



**FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-247 ISSUE 1**

MANUFACTURER'S TEST REPORT

FOR

WIRELESS ALARM CONSOLE

MODEL NUMBER: TSSC-VE

**FCC ID: CFS8DLTSSCBASE1
IC: 573F-TSSCBASE1**

REPORT NUMBER: R11070857-E3

ISSUE DATE: 2016-01-21

Prepared for
**HONEYWELL SECURITY
2 CORPORATE CENTER DR
SUITE 100 PO BOX 9040
MELVILLE, NY, 11747, USA**

Prepared by
**UL LLC
12 LABORATORY DR.
RESEARCH TRIANGLE PARK, NC 27709 USA
TEL: (919) 549-1400**



NVLAP Lab code: 200246-0

Revision History

Ver.	Issue Date	Revisions	Revised By
1	2016-01-20	Initial Issue	Mark Nolting
2	2016-01-21	Revised EUT description in Section 5.1.	Jeff Moser

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	6
4.1. MEASURING INSTRUMENT CALIBRATION	6
4.2. SAMPLE CALCULATION	6
4.3. MEASUREMENT UNCERTAINTY	7
5. EQUIPMENT UNDER TEST	8
5.1. DESCRIPTION OF EUT	8
5.2. DESCRIPTION OF AVAILABLE ANTENNAS	8
5.3. SOFTWARE AND FIRMWARE	8
5.4. WORST-CASE CONFIGURATION AND MODE	9
5.5. DESCRIPTION OF TEST SETUP	10
6. TEST AND MEASUREMENT EQUIPMENT	12
7. MEASUREMENT METHODS	13
7.1. ON TIME AND DUTY CYCLE	14
8. RADIATED TEST RESULTS	18
8.1. LIMITS AND PROCEDURE	18
8.2. TRANSMITTER ABOVE 1 GHz	19
8.3. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND	19
8.4. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND	40
8.5. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND	61
8.6. WORST-CASE 18-26 GHz	82
8.7. WORST-CASE BELOW 1 GHz	85

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: HONEYWELL SECURITY
2 CORPORATE CENTER DR
SUITE 100 PO BOX 9040
MELVILLE, NY, 11747, USA

EUT DESCRIPTION: WIRELESS ALARM CONSOLE

MODEL: TSSC-VE

SERIAL NUMBER: Non-serialized sample: SRID 1740

DATE TESTED: 12/03-04/2015, 12/07-09/2015, 01/03/2016

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C (Radiated spurious emissions only.)	PASS
INDUSTRY CANADA RSS-247 Issue 1 (Radiated spurious emissions only.)	PASS
INDUSTRY CANADA RSS-GEN Issue 3 (Radiated spurious emissions only.)	PASS

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

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

Approved & Released
For UL LLC By:



Jeff Moser
EMC Program Manager
UL – Consumer Technology Division

Prepared By:



Mark Nolting
EMC Engineer
UL – Consumer Technology Division

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, RSS-GEN Issue 4, and RSS-247 Issue 1. This report is a manufacturer's specification report that contains only radiated spurious emissions data.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 12 Laboratory Dr., Research Triangle Park, NC 27709, USA and 2800 Suite B Perimeter Park Dr., Morrisville, NC 27560.

12 Laboratory Dr., RTP, NC 27709	
☐	Chamber A
☒	Chamber C

2800 Suite B Perimeter Park Dr., Morrisville, NC 27560	
☒	Chamber NORTH
☐	Chamber SOUTH

The onsite chambers are covered under Industry Canada company address code 2180C with site numbers 2180C -1 through 2180C-4, respectively.

UL LLC (RTP) is accredited by NVLAP, Laboratory Code 200246-0. The full scope of accreditation can be viewed at <http://www.nist.gov/nvlap/>.

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
Radiated Disturbance 0.009 to 30 MHz	+/- 3.15
Radiated Disturbance, 30 to 1000 MHz	+/- 5.36
Radiated Disturbance, 1 to 18 GHz	+/- 4.32
Radiated Disturbance, 18 to 26 GHz	+/- 4.45

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a wireless alarm console that contains a 344.94 MHz radio, 802.11 b/g/n (HT20) radio and Z-Wave (908.4 MHz) radio. This report covers the 802.11 b/g/n radio.

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes two monopole antennas (for diversity), with each having a maximum gain of 1 dBi.

5.3. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was standard production panel firmware, rev. 2.0.

5.4. WORST-CASE CONFIGURATION AND MODE

The fundamental of the EUT was investigated in two orientations as follows: Table-top and Wall-mount. Additionally, both antennas associated with the device's WiFi transmission were evaluated. The worst-case orientations as a function of antenna operation are as follows:

Transmitting Antenna(s)	EUT Orientation
1	Wall-mount
2	Table-top
1 & 2	Table-top

Hence, all final radiated testing was performed with the EUT in the orientations described in the preceding table.

Worst-case data rates as provided by the client were:

802.11b mode: 1 Mbps

802.11g mode: 6 Mbps

802.11n HT20mode: MCS0

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
EUT AC adapter	Honeywell	300-05763V1	15060548099	N/A

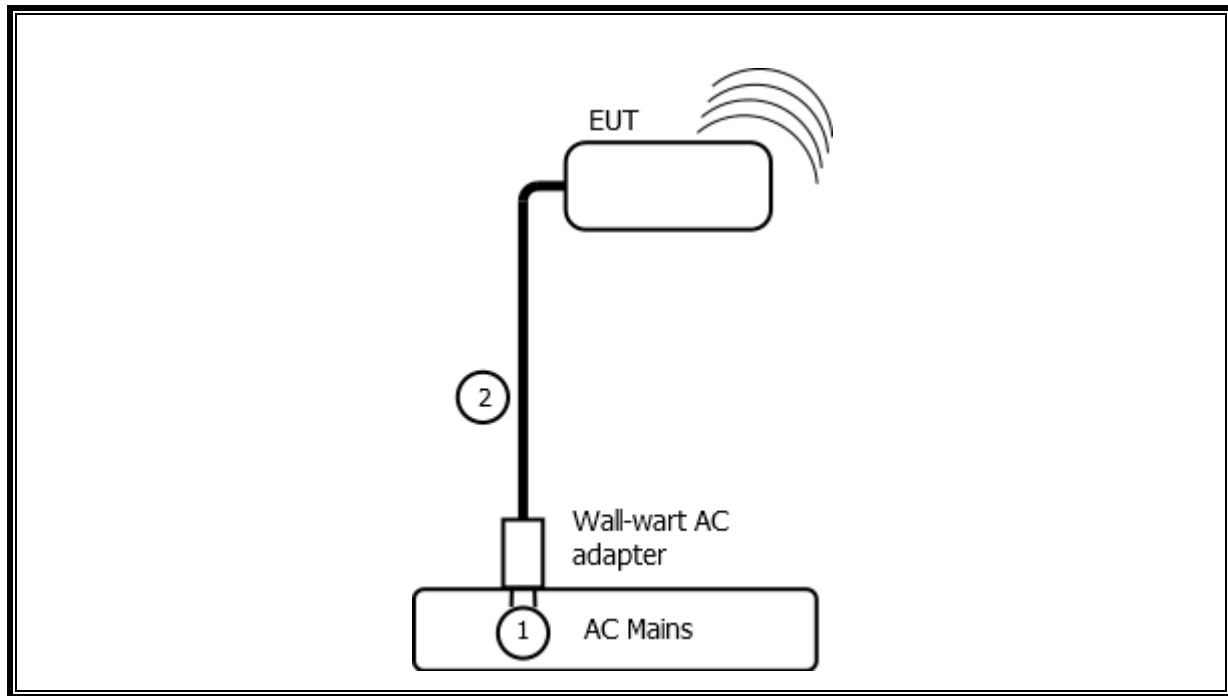
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	2C AC	N/A	0	Wall-wart AC adapter's AC input.
2	DC (9V)	1	2C DC	Unshielded	2.4	Wall-wart AC adapter DC output to EUT. Non-detachable.

TEST SETUP

The EUT was configured as a table-top device. Test software internal to the device exercised its radio card.

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 Used - Radiated Disturbance Emissions Test Equipment (Morrisville - North Chamber)

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
AT0059	Active Shielded Loop Antenna	EMCO	6502	2015-03-17	2016-03-31
AT0072	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2015-02-17	2016-02-29
AT0073	Hybrid Broadband Antenna, 30-1000MHz	Sunol Sciences Corp.	JB3	2015-06-10	2016-06-30
N-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2015-10-07	2016-10-31
N-SAC02	Gain-loss string: 30-1000MHz	Various	Various	2015-06-04	2016-06-30
N-SAC03	Gain-loss string: 1-18GHz	Various	Various	2015-09-29	2016-09-30
PRE0101521 (75141)	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2015-08-26	2016-08-31
SA0026	Spectrum Analyzer	Agilent	N9030A	2015-03-27	2016-03-31
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
HI0079	Temp/Humid/Pressure Meter	Springfield Precision	PreciseTemp	2015-07-01	2016-07-31

Test Equipment Used - Radiated Disturbance Emissions (E-field) – Chamber C

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
AT0063	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2015-08-27	2016-08-31
C-SAC03	Gain-loss string: 18-40GHz	Various	Various	2015-09-27	2016-09-30
SA0018	Spectrum Analyzer	Agilent	N9030A	2015-11-07	2016-11-30
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
HI0034	Temp/Humid/Pressure Meter	Cole-Parmer	99760-00	2015-03-23	2016-03-31

7. MEASUREMENT METHODS

Out-of-band emissions in restricted bands: KDB 558074 D01 v03r02, Section 12.1.

Band-edge: KDB 558074 D01 v03r02, Section 12.1.

7.1. ON TIME AND DUTY CYCLE

LIMITS

None, for reporting purposes only.

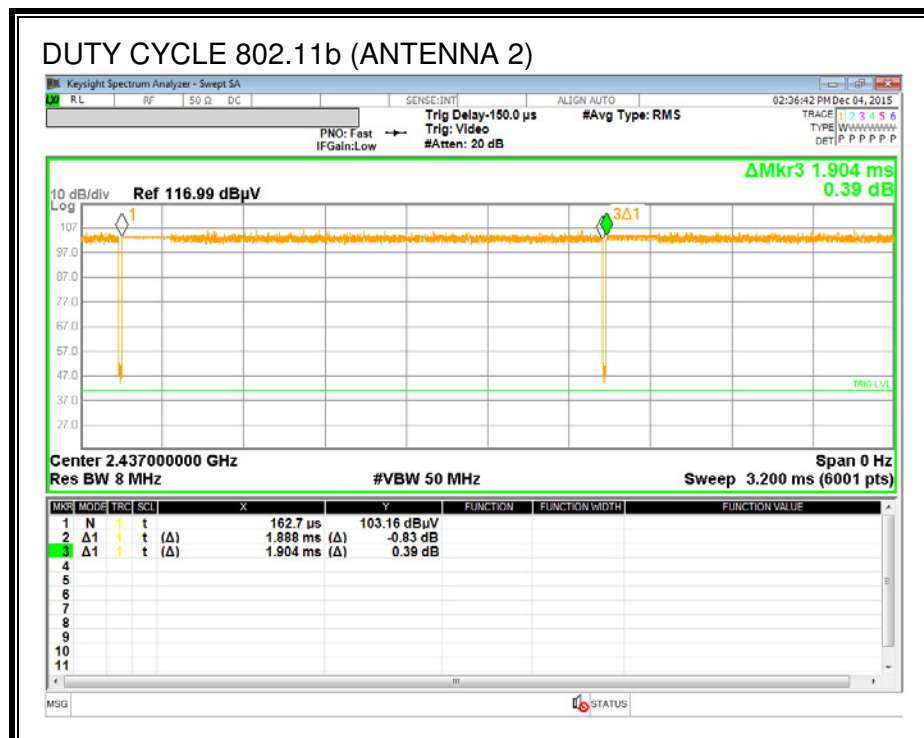
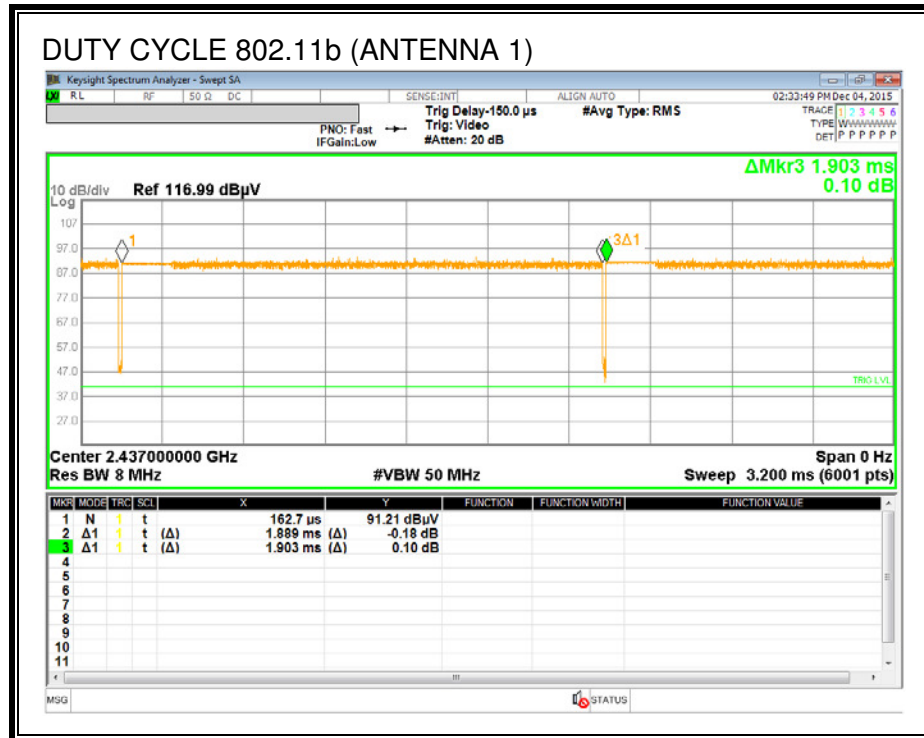
PROCEDURE

