



SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China
Telephone: +86 (0) 21 6191 5666
Fax: +86 (0) 21 6191 5678
ee.shanghai@sgs.com

Report No.: SHEM170600347902V01
Page: 1 of 59

1 Cover Page

RF TEST REPORT

Application No.:	SHEM1706003479CR
Applicant:	Hangzhou Hikvision Digital Technology Co., Ltd.
FCC ID:	2ADTD-T03C0D00
Equipment Under Test (EUT): NOTE: The following sample(s) was/were submitted and identified by the client as	
Product Name:	Wireless Transmitter & Receiver
Model No.:	DS-3WF03C-D
Standards:	FCC PART 15 Subpart E: 2016
Date of Receipt:	2017-06-07
Date of Test:	2016-06-07 to 2017-06-23
Date of Issue:	2017-07-11
Test Result:	Pass*

*In the configuration tested, the EUT detailed in this report complied with the standards specified above.



Parlam Zhan
E&E Section Manager
SGS-CSTC (Shanghai) Co., Ltd.



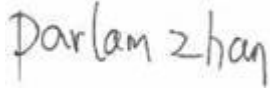
The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00	/	2017-07-11	/	Original

Authorized for issue by:			
Engineer	Eddy Zong		
	Print Name		
Clerk	Susie Liu		
	Print Name		
Reviewer	Parlam Zhan		
	Print Name		

3 Test Summary

Test Item	FCC Requirement	Test method	Result
Antenna Requirement	15.203 & 15.407 a(1)&(3)	-	PASS
AC Power Line Conducted Emission	15.407 b(6)	ANSI C63.10 (2013) Clause 6.2	PASS
26 dB Emission bandwidth	15.403 i	KDB 789033 D02 KDB 644545 KDB662911 D01	PASS
Minimum 6 dB bandwidth (5.725-5.85 GHz band)	15.407 (e)		N/A
Maximum Conducted output power	15.407 a(1)&(3)		PASS
Transmitter Power Control	15.407 (h)(1)		N/A
Peak Power spectrum density	15.407 a(1)&(3)		PASS
Radiated Spurious emissions and Band-edge	15.209 & 15.407		PASS
Transmission in the Absence of Data	15.407 (c)		PASS
Frequency Stability	15.407 (g)		PASS
Dynamic Frequency Selection	15.407 (h)(2)	KDB 905462 D02 KDB 905462 D03	N/A

Notes: N/A: The device no DFS Band.

4 Contents

	Page
1 COVER PAGE.....	1
2 VERSION	2
3 TEST SUMMARY	3
4 CONTENTS	4
5 GENERAL INFORMATION.....	5
5.1 CLIENT INFORMATION	5
5.2 GENERAL DESCRIPTION OF E.U.T.....	5
5.3 TECHNICAL SPECIFICATIONS.....	5
5.4 TEST MODE.....	5
5.5 TEST CHANNEL	6
5.6 DESCRIPTION OF SUPPORT UNITS.....	6
5.7 TEST LOCATION	7
5.8 TEST FACILITY	7
5.9 MEASUREMENT UNCERTAINTY.....	7
6 EQUIPMENTS USED DURING TEST.....	8
7 TEST RESULTS	9
7.1 E.U.T. TEST CONDITIONS	9
7.2 ANTENNA REQUIREMENT.....	10
7.3 CONDUCTED EMISSIONS ON MAINS TERMINALS	11
7.4 DUTY CYCLE	15
7.5 EMISSION BANDWIDTH	16
7.6 MAXIMUM CONDUCTED OUTPUT POWER	17
7.7 PEAK POWER SPECTRAL DENSITY	18
7.8 RADIATED SPURIOUS EMISSIONS AND BAND-EDGE	19
7.9 TRANSMISSION IN THE ABSENCE OF DATA.....	57
7.10 FREQUENCY STABILITY	58
8 TEST SETUP PHOTOGRAPHS.....	59
9 EUT CONSTRUCTIONAL DETAILS.....	59

5 General Information

5.1 Client Information

Applicant:	Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Applicant:	No. 555 Qianmo Road, Binjiang District, Hangzhou 310052, China
Manufacturer:	Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Manufacturer:	No. 555 Qianmo Road, Binjiang District, Hangzhou 310052, China
Factory:	1. Hangzhou Hikvision Technology Co., Ltd. 2. Hangzhou Hikvision Electronics Co., Ltd.
Address of Factory:	1. No.700, Dongliu Road, Binjiang District, Hangzhou City, Zhejiang, 310052, China 2. No.299, Qiushi Road, Tonglu Economic Development Zone, Tonglu County, Hangzhou, Zhejiang, 310052, China.

5.2 General Description of E.U.T.

Product Description:	Fixed product with 5.1GHz WiFi function
Brand Name:	HIKVISION
Test Voltage:	AC 120V 60Hz for POE

Parameter of POE:

POE:	Model No.:	G0549A-240-050	
	Rated Input:	AC 100~240V 50~60Hz 0.5A MAX	
	Rated Output:	DC 24V 0.5A	
	Cable length:	AC port:	2 Wires (100 cm)
		DC port:	LAN Port

5.3 Technical Specifications

Operation Frequency:	802.11a/n(HT20): 5180-5240MHz 802.11n(HT40): 5190-5230MHz
Modulation Technique:	OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK)
Data Rate:	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: MCS0-7 2Tx2R MIMO
Number of Channel:	802.11 a/n(HT20): 4 Channel 36, 40, 44, 48 802.11 n(HT40): 2 Channel 38, 46
Antenna Type	Integral Antenna
Antenna Gain	15 dBi

5.4 Test Mode

Test Mode	Description of Test Mode
Engineering mode	Using test software to control EUT working in continuous transmitting, and select channel and modulation type.

5.5 Test Channel

Preliminary tests were performed in all tests in different data rate and antenna configurations at lowest channel, the data rates of worse case as below were chosen for final test.

Band	802.11a			802.11 n(HT20)			802.11n(HT40)		
	Channel	Freq	Rate	Chan	Freq	Rate	Channel	Freq	Rate
U-NII 1	36	5180	6 Mbps	36	5180	MSC0	38	5190	MSC0
	44	5220	6 Mbps	44	5220	MSC0	-	-	-
	48	5240	6 Mbps	48	5240	MSC0	46	5230	MSC0

5.6 Description of Support Units

The EUT has been tested with support equipments as below.

Description	Manufacturer	Model No.	Supplied By
Laptop	Lenovo	ThinkPad X100e	SGS

Software name	Manufacturer	Version	Supplied By
ART2	/	/	SGS

5.7 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

No.588 West Jindu Road, Songjiang District, Shanghai, China.201612.

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

5.8 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868 and C-4336 respectively.

5.9 Measurement Uncertainty

No.	Parameter	Measurement Uncertainty
1	Radio Frequency	$< \pm 1 \times 10^{-5}$
2	Total RF power, conducted	$< \pm 1.5 \text{ dB}$
3	RF power density, conducted	$< \pm 3 \text{ dB}$
4	Spurious emissions, conducted	$< \pm 3 \text{ dB}$
5	All emissions, radiated	$< \pm 6 \text{ dB (30MHz – 1GHz)}$ $< \pm 6 \text{ dB (above 1GHz)}$
6	Temperature	$< \pm 1^{\circ}\text{C}$
7	Humidity	$< \pm 5 \%$
8	DC and low frequency voltages	$< \pm 3 \%$

6 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Spectrum Analyzer	R&S	FSP-30	2705121009	2017-01-14	2018-01-13
2	Spectrum Analyzer	Agilent	N9020A	MY51240197	2017-07-03	2018-07-02
3	Power meter	R&S	NRP	101641	2017-01-14	2018-01-13
4	Power Sensor	R&S	NRP-Z22	101096	2016-08-06	2017-08-05
5	Signal Generator	R&S	SMR40	100555	2017-07-03	2018-07-02
6	Signal Generator	Agilent	N5182A	MY50143776	2017-07-03	2018-07-02
7	Communication Tester	R&S	CMW500	1201.0002K75	2016-12-24	2017-12-23
8	Switcher	Tonscend	JS0806	JS0806-2	/	/
9	Splitter	Anritsu	MA1612A	M12265	/	/
10	Coupler	e-meca	803-S-1	900-M01	/	/
11	High-low Temperature Cabinet	Suzhou Zhihe	TL-40	50110050	2016-09-11	2017-09-10
12	AC Power Stabilizer	WOCEN	6100	51122	2017-01-14	2018-01-13
13	DC Power Supply	QJE	QJ30003SII	3573/4/3	2017-01-14	2018-01-13
14	EMI Test Receiver	R&S	ESU40	100109	2017-02-13	2018-01-15
15	Active Loop Antenna (9kHz to 30MHz)	R&S	FMZB1519	1519-034	2017-02-13	2018-01-15
16	Broadband Antenna (25MHz to 2GHz)	Schwarzbeck	VULB9168	9168-313	2017-02-13	2018-01-15
17	Broadband Antenna (25MHz to 3GHz)	R&S	HL562	100227	2016-08-30	2017-08-29
18	Horn Antenna (1 -18GHz)	R&S	HF906	100284	2017-02-13	2018-01-15
19	Horn Antenna (1 - 18GHz)	Schwarzbeck	BBHA9120D	9120D-679	2017-02-13	2018-01-15
20	Horn Antenna (14 - 40GHz)	Schwarzbeck	BBHA 9170	BBHA917-0373	2017-02-13	2018-01-15
21	Pre-amplifier (9KHz – 2GHz)	LNA6900	TESEQ	71033	2017-02-13	2018-01-15
22	Pre-amplifier (1 – 26.5GHz)	Schwarzbeck	SCU-F0118-G40-BZ4-CSS(F)	10001	2017-01-14	2018-01-13
23	Pre-amplifier (14 – 40GHz)	Schwarzbeck	SCU-F1840-G35-BZ3-CSS(F)	10001	2017-01-14	2018-01-13
24	Tunable Notch Filter	Wainwright	WRCT800.0/880.0-0.2/40-5SSK	170397 169777 169780 192507	/	/
25	High pass Filter	FSCW	HP 12/2800-5AA2	19A45-02	/	/
26	EMI test receiver	Rohde & Schwarz	ESR7	101391	2016-12-29	2017-12-28
27	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127490	2017-01-14	2018-01-13
28	Line impedance stabilization network	EMCO	3816/2	00034161	2017-01-14	2018-01-13

7 Test Results

7.1 E.U.T. Test Conditions

Requirements: 15.31(e) For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Operating Environment:	Temperature:	20.0 -25.0 °C
	Humidity:	35-75 % RH
	Atmospheric Pressure:	99.2 -102.0 kPa

Test frequencies: According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

Frequency range over which device operates	Number of frequencies	Location in the range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

Pursuant to Part 15.31(c) For swept frequency equipment, measurements shall be made with the frequency sweep stopped at those frequencies chosen for the measurements to be reported

7.2 Antenna Requirement

Standard requirement:

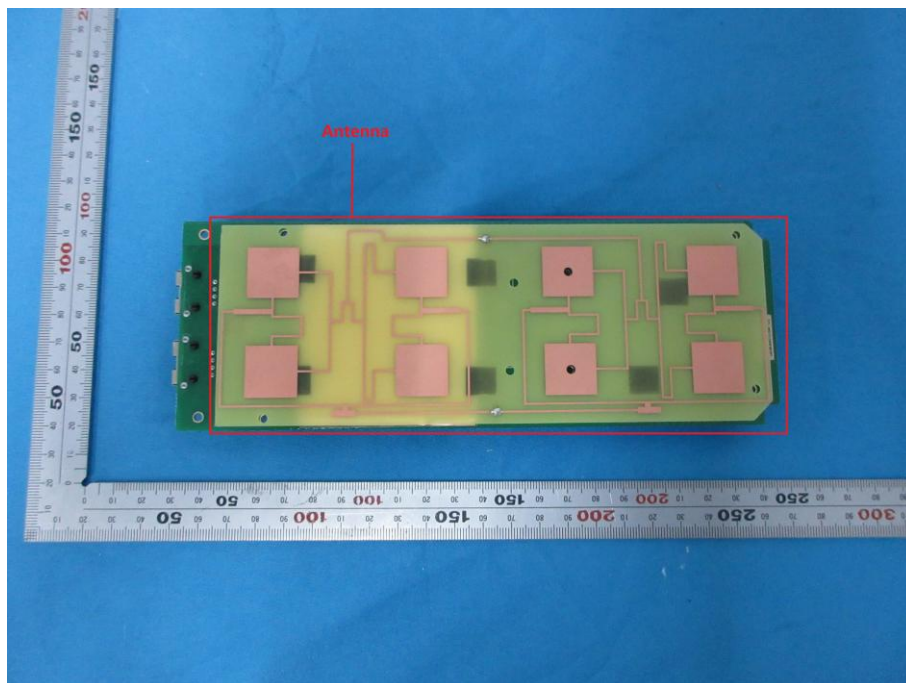
15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited

This requirement does not apply to carrier current devices. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

EUT Antenna:

The antenna is Integral Antenna. The gain is less than 15.0dBi.



7.3 Conducted Emissions on Mains Terminals

Frequency Range: 150 KHz to 30 MHz

Class/Severity: Class B

Limit:

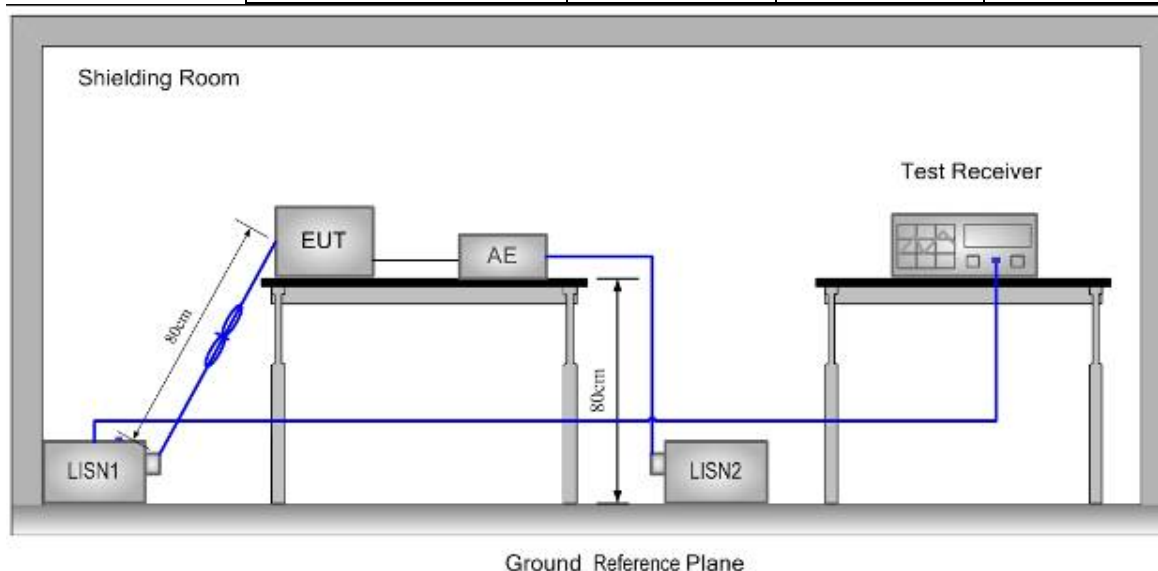
Frequency range MHz	Class B Limits: dB (μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.
Note2: The lower limit is applicable at the transition frequency.

