



CERTIFICATION TEST REPORT

Report Number : R12453250-E1

Applicant : Tosibox Oy
Teknologiantie 12A
90590 OULU
FINLAND

Model : Lock 500, Lock 500iC

FCC ID : 2AHCNLOCK500I

IC : 25009-LOCK500IC

EUT Description : Remote access device with wireless router functionality

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

Date Of Issue:

2019-09-04

Prepared by:

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REPORT REVISION HISTORY

Ver.	Issue Date	Revisions	Revised By
1	2019-08-30	Initial Issue	Brian T. Kiewra
2	2019-09-04	Updated IDs	Niklas Haydon

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Tosibox Oy
Teknologiantie 12A
90590 OULU
FINLAND

EUT DESCRIPTION: Remote access device with wireless router functionality

MODEL: Lock 500, Lock 500iC

SERIAL NUMBER: Non-Serialized

DATE TESTED: 2019-06-24 to 2019-08-28

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. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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

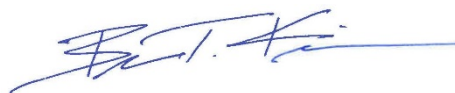
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Approved & Released
For UL LLC By:



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, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, 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, NC 27709, USA and 2800 Perimeter Park Dr., Suite B, Morrisville, NC 27560, 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.
ISED Site Code: 2180C	
<input type="checkbox"/> Chamber A RTP	<input checked="" type="checkbox"/> North Chamber
<input type="checkbox"/> Chamber C RTP	<input checked="" type="checkbox"/> South Chamber

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:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$

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

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\text{Final Voltage (dBuV)} = \text{Measured Voltage (dBuV)} + \text{Cable Loss (dB)} + \text{Limiter Factor (dB)} + \text{LISN Insertion Loss}$$

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Radio Frequency (Spectrum Analyzer)	141.2 Hz
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	2.50 dB
All emissions, radiated	4.88 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 a remote access device with wireless router functionality that contains an 802.11b/g/n20 (2x2 SISO) radio.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum PK conducted output power as follows:

Chain 0

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
1Tx			
2412 - 2462	802.11b	14.26	26.67
2412 - 2462	802.11g	18.67	73.62
2412 - 2462	802.11n HT20	17.73	59.29

Chain 1

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
1Tx			
2412 - 2462	802.11b	14.87	30.69
2412 - 2462	802.11g	19.38	86.70
2412 - 2462	802.11n HT20	18.91	77.80

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes two identical monopole antennas, with maximum gains of 2 dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 4.2.0, rev. 2.

The EUT driver software installed in the host support equipment during testing was MT7620QA, rev. 1.0.6.2

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, with the antennas in two orientations, 90° and 180°. It was determined that for chain 0, Y-axis with the antenna at 90° was worst-case orientation. For chain 1, it was determined that Y-Axis with the antenna at 180° was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in these orientatons.

Worst-case data rates were declared as:

802.11b mode: 1 Mbps

802.11g mode: 6 Mbps

802.11n HT20mode: MCS0

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	T430	PB-C346V	N/A
Power Supply	Cool Power Solutions	ATS018T-W240V	NA	NA

I/O CABLES

I/O Cable List						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Ethernet	5	Ethernet	Unshielded	<3m	None
2	Power	1	Barrel	Power	<3m	None

SETUP DIAGRAM

Please refer to R12453250-EP1 for setup diagrams.

6. MEASUREMENT METHOD

On Time and Duty Cycle: ANSI C63.10 Section 11.6

6 dB BW: ANSI C63.10 Subclause -11.8.1

Occupied BW (99%): ANSI C63.10-2013 Section 6.9.3

Output Power: ANSI C63.10 Subclause -11.9.1.3 PKPM1

PSD: ANSI C63.10 Subclause -11.10.2 Method PKPSD (peak PSD)

Out-of-band emissions in non-restricted bands: ANSI C63.10-2013 Section 11.11 & 6.10.4

Out-of-band emissions in restricted bands: ANSI C63.10-2013 Section 11.12.1 & 6.10.5

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:

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
72822 (PRE0100902)	Spectrum Analyzer	Agilent Technologies	E4446A	2018-11-19	2019-11-19
T177 (PRE0079253)	Spectrum Analyzer	Agilent Technologies	E4446A	2019-04-22	2020-04-22
SA0027	Spectrum Analyzer	KEYSIGHT	N9030A	2019-05-15	2020-05-15
SN 181474341	Environmental Meter	Fisher Scientific	15-077-963	2018-07-27	2020-07-27
126431 (PRE0128068)	RF Power Meter	Anritsu	ML2495A	2019-04-30	2020-04-30
126430 (PRE0128067)	Pulse Power Sensor, 300MHz to 40GHz	Anritsu	MA2411B	2019-04-30	2020-04-30

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	2019-05-29	2020-05-29
s/n 181562858	Environmental Meter	Fisher Scientific	14-650-118	2018-09-04	2020-09-04
LISN003	LISN, 50-ohm/50-uH, 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50-25-2-01-550V	2019-08-19	2020-08-19
75141 (PRE0101521)	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2019-08-20	2020-08-20
TL001	Transient Limiter, 0.009-30MHz	Com-Power	LIT-930A	2019-05-29	2020-05-29
PS214	AC Power Source	Elgar	CW2501M (s/n 1523A02396)	NA	NA
CDECABLE001	ANSI C63.4 1m extension cable.	UL	Per Annex B of ANSI C63.4	2019-07-10	2020-07-10
LISN008	LISN, 50-ohm/50-uH, 2-conductor, 25A (For support gear only.)	Solar Electronics	8012-50-R-24-BNC	2019-07-10	2020-07-10

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

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
0.009-30MHz (Loop Ant.)					
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2019-08-08	2020-08-08
30-1000 MHz					
AT0074	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2019-07-16	2020-07-16
1-18 GHz					
AT0067	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2019-03-22	2020-03-22
Gain-Loss Chains					
N-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2019-05-02	2020-05-02
N-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2019-05-02	2020-05-02
N-SAC03	Gain-loss string: 1-18GHz	Various	Various	2019-03-15	2020-03-15
Receiver & Software					
SA0026	Spectrum Analyzer	Agilent	N9030A	2019-03-19	2020-03-19
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
Additional Equipment used					
s/n 181474341	Environmental Meter	Fisher Scientific	15-077-963	2018-07-27	2020-07-27

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

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
1-18 GHz					
AT0072	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2019-04-22	2020-04-22
18-40 GHz					
AT0076	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2018-11-08	2019-11-08
Gain-Loss Chains					
S-SAC03	Gain-loss string: 1-18GHz	Various	Various	2019-03-13	2020-03-13
S-SAC04	Gain-loss string: 18-40GHz	Various	Various	2018-09-30	2019-09-30
Receiver & Software					
SA0025	Spectrum Analyzer	Agilent	N9030A	2019-02-28	2020-02-28
SA0027 (18-40GHz RSE)	Spectrum Analyzer	Agilent	N9030A	2019-05-15	2020-05-15
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
Additional Equipment used					
s/n 181474409	Environmental Meter	Fisher Scientific	15-077-963	2018-07-27	2020-07-27

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

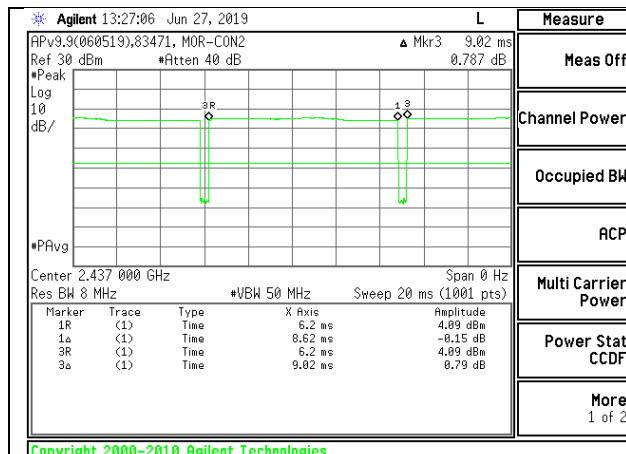
None; for reporting purposes only.

PROCEDURE

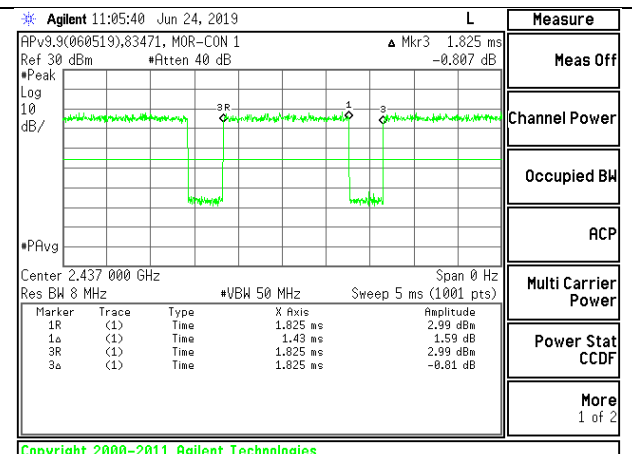
KDB 558074 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

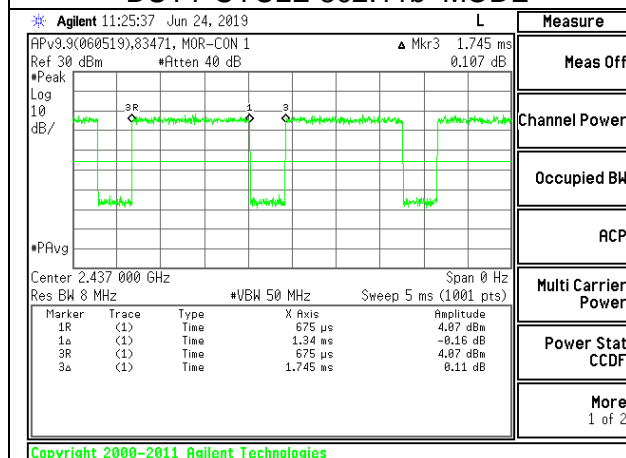
Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.11b 1TX	8.620	9.020	0.956	95.57%	0.20	0.116
802.11g 1TX	1.430	1.825	0.784	78.36%	1.06	0.699
802.11n HT20 1TX	1.340	1.745	0.768	76.79%	1.15	0.746



DUTY CYCLE 802.11b MODE



DUTY CYCLE 802.11g MODE



DUTY CYCLE 802.11nHT20 MODE

Tested by: 83471/40882

8.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

8.2.1. 802.11b MODE

CHAIN 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	14.5745
Mid 6	2437	14.5299
High 11	2462	14.6624

<p>Agilent 13:13:49 Jun 27, 2019</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Occupied Bandwidth Averages: 1</p> <p>APv9.9(060519),83471, MOR-C0N2 Ref 30 dBm *Atten 40 dB</p> <p>Center 2.412 00 GHz Span 40 MHz *Res BW 300 kHz *VBW 910 kHz Sweep 1.4 ms (1001 pts)</p> <p>Occupied Bandwidth 14.5745 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -125.894 kHz x dB Bandwidth 17.545 MHz*</p> <p>Copyright 2000-2010 Agilent Technologies</p> <p>LOW CHANNEL 1</p>	<p>Agilent 13:24:02 Jun 27, 2019</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Occupied Bandwidth Averages: 1</p> <p>APv9.9(060519),83471, MOR-C0N2 Ref 30 dBm *Atten 40 dB</p> <p>Center 2.437 00 GHz Span 40 MHz *Res BW 300 kHz *VBW 910 kHz Sweep 1.4 ms (1001 pts)</p> <p>Occupied Bandwidth 14.5299 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 41.926 kHz x dB Bandwidth 17.856 MHz*</p> <p>Copyright 2000-2010 Agilent Technologies</p> <p>MID CHANNEL 6</p>
<p>Agilent 10:55:31 Jun 24, 2019</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Occupied Bandwidth Averages: 1</p> <p>APv9.9(060519),83471, MOR-C0N 1 Ref 30 dBm *Atten 40 dB</p> <p>Center 2.462 00 GHz Span 40 MHz *Res BW 300 kHz *VBW 910 kHz Sweep 1.4 ms (1001 pts)</p> <p>Occupied Bandwidth 14.6624 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 32.340 kHz x dB Bandwidth 17.239 MHz*</p> <p>Copyright 2000-2011 Agilent Technologies</p> <p>HIGH CHANNEL 11</p>	<p>Tested by: 83471/40882</p>

CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	14.9791
Mid 6	2437	14.8929
High 11	2462	14.9575

LOW CHANNEL 1

Agilent 11:57:29 Jun 27, 2019

Ch Freq: 2.412 GHz

Occupied Bandwidth: 14.9791 MHz

Transmit Freq Error: -94.131 kHz

x dB Bandwidth: 18.116 MHz*

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MID CHANNEL 6

Agilent 12:03:00 Jun 27, 2019

Ch Freq: 2.437 GHz

Occupied Bandwidth: 14.8929 MHz

Transmit Freq Error: 11.985 kHz

x dB Bandwidth: 18.257 MHz*

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HIGH CHANNEL 11

Agilent 12:06:32 Jun 27, 2019

Ch Freq: 2.462 GHz

Occupied Bandwidth: 14.9575 MHz

Transmit Freq Error: 24.780 kHz

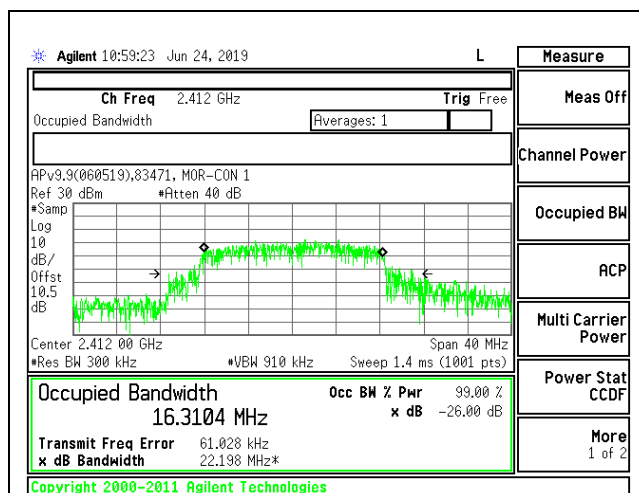
x dB Bandwidth: 17.942 MHz*

Copyright 2000-2010 Agilent Technologies

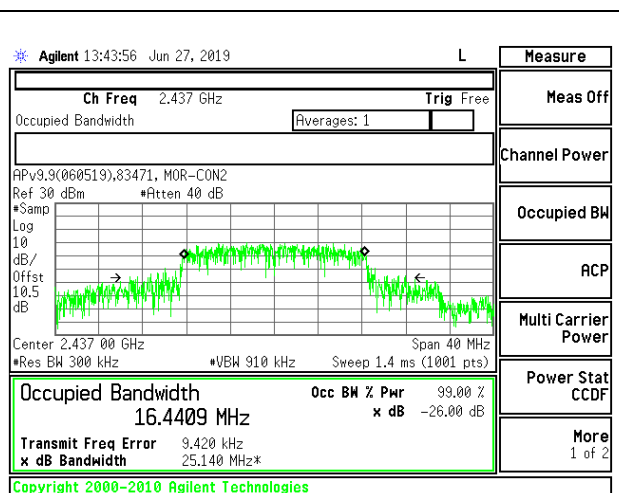
8.2.2. 802.11g MODE

CHAIN 0

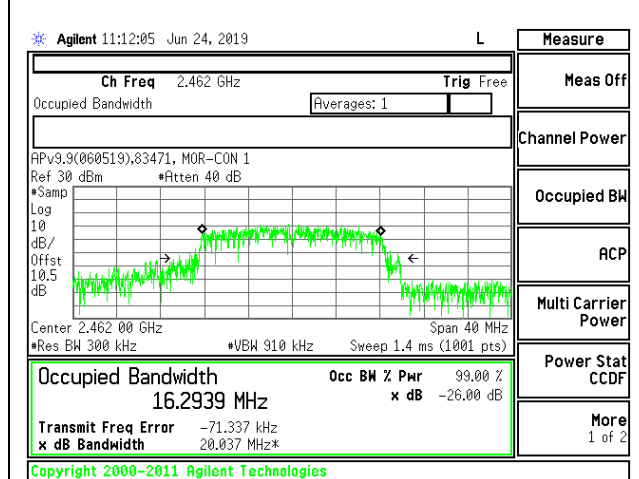
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	16.3104
Mid 6	2437	16.4409
High 11	2462	16.2939



LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11

Tested by: 83471/40882

CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	16.3987
Mid 6	2437	16.5305
High 11	2462	16.3102

LOW CHANNEL 1

Agilent 12:09:54 Jun 27, 2019

Ch Freq: 2.412 GHz

Occupied Bandwidth: 16.3987 MHz

Transmit Freq Error: 17.918 kHz

x dB Bandwidth: 24.620 MHz*

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MID CHANNEL 6

Agilent 12:13:04 Jun 27, 2019

Ch Freq: 2.437 GHz

Occupied Bandwidth: 16.5306 MHz

Transmit Freq Error: -64.736 kHz

x dB Bandwidth: 25.292 MHz*

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HIGH CHANNEL 11

Agilent 12:16:37 Jun 27, 2019

Ch Freq: 2.462 GHz

Occupied Bandwidth: 16.3102 MHz

Transmit Freq Error: -32.457 kHz

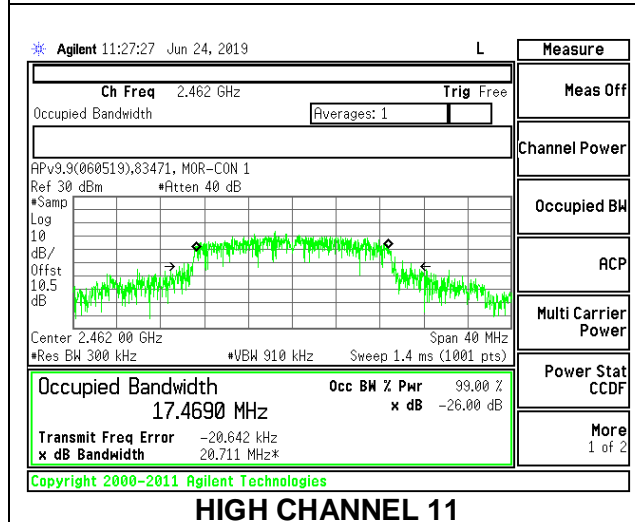
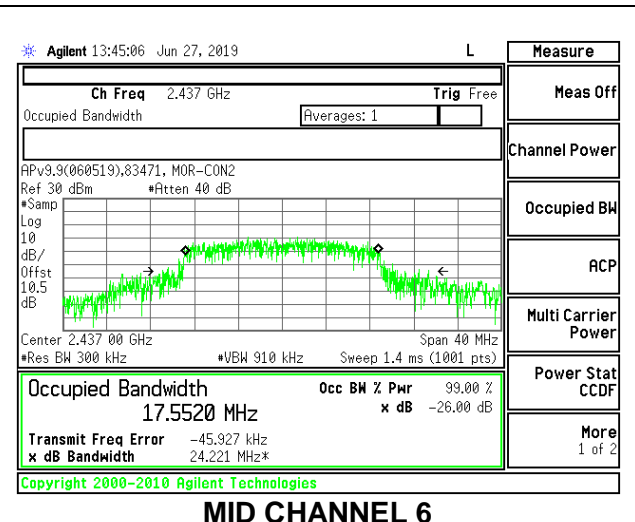
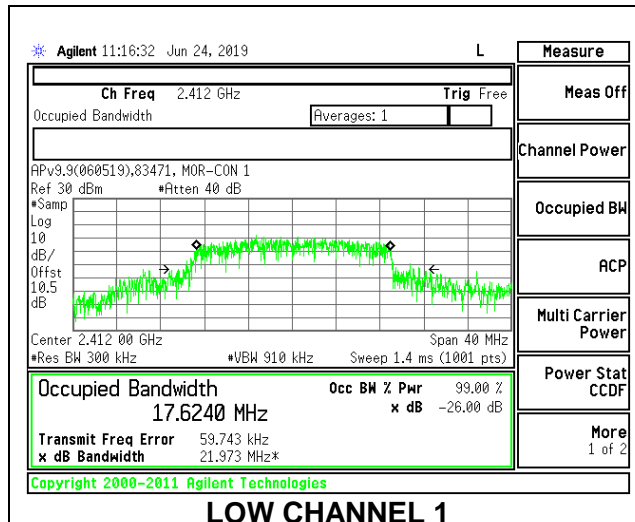
x dB Bandwidth: 20.038 MHz*

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8.2.3. 802.11n HT20 MODE

CHAIN 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.6240
Mid 6	2437	17.5520
High 11	2462	17.4690



Tested by: 83471/40882

CHAIN 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.6597
Mid 6	2437	17.5123
High 11	2462	17.4638

LOW CHANNEL 1

Agilent 12:21:23 Jun 27, 2019

Ch Freq: 2.412 GHz

Occupied Bandwidth: 17.6597 MHz

Transmit Freq Error: 39.974 kHz

x dB Bandwidth: 23.535 MHz*

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MID CHANNEL 6

Agilent 12:24:51 Jun 27, 2019

Ch Freq: 2.437 GHz

Occupied Bandwidth: 17.5123 MHz

Transmit Freq Error: -3.706 kHz

x dB Bandwidth: 20.593 MHz*

Copyright 2000-2010 Agilent Technologies

HIGH CHANNEL 11

Agilent 12:29:11 Jun 27, 2019

Ch Freq: 2.462 GHz

Occupied Bandwidth: 17.4638 MHz

Transmit Freq Error: -58.419 kHz

x dB Bandwidth: 20.267 MHz*

Copyright 2000-2010 Agilent Technologies

8.3. 6 dB BANDWIDTH

LIMITS

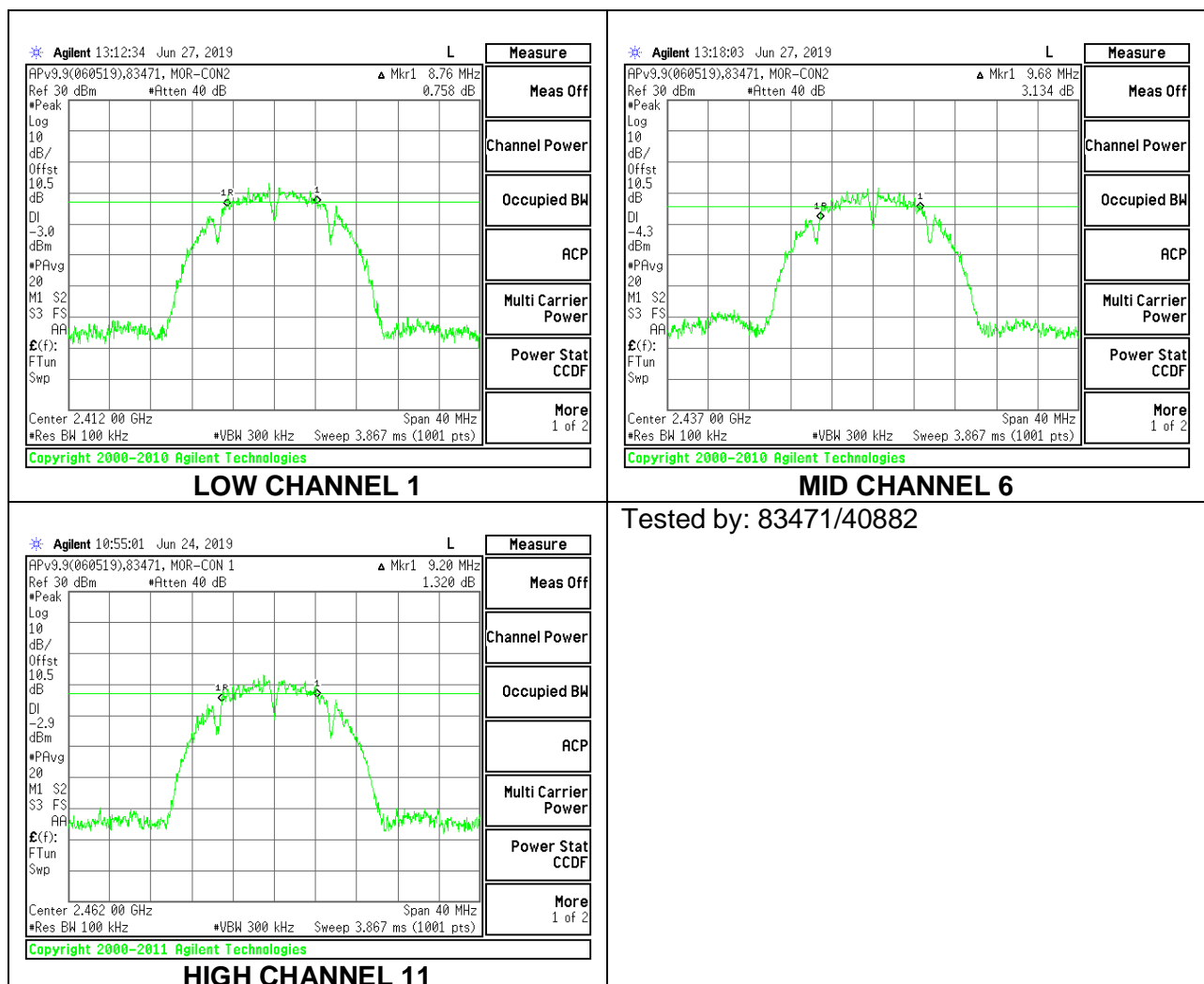
FCC §15.247 (a) (2)
 RSS-247 5.2 (a)

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

8.3.1. 802.11b MODE

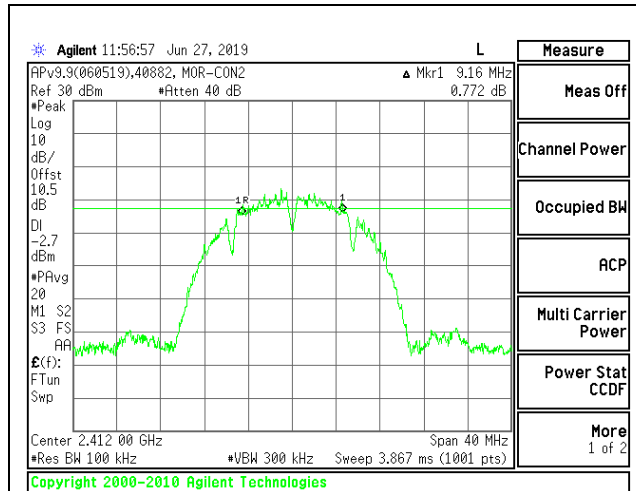
CHAIN 0

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	8.76	0.5
Mid 6	2437	9.68	0.5
High 11	2462	9.20	0.5

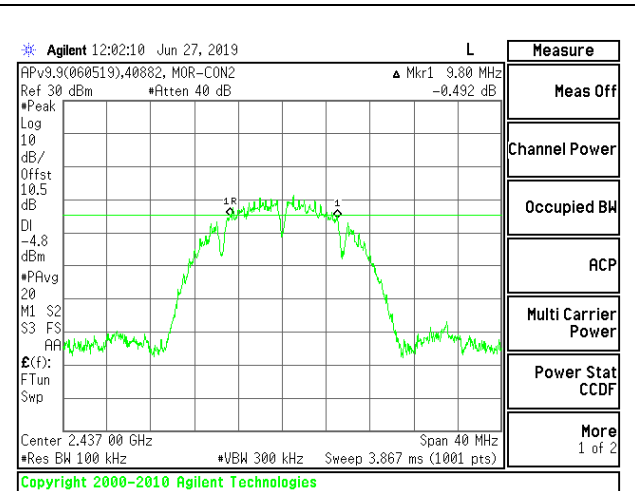


CHAIN 1

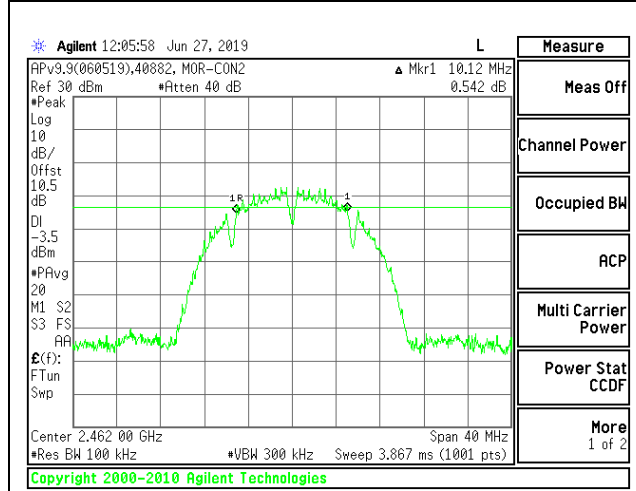
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	9.16	0.5
Mid 6	2437	9.80	0.5
High 11	2462	10.12	0.5



LOW CHANNEL 1



MID CHANNEL 6

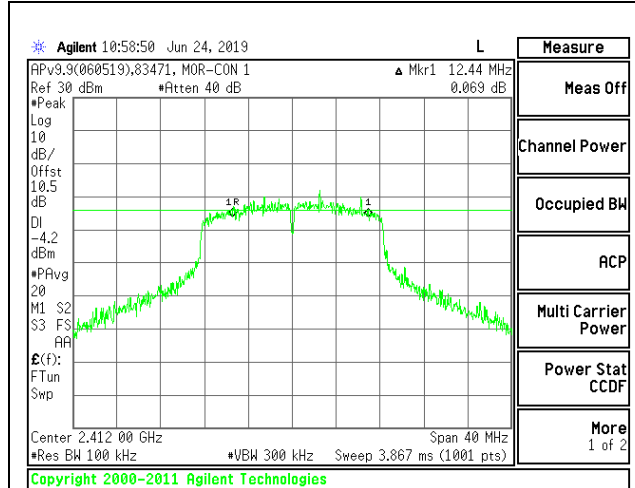


HIGH CHANNEL 11

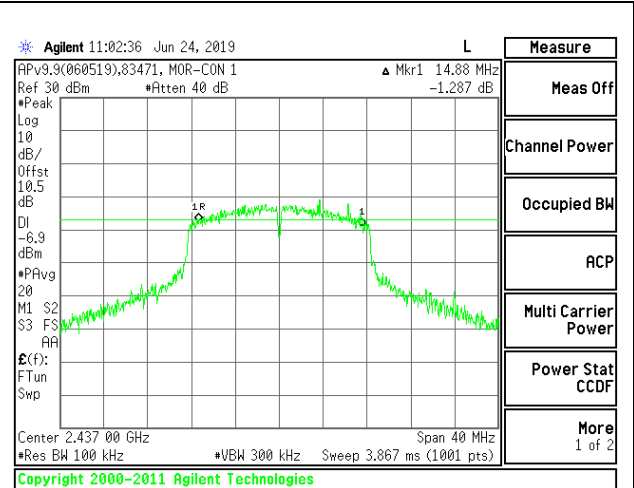
8.3.2. 802.11g MODE

CHAIN 0

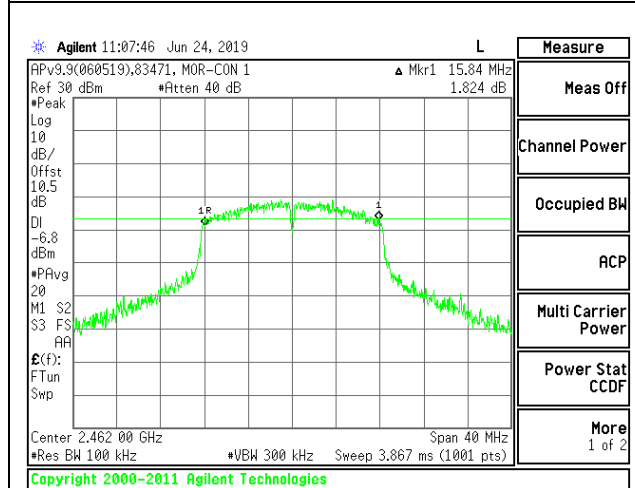
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	12.44	0.5
Mid 6	2437	14.88	0.5
High 11	2462	15.84	0.5