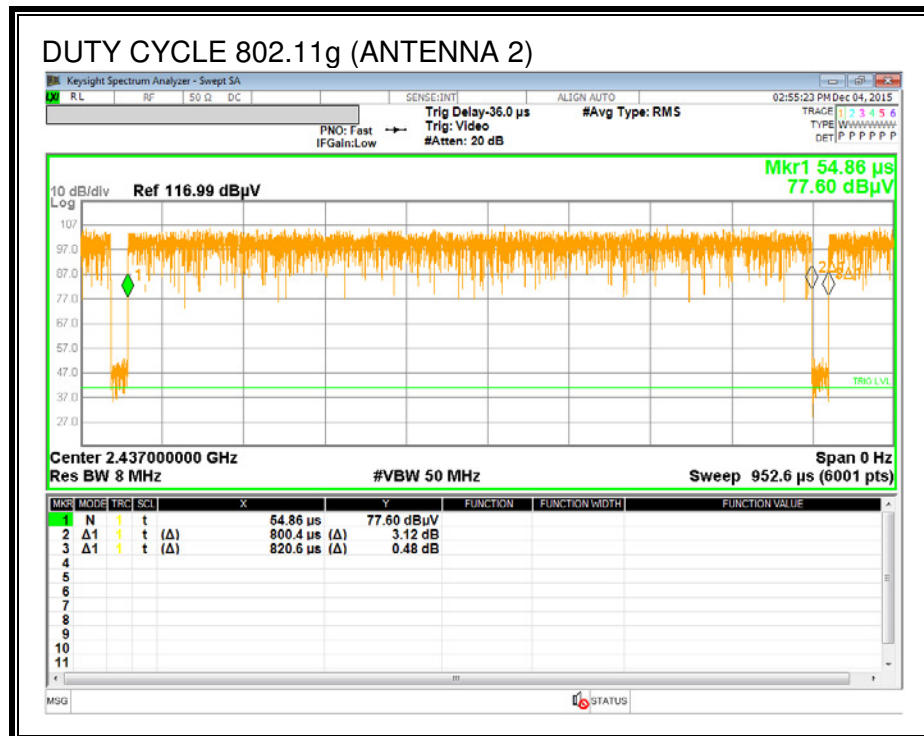
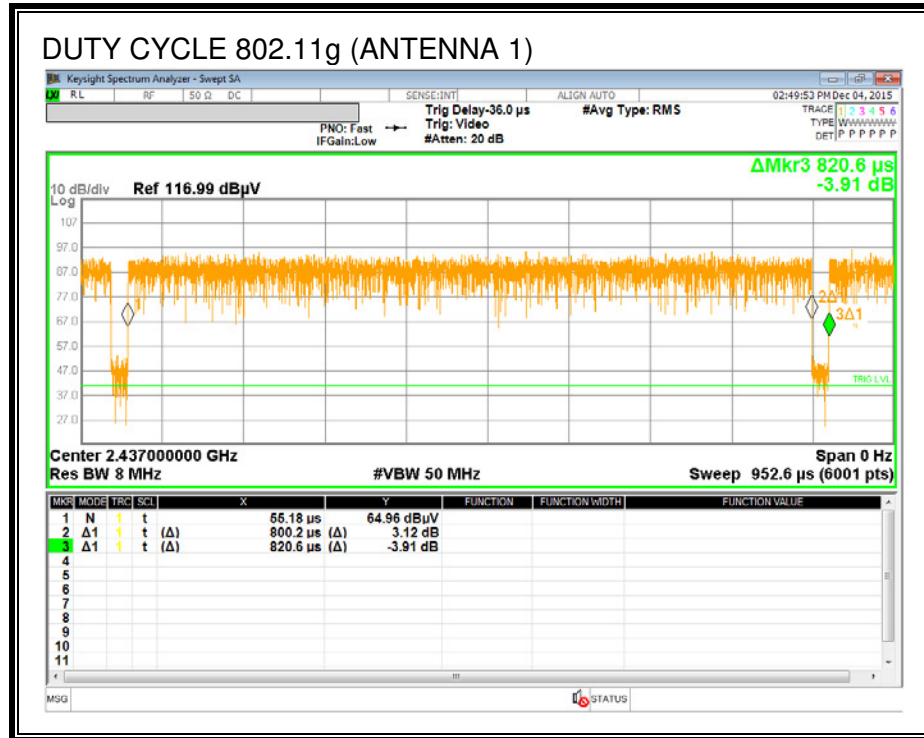
KDB 558074 Zero-Span Spectrum Analyzer Method.

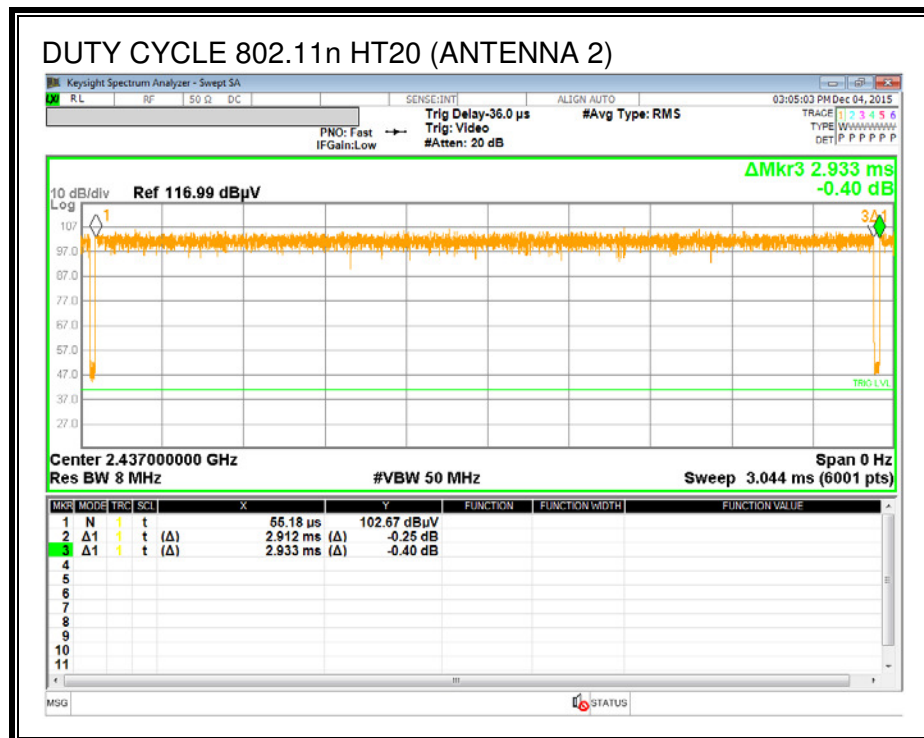
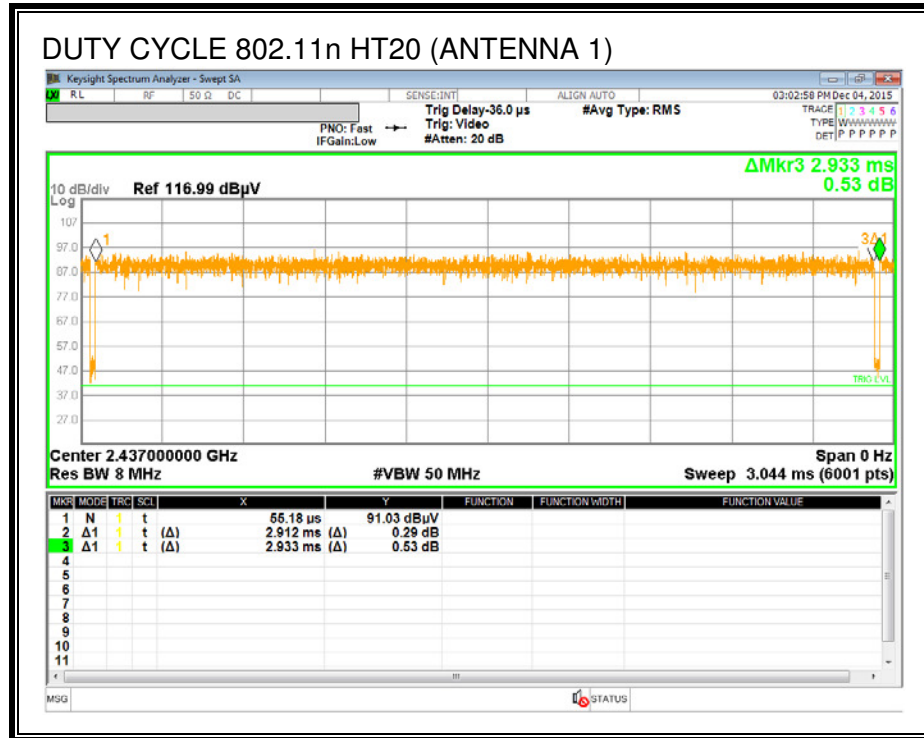
ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.11b (ANTENNA 1)	1.889	1.903	0.993	99.26%	0.00	0.010
802.11b (ANTENNA 2)	1.888	1.904	0.992	99.16%	0.00	0.010
802.11g (ANTENNA 1)	0.800	0.821	0.975	97.51%	0.11	1.250
802.11g (ANTENNA 2)	0.800	0.821	0.975	97.54%	0.11	1.249
802.11n HT20 (ANTENNA 1)	2.912	2.933	0.993	99.28%	0.00	0.010
802.11n HT20 (ANTENNA 2)	2.912	2.933	0.993	99.28%	0.00	0.010

DUTY CYCLE PLOTS







8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-GEN Clause 8.9

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz measurements and 1.5 m above the ground plane for above 1GHz measurements. The antenna to EUT distance is 3 meters.

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

For peak measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz. For average measurements, the resolution and video bandwidths are set as described in ANSI 63.10:2013 for the applicable average measurement.

The spectrum from 9 kHz to 26 GHz is investigated with the transmitter on.