Test site/setup:

Test instrumentation set-up:

Frequency Range	Detector	RBW	VBW
9KHz to 150Hz	Quasi-peak	200Hz	500Hz
150KHz to 30MHz	Quasi-peak	9kHz	30kHz



Test Procedure:

- The mains terminal disturbance voltage was measured with the EUT in a shielded room.
- The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides $50\Omega/50\mu H + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN, which was bonded to the ground reference plane in the same way as the LISN for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded
- The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
- The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to

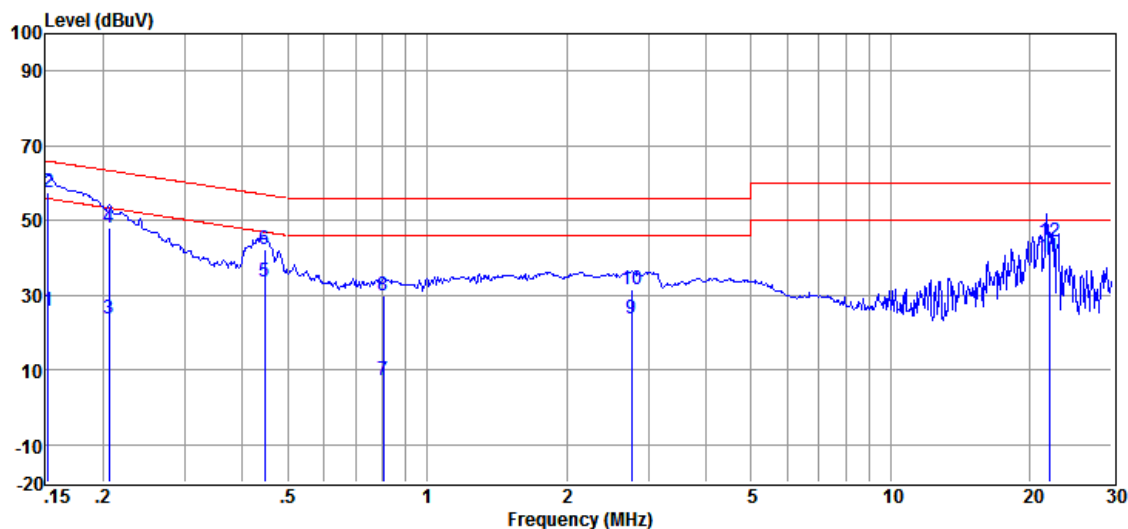
the horizontal ground reference plane. The LISN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance was between the closest points of the LISN and the EUT. The mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m. All other units of the EUT and associated equipment were at least 0.8 m from the LISN.

Remark: Pre-scan was performed with peak detected on all ports, Quasi-peak & average measurements were performed at the frequencies at which maximum peak emission level were detected. Pretest under all modes; choose the worst case mode (802.11a in Middle channel) record on the report. Please see the attached Quasi-peak and Average test results.

Test Result: Pass

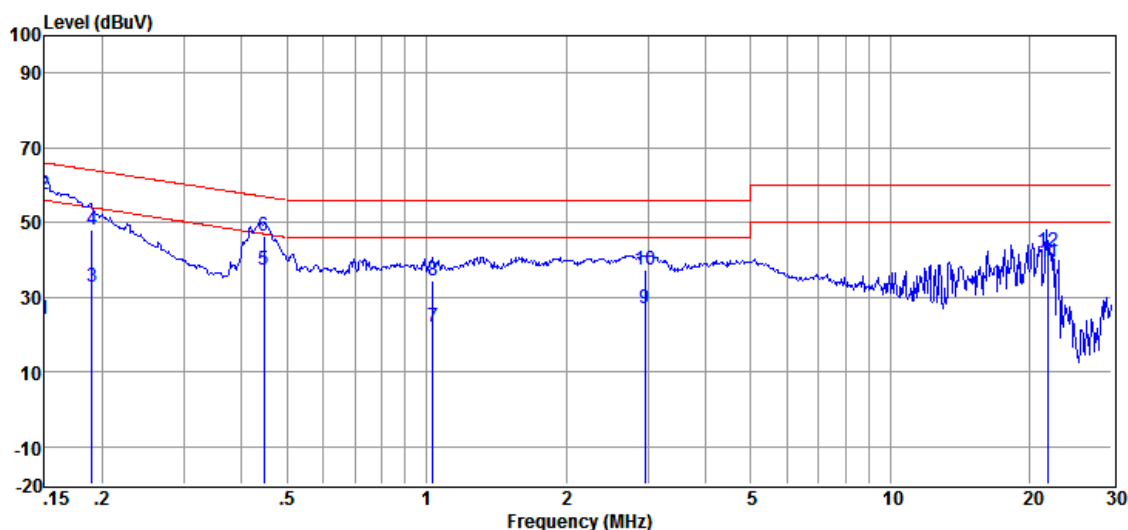
Test Data:

Test Mode:	802.11a	Test Channel:	Channel 44
Test Port:	AC Live Line		



Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)	
1	0.152	15.73	0.05	9.81	25.59	55.87	-30.28	Average
2	0.152	47.84	0.05	9.81	57.70	65.87	-8.17	QP
3	0.206	13.96	0.09	9.81	23.86	53.36	-29.50	Average
4	0.206	38.32	0.09	9.81	48.22	63.36	-15.14	QP
5	0.447	23.50	0.10	9.82	33.42	46.93	-13.51	Average
6	0.447	32.45	0.10	9.82	42.37	56.93	-14.56	QP
7	0.804	-2.74	0.09	9.83	7.18	46.00	-38.82	Average
8	0.804	19.80	0.09	9.83	29.72	56.00	-26.28	QP
9	2.765	13.84	0.10	9.85	23.79	46.00	-22.21	Average
10	2.765	21.66	0.10	9.85	31.61	56.00	-24.39	QP
11	22.030	30.00	0.32	10.04	40.36	50.00	-9.64	Average
12	22.030	33.90	0.32	10.04	44.26	60.00	-15.74	QP

Test Port: AC Neutral Line



Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)	
1	0.150	14.20	0.05	9.81	24.06	56.00	-31.94	Average
2	0.150	47.81	0.05	9.81	57.67	66.00	-8.33	QP
3	0.190	22.92	0.05	9.81	32.78	54.02	-21.24	Average
4	0.190	38.20	0.05	9.81	48.06	64.02	-15.96	QP
5	0.447	27.50	0.04	9.82	37.36	46.93	-9.57	Average
6	0.447	36.66	0.04	9.82	46.52	56.93	-10.41	QP
7	1.032	12.14	0.05	9.84	22.03	46.00	-23.97	Average
8	1.032	24.42	0.05	9.84	34.31	56.00	-21.69	QP
9	2.962	17.08	0.11	9.85	27.04	46.00	-18.96	Average
10	2.962	27.43	0.11	9.85	37.39	56.00	-18.61	QP
11	21.910	28.80	0.34	10.04	39.18	50.00	-10.82	Average
12	21.910	31.70	0.34	10.04	42.08	60.00	-17.92	QP

Remark: Level = Read Level + LISN/ISN Factor + Cable Loss.

7.4 Duty Cycle

In order to assist with the determination of the average level of fundamental and spurious emissions field strength, measurements were made of duty cycle to determine the transmission duration and the silent period time of the transmitter. The transmitter duty cycle was measured using a spectrum analyser in the time domain and calculated by using the following calculation:

Duty cycle= T on time / Period

Duty factor = $10 * \log (1/\text{Duty cycle})$

If duty cycle of test signal is > 98%, duty factor is not required.

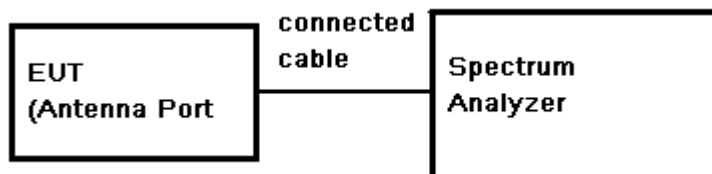
If duty cycle of test signal is < 98%, duty factor shall be considered.

Test Data:

The detailed test data see: Appendix A for SHEM170600347902

7.5 Emission Bandwidth

Test Configuration:



Test Procedure:

- Place the EUT on the table and set it in transmitting mode.
- Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- Set the spectrum analyzer as RBW= approximately 1% of the emission bandwidth or 100KHz(for 5.725-5.85 GHz band), VBW \geq 3* RBW, Span=40/80/160MHz, Sweep=auto couple
- Mark the peak frequency and -6dB (upper and lower) frequency.
- Repeat above procedures until all frequency measured was complete.

Limit: \geq 500 kHz (For 5.725-5.85 GHz band)

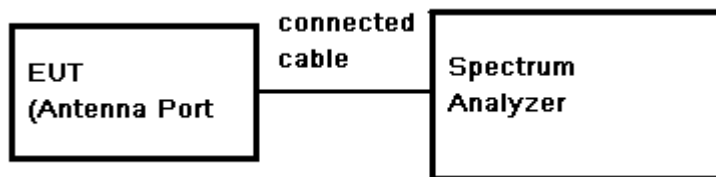
Test Result: Pass

Test Data:

The detailed test data see: Appendix A for SHEM170600347902

7.6 Maximum Conducted output power

Test Setup:



Test Procedure:

- Place the EUT on the table and set it in transmitting mode.
- Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum.
- Set the spectrum analyzer as RBW=1MHz, VBW≥3* RBW, Span=40/80MHz, Sweep=auto, Detector = RMS
- Set the occur band to the entire emission 26dB bandwidth of the signal.
- Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 26dB occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges.
- Record the max. Power channel reading.
- Repeat above procedures until all the frequency measured were complete.

Test Limit:

Frequency Band	EUT Category	Limit
U-NII-1	<input type="checkbox"/> Outdoor Access Point	1W(30dBm) The maximum e.i.r.p≤125 mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon.
	<input checked="" type="checkbox"/> Fixed Point-to-point Access Point	1W(30dBm)
	<input type="checkbox"/> Indoor Access Point	
	<input type="checkbox"/> Mobile and Portable client device	250mW (24dBm)
U-NII-2a	-	Lesser of 250mW (24dBm) or 11dBm + 10log B*
U-NII-2c		
U-NII-3		1W (30dBm)
Note1: *Where B is the 26dB emission bandwidth in MHz.		

Test Result:

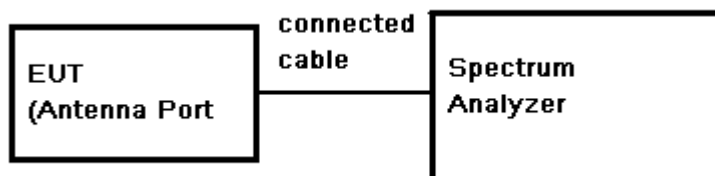
Pass

Test Data:

The detailed test data see: Appendix A for SHEM170600347902

7.7 Peak Power Spectral Density

Test Setup:



Test Procedure:

- Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
- 5.15GHz-5.25GHz set span $\geq 1.5 \times \text{OBW}$; RBW = 1 MHz; VBW ≥ 3 MHz, Number of points in sweep $\geq 2 \times \text{Span} / \text{RBW}$; Sweep time = auto.
- Detector = RMS, Trigger = Free run Record the marker level for the particular mode.
- Use the peak search function on the instrument to find the peak of the spectrum and record its value.
- Repeat these steps for other channel and device modes.

Test Limit:

3) Repeat these steps for other channel and device modes.

Frequency Band	EUT Category	Limit
U-NII-1	<input type="checkbox"/> Outdoor Access Point	17dBm/MHz
	<input checked="" type="checkbox"/> Fixed Point-to-point Access Point	17dBm/MHz
	<input type="checkbox"/> Indoor Access Point	
	<input type="checkbox"/> Mobile and Portable client device	11 dBm/MHz
U-NII-2a	-	11 dBm/MHz
U-NII-2c		
U-NII-3		30 dBm/500KHz
Note: For IC 5150MHz to 5250MHz limit is 10 dBm/MHz		

Test Result:

Pass

Test Data:

The detailed test data see: Appendix A for SHEM170600347902

7.8 Radiated Spurious Emissions and Band-edge

Test site/setup: Measurement Distance: 3m

Test instrumentation set-up:

Frequency Range(MHz)	Detector	RBW	VBW
0.009-0.090	Peak	10kHz	30kHz
0.009-0.090	Average	10kHz	30kHz
0.090-0.110	Quasi-peak	10kHz	30kHz
0.110-0.490MHz	Peak	10kHz	30kHz
0.110-0.490	Average	10kHz	30kHz
0.490 -30	Quasi-peak	10kHz	30kHz
30-1000	Quasi-peak	100kHz	300kHz
Above 1000	Peak	RBW=1MHz	VBW≥RBW
	Average		VBW=10Hz

Sweep=Auto

15.209 Limit:

Frequency(MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)
0.009-0.490	2400/F(KHz)	128.5 ~ 93.8
0.490-1.705	24000/F(KHz)	73.8 ~63.0
1.705-30	30	69.5
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
960-1000	500	54.0
Above 1000	500	54.0

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

15.407 Limit:

Operation Frequency (MHz)	EIRP Limit (dBm/MHz)	Equivalent Field Strength (dBμV/m)
5150-5250	-27	68.3
5250-5350		
5470-5725		
5725-5850	-27* ¹	68.3* ¹
	-17* ²	78.3* ²

Note: The following formula is used to convert the EIRP to field strength

$$E = \frac{1000000 \sqrt{30P}}{3} \text{ uV/m, where P is the EIRP (Watts).}$$

Remark: *¹ Without 10MHz of band edge; *² Within 10MHz of band edge

Test Setup:

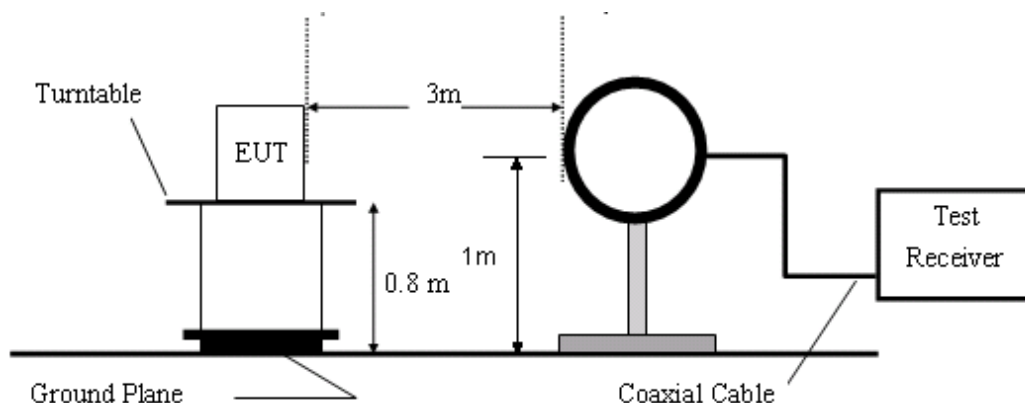


Figure1. Below 30MHz radiated emissions test configuration

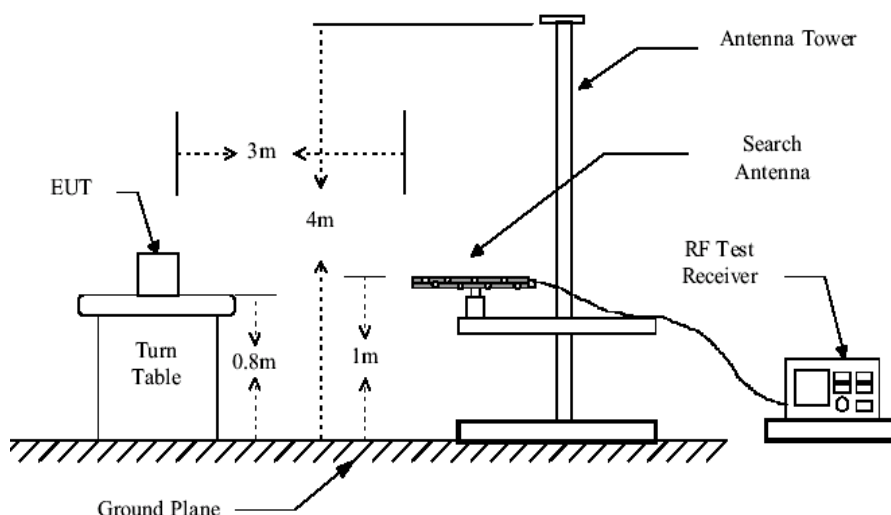


Figure2. 30MHz to 1GHz radiated emissions test configuration

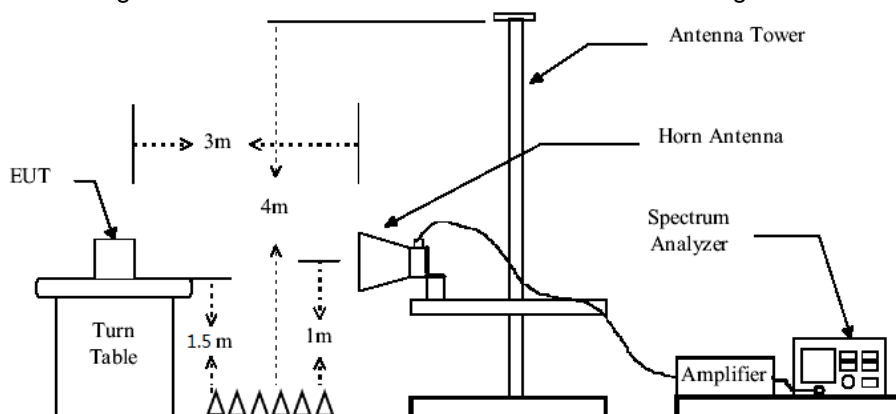


Figure3. Above 1GHz radiated emissions test configuration

- Test Procedure:**
- 1) The procedure used was ANSI Standard C63.10. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.
 - 2) Low noise amplifier was used below 1GHz, High pass Filter and amplifier was used above 3GHz. We did not use any amplifier or filter between 1G and 3GHz.
 - 3) Test were performed for their spatial orthogonal(X, Y, Z), the worst test data (X orthogonal) was submitted.
 - a) For this intentional radiator operates below 25 GHz. the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the third harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 5rd harmonic.
 - b) As shown in Section, for frequencies above 1000MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.
 - 4) Pretest under all modes during 30MHz to 1GHz; choose the worst case mode (Middle channel of 802.11a on band 1) record on the report.
 - 5) No spurious emissions were detected within 20dB of limit below 30MHz.

Test Result: Pass

7.8.1 Radiated Spurious Emissions

30MHz-1GHz:

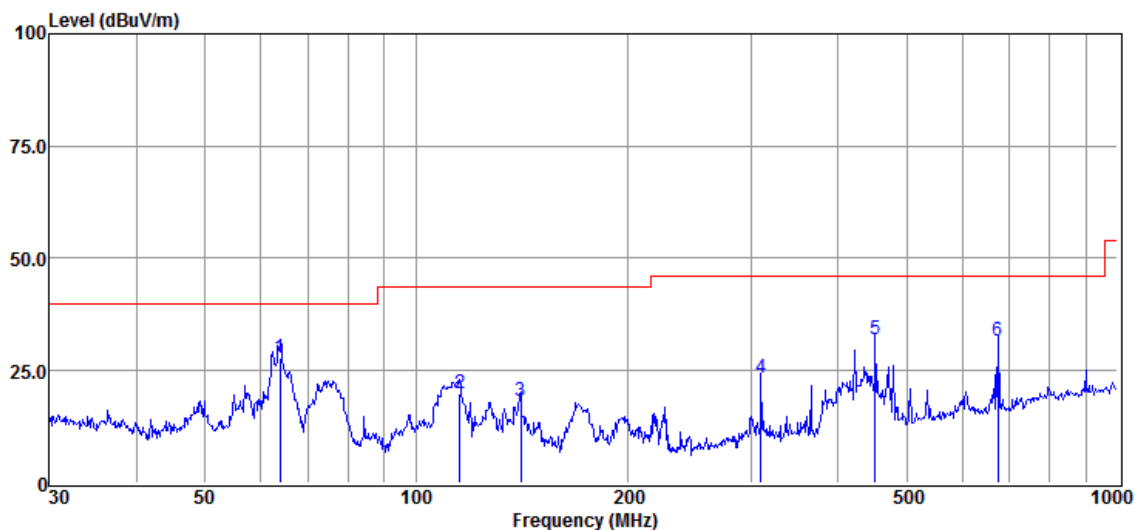
802.11 a

Channel: 44

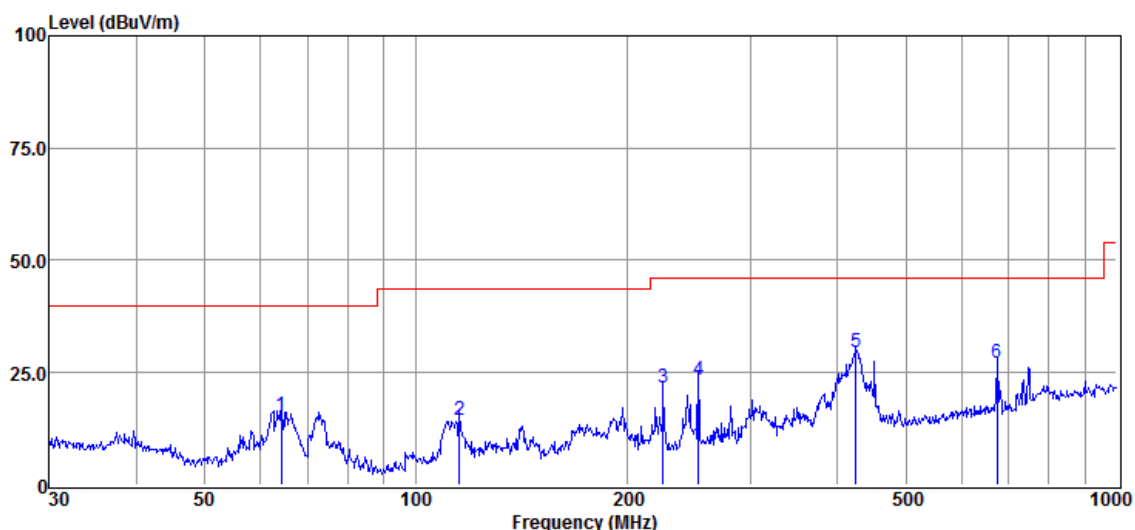
Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
1	64.21	45.85	12.08	42.66	0.32	15.59	40.00	-24.41	QP	Horizontal
2	115.32	46.82	9.82	42.69	0.52	14.47	43.50	-29.03	QP	Horizontal
3	225.31	52.77	10.51	42.49	0.73	21.52	46.00	-24.48	QP	Horizontal
4	252.95	53.49	11.59	42.45	0.77	23.40	46.00	-22.60	QP	Horizontal
5	425.03	55.07	15.67	42.11	1.04	29.67	46.00	-16.33	QP	Horizontal
6	675.21	47.82	20.02	42.32	1.61	27.13	46.00	-18.87	QP	Horizontal
1	63.98	58.17	12.11	42.66	0.31	27.93	40.00	-12.07	QP	Vertical
2	115.32	52.33	9.82	42.69	0.52	19.98	43.50	-23.52	QP	Vertical
3	140.84	48.80	11.36	42.63	0.61	18.14	43.50	-25.36	QP	Vertical
4	310.00	51.34	13.41	42.37	0.86	23.24	46.00	-22.76	QP	Vertical
5	451.14	56.69	16.23	42.12	1.09	31.89	46.00	-14.11	QP	Vertical
6	675.21	52.27	20.02	42.32	1.61	31.58	46.00	-14.42	QP	Vertical

Remark: 1. Result Level = Read Level + Antenna Factor + Cable loss - Preamp Factor

Below is the plot of worst case:
Vertical:



Horizontal:



Above 1GHz

802.11a

Antenna 1

Channel: 36

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	8310	32.27	11.8	44.07	54	-9.93	peak	Horizontal
2	10724	33.99	14.27	48.26	54	-5.74	peak	Horizontal
3	12679	34.45	14.3	48.75	54	-5.25	peak	Horizontal
4	6355	32.43	7.9	40.33	54	-13.67	peak	Vertical
5	7205	31.29	10.63	41.92	54	-12.08	peak	Vertical
6	10962	34.43	14.56	48.99	54	-5.01	peak	Vertical

802.11a

Antenna 1

Channel: 44

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	7681	34.13	12.1	46.23	54	-7.77	peak	Horizontal
2	11540	33.55	14.32	47.87	54	-6.13	peak	Horizontal
3	13189	35.89	15.51	51.4	54	-2.6	peak	Horizontal
4	7647	34.22	12.04	46.26	54	-7.74	peak	Vertical
5	9976	33.51	14.42	47.93	54	-6.07	peak	Vertical
6	11217	35.26	14.26	49.52	54	-4.48	peak	Vertical

802.11a

Antenna 1

Channel: 48

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	7987	32.77	12.05	44.82	54	-9.18	peak	Horizontal
2	9415	32.37	14.42	46.79	54	-7.21	peak	Horizontal
3	12679	33.98	14.3	48.28	54	-5.72	peak	Horizontal
4	8956	31.89	13.6	45.49	54	-8.51	peak	Vertical
5	10078	32.46	14.41	46.87	54	-7.13	peak	Vertical
6	13070	33.98	15.28	49.26	54	-4.74	peak	Vertical

802.11 n(HT20)

Antenna 1

Channel: 36

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	8259	32.19	11.7	43.89	54	-10.11	peak	Horizontal
2	10503	33.37	14.04	47.41	54	-6.59	peak	Horizontal
3	12271	34.11	13.96	48.07	54	-5.93	peak	Horizontal
4	6848	31.03	9.21	40.24	54	-13.76	peak	Vertical
5	7664	33.93	12.07	46	54	-8	peak	Vertical
6	11591	34.18	14.21	48.39	54	-5.61	peak	Vertical

802.11 n(HT20)

Antenna 1

Channel: 44

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	6355	31.09	7.9	38.99	54	-15.01	peak	Horizontal
2	7205	31.42	10.63	42.05	54	-11.95	peak	Horizontal
3	11574	34.31	14.24	48.55	54	-5.45	peak	Horizontal
4	8208	32.86	11.59	44.45	54	-9.55	peak	Vertical
5	9517	32.82	14.41	47.23	54	-6.77	peak	Vertical
6	11098	34.28	14.4	48.68	54	-5.32	peak	Vertical

802.11 n(HT20)

Antenna 1

Channel: 48

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5420	30.86	7.25	38.11	54	-15.89	peak	Horizontal
2	7953	32.6	12.2	44.8	54	-9.2	peak	Horizontal
3	10673	33.79	14.19	47.98	54	-6.02	peak	Horizontal
4	6508	30.42	8.43	38.85	54	-15.15	peak	Vertical
5	9347	32.14	14.33	46.47	54	-7.53	peak	Vertical
6	11149	34.47	14.33	48.8	54	-5.2	peak	Vertical

802.11 n(HT40)

Antenna 1

Channel: 38

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	6083	30.39	6.83	37.22	54	-16.78	peak	Horizontal
2	8735	30.93	12.87	43.8	54	-10.2	peak	Horizontal
3	11506	35.82	14.41	50.23	54	-3.77	peak	Horizontal
4	7511	31.49	11.92	43.41	54	-10.59	peak	Vertical
5	9517	32.92	14.41	47.33	54	-6.67	peak	Vertical
6	12747	33.38	14.46	47.84	54	-6.16	peak	Vertical

802.11 n(HT40)

Antenna 1

Channel: 46

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	6967	32.08	9.61	41.69	54	-12.31	peak	Horizontal
2	9007	31.7	13.75	45.45	54	-8.55	peak	Horizontal
3	12985	34.49	15.1	49.59	54	-4.41	peak	Horizontal
4	7477	32.31	11.8	44.11	54	-9.89	peak	Vertical
5	10282	33.03	14.38	47.41	54	-6.59	peak	Vertical
6	12866	34.49	14.78	49.27	54	-4.73	peak	Vertical

802.11a

Antenna 2

Channel: 36

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5556	31.07	6.86	37.93	54	-16.07	peak	Horizontal
2	7341	31.41	11.22	42.63	54	-11.37	peak	Horizontal
3	11727	35.07	13.88	48.95	54	-5.05	peak	Horizontal
4	7613	34.66	12	46.66	54	-7.34	peak	Vertical
5	8956	33.16	13.6	46.76	54	-7.24	peak	Vertical
6	10707	33.11	14.25	47.36	54	-6.64	peak	Vertical

