	DC Power	1	DC	Unshielded	1	

TEST SETUP

The EUT is connected to the laptop via USB cable. Test software exercised the EUT.

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 No.	Cal Date	Cal Due
Bilog Antenna 30-1000MHz	Sunol	JB1	899	05/26/16	05/26/17
Preamp 10kHz-1000MHz	Sonoma	310	300	11/10/16	11/10/17
EMI Test Receiver	Rohde & Schwarz	ESR-EMI	1436	11/19/16	11/19/17
Spectrum Analyzer 44GHz	Agilent	N9030A	908	04/13/16	04/13/17
LISN for Conducted Emission	FCC	50/250-25-2	1310	06/08/16	06/08/17
Temp chamber	Thermotron	SE-600-10-10	T80	01/14/16	05/14/17
Loop Antenna	EMCO	6502	35	03/24/16	03/24/17
Radiated Software	UL	UL EMC	Ver 9.5, June 24, 2015		
Conducted Software	UL	UL EMC	Ver 9.5, Mar 26, 2015		

7. ANTENNA PORT TEST RESULTS

7.1. 20 dB BANDWIDTH

LIMIT

None; for reporting purposes only.

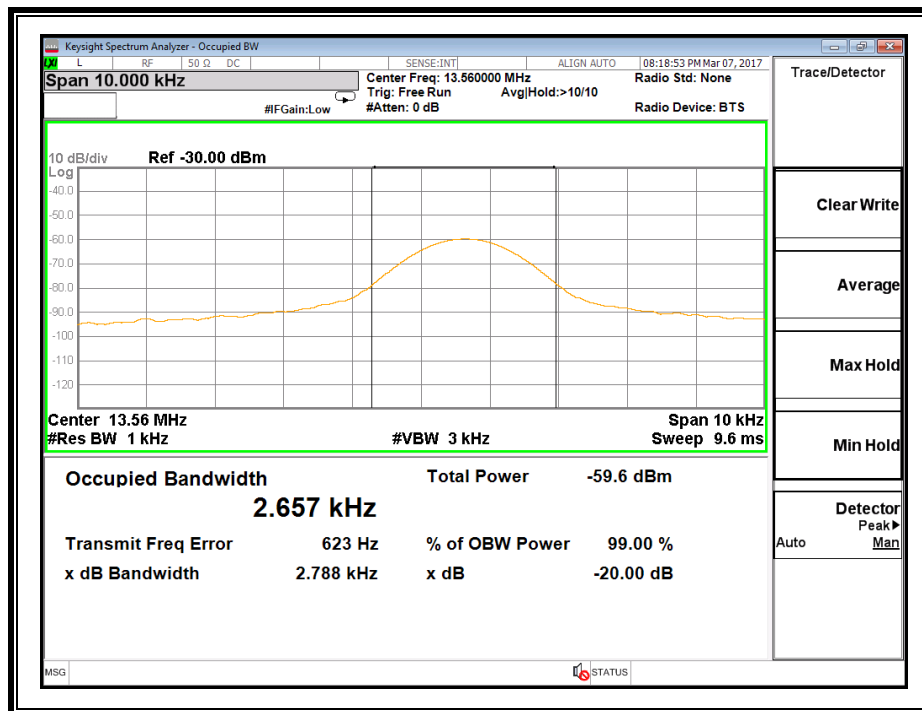
TEST PROCEDURE

§2.1049

The 20dB bandwidth was measured by using a spectrum analyzer.

RESULTS

Frequency (MHz)	20 dB Bandwidth (KHz)
13.56	2.79



7.2. FREQUENCY STABILITY

LIMIT

§15.225 (e) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency, over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.3.1 and 2.3.2

RESULTS

ID:	45211	Date:	02/01/2017
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TEST INFORMATION

Reference Frequency: EUT Channel 13.56 MHz @ 20°C				
Limit: ± 100 ppm = 1.356 kHz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	13.5605800	5.162	± 100
	40	13.5606000	3.687	± 100
	30	13.5606000	3.687	± 100
	20	13.5606500	0.000	± 100
	10	13.5607000	-3.687	± 100
	0	13.5607500	-7.374	± 100
	-10	13.5607500	-7.374	± 100
	-20	13.5607600	-8.112	± 100

Note: EUT is using internal battery.

8. RADIATED EMISSION TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMIT

§15.225

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/ meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110– 14.010 MHz and shall not exceed the general radiated emission limits in § 15.209 as follows:

§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:

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (µV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 – 88	100**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