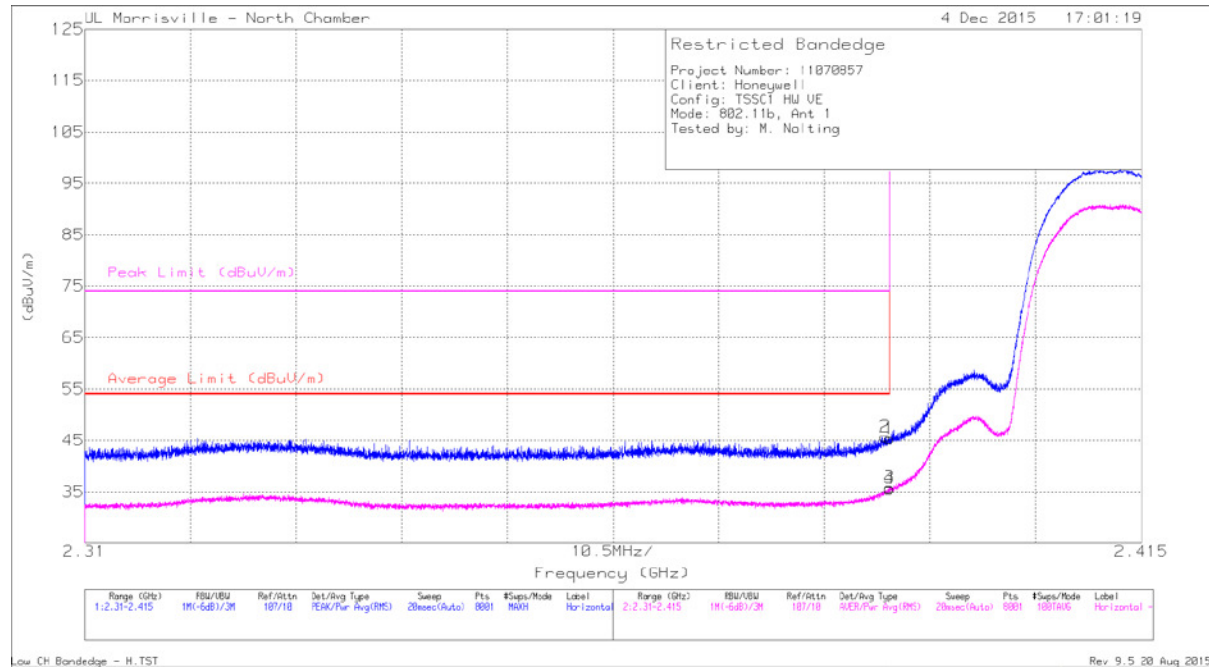
The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

8.2. TRANSMITTER ABOVE 1 GHz

8.3. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ, ANT 1



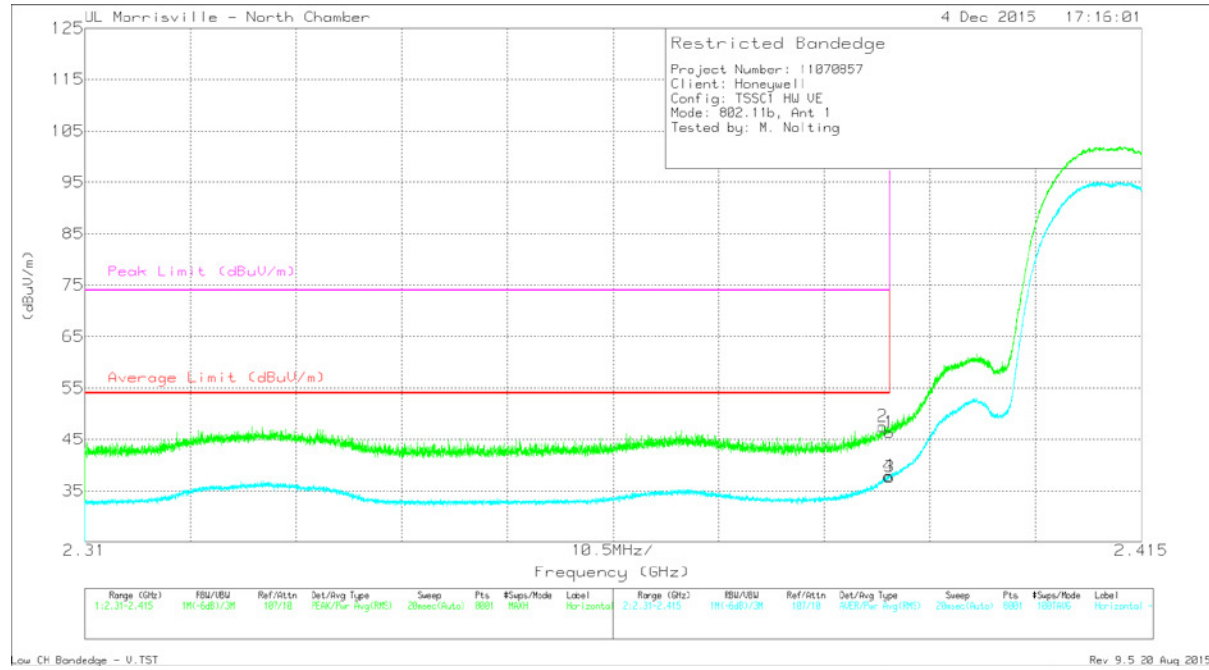
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	38.26	Pk	31.9	-24.8	45.36	-	-	74	-28.64	58	116	H
2	* 2.39	38.63	Pk	31.9	-24.8	45.73	-	-	74	-28.27	58	116	H
3	* 2.39	28.73	RMS	31.9	-24.8	35.83	54	-18.17	-	-	58	116	H
4	* 2.39	28.53	RMS	31.9	-24.8	35.63	54	-18.37	-	-	58	116	H

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

Pk - Peak detector

RMS - RMS detection

LOW CHANNEL RESTRICTED, VERT, ANT 1



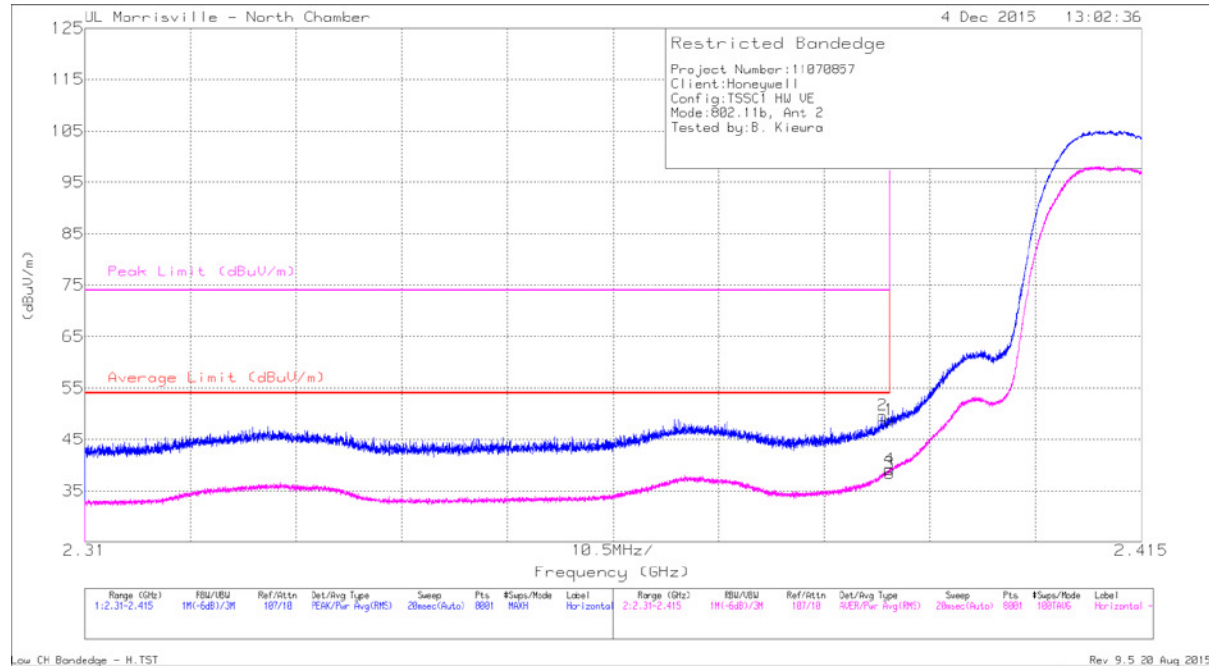
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.24	Pk	31.9	-24.8	46.34	-	-	74	-27.66	158	136	V
2	* 2.389	40.44	Pk	31.9	-24.8	47.54	-	-	74	-26.46	158	136	V
3	* 2.39	30.59	RMS	31.9	-24.8	37.69	54	-16.31	-	-	158	136	V
4	* 2.39	30.8	RMS	31.9	-24.8	37.9	54	-16.1	-	-	158	136	V

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

Pk - Peak detector

RMS - RMS detection

LOW CHANNEL RESTRICTED, HORIZ, ANT 2



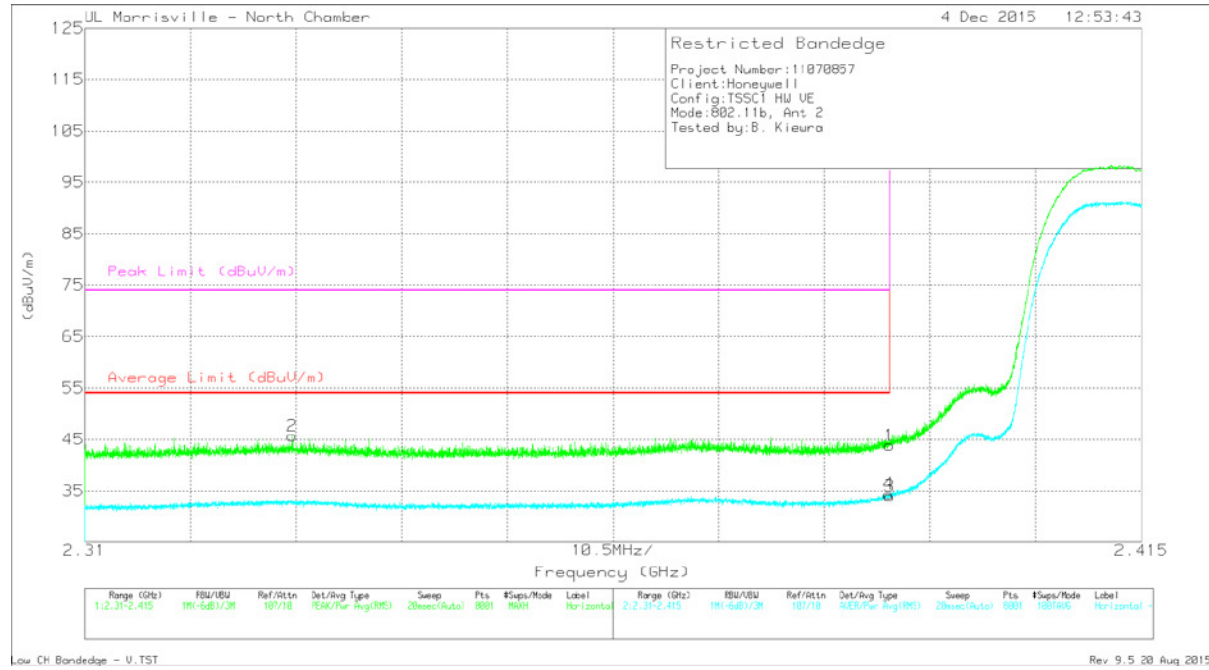
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	41.62	Pk	31.9	-24.8	48.72	-	-	74	-25.28	102	113	H
2	* 2.389	42.55	Pk	31.9	-24.8	49.65	-	-	74	-24.35	102	113	H
3	* 2.39	31.29	RMS	31.9	-24.8	38.39	54	-15.61	-	-	102	113	H
4	* 2.39	32.07	RMS	31.9	-24.8	39.17	54	-14.83	-	-	102	113	H

