



# **CERTIFICATION TEST REPORT**

**Report Number. :** R12373455- E1

**Applicant :** Alliance Laundry Systems LLC  
221 Shepard Street  
PO Box 990  
Ripon, WI 54971, USA

**Model :** 807211

**FCC ID :** 2ANOT-807211

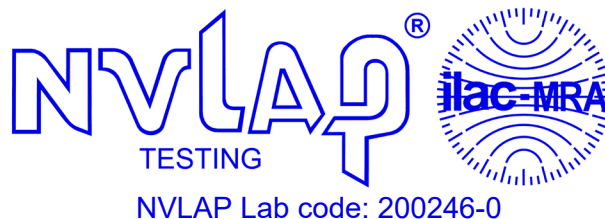
**IC :** 23166-807211

**EUT Description :** Wireless Network Control

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART C  
ISED RSS-247 ISSUE 2  
ISED RSS-GEN ISSUE 5

**Date Of Issue:**  
30 NOVEMBER 2018

**Prepared by:**  
UL LLC  
12 Laboratory Dr.  
Research Triangle Park, NC 27709 U.S.A.  
TEL: (919) 549-1400



## REPORT REVISION HISTORY

Ver	Issue Date	Revisions	Revised By
1	2018-09-27	Initial Issue	Brian T. Kiewra
2	2018-10-08	Revised Model	Brian T. Kiewra
3	2018-10-30	Revised radiated harmonics data. Additional points required measurements.	Brian T. Kiewra
4	2018-11-07	Revised model and EUT description	Lariah Ijames
5	2018-11-30	Revised 0.009-30MHz limits in tabular data in section 9.2.	Brian T. Kiewra

**REPORT REVISION HISTORY ..... 2**

**1. ATTESTATION OF TEST RESULTS ..... 5**

**2. TEST METHODOLOGY ..... 6**

**3. FACILITIES AND ACCREDITATION ..... 6**

**4. CALIBRATION AND UNCERTAINTY ..... 7**

    4.1. *MEASURING INSTRUMENT CALIBRATION* ..... 7

    4.2. *SAMPLE CALCULATION* ..... 7

    4.3. *MEASUREMENT UNCERTAINTY* ..... 7

**5. EQUIPMENT UNDER TEST ..... 8**

    5.1. *EUT DESCRIPTION* ..... 8

    5.2. *MAXIMUM OUTPUT POWER* ..... 8

    5.3. *DESCRIPTION OF AVAILABLE ANTENNAS* ..... 8

    5.4. *SOFTWARE AND FIRMWARE* ..... 8

    5.5. *WORST-CASE CONFIGURATION AND MODE* ..... 8

    5.6. *DESCRIPTION OF TEST SETUP* ..... 9

**6. MEASUREMENT METHOD ..... 10**

**7. TEST AND MEASUREMENT EQUIPMENT ..... 11**

**8. ANTENNA PORT TEST RESULTS ..... 14**

    8.1. *ON TIME AND DUTY CYCLE* ..... 14

    8.2. *99% BANDWIDTH* ..... 16

        8.2.1. *802.11b MODE* ..... 17

        8.2.2. *802.11g MODE* ..... 18

        8.2.3. *802.11n HT20 MODE* ..... 19

    8.3. *6 dB BANDWIDTH* ..... 20

        8.3.1. *802.11b MODE* ..... 20

        8.3.2. *802.11g MODE* ..... 21

        8.3.3. *802.11n HT20 MODE* ..... 22

    8.4. *OUTPUT POWER* ..... 23

        8.4.1. *802.11b MODE* ..... 23

        8.4.1. *802.11g MODE* ..... 24

        8.4.1. *802.11nHT20 MODE* ..... 25

    8.5. *POWER SPECTRAL DENSITY* ..... 26

        8.5.1. *802.11b MODE* ..... 27

        8.5.2. *802.11g MODE* ..... 28

        8.5.3. *802.11n HT20 MODE* ..... 30

    8.6. *CONDUCTED SPURIOUS EMISSIONS* ..... 32

        8.6.1. *802.11b MODE* ..... 33

8.6.2. 802.11g MODE .....34  
8.6.3. 802.11n HT20 MODE .....36

**9. RADIATED TEST RESULTS.....38**

9.1. *TRANSMITTER ABOVE 1 GHz* .....39  
9.1.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND .....39  
9.1.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND .....49  
9.1.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND.....73

9.2. *WORST CASE BELOW 30MHz*.....91  
9.3. *WORST CASE 30 – 1000MHz*.....92  
9.4. *WORST CASE 18-26 GHz*.....94

**10. AC POWER LINE CONDUCTED EMISSIONS .....96**

**11. SETUP PHOTOS.....99**

**END OF TEST REPORT .....99**

# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Alliance Laundry Systems LLC  
221 Shepard Street, PO Box 990  
Ripon, WI 54971, USA

**EUT DESCRIPTION:** Wireless Network Control

**MODEL:** 807211

**SERIAL NUMBER:** NPI45795

**DATE TESTED:** 2018-07-06 to 2018-10-29

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Compliant
ISED RSS-247 Issue 2	Compliant
ISED RSS-GEN Issue 5	Compliant

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. 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.

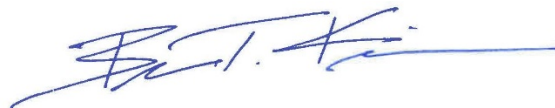
**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. All samples tested were in good operating condition throughout the entire test program. This document may not be altered or revised in any way unless done 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, or any agency of the U.S. government.

Approved & Released  
For UL LLC By:



Jeffrey Moser  
Operations Leader  
UL – Consumer Technology Division

Prepared By:



Brian T. Kiewra  
Project 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, KDB 558074 v05, ANSI C63.10-2013, RSS-GEN Issue 5, and RSS-247 Issue 2.

## 3. FACILITIES AND ACCREDITATION

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

12 Laboratory Dr.	2800 Perimeter Park Dr.
<input type="checkbox"/> Chamber A (ISED:2180C-1)	<input checked="" type="checkbox"/> Chamber North (ISED:2180C-3)
<input type="checkbox"/> Chamber C (ISED:2180C-2)	<input checked="" type="checkbox"/> Chamber South (ISED:2180C-4)

UL LLC (RTP) is accredited by NVLAP, Laboratory Code 200246-0

## 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

#### **RADIATED EMISSIONS**

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)

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

#### **MAINS CONDUCTED EMISSIONS**

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.

$$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$$

### 4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Occupied Channel Bandwidth	2.00%
RF output power, conducted	1.3 dB (PK), 0.45 dB (AV)
Power Spectral Density, conducted	2.47 dB
Unwanted Emissions, conducted	3.05 dB
All emissions, radiated	5.36 dB
Temperature	2.26°C
Humidity	6.79%
DC Supply voltages	1.70%
Time	3.39%

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

## 5. EQUIPMENT UNDER TEST

### 5.1. EUT DESCRIPTION

The EUT is an 802.11b/g/n (nHT20) module to be used in commercial and residential washers and dryers.

### 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	12.65	18.41
2412 - 2462	802.11g	11.66	14.66
2412 - 2462	802.11n HT20	10.7	11.75

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an ¼ wave dipole antenna with a maximum gain of 2 dBi.

### 5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was:

- ALS Radio Tools\_180615100124
- OOB-Comet-EU\_180705112047
- NW-Term-EU\_180705112332

The test utility software used during testing was CometEchoTest, rev. 1.0.0.3.

### 5.5. WORST-CASE CONFIGURATION AND MODE

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.

The worst-case data rate for each mode is determined to be as follows, based on preliminary tests of the chipset utilized in this radio.

All final tests in the 802.11b mode were made at 5.5 Mb/s .

All final tests in the 802.11g mode were made at 9 Mb/s.

All final tests in the 802.11n HT20 mode were made at MCS2.



## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	L470	PF0ZV674	N/A
DC Regulated Power Supply	CircuitSpecialists.Com	CSI3005X5	76021	N/A
Debug Device	Texas Instruments Inc.	TMDSEMU110-U	ETP_1802257	N/A

### I/O CABLES

I/O Cable List						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC	1	Pin	Unshielded	<3m	Connects to DC power supply
2	Debug	1	Ribbon	Unshielded	<3m	Connects to Debug device for EUT configuration

### TEST SETUP

The EUT is installed in as a standalone device. Test software exercised the radio card.

### SETUP DIAGRAM

Please refer to R12373455-EP1 for setup diagrams

## 6. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 558074 v05, Section 6.

6dB BW: ANSI C63.10-2013, Section 11.8.

99% BW: ANSI C63.10-2013, Section 6.9.3.

Output Power: ANSI C63.10-2013, Section 11.9.2.3.2

Power Spectral Density: ANSI C63.10-2013, Section 11.10.2

Out-of-band emissions in non-restricted bands: ANSI C63.10-2013 Section 11.11.

Out-of-band emissions in restricted bands: ANSI C63.10-2013 Section 11.12.1

Band-edge: ANSI C63.10-2013, Section 6.6.

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

## 7. TEST AND MEASUREMENT EQUIPMENT

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

Note: All equipment within calibration at time of use. If use spans multiple calibration intervals then both intervals included in equipment lists.

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

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
<b>30-1000 MHz</b>					
AT0075	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2017-09-05	2018-09-30
<b>1-18 GHz</b>					
AT0072	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2018-04-30	2019-04-30
<b>Gain-Loss Chains</b>					
N-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2018-05-20	2019-05-20
N-SAC03	Gain-loss string: 1-18GHz	Various	Various	2018-03-23	2019-03-23
<b>Receiver &amp; Software</b>					
SA0027	Spectrum Analyzer	Agilent	N9030A	2018-04-04	2019-04-04
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
<b>Additional Equipment used</b>					
s/n 161024690	Environmental Meter	Fisher Scientific	15-077-963	2016-12-21	2018-12-21

Note – Below 1GHz testing completed prior to 2018-09-30. Above 1 GHz testing completed on 2018-10-29.

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

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
<b>0.009-30MHz (Loop Ant.)</b>					
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2018-01-02	2019-01-02
<b>1-18 GHz</b>					
AT0069	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2018-04-30	2019-04-30
<b>18-26.5 GHz</b>					
AT0076	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2017-10-10	2018-10-10
<b>Gain-Loss Chains</b>					
S-SAC03	Gain-loss string: 1-18GHz	Various	Various	2018-03-20	2019-03-20
S-SAC04	Gain-loss string: 18-40GHz	Various	Various	2018-04-02	2019-04-02
<b>Receiver &amp; Software</b>					
SA0026	Spectrum Analyzer	Agilent	N9030A	2018-03-20	2019-03-20
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
<b>Additional Equipment used</b>					
s/n 161024887	Environmental Meter	Fisher Scientific	15-077-963	2016-12-23	2018-12-23

Note – Below 1GHz testing completed prior to 2018-09-30. 1-18 GHz testing completed on 2018-10-29.  
 Above 18 GHz testing completed prior to 2018-09-30.

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
SA0020 (PRE0100902)	Spectrum Analyzer	Agilent Technologies	E4446A	2017-11-06	2018-11-06
81018	Spectrum Analyzer	Agilent Technologies	E4446A	2018-04-12	2019-04-12
PWM003	RF Power Meter	Keysight Technologies	N1911A	2017-07-14	2018-07-14
				2018-07-30	2019-07-30
PWS004	Peak and Avg Power Sensor, 50MHz to 6GHz	Keysight Technologies	E9323A	2017-07-17	2018-07-17
				2018-07-30	2019-07-30
SN 161024885	Environmental Meter	Fisher Scientific	15-077-963	2016-12-23	2018-12-23
76022	DC Regulated Power Supply	CircuitSpecialist s.Com	CSI3005X5	N/A	N/A
MM0165	True RMS Multimeter	Agilent	U1232A	2017-09-25	2018-09-30

Test Equipment Used - Line-Conducted Emissions – Voltage (Morrisville – Conducted 1)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
CBL087	Coax cable, RG223, N-male to BNC-male, 20-ft.	Pasternack	PE3W06143-240	2018-06-19	2019-06-19
s/n 160938893	Environmental Meter	Fisher Scientific	14-650-118	2016-11-02	2018-11-02
LISN003	LISN, 50-ohm/50-uH, 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50-25-2-01-550V	2018-08-21	2019-08-21
PRE0101521 (75141)	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2018-08-22	2019-08-22
TL001	Transient Limiter, 0.009-30MHz	Com-Power	LIT-930A	2018-06-13	2019-06-13
PS214	AC Power Source	Elgar	CW2501M (s/n 1523A02396)	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
MM0166	Multi-meter	Agilent	U1232A	2018-03-16	2019-03-16

## 8. ANTENNA PORT TEST RESULTS

### 8.1. ON TIME AND DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

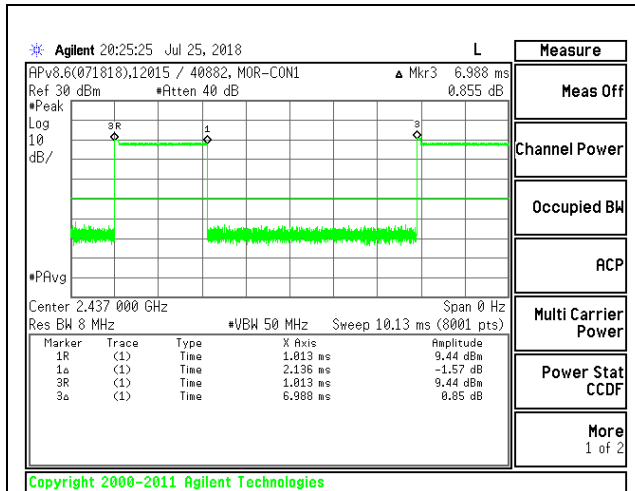
#### PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

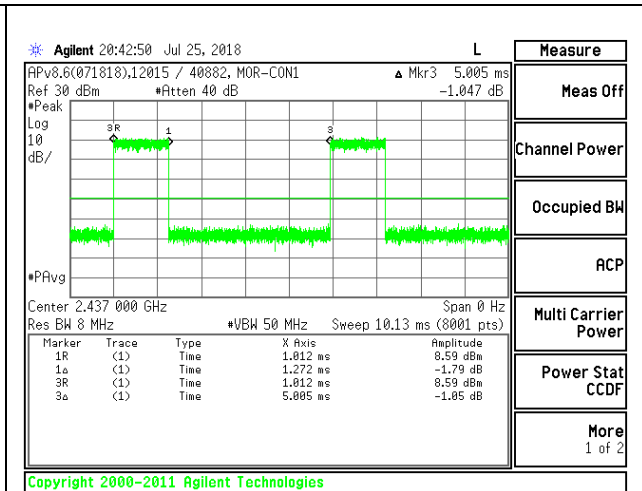
#### ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
<b>2.4GHz Band</b>						
802.11b 1TX	2.136	6.988	0.306	30.57%	5.15	0.468
802.11g 1TX	1.272	5.005	0.254	25.41%	5.95	0.786
802.11n HT20 1TX	0.616	3.998	0.154	15.40%	8.13	1.624

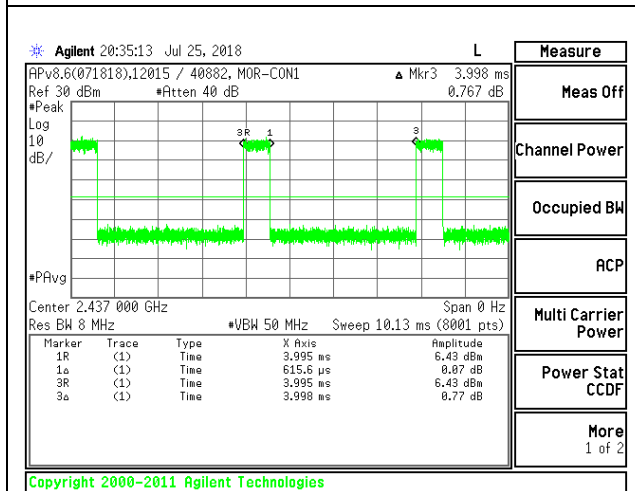
**DUTY CYCLE PLOTS**



DUTY CYCLE 802.11b 1TX MODE



DUTY CYCLE 802.11g 1TX MODE



DUTY CYCLE 802.11nHT20 1TX MODE

## **8.2. 99% BANDWIDTH**

### **LIMITS**

None; for reporting purposes only.

### **TEST PROCEDURE**

The transmitter output is connected to the spectrum analyzer. 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.

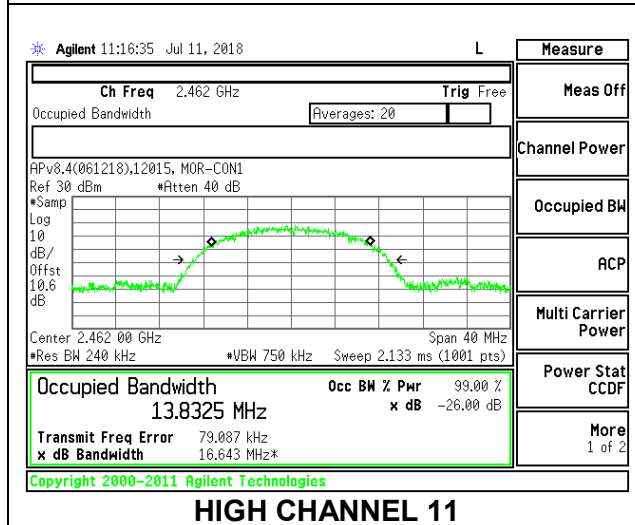
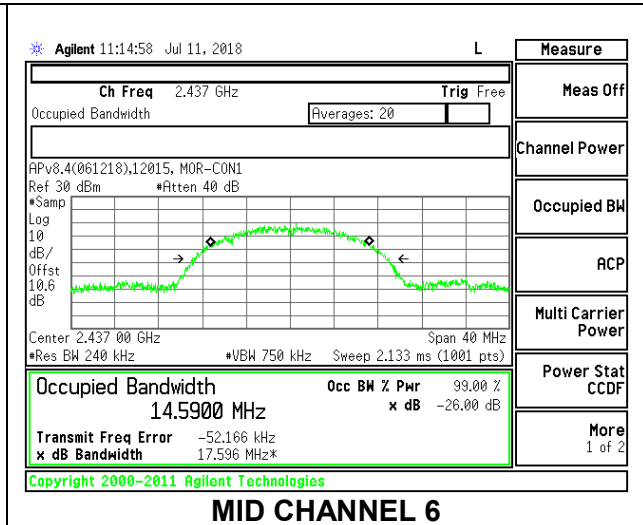
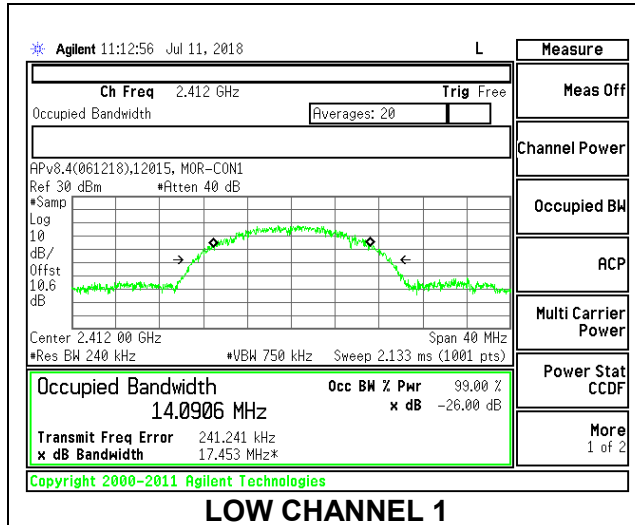
### **RESULTS**

Refer to following pages.



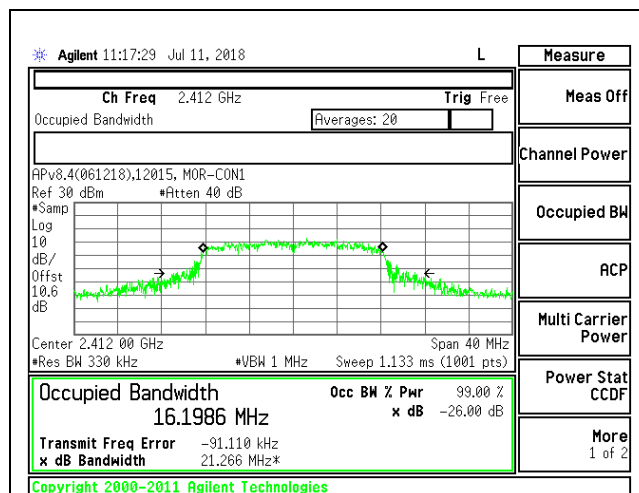
### 8.2.1. 802.11b MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	14.0906
Mid 6	2437	14.5900
High 11	2462	13.8325
Worst		14.5900

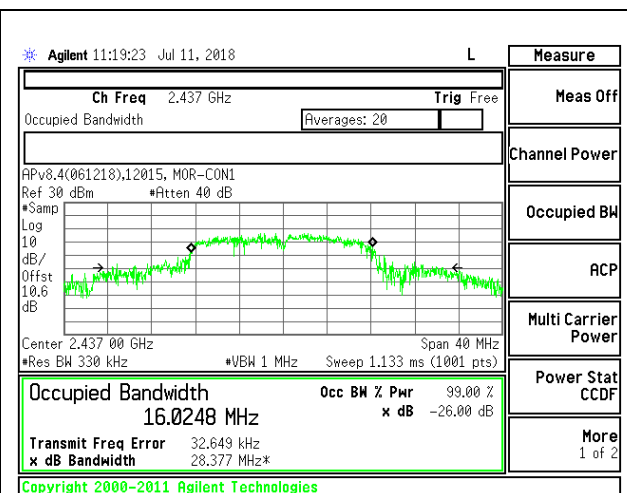


### 8.2.2. 802.11g MODE

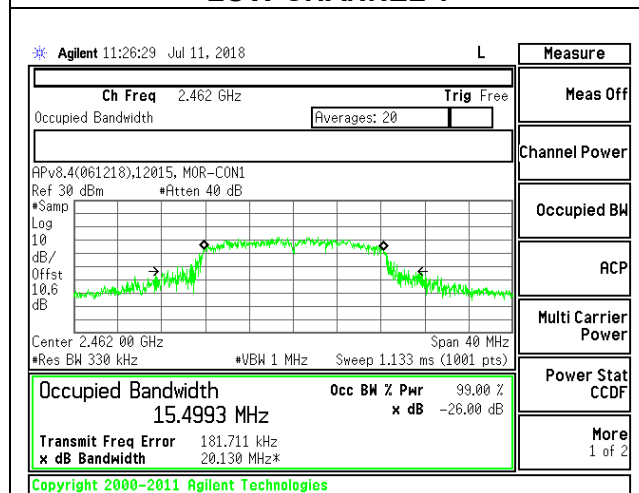
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	16.1986
Mid 6	2437	16.0248
High 11	2462	15.4993
Worst		16.20



**LOW CHANNEL 1**



**MID CHANNEL 6**



**HIGH CHANNEL 11**

### 8.2.3. 802.11n HT20 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	15.4932
Mid 6	2437	17.6505
High 11	2462	17.5395
Worst		17.65

**LOW CHANNEL 1**

**MID CHANNEL 6**

**HIGH CHANNEL 11**

### 8.3. 6 dB BANDWIDTH

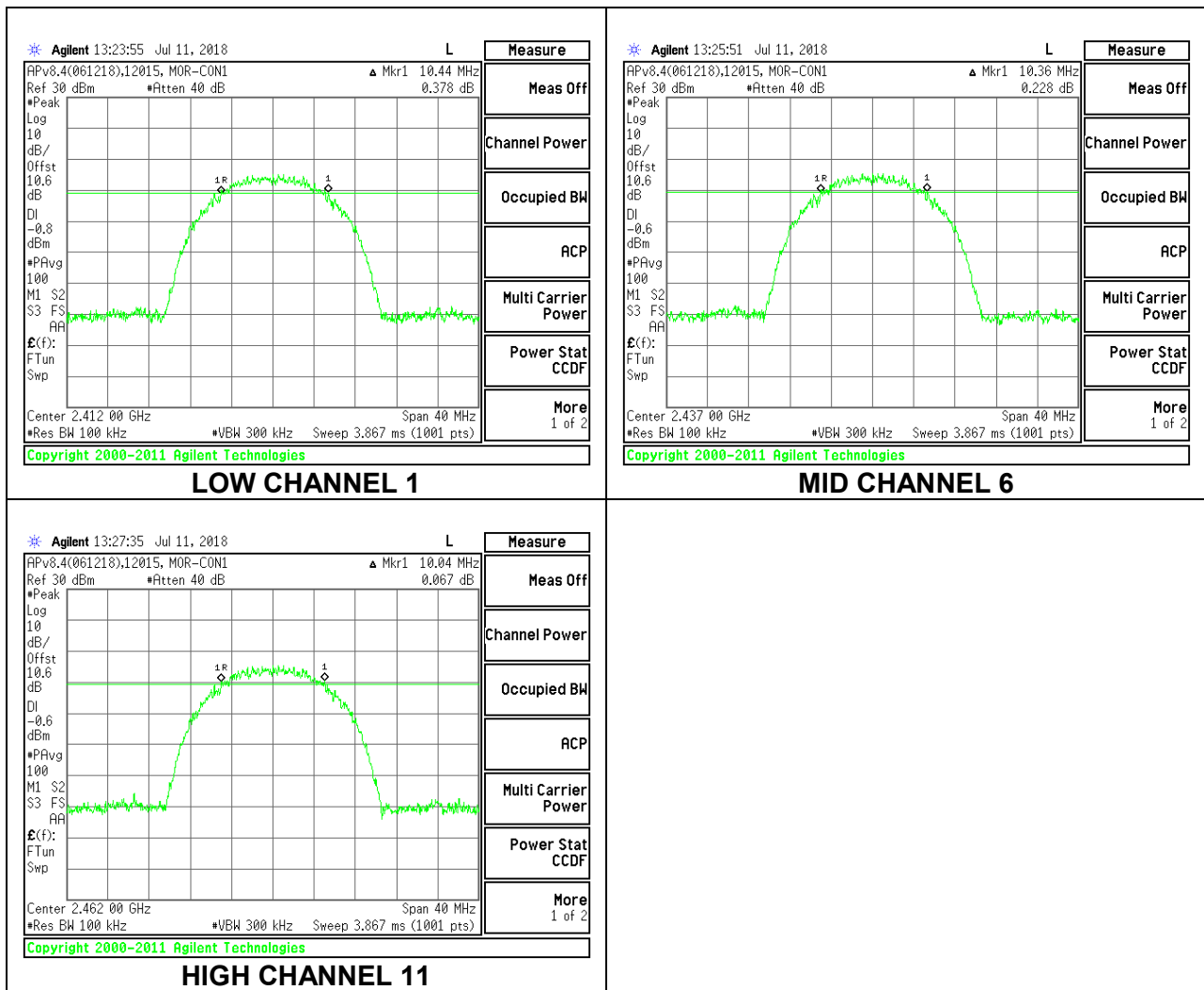
#### LIMITS

FCC §15.247 (a) (2)  
 RSS-247 Clause 5.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

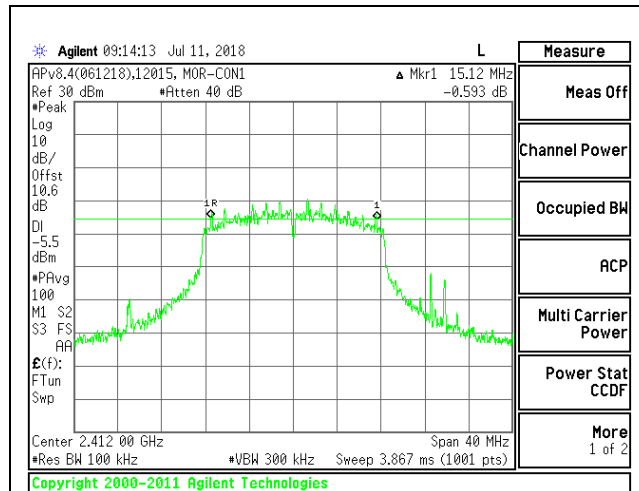
#### 8.3.1. 802.11b MODE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	10.4400	0.5
Mid 6	2437	10.3600	0.5
High 11	2462	10.0400	0.5

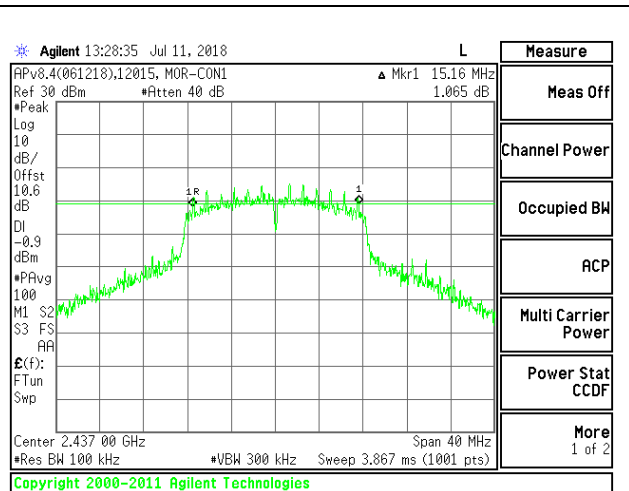


### 8.3.2. 802.11g MODE

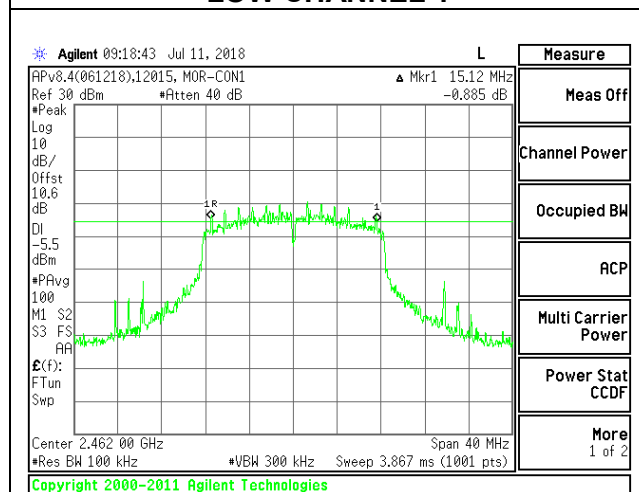
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	15.1200	0.5
Mid 6	2437	15.1600	0.5
High 11	2462	15.1200	0.5



**LOW CHANNEL 1**



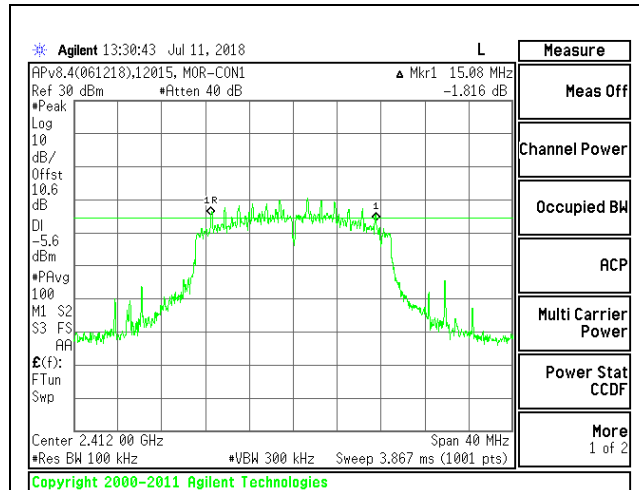
**MID CHANNEL 6**



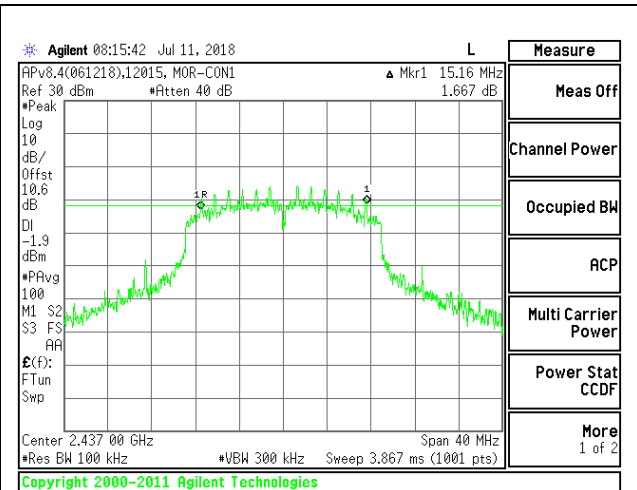
**HIGH CHANNEL 11**

### 8.3.3. 802.11n HT20 MODE

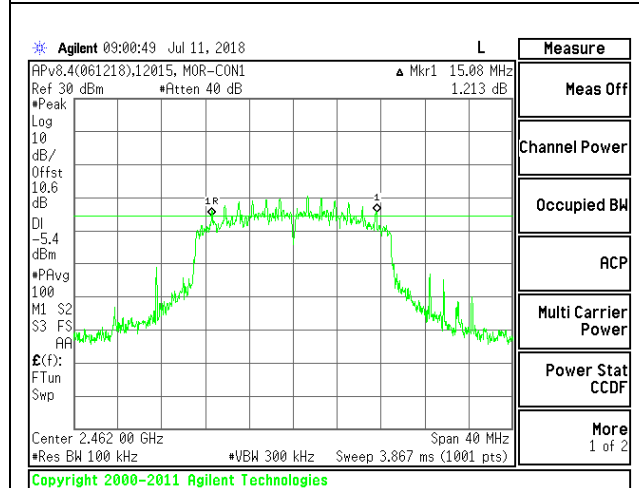
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	15.0800	0.5
Mid 6	2437	15.1600	0.5
High 11	2462	15.0800	0.5



**LOW CHANNEL 1**



**MID CHANNEL 6**



**HIGH CHANNEL 11**

## 8.4. OUTPUT POWER

FCC §15.247 (b)(3)

ISED RSS-247 Clause 5.4 (d)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### TEST INFORMATION

Test Date: 2018-08-06

Tested By: 12015

### 8.4.1. 802.11b MODE

#### Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	2.00	30.00	30	36	30.00
Mid	2437	2.00	30.00	30	36	30.00
High	2462	2.00	30.00	30	36	30.00

#### Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	12.43	12.43	30.00	-17.57
Mid	2437	12.58	12.58	30.00	-17.42
High	2462	12.65	12.65	30.00	-17.35

Note: Measurements are gated average.

### 8.4.1. 802.11g MODE

#### Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	2.00	30.00	30	36	30.00
Low	2417	2.00	30.00	30	36	30.00
Low	2422	2.00	30.00	30	36	30.00
Mid	2437	2.00	30.00	30	36	30.00
High	2452	2.00	30.00	30	36	30.00
High	2457	2.00	30.00	30	36	30.00
High	2462	2.00	30.00	30	36	30.00

#### Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	10.25	10.25	30.00	-19.75
Low	2417	11.66	11.66	30.00	-18.34
Low	2422	11.64	11.64	30.00	-18.36
Mid	2437	11.50	11.50	30.00	-18.50
High	2452	10.81	10.81	30.00	-19.19
High	2457	11.55	11.55	30.00	-18.45
High	2462	10.19	10.19	30.00	-19.81

Note: Measurements are gated average.



### 8.4.1. 802.11nHT20 MODE

#### Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	2.00	30.00	30	36	30.00
Low	2417	2.00	30.00	30	36	30.00
Mid	2437	2.00	30.00	30	36	30.00
High	2457	2.00	30.00	30	36	30.00
High	2462	2.00	30.00	30	36	30.00

#### Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	9.69	9.69	30.00	-20.31
Low	2417	10.70	10.70	30.00	-19.30
Mid	2437	10.63	10.63	30.00	-19.37
High	2457	10.56	10.56	30.00	-19.44
High	2462	9.79	9.79	30.00	-20.21

Note: Measurements are gated average.

## **8.5. POWER SPECTRAL DENSITY**

### **LIMITS**

FCC §15.247 (e)

RSS-247 Clause 5.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

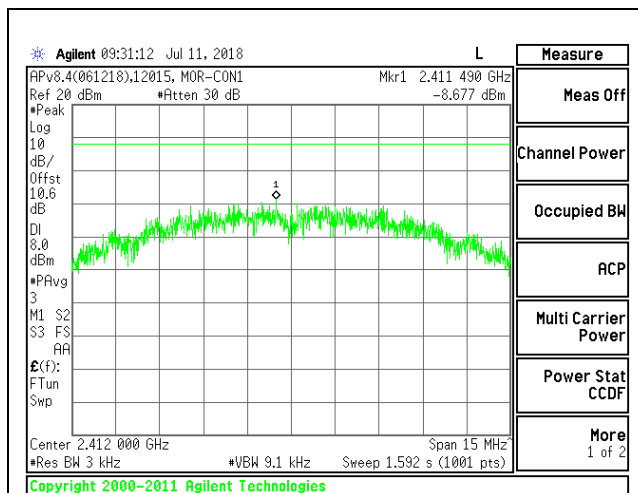
### **RESULTS**

Refer to following pages.