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

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

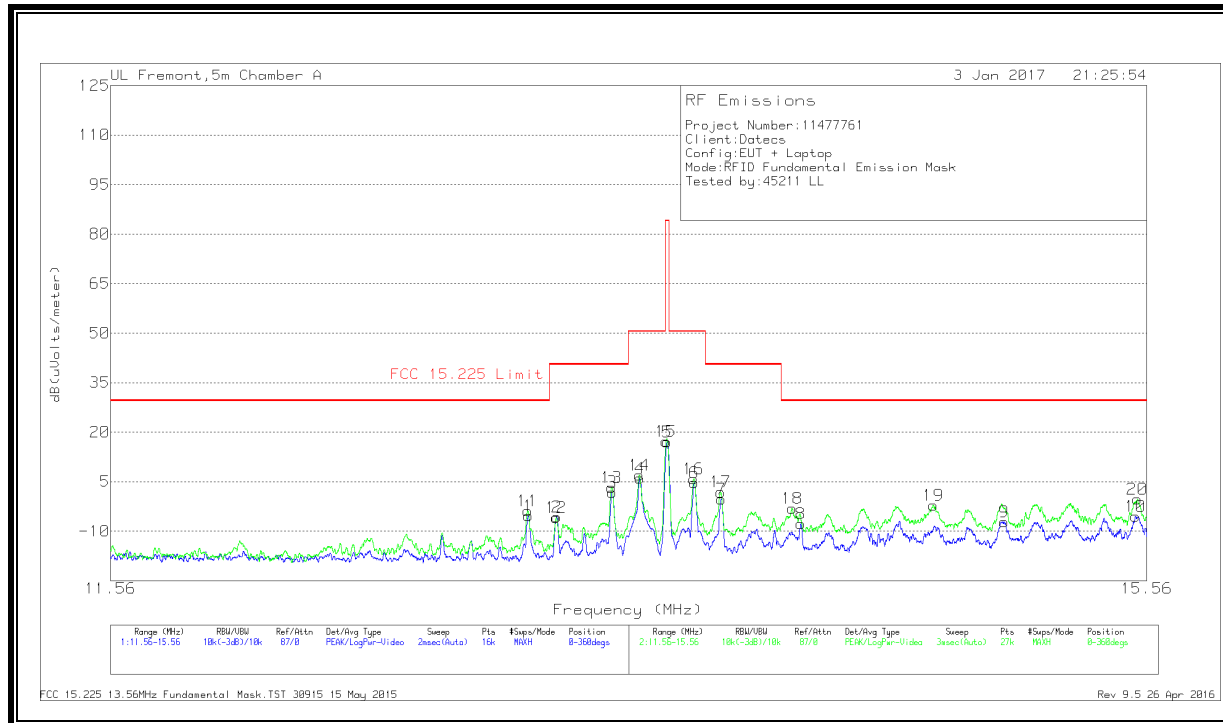
In addition:

§15.209 (d) The emission limits shown the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

§15.209 (d) The provisions in §§ 15.225, measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part.

RESULTS

8.1.1. FUNDAMENTAL EMISSION MASK(11.56 to 15.56MHz)



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 30m	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)
11	13.02868	24.89	Pk	10.7	.6	-40	-3.81	29.54	-33.35	0-360
1	13.03113	23.32	Pk	10.7	.6	-40	-5.38	29.54	-34.92	0-360
12	13.13598	22.8	Pk	10.7	.6	-40	-5.9	40.51	-46.41	0-360
2	13.13713	23.09	Pk	10.7	.6	-40	-5.61	40.51	-46.12	0-360
13	13.34673	31.97	Pk	10.7	.6	-40	3.27	40.51	-37.24	0-360
3	13.34888	30.55	Pk	10.7	.6	-40	1.85	40.51	-38.66	0-360
14	13.45299	35.7	Pk	10.7	.6	-40	7	50.5	-43.5	0-360
4	13.45488	34.74	Pk	10.7	.6	-40	6.04	50.5	-44.46	0-360
15	13.55622	46.1	Pk	10.6	.6	-40	17.3	84	-66.7	0-360
5	13.56075	45.79	Pk	10.6	.6	-40	16.99	84	-67.01	0-360
16	13.66478	34.74	Pk	10.6	.6	-40	5.94	50.5	-44.56	0-360
6	13.66688	33.47	Pk	10.6	.6	-40	4.67	50.5	-45.83	0-360
17	13.7706	30.76	Pk	10.6	.5	-40	1.86	40.51	-38.65	0-360
7	13.77288	28.57	Pk	10.6	.5	-40	-.33	40.51	-40.84	0-360
18	14.05506	25.83	Pk	10.6	.5	-40	-3.07	29.54	-32.61	0-360
8	14.09038	21.09	Pk	10.6	.5	-40	-7.81	29.54	-37.35	0-360
19	14.63566	26.75	Pk	10.5	.6	-40	-2.15	29.54	-31.69	0-360
9	14.93638	21.73	Pk	10.5	.6	-40	-7.17	29.54	-36.71	0-360
10	15.5105	23.52	Pk	10.4	.6	-40	-5.48	29.54	-35.02	0-360
20	15.51856	28.66	Pk	10.4	.6	-40	-.34	29.54	-29.88	0-360