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

Pk - Peak detector

RMS - RMS detection

LOW CHANNEL RESTRICTED, VERT, ANT 2



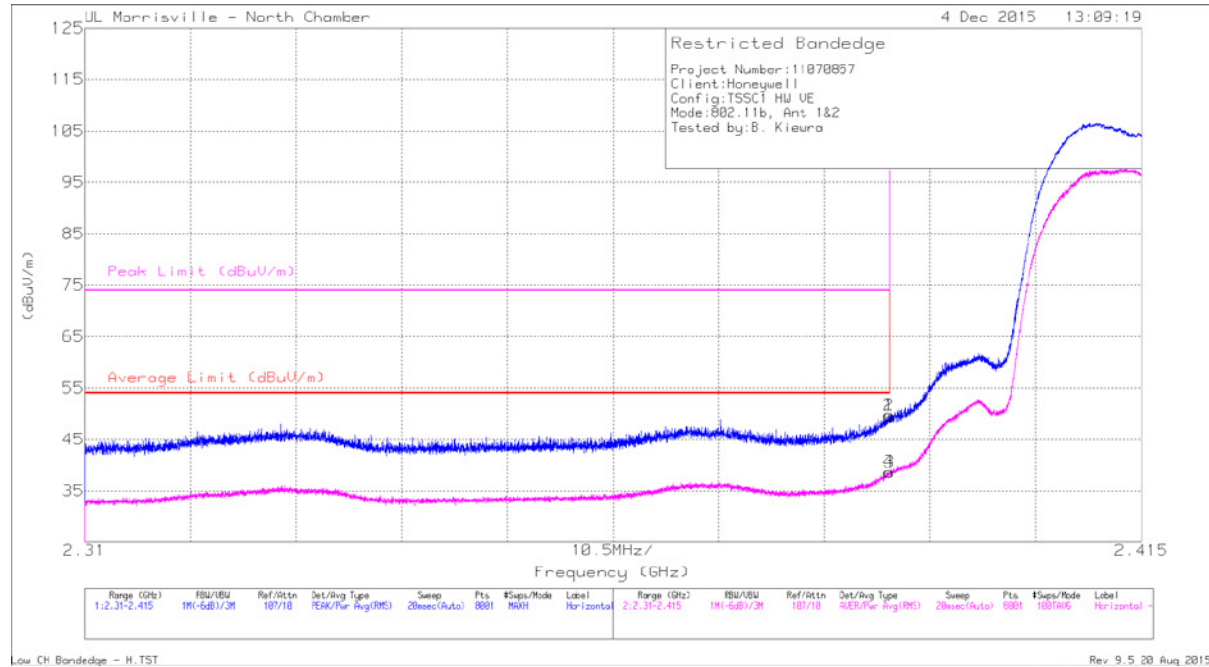
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	36.72	Pk	31.9	-24.8	43.82	-	-	74	-30.18	29	115	V
2	* 2.331	38.58	Pk	31.8	-24.7	45.68	-	-	74	-28.32	29	115	V
3	* 2.39	26.84	RMS	31.9	-24.8	33.94	54	-20.06	-	-	29	115	V
4	* 2.39	27.25	RMS	31.9	-24.8	34.35	54	-19.65	-	-	29	115	V

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

Pk - Peak detector

RMS - RMS detection

LOW CHANNEL RESTRICTED, HORIZ, ANT 1/2



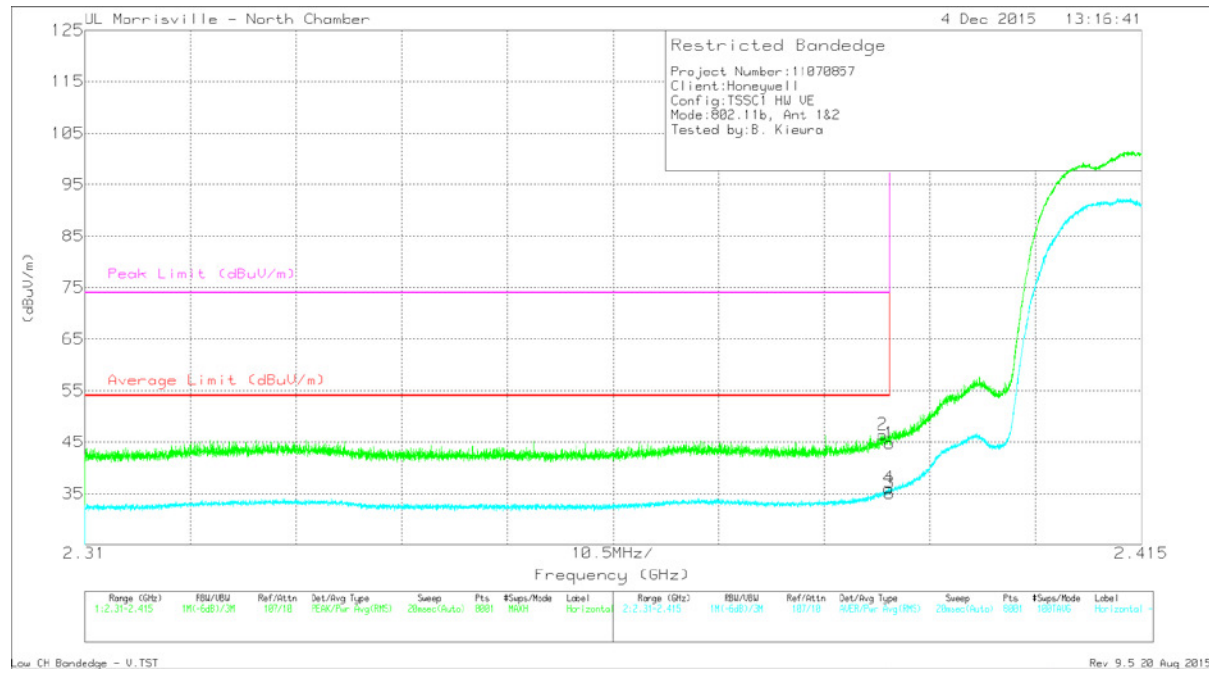
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	42.58	Pk	31.9	-24.8	49.68	-	-	74	-24.32	107	125	H
2	* 2.39	42.61	Pk	31.9	-24.8	49.71	-	-	74	-24.29	107	125	H
3	* 2.39	31.55	RMS	31.9	-24.8	38.65	54	-15.35	-	-	107	125	H
4	* 2.39	31.55	RMS	31.9	-24.8	38.65	54	-15.35	-	-	107	125	H

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

Pk - Peak detector

RMS - RMS detection

LOW CHANNEL RESTRICTED, VERT, ANT 1/2



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	37.68	Pk	31.9	-24.8	44.78	-	-	74	-29.22	20	101	V
2	* 2.389	39.35	Pk	31.9	-24.8	46.45	-	-	74	-27.55	20	101	V
3	* 2.39	28.02	RMS	31.9	-24.8	35.12	54	-18.88	-	-	20	101	V
4	* 2.39	28.96	RMS	31.9	-24.8	36.06	54	-17.94	-	-	20	101	V

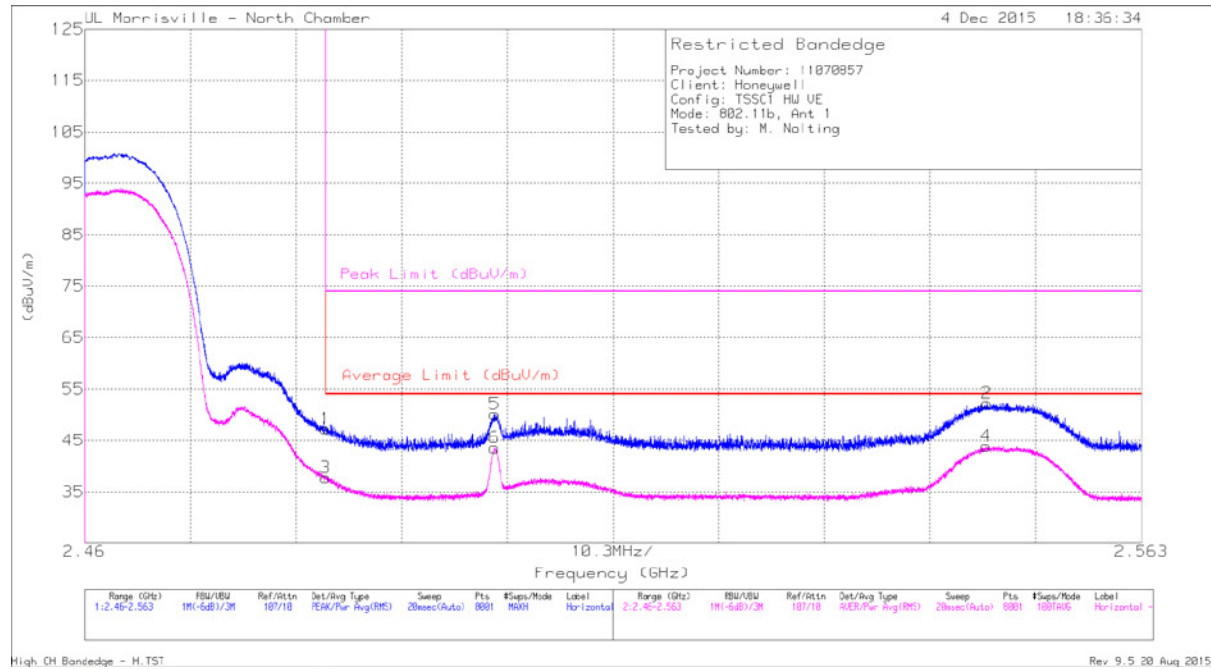
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL RESTRICTED, HORIZ, ANT 1



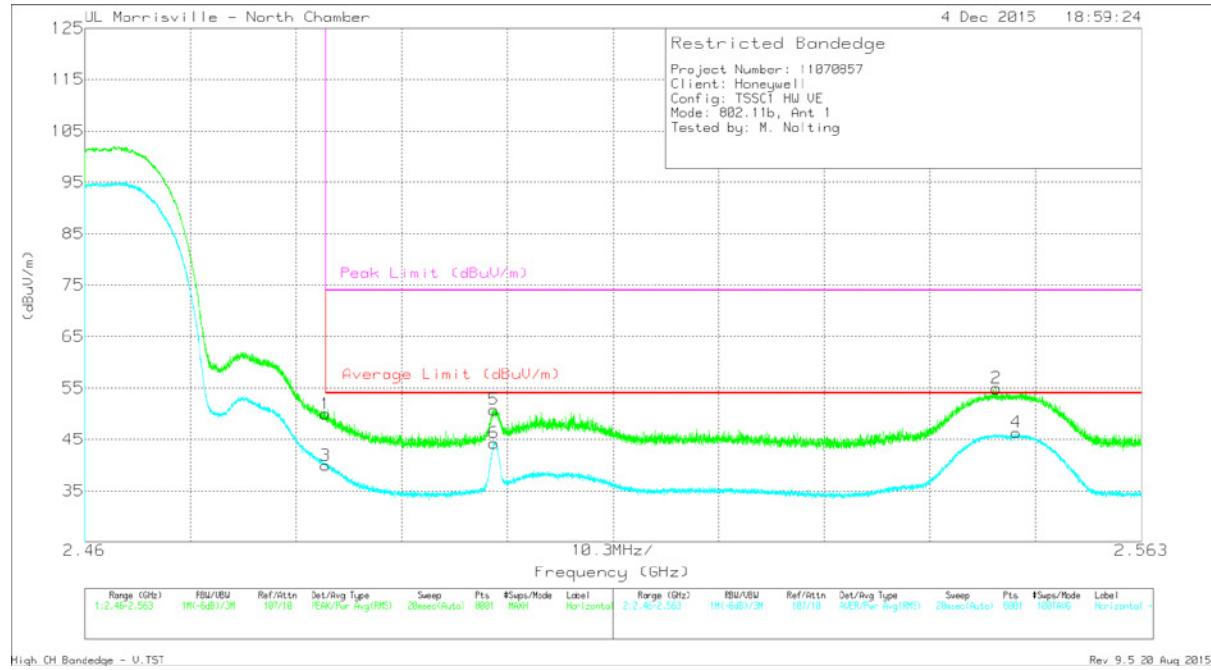
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.98	Pk	32.1	-24.8	47.28	-	-	74	-26.72	60	156	H
3	* 2.484	30.47	RMS	32.1	-24.8	37.77	54	-16.23	-	-	60	156	H
5	* 2.5	42.72	Pk	32.1	-24.7	50.12	-	-	74	-23.88	60	156	H
6	* 2.5	36.16	RMS	32.1	-24.7	43.56	54	-10.44	-	-	60	156	H
2	2.548	44.66	Pk	32.2	-24.6	52.26	-	-	74	-21.74	60	156	H
4	2.548	36.27	RMS	32.2	-24.6	43.87	54	-10.13	-	-	60	156	H