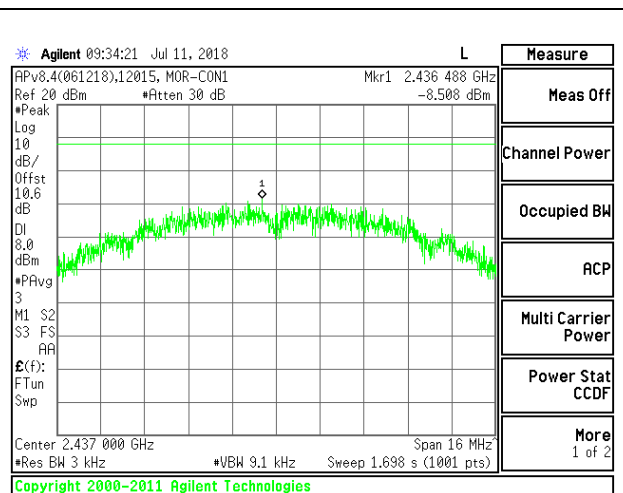
### 8.5.1. 802.11b MODE

#### PSD Results

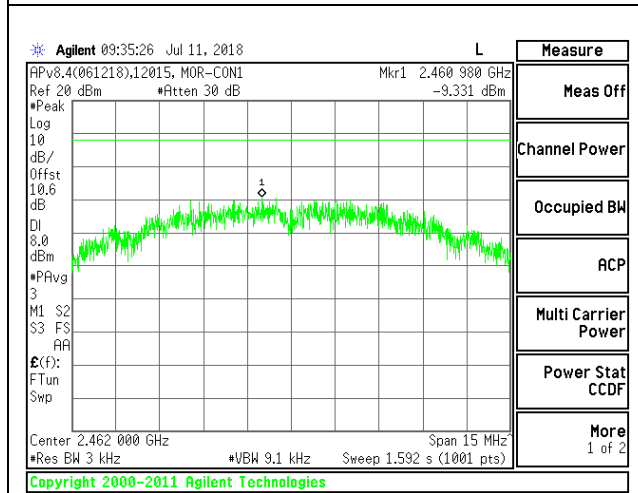
Channel	Frequency (MHz)	Chain 0 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-8.677	-8.677	8.0	-16.7
Mid 6	2437	-8.508	-8.508	8.0	-16.5
High 11	2462	-9.331	-9.331	8.0	-17.3



**LOW CHANNEL 1**



**MID CHANNEL 6**



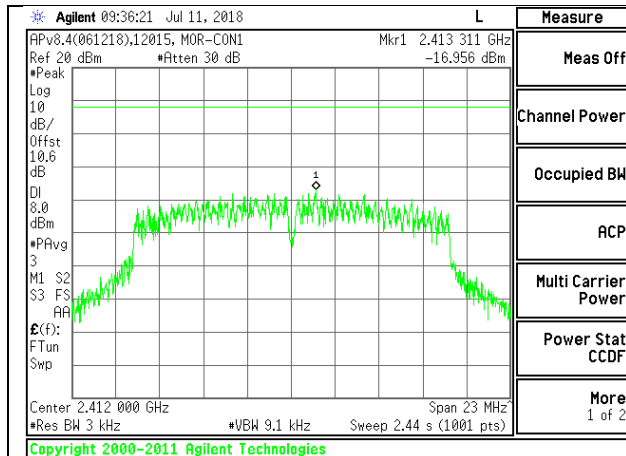
**HIGH CHANNEL 11**

Note: All channels run at mid channel power settings.

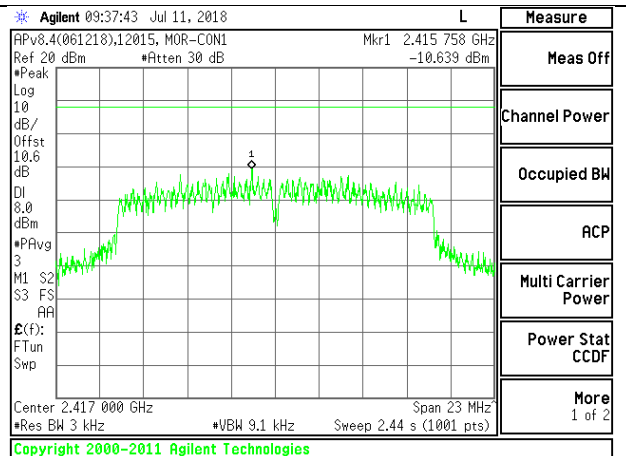
### 8.5.2. 802.11g MODE

#### PSD Results

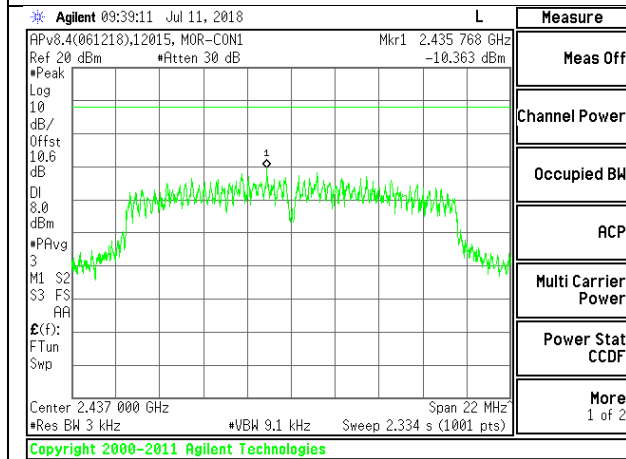
Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-16.956	-16.956	8.0	-25.0
Low 2	2417	-10.639	-10.639	8.0	-18.6
Mid 6	2437	-10.363	-10.363	8.0	-18.4
High 9	2452	-12.052	-12.052	8.0	-20.1
High 10	2457	-12.249	-12.249	8.0	-20.2
High 11	2462	-15.697	-15.697	8.0	-23.7



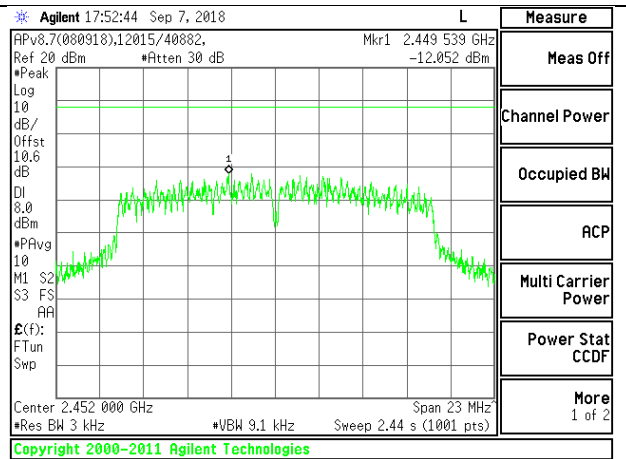
LOW CHANNEL 1



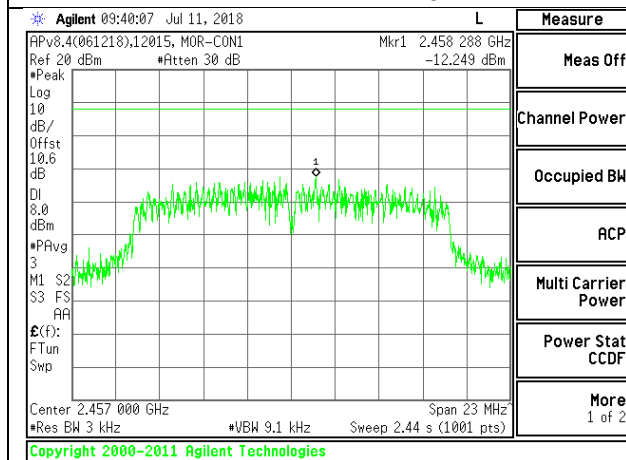
LOW CHANNEL 2



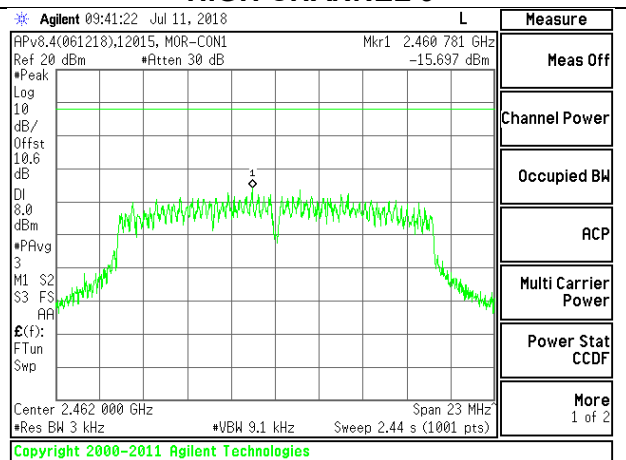
MID CHANNEL 6



HIGH CHANNEL 9



HIGH CHANNEL 10

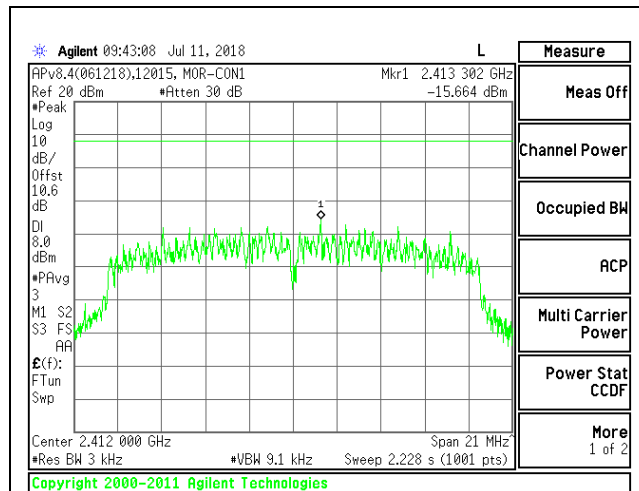


HIGH CHANNEL 11

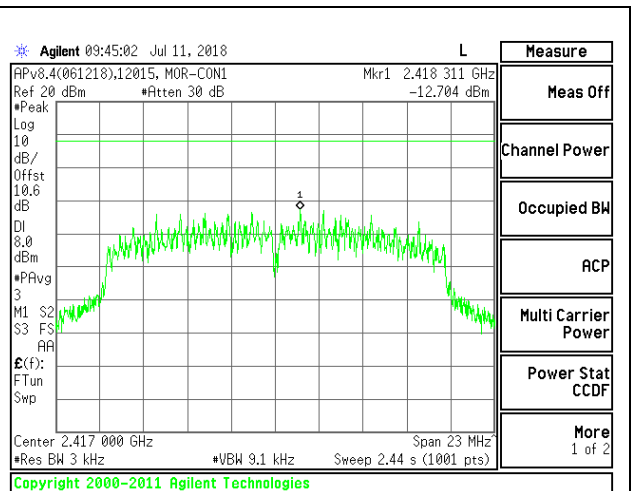
### 8.5.3. 802.11n HT20 MODE

#### PSD Results

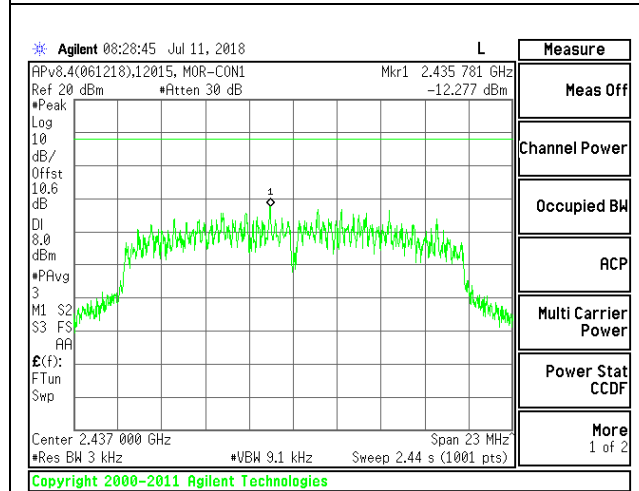
Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-15.664	-15.664	8.0	-23.7
Low 2	2417	-12.704	-12.704	8.0	-20.7
Mid 6	2437	-12.277	-12.277	8.0	-20.3
High 10	2457	-10.956	-10.956	8.0	-19.0
High 11	2462	-16.770	-16.770	8.0	-24.8



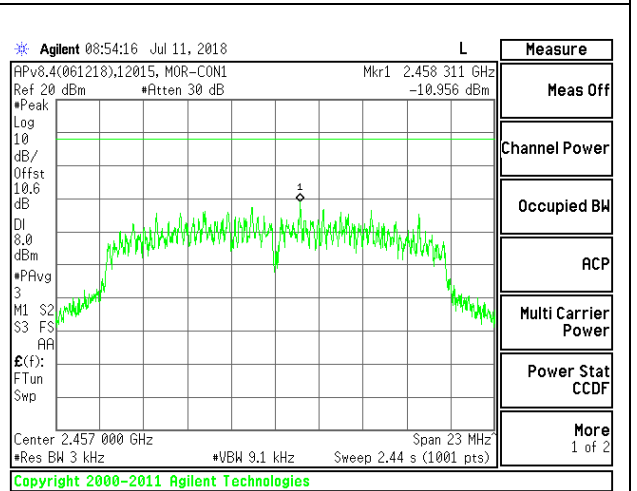
LOW CHANNEL 1



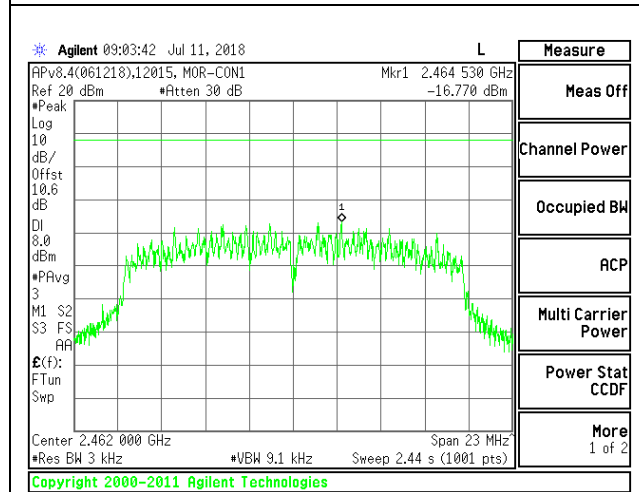
LOW CHANNEL 2



MID CHANNEL 6



HIGH CHANNEL 10



HIGH CHANNEL 11

## **8.6. CONDUCTED SPURIOUS EMISSIONS**

### **LIMITS**

FCC §15.247 (d)

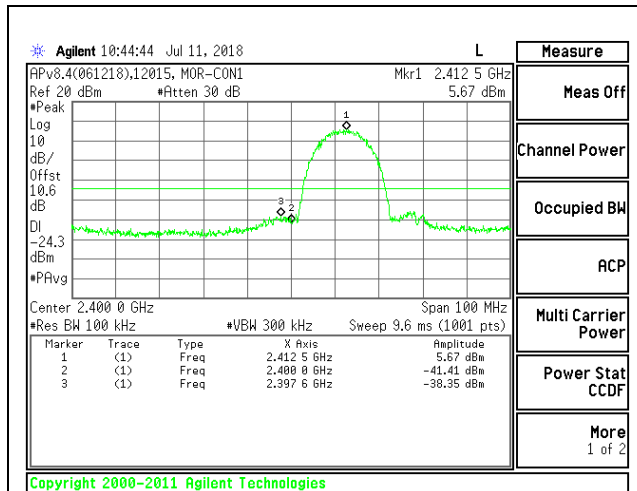
RSS-247 Clause 5.5

Output power was measured based on the use of peak measurement, therefore the required attenuation is 20 dB.

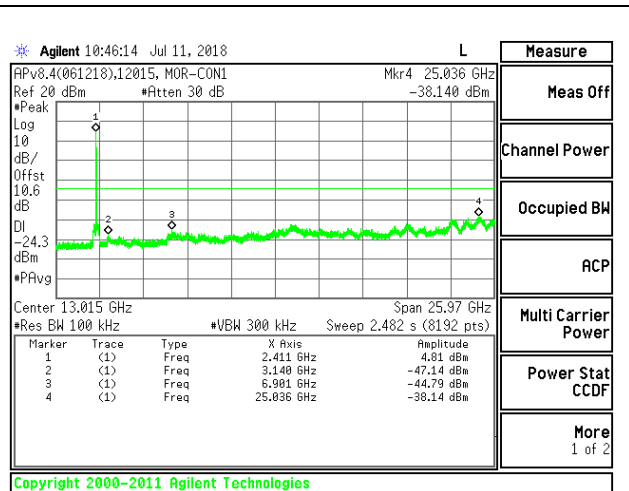
### **RESULTS**



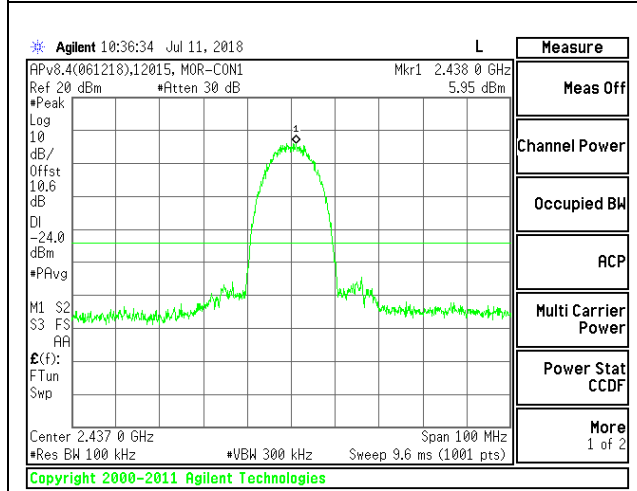
### 8.6.1. 802.11b MODE



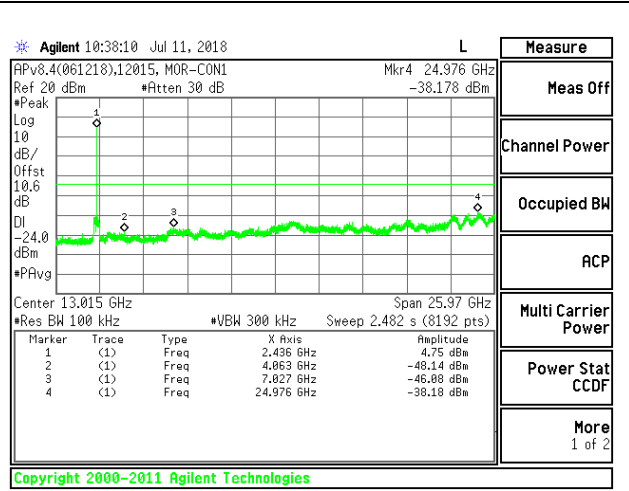
**LOW CHANNEL 1 BANDEDGE**



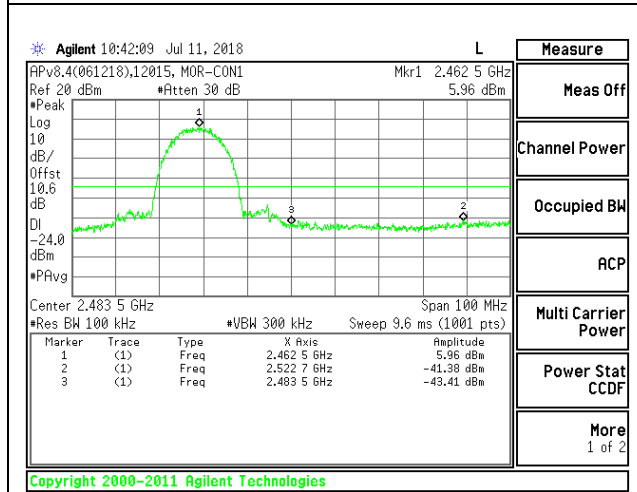
**OUT-OF-BAND LOW CHANNEL 1**



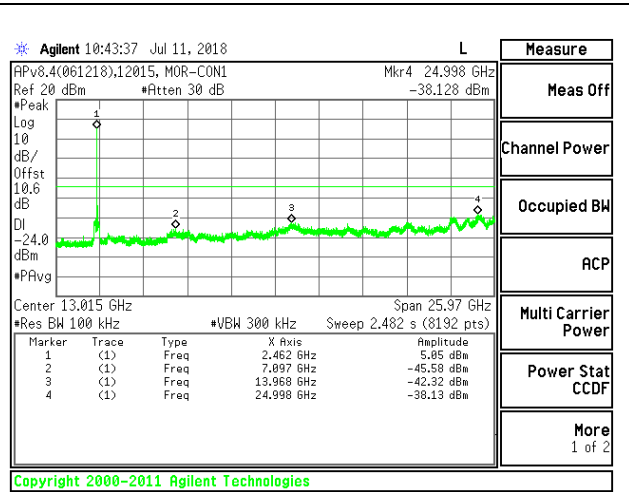
**IN-BAND REFERENCE LEVEL**



**OUT-OF-BAND MID CHANNEL**

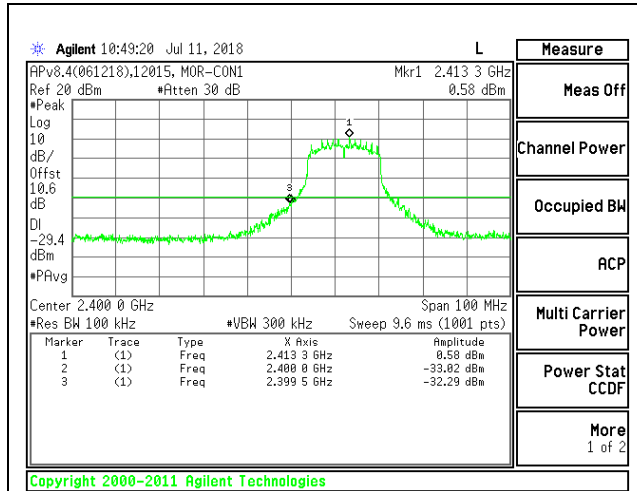


**HIGH CHANNEL 11 BANDEDGE**

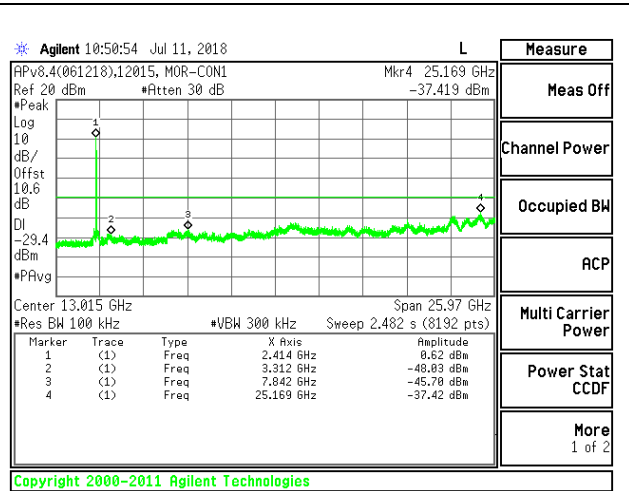


**OUT-OF-BAND HIGH CHANNEL 11**

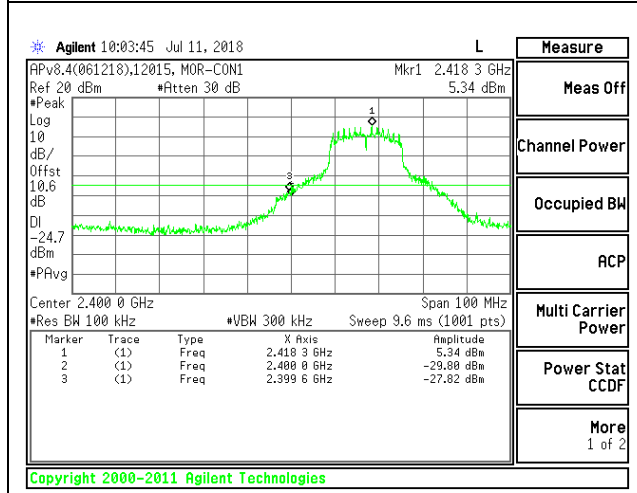
### 8.6.2. 802.11g MODE



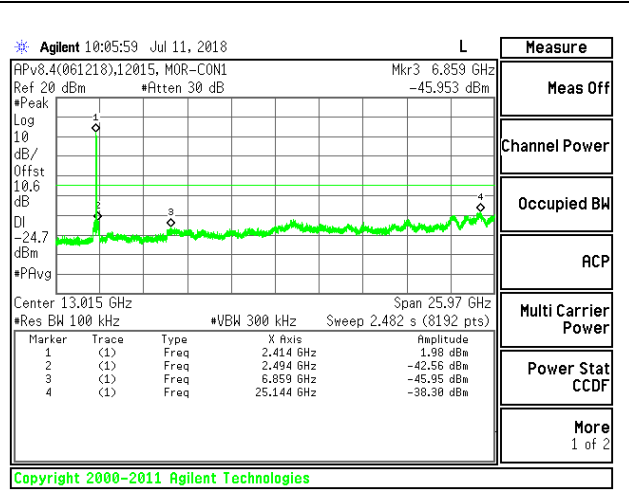
**LOW CHANNEL 1 BANDEDGE**



**OUT-OF-BAND LOW CHANNEL 1**

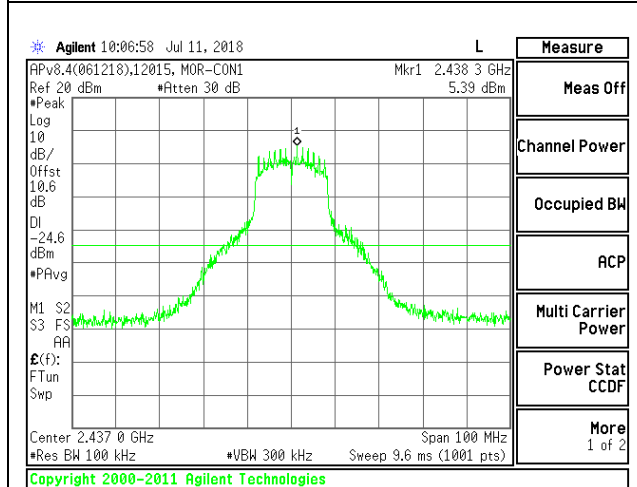


**LOW CHANNEL 2 BANDEDGE**

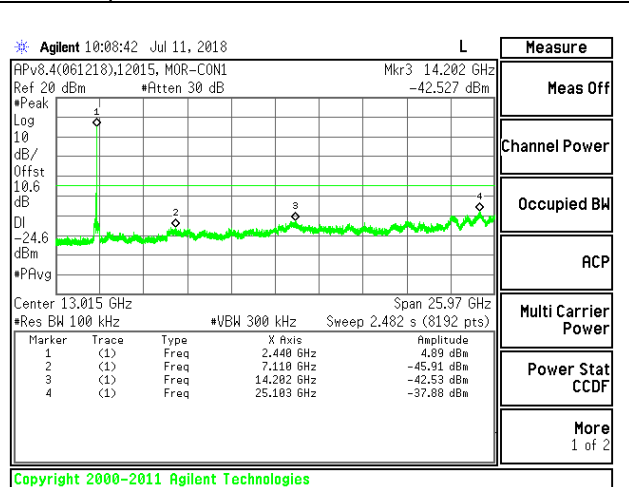


**OUT-OF-BAND LOW CHANNEL 2**

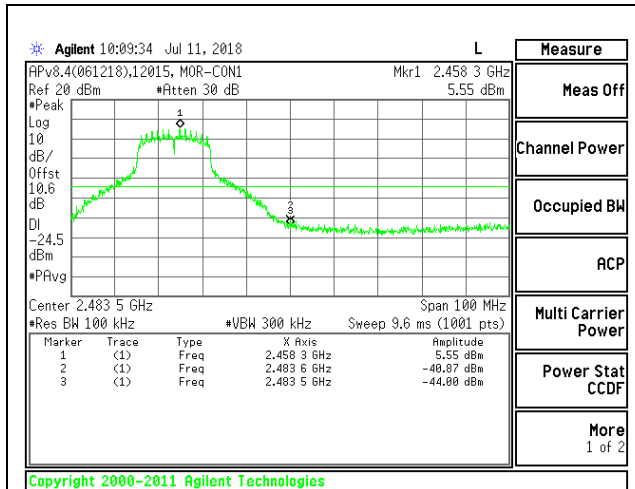
Note: Channel 2 Power was tested at mid channel power.



**IN-BAND REFERENCE LEVEL**

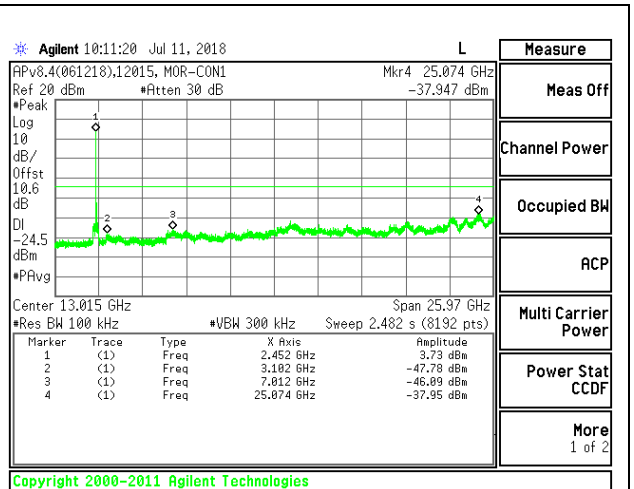


**OUT-OF-BAND MID CHANNEL**



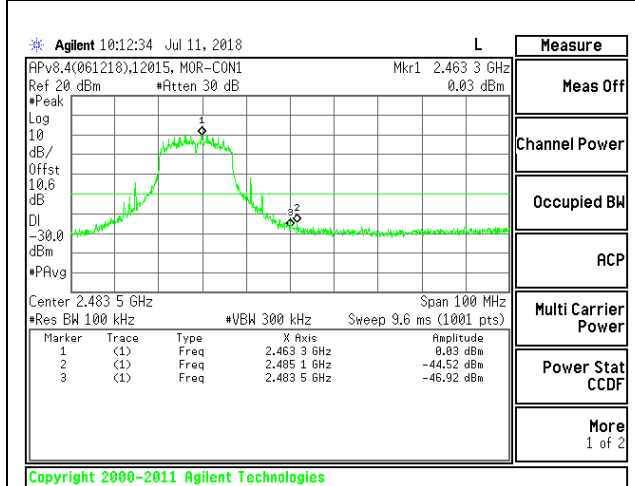
**HIGH CHANNEL 10 BANDEDGE**

Note: Channel 10 Power was tested at mid

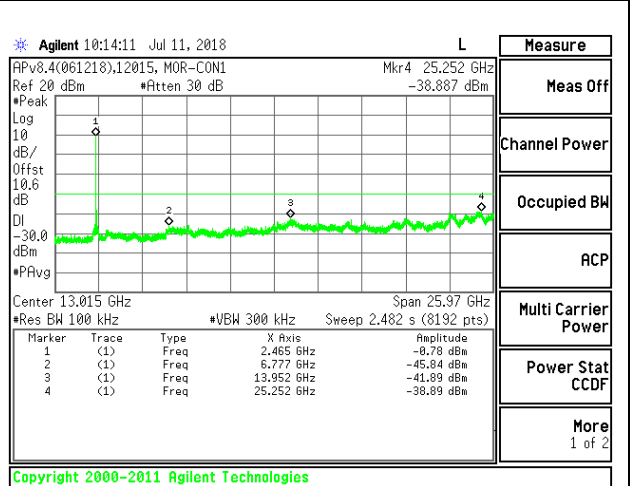


**OUT-OF-BAND HIGH CHANNEL 10**

channel power.

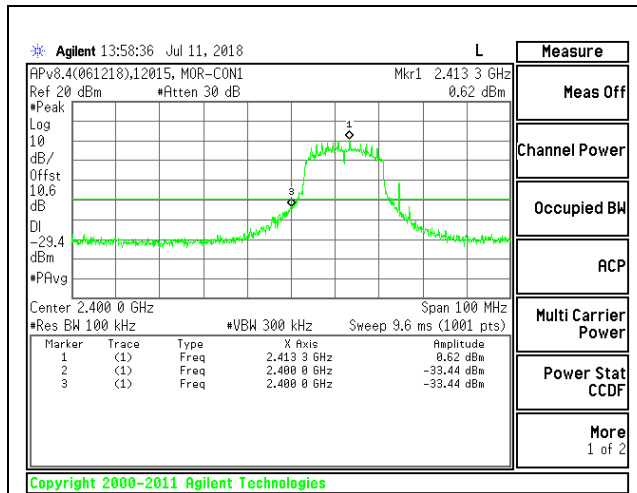


**HIGH CHANNEL 11 BANDEDGE**

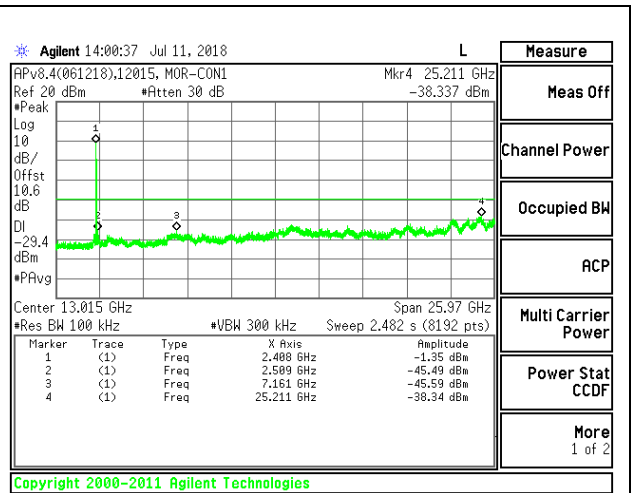


**OUT-OF-BAND HIGH CHANNEL 11**

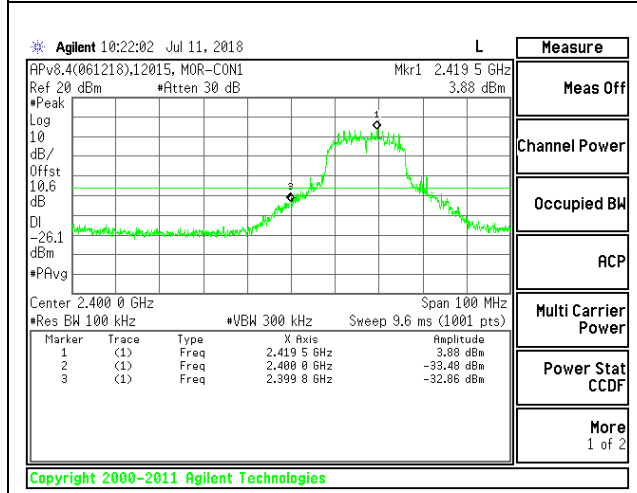
### 8.6.3. 802.11n HT20 MODE



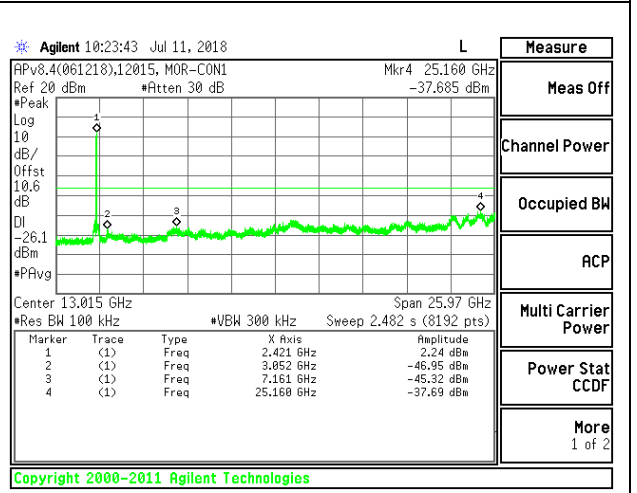
**LOW CHANNEL 1 BANDEDGE**



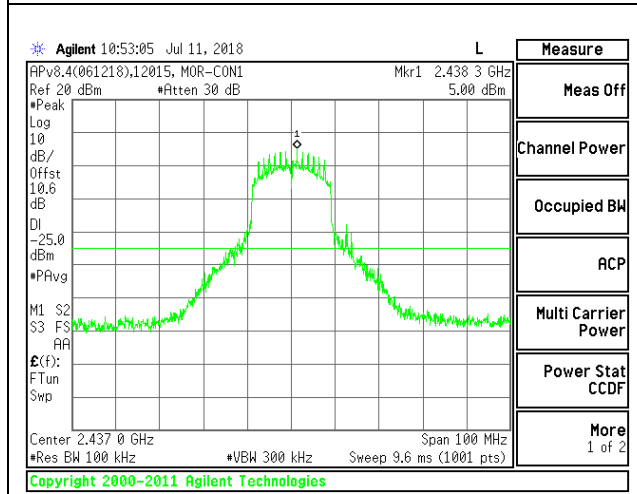
**OUT-OF-BAND LOW CHANNEL 1**



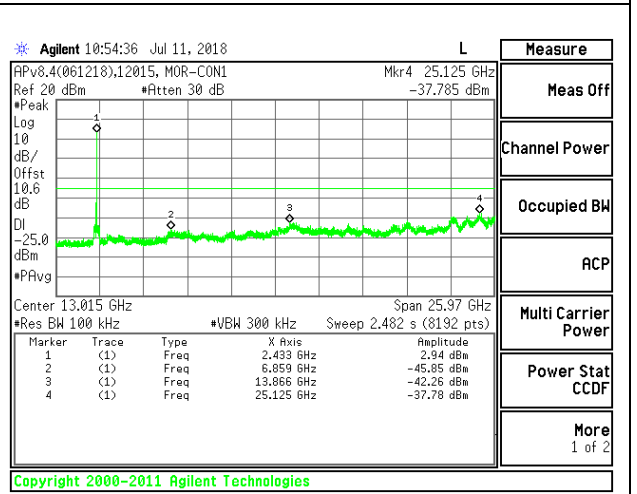
**LOW CHANNEL 2 BANDEDGE**



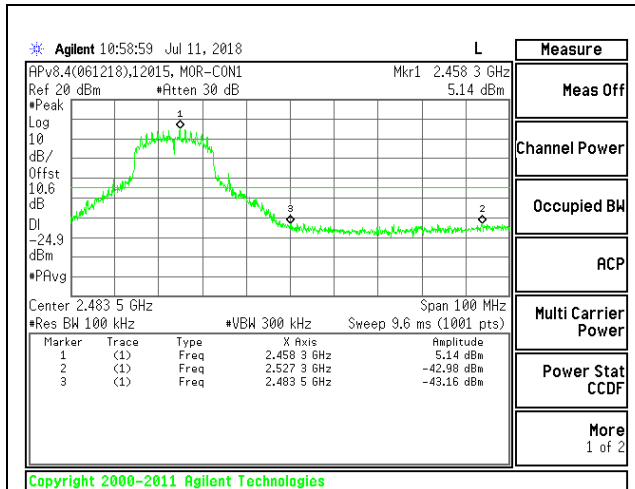
**OUT-OF-BAND LOW CHANNEL 2**



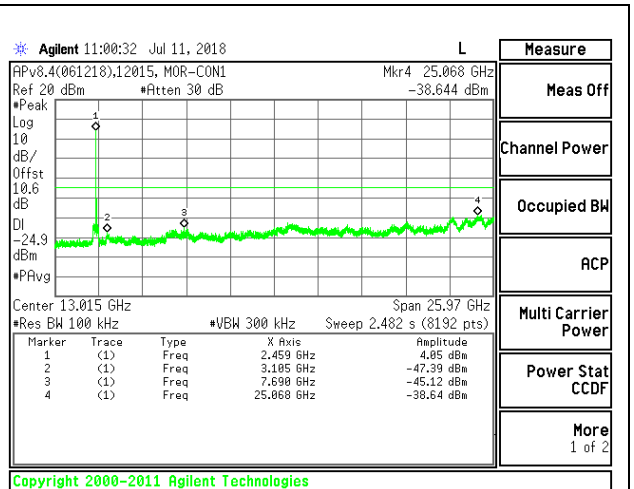
**IN-BAND REFERENCE LEVEL**



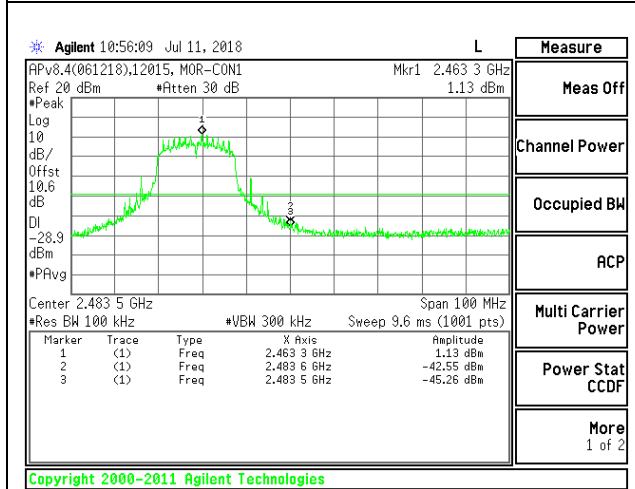
**OUT-OF-BAND MID CHANNEL**



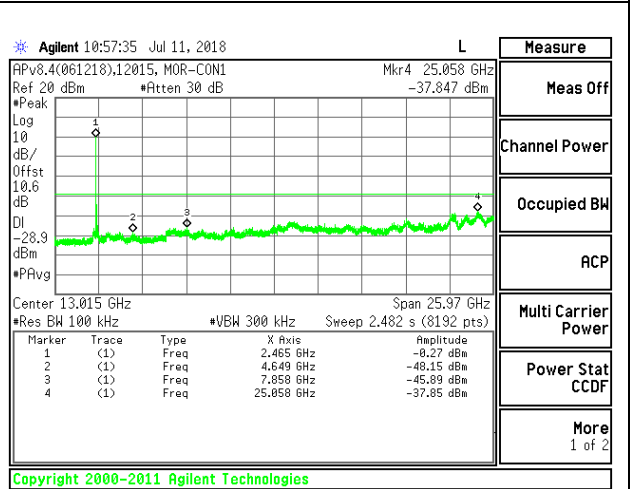
**HIGH CHANNEL 10 BANDEDGE**



**OUT-OF-BAND HIGH CHANNEL 10**



**HIGH CHANNEL 11 BANDEDGE**



**OUT-OF-BAND HIGH CHANNEL 11**

## 9. RADIATED TEST RESULTS

### LIMITS

FCC §15.205 and §15.209

RSS-GEN Section 8.9

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
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 for the 30-1000 MHz range, 9 kHz for peak detection measurements or 9 kHz for quasi-peak detection measurements for the 0.15-30 MHz range and 200 Hz for peak detection measurements or 200 Hz for quasi-peak detection measurements for the 9 to 150 kHz range. Peak detection is used unless otherwise noted as quasi-peak.