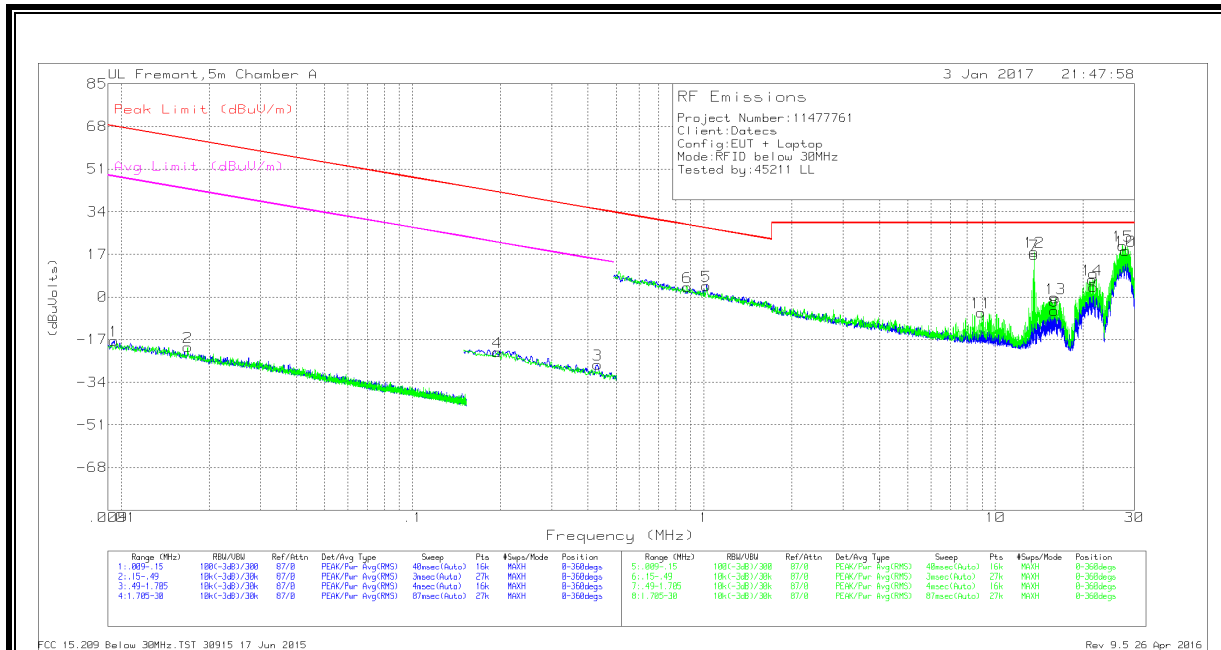
Pk - Peak detector

Fundamental Frequency

Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 30m	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)
13.5608	45.63	Pk	10.6	.6	-40	16.83	84	-67.17	100
13.5608	46.74	Pk	10.6	.6	-40	17.94	84	-66.06	209

Pk - Peak detector

8.1.1. SPURIOUS EMISSIONS (0.09 – 30 MHz)



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.

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	.00946	44.01	PK	18.4	.1	-80	-17.49	68.09	-85.58	48.09	-65.58	0-360
2	.0169	44.84	PK	15.1	.1	-80	-19.96	63.05	-83.01	43.05	-63.01	0-360
4	.19573	47.1	PK	10.8	.1	-80	-22	41.77	-63.77	21.77	-43.77	0-360
3	.43101	42.12	PK	10.7	.1	-80	-27.08	34.91	-61.99	14.91	-41.99	0-360