LOW CHANNEL 1



MID CHANNEL 6

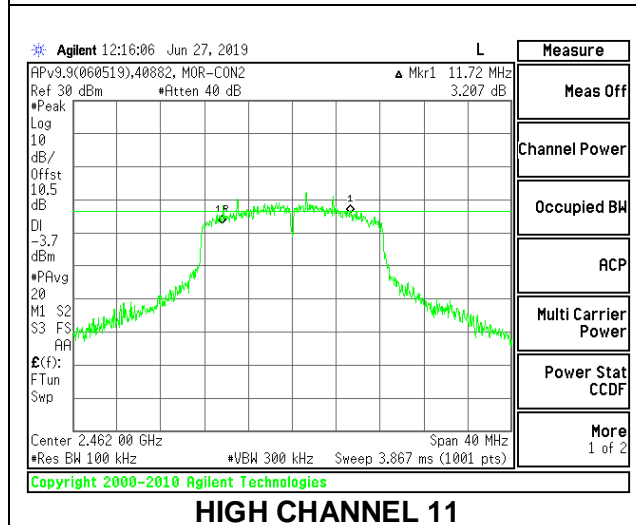
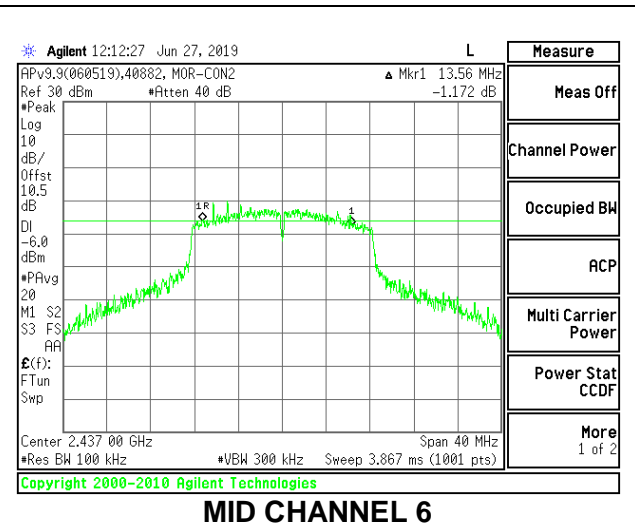
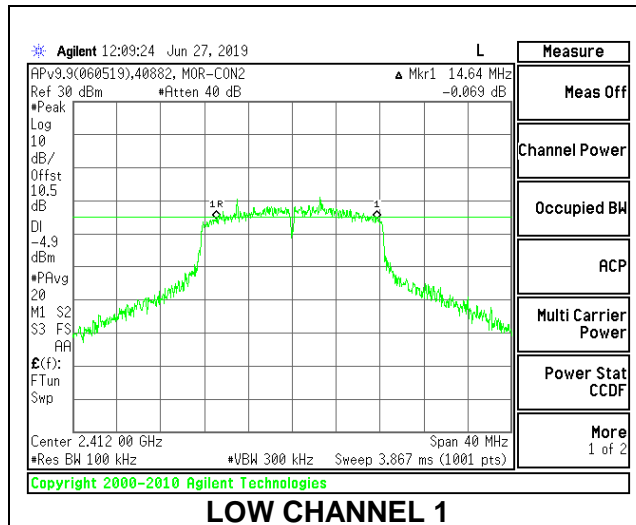


HIGH CHANNEL 11

Tested by: 83471/40882

CHAIN 1

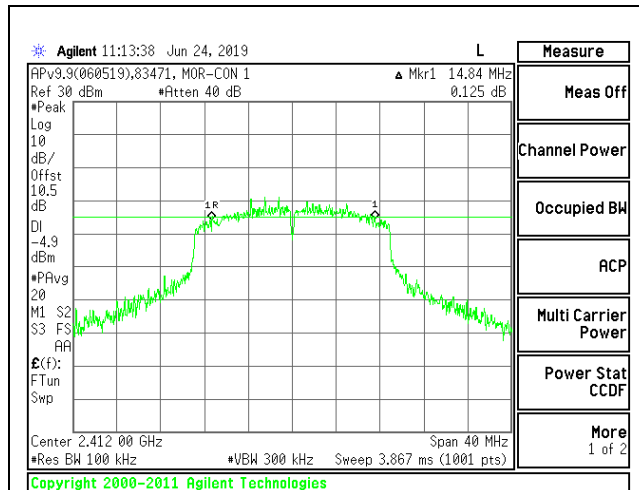
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	14.64	0.5
Mid 6	2437	13.56	0.5
High 11	2462	11.72	0.5



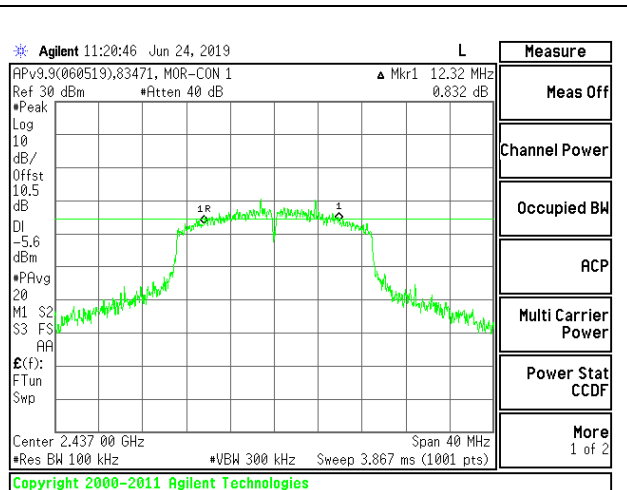
8.3.3. 802.11n HT20 MODE

CHAIN 0

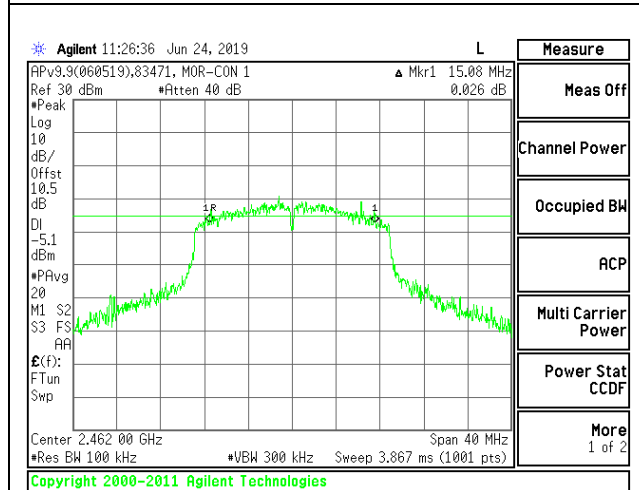
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	14.84	0.5
Mid 6	2437	12.32	0.5
High 11	2462	15.08	0.5



LOW CHANNEL 1



MID CHANNEL 6

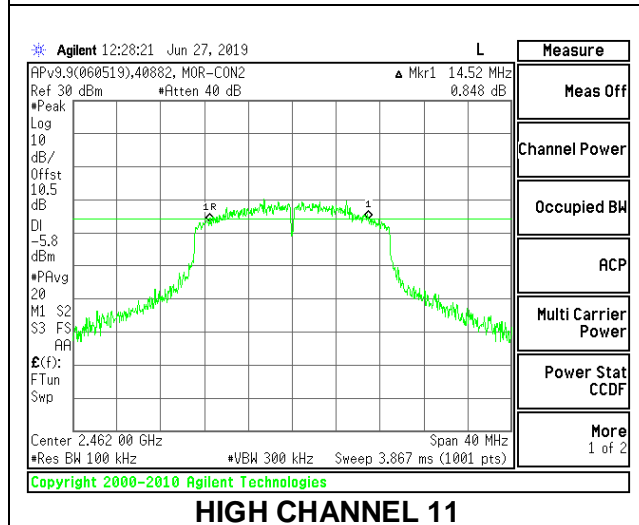
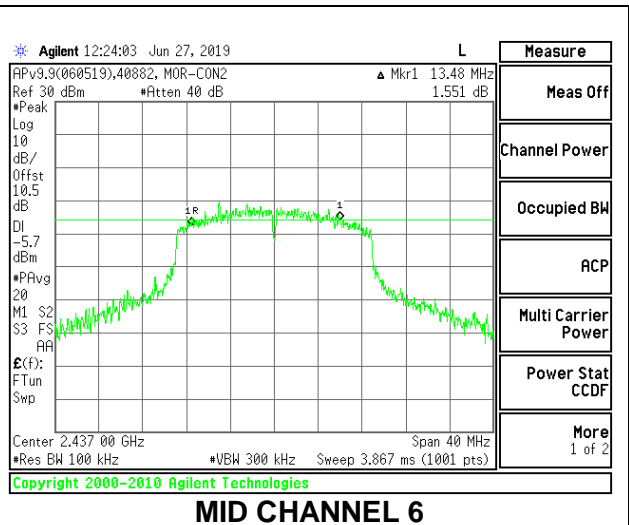
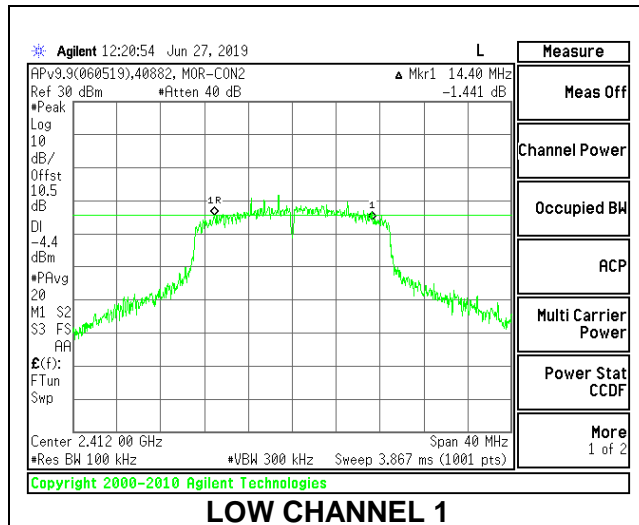


HIGH CHANNEL 11

Tested by: 83471/40882

CHAIN 1

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	14.40	0.5
Mid 6	2437	13.48	0.5
High 11	2462	14.52	0.5



8.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)
RSS-247 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 PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.26 dB (including 10 dB pad and 0.26 dB cable) was entered as an offset in the power meter to allow for a peak reading of power.

DIRECTIONAL ANTENNA GAIN

Unit is SISO with 2 antenna ports, therefore directional gain is equal to antenna gain.

Test information

Test date: 2019-06-25 and 2019-08-28
Tested By: 83471/44389 and 40882

8.4.1. 802.11b MODE

CHAIN 0

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	2.00	30.00	30	36	30.00
Mid 6	2437	2.00	30.00	30	36	30.00
High 11	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 1	2412	14.26	14.26	30.00	-15.74
Mid 6	2437	13.27	13.27	30.00	-16.73
High 11	2462	14.19	14.19	30.00	-15.81

CHAIN 1

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	2.00	30.00	30	36	30.00
Mid 6	2437	2.00	30.00	30	36	30.00
High 11	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 1	2412	14.61	14.61	30.00	-15.39
Mid 6	2437	13.51	13.51	30.00	-16.49
High 11	2462	14.87	14.87	30.00	-15.13

8.4.2. 802.11g MODE

CHAIN 0

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	2.00	30.00	30	36	30.00
Mid 6	2437	2.00	30.00	30	36	30.00
High 11	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 1	2412	18.67	18.67	30.00	-11.33
Mid 6	2437	17.73	17.73	30.00	-12.27
High 11	2462	18.39	18.39	30.00	-11.61

CHAIN 1

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	2.00	30.00	30	36	30.00
Mid 6	2437	2.00	30.00	30	36	30.00
High 11	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 1	2412	19.30	19.30	30.00	-10.70
Mid 6	2437	16.67	16.67	30.00	-13.33
High 11	2462	19.38	19.38	30.00	-10.62

8.4.3. 802.11n HT20 MODE

CHAIN 0

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	2.00	30.00	30	36	30.00
Mid 6	2437	2.00	30.00	30	36	30.00
High 11	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 1	2412	17.48	17.48	30.00	-12.52
Mid 6	2437	16.73	16.73	30.00	-13.27
High 11	2462	17.73	17.73	30.00	-12.27

CHAIN 1

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	2.00	30.00	30	36	30.00
Mid 6	2437	2.00	30.00	30	36	30.00
High 11	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 1	2412	18.91	18.91	30.00	-11.09
Mid 6	2437	17.59	17.59	30.00	-12.41
High 11	2462	18.52	18.52	30.00	-11.48

8.5. AVERAGE POWER

LIMITS

None; for reporting purposes only

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for a gated average reading of power

Test information

Test date: 2019-06-25 and 2019-08-28

Tested By: 83471/44389 and 40882

8.5.1. 802.11b MODE

CHAIN 0

Channel	Frequency (MHz)	Chain 0 Power (dBm)
Low 1	2412	12.4200
Mid 6	2437	11.1600
High 11	2462	12.1500

CHAIN 1

Channel	Frequency (MHz)	Chain 1 Power (dBm)
Low 1	2412	12.8200
Mid 6	2437	11.4700
High 11	2462	12.6400

8.5.2. 802.11g MODE

CHAIN 0

Channel	Frequency (MHz)	Chain 0 Power (dBm)
Low 1	2412	12.0500
Mid 6	2437	10.1300
High 11	2462	10.7500

CHAIN 1

Channel	Frequency (MHz)	Chain 1 Power (dBm)
Low 1	2412	11.7200
Mid 6	2437	11.5800
High 11	2462	12.4800

8.5.3. 802.11n HT20 MODE

CHAIN 0

Channel	Frequency (MHz)	Chain 0 Power (dBm)
Low 1	2412	10.85
Mid 6	2437	9.72
High 11	2462	11.22

CHAIN 1

Channel	Frequency (MHz)	Chain 1 Power (dBm)
Low 1	2412	10.43
Mid 6	2437	9.69
High 11	2462	10.51

8.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)
RSS-247 (5.2) (b)

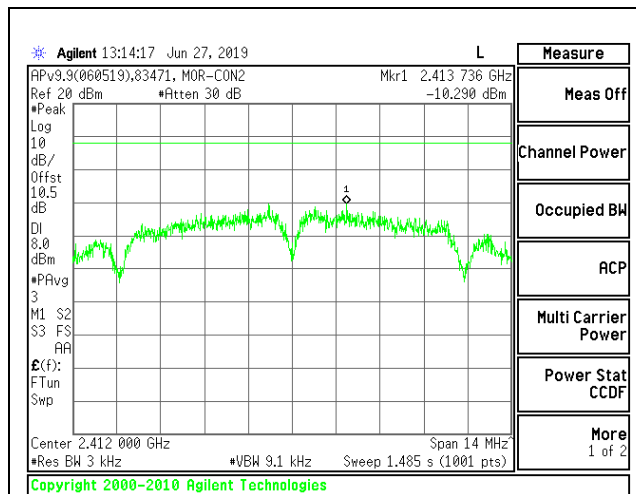
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

8.6.1. 802.11b MODE

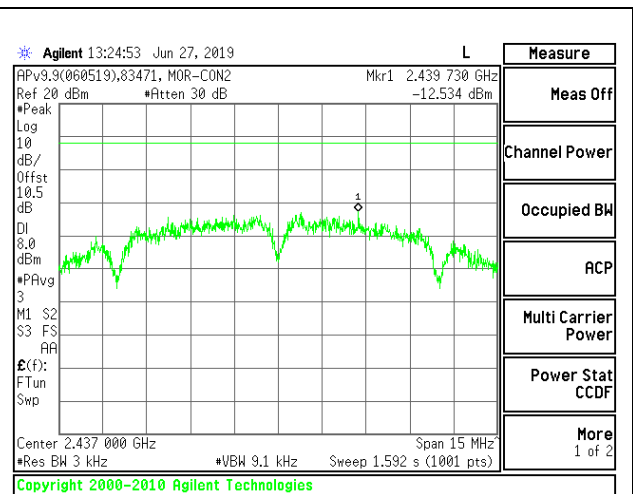
CHAIN 0

PSD Results

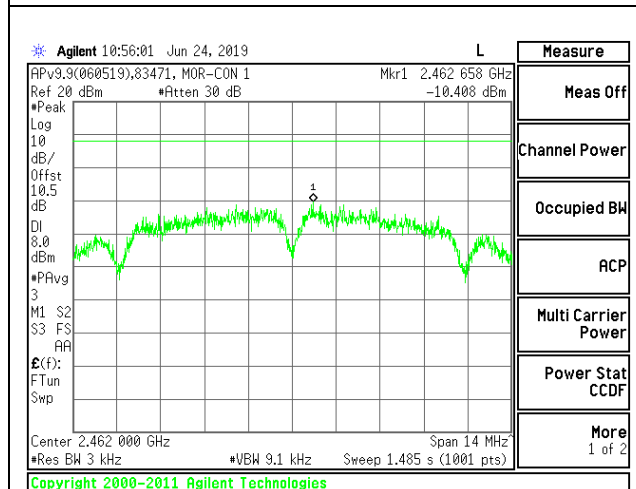
Channel	Frequency (MHz)	Chain 0 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-10.290	-10.29	8.0	-18.3
Mid 6	2437	-12.534	-12.53	8.0	-20.5
High 11	2462	-10.408	-10.41	8.0	-18.4