For peak measurements above 1 GHz, the resolution bandwidth is set to 1 MHz and the video bandwidth is set to 3 MHz. For average measurements above 1GHz, the resolution bandwidth and video bandwidth are set as described in ANSI C63.10:2013 for the applicable measurement. The particular averaging method used for this test program was RMS averaging.

The spectrum from 1 to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. For 9kHz to 1000 MHz and 18 to 26 GHz investigation, the worst-case channel was selected.

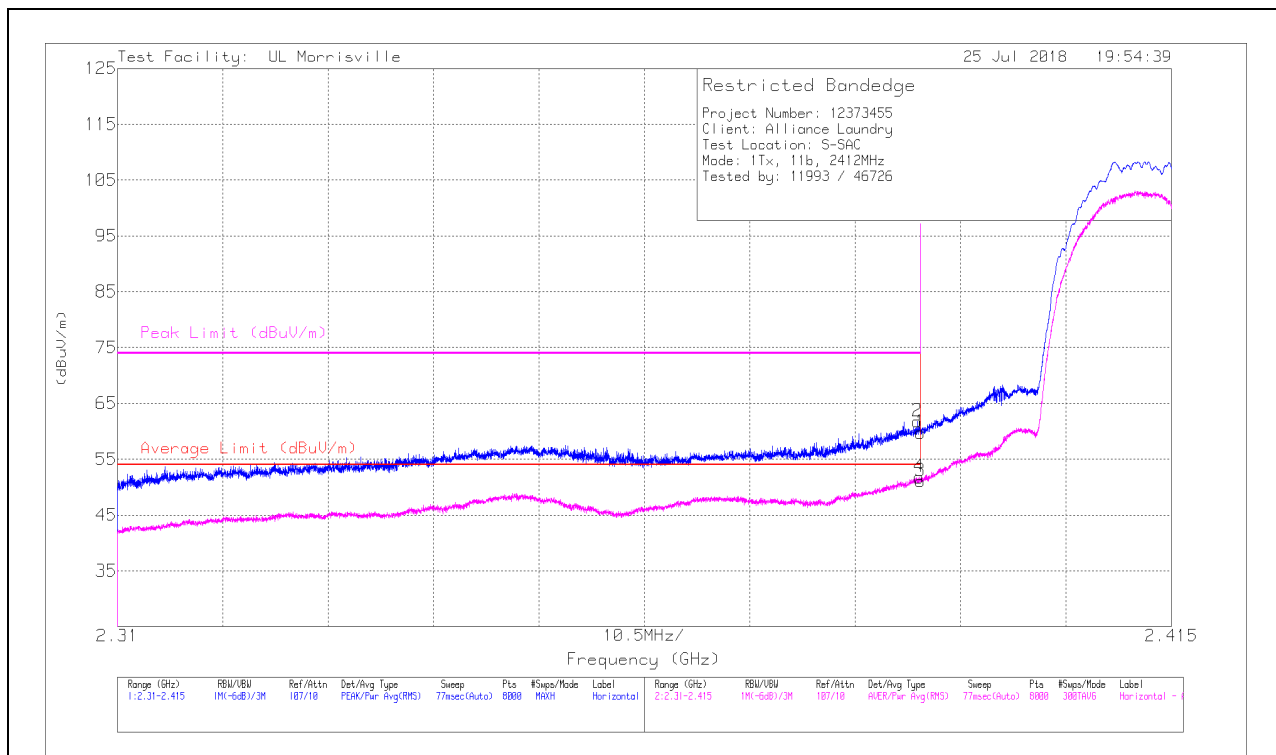
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

## 9.1. TRANSMITTER ABOVE 1 GHz

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

#### BANDEDGE (LOW CHANNEL, CH 1)

#### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (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	51.86	Pk	32	-24.1	0	59.76	-	-	74	-14.24	306	297	H
2	*** 2.39	53.87	Pk	32	-24.1	0	61.77	-	-	74	-12.23	306	297	H
3	*** 2.39	38.06	RMS	32	-24.1	5.15	51.11	54	-2.89	-	-	306	297	H
4	*** 2.39	38.72	RMS	32	-24.1	5.15	51.77	54	-2.23	-	-	306	297	H

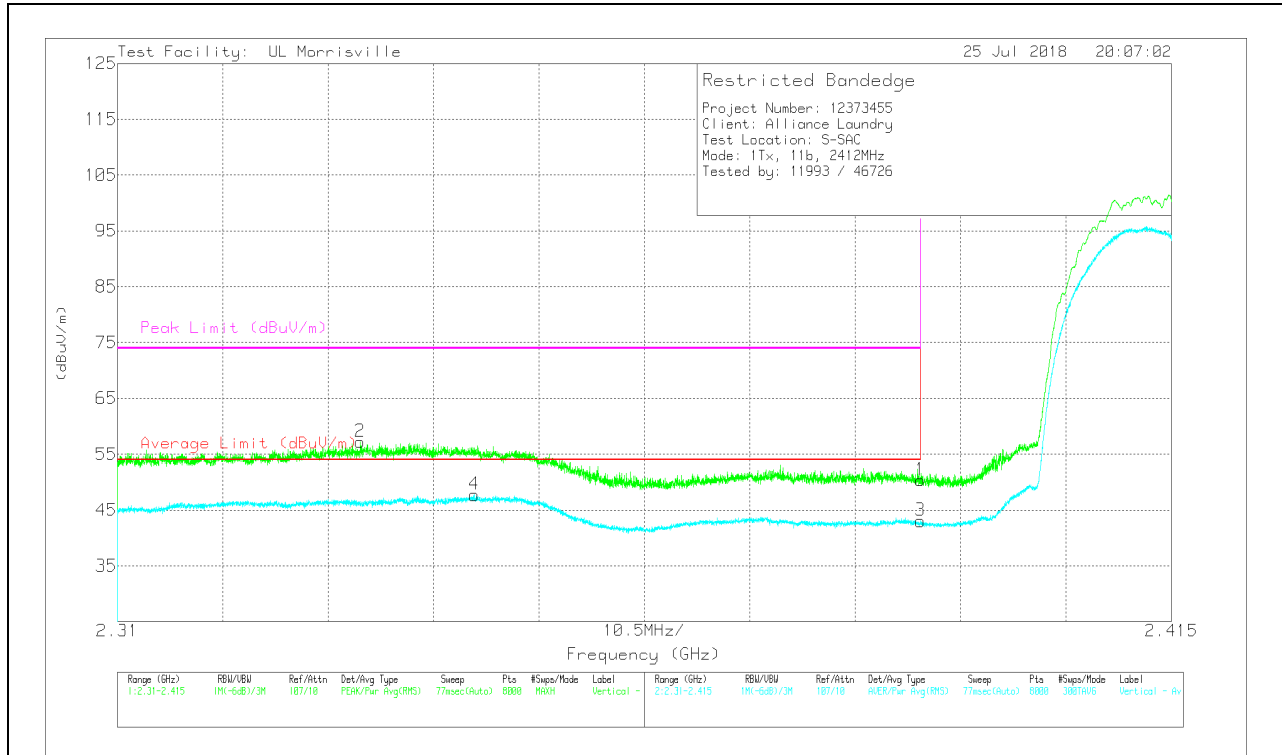
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

RMS - RMS detection

**VERTICAL RESULT**



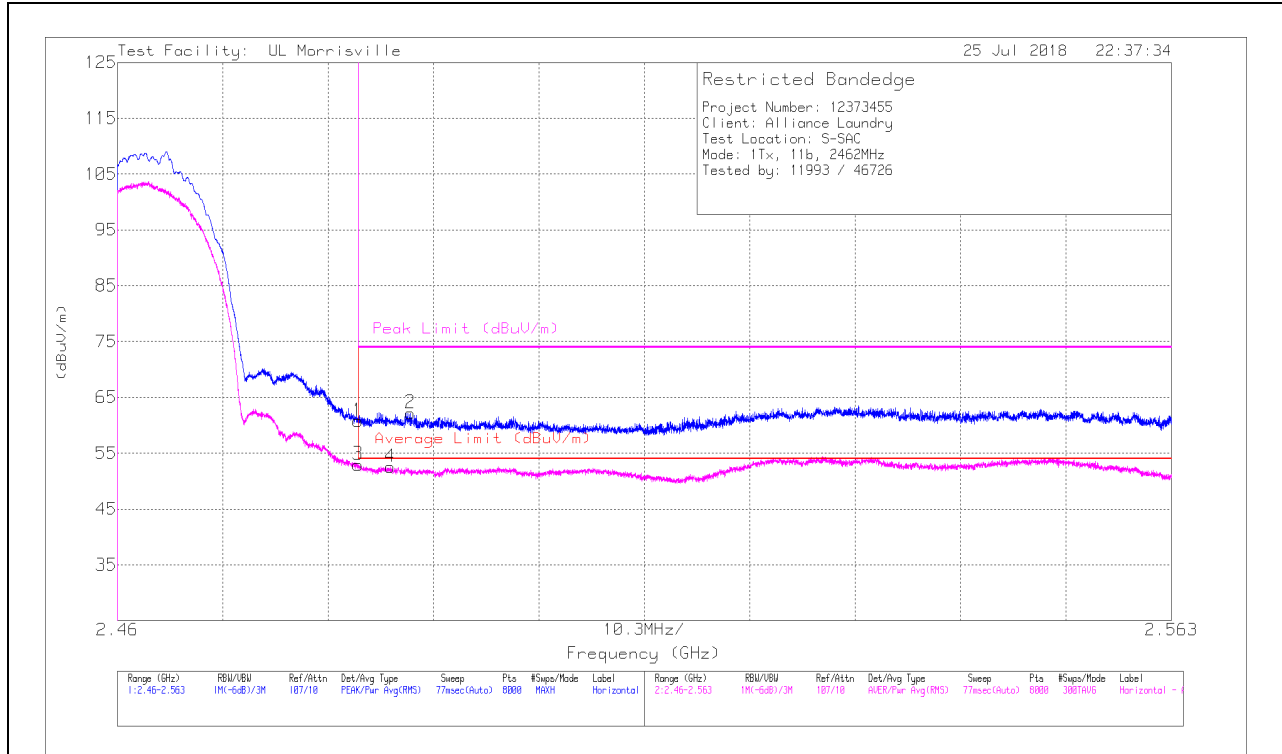
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.39	42.46	Pk	32	-24.1	0	50.36	-	-	74	-23.64	197	343	V
2	*** 2.334	49.39	Pk	31.7	-23.9	0	57.19	-	-	74	-16.81	197	343	V
3	*** 2.39	29.99	RMS	32	-24.1	5.15	43.04	54	-10.96	-	-	197	343	V
4	*** 2.346	34.76	RMS	31.7	-23.9	5.15	47.71	54	-6.29	-	-	197	343	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection



## BANEDGE (HIGH CHANNEL, CH 11)

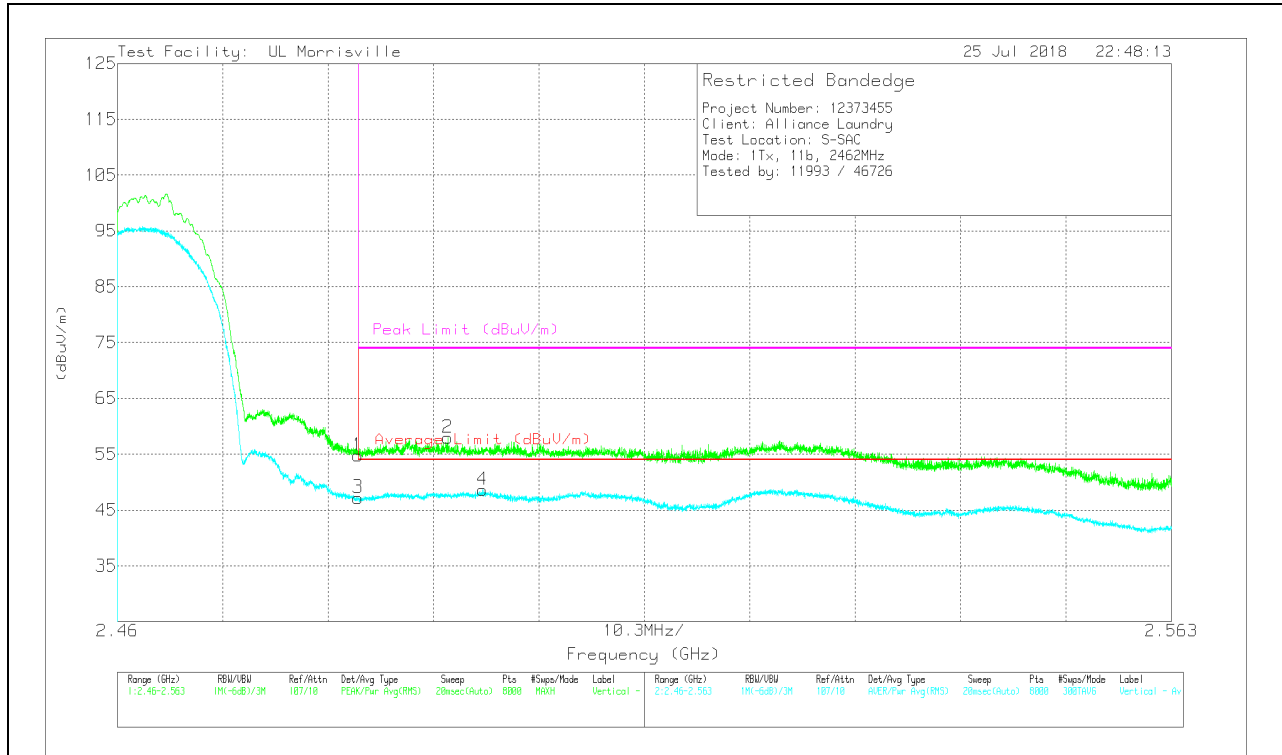
### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (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	52.98	Pk	32.4	-24.6	0	60.78	-	-	74	-13.22	142	141	H
2	*** 2.489	54.49	Pk	32.4	-24.7	0	62.19	-	-	74	-11.81	142	141	H
3	*** 2.484	40.02	RMS	32.4	-24.6	5.15	52.97	54	-1.03	-	-	142	141	H
4	*** 2.487	39.62	RMS	32.4	-24.6	5.15	52.57	54	-1.43	-	-	142	141	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

**VERTICAL RESULT**

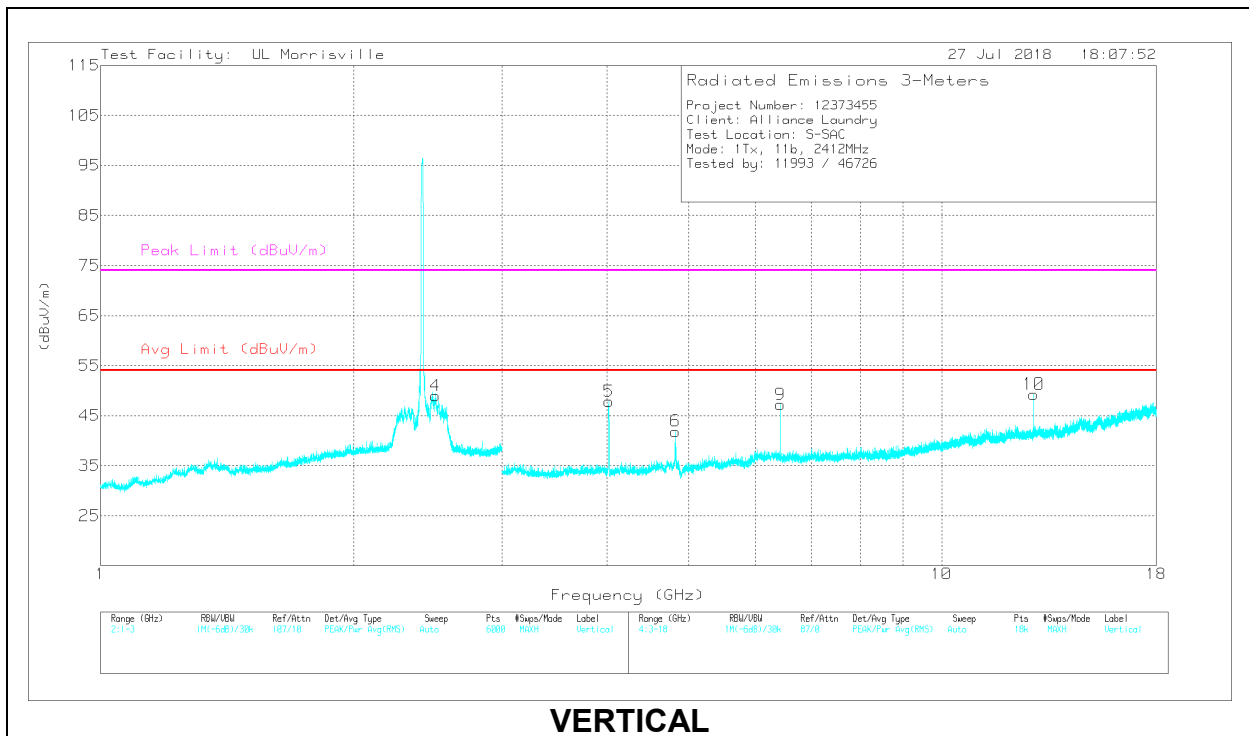
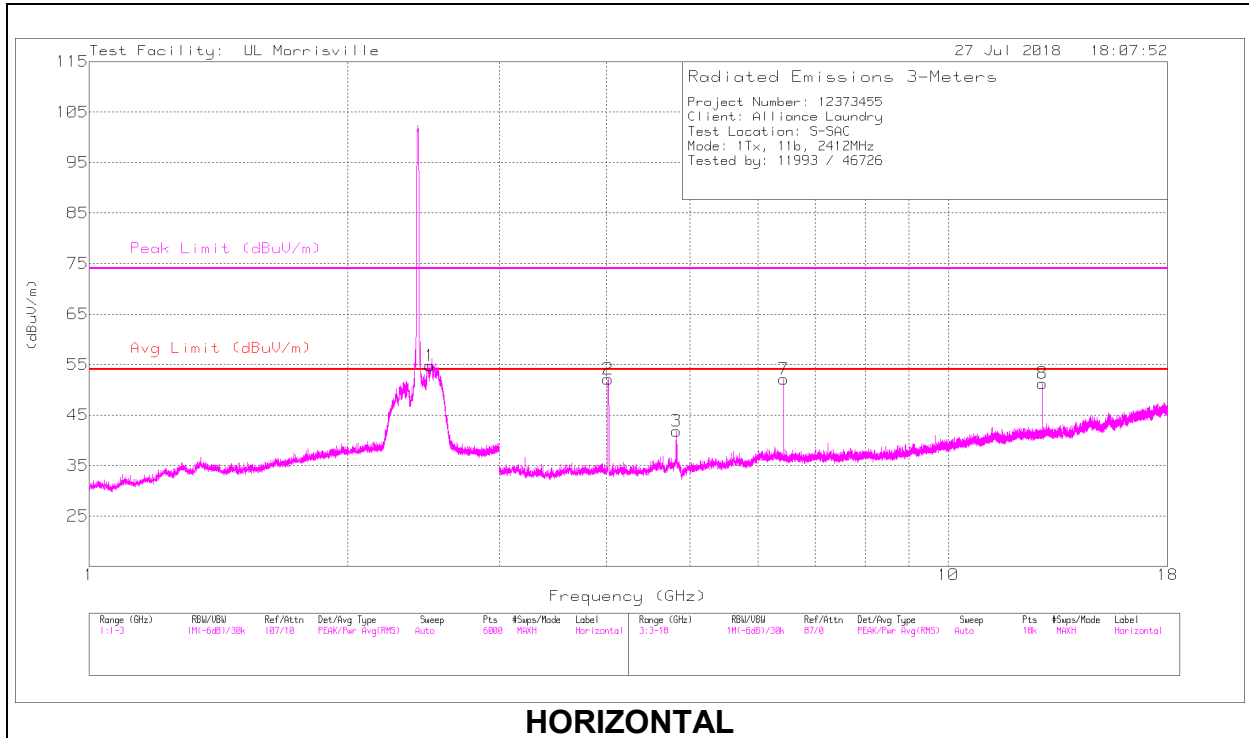


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.484	46.97	Pk	32.4	-24.6	0	54.77	-	-	74	-19.23	200	376	V
2	* ** 2.492	50.29	Pk	32.4	-24.7	0	57.99	-	-	74	-16.01	200	376	V
3	* ** 2.484	34.24	RMS	32.4	-24.6	5.15	47.19	54	-6.81	-	-	200	376	V
4	* ** 2.496	35.89	RMS	32.3	-24.7	5.15	48.64	54	-5.36	-	-	200	376	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL, CH 1 RESULTS



**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.493	54.48	PK2	32.4	-24.7	0	62.18	-	-	74	-11.82	110	292	H
	*** 2.495	39.5	MAv1	32.3	-24.7	5.15	52.25	54	-1.75	-	-	110	292	H
2	*** 4.019	56.07	PK2	33.3	-32.3	0	57.07	-	-	74	-16.93	207	159	H
	*** 4.019	45.46	MAv1	33.3	-32.3	5.15	51.61	54	-2.39	-	-	207	159	H
3	*** 4.824	44.2	PK2	34	-31	0	47.2	-	-	74	-26.8	132	245	H
	*** 4.824	29.58	MAv1	34	-31	5.15	37.73	54	-16.27	-	-	132	245	H
7	6.432	45.63	Pk	35.4	-28.9	0	52.13	-	-	-	-	0-360	102	H
8	12.865	36.88	Pk	39	-24.6	0	51.28	-	-	-	-	0-360	102	H
4	*** 2.497	51.19	PK2	32.3	-24.7	0	58.79	-	-	74	-15.21	4	266	V
	*** 2.499	36.78	MAv1	32.3	-24.7	5.15	49.53	54	-4.47	-	-	4	266	V
5	*** 4.019	51.94	PK2	33.3	-32.3	0	52.94	-	-	74	-21.06	21	221	V
	*** 4.02	41.24	MAv1	33.3	-32.3	5.15	47.39	54	-6.61	-	-	21	221	V
6	*** 4.824	42.3	PK2	34	-31	0	45.3	-	-	74	-28.7	343	252	V
	*** 4.824	29.39	MAv1	34	-31	5.15	37.54	54	-16.46	-	-	343	252	V
9	6.432	40.72	Pk	35.4	-28.9	0	47.22	-	-	-	-	0-360	199	V
10	12.865	34.88	Pk	39	-24.6	0	49.28	-	-	-	-	0-360	101	V

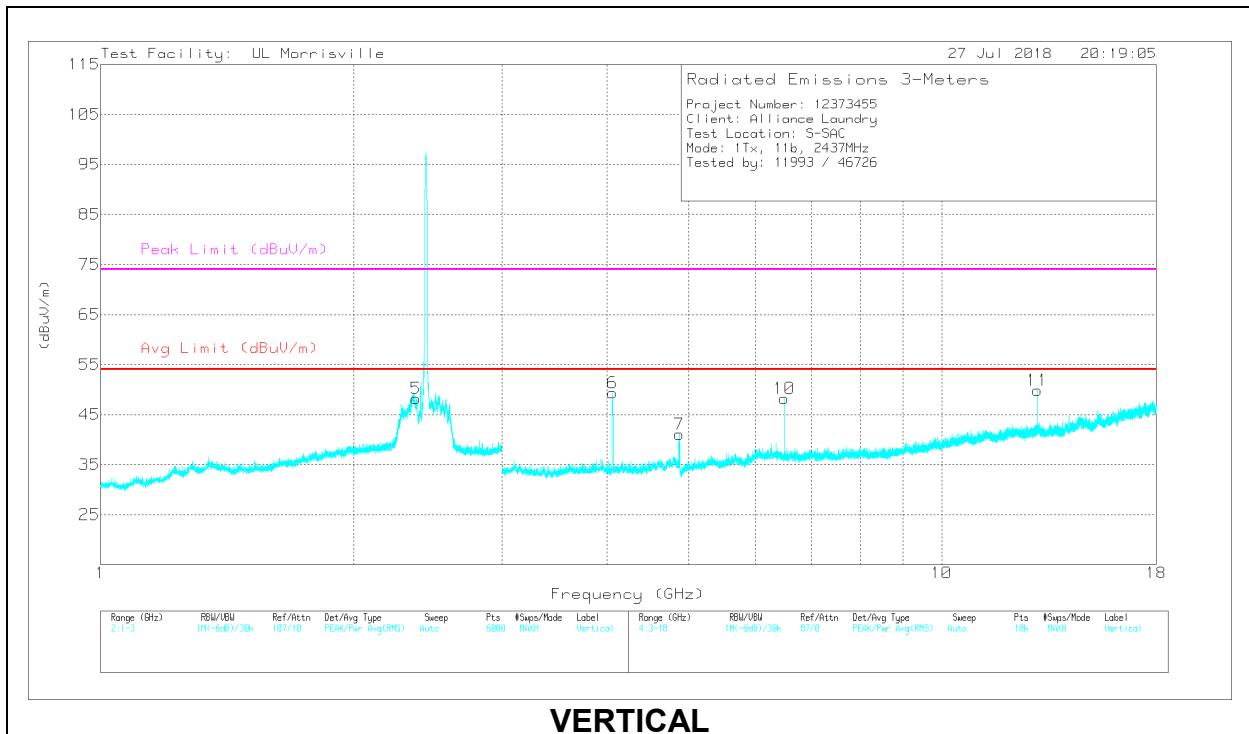
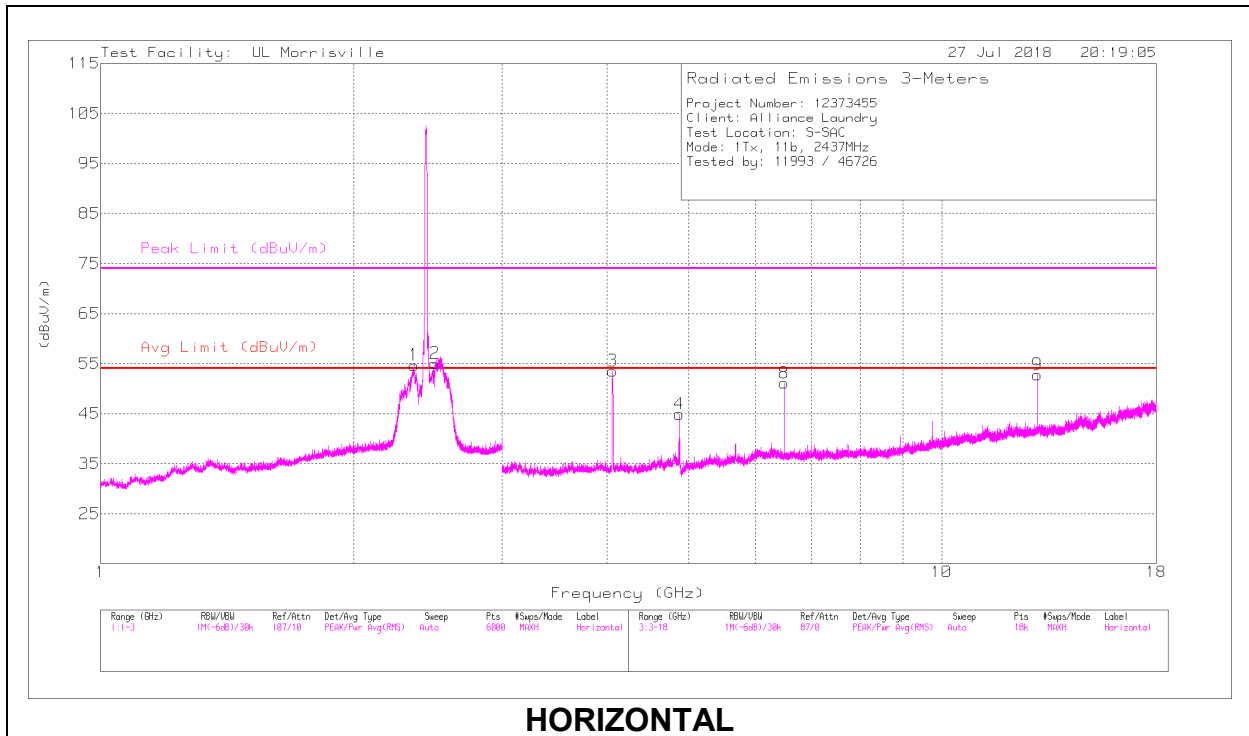
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

PK2 - Maximum Peak

MAv1 - Maximum RMS Average

### MID CHANNEL, CH 6 RESULTS



**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.358	52.07	PK2	31.7	-24	0	59.77	-	-	74	-14.23	146	131	H
	* ** 2.357	37.58	MAv1	31.7	-24	5.15	50.43	54	-3.57	-	-	146	131	H
2	* ** 2.5	54.01	PK2	32.3	-24.7	0	61.61	-	-	74	-12.39	309	270	H
	* ** 2.5	40.09	MAv1	32.3	-24.7	5.15	52.84	54	-1.16	-	-	309	270	H
5	* ** 2.369	47.71	PK2	31.8	-24.1	0	55.41	-	-	74	-18.59	266	330	V
	* ** 2.371	33.54	MAv1	31.9	-24.1	5.15	46.49	54	-7.51	-	-	266	330	V
3	* ** 4.061	57.43	PK2	33.4	-32.7	0	58.13	-	-	74	-15.87	215	110	H
	* ** 4.062	46.99	MAv1	33.4	-32.7	5.15	52.84	54	-1.16	-	-	215	110	H
4	* ** 4.874	43.28	PK2	34	-30.9	0	46.38	-	-	74	-27.62	188	193	H
	* ** 4.874	29.5	MAv1	34	-30.9	5.15	37.75	54	-16.25	-	-	188	193	H
6	* ** 4.061	54.2	PK2	33.4	-32.7	0	54.9	-	-	74	-19.1	11	244	V
	* ** 4.061	43.25	MAv1	33.4	-32.7	5.15	49.1	54	-4.9	-	-	11	244	V
7	* ** 4.88	42.65	PK2	34	-30.9	0	45.75	-	-	74	-28.25	340	112	V
	* ** 4.88	31.18	MAv1	34	-30.9	5.15	39.43	54	-14.57	-	-	340	112	V
8	6.499	45.19	Pk	35.4	-29.5	0	51.09	-	-	-	-	0-360	102	H
10	6.499	42.35	Pk	35.4	-29.5	0	48.25	-	-	-	-	0-360	101	V
9	12.997	37.68	Pk	39.1	-24	0	52.78	-	-	-	-	0-360	102	H
11	12.998	34.77	Pk	39.1	-24	0	49.87	-	-	-	-	0-360	200	V

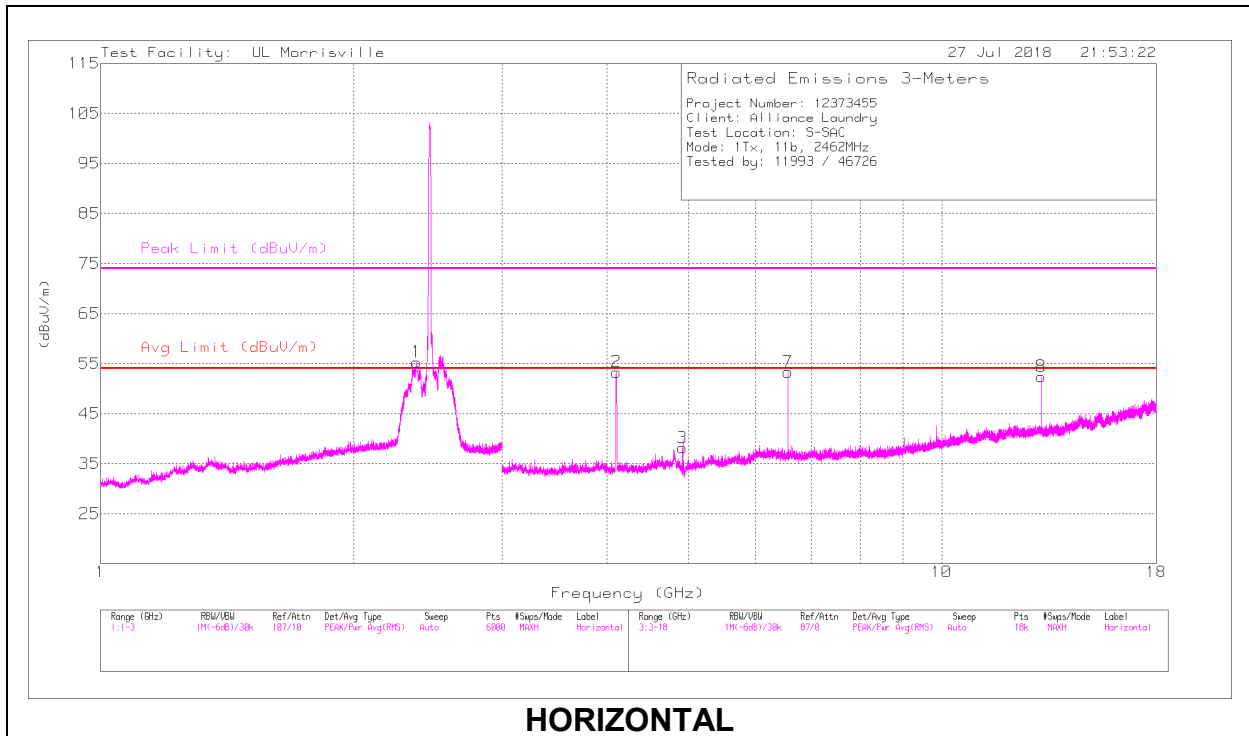
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