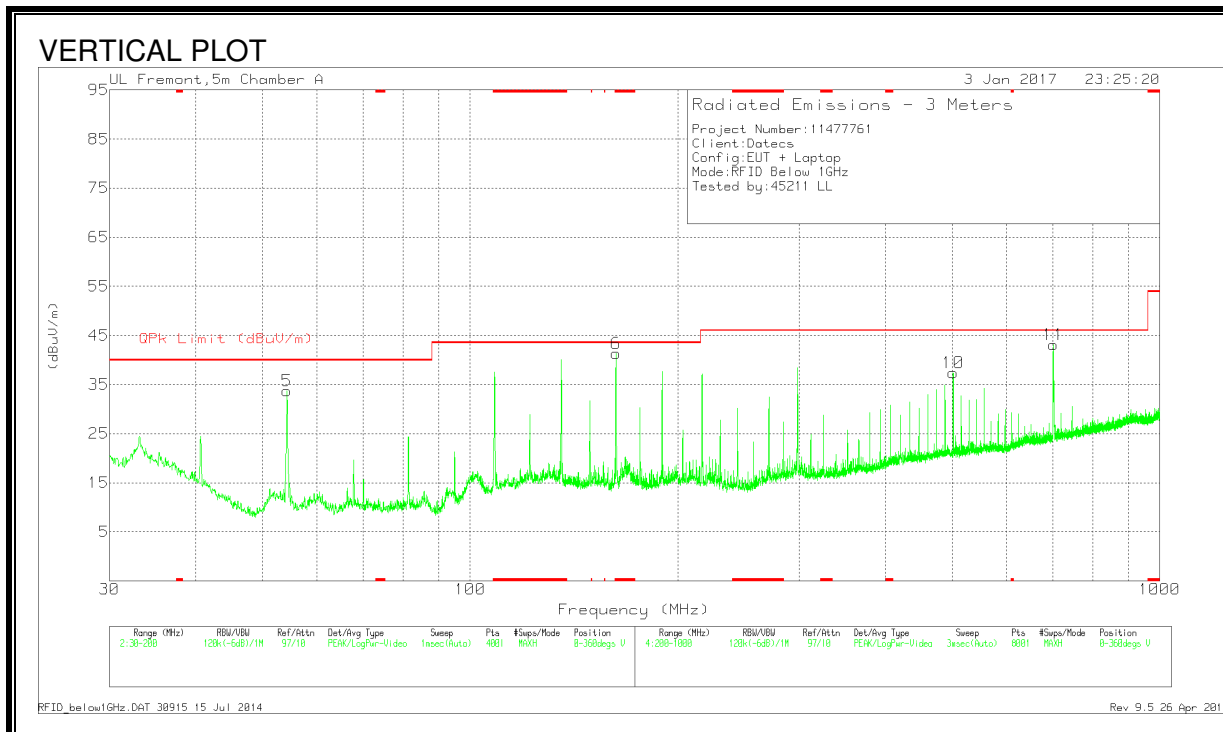
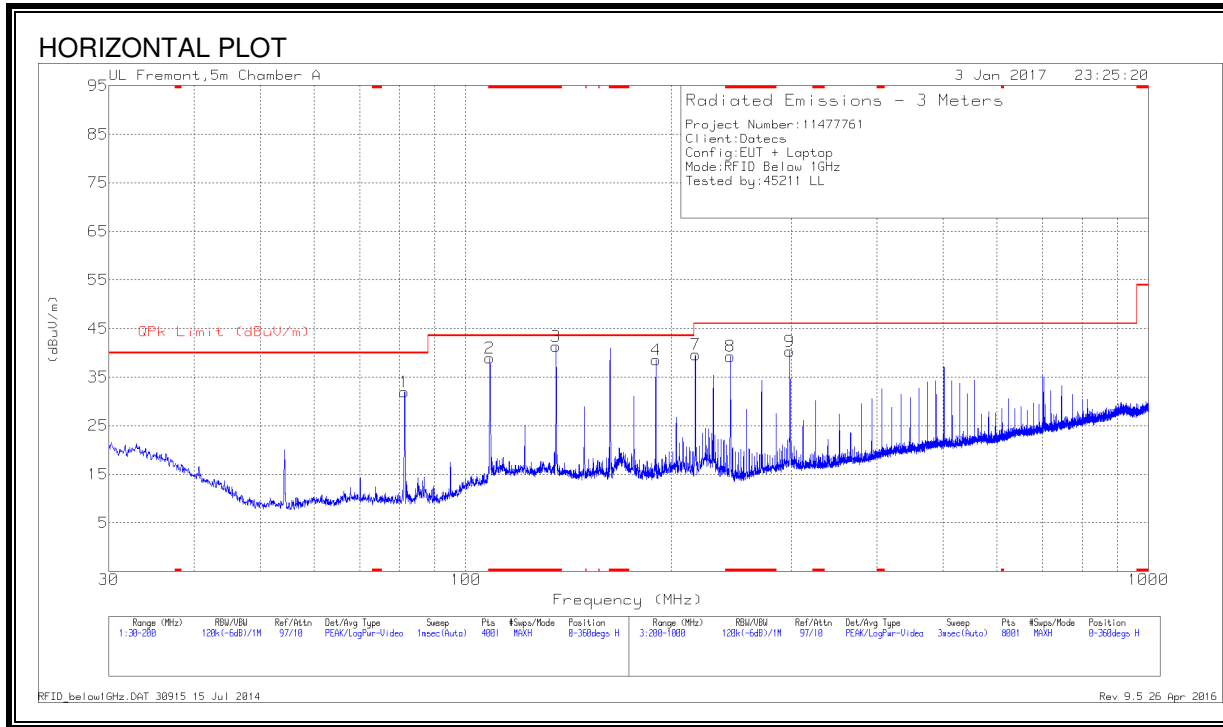
Pk - Peak detector

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)
6	.87509	32.97	Pk	10.7	.2	-40	3.87	28.76	-24.89	-	-	0-360
5	1.01957	33.56	Pk	10.7	.2	-40	4.46	27.44	-22.98	-	-	0-360
11	8.93148	22.56	Pk	10.8	.5	-40	-6.14	29.54	-35.68	-	-	0-360
7	**13.56155	45.61	Pk	10.7	.6	-40	16.91	29.54	-12.63	-	-	0-360
12	**13.56155	46.77	Pk	10.7	.6	-40	18.07	29.54	-11.47	-	-	0-360
8	15.96199	23.43	Pk	10.5	.6	-40	-5.47	29.54	-35.01	-	-	0-360
13	16.10033	28.41	Pk	10.5	.6	-40	-.49	29.54	-30.03	-	-	0-360
14	21.52373	36.31	Pk	9.8	.7	-40	6.81	29.54	-22.73	-	-	0-360
9	21.67097	33.54	Pk	9.8	.7	-40	4.04	29.54	-25.5	-	-	0-360
15	27.37	50.95	Pk	8.6	.8	-40	20.35	29.54	-9.19	-	-	0-360
10	27.95164	49.09	Pk	8.5	.8	-40	18.39	29.54	-11.15	-	-	0-360