LOW CHANNEL 1



MID CHANNEL 6



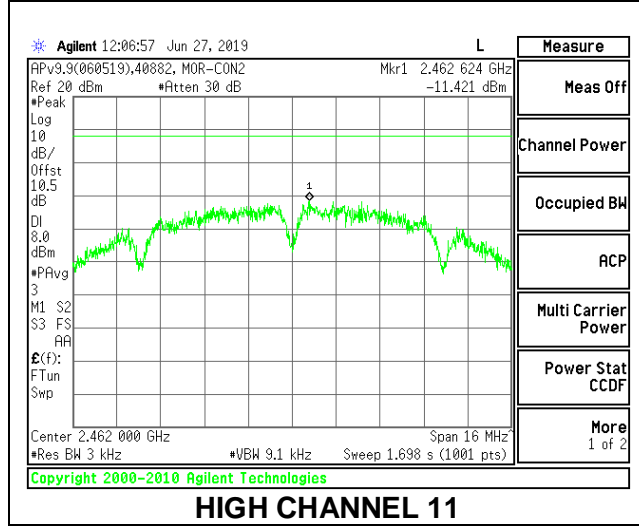
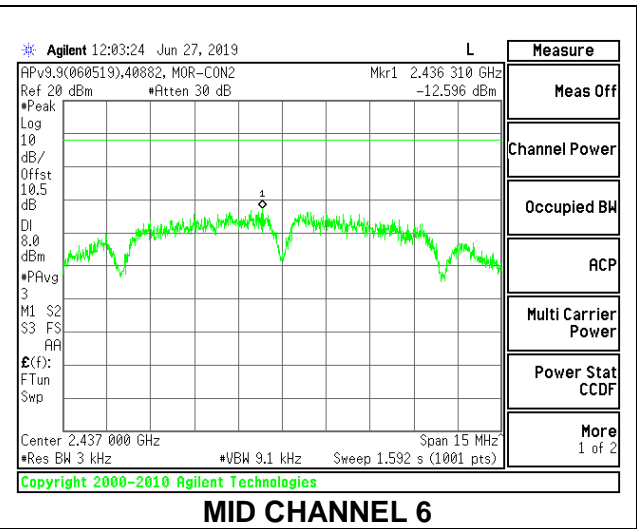
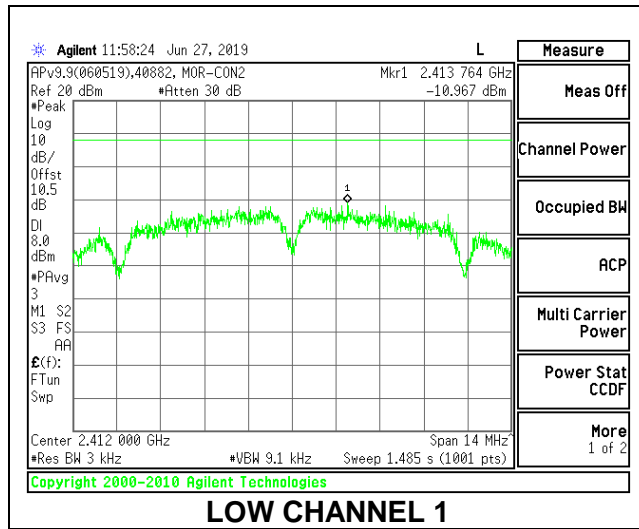
HIGH CHANNEL 11

Tested by: 83471/40882

CHAIN 1

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-10.967	-10.97	8.0	-19.0
Mid 6	2437	-12.596	-12.60	8.0	-20.6
High 11	2462	-11.421	-11.42	8.0	-19.4

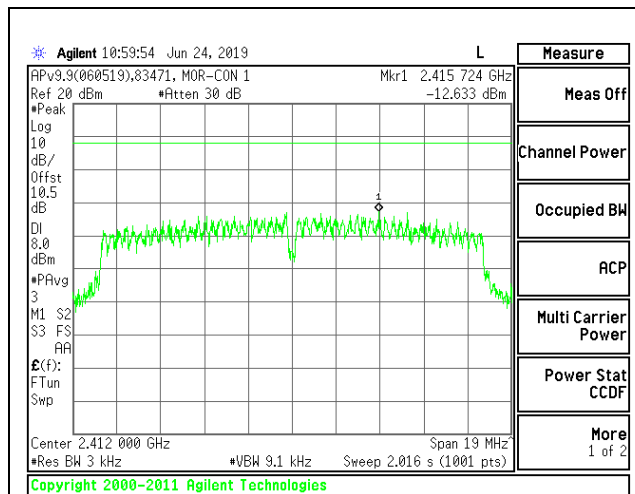


8.6.2. 802.11g MODE

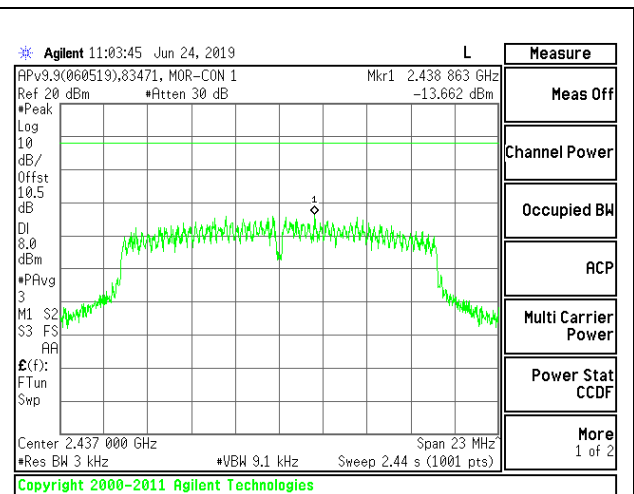
CHAIN 0

PSD Results

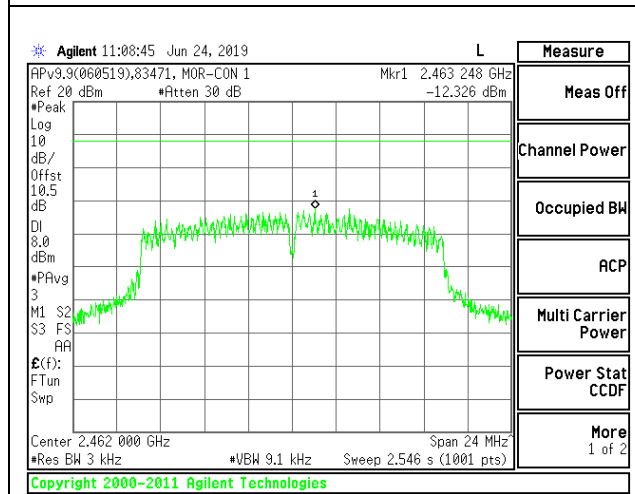
Channel	Frequency (MHz)	Chain 0 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-12.633	-12.63	8.0	-20.6
Mid 6	2437	-13.662	-13.66	8.0	-21.7
High 11	2462	12.326	12.33	8.0	4.3



LOW CHANNEL 1



MID CHANNEL 6



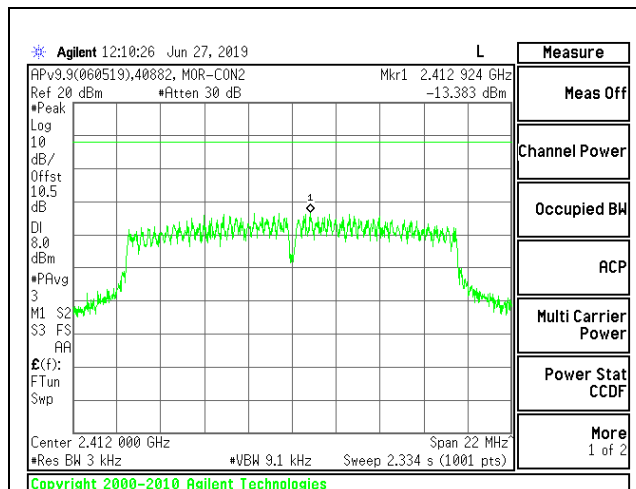
HIGH CHANNEL 11

Tested by: 83471/40882

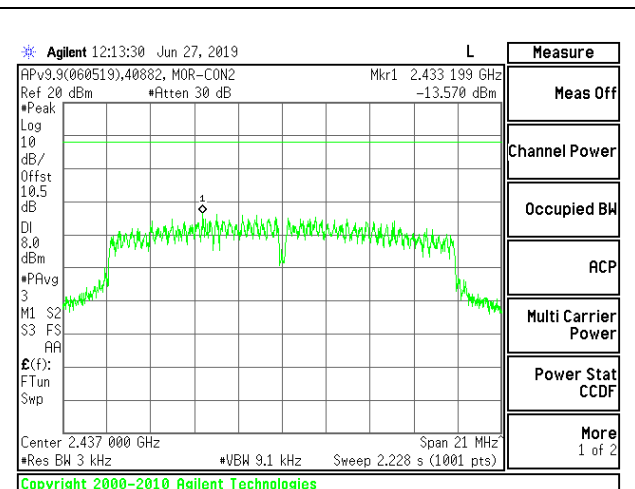
CHAIN 1

PSD Results

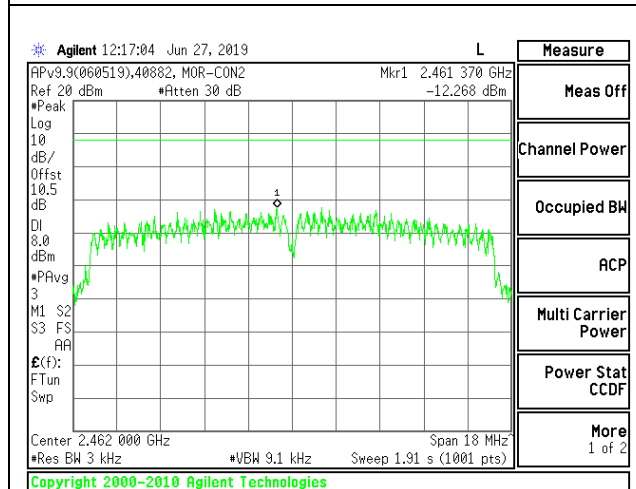
Channel	Frequency (MHz)	Chain 1 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-13.383	-13.38	8.0	-21.4
Mid 6	2437	-13.570	-13.57	8.0	-21.6
High 11	2462	-12.268	-12.27	8.0	-20.3



LOW CHANNEL 1



MID CHANNEL 6



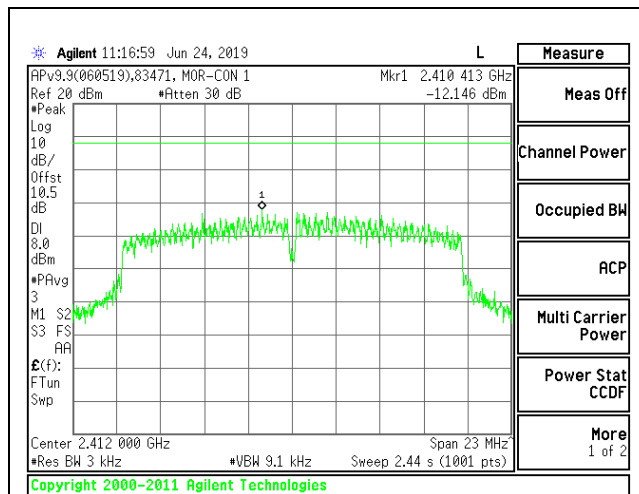
HIGH CHANNEL 11

8.6.3. 802.11n HT20 MODE

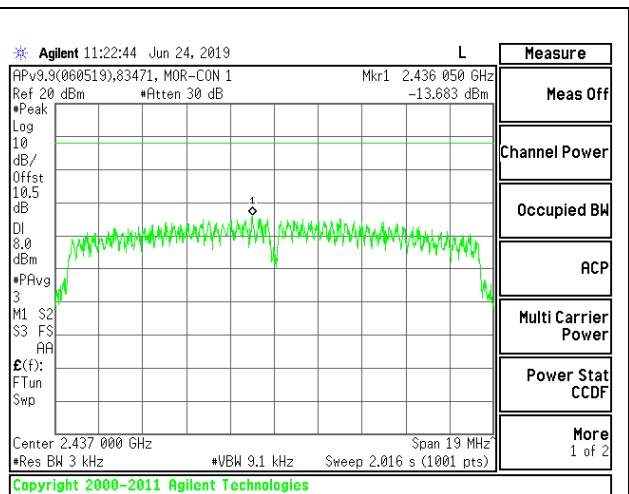
CHAIN 0

PSD Results

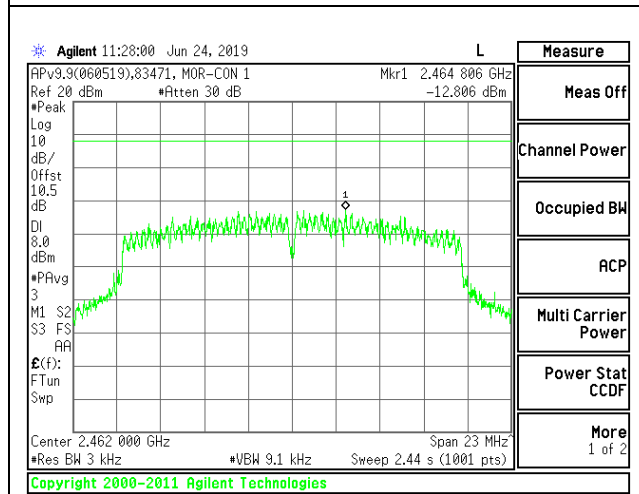
Channel	Frequency (MHz)	Chain 0 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-12.146	-12.15	8.0	-20.1
Mid 6	2437	-13.683	-13.68	8.0	-21.7
High 11	2462	-12.806	-12.81	8.0	-20.8



LOW CHANNEL 1



MID CHANNEL 6



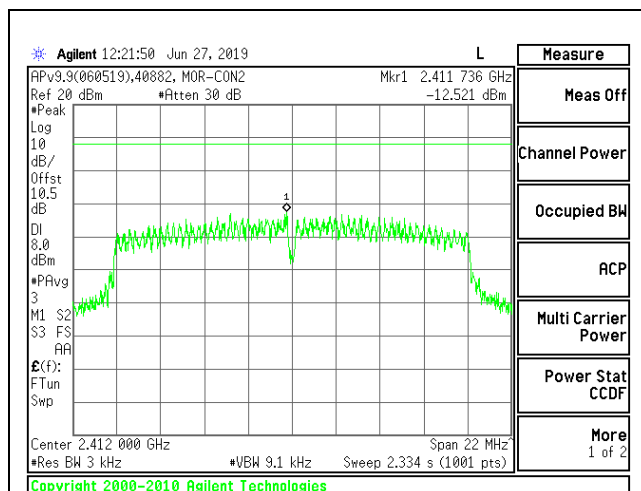
HIGH CHANNEL 11

Tested by: 83471/40882

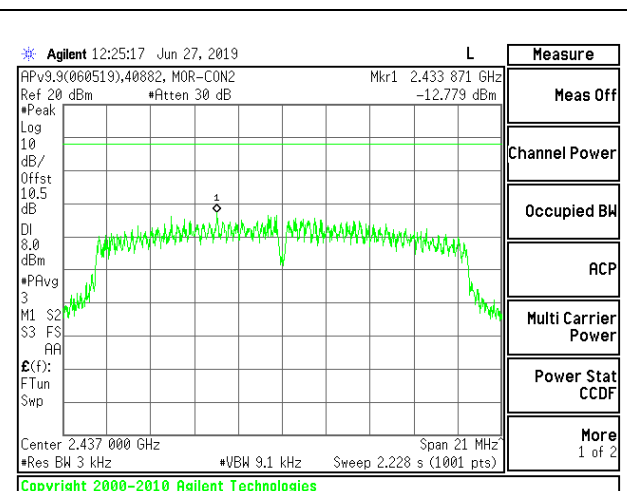
CHAIN 1

PSD Results

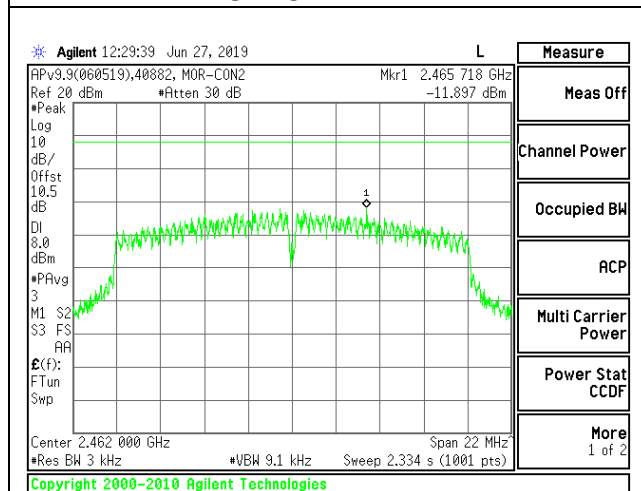
Channel	Frequency (MHz)	Chain 1 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-12.521	-12.52	8.0	-20.5
Mid 6	2437	-12.779	-12.78	8.0	-20.8
High 11	2462	-11.897	-11.90	8.0	-19.9



LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11

8.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

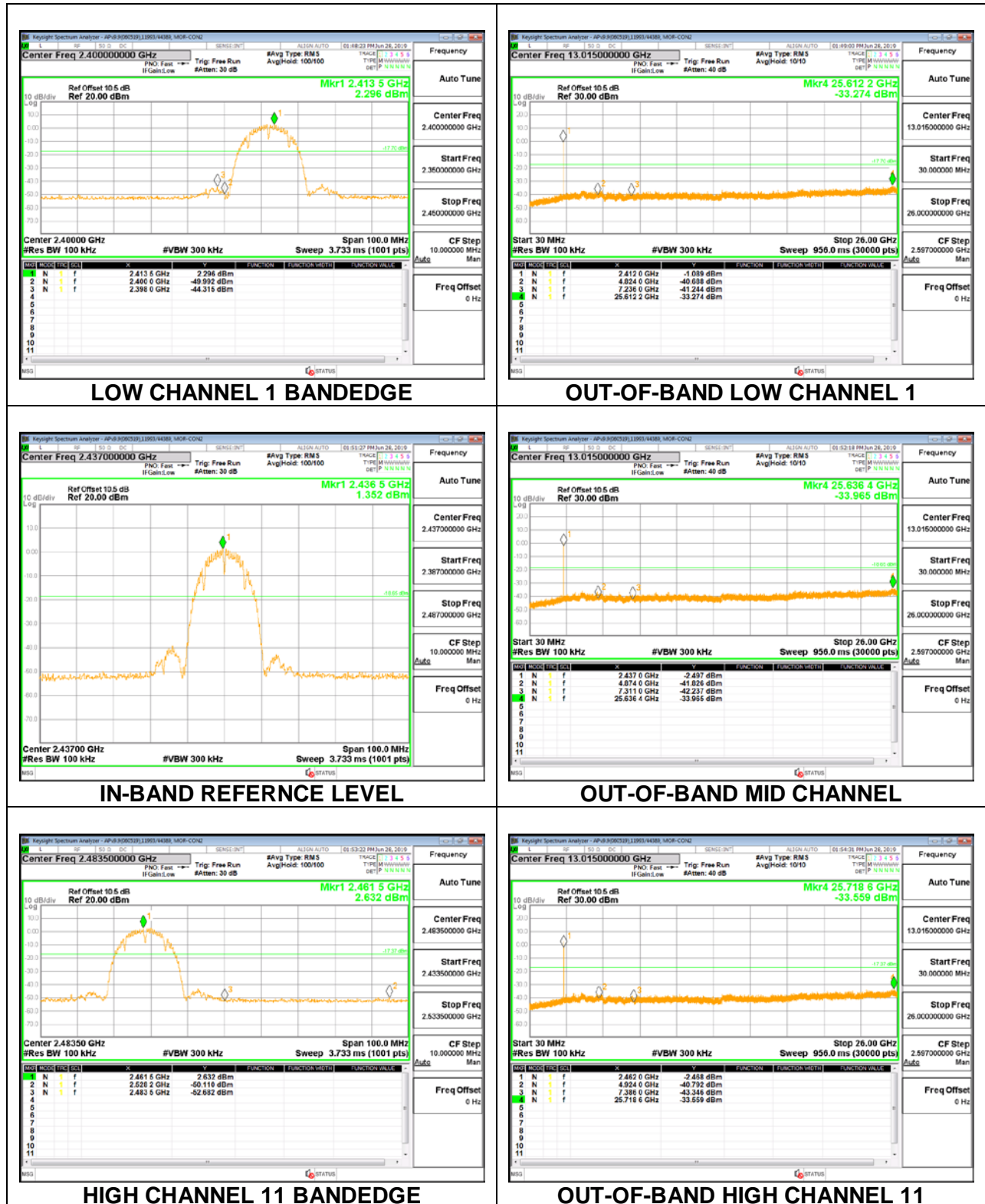
RSS-247 5.5

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

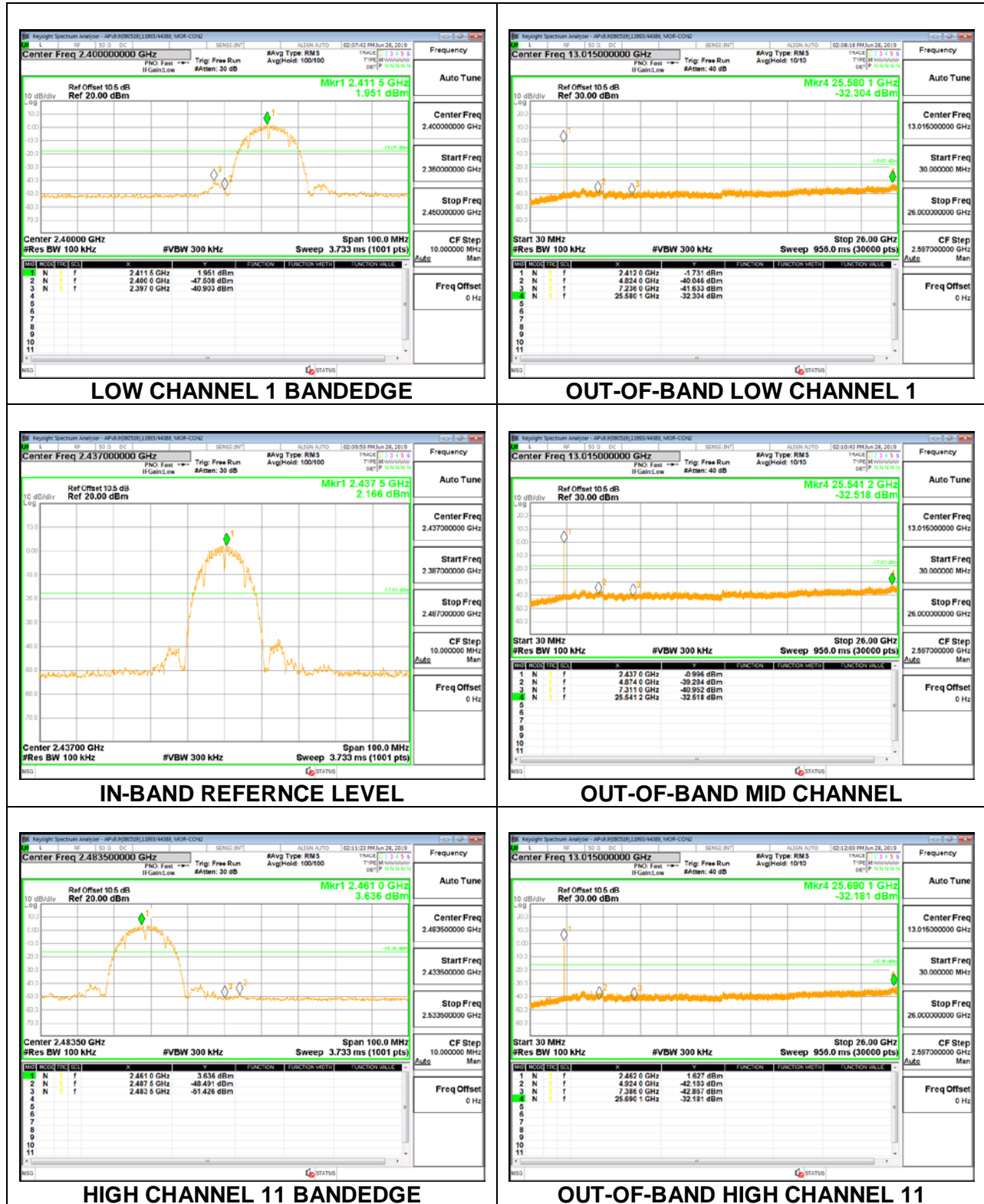
RESULTS

8.7.1. 802.11b MODE

CHAIN 0

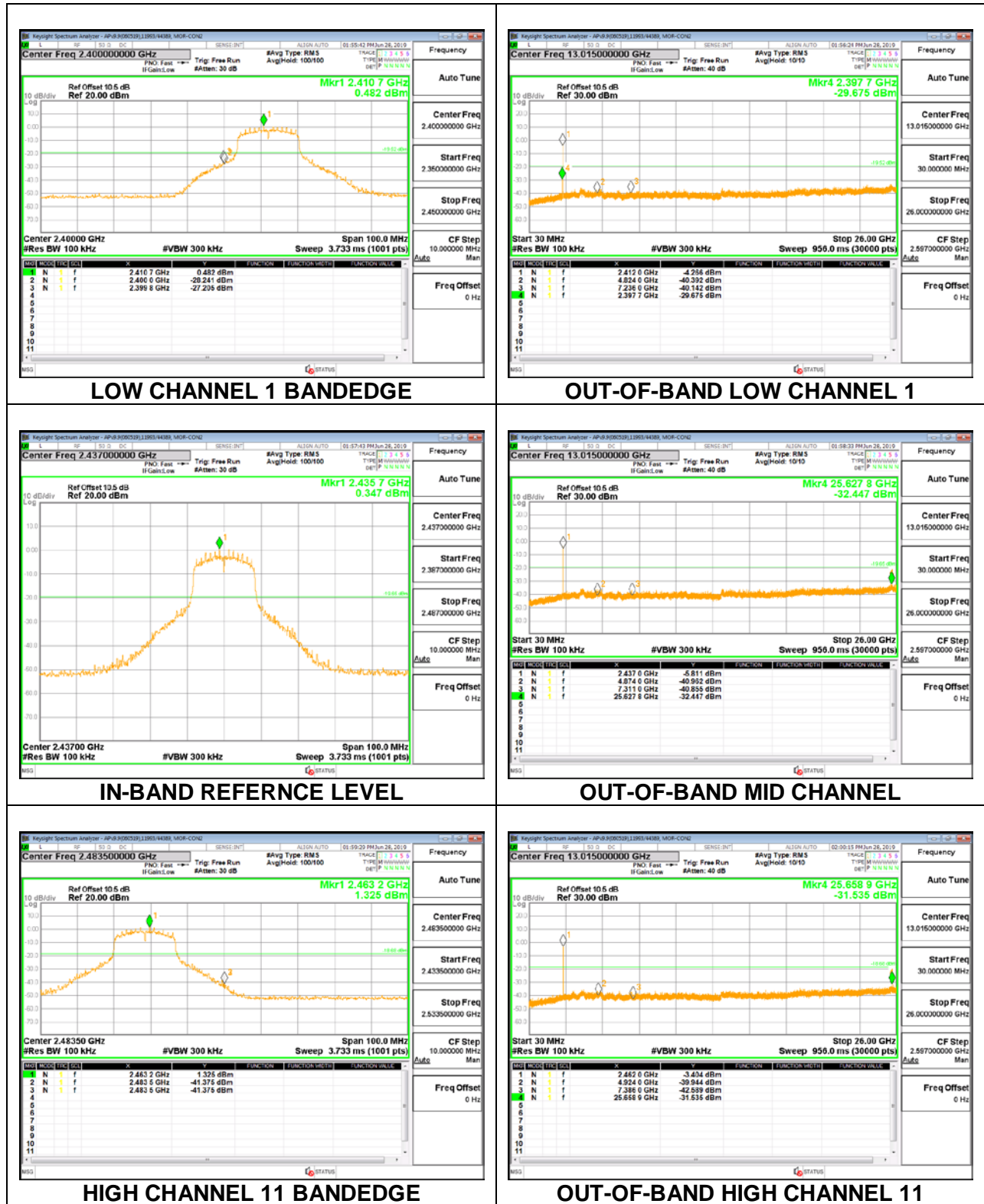


CHAIN 1

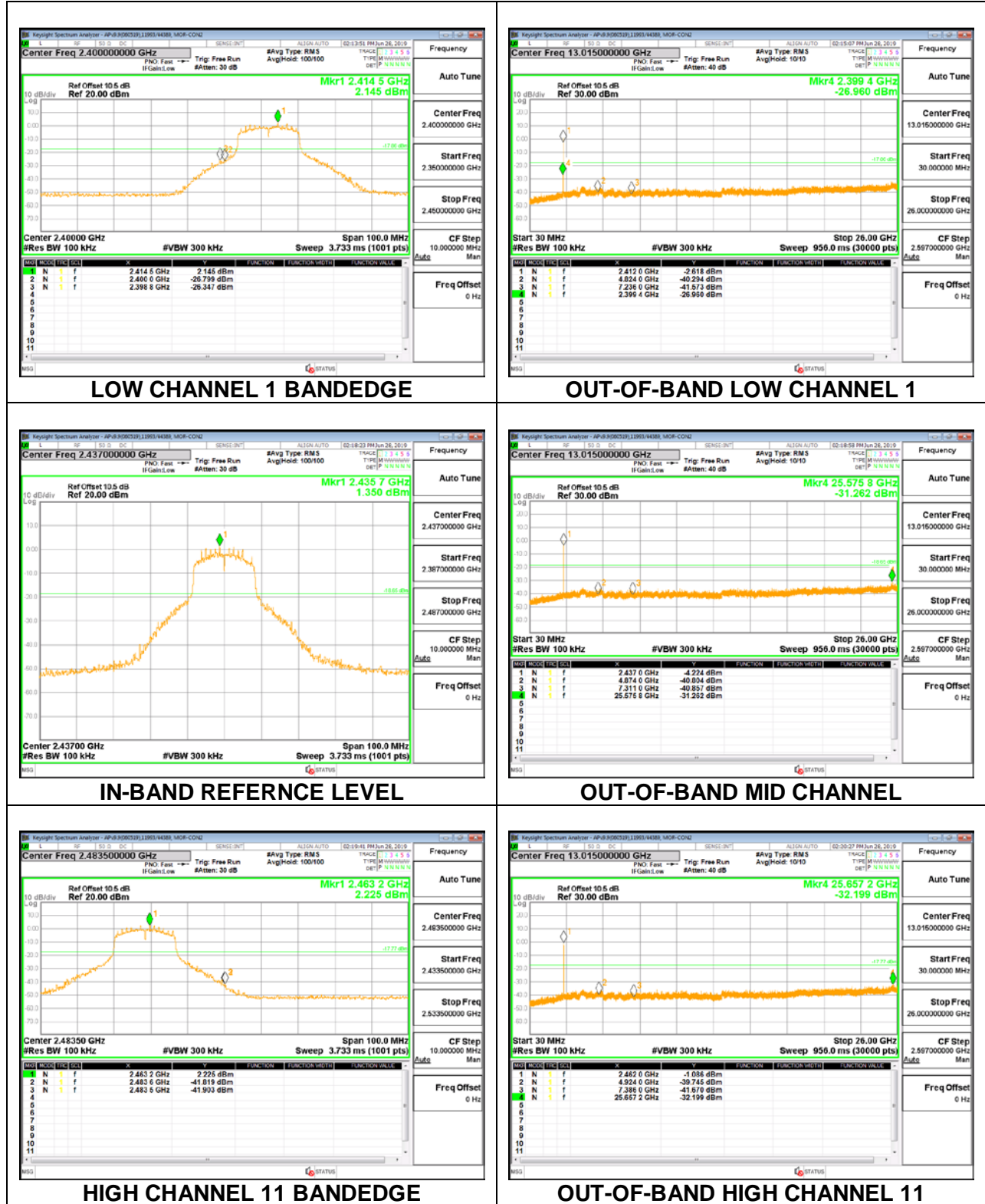


8.7.2. 802.11g MODE

CHAIN 0

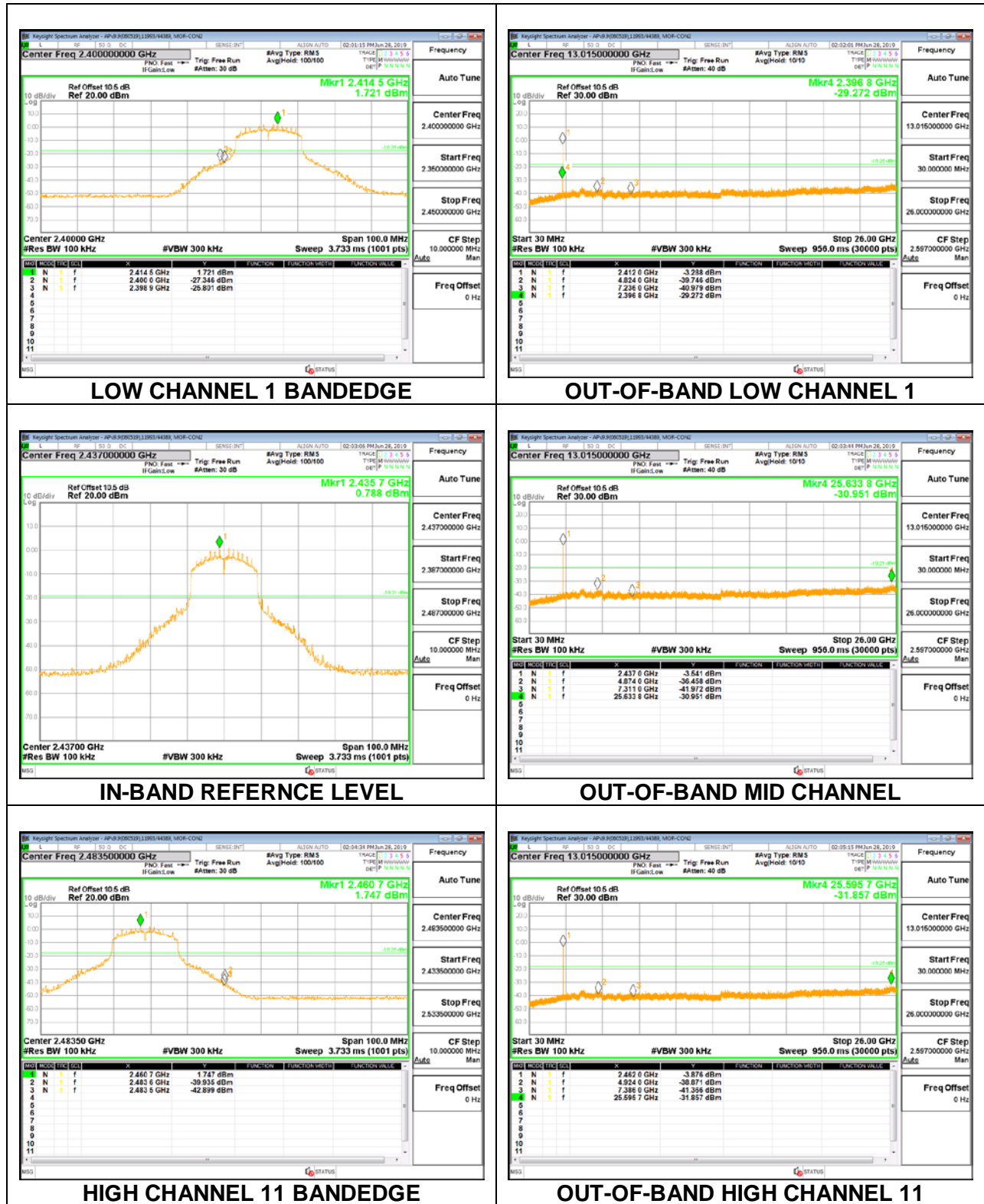


CHAIN 1

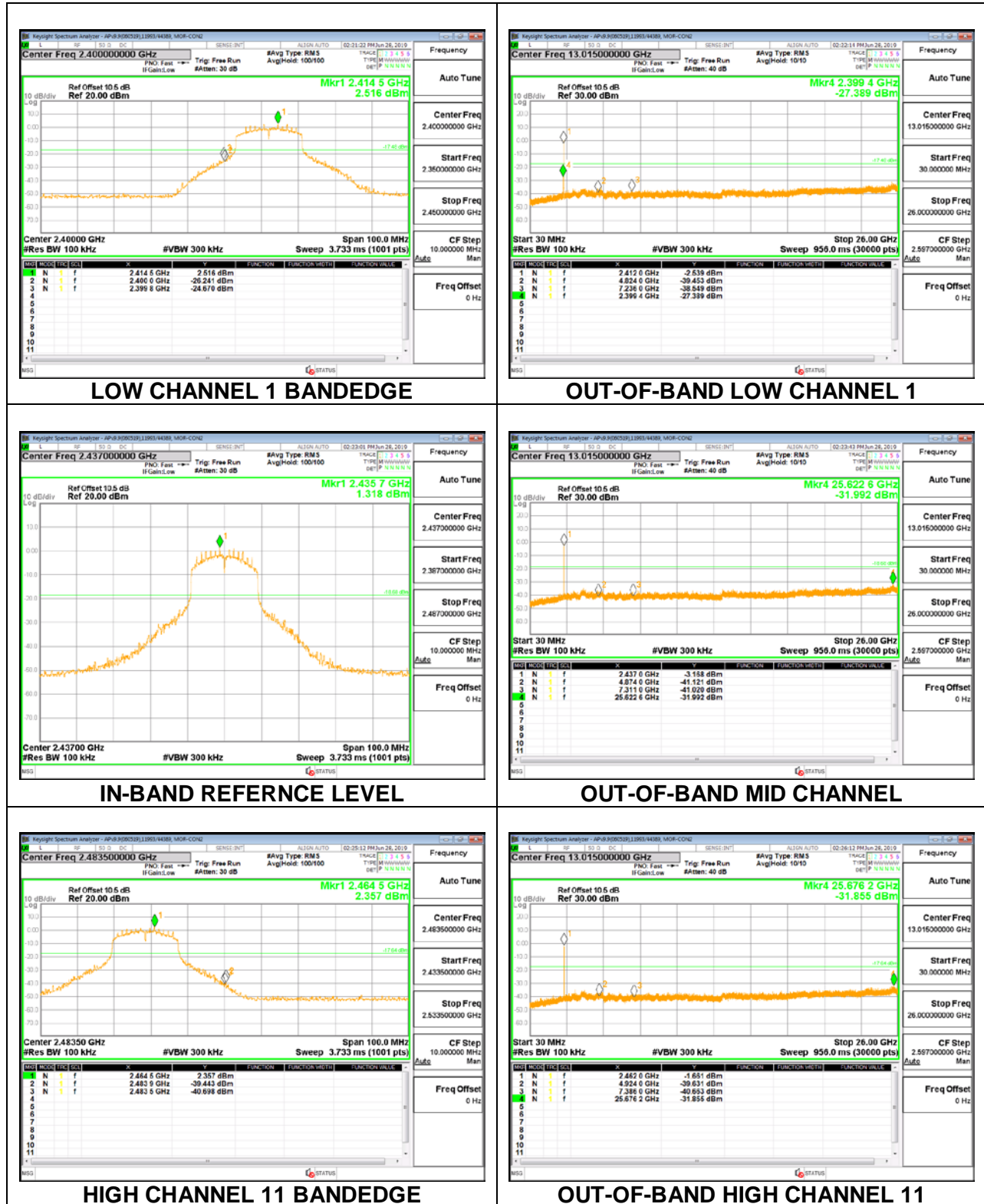


8.7.3. 802.11n HT20 MODE

CHAIN 0



CHAIN 1



9. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209
RSS-GEN, Section 8.9 and 8.10

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 measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

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

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements. RMS detection used.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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.