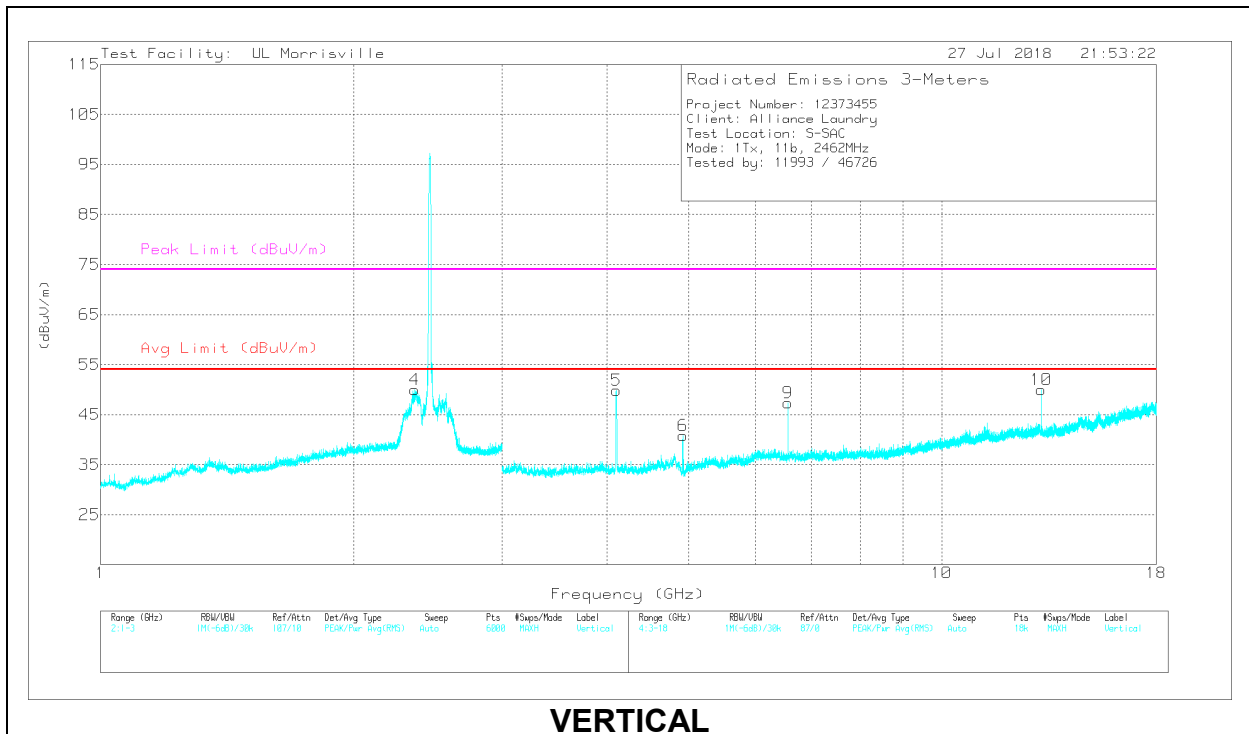
PK2 - Maximum Peak

MAv1 - Maximum RMS Average

### HIGH CHANNEL, CH 11 RESULTS



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.377	53.69	PK2	31.9	-24.1	0	61.49	-	-	74	-12.51	143	197	H
	*** 2.376	39.57	MAv1	31.9	-24.1	5.15	52.52	54	-1.48	-	-	143	197	H
4	*** 2.363	49.08	PK2	31.8	-24	0	56.88	-	-	74	-17.12	248	298	V
	*** 2.362	33.81	MAv1	31.8	-24	5.15	46.76	54	-7.24	-	-	248	298	V
2	*** 4.103	56.35	PK2	33.5	-32.4	0	57.45	-	-	74	-16.55	225	203	H
	*** 4.104	46.49	MAv1	33.5	-32.4	5.15	52.74	54	-1.26	-	-	225	203	H
3	*** 4.918	44.32	PK2	34	-31	0	47.32	-	-	74	-26.68	187	109	H
	*** 4.919	32.23	MAv1	34	-31	5.15	40.38	54	-13.62	-	-	187	109	H
5	*** 4.104	53.95	PK2	33.5	-32.4	0	55.05	-	-	74	-18.95	16	226	V
	*** 4.104	43.54	MAv1	33.5	-32.4	5.15	49.79	54	-4.21	-	-	16	226	V
6	*** 4.924	45.9	PK2	34	-31	0	48.9	-	-	74	-25.1	74	252	V
	*** 4.924	31.31	MAv1	34	-31	5.15	39.46	54	-14.54	-	-	74	252	V
7	6.565	46.83	Pk	35.4	-28.9	0	53.33	-	-	-	-	0-360	102	H
9	6.565	40.87	Pk	35.4	-28.9	0	47.37	-	-	-	-	0-360	101	V
8	13.131	37.71	Pk	39	-24.3	0	52.41	-	-	-	-	0-360	102	H
10	13.131	35.25	Pk	39	-24.3	0	49.95	-	-	-	-	0-360	101	V

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

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

PK2 - Maximum Peak

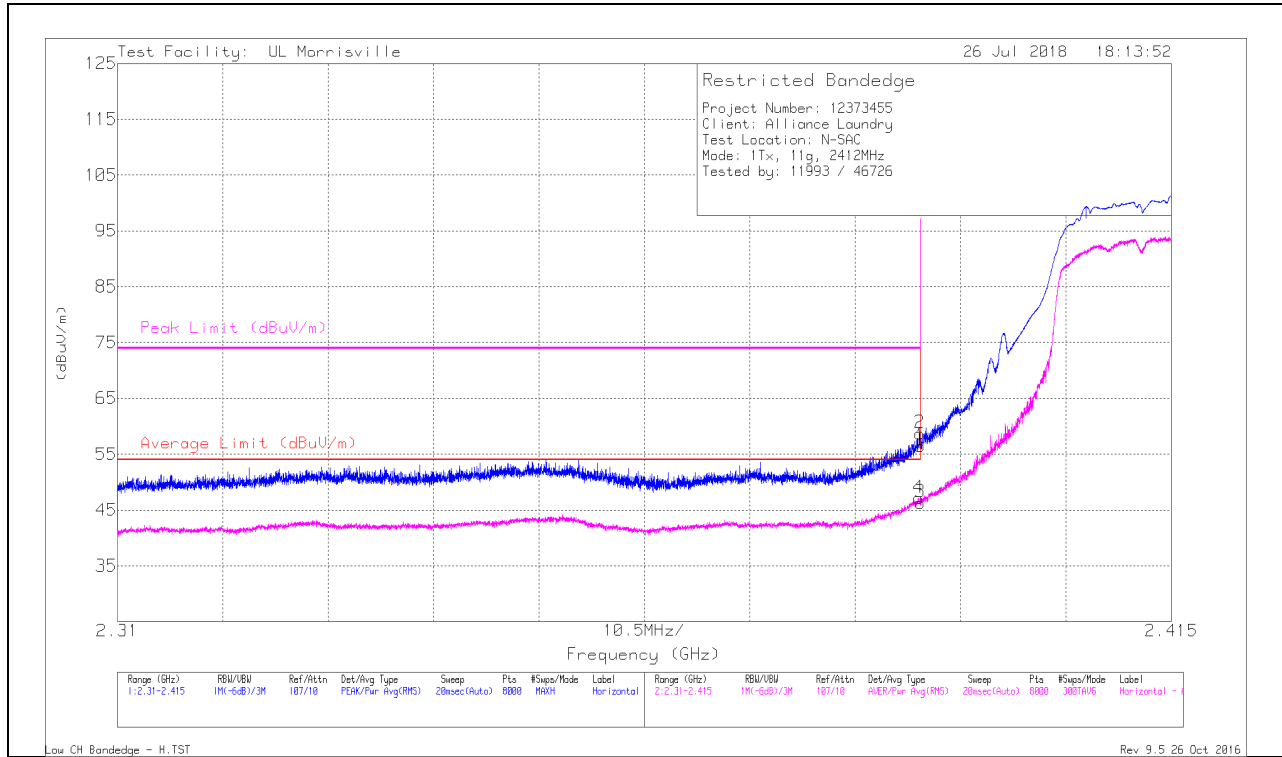
MAv1 - Maximum RMS Average



### 9.1.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

#### BANDEDGE (LOW CHANNEL, CH 1)

#### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (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	48.98	Pk	32	-24.5	0	56.48	-	-	74	-17.52	232	189	H
2	*** 2.39	51.26	Pk	32	-24.5	0	58.76	-	-	74	-15.24	232	189	H
3	*** 2.39	32.9	RMS	32	-24.5	5.95	46.35	54	-7.65	-	-	232	189	H
4	*** 2.39	33.66	RMS	32	-24.5	5.95	47.11	54	-6.89	-	-	232	189	H

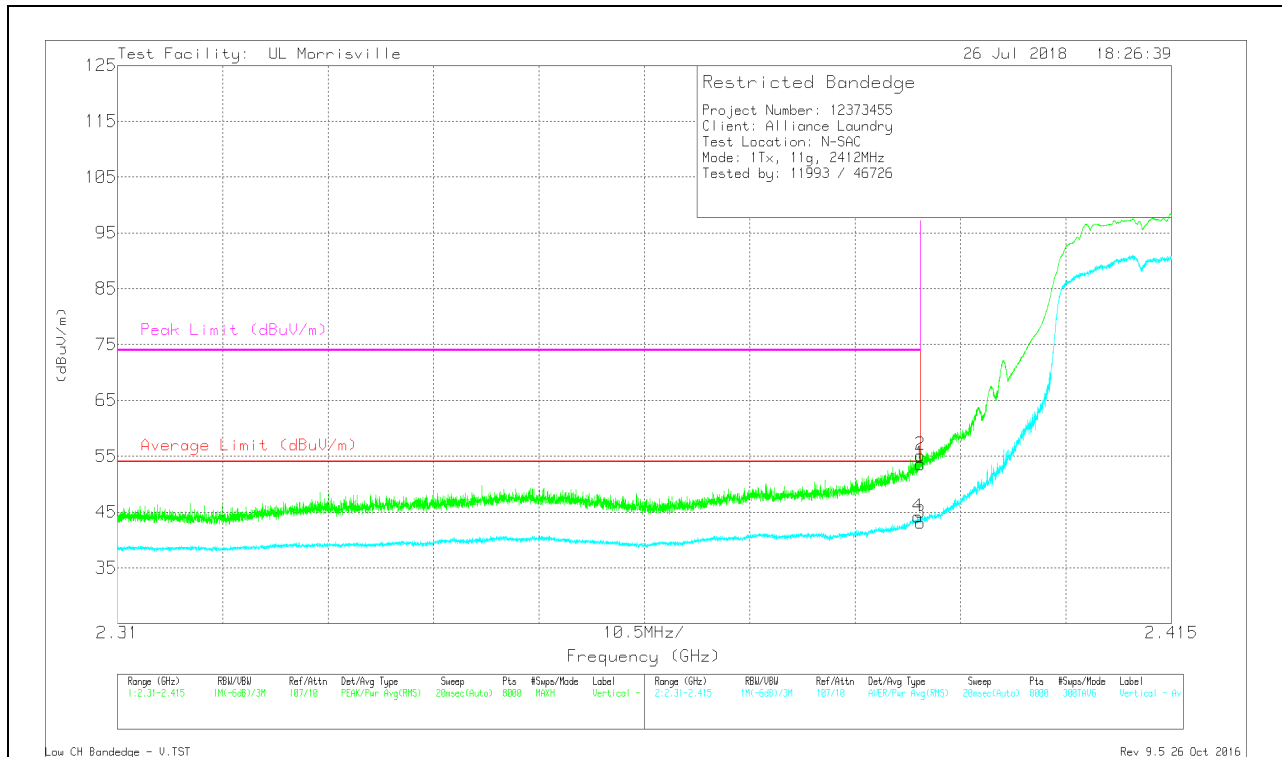
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

RMS - RMS detection

**VERTICAL RESULT**

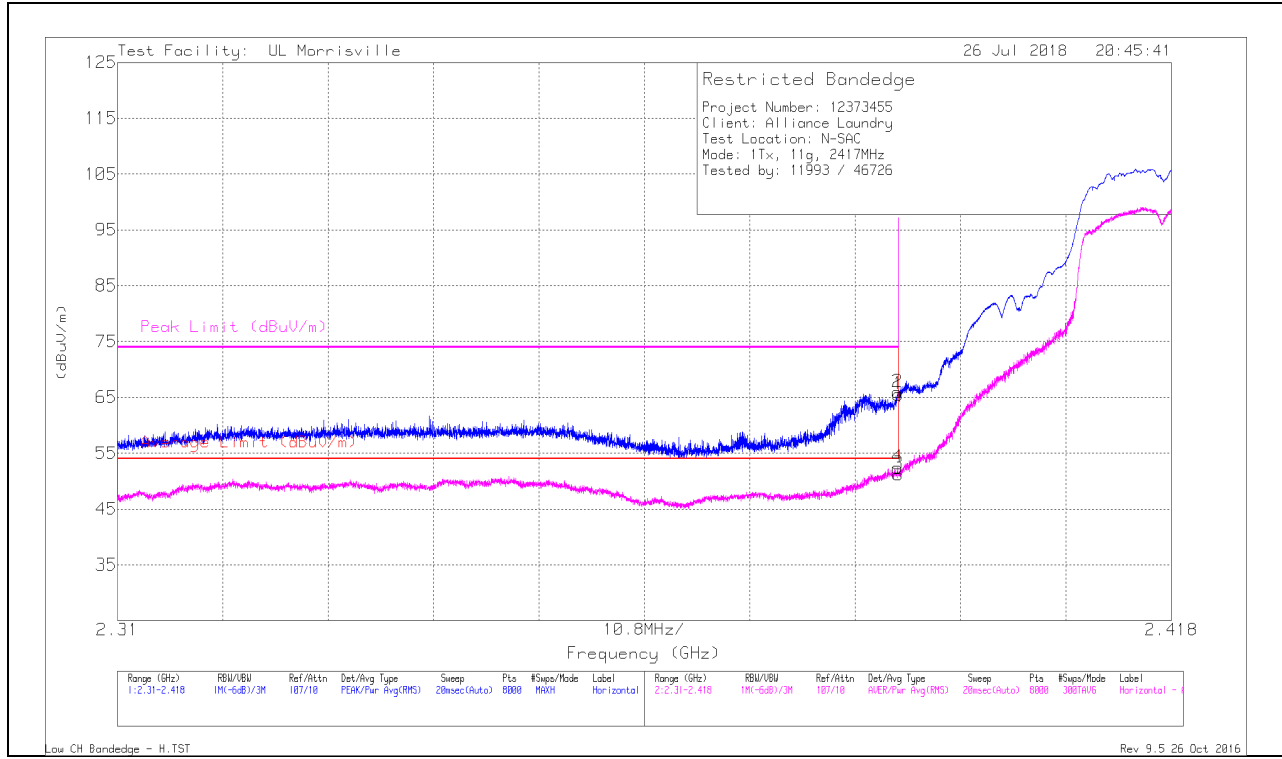


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.39	46.11	Pk	32	-24.5	0	53.61	-	-	74	-20.39	196	204	V
2	*** 2.39	47.7	Pk	32	-24.5	0	55.2	-	-	74	-18.8	196	204	V
3	*** 2.39	29.67	RMS	32	-24.5	5.95	43.12	54	-10.88	-	-	196	204	V
4	*** 2.39	30.71	RMS	32	-24.5	5.95	44.16	54	-9.84	-	-	196	204	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

## BANDEDGE (LOW CHANNEL, CH 2)

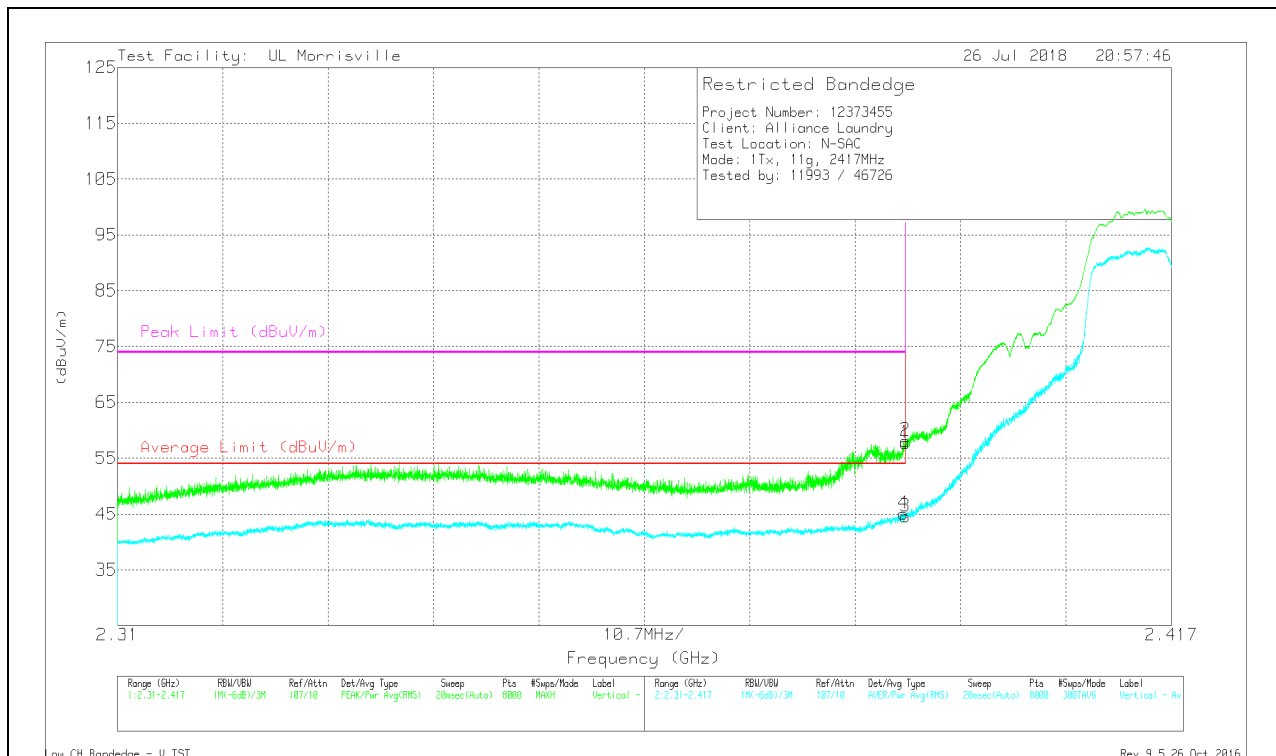
### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (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	58.03	Pk	32	-24.5	0	65.53	-	-	74	-8.47	258	103	H
2	*** 2.39	58.47	Pk	32	-24.5	0	65.97	-	-	74	-8.03	258	103	H
3	*** 2.39	37.79	RMS	32	-24.5	5.95	51.24	54	-2.76	-	-	258	103	H
4	*** 2.39	38.94	RMS	32	-24.5	5.95	52.39	54	-1.61	-	-	258	103	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

### VERTICAL RESULT

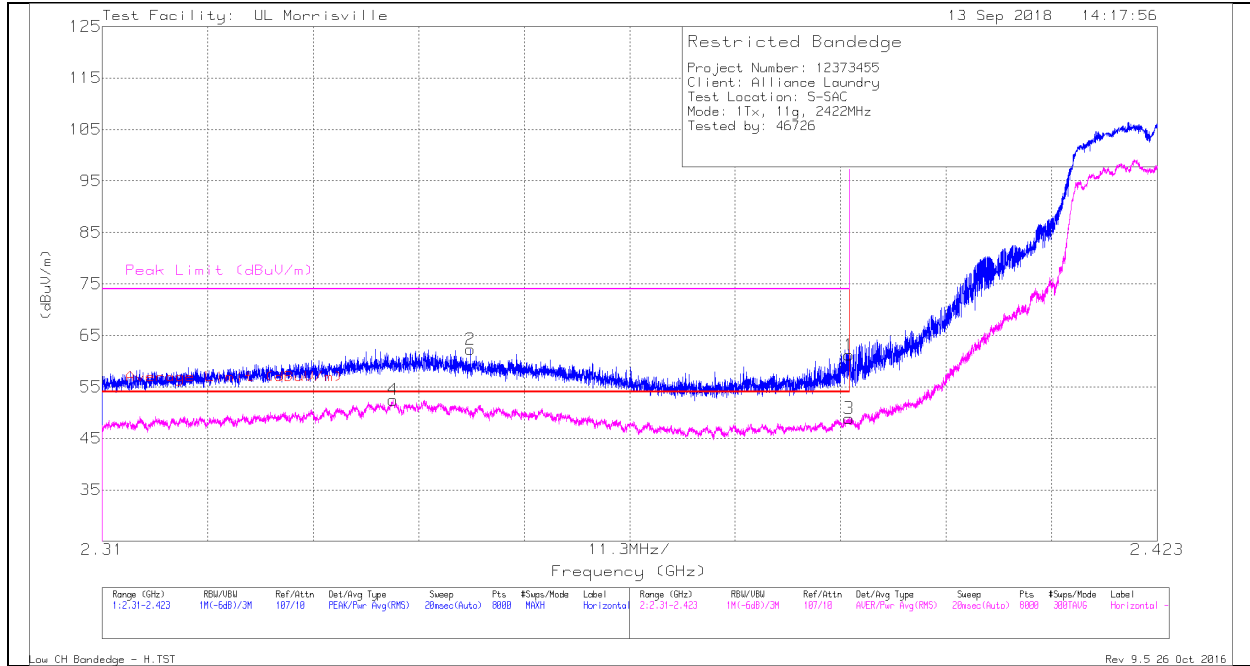


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.39	50.22	Pk	32	-24.5	0	57.72	-	-	74	-16.28	240	217	V
2	*** 2.39	50.63	Pk	32	-24.5	0	58.13	-	-	74	-15.87	240	217	V
3	*** 2.39	31.1	RMS	32	-24.5	5.95	44.55	54	-9.45	-	-	240	217	V
4	*** 2.39	31.62	RMS	32	-24.5	5.95	45.07	54	-8.93	-	-	240	217	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

### BANDEGE (LOW CHANNEL, CH 3)

### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (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	53.27	Pk	32	-24.1	0	61.17	-	-	74	-12.83	156	206	H
2	* ** 2.349	54.49	Pk	31.7	-23.9	0	62.29	-	-	74	-11.71	156	206	H
3	* ** 2.39	35.03	RMS	32	-24.1	5.95	48.88	54	-5.12	-	-	156	206	H
4	* ** 2.341	38.73	RMS	31.7	-23.9	5.95	52.48	54	-1.52	-	-	156	206	H

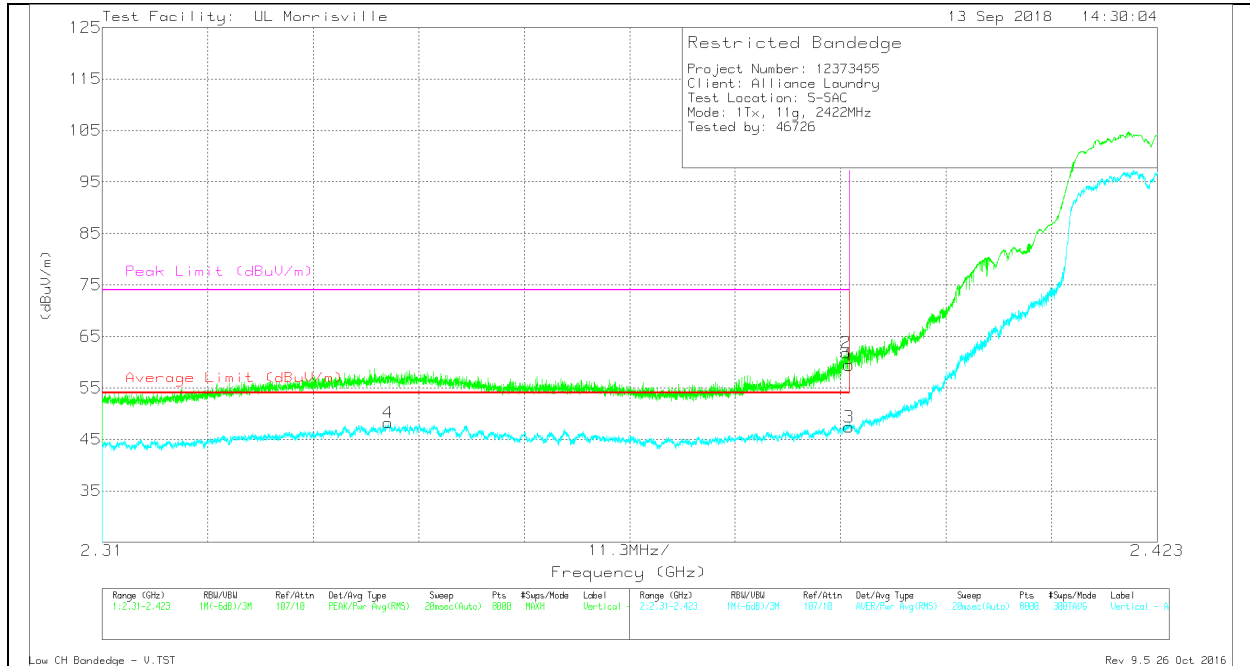
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

RMS - RMS detection

**VERTICAL RESULT**

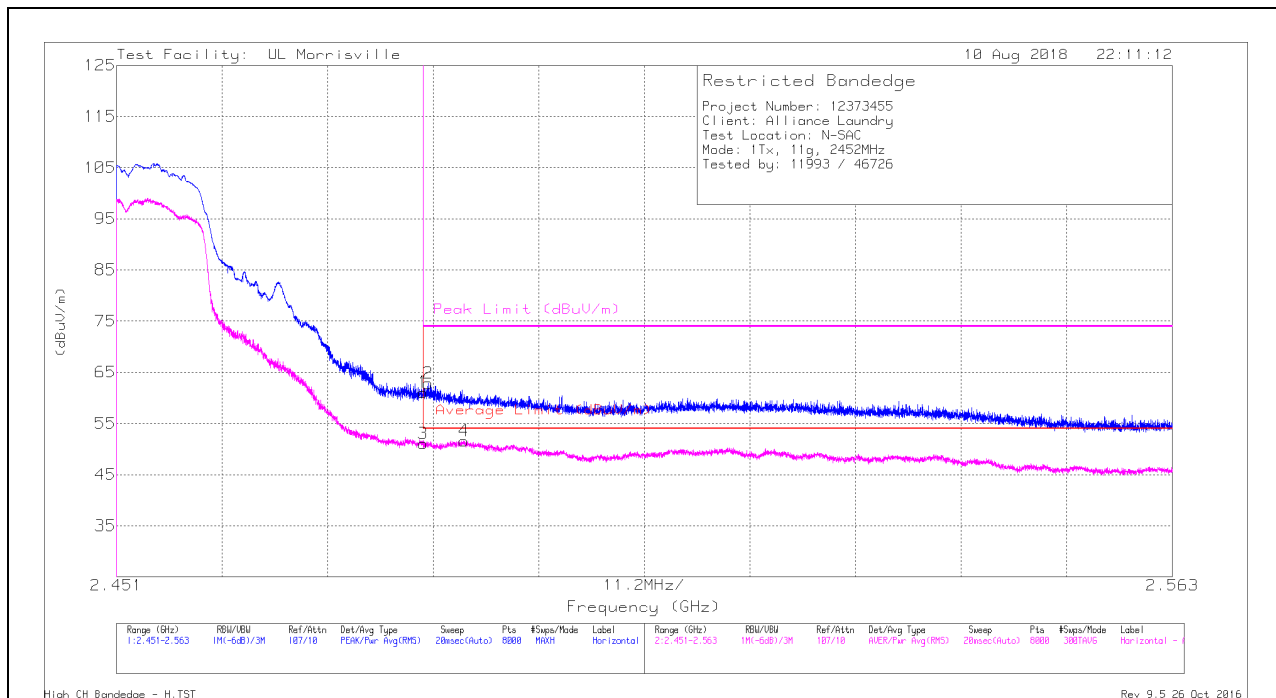


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cb/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	*** 2.341	34.47	RMS	31.7	-23.9	5.95	48.22	54	-5.78	-	-	260	231	V
1	*** 2.39	51.55	Pk	32	-24.1	0	59.45	-	-	74	-14.55	260	231	V
2	*** 2.39	53.88	Pk	32	-24.1	0	61.78	-	-	74	-12.22	260	231	V
3	*** 2.39	33.51	RMS	32	-24.1	5.95	47.36	54	-6.64	-	-	260	231	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

## BANDEDGE (HIGH CHANNEL, CH 9)

### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (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	53.28	Pk	32.4	-24.6	0	61.08	-	-	74	-12.92	303	351	H
2	* ** 2.484	55.03	Pk	32.4	-24.6	0	62.83	-	-	74	-11.17	303	351	H
3	* ** 2.484	37.34	RMS	32.4	-24.6	5.95	51.09	54	-2.91	-	-	303	351	H
4	* ** 2.488	37.86	RMS	32.4	-24.6	5.95	51.61	54	-2.39	-	-	303	351	H

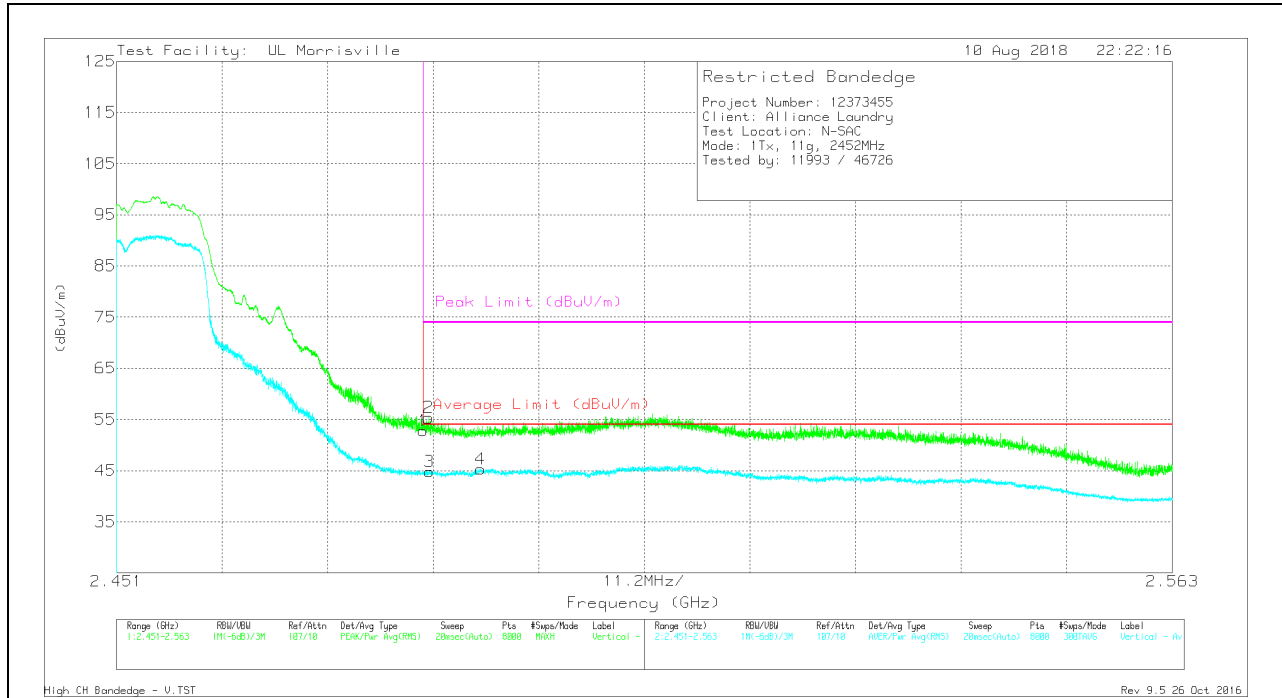
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

RMS - RMS detection

**VERTICAL RESULT**



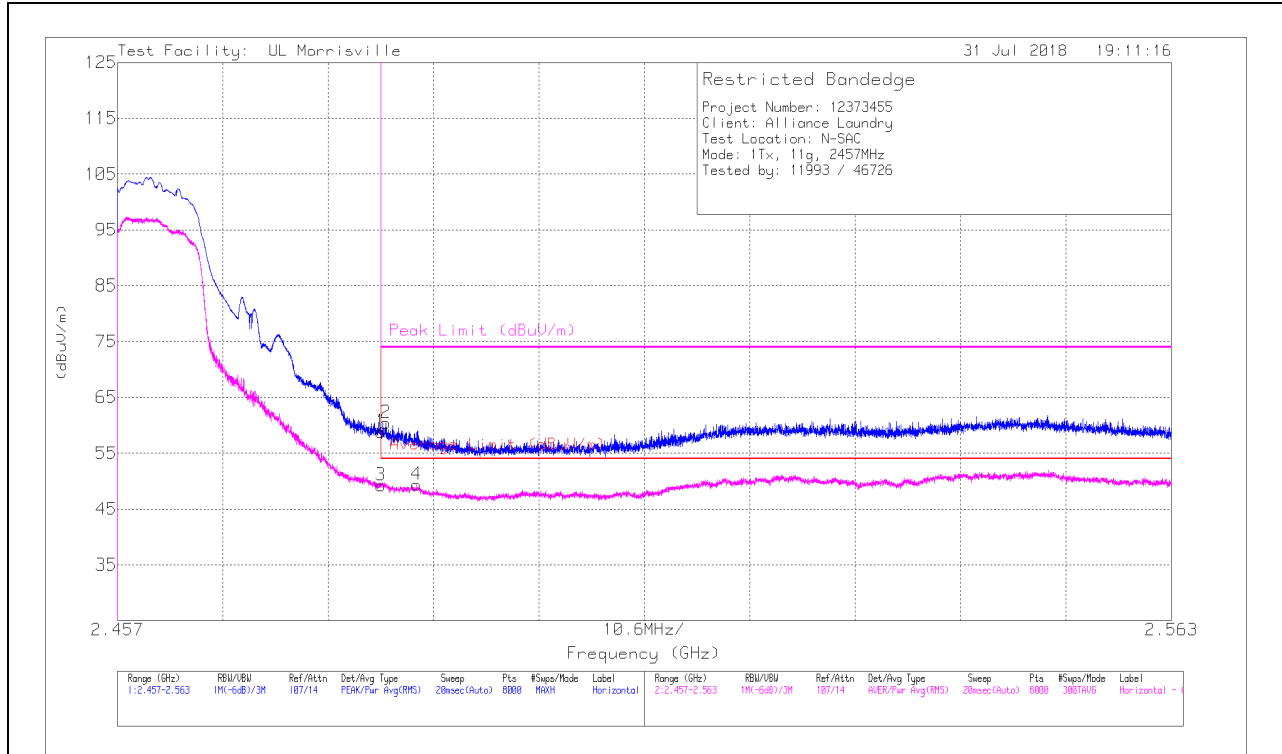
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.484	45.03	Pk	32.4	-24.6	0	52.83	-	-	74	-21.17	41	388	V
2	*** 2.484	47.54	Pk	32.4	-24.6	0	55.34	-	-	74	-18.66	41	388	V
3	*** 2.484	31.08	RMS	32.4	-24.6	5.95	44.83	54	-9.17	-	-	41	388	V
4	*** 2.49	31.62	RMS	32.4	-24.7	5.95	45.27	54	-8.73	-	-	41	388	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection



## BANEDGE (HIGH CHANNEL, CH 10)

### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (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	50.84	Pk	32.4	-24.4	0	58.84	-	-	74	-15.16	66	177	H
2	* ** 2.484	52.44	Pk	32.4	-24.4	0	60.44	-	-	74	-13.56	66	177	H
3	* ** 2.484	35.27	RMS	32.4	-24.4	5.95	49.22	54	-4.78	-	-	66	177	H
4	* ** 2.487	35.44	RMS	32.4	-24.4	5.95	49.39	54	-4.61	-	-	66	177	H

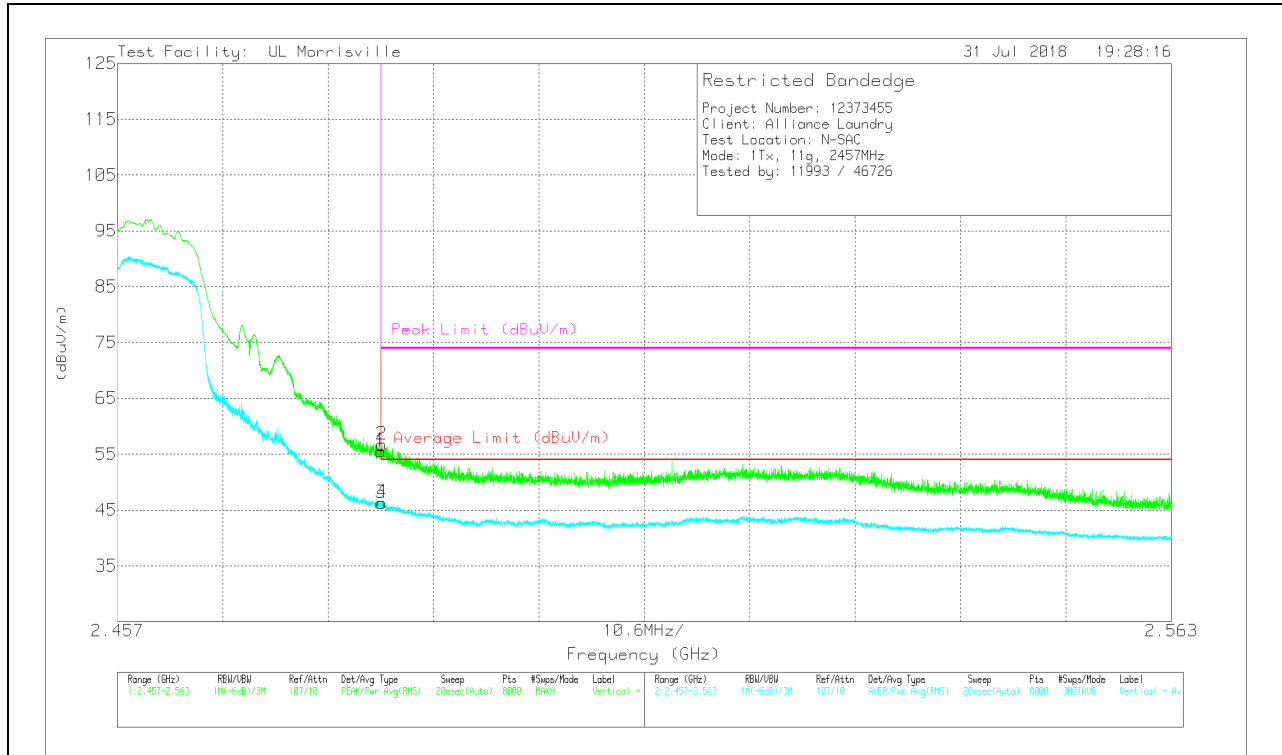
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