Pk - Peak detector

** - Fundamental frequency

8.1.2. TX SPURIOUS EMISSION 30 TO 1000 MHz



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 108.4975	53.12	Pk	16.3	-30.5	38.92	43.52	-4.6	0-360	300	H
3	* 135.6125	54.09	Pk	17.5	-30.3	41.29	43.52	-2.23	0-360	200	H
6	* 162.7275	55.42	Pk	16.1	-30.2	41.32	43.52	-2.2	0-360	100	V
8	* 244.1	53.35	Pk	15.6	-29.7	39.25	46.02	-6.77	0-360	100	H
5	54.225	53.58	Pk	11.1	-31	33.68	40	-6.32	0-360	100	V
1	81.34	51.08	Pk	11.6	-30.7	31.98	40	-8.02	0-360	200	H
4	189.8425	53.16	Pk	15.4	-30	38.56	43.52	-4.96	0-360	100	H
7	217	54.83	Pk	14.6	-29.8	39.63	46.02	-6.39	0-360	100	H
9	298.3	52.38	Pk	17.4	-29.4	40.38	46.02	-5.64	0-360	100	H
10	501.7	44.29	Pk	21.7	-28.6	37.39	46.02	-8.63	0-360	200	V
11	700.8	47.2	Pk	24.2	-28.3	43.1	46.02	-2.92	0-360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 108.4937	53.47	Qp	16.3	-30.5	39.27	43.52	-4.25	128	282	H
* 135.6082	54.24	Qp	17.5	-30.3	41.44	43.52	-2.08	116	214	H
189.8435	55.04	Qp	15.4	-30	40.44	43.52	-3.08	106	156	H
* 162.7265	55.49	Qp	16.1	-30.2	41.39	43.52	-2.13	296	145	V
298.3394	49.24	Qp	17.4	-29.4	37.24	46.02	-8.78	100	107	H
700.7933	23.27	Qp	24.2	-28.3	19.27	46.02	-26.75	250	302	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Qp - Quasi-Peak detector

9. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Notes:
 1. The lower limit shall apply at the transition frequencies
 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