3D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel).

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

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

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

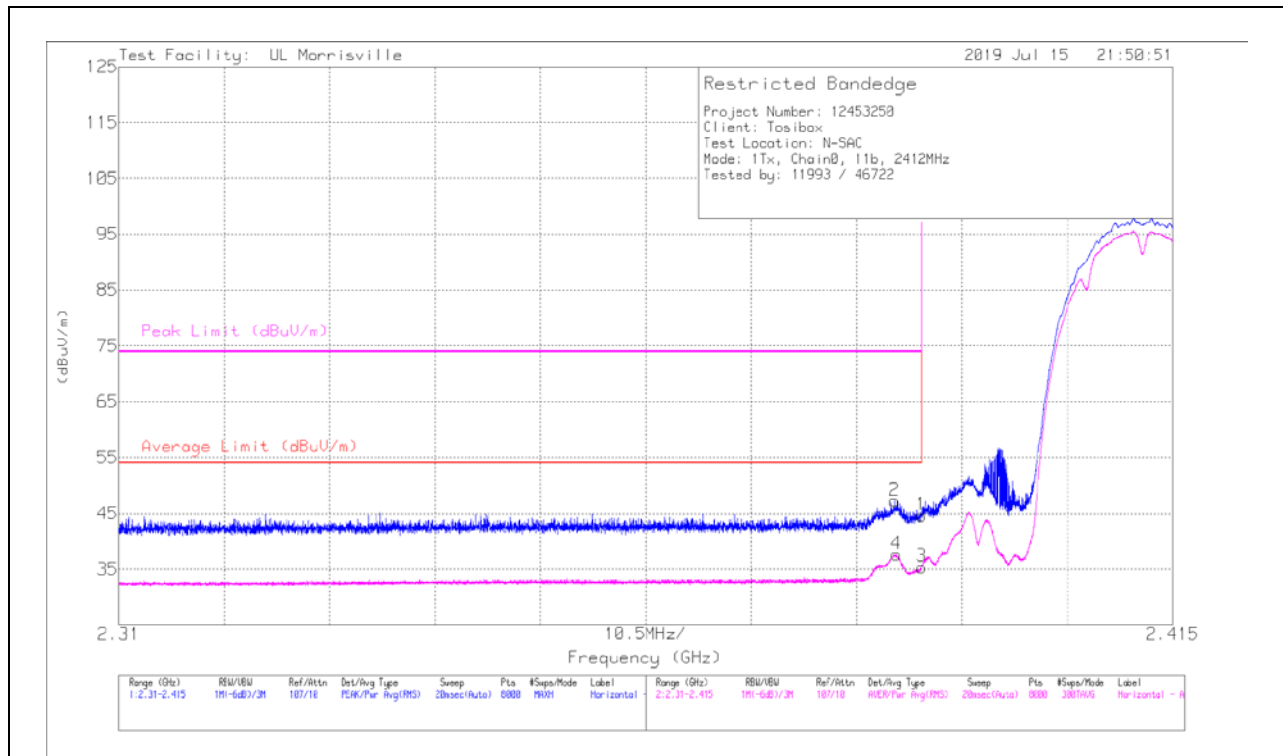
9.1. TRANSMITTER 1 – 18 GHz

9.1.1. TX 1-18 GHz 802.11b MODE IN THE 2.4 GHz BAND

1TX Antenna 1 MODE

BANDEDGE (LOW CHANNEL, CH 1)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0067 AF (dBuV/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	37.04	Pk	32	-24.4	0	44.64	-	-	74	-29.36	295	131	H
2	*** 2.38731	39.7	Pk	32	-24.4	0	47.3	-	-	74	-26.7	295	131	H
3	*** 2.39	27.61	RMS	32	-24.4	.2	35.41	54	-18.59	-	-	295	131	H
4	** 2.3875	29.83	RMS	32	-24.4	.2	37.63	54	-16.37	-	-	295	131	H

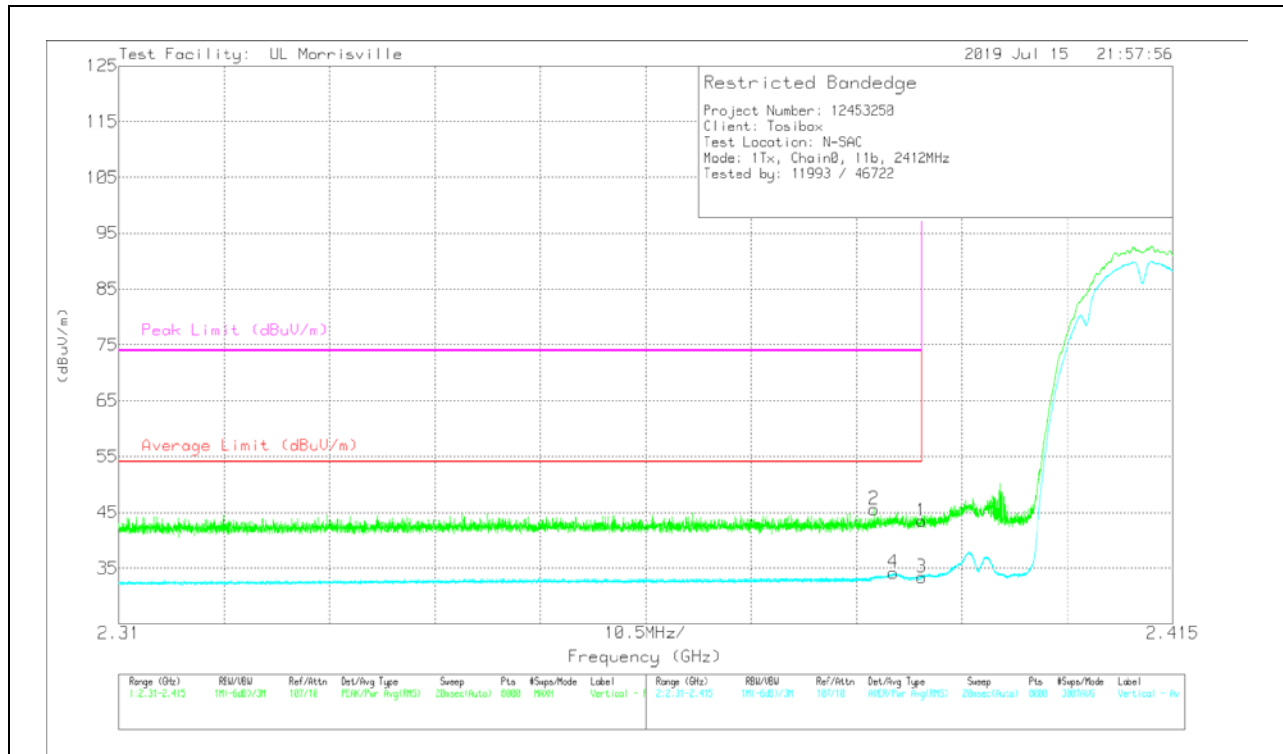
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT

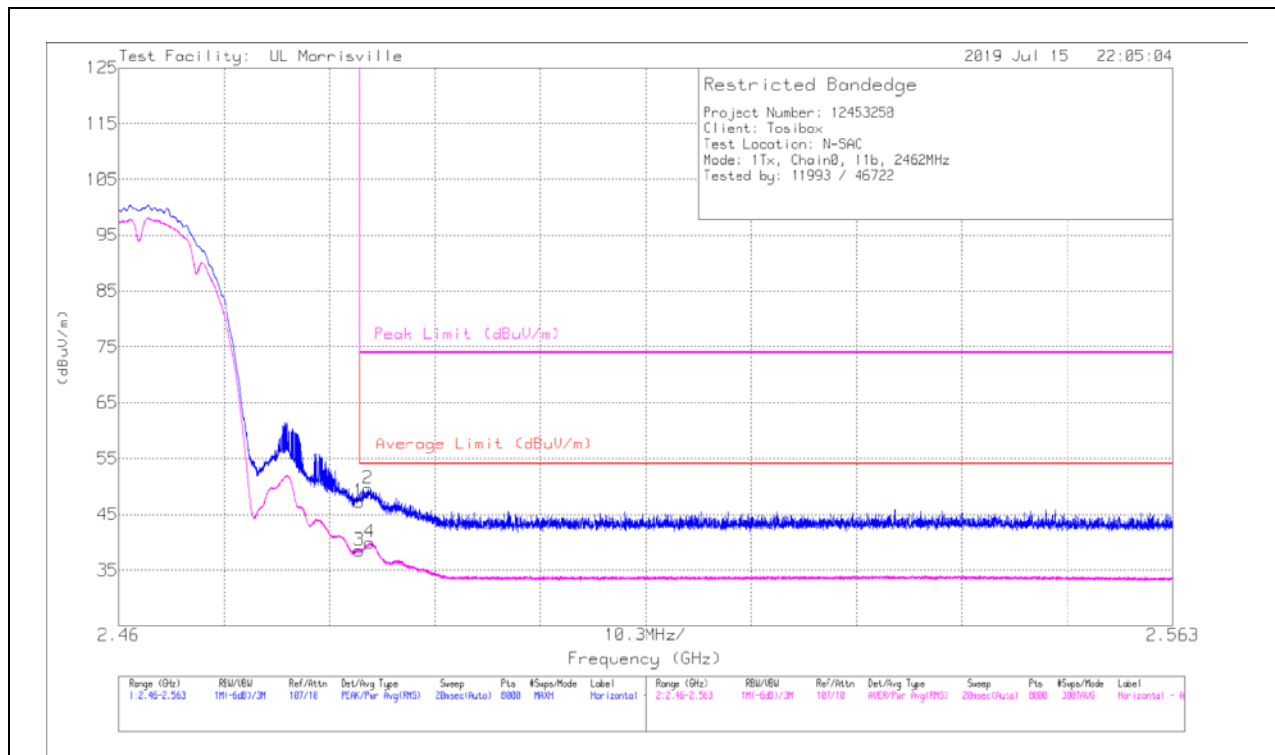


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0067 AF (dBuV/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.39	35.87	Pk	32	-24.4	0	43.47	-	-	74	-30.53	21	284	V
2	** 2.38524	37.93	Pk	32	-24.4	0	45.53	-	-	74	-28.47	21	284	V
3	*** 2.39	25.59	RMS	32	-24.4	.2	33.39	54	-20.61	-	-	21	284	V
4	** 2.38717	26.39	RMS	32	-24.4	.2	34.19	54	-19.81	-	-	21	284	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 (HIGH CHANNEL, CH 11)

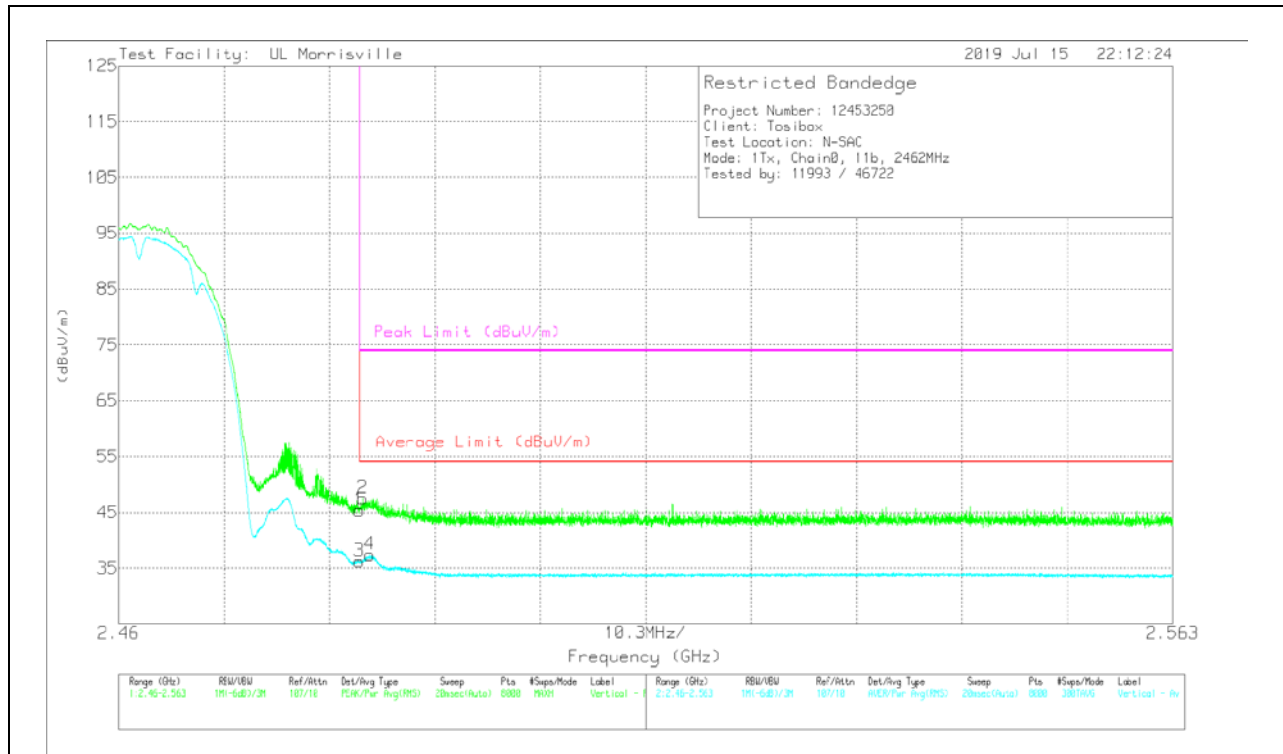
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0067 AF (dBuV/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	* ** 2.4835	39.2	Pk	32.4	-24.3	0	47.3	-	-	74	-26.7	206	280	H
2	* ** 2.48434	41.53	Pk	32.4	-24.3	0	49.63	-	-	74	-24.37	206	280	H
3	* ** 2.4835	30.22	RMS	32.4	-24.3	.2	38.52	54	-15.48	-	-	206	280	H
4	* ** 2.48452	31.66	RMS	32.4	-24.3	.2	39.96	54	-14.04	-	-	206	280	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

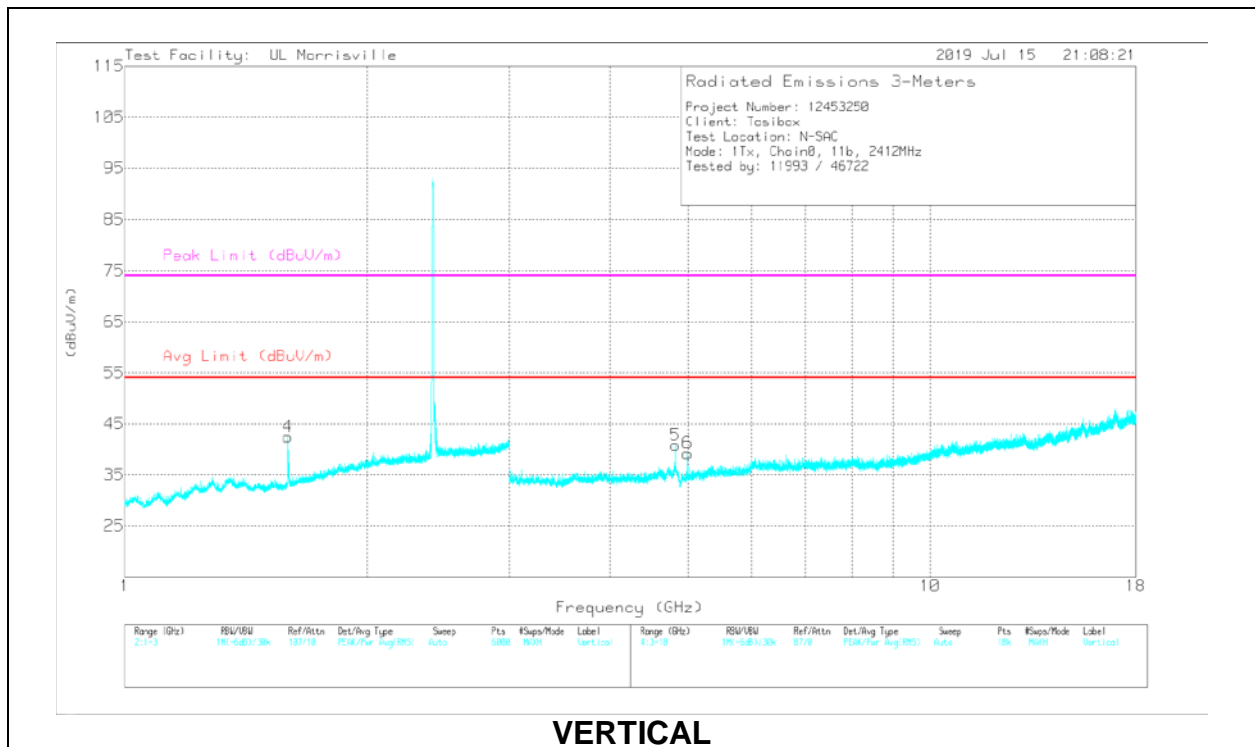
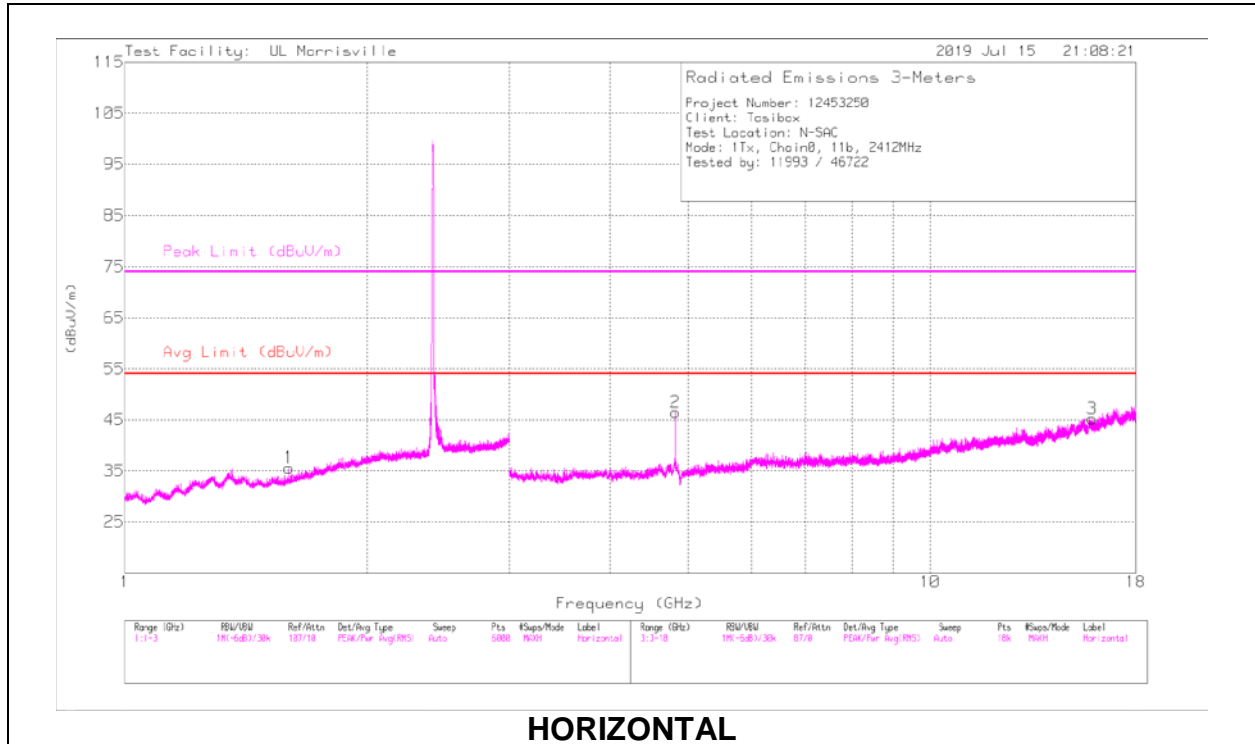


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0067 AF (dBuV/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.4835	37.28	Pk	32.4	-24.3	0	45.38	-	-	74	-28.62	237	348	V
2	* ** 2.48382	39.42	Pk	32.4	-24.3	0	47.52	-	-	74	-26.48	237	348	V
3	* ** 2.4835	27.95	RMS	32.4	-24.3	.2	36.25	54	-17.75	-	-	237	348	V
4	* ** 2.48451	29.09	RMS	32.4	-24.3	.2	37.39	54	-16.61	-	-	237	348	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	AT0067 AF (dBuV/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	*** 1.59979	42.77	PK2	28.1	-24.6	0	46.27	-	-	74	-27.73	76	342	H
	*** 1.59862	24.72	MAv1	28.1	-24.6	.2	28.42	54	-25.58	-	-	76	342	H
4	*** 1.59419	49.91	PK2	28.1	-24.6	0	53.41	-	-	74	-20.59	142	136	V
	*** 1.59303	25.87	MAv1	28.1	-24.6	.2	29.57	54	-24.43	-	-	142	136	V
2	*** 4.82397	48.05	PK2	34.1	-31.4	0	50.75	-	-	74	-23.25	259	198	H
	*** 4.82395	43.66	MAv1	34.1	-31.4	.2	46.56	54	-7.44	-	-	259	198	H
3	* ** 15.88473	36.56	PK2	40.3	-25.6	0	51.26	-	-	74	-22.74	44	391	H
	* ** 15.88449	24.59	MAv1	40.3	-25.6	.2	39.49	54	-14.51	-	-	44	391	H
5	*** 4.82387	44.06	PK2	34.1	-31.4	0	46.76	-	-	74	-27.24	161	107	V
	*** 4.82395	34.96	MAv1	34.1	-31.4	.2	37.86	54	-16.14	-	-	161	107	V
6	*** 4.99732	45.7	PK2	34	-32.6	0	47.1	-	-	74	-26.9	90	102	V
	*** 4.99738	28.3	MAv1	34	-32.6	.2	29.9	54	-24.1	-	-	90	102	V

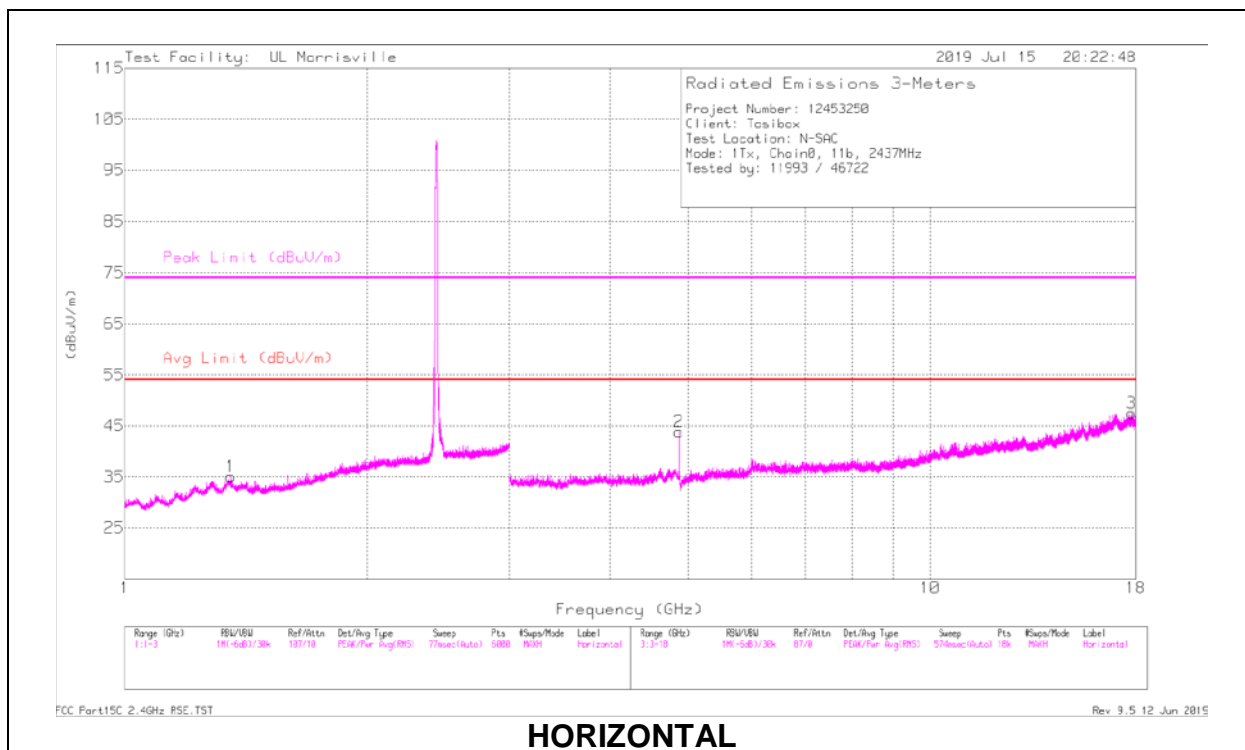
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