RMS - RMS detection

**VERTICAL RESULT**

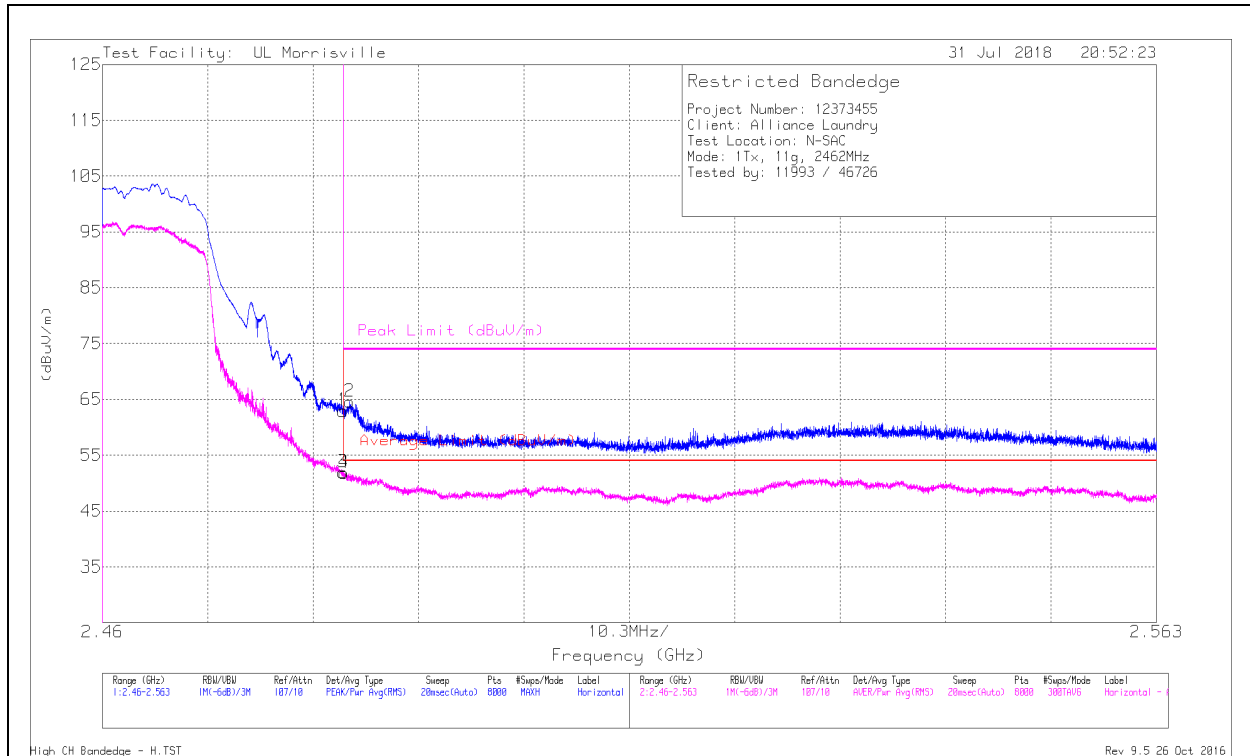


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.484	47.55	Pk	32.4	-24.4	0	55.55	-	-	74	-18.45	174	225	V
2	* ** 2.484	48.69	Pk	32.4	-24.4	0	56.69	-	-	74	-17.31	174	225	V
3	* ** 2.484	32.3	RMS	32.4	-24.4	5.95	46.25	54	-7.75	-	-	174	225	V
4	* ** 2.484	32.38	RMS	32.4	-24.4	5.95	46.33	54	-7.67	-	-	174	225	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

## BANEDGE (HIGH CHANNEL, CH 11)

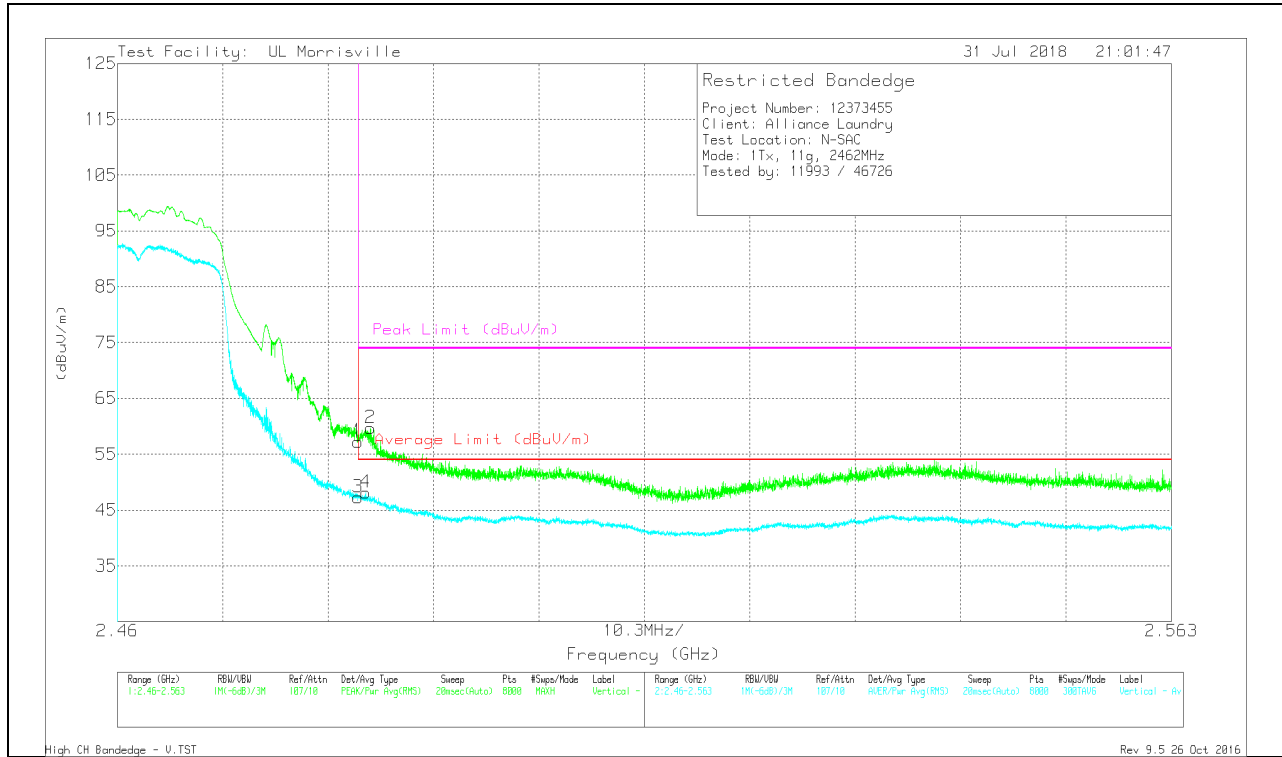
### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (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	54.95	Pk	32.4	-24.4	0	62.95	-	-	74	-11.05	62	208	H
2	* ** 2.484	56.61	Pk	32.4	-24.4	0	64.61	-	-	74	-9.39	62	208	H
3	* ** 2.484	38.01	RMS	32.4	-24.4	5.95	51.96	54	-2.04	-	-	62	208	H
4	* ** 2.484	37.87	RMS	32.4	-24.4	5.95	51.82	54	-2.18	-	-	62	208	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

**VERTICAL RESULT**

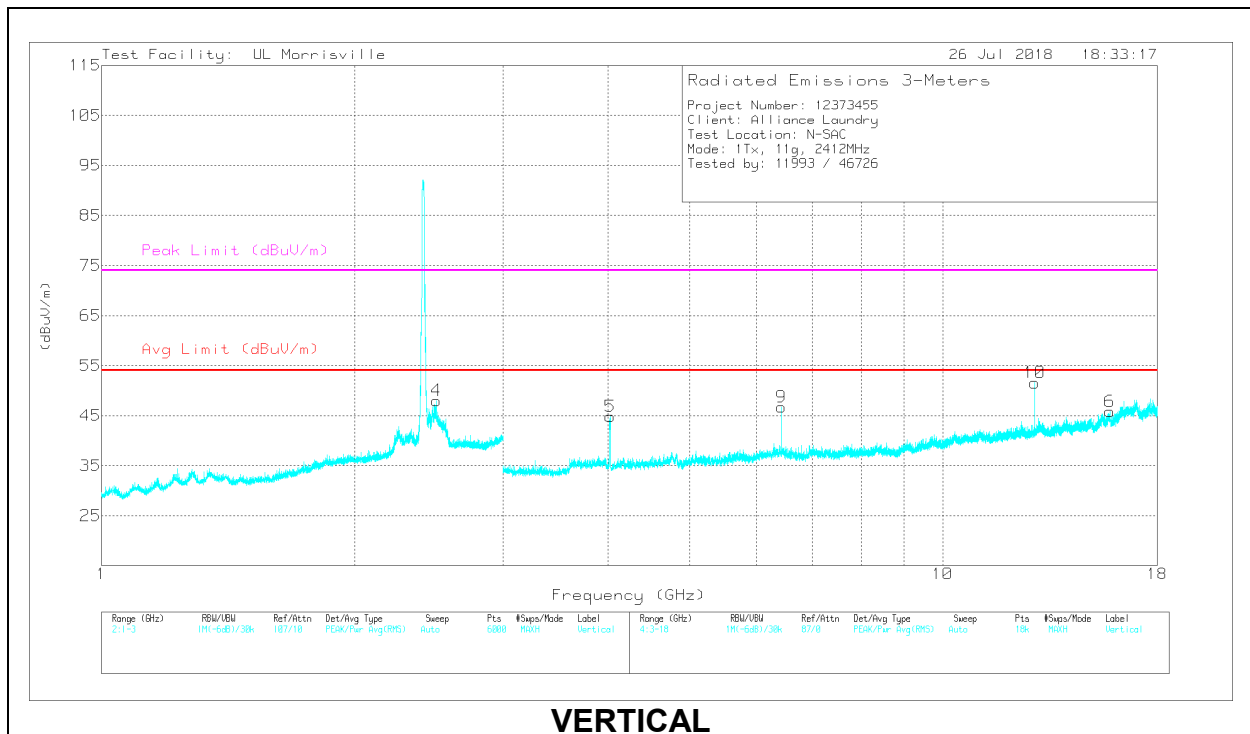
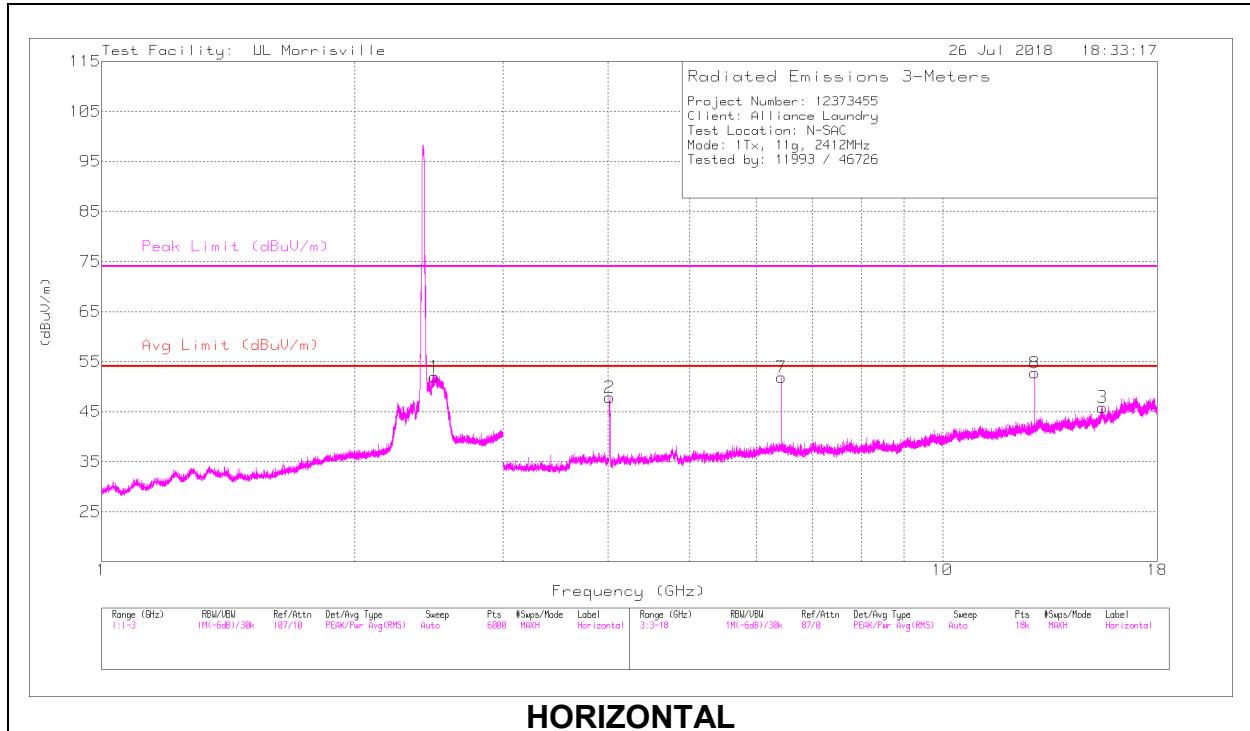


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.484	49.26	Pk	32.4	-24.4	0	57.26	-	-	74	-16.74	203	317	V
2	* ** 2.485	51.71	Pk	32.4	-24.4	0	59.71	-	-	74	-14.29	203	317	V
3	* ** 2.484	33.3	RMS	32.4	-24.4	5.95	47.25	54	-6.75	-	-	203	317	V
4	* ** 2.484	34.21	RMS	32.4	-24.4	5.95	48.16	54	-5.84	-	-	203	317	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL, CH 1 RESULTS



**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.487	52.17	PK2	32.4	-24.4	0	60.17	-	-	74	-13.83	236	314	H
	*** 2.489	35.93	MAv1	32.3	-24.4	5.95	49.78	54	-4.22	-	-	236	314	H
4	*** 2.498	47.37	PK2	32.3	-24.4	0	55.27	-	-	74	-18.73	198	244	V
	*** 2.496	31.01	MAv1	32.3	-24.4	5.95	44.86	54	-9.14	-	-	198	244	V
2	*** 4.019	53.37	PK2	33.5	-32.3	0	54.57	-	-	74	-19.43	143	108	H
	*** 4.021	40.44	MAv1	33.5	-32.4	5.95	47.49	54	-6.51	-	-	143	108	H
3	** 15.492	35.1	PK2	40.2	-24.1	0	51.2	-	-	74	-22.8	277	182	H
	** 15.494	23.72	MAv1	40.2	-24.1	5.95	45.77	54	-8.23	-	-	277	182	H
5	** 4.024	46.32	PK2	33.5	-32.5	0	47.32	-	-	74	-26.68	277	198	V
	*** 4.023	33.53	MAv1	33.5	-32.4	5.95	40.58	54	-13.42	-	-	277	198	V
6	*** 15.805	36.37	PK2	40.2	-25.1	0	51.47	-	-	74	-22.53	157	275	V
	*** 15.804	24.91	MAv1	40.2	-25.1	5.95	45.96	54	-8.04	-	-	157	275	V
7	6.432	46.98	Pk	35.5	-30.6	0	51.88	-	-	-	-	0-360	102	H
9	6.432	41.81	Pk	35.5	-30.6	0	46.71	-	-	-	-	0-360	102	V
8	12.865	40.93	Pk	39.2	-27.4	0	52.73	-	-	-	-	0-360	102	H
10	12.865	39.77	Pk	39.2	-27.4	0	51.57	-	-	-	-	0-360	102	V

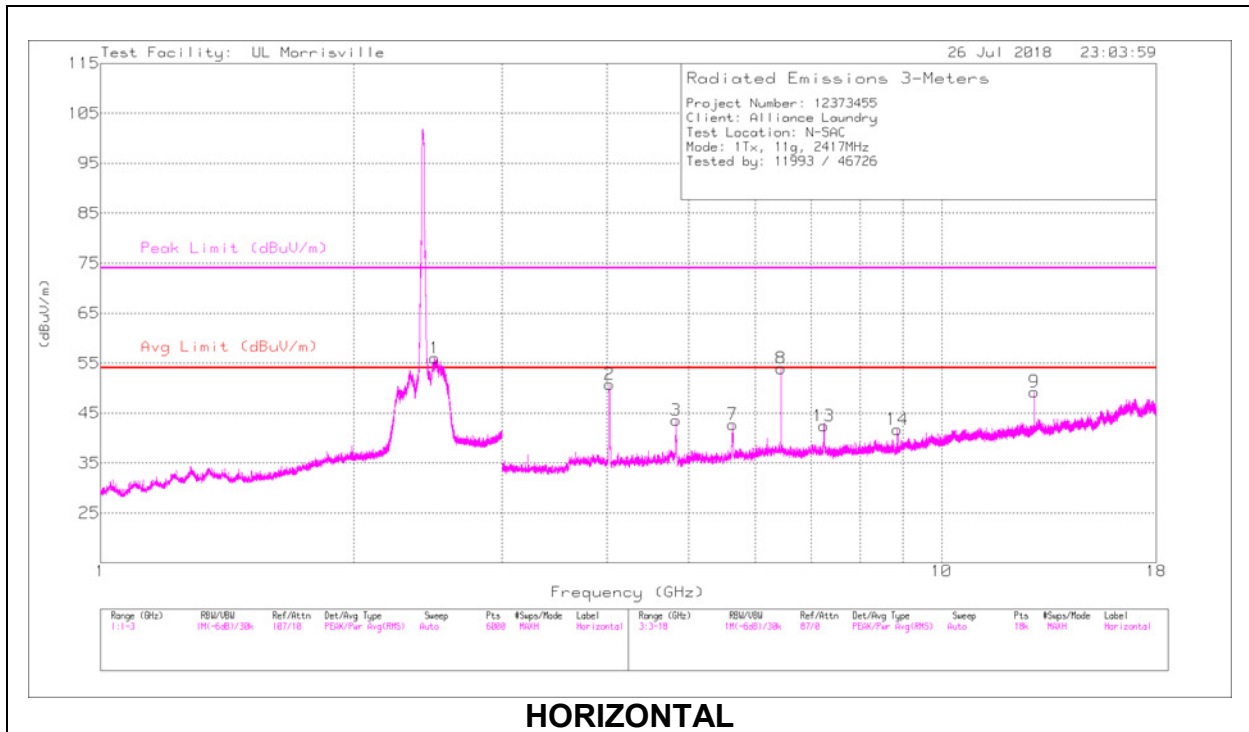
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

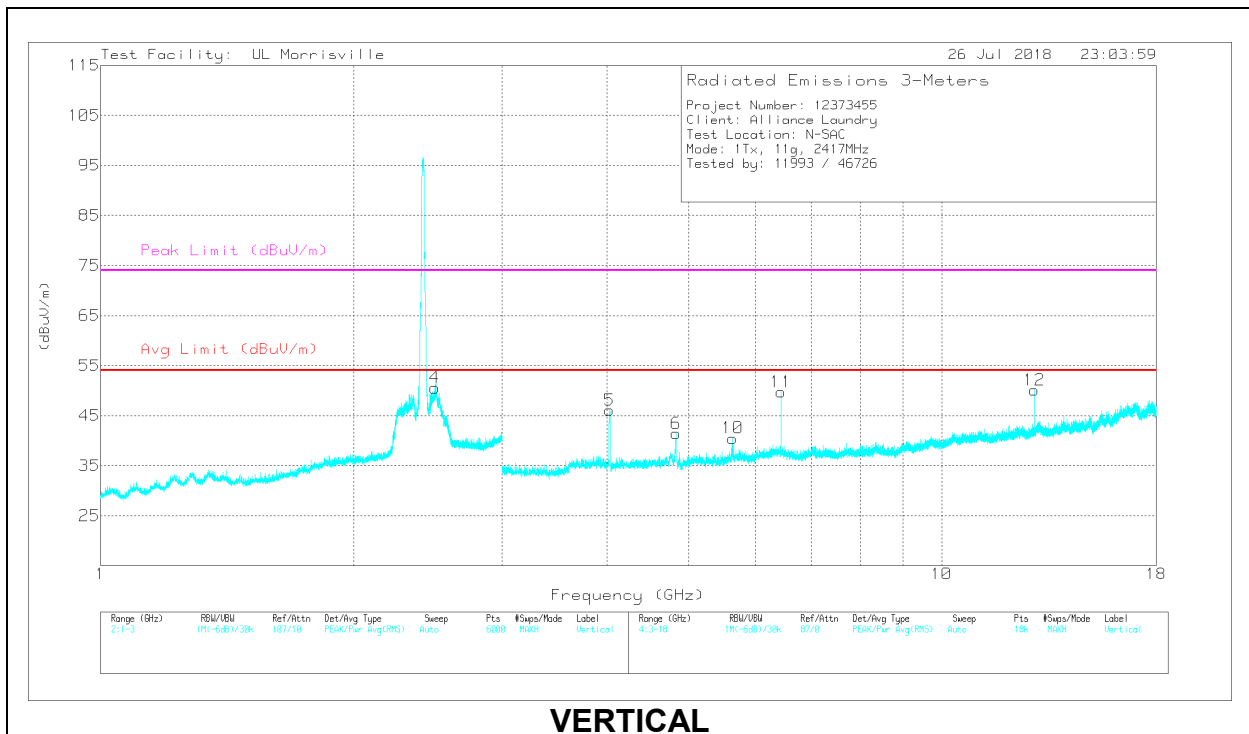
PK2 - Maximum Peak

MAv1 - Maximum RMS Average

### LOW CHANNEL, CH 2 RESULTS



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.498	54.96	PK2	32.3	-24.4	0	62.86	-	-	74	-11.14	82	210	H
	* ** 2.497	38.74	MAv1	32.3	-24.4	5.95	52.59	54	-1.41	-	-	82	210	H
4	* ** 2.494	51.65	PK2	32.3	-24.4	0	59.55	-	-	74	-14.45	191	279	V
	* ** 2.5	35.26	MAv1	32.3	-24.4	5.95	49.11	54	-4.89	-	-	191	279	V
2	* ** 4.027	57.43	PK2	33.5	-32.5	0	58.43	-	-	74	-15.57	147	134	H
	* ** 4.027	44.24	MAv1	33.5	-32.5	5.95	51.19	54	-2.81	-	-	147	134	H
3	* ** 4.832	48.13	PK2	34.1	-31.6	0	50.63	-	-	74	-23.37	136	109	H
	* ** 4.833	33.04	MAv1	34.1	-31.6	5.95	41.49	54	-12.51	-	-	136	109	H
5	* ** 4.03	51.91	PK2	33.5	-32.6	0	52.81	-	-	74	-21.19	321	237	V
	* ** 4.029	39.14	MAv1	33.5	-32.6	5.95	45.99	54	-8.01	-	-	321	237	V
6	* ** 4.832	47.81	PK2	34.1	-31.6	0	50.31	-	-	74	-23.69	349	286	V
	* ** 4.832	32.76	MAv1	34.1	-31.6	5.95	41.21	54	-12.79	-	-	349	286	V
7	5.64	NOTE	PK	34.5	-32.1	0	NOTE	-	-	-	-	0-360	199	H
10	5.64	38.1	PK	34.5	-32.1	0	40.5	-	-	-	-	0-360	199	V
8	6.445	49.06	PK	35.5	-30.6	0	53.96	-	-	-	-	0-360	102	H
11	6.445	44.83	PK	35.5	-30.6	0	49.73	-	-	-	-	0-360	102	V
9	12.891	37.46	PK	39.2	-27.4	0	49.26	-	-	-	-	0-360	102	H
12	12.891	38.27	PK	39.2	-27.4	0	50.07	-	-	-	-	0-360	199	V
13	7.245	36.43	PK	35.6	-29.6	0	42.43	-	-	-	-	0-360	102	H
14	8.864	34.13	PK	36.2	-28.6	0	41.73	-	-	-	-	0-360	199	H

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

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

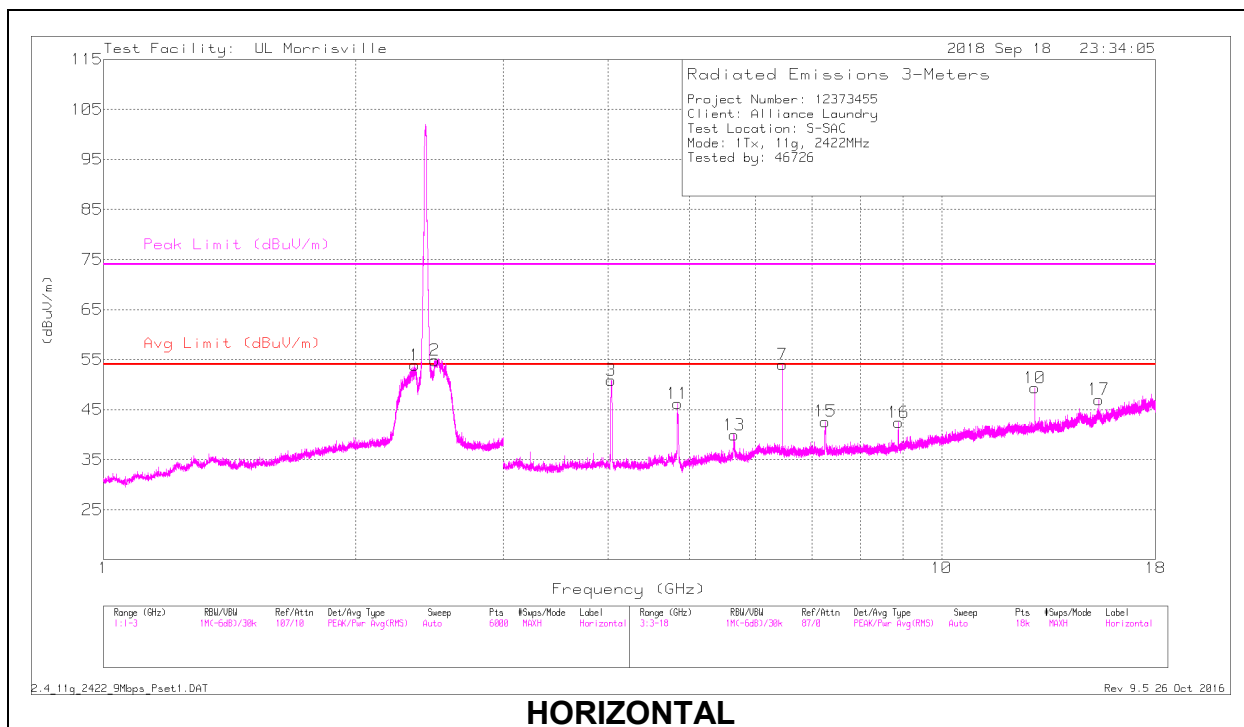
PK2 - Maximum Peak

MAv1 - Maximum RMS Average

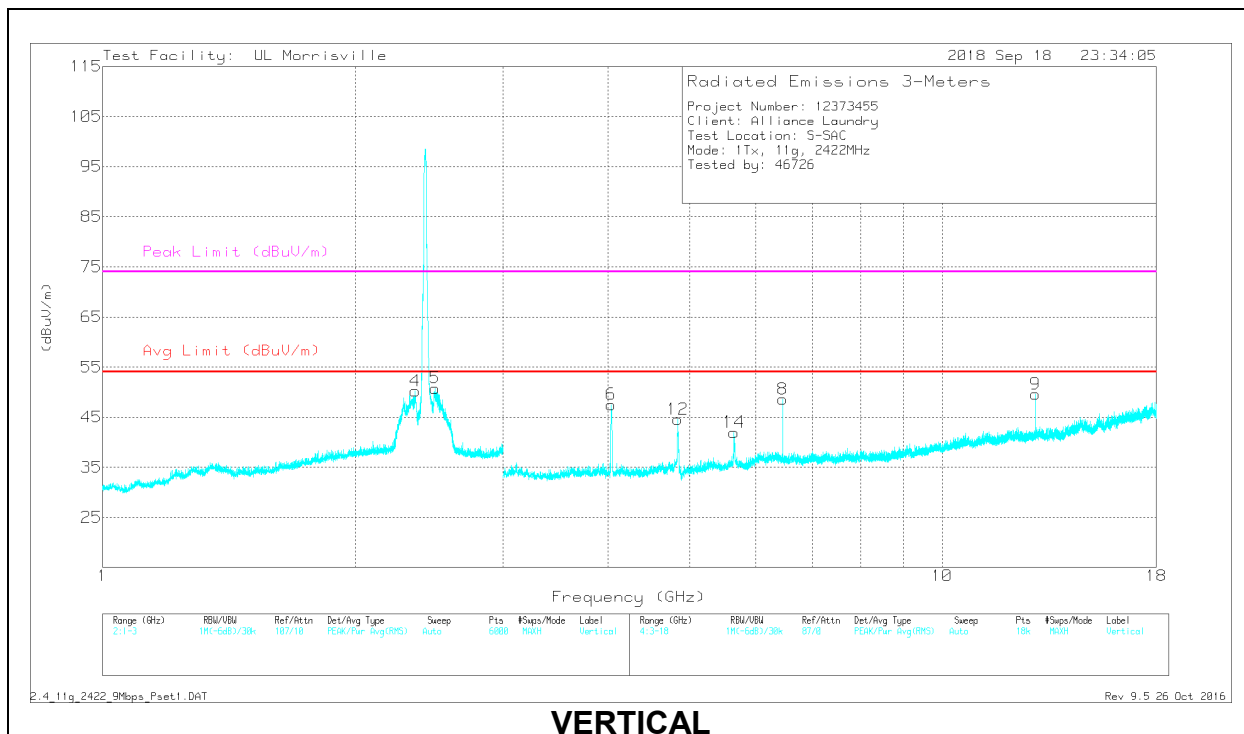
Note – Marker 7 is the same frequency as Marker 10 (5.64 GHz), but in the opposite polarity. The meter reading from the PK scan was lost from the test file and not included in this report since the frequency is not in a restricted band.



### LOW CHANNEL, CH 3 RESULTS



**HORIZONTAL**



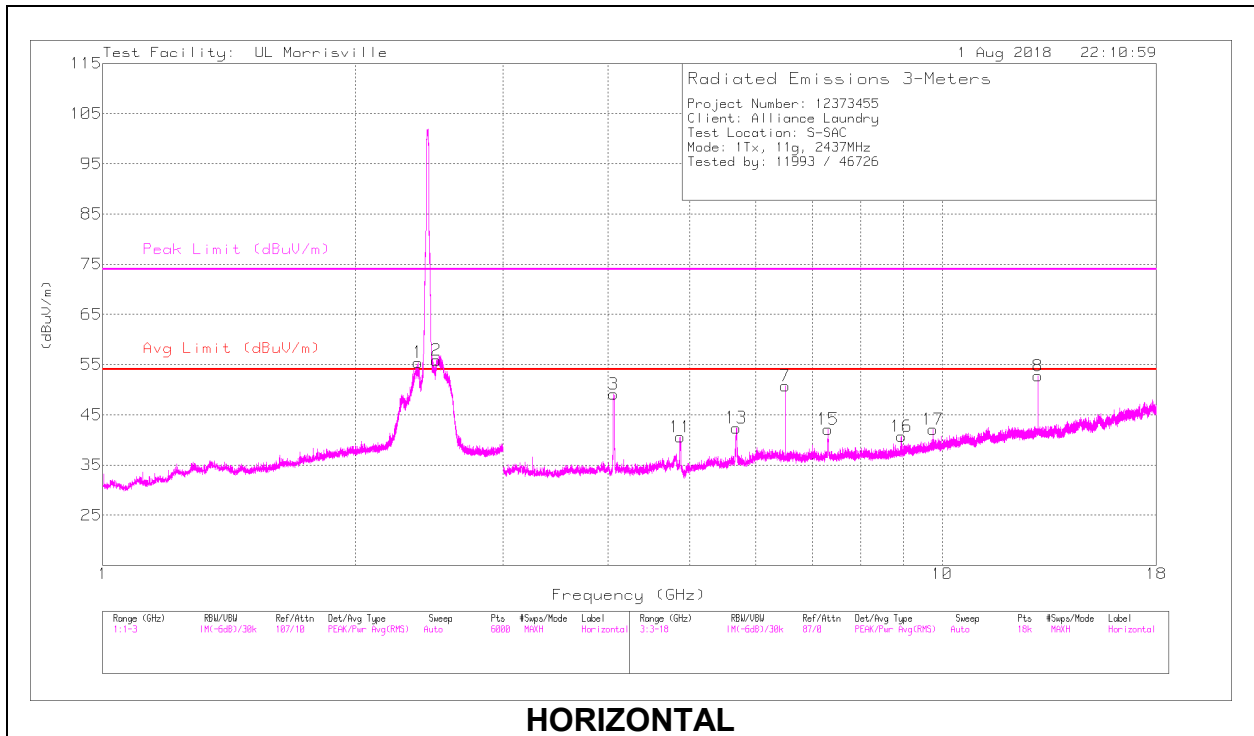
**VERTICAL**

Note – Original measurements for this mode and channel were performed on 2018-09-18 (Frequency Markers 1-6). Supplemental measurements were performed on 2018-10-29 (Frequency Markers 11, 12, 15, 17).

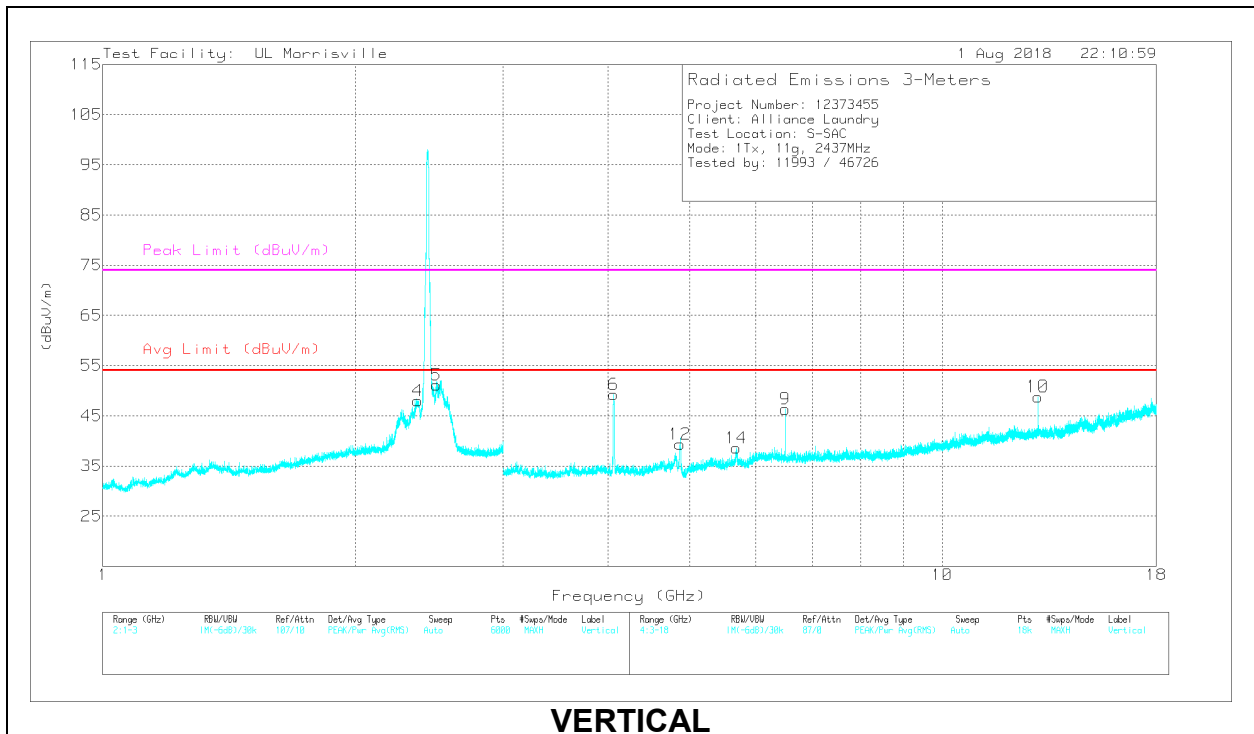
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Fitr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.352	52.8	PK2	31.7	-24	0	60.5	-	-	74	-13.5	331	105	H
	*** 2.354	36.17	MAv1	31.7	-24	5.95	49.82	54	-4.18	-	-	331	105	H
2	*** 2.485	54.92	PK2	32.4	-24.6	0	62.72	-	-	74	-11.28	115	242	H
	*** 2.486	39.25	MAv1	32.4	-24.6	5.95	53	54	-1	-	-	115	242	H
4	*** 2.358	48.67	PK2	31.7	-24	0	56.37	-	-	74	-17.63	273	190	V
	*** 2.358	32.82	MAv1	31.8	-24	5.95	46.57	54	-7.43	-	-	273	190	V
5	*** 2.488	50.59	PK2	32.4	-24.6	0	58.39	-	-	74	-15.61	257	173	V
	*** 2.49	34.89	MAv1	32.4	-24.7	5.95	48.54	54	-5.46	-	-	257	173	V
3	*** 4.036	56.06	PK2	33.4	-32.5	0	56.96	-	-	74	-17.04	214	117	H
	*** 4.035	42.73	MAv1	33.4	-32.5	5.95	49.58	54	-4.42	-	-	214	117	H
11	*** 4.844	47.41	PK2	34	-30.8	0	50.61	-	-	74	-23.39	203	145	H
	*** 4.844	32.02	MAv1	34	-30.8	5.95	41.17	54	-12.83	-	-	203	145	H
15	*** 7.265	42.41	PK2	35.5	-27.7	0	50.21	-	-	74	-23.79	165	103	H
	*** 7.267	27.77	MAv1	35.5	-27.7	5.95	41.52	54	-12.48	-	-	165	103	H
17	*** 15.406	32.41	PK2	40	-21.8	0	50.61	-	-	74	-23.39	338	222	H
	*** 15.407	21.2	MAv1	40	-21.8	5.95	45.35	54	-8.65	-	-	338	222	H
6	*** 4.035	51.92	PK2	33.4	-32.5	0	52.82	-	-	74	-21.18	10	222	V
	*** 4.034	38.39	MAv1	33.4	-32.5	5.95	45.24	54	-8.76	-	-	10	222	V
12	*** 4.842	45.64	PK2	34	-30.8	0	48.84	-	-	74	-25.16	209	111	V
	*** 4.843	30.79	MAv1	34	-30.8	5.95	39.94	54	-14.06	-	-	209	111	V
14	5.65	36.78	PK	34.5	-29.3	0	41.98	-	-	-	-	0-360	199	V
13	5.653	34.62	PK	34.5	-29.2	0	39.92	-	-	-	-	0-360	101	H
7	6.459	47.78	PK	35.4	-29.2	0	53.98	-	-	-	-	0-360	101	H
8	6.459	42.38	PK	35.4	-29.2	0	48.58	-	-	-	-	0-360	101	V
16	8.884	33.33	PK	36	-26.9	0	42.43	-	-	-	-	0-360	199	H
10	12.918	34.66	PK	39.1	-24.4	0	49.36	-	-	-	-	0-360	101	H
9	12.918	34.9	PK	39.1	-24.4	0	49.6	-	-	-	-	0-360	199	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 PK2 - Maximum Peak  
 MAv1 - Maximum RMS Average

### MID CHANNEL, CH 6 RESULTS



**HORIZONTAL**



**VERTICAL**

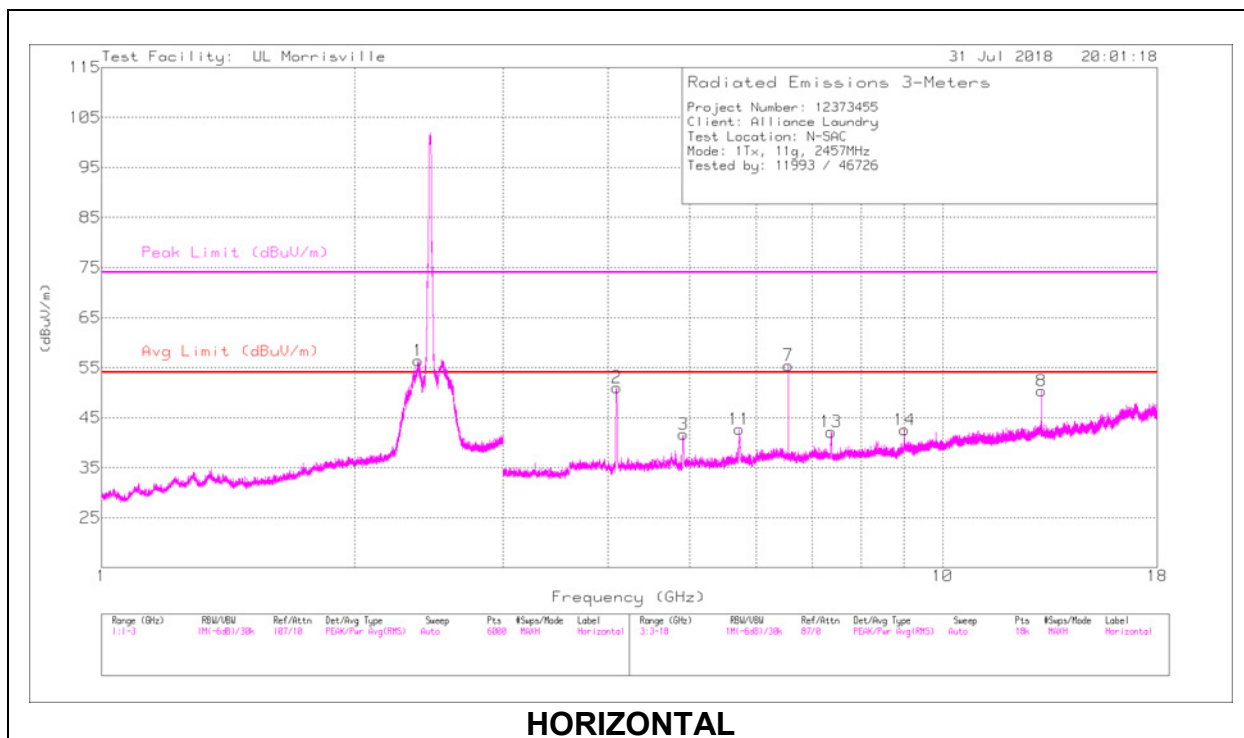
Note – Original measurements for this mode and channel were performed on 2018-08-01 (Frequency Markers 1-6). Supplemental measurements were performed on 2018-10-29 (Frequency Markers 11, 12, 15).