802.11a

Antenna 2

Channel: 44

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5743	31.09	6.79	37.88	54	-16.12	peak	Horizontal
2	7868	33.16	12.37	45.53	54	-8.47	peak	Horizontal
3	11557	34.35	14.28	48.63	54	-5.37	peak	Horizontal
4	7953	32.96	12.2	45.16	54	-8.84	peak	Vertical
5	10367	32.64	14.27	46.91	54	-7.09	peak	Vertical
6	12696	34.19	14.33	48.52	54	-5.48	peak	Vertical

802.11a

Antenna 2

Channel: 48

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5743	32.51	6.79	39.3	54	-14.7	peak	Horizontal
2	8854	31.37	13.25	44.62	54	-9.38	peak	Horizontal
3	13155	35.06	15.45	50.51	54	-3.49	peak	Horizontal
4	7001	31.98	9.73	41.71	54	-12.29	peak	Vertical
5	9262	32.52	14.18	46.7	54	-7.3	peak	Vertical
6	10248	32.72	14.39	47.11	54	-6.89	peak	Vertical

802.11 n(HT20)

Antenna 2

Channel: 36

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	7222	31.44	10.7	42.14	54	-11.86	peak	Horizontal
2	10520	33.2	14.04	47.24	54	-6.76	peak	Horizontal
3	11523	33.99	14.36	48.35	54	-5.65	peak	Horizontal
4	8106	32.4	11.78	44.18	54	-9.82	peak	Vertical
5	10418	33.15	14.19	47.34	54	-6.66	peak	Vertical
6	12764	34.76	14.51	49.27	54	-4.73	peak	Vertical

802.11 n(HT20)

Antenna 2

Channel: 44

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	7103	32.45	10.18	42.63	54	-11.37	peak	Horizontal
2	10401	33.49	14.21	47.7	54	-6.3	peak	Horizontal
3	12577	33.04	14.06	47.1	54	-6.9	peak	Horizontal
4	7630	34.29	12.02	46.31	54	-7.69	peak	Vertical
5	9874	32.74	14.39	47.13	54	-6.87	peak	Vertical
6	11625	34.08	14.13	48.21	54	-5.79	peak	Vertical

802.11 n(HT20)

Antenna 2

Channel: 48

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	6474	30.42	8.33	38.75	54	-15.25	peak	Horizontal
2	8837	31.21	13.19	44.4	54	-9.6	peak	Horizontal
3	12067	35.02	13.72	48.74	54	-5.26	peak	Horizontal
4	7103	32.47	10.18	42.65	54	-11.35	peak	Vertical
5	9330	32.11	14.3	46.41	54	-7.59	peak	Vertical
6	12237	33.29	13.9	47.19	54	-6.81	peak	Vertical

802.11 n(HT40)

Antenna 2

Channel: 38

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	6746	32.16	8.85	41.01	54	-12.99	peak	Horizontal
2	9857	31.13	14.38	45.51	54	-8.49	peak	Horizontal
3	12543	34.04	13.98	48.02	54	-5.98	peak	Horizontal
4	7324	31.99	11.14	43.13	54	-10.87	peak	Vertical
5	9840	32.5	14.38	46.88	54	-7.12	peak	Vertical
6	12968	35.05	15.05	50.1	54	-3.9	peak	Vertical

802.11 n(HT40)

Antenna 2

Channel: 46

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	7324	32.85	11.14	43.99	54	-10.01	peak	Horizontal
2	9891	31.86	14.39	46.25	54	-7.75	peak	Horizontal
3	13206	35.93	15.55	51.48	54	-2.52	peak	Horizontal
4	6542	30.01	8.47	38.48	54	-15.52	peak	Vertical
5	8905	31.8	13.43	45.23	54	-8.77	peak	Vertical
6	10401	33.17	14.21	47.38	54	-6.62	peak	Vertical

802.11 n(HT20)

MIMO

Channel: 36

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	6423	31.03	8.16	39.19	54	-14.81	peak	Horizontal
2	7460	32.09	11.73	43.82	54	-10.18	peak	Horizontal
3	12084	35.11	13.68	48.79	54	-5.21	peak	Horizontal
4	7987	32.94	12.05	44.99	54	-9.01	peak	Vertical
5	11880	32.44	13.77	46.21	54	-7.79	peak	Vertical
6	13138	36.74	15.41	52.15	54	-1.85	peak	Vertical

802.11 n(HT20)

MIMO

Channel: 44

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	7902	32.75	12.41	45.16	54	-8.84	peak	Horizontal
2	8395	32.18	11.95	44.13	54	-9.87	peak	Horizontal
3	11336	33.8	14.33	48.13	54	-5.87	peak	Horizontal
4	8191	33.07	11.59	44.66	54	-9.34	peak	Vertical
5	10282	32.38	14.38	46.76	54	-7.24	peak	Vertical
6	13206	36.61	15.55	52.16	54	-1.84	peak	Vertical

802.11 n(HT20)

MIMO

Channel: 48

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	7987	32.6	12.05	44.65	54	-9.35	peak	Horizontal
2	10520	34.18	14.04	48.22	54	-5.78	peak	Horizontal
3	12849	33.78	14.74	48.52	54	-5.48	peak	Horizontal
4	7222	30.94	10.7	41.64	54	-12.36	peak	Vertical
5	8718	31.67	12.82	44.49	54	-9.51	peak	Vertical
6	12237	33.94	13.9	47.84	54	-6.16	peak	Vertical

802.11 n(HT40)

MIMO

Channel: 38

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	7953	33.34	12.2	45.54	54	-8.46	peak	Horizontal
2	10197	33.1	14.4	47.5	54	-6.5	peak	Horizontal
3	12220	33.97	13.87	47.84	54	-6.16	peak	Horizontal
4	6474	31.61	8.33	39.94	54	-14.06	peak	Vertical
5	7953	33.53	12.2	45.73	54	-8.27	peak	Vertical
6	11370	33.03	14.35	47.38	54	-6.62	peak	Vertical

802.11 n(HT40)

MIMO

Channel: 46

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	8123	32.69	11.73	44.42	54	-9.58	peak	Horizontal
2	10282	33.25	14.38	47.63	54	-6.37	peak	Horizontal
3	12254	33.51	13.93	47.44	54	-6.56	peak	Horizontal
4	7052	32.23	9.95	42.18	54	-11.82	peak	Vertical
5	10129	33.39	14.4	47.79	54	-6.21	peak	Vertical
6	12390	32.32	14.16	46.48	54	-7.52	peak	Vertical

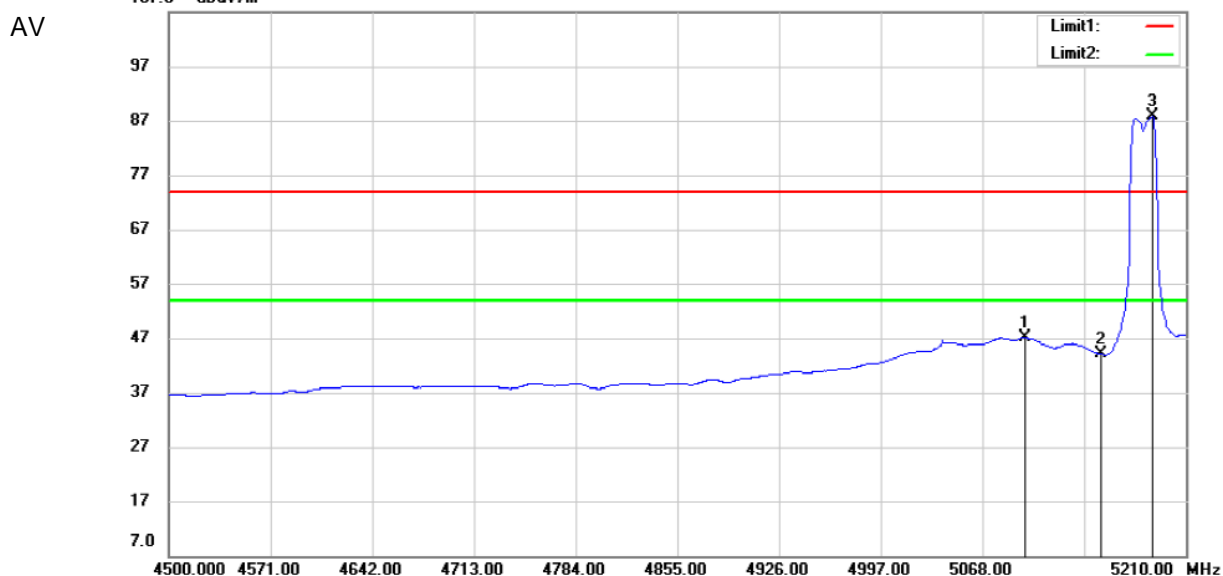
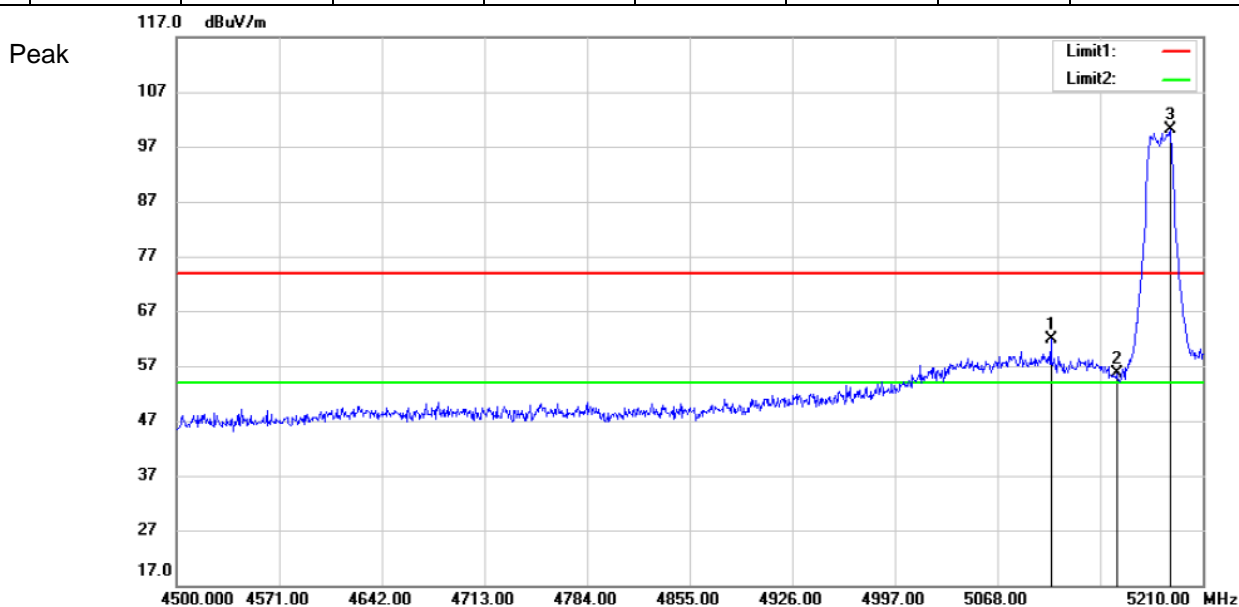
7.8.2 Radiated Band-edge

802.11 a

Antenna 1

Channel: 36

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5104.92	54.68	7.17	61.85	74	-12.15	Peak	Horizontal
2	5150	48.62	6.92	55.54	74	-18.46	Peak	Horizontal
3	5187.28	93.4	6.72	100.12	74	26.12	Peak	Horizontal
1	5097.82	39.89	7.21	47.1	54	-6.9	AV	Horizontal
2	5150	37.17	6.92	44.09	54	-9.91	AV	Horizontal
3	5186.57	81.04	6.72	87.76	54	33.76	AV	Horizontal

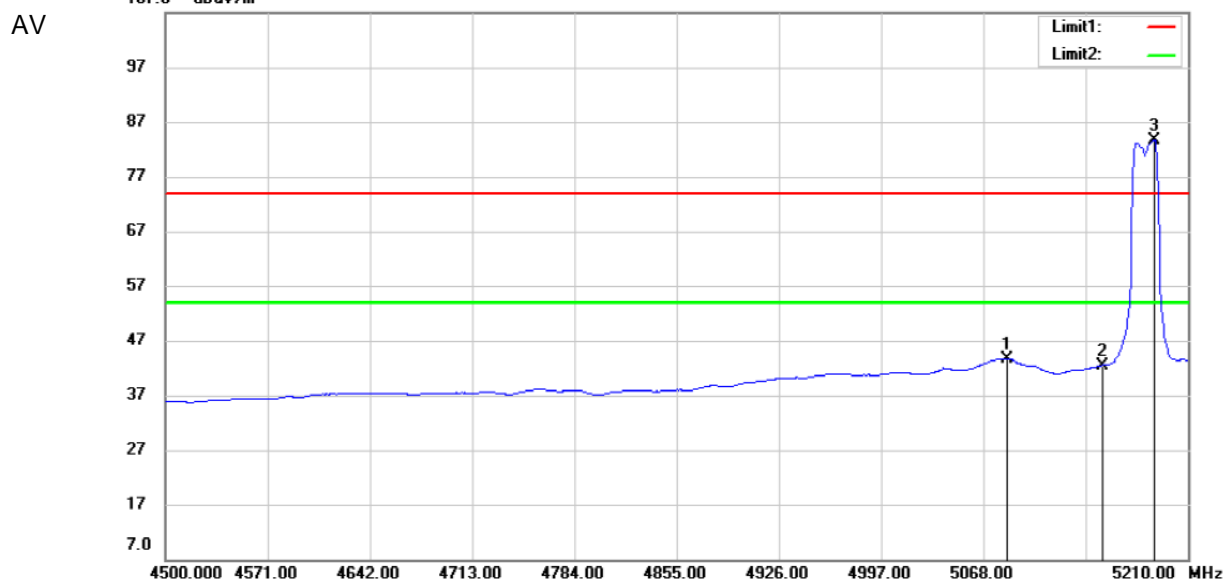
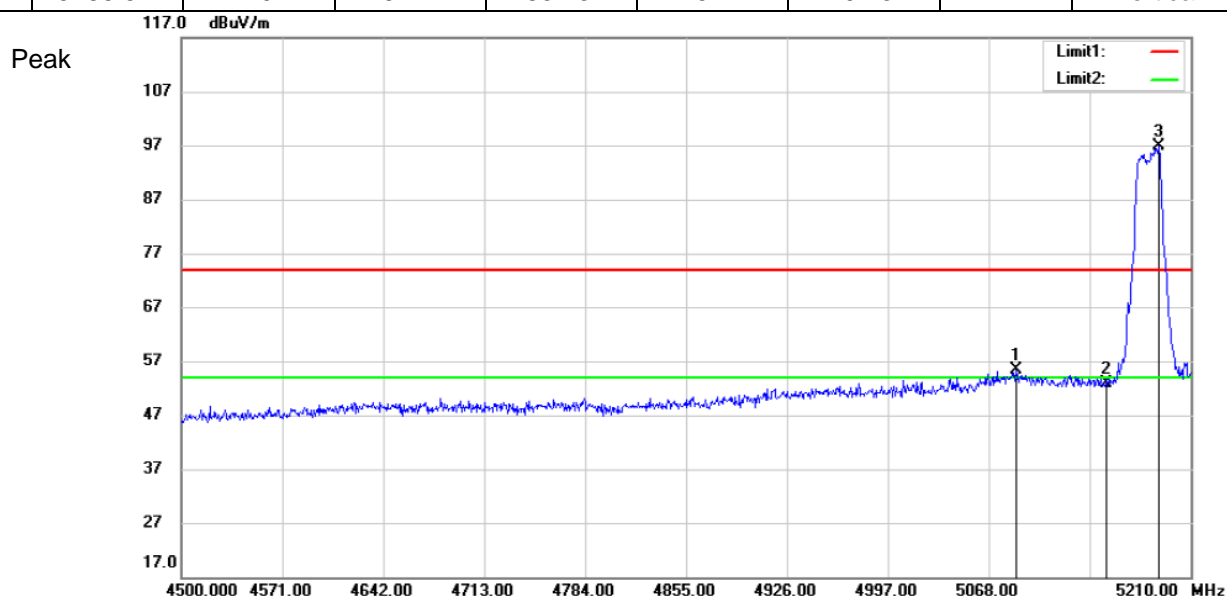