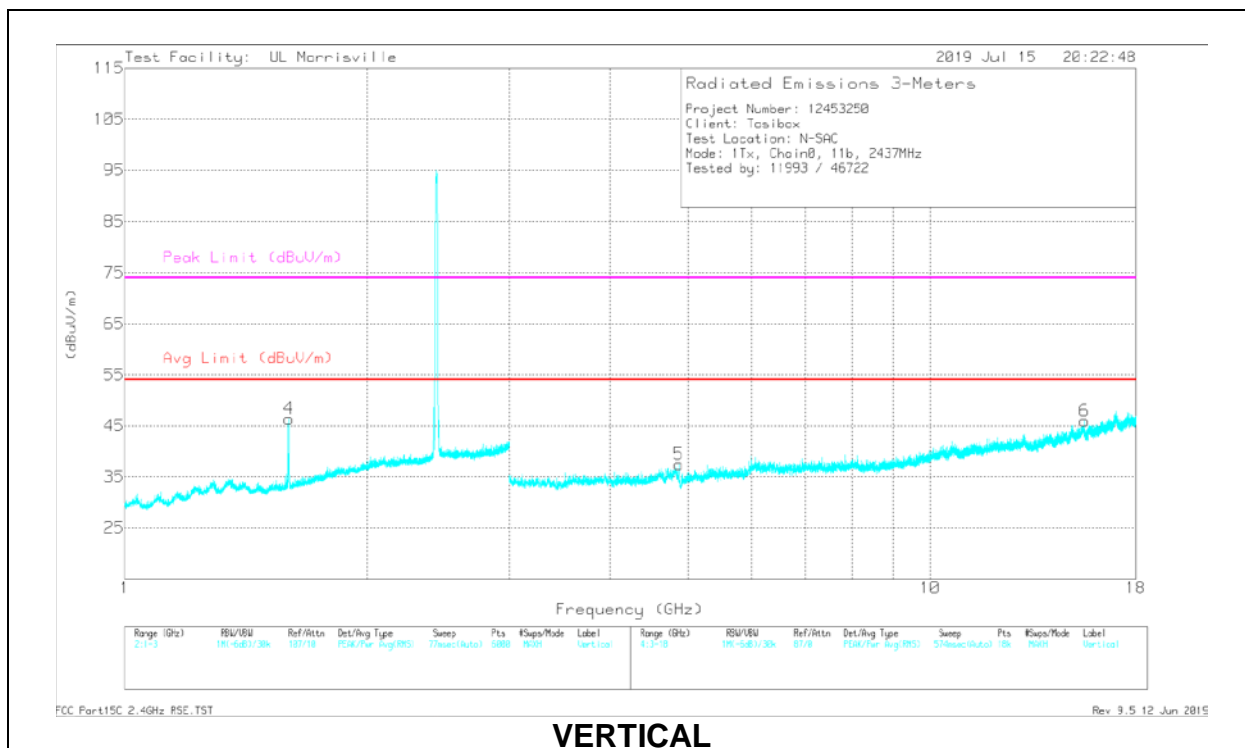
PK2 - Maximum Peak

MAv1 - Maximum RMS Average

MID CHANNEL, CH 6 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0067 AF (dBuV/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	*** 1.35029	36.59	PK2	29.5	-25.4	0	40.69	-	-	74	-33.31	189	333	H
	*** 1.34978	24.8	MAv1	29.5	-25.4	.2	29.1	54	-24.9	-	-	189	333	H
4	*** 1.59848	50.36	PK2	28.1	-24.6	0	53.86	-	-	74	-20.14	132	105	V
	*** 1.59758	26.52	MAv1	28.1	-24.6	.2	30.22	54	-23.78	-	-	132	105	V
2	*** 4.8741	45.78	PK2	34	-31.3	0	48.48	-	-	74	-25.52	156	202	H
	*** 4.87395	41.22	MAv1	34	-31.3	.2	44.12	54	-9.88	-	-	156	202	H
3	*** 17.76778	35.54	PK2	41.1	-22.6	0	54.04	-	-	74	-19.96	300	285	H
	*** 17.76794	23.36	MAv1	41.1	-22.6	.2	42.06	54	-11.94	-	-	300	285	H
5	*** 4.87395	42.97	PK2	34	-31.3	0	45.67	-	-	74	-28.33	89	339	V
	*** 4.8739	35.78	MAv1	34	-31.3	.2	38.68	54	-15.32	-	-	89	339	V
6	*** 15.54135	35.63	PK2	40.2	-24.5	0	51.33	-	-	74	-22.67	231	172	V
	*** 15.54153	23.34	MAv1	40.2	-24.5	.2	39.24	54	-14.76	-	-	231	172	V

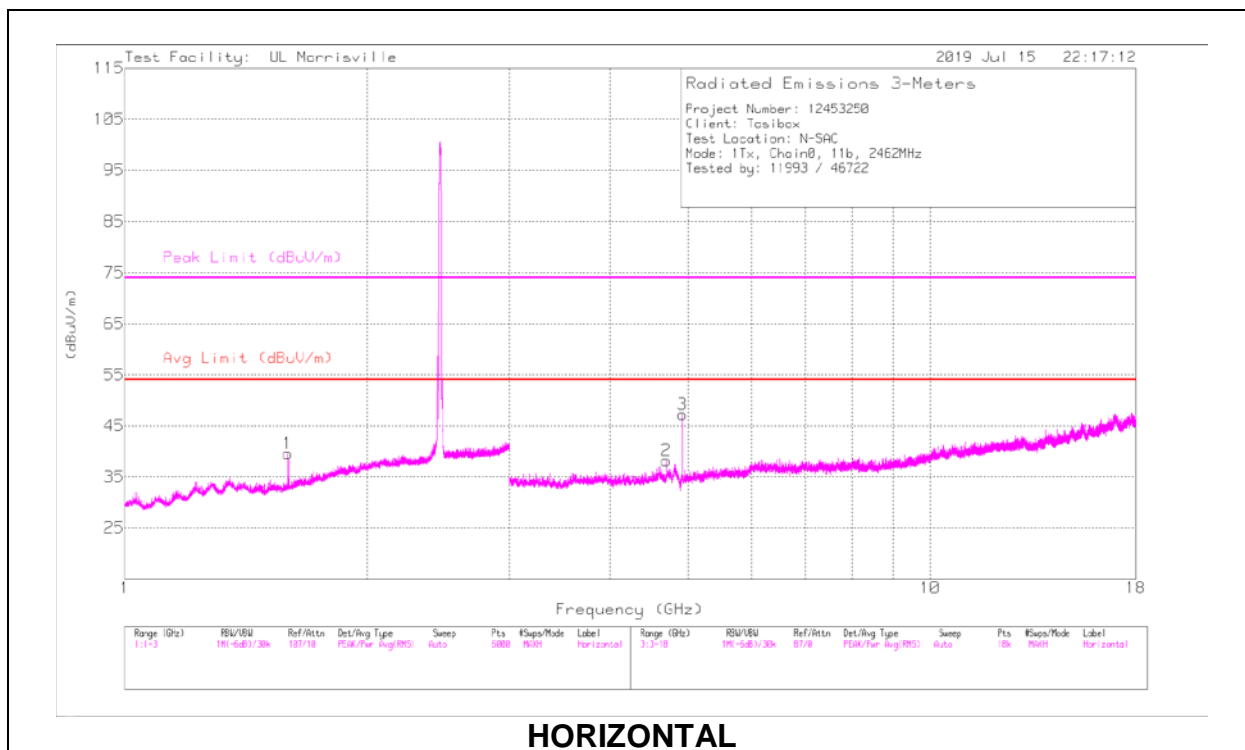
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

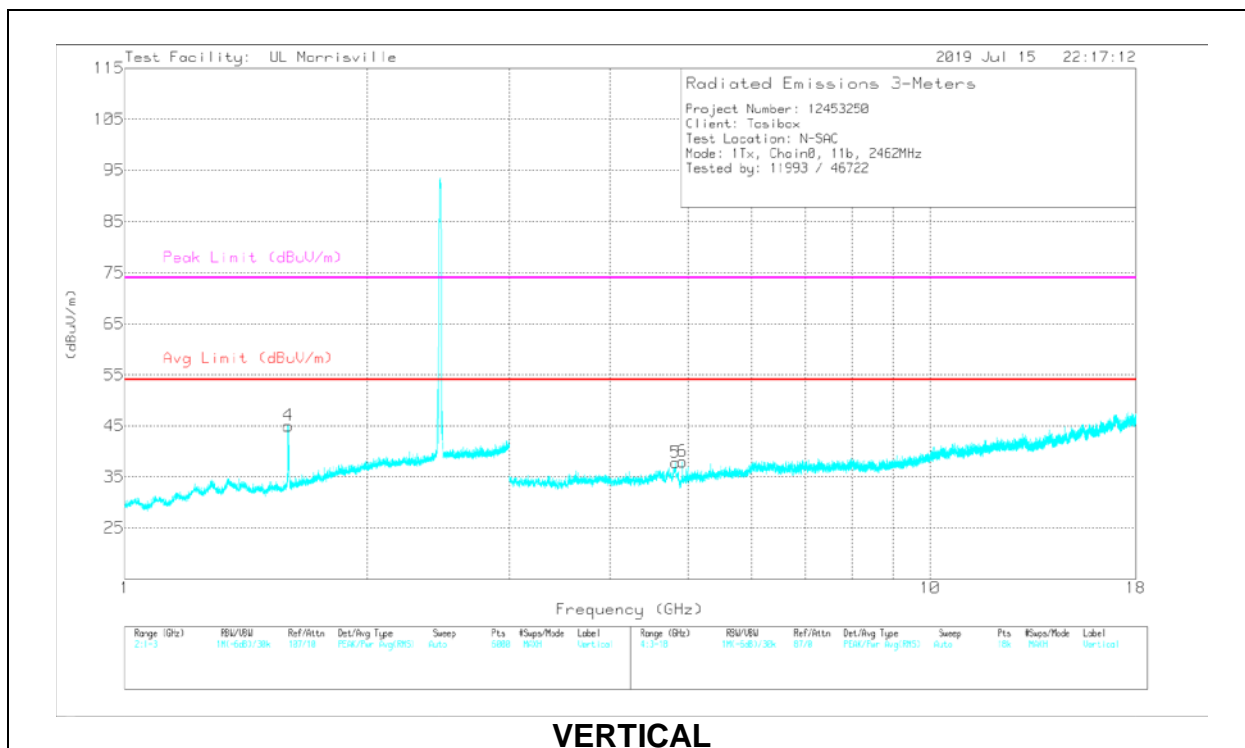
PK2 - Maximum Peak

MAv1 - Maximum RMS Average

HIGH CHANNEL, CH 11 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0067 AF (dBuV/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	*** 1.59392	43.15	PK2	28.1	-24.6	0	46.65	-	-	74	-27.35	206	400	H
	*** 1.59381	25.54	MAv1	28.1	-24.6	.2	29.24	54	-24.76	-	-	206	400	H
4	*** 1.59495	50.97	PK2	28.1	-24.6	0	54.47	-	-	74	-19.53	134	103	V
	*** 1.59488	29.46	MAv1	28.1	-24.6	.2	33.16	54	-20.84	-	-	134	103	V
2	*** 4.70574	40.39	PK2	34	-32.4	0	41.99	-	-	74	-32.01	89	177	H
	*** 4.70818	29.17	MAv1	33.9	-32.4	.2	30.87	54	-23.13	-	-	89	177	H
3	*** 4.92404	46.86	PK2	33.9	-31.8	0	48.96	-	-	74	-25.04	259	224	H
	*** 4.92398	42.71	MAv1	33.9	-31.8	.2	45.01	54	-8.99	-	-	259	224	H
5	*** 4.82716	40.75	PK2	34.1	-31.4	0	43.45	-	-	74	-30.55	76	334	V
	*** 4.82674	28.41	MAv1	34.1	-31.4	.2	31.31	54	-22.69	-	-	76	334	V
6	*** 4.9241	41.58	PK2	33.9	-31.8	0	43.68	-	-	74	-30.32	159	122	V
	*** 4.92397	33.38	MAv1	33.9	-31.8	.2	35.68	54	-18.32	-	-	159	122	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

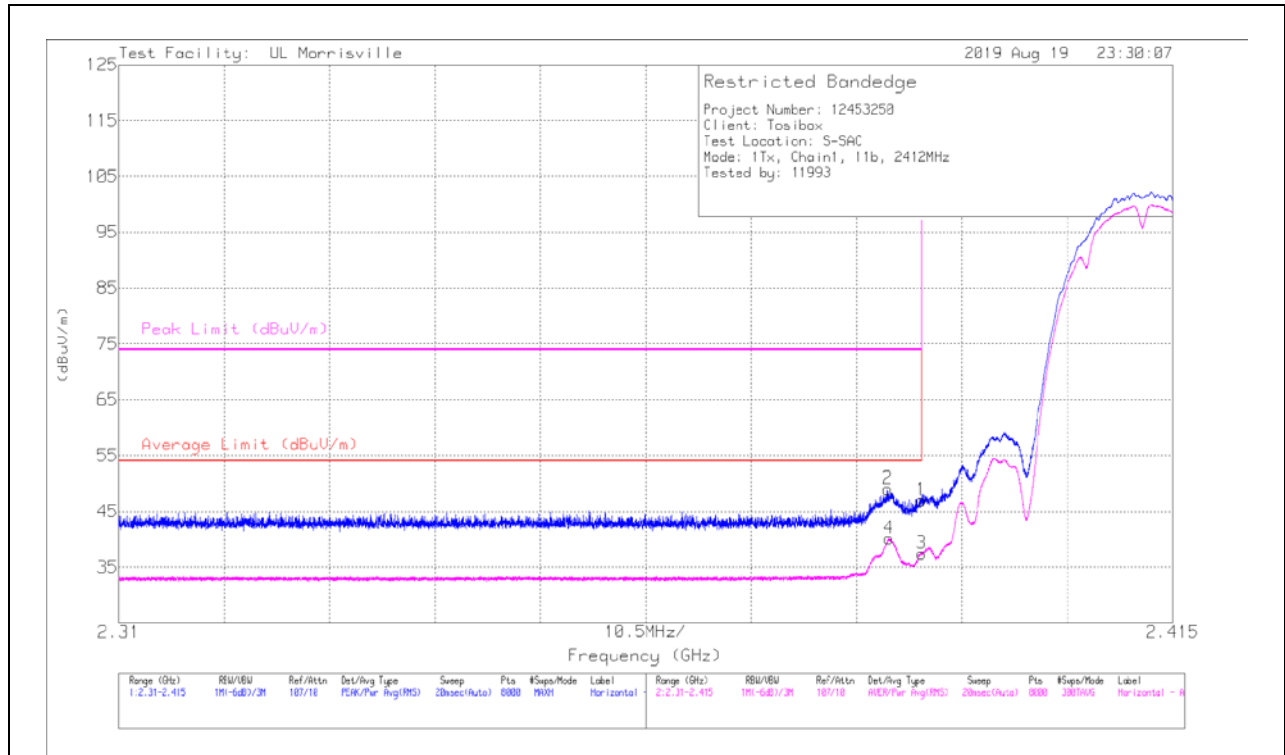
PK2 - Maximum Peak

MAv1 - Maximum RMS Average

1TX Antenna 2 MODE

BANDEDGE (LOW CHANNEL, CH 1)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (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	39.08	Pk	31.9	-24	0	46.98	-	-	74	-27.02	179	111	H
2	*** 2.38664	41.13	Pk	31.9	-24	0	49.03	-	-	74	-24.97	179	111	H
3	*** 2.39	29.33	RMS	31.9	-24	.2	37.43	54	-16.57	-	-	179	111	H
4	*** 2.38674	32	RMS	31.9	-24	.2	40.1	54	-13.9	-	-	179	111	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