**RADIATED EMISSIONS**

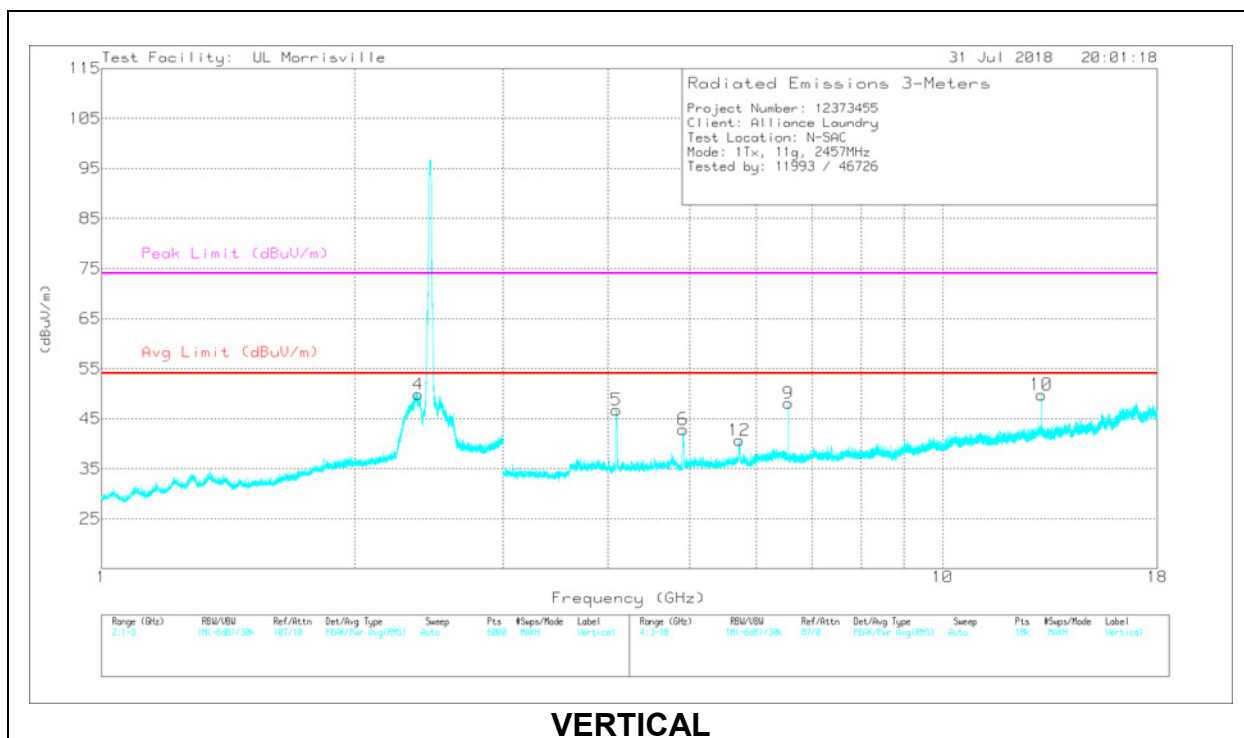
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.375	54.29	PK2	31.9	-24.1	0	62.09	-	-	74	-11.91	131	230	H
	*** 2.375	38.91	MAv1	31.9	-24.1	5.95	52.66	54	-1.34	-	-	131	230	H
2	*** 2.5	54.86	PK2	32.3	-24.7	0	62.46	-	-	74	-11.54	155	144	H
	*** 2.5	38.94	MAv1	32.3	-24.7	5.95	52.49	54	-1.51	-	-	155	144	H
4	*** 2.372	49.15	PK2	31.9	-24.1	0	56.95	-	-	74	-17.05	11	269	V
	*** 2.373	33.03	MAv1	31.9	-24.1	5.95	46.78	54	-7.22	-	-	11	269	V
5	*** 2.496	50.97	PK2	32.3	-24.7	0	58.57	-	-	74	-15.43	347	248	V
	*** 2.498	35.02	MAv1	32.3	-24.7	5.95	48.57	54	-5.43	-	-	347	248	V
3	*** 4.061	55.49	PK2	33.4	-32.7	0	56.19	-	-	74	-17.81	187	106	H
	*** 4.063	43.02	MAv1	33.4	-32.7	5.95	49.67	54	-4.33	-	-	187	106	H
11	*** 4.872	38.74	PK2	34	-30.9	0	41.84	-	-	74	-32.16	197	120	H
	*** 4.872	27.02	MAv1	34	-30.9	5.95	36.07	54	-17.93	-	-	197	120	H
15	*** 7.307	36.24	PK2	35.5	-27.6	0	44.14	-	-	74	-29.86	116	198	H
	*** 7.306	24.38	MAv1	35.5	-27.6	5.95	38.23	54	-15.77	-	-	116	198	H
6	*** 4.062	53.9	PK2	33.4	-32.7	0	54.6	-	-	74	-19.4	10	242	V
	*** 4.062	41.41	MAv1	33.4	-32.7	5.95	48.06	54	-5.94	-	-	10	242	V
12	*** 4.872	38.17	PK2	34	-30.9	0	41.27	-	-	74	-32.73	300	107	V
	*** 4.869	27.27	MAv1	34	-30.9	5.95	36.32	54	-17.68	-	-	300	107	V
14	5.685	33.39	Pk	34.6	-29.4	0	38.59	-	-	-	-	0-360	199	V
13	5.686	37.18	Pk	34.6	-29.4	0	42.38	-	-	-	-	0-360	102	H
7	6.499	44.83	Pk	35.4	-29.5	0	50.73	-	-	-	-	0-360	102	H
9	6.499	40.41	Pk	35.4	-29.5	0	46.31	-	-	-	-	0-360	101	V
16	8.941	31.69	Pk	36	-27	0	40.69	-	-	-	-	0-360	102	H
17	9.748	30.91	Pk	37	-25.8	0	42.11	-	-	-	-	0-360	102	H
8	12.998	37.63	Pk	39.1	-24	0	52.73	-	-	-	-	0-360	102	H
10	12.998	33.69	Pk	39.1	-24	0	48.79	-	-	-	-	0-360	101	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 PK2 - Maximum Peak  
 MAv1 - Maximum RMS Average

### HIGH CHANNEL, CH 10 RESULTS



**HORIZONTAL**



**VERTICAL**

Note – Original measurements for this mode and channel were performed on 2018-07-31 (Frequency Markers 1-6). Supplemental measurements were performed on 2018-10-29 (Frequency Markers 13, 14).

**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.382	55.86	PK2	32	-24.5	0	63.36	-	-	74	-10.64	84	287	H
	*** 2.38	39.04	MAv1	32	-24.5	5.95	52.49	54	-1.51	-	-	84	287	H
4	*** 2.381	50.66	PK2	32	-24.5	0	58.16	-	-	74	-15.84	89	334	V
	*** 2.38	34.19	MAv1	32	-24.5	5.95	47.64	54	-6.36	-	-	89	334	V
2	*** 4.096	56.33	PK2	33.7	-33.1	0	56.93	-	-	74	-17.07	154	125	H
	*** 4.096	43.34	MAv1	33.7	-33.1	5.95	49.89	54	-4.11	-	-	154	125	H
3	*** 4.916	47.9	PK2	34.1	-31.9	0	50.1	-	-	74	-23.9	137	137	H
	*** 4.915	32.58	MAv1	34.1	-31.9	5.95	40.73	54	-13.27	-	-	137	137	H
5	*** 4.093	41.39	PK2	33.7	-33.1	0	41.99	-	-	74	-32.01	137	104	V
	*** 4.095	30.53	MAv1	33.7	-33.1	5.95	37.08	54	-16.92	-	-	137	104	V
6	*** 4.915	47.61	PK2	34.1	-31.8	0	49.91	-	-	74	-24.09	331	266	V
	*** 4.915	32.83	MAv1	34.1	-31.9	5.95	40.98	54	-13.02	-	-	331	266	V
13	*** 7.37	38.06	PK2	35.6	-29.3	0	44.36	-	-	74	-29.64	19	178	H
	*** 7.37	26.22	MAv1	35.6	-29.3	5.95	38.47	54	-15.53	-	-	19	178	H
14	*** 9.008	36.84	PK2	36.2	-28.6	0	44.44	-	-	74	-29.56	342	311	H
	*** 9.006	25.81	MAv1	36.2	-28.6	5.95	39.36	54	-14.64	-	-	342	311	H
7	6.552	51.32	Pk	35.4	-31.3	0	55.42	-	-	-	-	0-360	102	H
9	6.552	44	Pk	35.4	-31.3	0	48.1	-	-	-	-	0-360	102	V
10	13.104	36.98	Pk	39.2	-26.4	0	49.78	-	-	-	-	0-360	102	V
8	13.105	37.54	Pk	39.2	-26.4	0	50.34	-	-	-	-	0-360	102	H
11	5.73	39.52	Pk	34.7	-31.5	0	42.72	-	-	-	-	0-360	199	H
12	5.732	37.48	Pk	34.7	-31.5	0	40.68	-	-	-	-	0-360	199	V

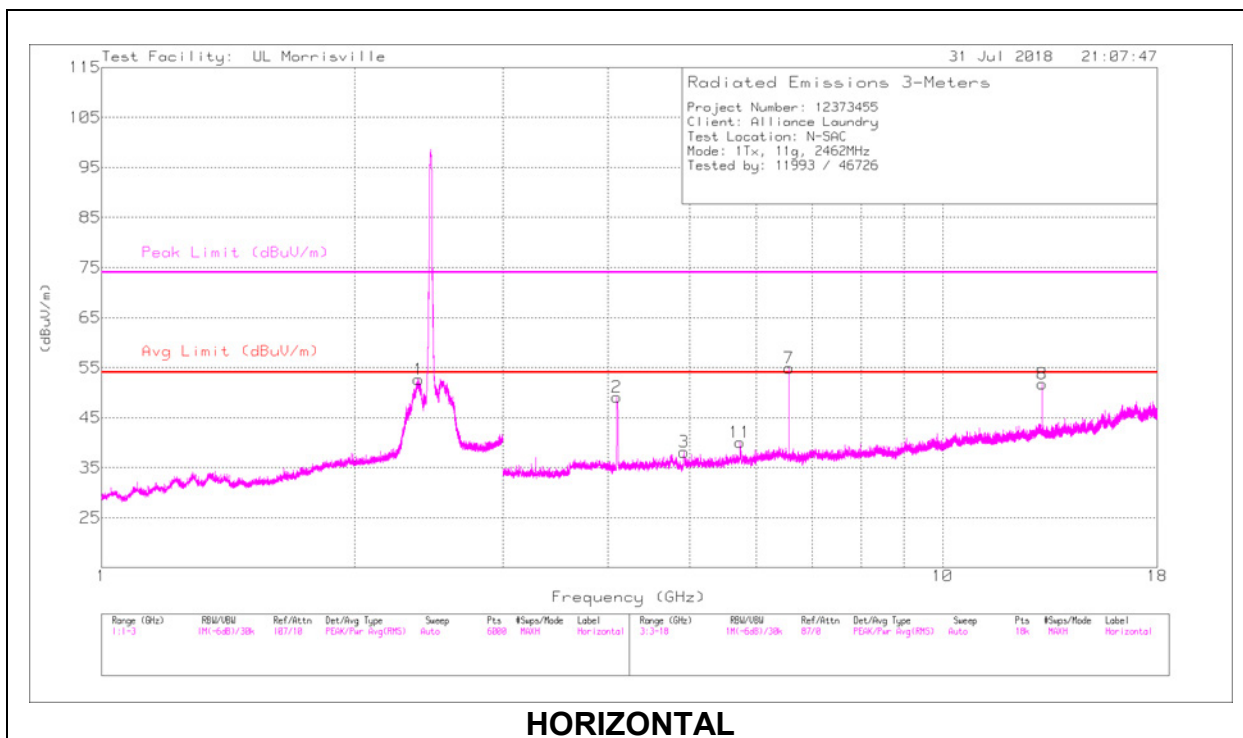
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

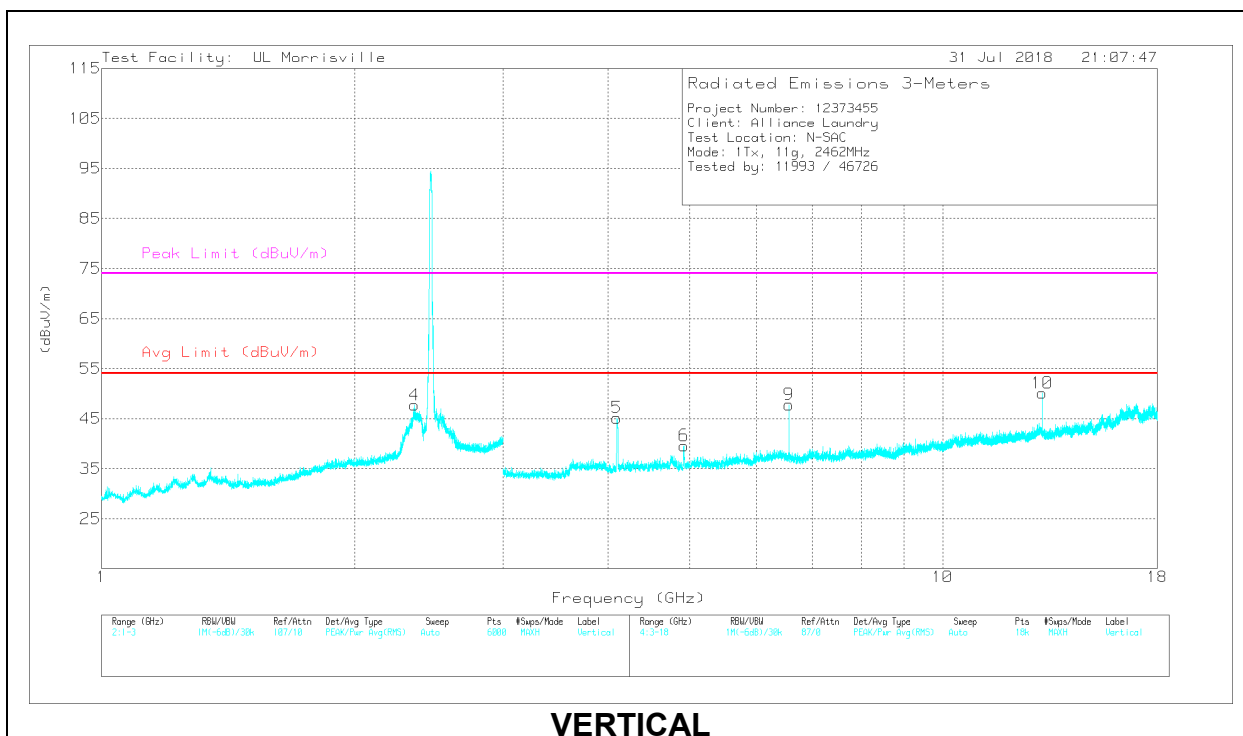
PK2 - Maximum Peak

MAv1 - Maximum RMS Average

### HIGH CHANNEL, CH 11 RESULTS



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.383	52.26	PK2	32	-24.5	0	59.76	-	-	74	-14.24	85	230	H
	*** 2.381	35.55	MAv1	32	-24.5	5.95	49	54	-5	-	-	85	230	H
4	*** 2.355	45.81	PK2	31.7	-24.5	0	53.01	-	-	74	-20.99	198	384	V
	*** 2.354	29.97	MAv1	31.7	-24.5	5.95	43.12	54	-10.88	-	-	198	384	V
2	*** 4.102	54.25	PK2	33.7	-33.2	0	54.75	-	-	74	-19.25	148	143	H
	*** 4.101	41.28	MAv1	33.7	-33.2	5.95	47.73	54	-6.27	-	-	148	143	H
3	*** 4.924	44.02	PK2	34.1	-32	0	46.12	-	-	74	-27.88	113	182	H
	*** 4.926	29.83	MAv1	34.1	-32	5.95	37.88	54	-16.12	-	-	113	182	H
5	*** 4.1	51.54	PK2	33.7	-33.2	0	52.04	-	-	74	-21.96	315	281	V
	*** 4.101	38.37	MAv1	33.7	-33.2	5.95	44.82	54	-9.18	-	-	315	281	V
6	*** 4.922	44.21	PK2	34.1	-31.9	0	46.41	-	-	74	-27.59	321	302	V
	*** 4.925	30.22	MAv1	34.1	-32	5.95	38.27	54	-15.73	-	-	321	302	V
7	6.565	50.58	Pk	35.5	-31.2	0	54.88	-	-	-	-	0-360	102	H
9	6.565	43.49	Pk	35.5	-31.2	0	47.79	-	-	-	-	0-360	102	V
8	13.131	39.13	Pk	39.2	-26.6	0	51.73	-	-	-	-	0-360	102	H
10	13.131	37.49	Pk	39.2	-26.6	0	50.09	-	-	-	-	0-360	199	V
11	5.745	36.87	Pk	34.7	-31.5	0	40.07	-	-	-	-	0-360	102	H

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

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

PK2 - Maximum Peak

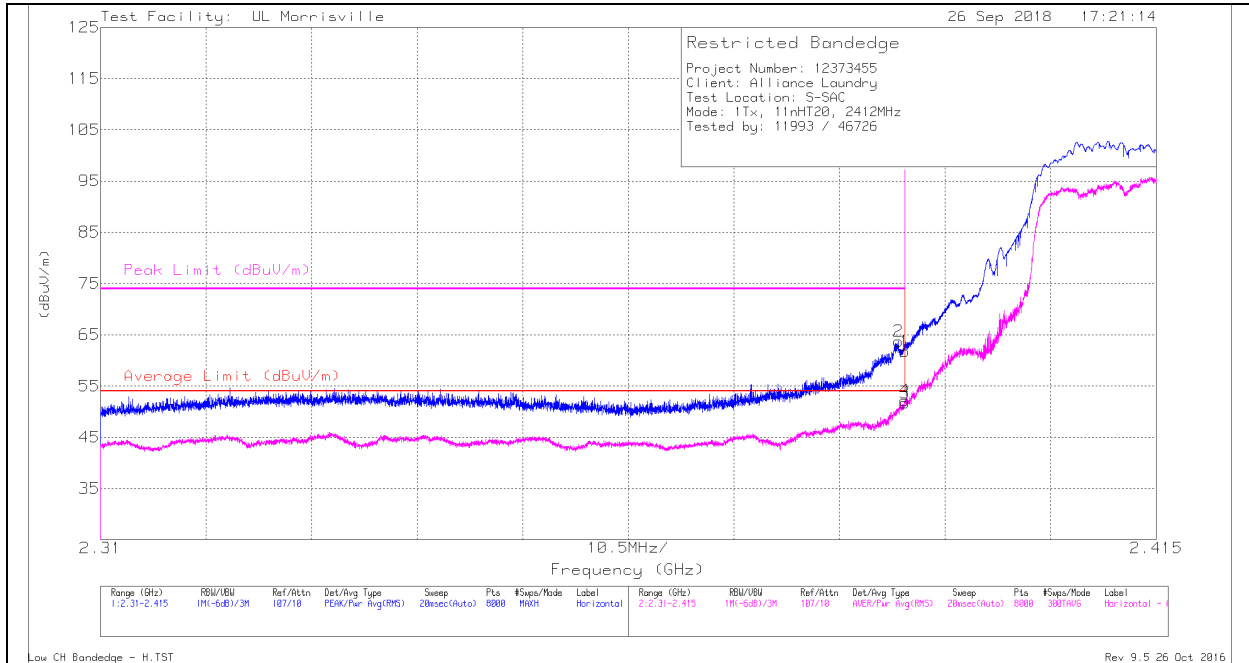
MAv1 - Maximum RMS Average



### 9.1.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

#### BANDEDGE (LOW CHANNEL, CH 1)

#### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (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	53.87	Pk	32	-24.1	0	61.77	-	-	74	-12.23	143	177	H
2	*** 2.389	55.81	Pk	32	-24.1	0	63.71	-	-	74	-10.29	143	177	H
3	*** 2.39	35.71	RMS	32	-24.1	8.13	51.74	54	-2.26	-	-	143	177	H
4	*** 2.39	36.18	RMS	32	-24.1	8.13	52.21	54	-1.79	-	-	143	177	H

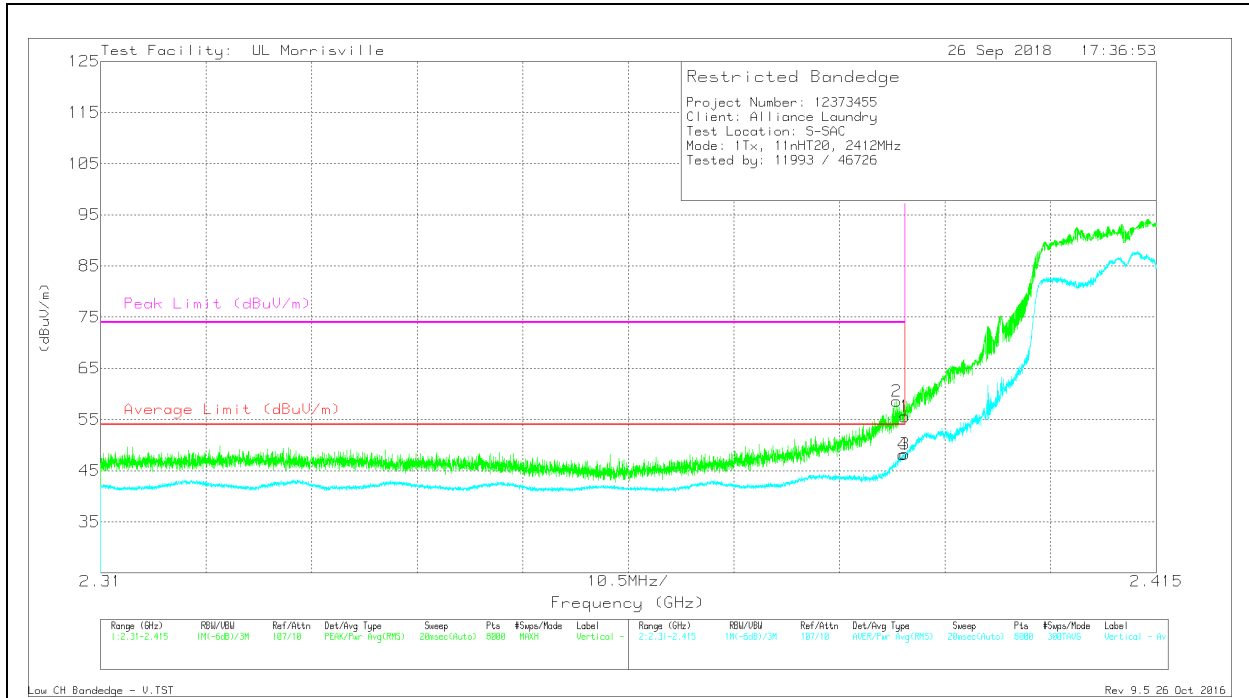
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

RMS - RMS detection

### VERTICAL RESULT

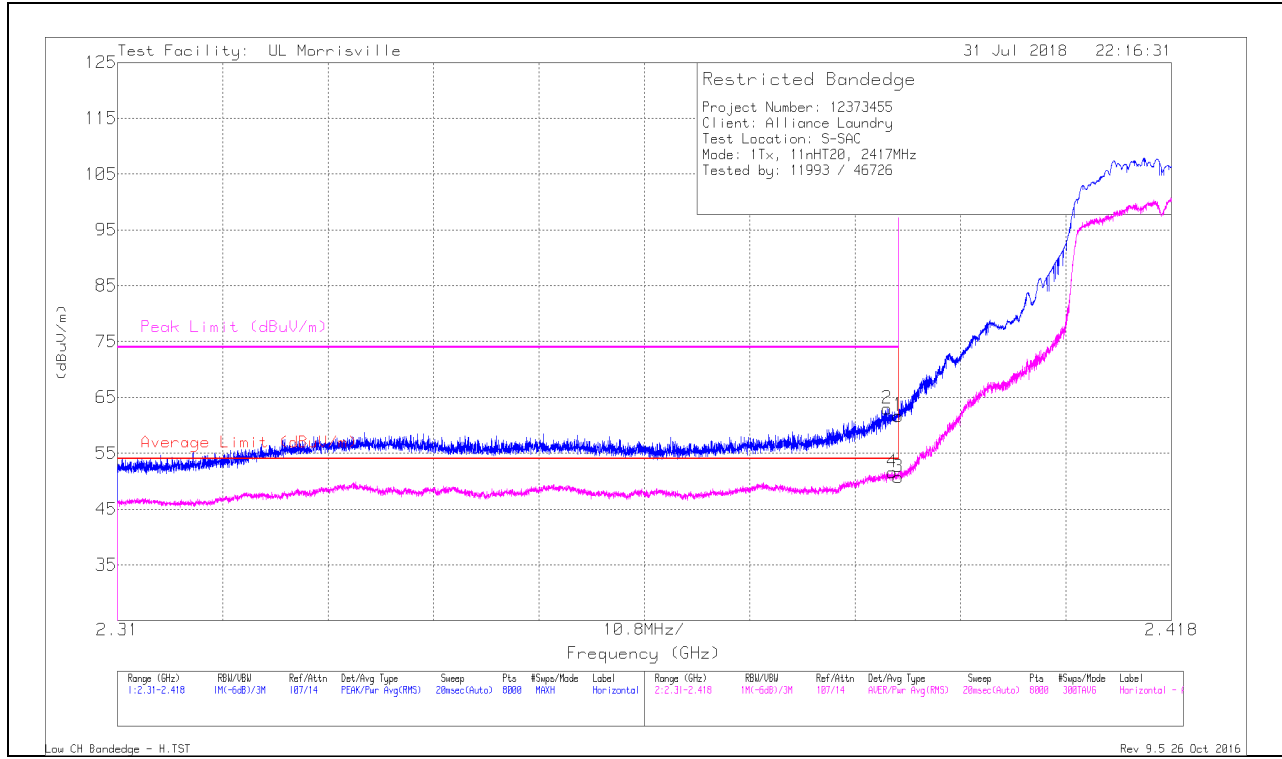


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.39	47.68	Pk	32	-24.1	0	55.58	-	-	74	-18.42	191	375	V
2	*** 2.389	50.68	Pk	32	-24.1	0	58.58	-	-	74	-15.42	191	375	V
3	*** 2.39	32.2	RMS	32	-24.1	8.13	48.23	54	-5.77	-	-	191	375	V
4	*** 2.39	32.14	RMS	32	-24.1	8.13	48.17	54	-5.83	-	-	191	375	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

## BANEDGE (LOW CHANNEL, CH 2)

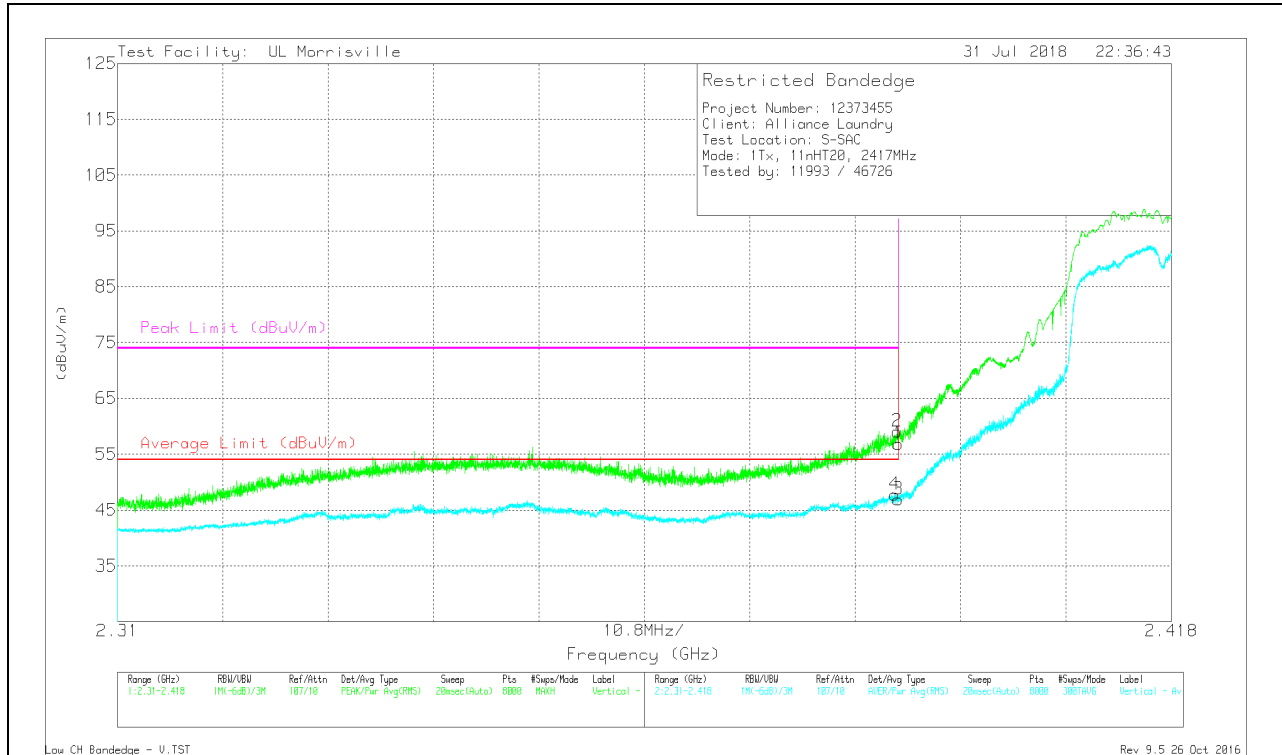
### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (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	53.79	Pk	32	-24.1	0	61.69	-	-	74	-12.31	135	216	H
2	*** 2.389	55.07	Pk	32	-24.1	0	62.97	-	-	74	-11.03	135	216	H
3	*** 2.39	34.7	RMS	32	-24.1	8.13	50.73	54	-3.27	-	-	135	216	H
4	*** 2.389	35.55	RMS	32	-24.1	8.13	51.58	54	-2.42	-	-	135	216	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

**VERTICAL RESULT**

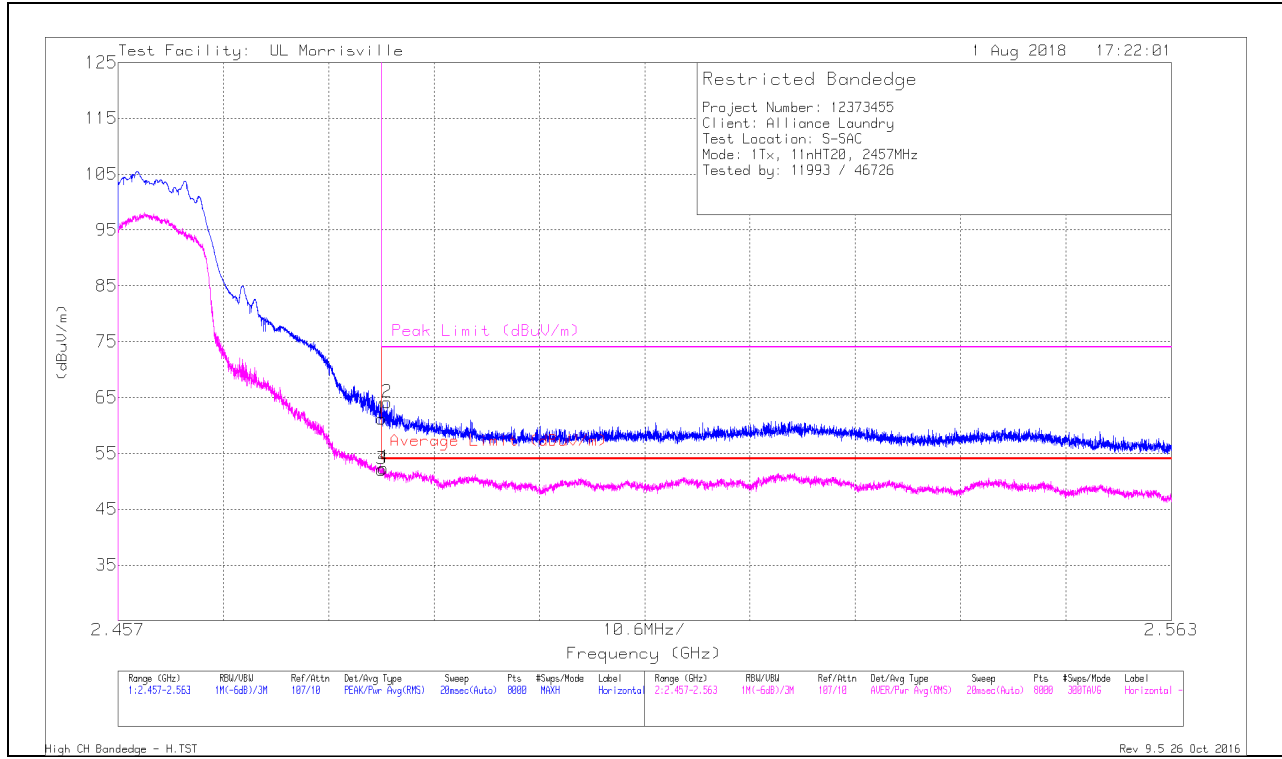


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.39	48.97	Pk	32	-24.1	0	56.87	-	-	74	-17.13	256	373	V
2	*** 2.39	51.17	Pk	32	-24.1	0	59.07	-	-	74	-14.93	256	373	V
3	*** 2.39	30.9	RMS	32	-24.1	8.13	46.93	54	-7.07	-	-	256	373	V
4	*** 2.39	31.7	RMS	32	-24.1	8.13	47.73	54	-6.27	-	-	256	373	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