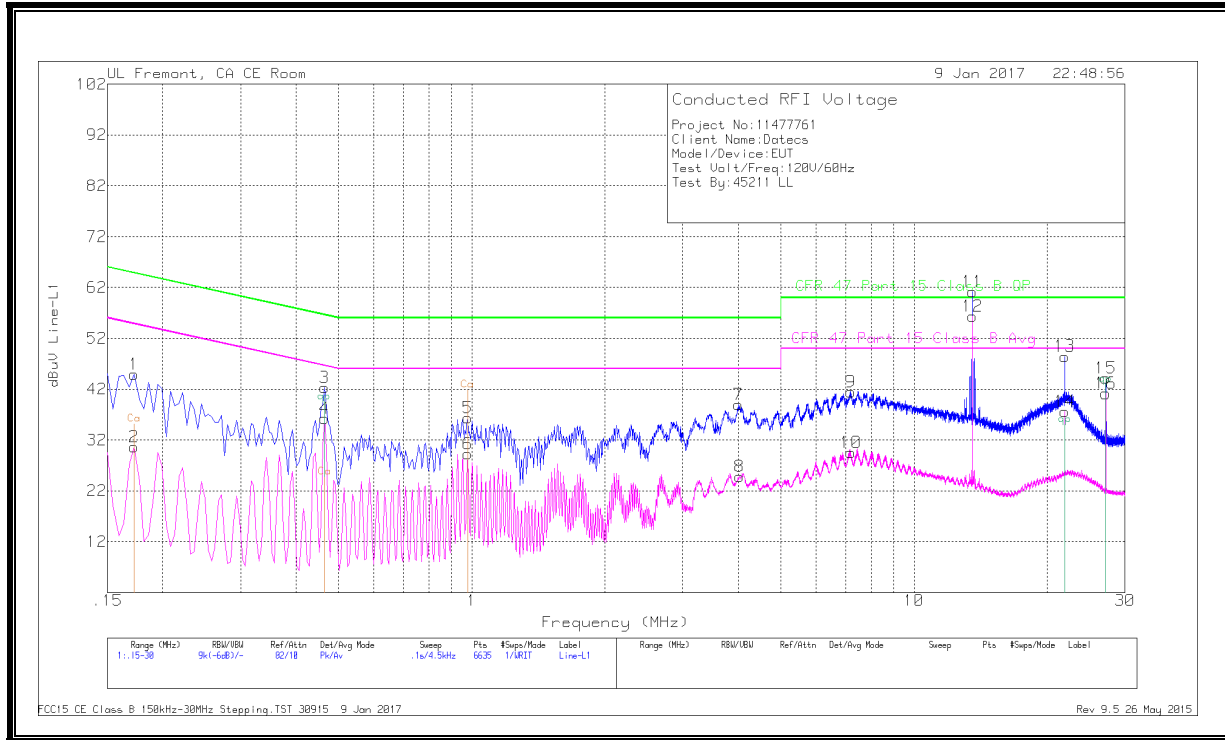
TEST PROCEDURE

ANSI C63.4

RESULTS

9.1. NORMAL OPERATION

LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables 1&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
1	.1725	34.77	Pk	0	0	10.1	44.87	-	-	54.84	-9.97
2	.1725	20.59	Av	0	0	10.1	30.69	-	-	-	-
3	.465	32.18	Pk	0	0	10.1	42.28	-	-	46.6	-4.32
4	.465	26.14	Av	0	0	10.1	36.24	-	-	-	-
5	.978	26.13	Pk	0	.1	10.1	36.33	-	-	46	-9.67
6	.978	19.07	Av	0	.1	10.1	29.27	-	-	-	-
7	4.0065	28.74	Pk	0	.1	10.1	38.94	-	-	46	-7.06
8	4.029	14.64	Av	0	.1	10.1	24.84	-	-	-	-
9	7.197	31.11	Pk	0	.1	10.2	41.41	-	-	50	-8.59
10	7.197	19.23	Av	0	.1	10.2	29.53	-	-	-	-
11	*13.56	50.73	Pk	.1	.2	10.2	61.23	-	-	-	-
12	*13.56	45.88	Av	.1	.2	10.2	56.38	-	-	-	-
13	21.9345	37.76	Pk	.1	.2	10.4	48.46	-	-	50	-1.54
14	21.9345	26.89	Av	.1	.2	10.4	37.59	-	-	-	-
15	27.123	33.33	Pk	.1	.3	10.5	44.23	-	-	50	-5.77
16	27.123	30.24	Av	.1	.3	10.5	41.14	-	-	-	-

Pk - Peak detector

Av - Average detection

** - Fundamental frequency, 13.56MHz.

Note: The 13.56MHz is a fundamental frequency of the EUT. The plots under the following section (with Antenna Port Terminated) indicate that when the antenna port is terminated, and with the EUT is transmitting, the fundamental is not showing. All frequencies are below the limit lines.

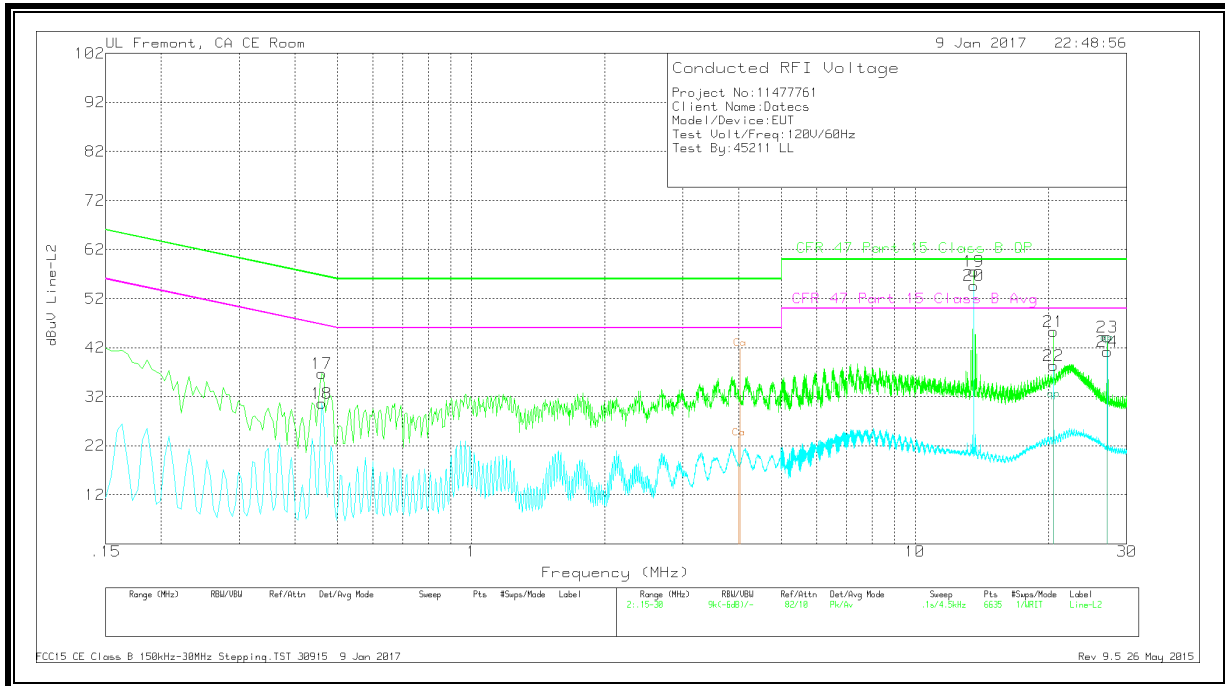
Range 1: Line-L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables 1&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
.46388	25.01	Ca	0	0	10.1	35.11	-	-	46.62	-11.51
.46388	29.41	Qp	0	0	10.1	39.51	56.62	-17.11	-	-
21.9352	14.01	Ca	.1	.2	10.4	24.71	-	-	50	-25.29
21.9352	24.35	Qp	.1	.2	10.4	35.05	60	-24.95	-	-
27.1219	30.9	Ca	.1	.3	10.5	41.8	-	-	50	-8.2
27.1219	32.05	Qp	.1	.3	10.5	42.95	60	-17.05	-	-