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

Pk - Peak detector

RMS - RMS detection

HIGH CHANNEL RESTRICTED, VERT, ANT 1



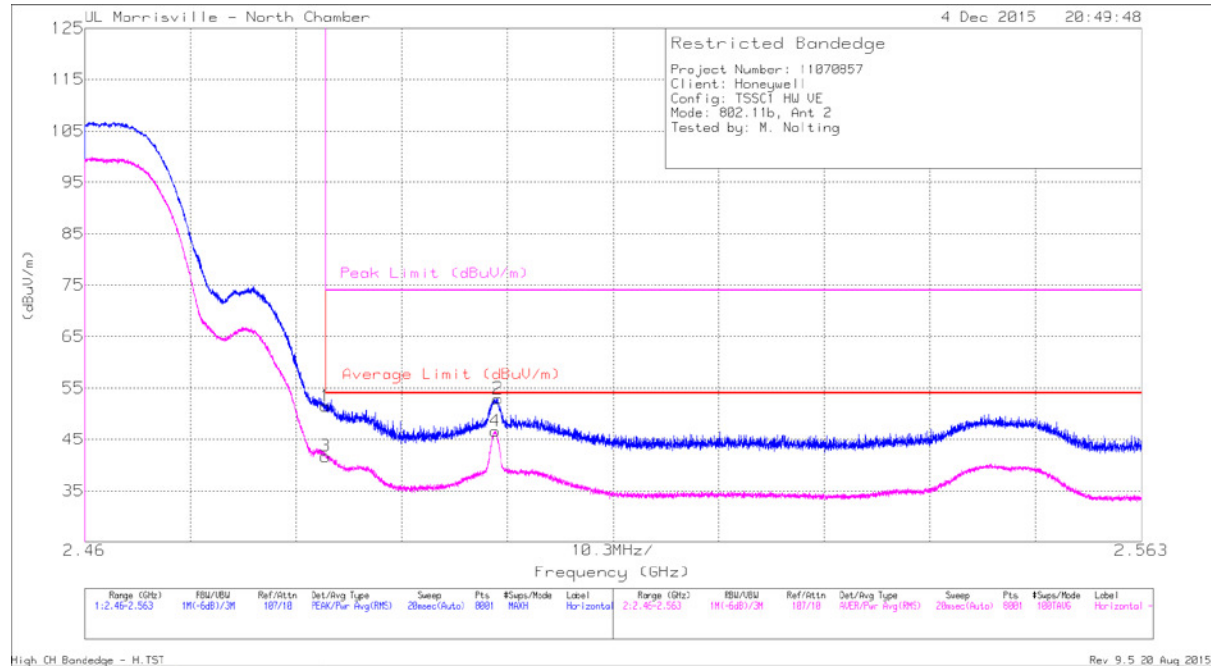
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	42.65	Pk	32.1	-24.8	49.95	-	-	74	-24.05	88	114	V
3	* 2.484	32.65	RMS	32.1	-24.8	39.95	54	-14.05	-	-	88	114	V
5	* 2.5	43.35	Pk	32.1	-24.7	50.75	-	-	74	-23.25	88	114	V
6	* 2.5	36.88	RMS	32.1	-24.7	44.28	54	-9.72	-	-	88	114	V
2	2.549	47.33	Pk	32.2	-24.6	54.93	-	-	74	-19.07	88	114	V
4	2.551	38.76	RMS	32.2	-24.6	46.36	54	-7.64	-	-	88	114	V

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

Pk - Peak detector

RMS - RMS detection

HIGH CHANNEL RESTRICTED, HORIZ, ANT 2



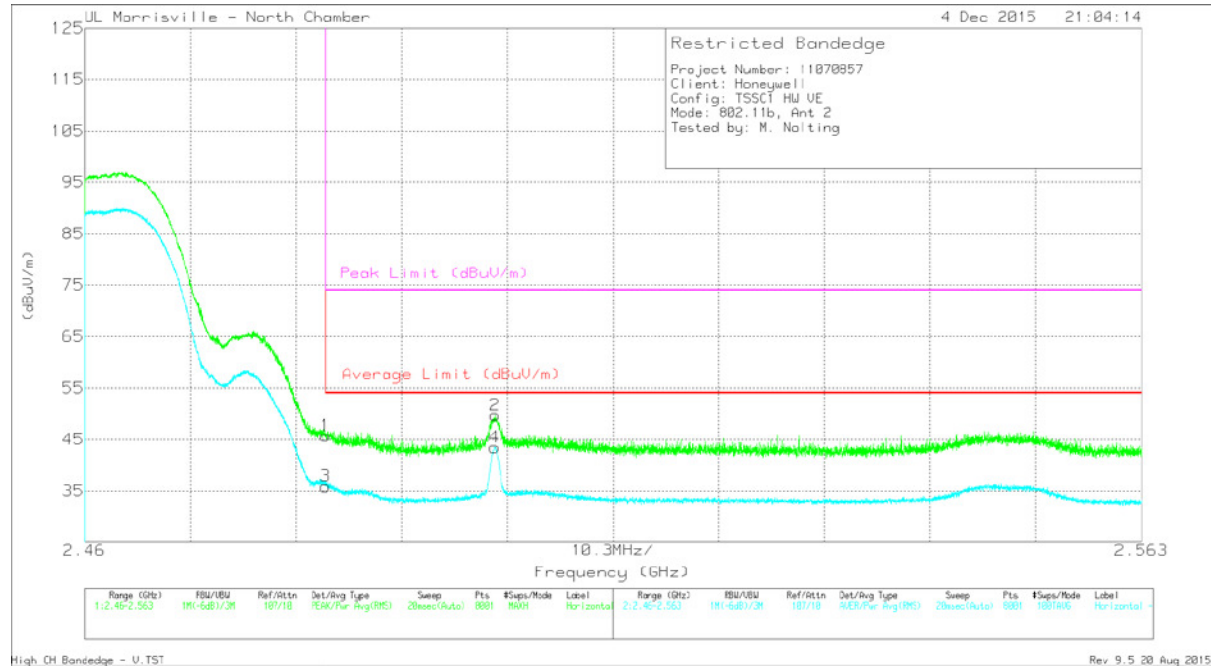
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	44.19	Pk	32.1	-24.8	51.49	-	-	74	-22.51	110	105	H
3	* 2.484	34.43	RMS	32.1	-24.8	41.73	54	-12.27	-	-	110	105	H
2	2.5	45.53	Pk	32.1	-24.7	52.93	-	-	74	-21.07	110	105	H
4	2.5	39.21	RMS	32.1	-24.7	46.61	54	-7.39	-	-	110	105	H

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

Pk - Peak detector

RMS - RMS detection

HIGH CHANNEL RESTRICTED, VERT, ANT 2



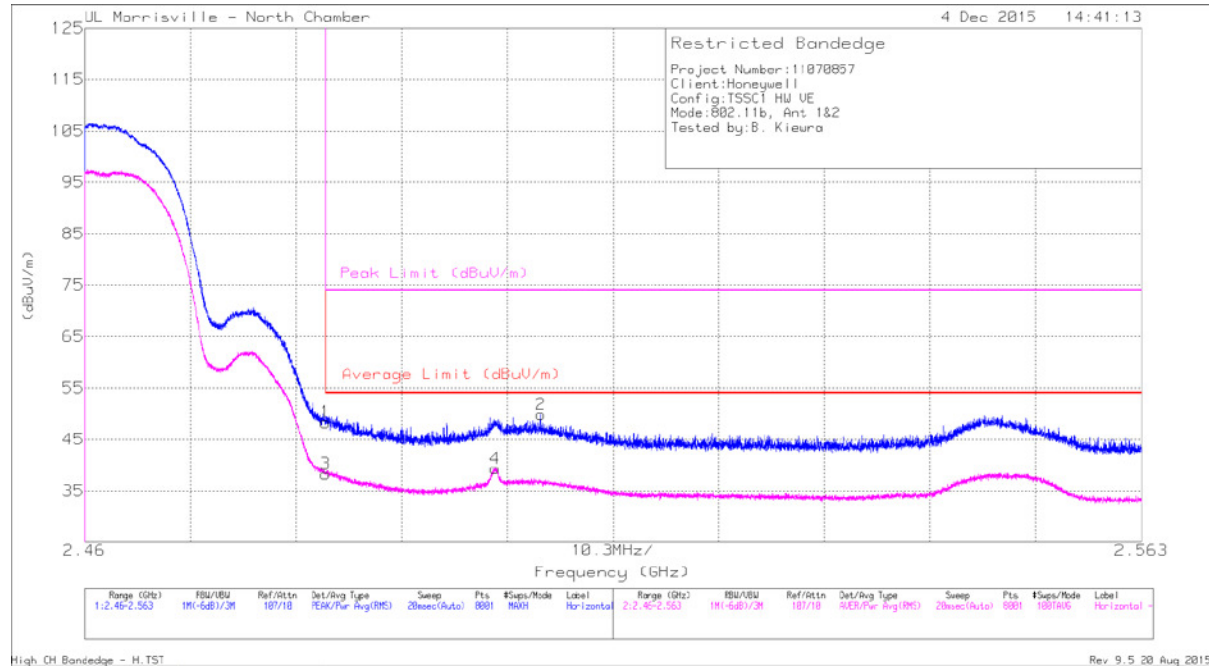
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.42	Pk	32.1	-24.8	45.72	-	-	74	-28.28	128	323	V
2	* 2.5	42.31	Pk	32.1	-24.7	49.71	-	-	74	-24.29	128	323	V
3	* 2.484	28.57	RMS	32.1	-24.8	35.87	54	-18.13	-	-	128	323	V
4	* 2.5	36.05	RMS	32.1	-24.7	43.45	54	-10.55	-	-	128	323	V

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

Pk - Peak detector

RMS - RMS detection

HIGH CHANNEL RESTRICTED, HORIZ, ANT 1/2



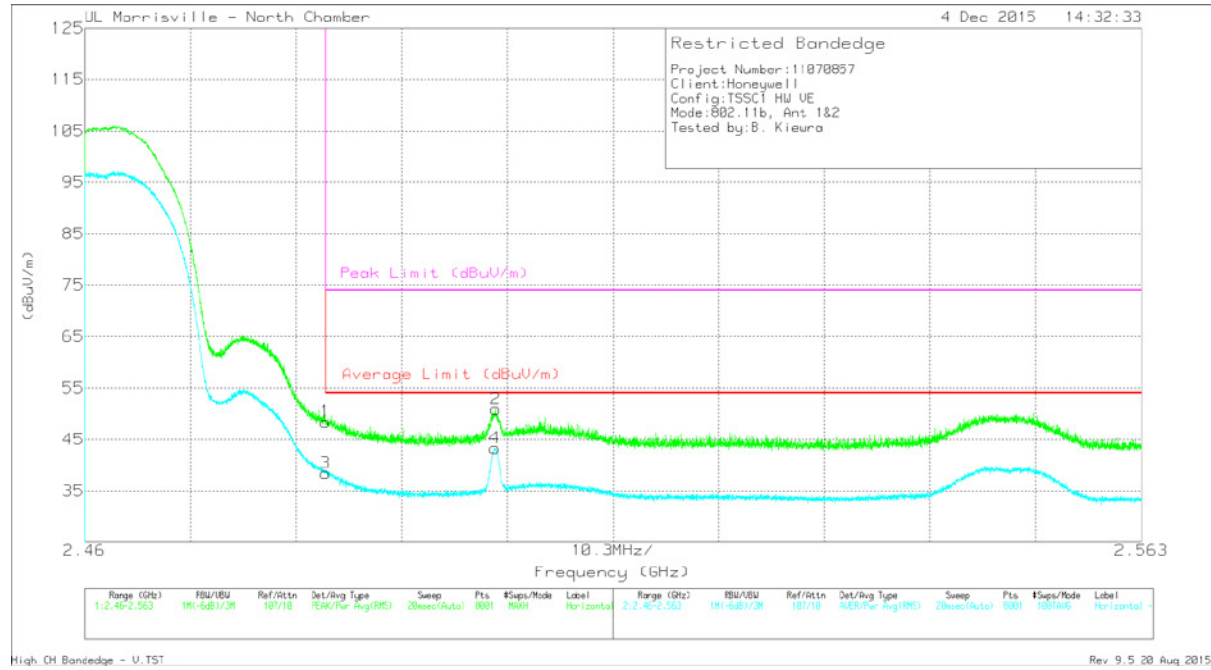
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.02	Pk	32.1	-24.8	48.32	-	-	74	-25.68	141	282	H
3	* 2.484	30.98	RMS	32.1	-24.8	38.28	54	-15.72	-	-	141	282	H
4	2.5	31.9	RMS	32.1	-24.7	39.3	54	-14.7	-	-	141	282	H
2	2.504	42.45	Pk	32.1	-24.7	49.85	-	-	74	-24.15	141	282	H