802.11 a

Antenna 1

Channel: 36

MK.	Frequency (MHz)	Reading (dBUV/m)	Corrected factor(dB)	Result (dBUV/m)	Limit (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	5087.17	48.09	7.26	55.35	74	-18.65	Peak	Vertical
2	5150	45.9	6.92	52.82	74	-21.18	Peak	Vertical
3	5187.28	90.06	6.72	96.78	74	22.78	Peak	Vertical
1	5084.33	36.44	7.28	43.72	54	-10.28	AV	Vertical
2	5150	35.58	6.92	42.5	54	-11.5	AV	Vertical
3	5186.57	77.01	6.72	83.73	54	29.73	AV	Vertical

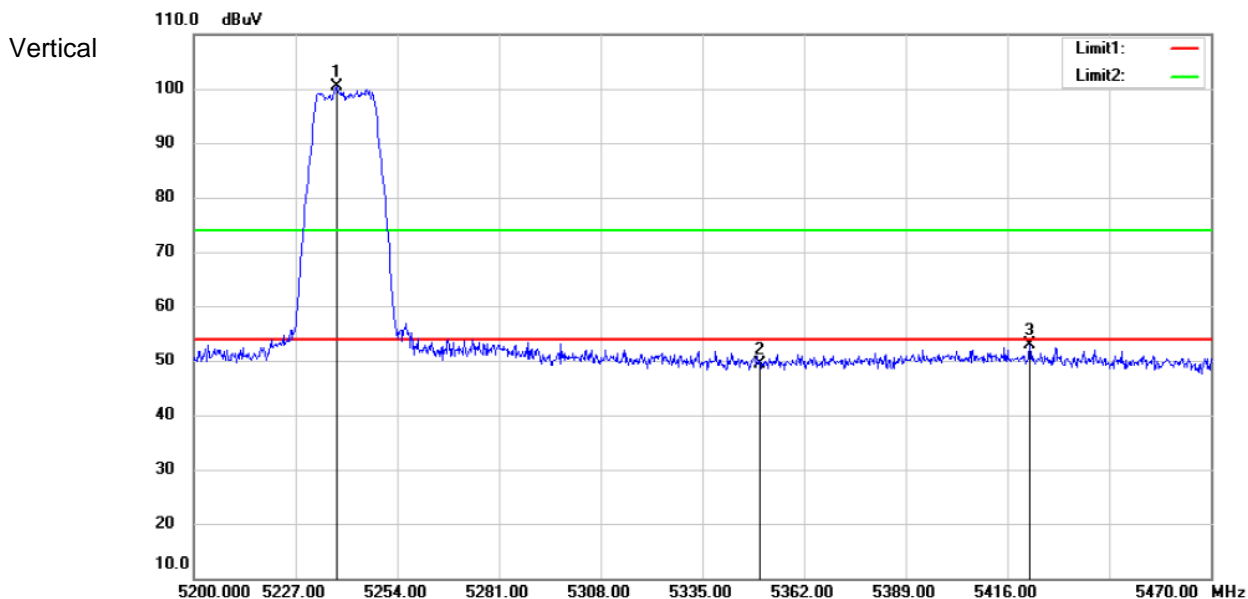
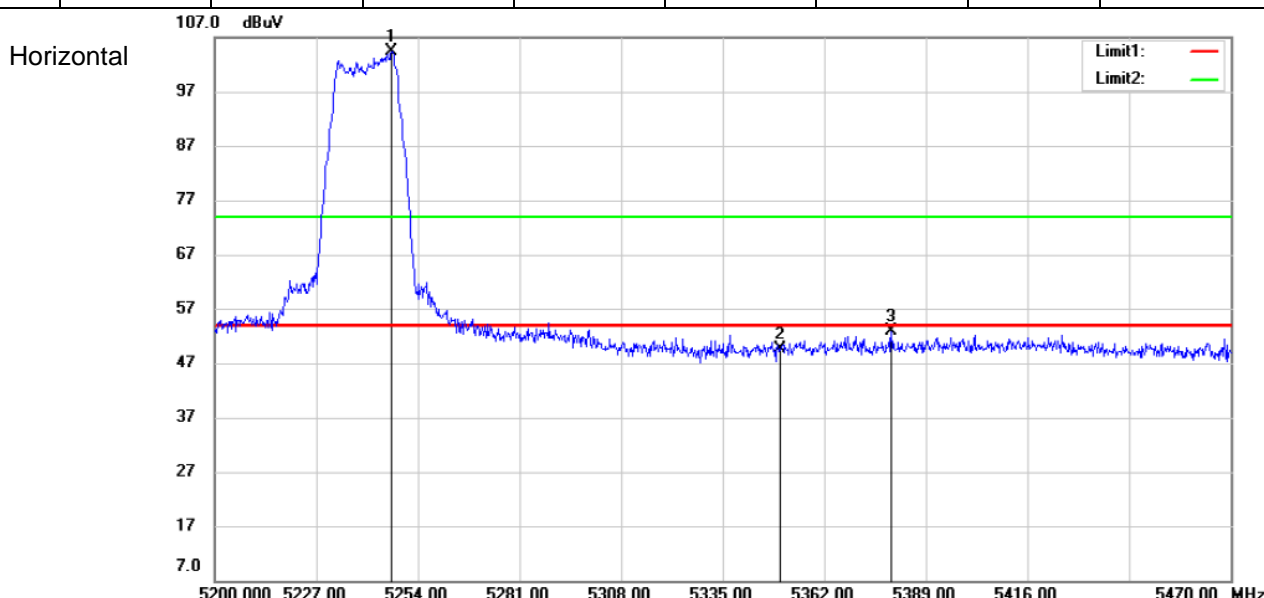


802.11 a

Antenna 1

Channel: 48

MK.	Frequency (MHz)	Reading (dBUV/m)	Corrected factor(dB)	Result (dBUV/m)	Limit (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	5246.98	97.75	6.65	104.4	54	50.4	Peak	Horizontal
2	5350	42.61	6.98	49.59	54	-4.41	Peak	Horizontal
3	5379.82	45.64	7.19	52.83	54	-1.17	Peak	Horizontal
1	5237.8	93.85	6.65	100.5	54	46.5	Peak	Vertical
2	5350	42.48	6.98	49.46	54	-4.54	Peak	Vertical
3	5421.94	45.51	7.25	52.76	54	-1.24	Peak	Vertical

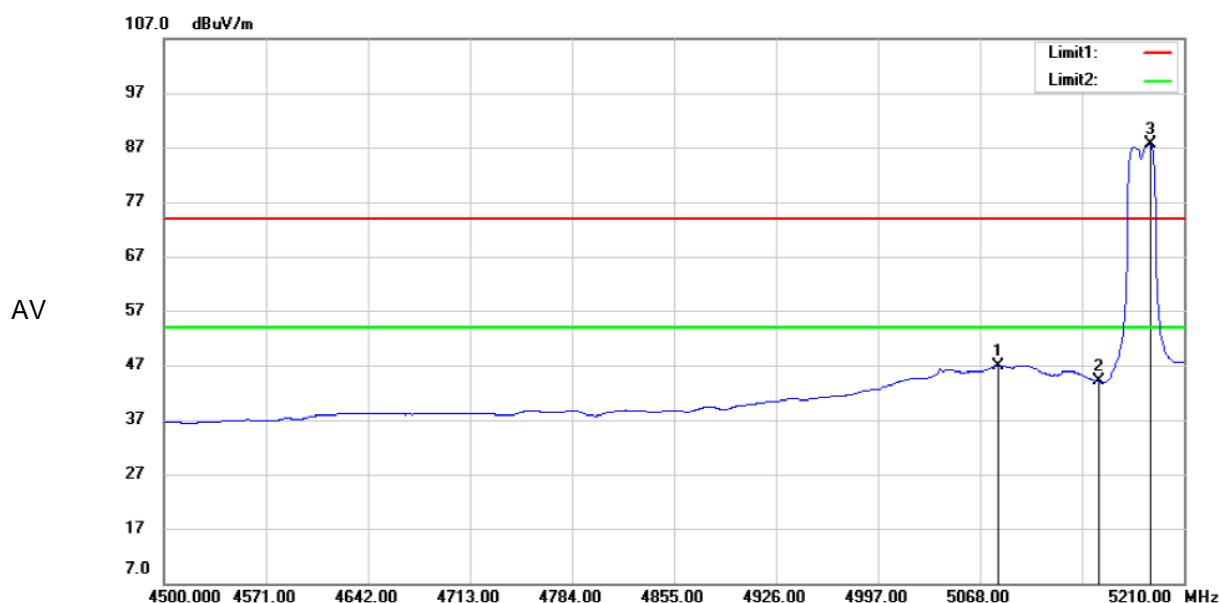
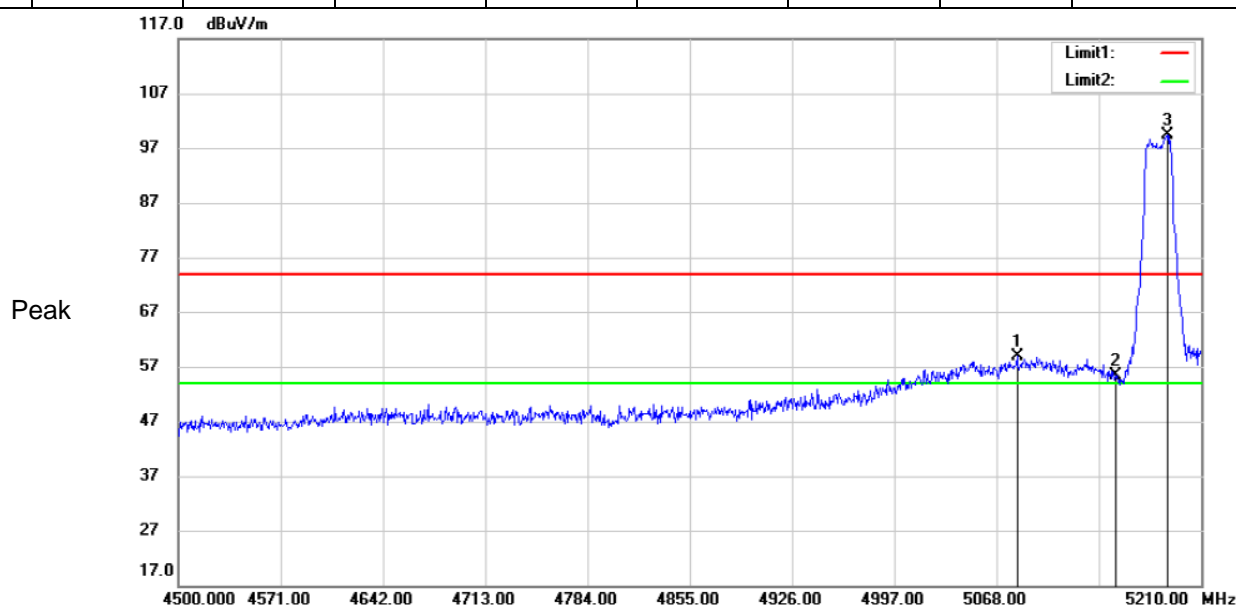


802.11 n(HT20)

Antenna 1

Channel: 36

MK.	Frequency (MHz)	Reading (dBUV/m)	Corrected factor(dB)	Result (dBUV/m)	Limit (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	5082.2	51.65	7.29	58.94	74	-15.06	Peak	Horizontal
2	5150	48.46	6.92	55.38	74	-18.62	Peak	Horizontal
3	5186.57	92.55	6.72	99.27	74	25.27	Peak	Horizontal
1	5080.78	39.64	7.3	46.94	54	-7.06	AV	Horizontal
2	5150	37.11	6.92	44.03	54	-9.97	AV	Horizontal
3	5186.57	81.01	6.72	87.73	54	33.73	AV	Horizontal