Ca - CISPR average detection

Qp - Quasi-Peak detector

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables 2&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
17	.4605	26.59	Pk	0	0	10.1	36.69	-	-	46.68	-9.99
18	.4605	20.58	Av	0	0	10.1	30.68	-	-	-	-
19	**13.56	47.09	Pk	.1	.2	10.2	57.59	-	-	-	-
20	**13.56	44.17	Av	.1	.2	10.2	54.67	-	-	-	-
21	20.5305	34.79	Pk	0	.2	10.3	45.29	-	-	50	-4.71
22	20.5305	27.87	Av	0	.2	10.3	38.37	-	-	-	-
23	27.123	33.33	Pk	.1	.3	10.5	44.23	-	-	50	-5.77
24	27.123	30.35	Av	.1	.3	10.5	41.25	-	-	-	-

Pk - Peak detector

Av - Average detection

** - Fundamental frequency, 13.56MHz.

Note: The 13.56MHz is a fundamental frequency of the EUT. The plots under the following section (with Antenna Port Terminated) indicate that when the antenna port is terminated, and with the EUT is transmitting, the fundamental is not showing. All frequencies are below the limit lines.

Range 2: Line-L2 .15 - 30MHz

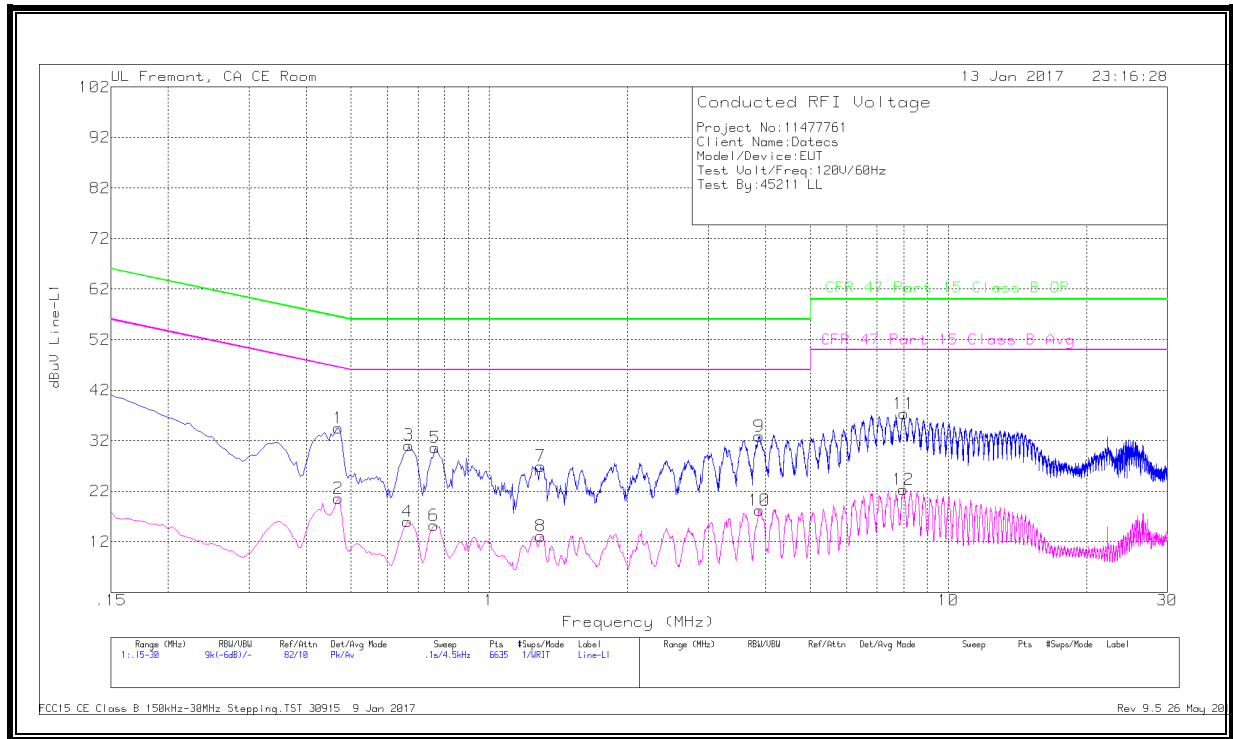
Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables 2&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
20.5312	13.05	Ca	0	.2	10.3	23.55	-	-	50	-26.45
20.5312	20.97	Qp	0	.2	10.3	31.47	60	-28.53	-	-
27.1219	30.96	Ca	.1	.3	10.5	41.86	-	-	50	-8.14
27.1219	32.02	Qp	.1	.3	10.5	42.92	60	-17.08	-	-