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

Pk - Peak detector

RMS - RMS detection

HIGH CHANNEL RESTRICTED, VERT, ANT 1/2



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.11	Pk	32.1	-24.8	48.41	-	-	74	-25.59	135	290	V
3	* 2.484	31.12	RMS	32.1	-24.8	38.42	54	-15.58	-	-	135	290	V
4	* 2.5	35.91	RMS	32.1	-24.7	43.31	54	-10.69	-	-	135	290	V
2	2.5	43.49	Pk	32.1	-24.7	50.89	-	-	74	-23.11	135	290	V

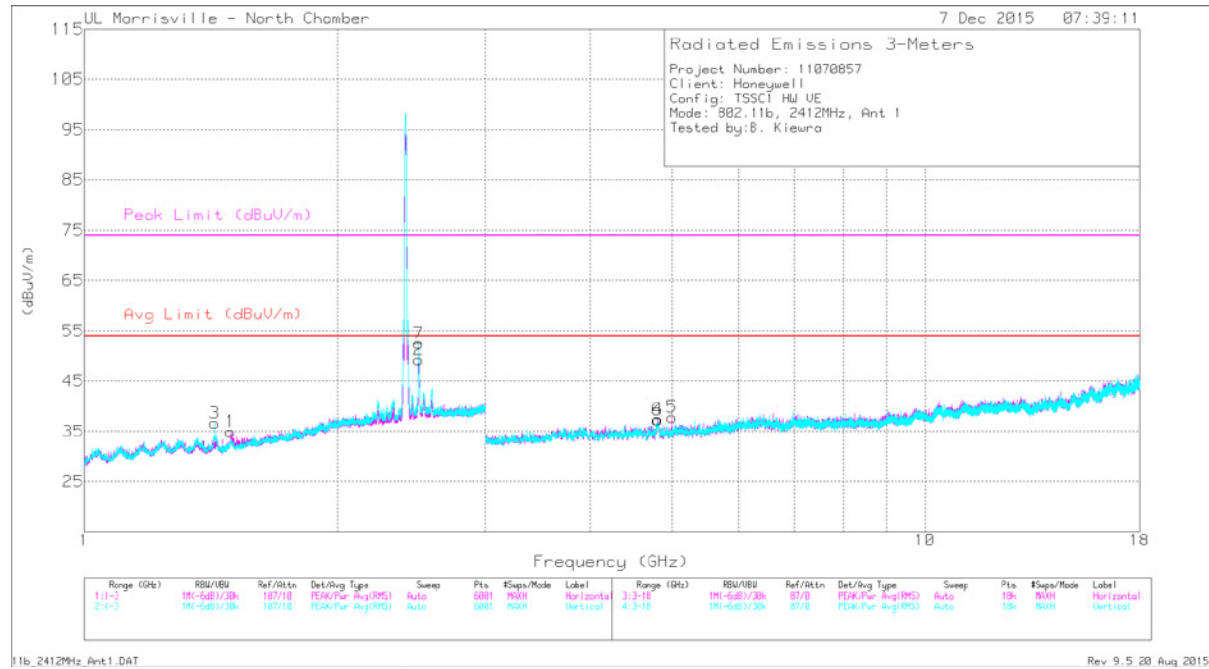
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL, 1-18GHz, ANT 1



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.493	38.11	PK2	27.9	-25.2	40.81	-	-	74	-33.19	159	106	H
	* 1.494	25.83	MAv1	27.9	-25.2	28.53	54	-25.47	-	-	159	106	H
2	* 2.5	47.53	PK2	32.1	-24.7	54.93	-	-	74	-19.07	303	105	H
	* 2.5	38.6	MAv1	32.1	-24.7	46	54	-8	-	-	303	105	H
7	* 2.5	49.89	PK2	32.1	-24.7	57.29	-	-	74	-16.71	163	149	V
	* 2.5	41.15	MAv1	32.1	-24.7	48.55	54	-5.45	-	-	163	149	V
4	* 4.816	41.43	PK2	34.1	-32.2	43.33	-	-	74	-30.67	50	170	H
	* 4.817	30.73	MAv1	34.1	-32.2	32.63	54	-21.37	-	-	50	170	H
5	*5	43.13	PK2	34.1	-33.5	43.73	-	-	74	-30.27	314	101	H
	*5	34.51	MAv1	34.1	-33.5	35.11	54	-18.89	-	-	314	101	H
6	* 4.809	42.2	PK2	34.1	-32.3	44	-	-	74	-30	53	377	V
	* 4.811	30.29	MAv1	34.1	-32.3	32.09	54	-21.91	-	-	53	377	V
3	1.429	33.93	Pk	28.2	-25.5	36.63	-	-	74	-37.37	0-360	200	V

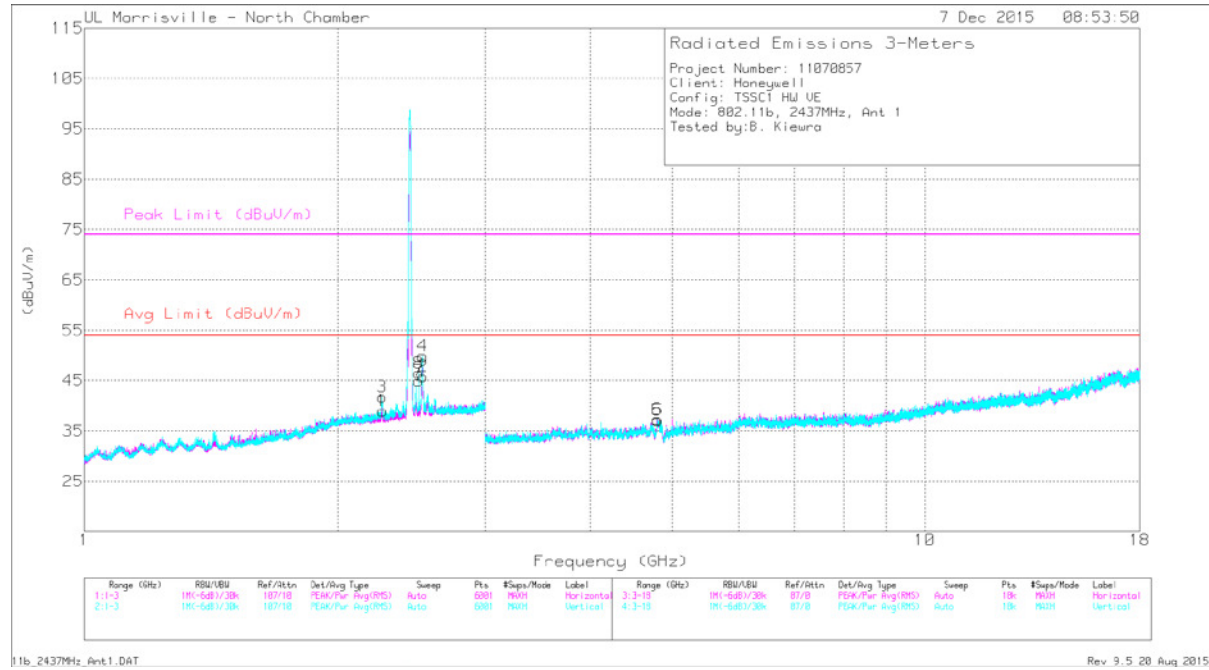
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL, 1-18GHz, ANT 1



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.262	39.08	PK2	31.6	-24.8	45.88	-	-	74	-28.12	321	130	H
	* 2.262	27.69	MAv1	31.6	-24.8	34.49	54	-19.51	-	-	321	130	H
7	* 2.5	41.51	PK2	32.1	-24.7	48.91	-	-	74	-25.09	308	145	H
	* 2.5	34.47	MAv1	32.1	-24.7	41.87	54	-12.13	-	-	308	145	H
3	* 2.262	40.52	PK2	31.6	-24.8	47.32	-	-	74	-26.68	131	105	V
	* 2.263	29.48	MAv1	31.6	-24.8	36.28	54	-17.72	-	-	131	105	V
8	* 2.5	42.82	PK2	32.1	-24.7	50.22	-	-	74	-23.78	160	187	V
	* 2.5	36.36	MAv1	32.1	-24.7	43.76	54	-10.24	-	-	160	187	V
5	* 4.81	41.66	PK2	34.1	-32.3	43.46	-	-	74	-30.54	211	195	H
	* 4.813	30.28	MAv1	34.1	-32.3	32.08	54	-21.92	-	-	211	195	H
6	* 4.81	41.51	PK2	34.1	-32.3	43.31	-	-	74	-30.69	248	243	V
	* 4.811	30.22	MAv1	34.1	-32.3	32.02	54	-21.98	-	-	248	243	V
4	2.527	42.35	Pk	32.1	-24.6	49.85	-	-	-	-	0-360	101	V
2	2.529	38.33	Pk	32.1	-24.6	45.83	-	-	-	-	0-360	101	H

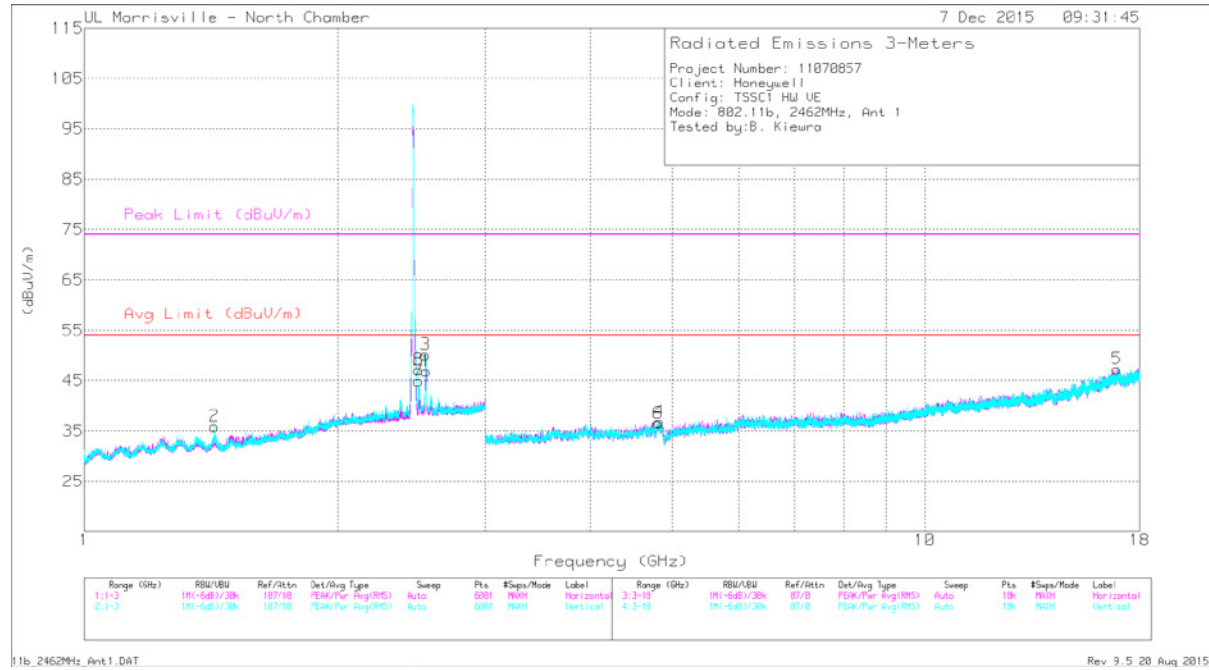
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL, 1-18GHz, ANT 1