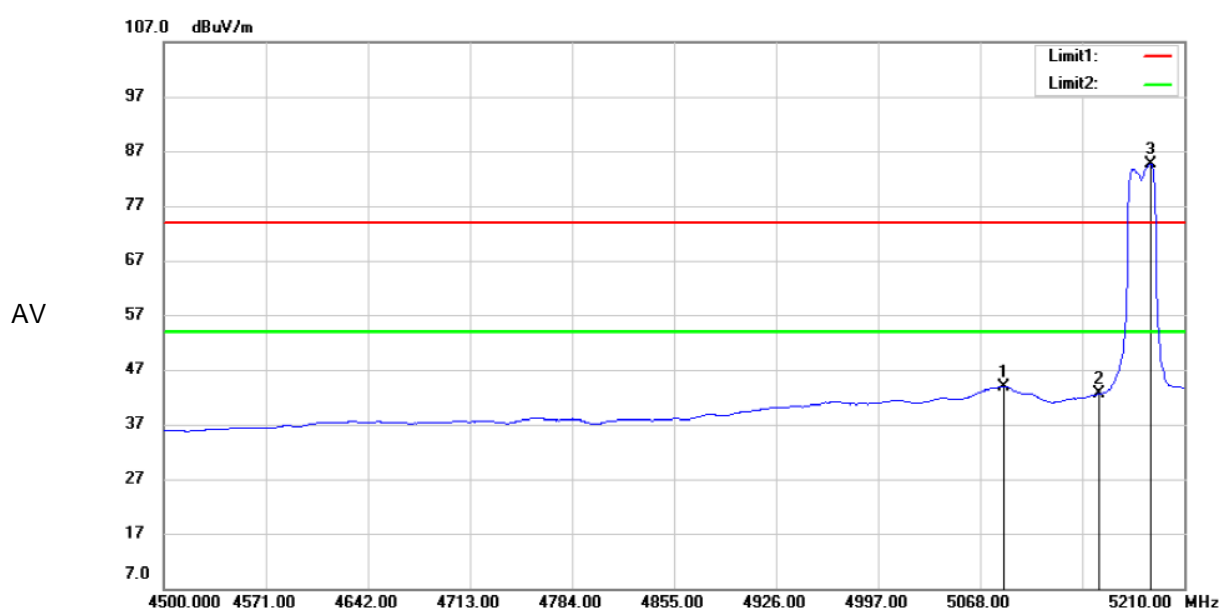
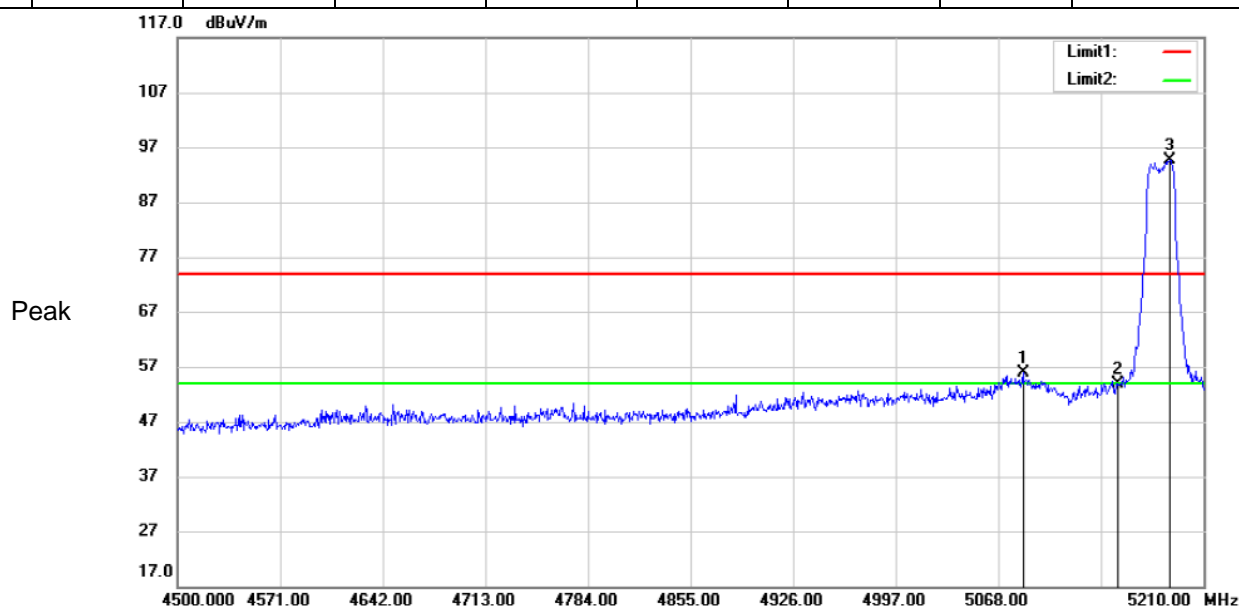


802.11 n(HT20)

Antenna 1

Channel: 36

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5085.04	48.49	7.28	55.77	74	-18.23	Peak	Vertical
2	5150	47.06	6.92	53.98	74	-20.02	Peak	Vertical
3	5186.57	87.95	6.72	94.67	74	20.67	Peak	Vertical
1	5084.33	36.59	7.28	43.87	54	-10.13	AV	Vertical
2	5150	35.65	6.92	42.57	54	-11.43	AV	Vertical
3	5186.57	77.86	6.72	84.58	54	30.58	AV	Vertical

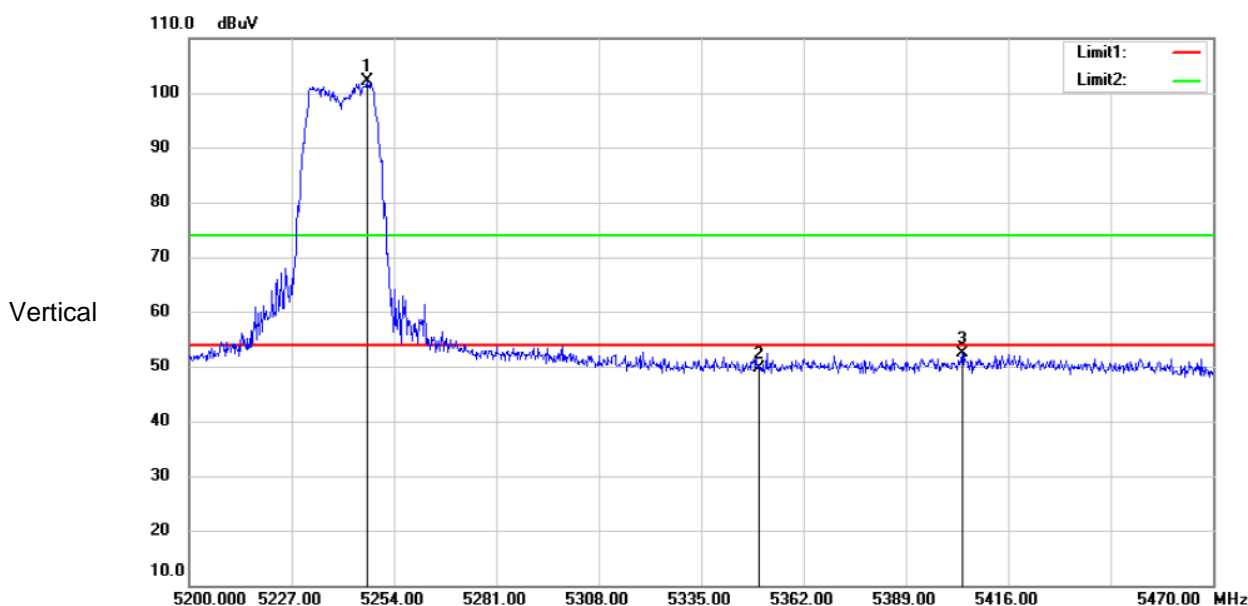
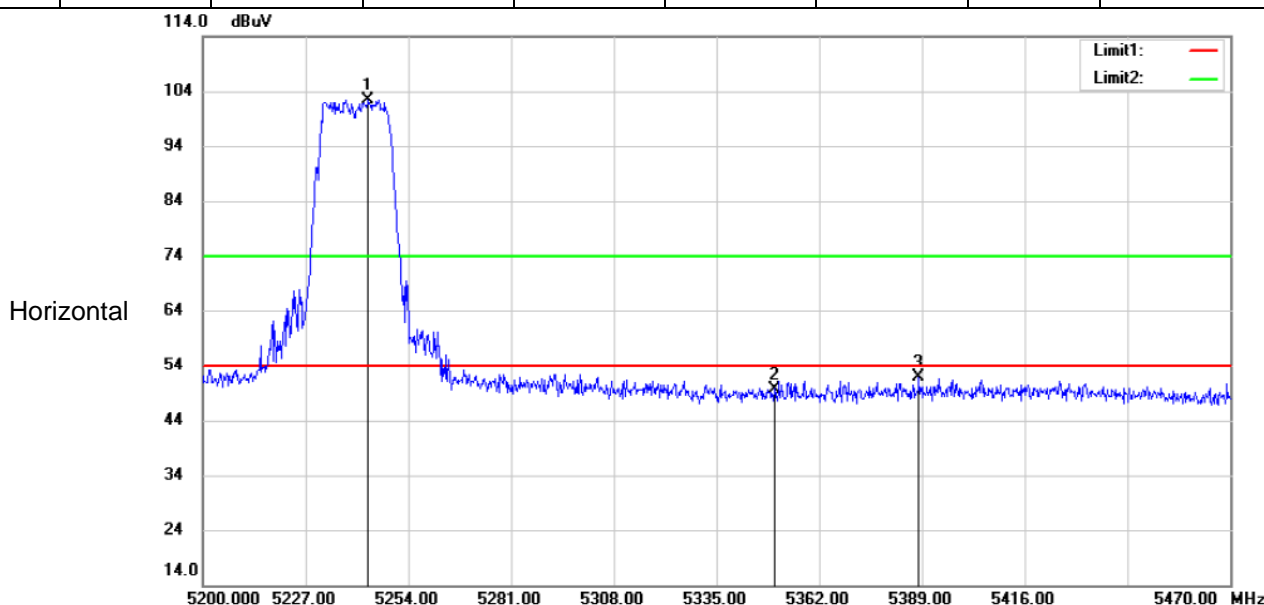


802.11 n(HT20)

Antenna 1

Channel: 48

MK.	Frequency (MHz)	Reading (dBUV/m)	Corrected factor(dB)	Result (dBUV/m)	Limit (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	5243.47	95.78	6.65	102.43	54	48.43	Peak	Horizontal
2	5350	42.67	6.98	49.65	54	-4.35	Peak	Horizontal
3	5388.19	44.63	7.24	51.87	54	-2.13	Peak	Horizontal
1	5246.98	95.41	6.65	102.06	54	48.06	Peak	Vertical
2	5350	42.62	6.98	49.6	54	-4.4	Peak	Vertical
3	5403.85	45.17	7.32	52.49	54	-1.51	Peak	Vertical

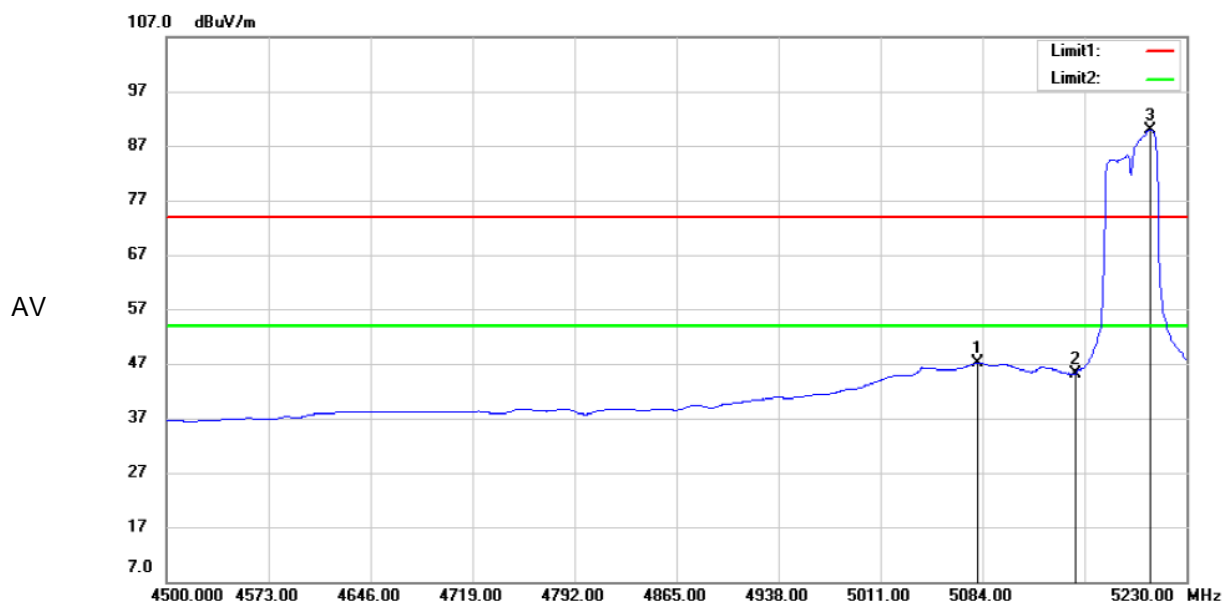
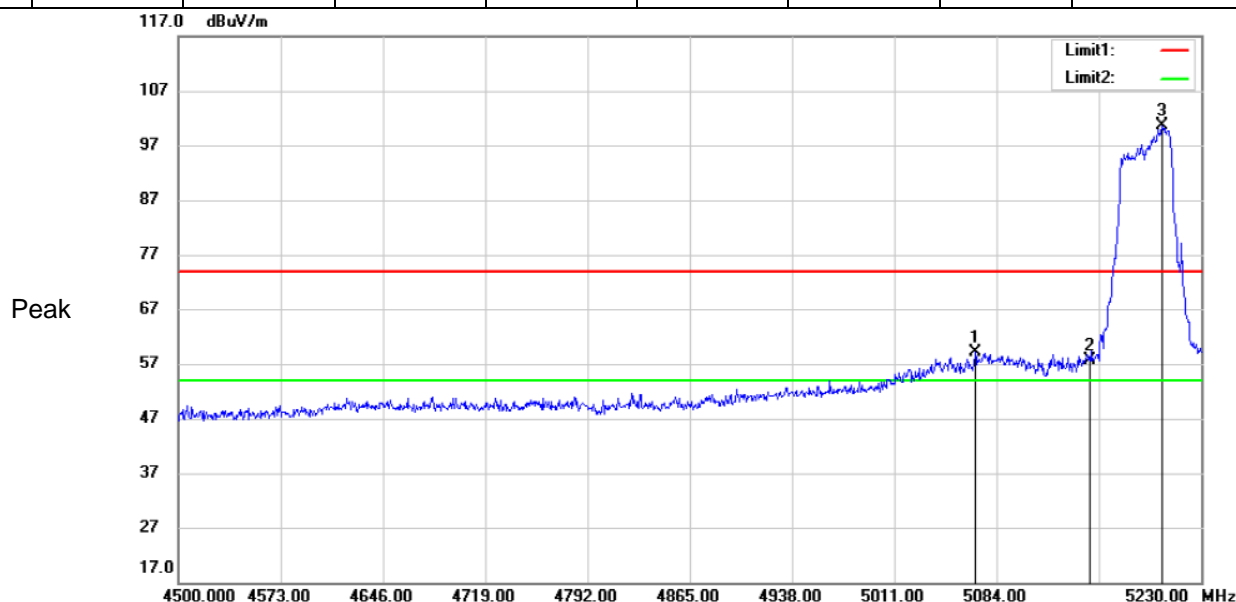


802.11 n(HT40)