Ca - CISPR average detection

Qp - Quasi-Peak detector

9.2. WITH ANTENNA PORT TERMINATED

LINE 1 RESULTS



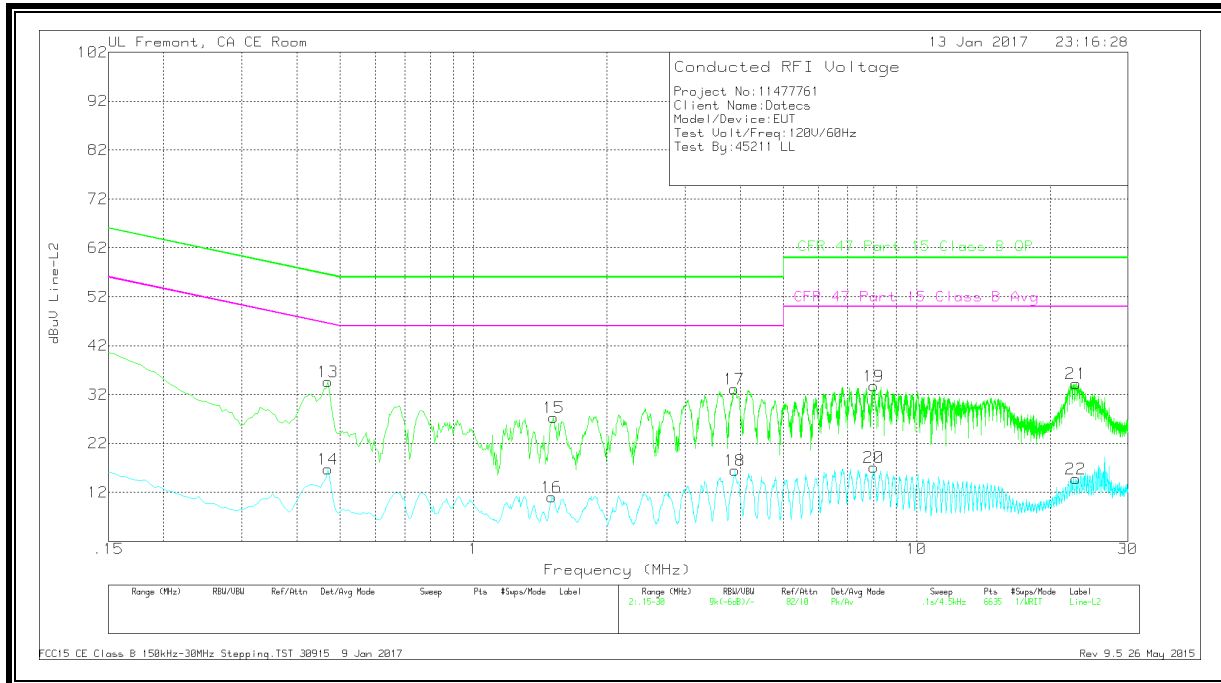
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables C1&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
1	.4695	24.26	Pk	0	.1	10.1	34.46	-	-	46.52	-12.06
2	.4695	10.41	Av	0	.1	10.1	20.61	-	-	-	-
3	.6675	20.88	Pk	0	.1	10.1	31.08	-	-	46	-14.92
4	.663	5.77	Av	0	.1	10.1	15.97	-	-	-	-
5	.762	20.41	Pk	0	.1	10.1	30.61	-	-	46	-15.39
6	.7575	5.02	Av	0	.1	10.1	15.22	-	-	-	-
7	1.293	16.78	Pk	0	.1	10.1	26.98	-	-	46	-19.02
8	1.293	2.92	Av	0	.1	10.1	13.12	-	-	-	-
9	3.8715	22.63	Pk	0	.1	10.1	32.83	-	-	46	-13.17
10	3.8805	8.07	Av	0	.1	10.1	18.27	-	-	-	-
11	7.998	26.97	Pk	0	.2	10.2	37.37	-	-	50	-12.63
12	7.9755	11.97	Av	0	.2	10.2	22.37	-	-	-	-

Pk - Peak detector

Av - Average detection

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables C2&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
13	.4695	24.44	Pk	0	.1	10.1	34.64	-	-	46.52	-11.88
14	.4695	6.59	Av	0	.1	10.1	16.79	-	-	-	-
15	1.518	17.12	Pk	0	.1	10.1	27.32	-	-	46	-18.68
16	1.5	.86	Av	0	.1	10.1	11.06	-	-	-	-
17	3.876	22.91	Pk	0	.1	10.1	33.11	-	-	46	-12.89
18	3.894	6.3	Av	0	.1	10.1	16.5	-	-	-	-
19	8.0115	23.38	Pk	0	.2	10.2	33.78	-	-	50	-16.22
20	8.007	6.71	Av	0	.2	10.2	17.11	-	-	-	-
21	22.902	23.5	Pk	0	.3	10.4	34.2	-	-	50	-15.8
22	22.8795	4.02	Av	0	.3	10.4	14.72	-	-	-	-

Pk - Peak detector

Av - Average detection