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
7	* 2.5	41.65	PK2	32.1	-24.7	49.05	-	-	74	-24.95	308	147	H
	* 2.5	34.57	MAv1	32.1	-24.7	41.97	54	-12.03	-	-	308	147	H
8	* 2.5	43.77	PK2	32.1	-24.7	51.17	-	-	74	-22.83	161	188	V
	* 2.5	36.33	MAv1	32.1	-24.7	43.73	54	-10.27	-	-	161	188	V
4	* 4.832	41.14	PK2	34.1	-32.1	43.14	-	-	74	-30.86	131	397	H
	* 4.832	29.18	MAv1	34.1	-32.1	31.18	54	-22.82	-	-	131	397	H
6	* 4.814	42.14	PK2	34.1	-32.2	44.04	-	-	74	-29.96	320	388	V
	* 4.812	30.32	MAv1	34.1	-32.3	32.12	54	-21.88	-	-	320	388	V
2	1.428	33.26	Pk	28.2	-25.5	35.96	-	-	-	-	0-360	199	V
3	2.547	42.57	Pk	32.2	-24.6	50.17	-	-	-	-	0-360	199	V
1	2.55	39.27	Pk	32.2	-24.6	46.87	-	-	-	-	0-360	101	H
5	16.924	29.73	Pk	42.2	-24.6	47.33	-	-	-	-	0-360	199	H

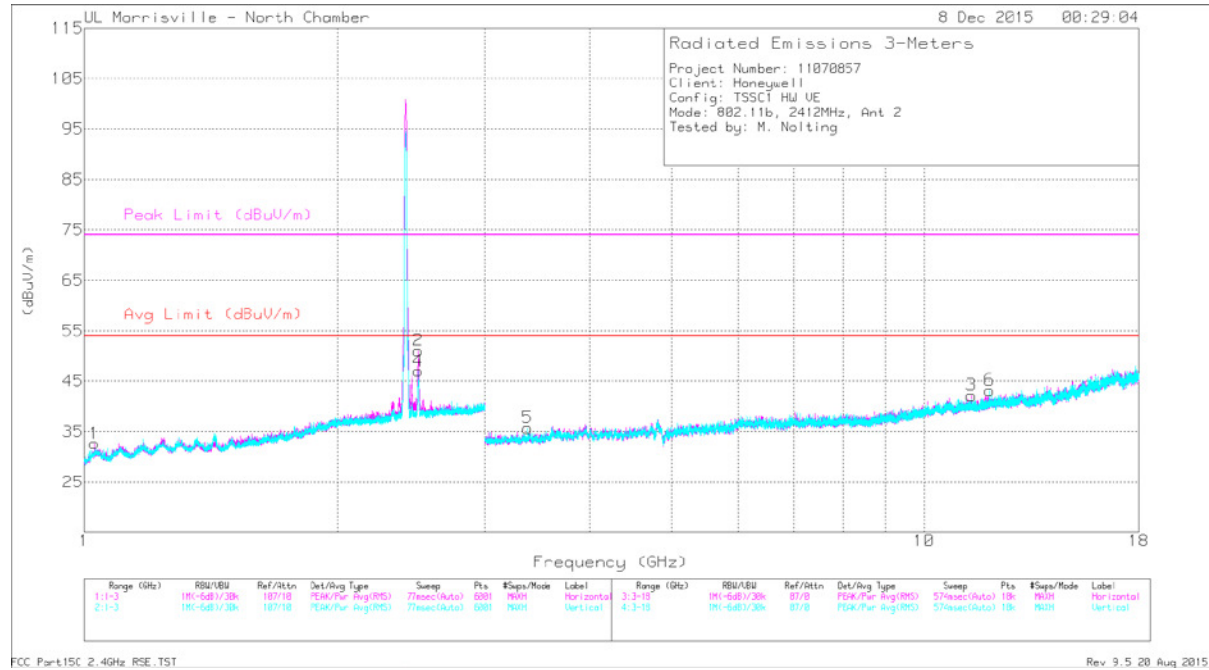
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

LOW CHANNEL, 1-18GHz, ANT 2



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.032	37.38	PK2	28	-27.5	37.88	-	-	74	-36.12	217	199	H
	* 1.032	25.51	MAv1	28	-27.5	26.01	54	-27.99	-	-	217	199	H
2	* 2.5	49.34	PK2	32.1	-24.7	56.74	-	-	74	-17.26	121	106	H
	* 2.5	40.99	MAv1	32.1	-24.7	48.39	54	-5.61	-	-	121	106	H
4	* 2.5	46.07	PK2	32.1	-24.7	53.47	-	-	74	-20.53	186	256	V
	* 2.5	37.79	MAv1	32.1	-24.7	45.19	54	-8.81	-	-	186	256	V
3	* 11.381	35.33	PK2	38.2	-26.1	47.43	-	-	74	-26.57	215	101	H
	* 11.386	23.56	MAv1	38.2	-26.1	35.66	54	-18.34	-	-	215	101	H
6	* 11.967	35.39	PK2	38.9	-26.7	47.59	-	-	74	-26.41	316	199	V
	* 11.966	24.05	MAv1	38.9	-26.7	36.25	54	-17.75	-	-	316	199	V
5	3.373	35.93	Pk	33	-33.2	35.73	-	-	-	-	0-360	101	V

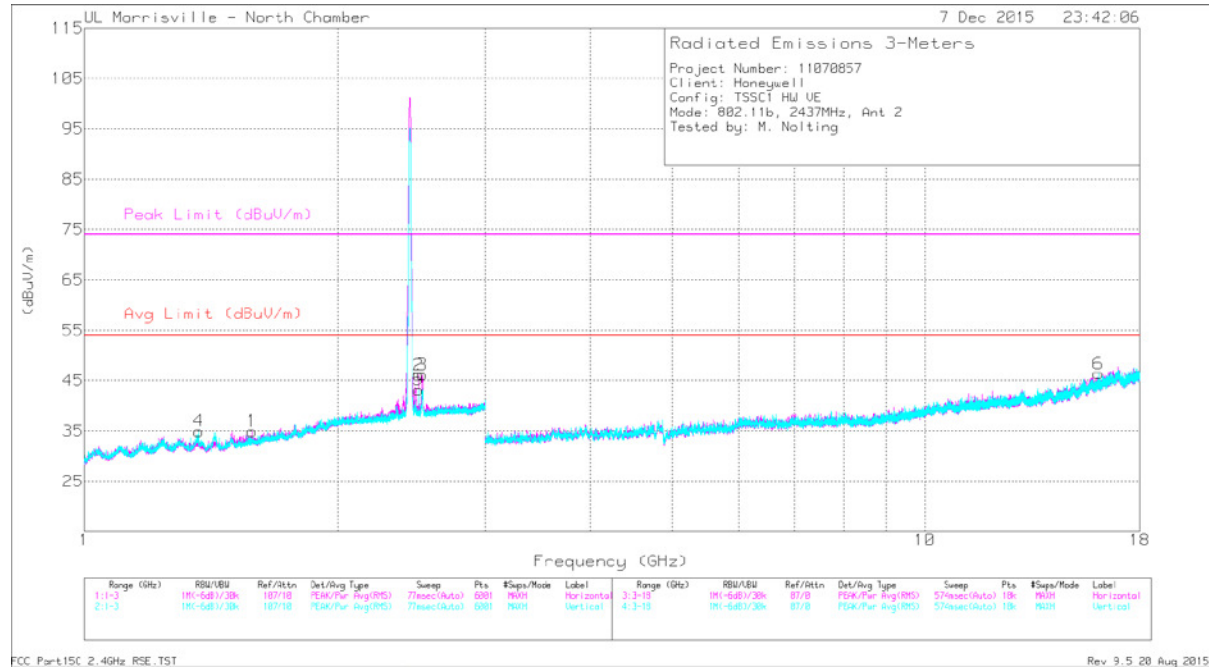
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL, 1-18GHz, ANT 2



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.584	37.75	PK2	28.4	-24.9	41.25	-	-	74	-32.75	88	337	H
	* 1.584	26.44	MAv1	28.4	-24.9	29.94	54	-24.06	-	-	88	337	H
2	* 2.5	43.41	PK2	32.1	-24.7	50.81	-	-	74	-23.19	118	106	H
	* 2.5	37.64	MAv1	32.1	-24.7	45.04	54	-8.96	-	-	118	106	H
4	* 1.364	37.39	PK2	28.5	-25.7	40.19	-	-	74	-33.81	320	200	V
	* 1.365	25.6	MAv1	28.5	-25.7	28.4	54	-25.6	-	-	320	200	V
5	* 2.5	41.45	PK2	32.1	-24.7	48.85	-	-	74	-25.15	190	255	V
	* 2.5	34.85	MAv1	32.1	-24.7	42.25	54	-11.75	-	-	190	255	V
6	* 16.085	37.25	PK2	41.2	-26.1	52.35	-	-	74	-21.65	190	201	V
	* 16.084	25.03	MAv1	41.2	-26.1	40.13	54	-13.87	-	-	190	201	V
3	2.524	38.68	Pk	32.1	-24.6	46.18	-	-	-	-	0-360	199	H

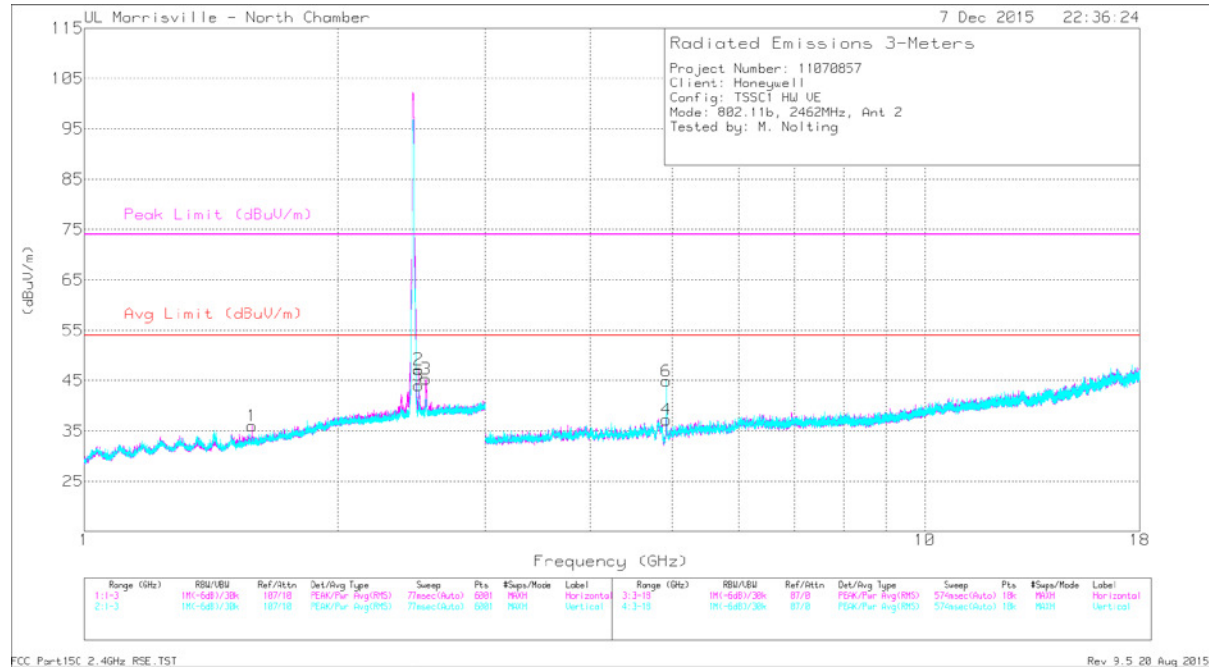
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL, 1-18GHz, ANT 2



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.584	37.61	PK2	28.4	-24.9	41.11	-	-	74	-32.89	87	336	H
	* 1.584	26.73	MAv1	28.4	-24.9	30.23	54	-23.77	-	-	87	336	H
2	* 2.5	45.62	PK2	32.1	-24.7	53.02	-	-	74	-20.98	121	106	H
	* 2.5	38.17	MAv1	32.1	-24.7	45.57	54	-8.43	-	-	121	106	H
5	* 2.5	42.85	PK2	32.1	-24.7	50.25	-	-	74	-23.75	190	257	V
	* 2.5	35.37	MAv1	32.1	-24.7	42.77	54	-11.23	-	-	190	257	V
4	* 4.924	42.71	PK2	34.1	-32.5	44.31	-	-	74	-29.69	223	101	H
	* 4.924	32.01	MAv1	34.1	-32.5	33.61	54	-20.39	-	-	223	101	H
6	* 4.924	43.29	Pk	34.1	-32.5	44.89	-	-	74	-29.11	0-360	101	V
	* 4.924	46.83	PK2	34.1	-32.5	48.43	-	-	74	-25.57	200	105	V
3	* 4.924	37.13	MAv1	34.1	-32.5	38.73	54	-15.27	-	-	200	105	V