## BANDEDGE (HIGH CHANNEL, CH 10)

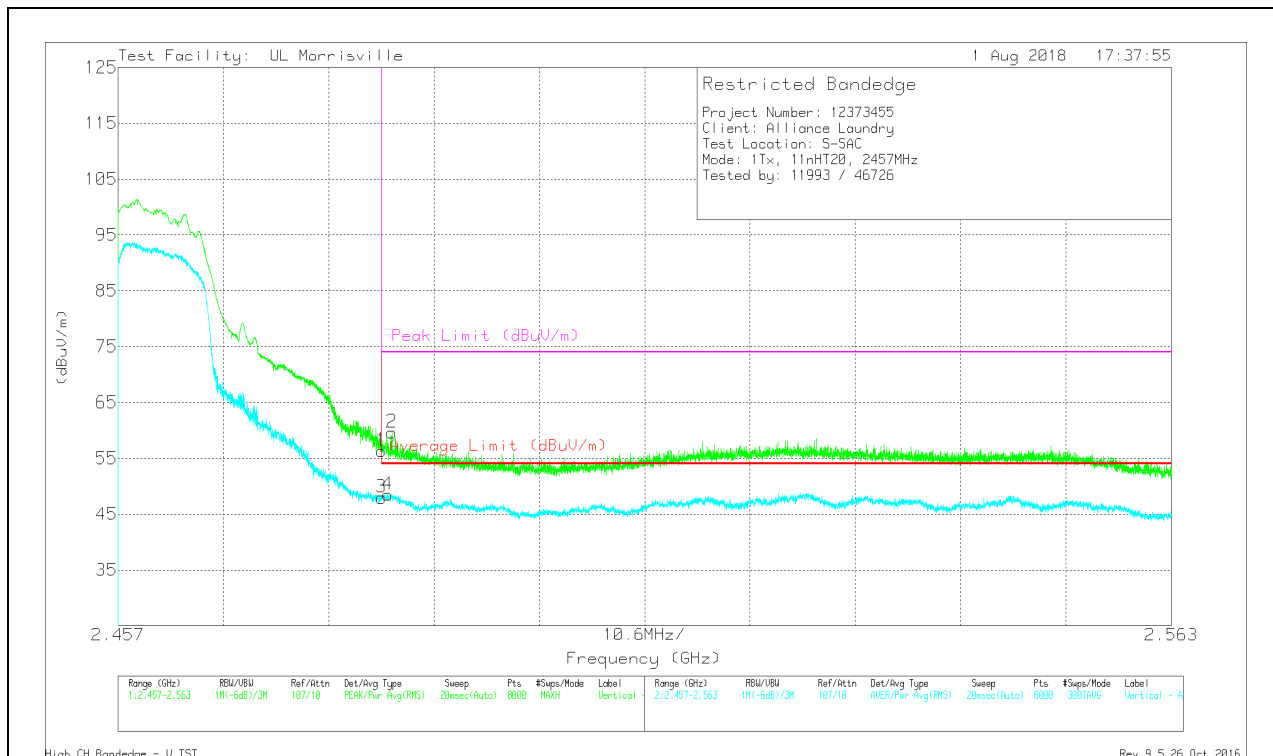
### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (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	53.37	Pk	32.4	-24.6	0	61.17	-	-	74	-12.83	284	293	H
2	*** 2.484	56.31	Pk	32.4	-24.6	0	64.11	-	-	74	-9.89	284	293	H
3	* ** 2.484	36.18	RMS	32.4	-24.6	8.13	52.11	54	-1.89	-	-	284	293	H
4	*** 2.484	36.42	RMS	32.4	-24.6	8.13	52.35	54	-1.65	-	-	284	293	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

### VERTICAL RESULT

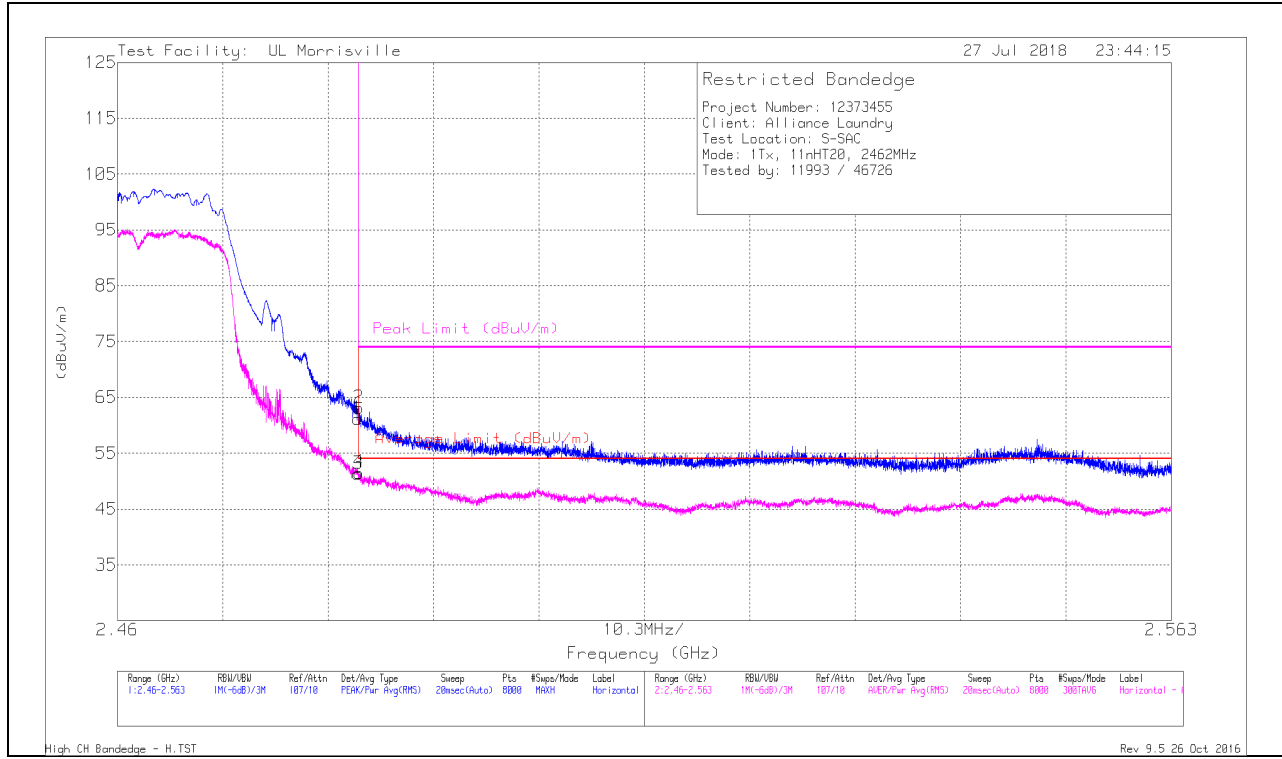


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.484	48.53	Pk	32.4	-24.6	0	56.33	-	-	74	-17.67	265	264	V
2	* ** 2.485	51.83	Pk	32.4	-24.6	0	59.63	-	-	74	-14.37	265	264	V
3	* ** 2.484	32.03	RMS	32.4	-24.6	8.13	47.96	54	-6.04	-	-	265	264	V
4	* ** 2.484	32.53	RMS	32.4	-24.6	8.13	48.46	54	-5.54	-	-	265	264	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

## BANEDGE (HIGH CHANNEL, CH 11)

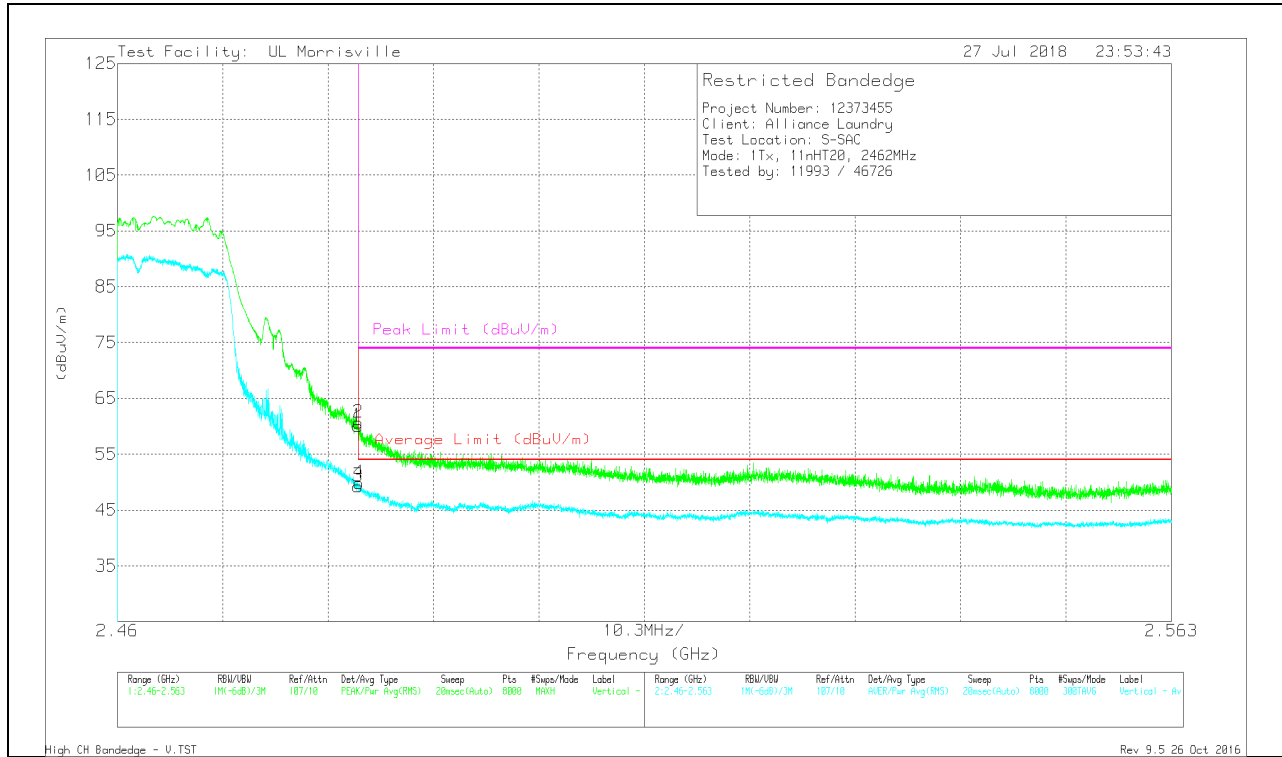
### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (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	53.35	Pk	32.4	-24.6	0	61.15	-	-	74	-12.85	143	375	H
2	* ** 2.484	55.3	Pk	32.4	-24.6	0	63.1	-	-	74	-10.9	143	375	H
3	* ** 2.484	35.42	RMS	32.4	-24.6	8.13	51.35	54	-2.65	-	-	143	375	H
4	* ** 2.484	35.58	RMS	32.4	-24.6	8.13	51.51	54	-2.49	-	-	143	375	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

**VERTICAL RESULT**



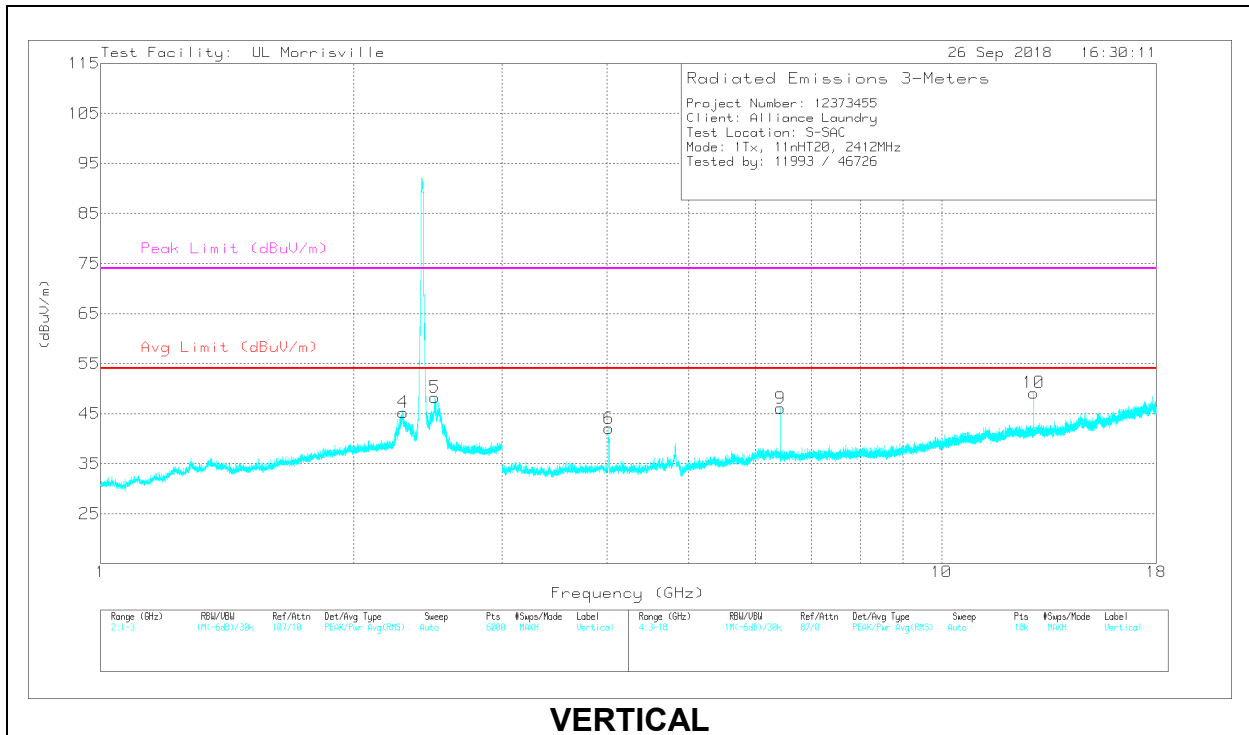
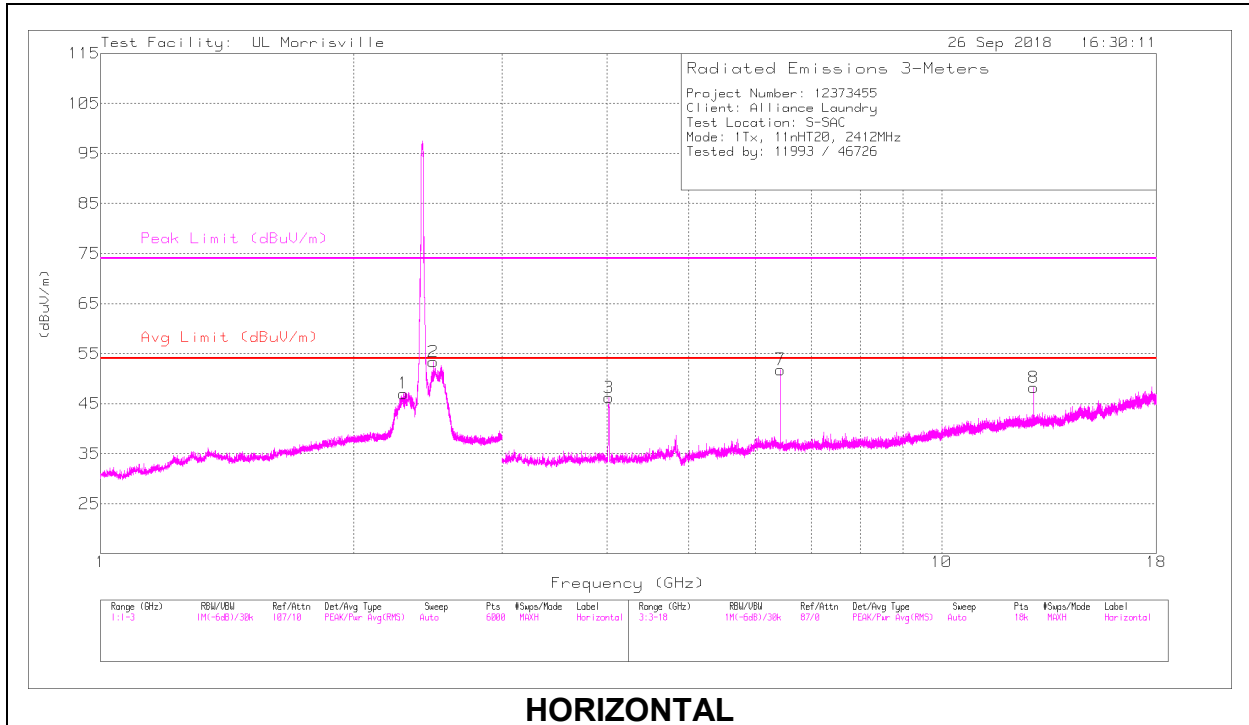
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.484	52.24	Pk	32.4	-24.6	0	60.04	-	-	74	-13.96	17	303	V
2	* ** 2.484	52.86	Pk	32.4	-24.6	0	60.66	-	-	74	-13.34	17	303	V
3	* ** 2.484	33.34	RMS	32.4	-24.6	8.13	49.27	54	-4.73	-	-	17	303	V
4	* ** 2.484	33.93	RMS	32.4	-24.6	8.13	49.86	54	-4.14	-	-	17	303	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection



# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL, CH 1 RESULTS



**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.292	45.61	PK2	31.8	-23.7	0	53.71	-	-	74	-20.29	337	183	H
	*** 2.293	28.94	MAv1	31.8	-23.7	8.13	45.17	54	-8.83	-	-	337	183	H
2	*** 2.488	52.63	PK2	32.4	-24.6	0	60.43	-	-	74	-13.57	298	272	H
	*** 2.498	36.72	MAv1	32.3	-24.7	8.13	52.45	54	-1.55	-	-	298	272	H
4	*** 2.289	43.1	PK2	31.8	-23.6	0	51.3	-	-	74	-22.7	192	127	V
	*** 2.286	27.77	MAv1	31.8	-23.6	8.13	44.1	54	-9.9	-	-	192	127	V
5	*** 2.499	47.91	PK2	32.3	-24.7	0	55.51	-	-	74	-18.49	359	301	V
	*** 2.5	33.07	MAv1	32.3	-24.7	8.13	48.8	54	-5.2	-	-	359	301	V
3	*** 4.022	51.69	PK2	33.3	-32.3	0	52.69	-	-	74	-21.31	209	140	H
	*** 4.021	36.98	MAv1	33.3	-32.3	8.13	46.11	54	-7.89	-	-	209	140	H
6	*** 4.022	44.01	PK2	33.3	-32.3	0	45.01	-	-	74	-28.99	0	127	V
	*** 4.021	30.17	MAv1	33.3	-32.3	8.13	39.3	54	-14.7	-	-	0	127	V
7	6.432	45.3	Pk	35.4	-28.9	0	51.8	-	-	-	-	0-360	102	H
9	6.432	39.55	Pk	35.4	-28.9	0	46.05	-	-	-	-	0-360	101	V
8	12.865	33.79	Pk	39	-24.6	0	48.19	-	-	-	-	0-360	102	H
10	12.865	34.77	Pk	39	-24.6	0	49.17	-	-	-	-	0-360	199	V

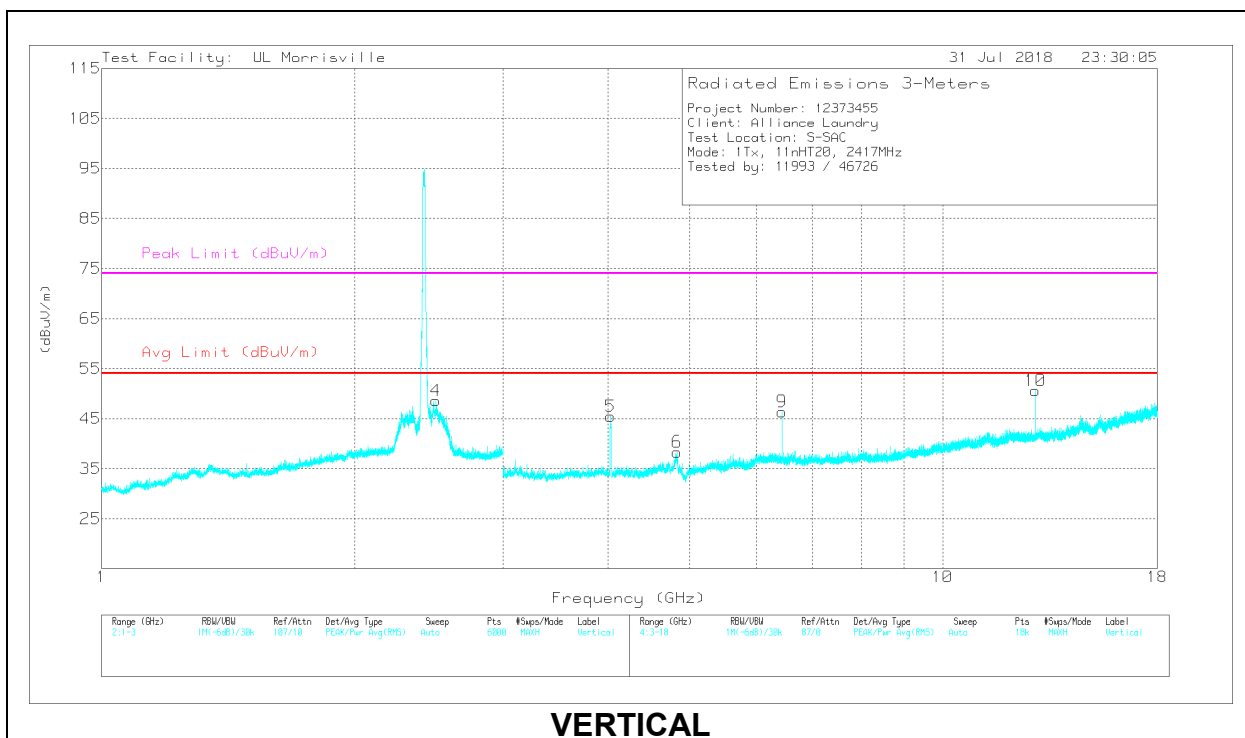
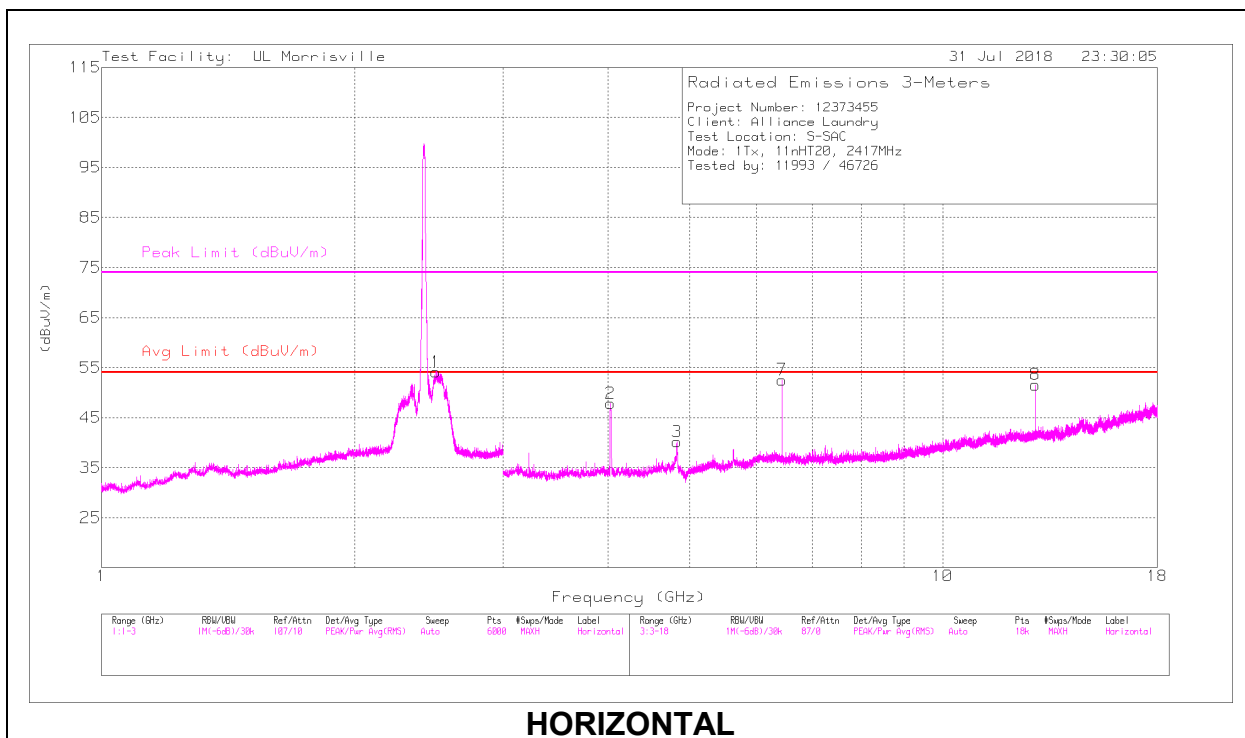
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

PK2 - Maximum Peak

MAv1 - Maximum RMS Average

### LOW CHANNEL, CH 2 RESULTS



**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.495	54.31	PK2	32.3	-24.7	0	61.91	-	-	74	-12.09	113	292	H
	* ** 2.498	37.03	MAv1	32.3	-24.7	8.13	52.76	54	-1.24	-	-	113	292	H
4	* ** 2.499	49.53	PK2	32.3	-24.7	0	57.13	-	-	74	-16.87	345	298	V
	* ** 2.499	33.72	MAv1	32.3	-24.7	8.13	49.45	54	-4.55	-	-	345	298	V
2	* ** 4.026	54.14	PK2	33.4	-32.4	0	55.14	-	-	74	-18.86	203	168	H
	* ** 4.027	39.83	MAv1	33.4	-32.4	8.13	48.96	54	-5.04	-	-	203	168	H
3	* ** 4.834	45.11	PK2	34	-30.9	0	48.21	-	-	74	-25.79	181	117	H
	* ** 4.833	30.19	MAv1	34	-30.9	8.13	41.42	54	-12.58	-	-	181	117	H
5	* ** 4.03	49.97	PK2	33.4	-32.4	0	50.97	-	-	74	-23.03	14	185	V
	* ** 4.03	35.42	MAv1	33.4	-32.4	8.13	44.55	54	-9.45	-	-	14	185	V
6	* ** 4.833	44.53	PK2	34	-30.9	0	47.63	-	-	74	-26.37	337	110	V
	* ** 4.83	30.08	MAv1	34	-30.9	8.13	41.31	54	-12.69	-	-	337	110	V
7	6.445	46.15	Pk	35.4	-29	0	52.55	-	-	-	-	0-360	101	H
9	6.445	39.97	Pk	35.4	-29	0	46.37	-	-	-	-	0-360	101	V
8	12.891	36.96	Pk	39.1	-24.5	0	51.56	-	-	-	-	0-360	101	H
10	12.891	36.03	Pk	39.1	-24.5	0	50.63	-	-	-	-	0-360	101	V

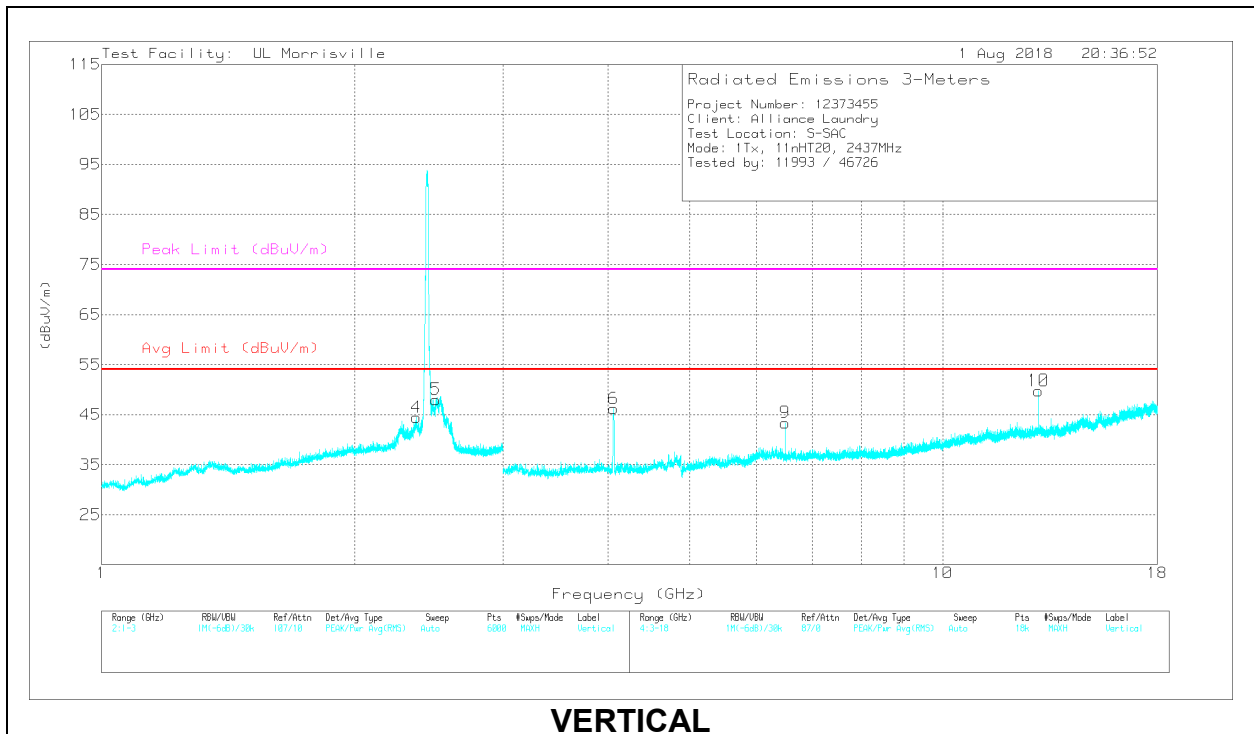
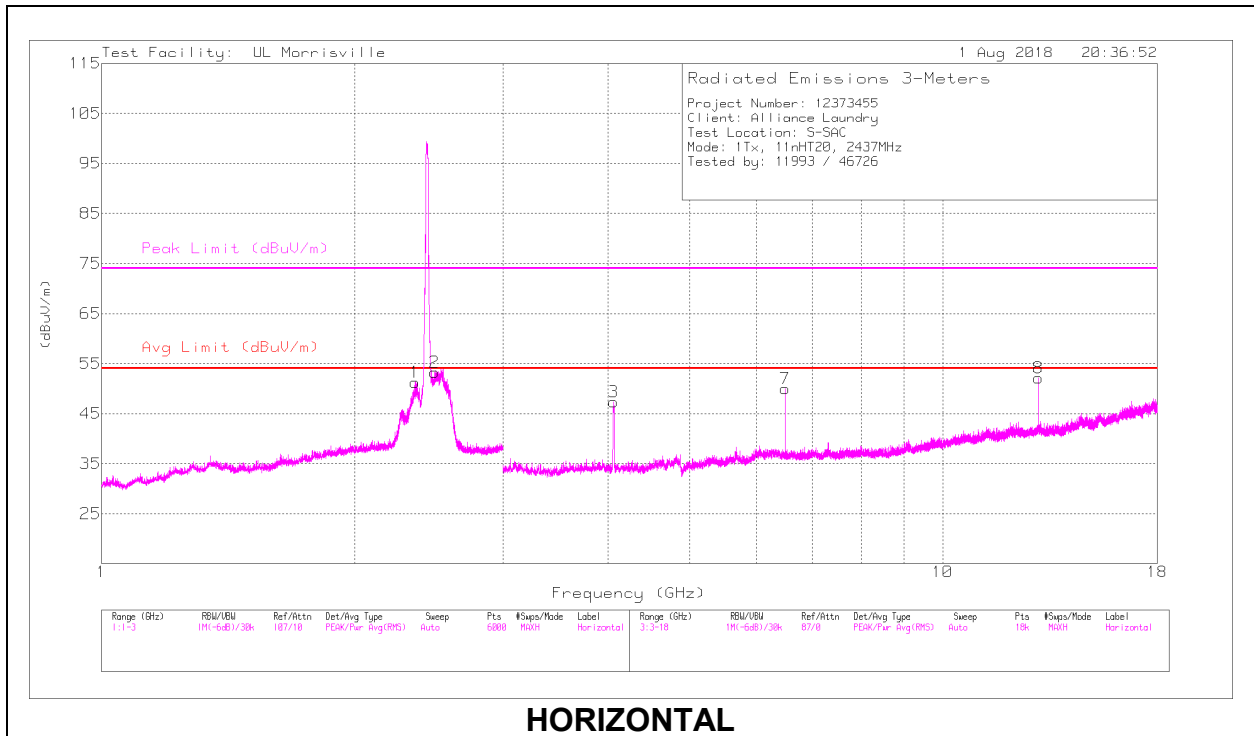
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

PK2 - Maximum Peak

MAv1 - Maximum RMS Average

### MID CHANNEL, CH 6 RESULTS

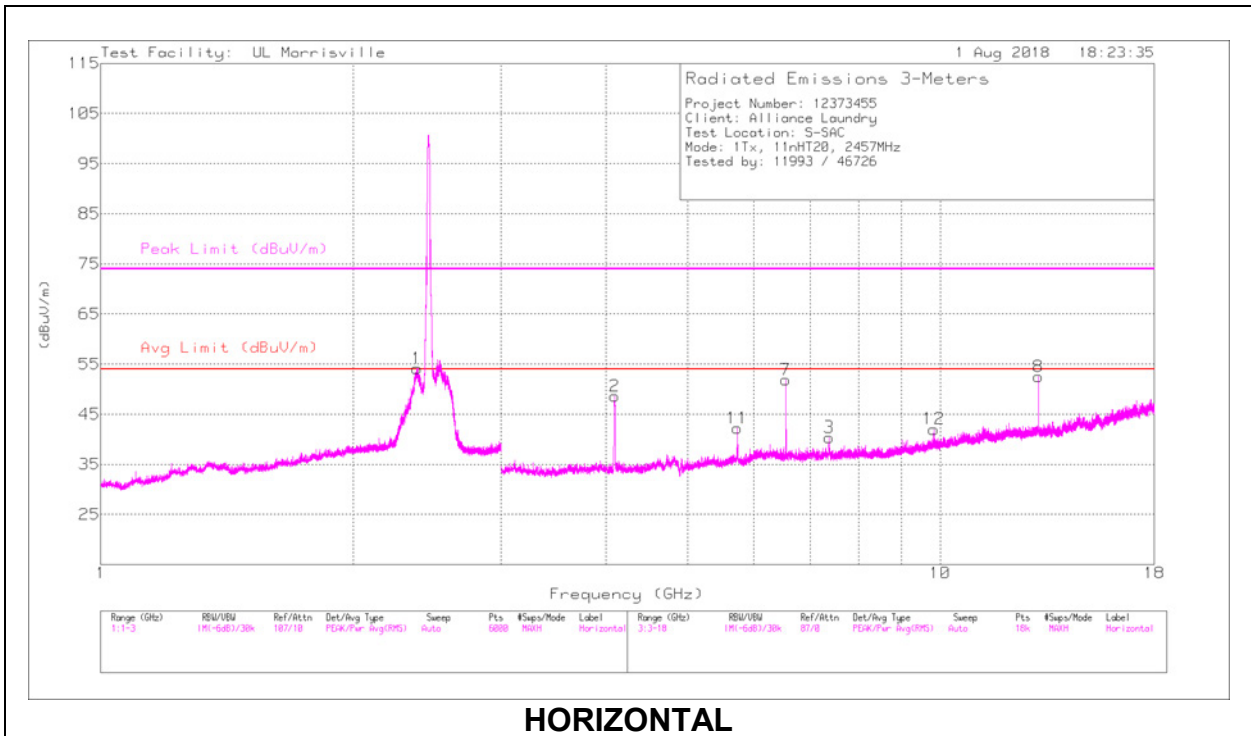


**RADIATED EMISSIONS**

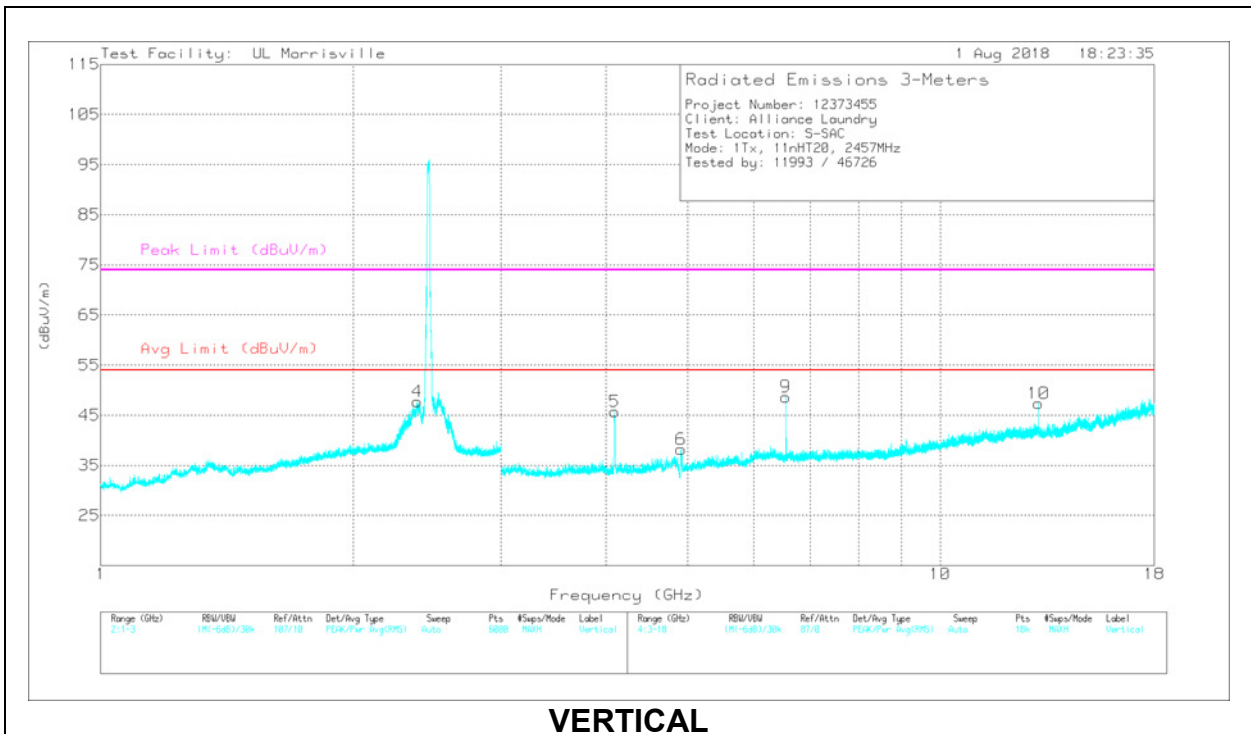
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.492	51.92	PK2	32.4	-24.7	0	59.62	-	-	74	-14.38	120	164	H
	*** 2.493	34.46	MAv1	32.4	-24.7	8.13	50.29	54	-3.71	-	-	120	164	H
2	*** 2.359	50.26	PK2	31.8	-24	0	58.06	-	-	74	-15.94	148	184	H
	*** 2.359	32.4	MAv1	31.8	-24	8.13	48.33	54	-5.67	-	-	148	184	H
4	*** 2.366	44.96	PK2	31.8	-24	0	52.76	-	-	74	-21.24	201	373	V
	*** 2.366	28.14	MAv1	31.8	-24	8.13	44.07	54	-9.93	-	-	201	373	V
5	*** 2.496	49.29	PK2	32.3	-24.7	0	56.89	-	-	74	-17.11	10	309	V
	*** 2.498	33.47	MAv1	32.3	-24.7	8.13	49.2	54	-4.8	-	-	10	309	V
3	*** 4.064	54.23	PK2	33.4	-32.7	0	54.93	-	-	74	-19.07	173	106	H
	*** 4.063	39.02	MAv1	33.4	-32.7	8.13	47.85	54	-6.15	-	-	173	106	H
6	*** 4.063	52.29	PK2	33.4	-32.7	0	52.99	-	-	74	-21.01	13	242	V
	*** 4.063	37.58	MAv1	33.4	-32.7	8.13	46.41	54	-7.59	-	-	13	242	V
7	6.499	44.11	Pk	35.4	-29.5	0	50.01	-	-	-	-	0-360	102	H
9	6.499	37.49	Pk	35.4	-29.5	0	43.39	-	-	-	-	0-360	199	V
8	12.998	37.01	Pk	39.1	-24	0	52.11	-	-	-	-	0-360	102	H
10	12.998	34.67	Pk	39.1	-24	0	49.77	-	-	-	-	0-360	199	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 PK2 - Maximum Peak  
 MAv1 - Maximum RMS Average