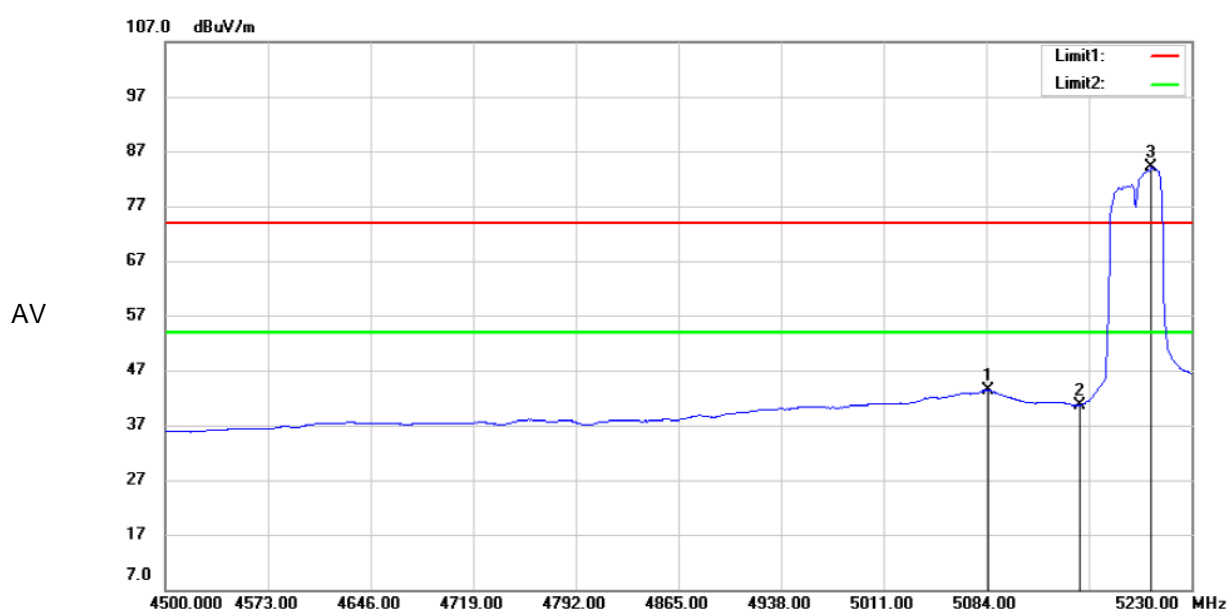
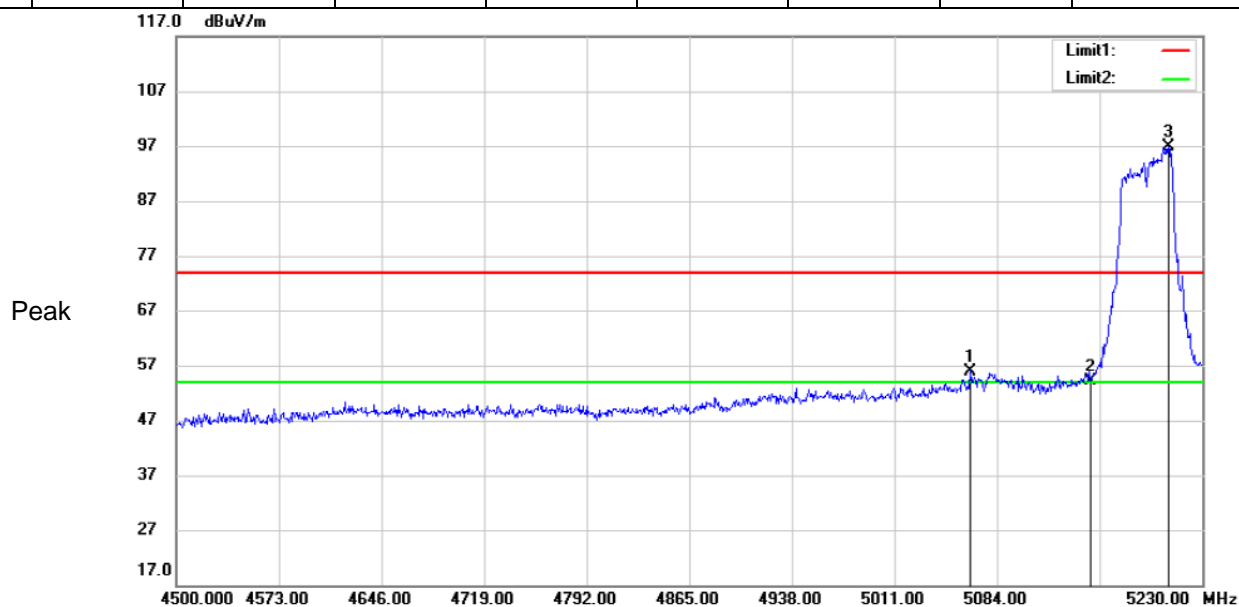
Antenna 1

Channel: 38

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5068.67	51.88	7.35	59.23	74	-14.77	Peak	Horizontal
2	5150	50.78	6.92	57.7	74	-16.3	Peak	Horizontal
3	5202.26	93.95	6.65	100.6	74	26.6	Peak	Horizontal
1	5080.35	39.91	7.3	47.21	54	-6.79	AV	Horizontal
2	5150	38.32	6.92	45.24	54	-8.76	AV	Horizontal
3	5203.72	83.2	6.65	89.85	54	35.85	AV	Horizontal



802.11 n(HT40)				Antenna 1		Channel: 38		
MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5065.02	48.63	7.37	56	74	-18	Peak	Vertical
2	5150	47.32	6.92	54.24	74	-19.76	Peak	Vertical
3	5205.91	90.13	6.65	96.78	74	22.78	Peak	Vertical
1	5085.46	36.18	7.28	43.46	54	-10.54	AV	Vertical
2	5150	33.66	6.92	40.58	54	-13.42	AV	Vertical
3	5201.53	77.42	6.65	84.07	54	30.07	AV	Vertical

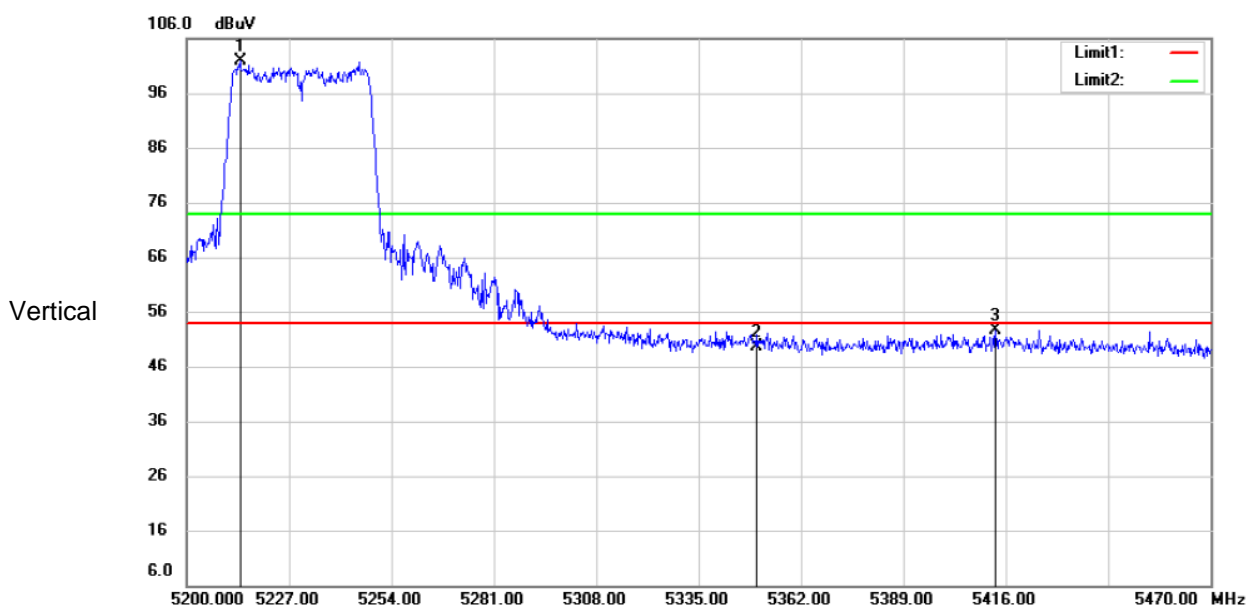
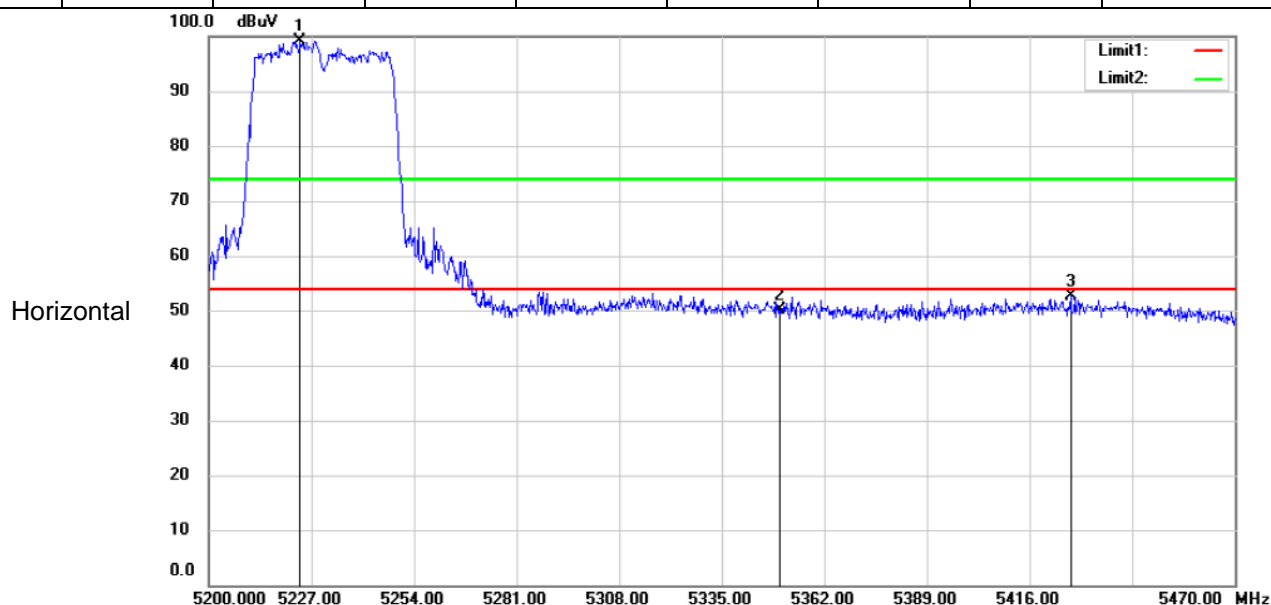


802.11 n(HT40)

Antenna 1

Channel: 46

MK.	Frequency (MHz)	Reading (dBUV/m)	Corrected factor(dB)	Result (dBUV/m)	Limit (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	5224.03	92.55	6.65	99.2	54	45.2	Peak	Horizontal
2	5350	43.11	6.98	50.09	54	-3.91	Peak	Horizontal
3	5426.8	45.52	7.23	52.75	54	-1.25	Peak	Horizontal
1	5214.04	95.19	6.65	101.84	54	47.84	Peak	Vertical
2	5350	42.64	6.98	49.62	54	-4.38	Peak	Vertical
3	5413.3	45.29	7.27	52.56	54	-1.44	Peak	Vertical

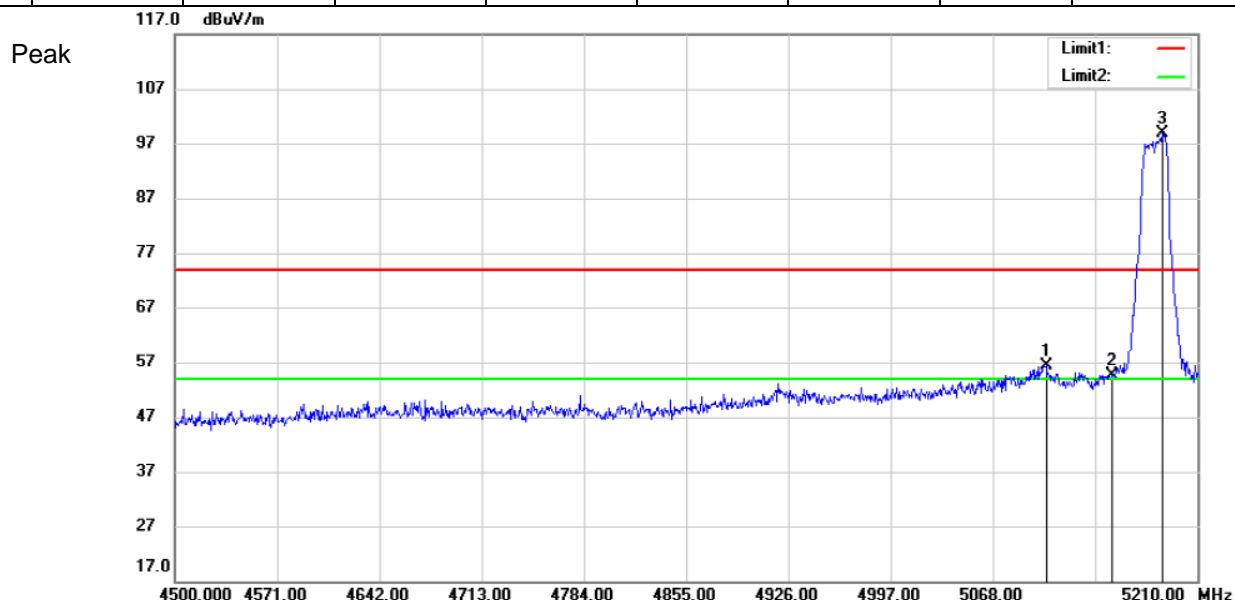


802.11 a

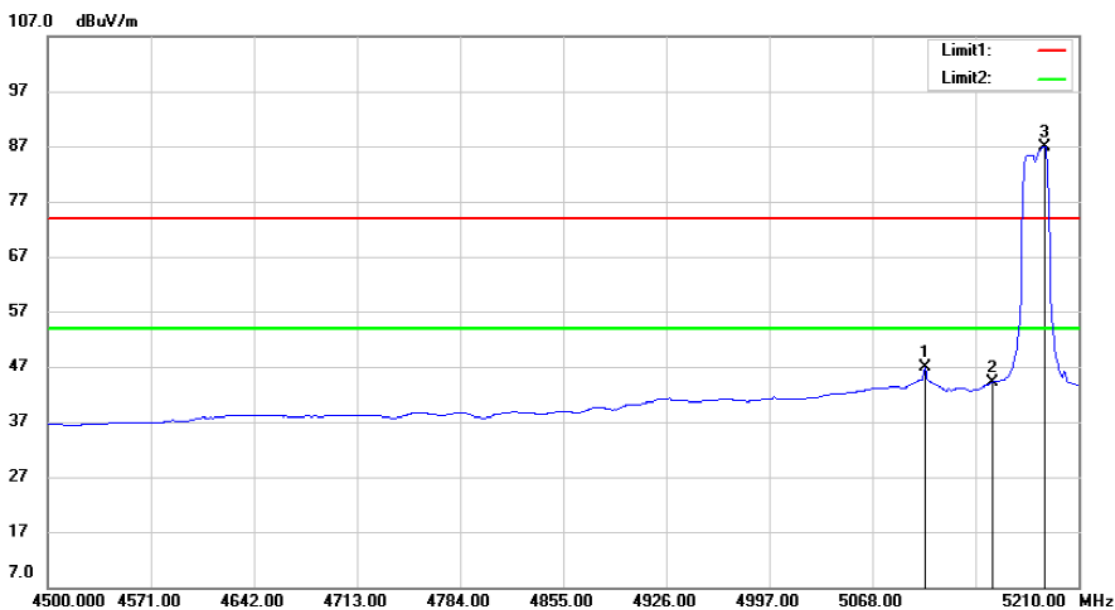
Antenna 2

Channel: 36

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5104.92	49.18	7.17	56.35	74	-17.65	Peak	Horizontal
2	5150	47.77	6.92	54.69	74	-19.31	Peak	Horizontal
3	5185.86	92.27	6.73	99	74	25	Peak	Horizontal
1	5104.21	39.6	7.18	46.78	54	-7.22	AV	Horizontal
2	5150	37.18	6.92	44.1	54	-9.9	AV	Horizontal
3	5186.57	80.27	6.72	86.99	54	32.99	AV	Horizontal