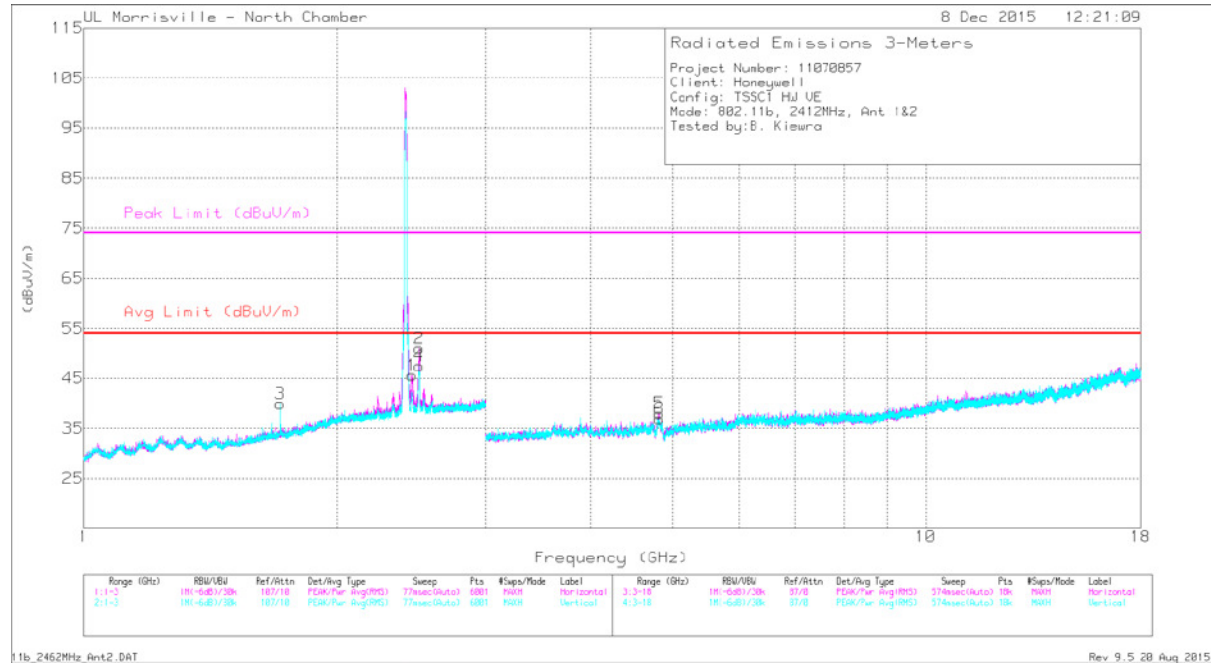
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

LOW CHANNEL, 1-18GHz, ANT 1/2



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.5	49.16	PK2	32.1	-24.7	56.56	-	-	74	-17.44	117	104	H
	* 2.5	39.73	MAv1	32.1	-24.7	47.13	54	-6.87	-	-	117	104	H
4	* 2.5	45.65	PK2	32.1	-24.7	53.05	-	-	74	-20.95	57	108	V
	* 2.5	36.33	MAv1	32.1	-24.7	43.73	54	-10.27	-	-	57	108	V
5	* 4.824	40.83	PK2	34.1	-32.2	42.73	-	-	74	-31.27	75	109	H
	* 4.824	29.74	MAv1	34.1	-32.2	31.64	54	-22.36	-	-	75	109	H
6	* 4.823	41.41	PK2	34.1	-32.2	43.31	-	-	74	-30.69	310	145	V
	* 4.824	29.92	MAv1	34.1	-32.2	31.82	54	-22.18	-	-	310	145	V
3	1.711	35.31	Pk	29.3	-24.7	39.91	-	-	-	-	0-360	199	V
1	2.454	38.37	Pk	32	-24.8	45.57	-	-	-	-	0-360	101	H

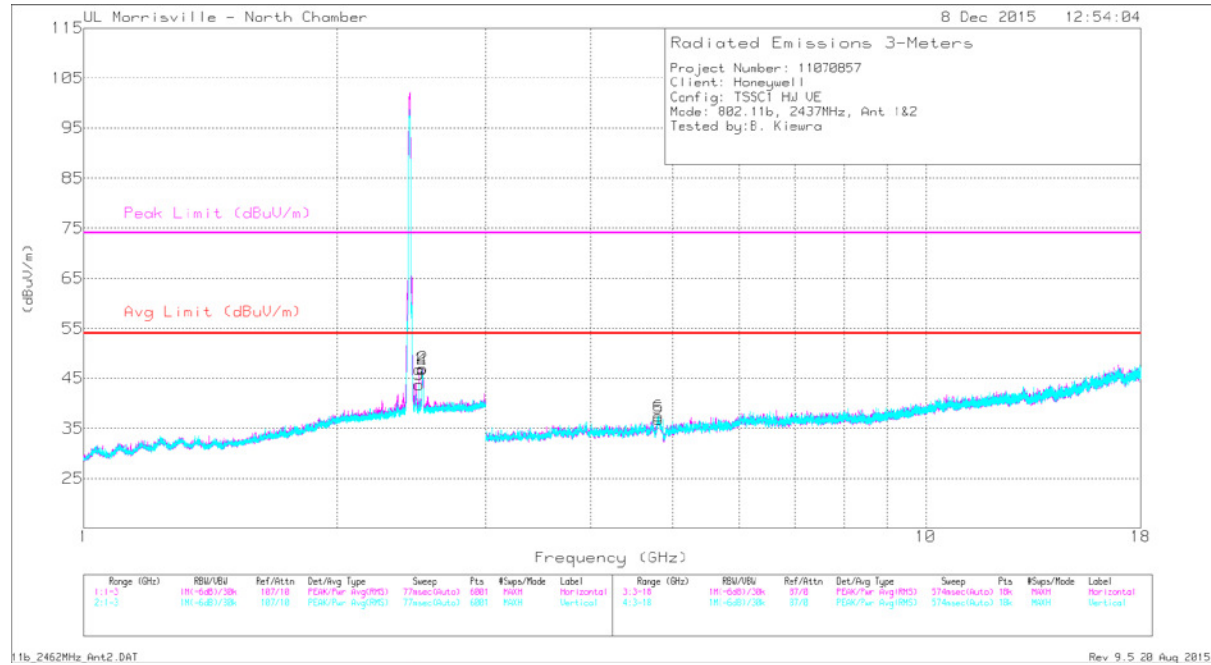
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL, 1-18GHz, ANT 1/2



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.5	43.48	PK2	32.1	-24.7	50.88	-	-	74	-23.12	122	129	H
	* 2.5	37.08	MAv1	32.1	-24.7	44.48	54	-9.52	-	-	122	129	H
3	* 2.5	41.46	PK2	32.1	-24.7	48.86	-	-	74	-25.14	186	253	V
	* 2.5	34.16	MAv1	32.1	-24.7	41.56	54	-12.44	-	-	186	253	V
5	* 4.82	41.51	PK2	34.1	-32.2	43.41	-	-	74	-30.59	211	255	H
	* 4.821	29.9	MAv1	34.1	-32.2	31.8	54	-22.2	-	-	211	255	H
6	* 4.819	41.44	PK2	34.1	-32.2	43.34	-	-	74	-30.66	194	258	V
	* 4.82	29.96	MAv1	34.1	-32.2	31.86	54	-22.14	-	-	194	258	V
4	2.524	39.22	Pk	32.1	-24.6	46.72	-	-	-	-	0-360	200	V
2	2.525	39.5	Pk	32.1	-24.6	47	-	-	-	-	0-360	101	H

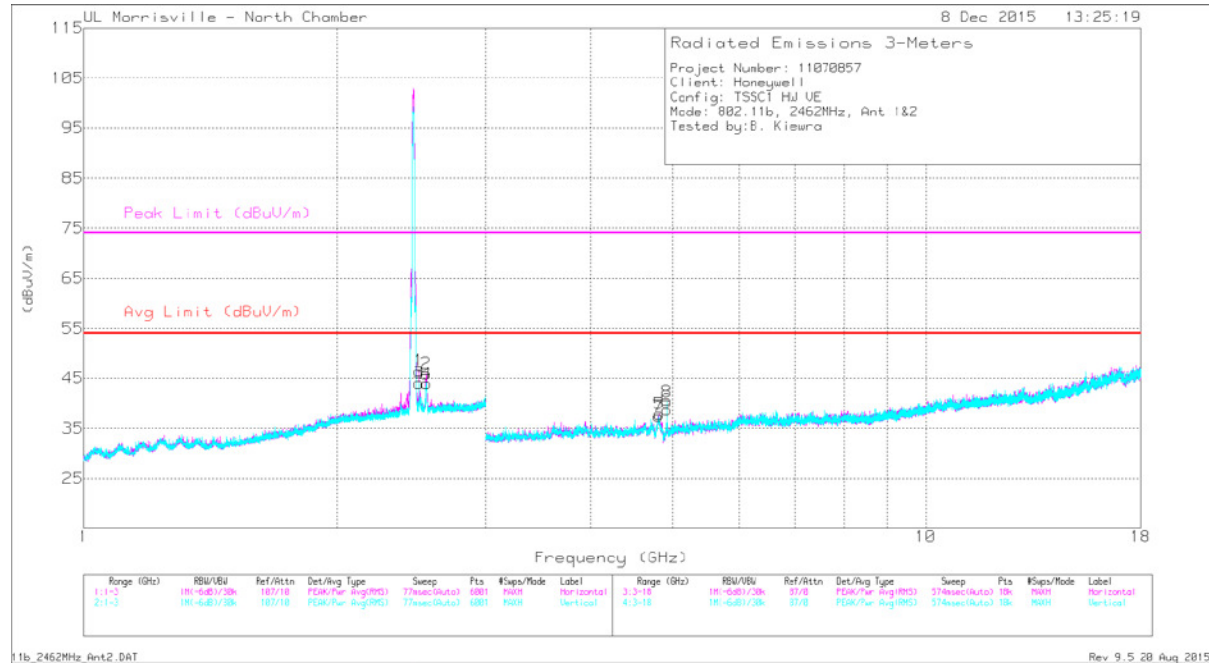
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL, 1-18GHz, ANT 1/2



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0072 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.5	45.58	PK2	32.1	-24.7	52.98	-	-	74	-21.02	119	104	H
	* 2.5	38.01	MAv1	32.1	-24.7	45.41	54	-8.59	-	-	119	104	H
3	* 2.5	41.62	PK2	32.1	-24.7	49.02	-	-	74	-24.98	58	169	V
	* 2.5	33.76	MAv1	32.1	-24.7	41.16	54	-12.84	-	-	58	169	V
5	* 4.821	41.01	PK2	34.1	-32.2	42.91	-	-	74	-31.09	287	344	H
	* 4.822	29.67	MAv1	34.1	-32.2	31.57	54	-22.43	-	-	287	344	H
6	* 4.924	42.14	PK2	34.1	-32.5	43.74	-	-	74	-30.26	41	105	H
	* 4.924	30.2	MAv1	34.1	-32.5	31.8	54	-22.2	-	-	41	105	H
7	* 4.815	41.72	PK2	34.1	-32.2	43.62	-	-	74	-30.38	268	126	V
	* 4.815	30.03	MAv1	34.1	-32.2	31.93	54	-22.07	-	-	268	126	V
8	* 4.924	43.47	PK2	34.1	-32.5	45.07	-	-	74	-28.93	199	105	V
	* 4.924	32.6	MAv1	34.1	-32.5	34.2	54	-19.8	-	-	199	105	V
2	2.548	38.31	Pk	32.2	-24.6	45.91	-	-	-	-	0-360	199	H
4	2.551	36.31	Pk	32.2	-24.6	43.91	-	-	-	-	0-360	101	V

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

Pk - Peak detector

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average