### HIGH CHANNEL, CH 10 RESULTS



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.383	54.12	PK2	32	-24.1	0	62.02	-	-	74	-11.98	142	229	H
	*** 2.383	35.57	MAv1	32	-24.1	8.13	51.6	54	-2.4	-	-	142	229	H
4	*** 2.385	49.45	PK2	32	-24.1	0	57.35	-	-	74	-16.65	266	157	V
	*** 2.385	31.86	MAv1	32	-24.1	8.13	47.89	54	-6.11	-	-	266	157	V
2	*** 4.097	53.65	PK2	33.5	-32.5	0	54.65	-	-	74	-19.35	222	152	H
	*** 4.096	38.62	MAv1	33.5	-32.5	8.13	47.75	54	-6.25	-	-	222	152	H
3	*** 7.37	41.58	PK2	35.5	-27.7	0	49.38	-	-	74	-24.62	184	144	H
	*** 7.371	26.01	MAv1	35.5	-27.7	8.13	41.94	54	-12.06	-	-	184	144	H
5	*** 4.097	51.58	PK2	33.5	-32.5	0	52.58	-	-	74	-21.42	23	213	V
	*** 4.096	37.08	MAv1	33.5	-32.5	8.13	46.21	54	-7.79	-	-	23	213	V
6	*** 4.913	42.48	PK2	34	-31	0	45.48	-	-	74	-28.52	14	113	V
	*** 4.913	28.37	MAv1	34	-31	8.13	39.5	54	-14.5	-	-	14	113	V
7	6.552	45.56	Pk	35.4	-29.1	0	51.86	-	-	-	-	0-360	102	H
9	6.552	42.35	Pk	35.4	-29.1	0	48.65	-	-	-	-	0-360	101	V
10	13.104	32.48	Pk	39	-24.1	0	47.38	-	-	-	-	0-360	199	V
8	13.105	37.58	Pk	39	-24.1	0	52.48	-	-	-	-	0-360	102	H
11	5.731	37.5	Pk	34.6	-29.9	0	42.2	-	-	-	-	0-360	102	H

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

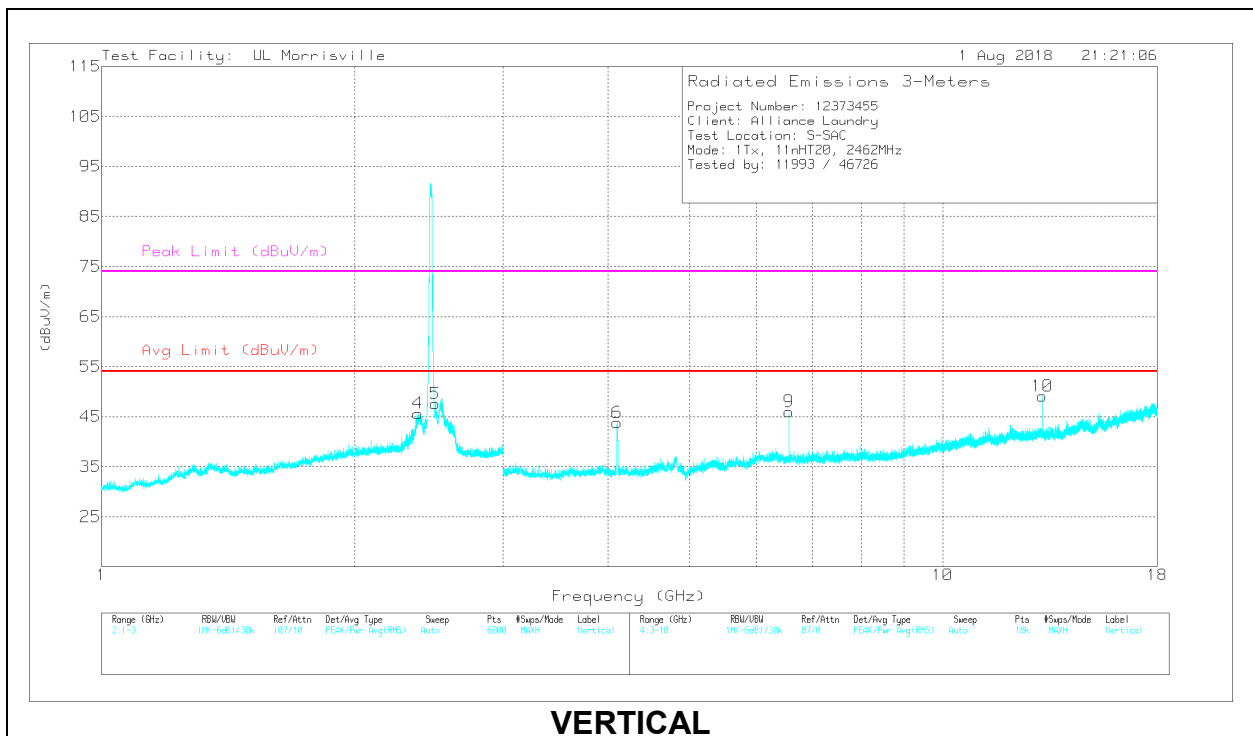
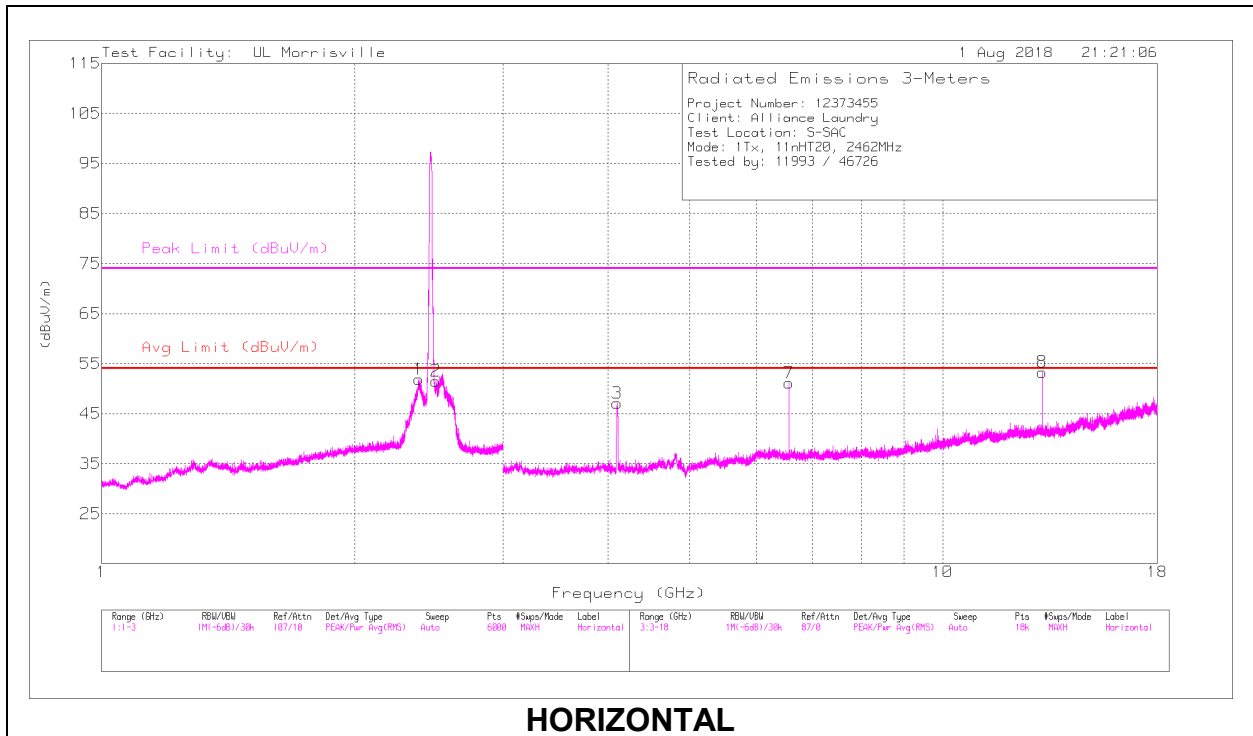
\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

PK2 - Maximum Peak

MAv1 - Maximum RMS Average



### HIGH CHANNEL, CH 11 RESULTS



**RADIATED EMISSIONS**

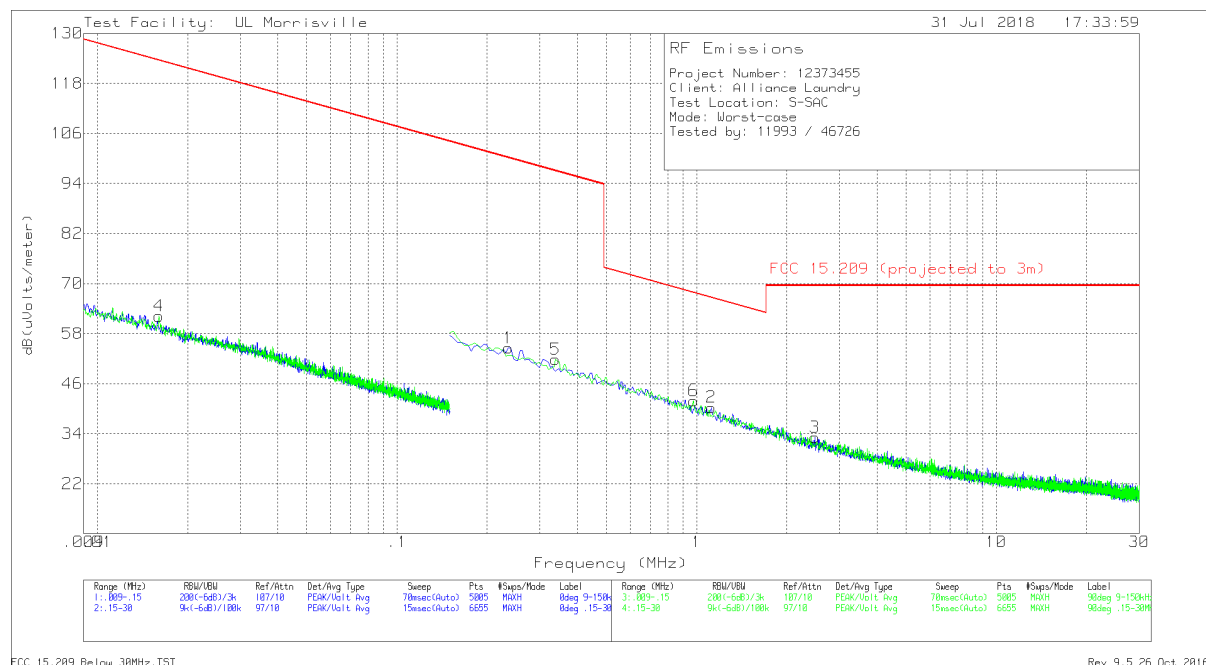
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 AF (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.382	51.66	PK2	32	-24.1	0	59.56	-	-	74	-14.44	125	224	H
	* ** 2.383	33.93	MAv1	32	-24.1	8.13	49.96	54	-4.04	-	-	125	224	H
2	* ** 2.497	49.96	PK2	32.3	-24.7	0	57.56	-	-	74	-16.44	150	263	H
	* ** 2.498	33	MAv1	32.3	-24.7	8.13	48.73	54	-5.27	-	-	150	263	H
4	* ** 2.376	45.45	PK2	31.9	-24.1	0	53.25	-	-	74	-20.75	308	133	V
	* ** 2.377	29.07	MAv1	31.9	-24.1	8.13	45	54	-9	-	-	308	133	V
5	* ** 2.494	47.93	PK2	32.3	-24.7	0	55.53	-	-	74	-18.47	360	298	V
	* ** 2.494	30.34	MAv1	32.4	-24.7	8.13	46.17	54	-7.83	-	-	360	298	V
3	* ** 4.101	52.08	PK2	33.5	-32.5	0	53.08	-	-	74	-20.92	175	104	H
	* ** 4.102	37.18	MAv1	33.5	-32.5	8.13	46.31	54	-7.69	-	-	175	104	H
6	* ** 4.102	50.54	PK2	33.5	-32.5	0	51.54	-	-	74	-22.46	15	242	V
	* ** 4.101	36.3	MAv1	33.5	-32.5	8.13	45.43	54	-8.57	-	-	15	242	V
7	6.565	44.58	Pk	35.4	-28.9	0	51.08	-	-	-	-	0-360	101	H
9	6.565	39.5	Pk	35.4	-28.9	0	46	-	-	-	-	0-360	101	V
8	13.131	38.6	Pk	39	-24.3	0	53.3	-	-	-	-	0-360	101	H
10	13.131	34.38	Pk	39	-24.3	0	49.08	-	-	-	-	0-360	101	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 PK2 - Maximum Peak  
 MAv1 - Maximum RMS Average

## 9.2. WORST CASE BELOW 30MHz

Note: All measurements were made at a test distance of 3 m. The limits in the plots are the FCC/IC limits extrapolated from the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz – 30 MHz) to the measurement distance to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were  $40 \cdot \log$  (specification distance / test distance). However, the tabular data has been adjusted to show the correct FCC limit and corrected measured data from the 3m measurement distance to the limit distance.

Although these tests were performed at a test site other than an open area test site, adequate comparison measurements were confirmed against an open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

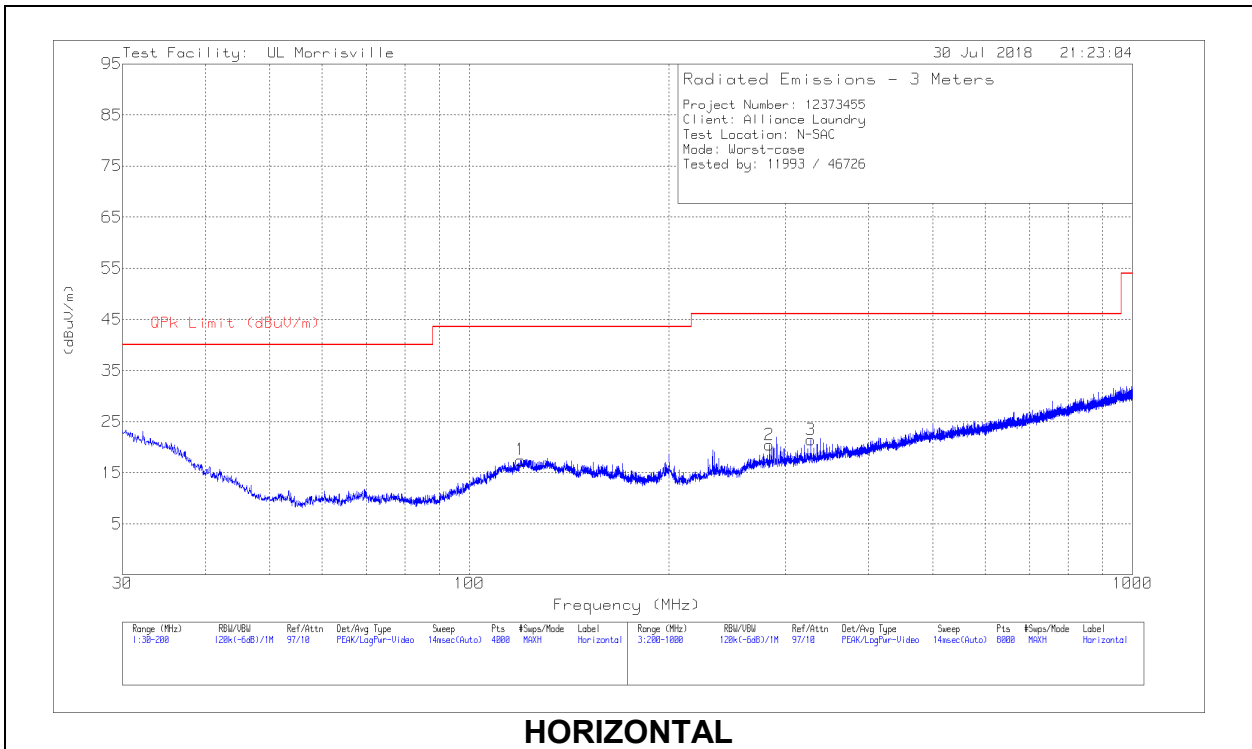


Note: Plot is for reference only to identify frequencies of interest.

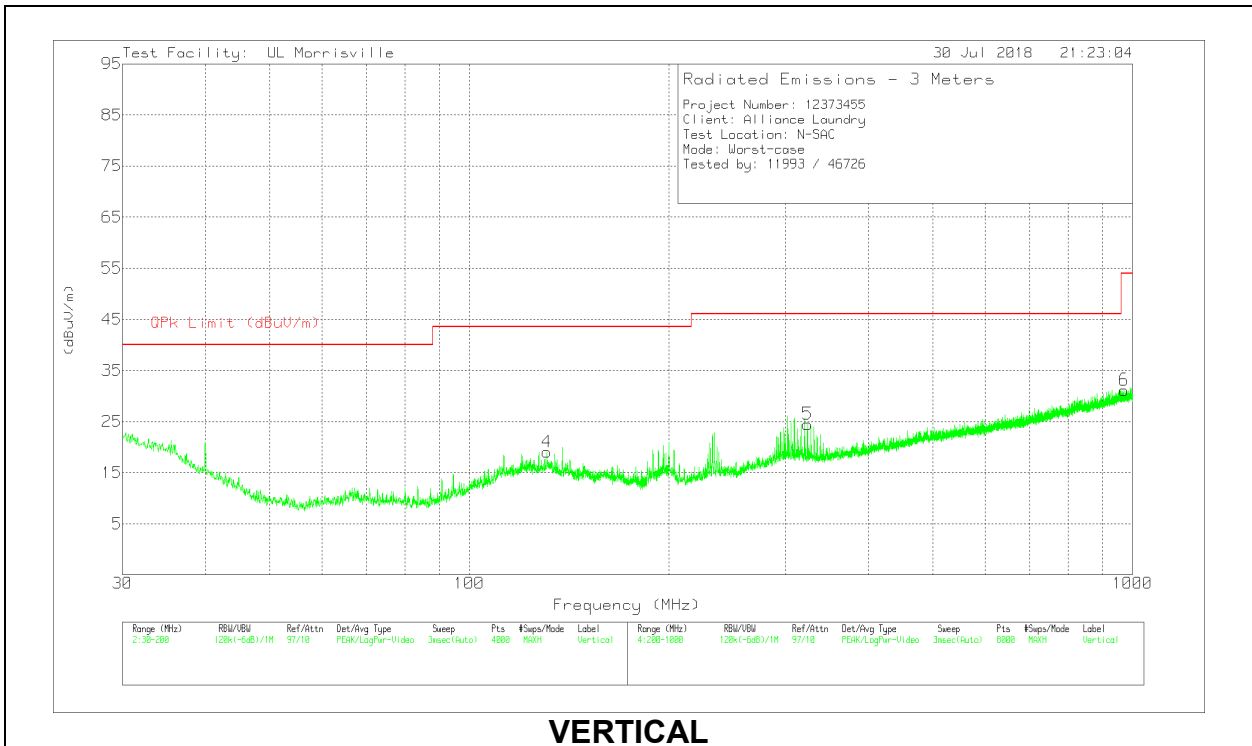
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 AF (dB/m)	Cbl (dB)	Distance Correction Factor (dB)	Corrected Reading dB(uVolts/meter)	FCC 15.209 QP	FCC 15.209 AV	FCC 15.209 PK	Worst Case Margin (dB)	Azimuth (Degs)
4	.01606	45.98	Pk	16.1	.1	-80	-17.82	-	43.49	63.49	-61.31	0-360
1	.23523	42.91	Pk	11.5	.1	-80	-25.49	-	20.17	400.17	-45.66	0-360
5	.33841	40.18	Pk	11.5	.1	-80	-28.22	-	17.02	37.02	-45.24	0-360
6	.97542	30.32	Pk	11.5	.1	-40	1.92	27.82	-	-	-25.9	0-360
2	1.11898	28.59	Pk	11.5	.2	-40	0.29	26.63	-	-	-26.34	0-360
3	2.47823	21.31	Pk	11.6	.2	-40	-6.89	29.54	-	-	-36.43	0-360

Pk - Peak detector

### 9.3. WORST CASE 30 – 1000MHZ



**HORIZONTAL**



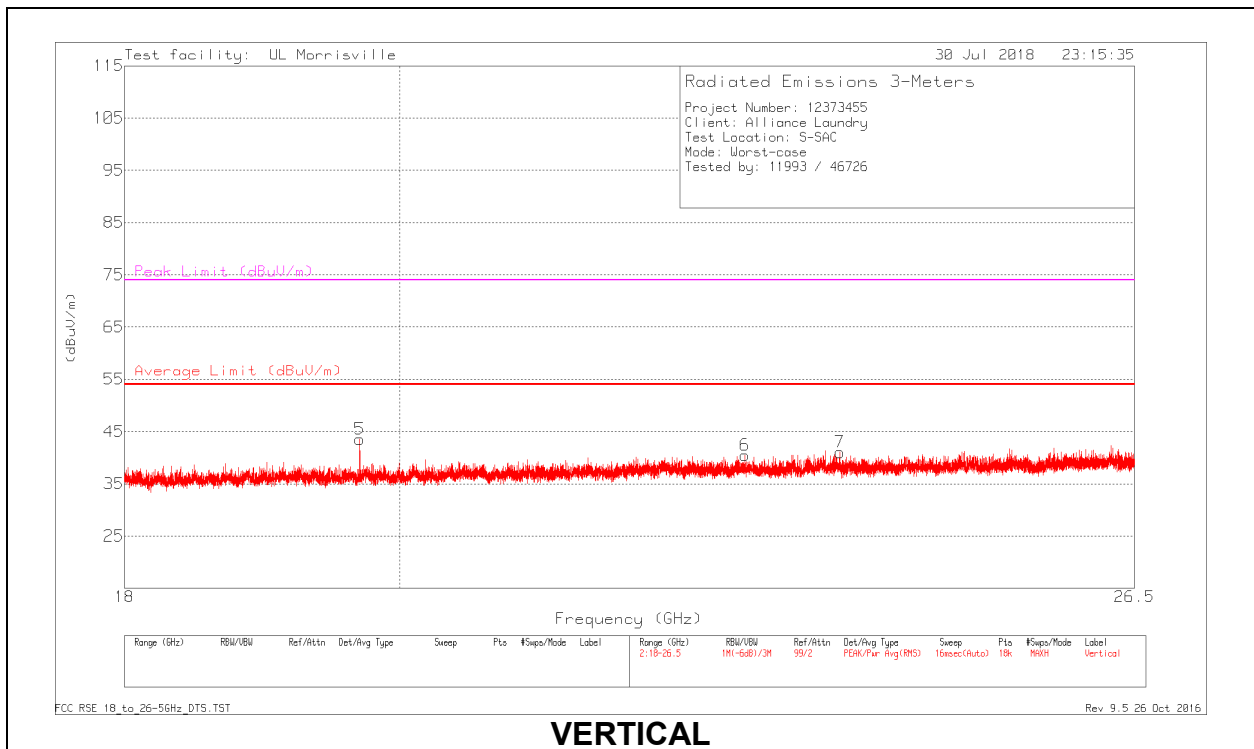
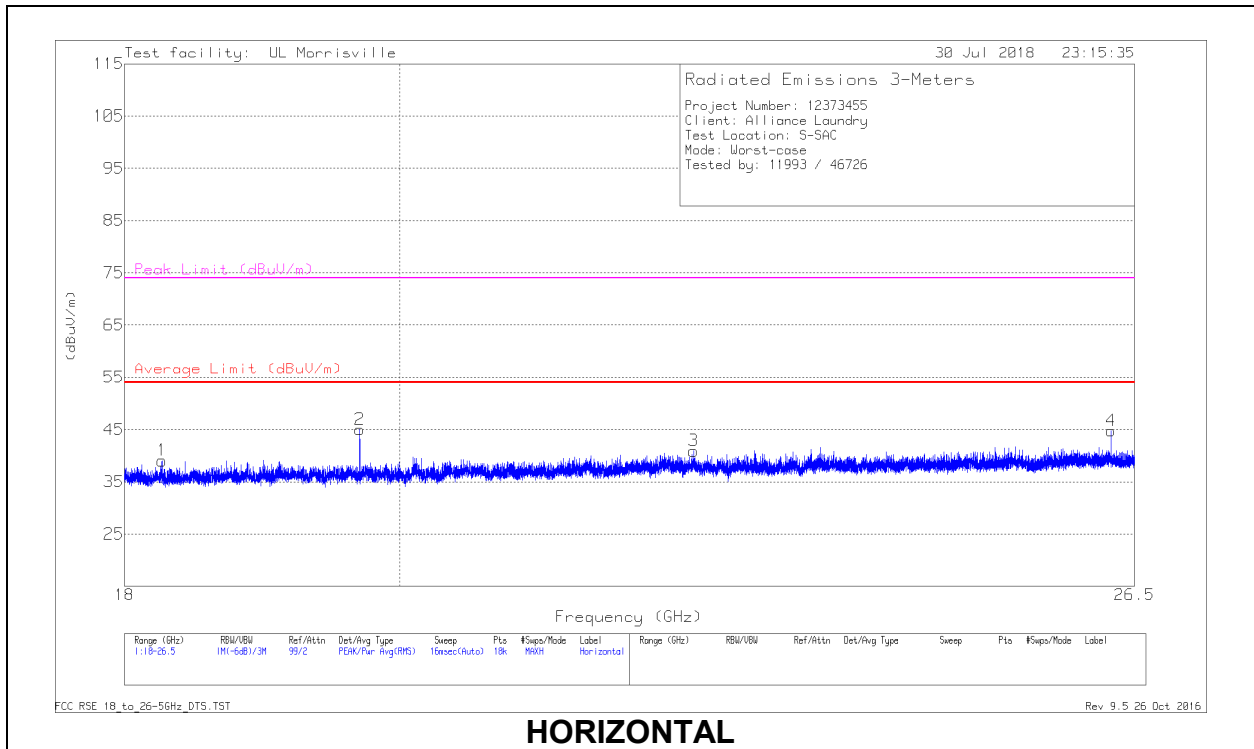
**VERTICAL**

**30-1000MHz DATA**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0073 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	119.5282	29.18	Pk	19.1	-30.8	17.48	43.52	-26.04	0-360	299	H
4	130.9211	30.71	Pk	19	-30.7	19.01	43.52	-24.51	0-360	102	V
2	283.5109	31.16	Pk	18.8	-29.5	20.46	46.02	-25.56	0-360	102	H
5	323.5161	34.3	Pk	19.5	-29.3	24.5	46.02	-21.52	0-360	199	V
3	327.2165	31.16	Pk	19.5	-29.2	21.46	46.02	-24.56	0-360	102	H
6	971.8003	28.15	Pk	28.4	-25.4	31.15	53.97	-22.82	0-360	299	V

Pk - Peak detector

### 9.4. WORST CASE 18-26 GHz



**18 – 26GHz DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0076 AF (dB/m)	Amp/Cbl (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 18.26	46.96	Pk	32.3	-40.2	0	39.06	54	-14.94	74	-34.94	0-360	102	H
2	* ** 19.697	52	Pk	32.7	-39.7	0	45	54	-9	74	-29	0-360	102	H
3	* ** 22.382	45.91	Pk	33.8	-38.8	0	40.91	54	-13.09	74	-33.09	0-360	149	H
4	26.262	46.75	Pk	34.6	-36.6	0	44.75	54	-9.25	74	-29.25	0-360	299	H
5	* ** 19.697	50.51	Pk	32.7	-39.7	0	43.51	54	-10.49	74	-30.49	0-360	101	V
6	* ** 22.825	45.15	Pk	33.8	-38.5	0	40.45	54	-13.55	74	-33.55	0-360	251	V
7	* ** 23.674	45.33	Pk	34	-38.3	0	41.03	54	-12.97	74	-32.97	0-360	151	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector

## 10. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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

\*Decreases with the logarithm of the frequency.

### TEST PROCEDURE

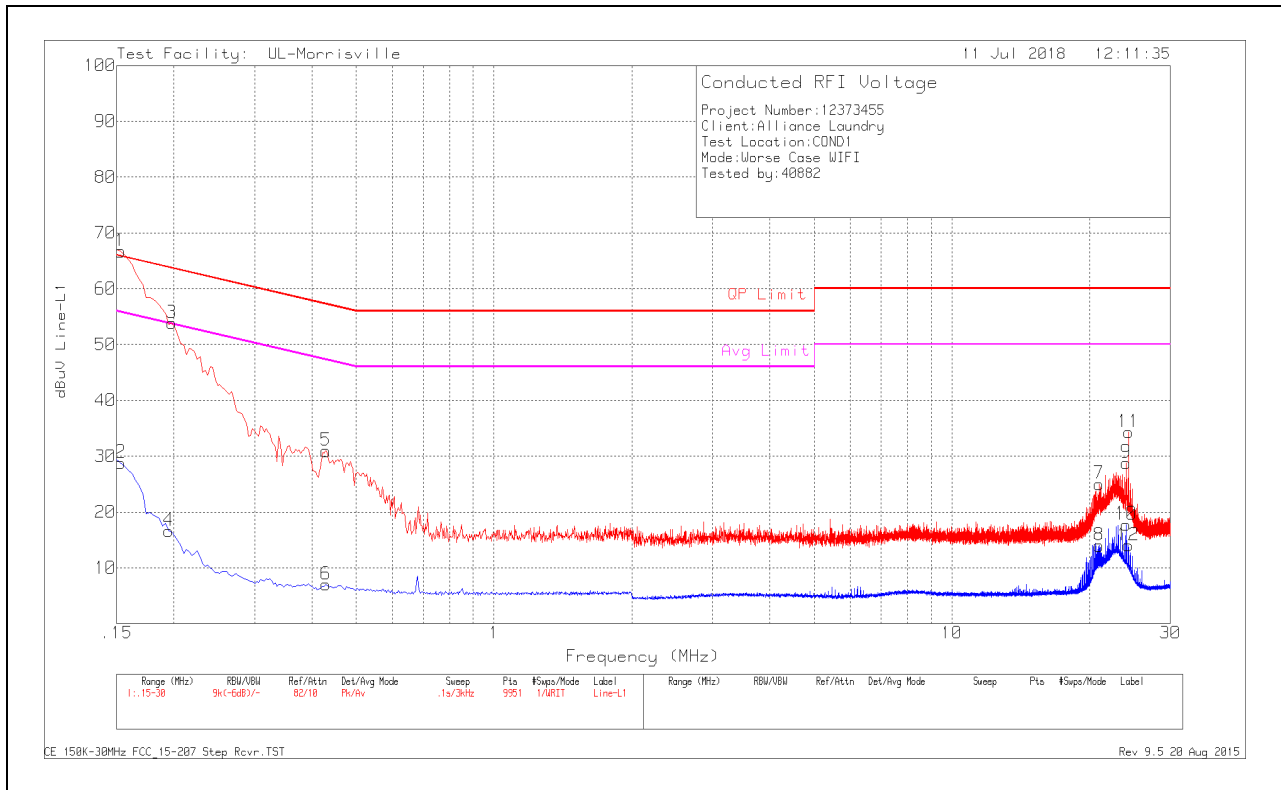
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

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

Line conducted data is recorded for both lines.

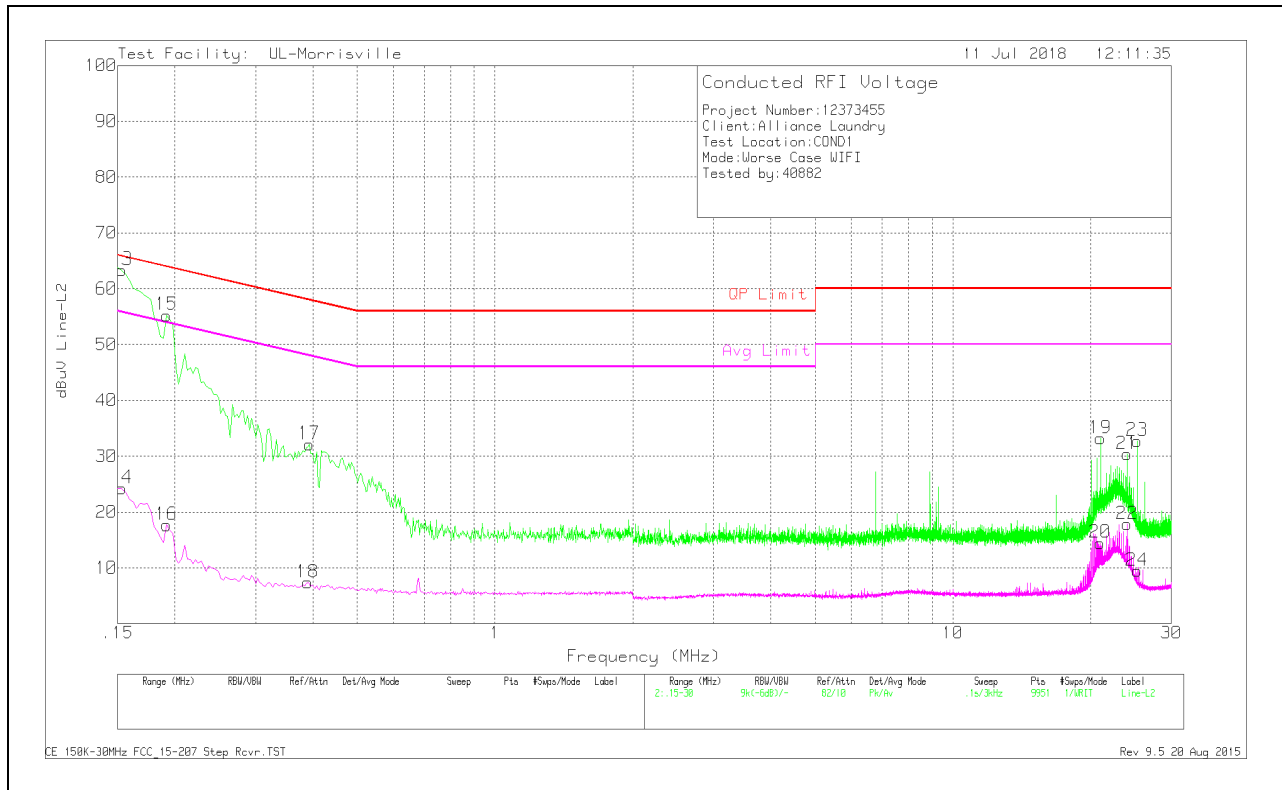


**LINE 1 RESULTS**



Range 1: Line-L1 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit	Margin (dB)	Avg Limit	Margin (dB)
1	.1605	47.72	Qp	.2	10	57.92	65.44	-7.52	-	-
2	.153	18.62	Av	.2	10	28.82	-	-	55.84	-27.02
3	.198	43.74	Pk	.1	10	53.84	63.69	-9.85	-	-
4	.195	6.43	Av	.2	10	16.63	-	-	53.82	-37.19
5	.429	20.85	Pk	.1	10	30.95	57.27	-26.32	-	-
6	.429	-3.11	Av	.1	10	6.99	-	-	47.27	-40.28
7	20.952	14.24	Pk	.2	10.6	25.04	60	-34.96	-	-
8	20.955	3.19	Av	.2	10.6	13.99	-	-	50	-36.01
9	24.003	18.03	Pk	.2	10.6	28.83	60	-31.17	-	-
10	24	6.96	Av	.2	10.6	17.76	-	-	50	-32.24
11	24.333	23.52	Pk	.2	10.6	34.32	60	-25.68	-	-
12	24.279	3.24	Av	.2	10.6	14.04	-	-	50	-35.96

**LINE 2 RESULTS**



Range 2: Line-L2 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit	Margin (dB)	Avg Limit	Margin (dB)
13	.1605	47.67	Qp	.2	10	57.87	65.44	-7.57	-	-
14	.153	14.07	Av	.2	10	24.27	-	-	55.84	-31.57
15	.192	45.07	Pk	.2	10	55.27	63.95	-8.68	-	-
16	.192	7.48	Av	.2	10	17.68	-	-	53.95	-36.27
17	.393	22.05	Pk	.1	10	32.15	58	-25.85	-	-
18	.39	-2.72	Av	.1	10	7.38	-	-	48.06	-40.68
19	21	22.42	Pk	.2	10.6	33.22	60	-26.78	-	-
20	20.958	3.67	Av	.2	10.6	14.47	-	-	50	-35.53
21	24	19.58	Pk	.2	10.6	30.38	60	-29.62	-	-
22	24	7.06	Av	.2	10.6	17.86	-	-	50	-32.14
23	25.248	21.97	Pk	.2	10.6	32.77	60	-27.23	-	-
24	25.23	-1.33	Av	.2	10.6	9.47	-	-	50	-40.53

## 11. SETUP PHOTOS

Please refer to R12373455-EP1 for setup photos

**END OF TEST REPORT**