AV

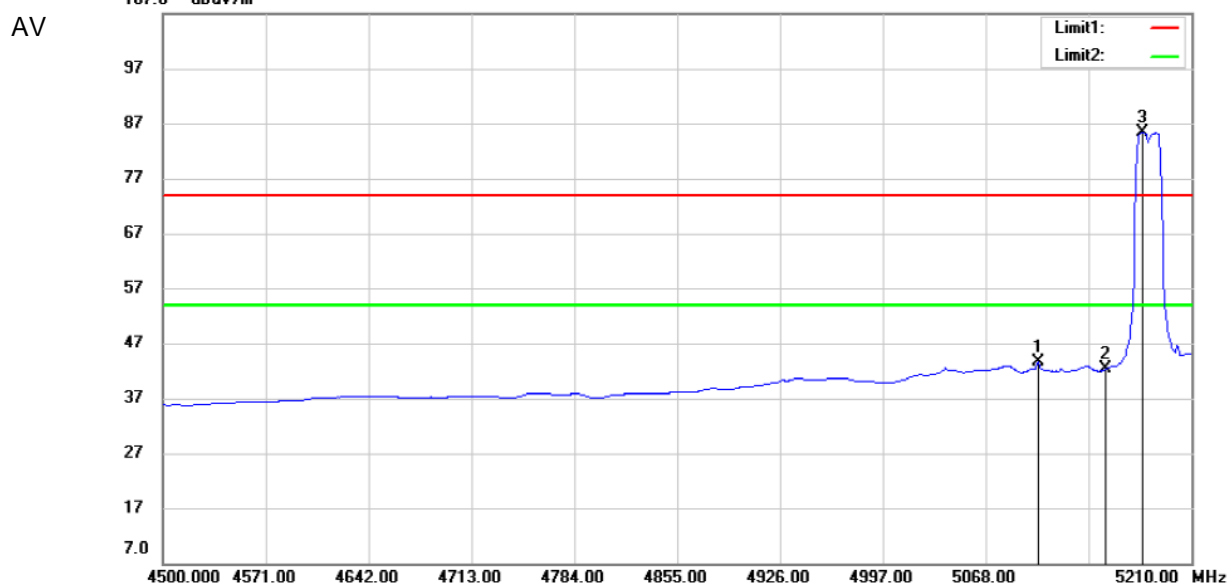
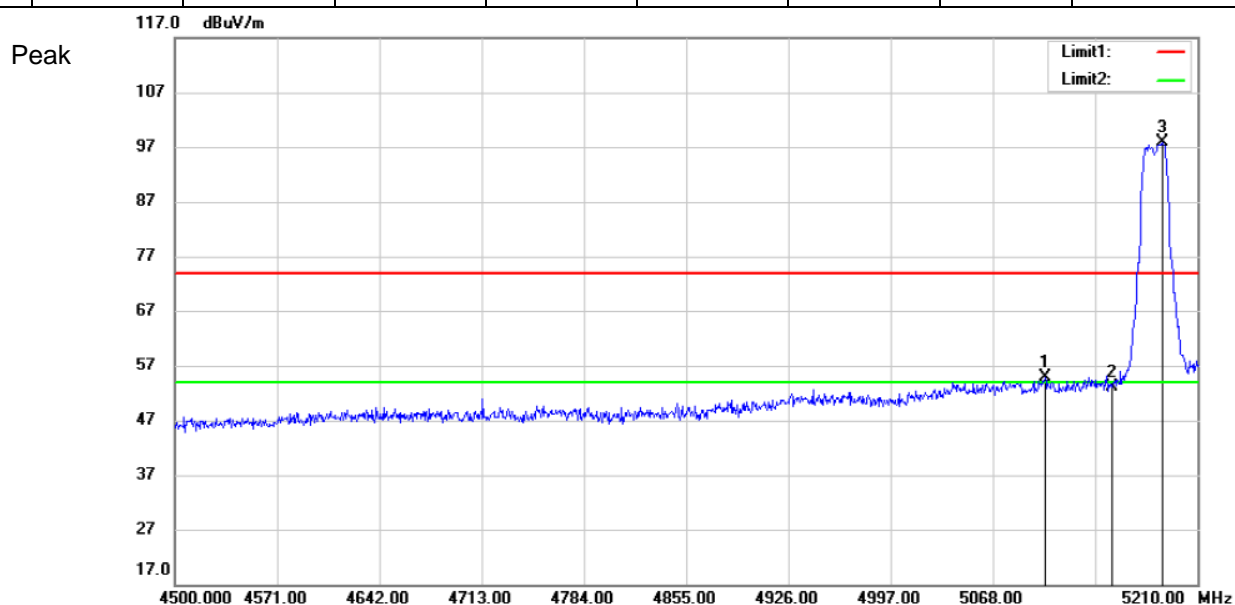


802.11 a

Antenna 2

Channel: 36

MK.	Frequency (MHz)	Reading (dBUV/m)	Corrected factor(dB)	Result (dBUV/m)	Limit (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	5104.21	47.67	7.18	54.85	74	-19.15	Peak	Vertical
2	5150	46.13	6.92	53.05	74	-20.95	Peak	Vertical
3	5185.86	91.13	6.73	97.86	74	23.86	Peak	Vertical
1	5104.21	36.51	7.18	43.69	54	-10.31	AV	Vertical
2	5150	35.38	6.92	42.3	54	-11.7	AV	Vertical
3	5176.63	78.63	6.78	85.41	54	31.41	AV	Vertical

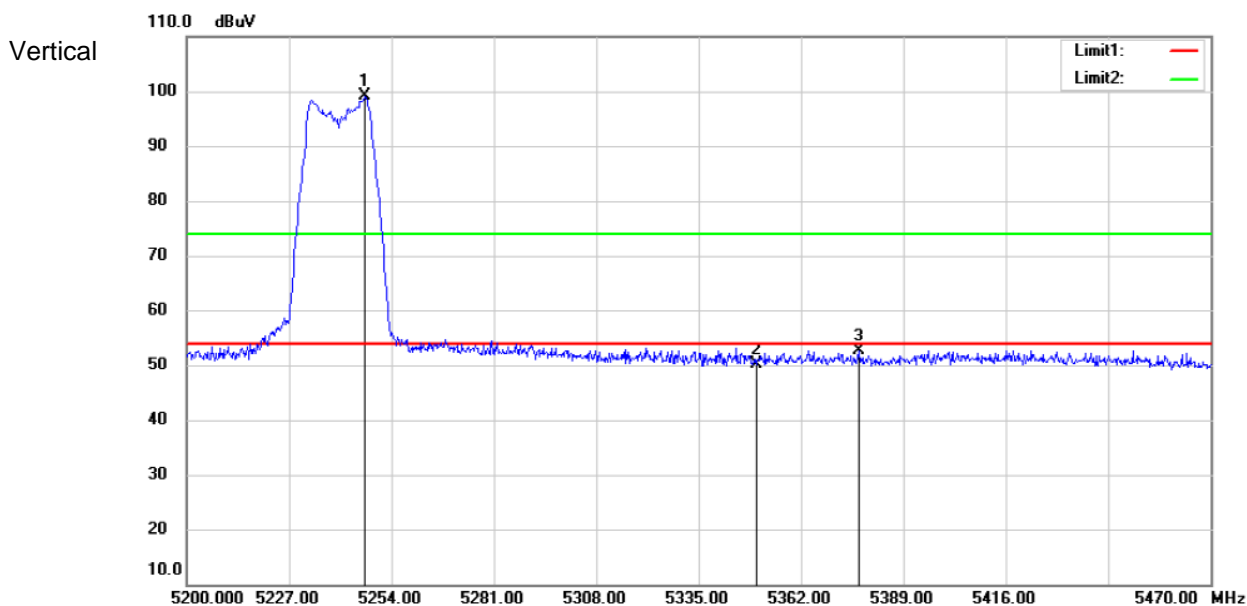
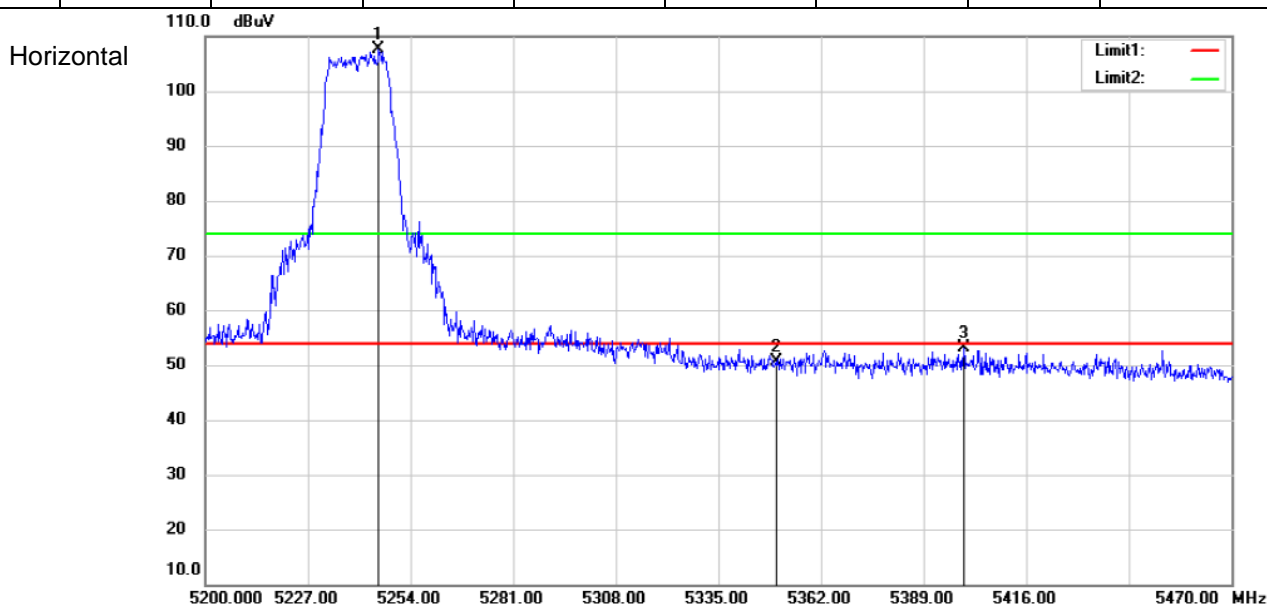


802.11 a

Antenna 2

Channel: 48

MK.	Frequency (MHz)	Reading (dBUV/m)	Corrected factor(dB)	Result (dBUV/m)	Limit (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	5245.63	100.9	6.64	107.54	54	53.54	Peak	Horizontal
2	5350	43.56	6.98	50.54	54	-3.46	Peak	Horizontal
3	5399.53	45.83	7.32	53.15	54	-0.85	Peak	Horizontal
1	5246.98	92.4	6.65	99.05	54	45.05	Peak	Vertical
2	5350	43.14	6.98	50.12	54	-3.88	Peak	Vertical
3	5377.12	45.51	7.16	52.67	54	-1.33	Peak	Vertical

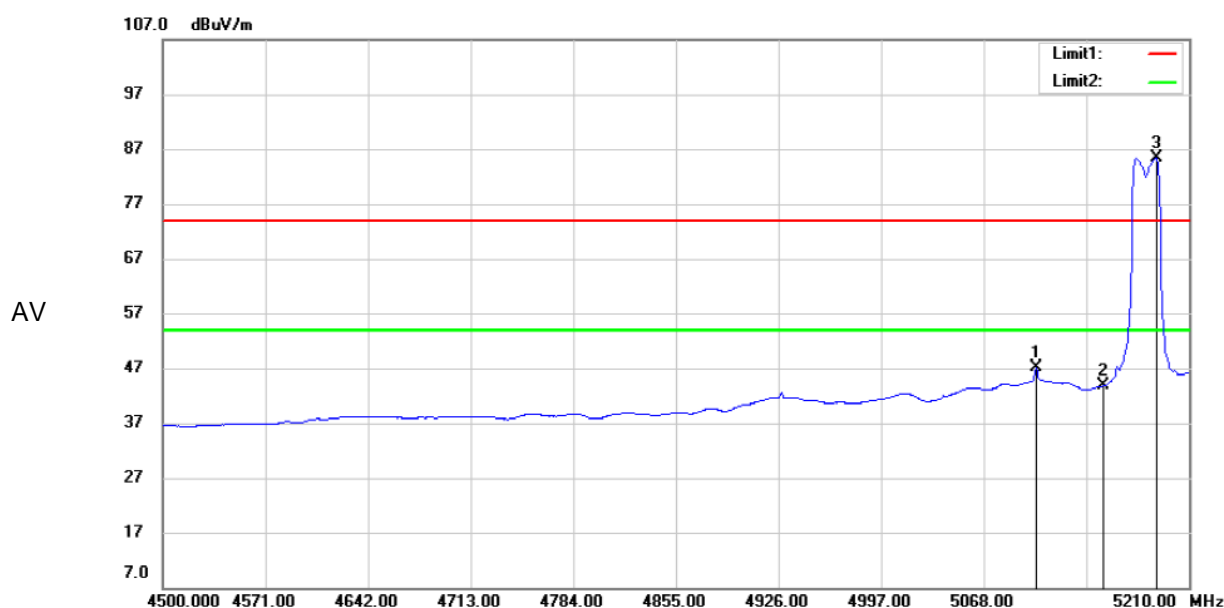
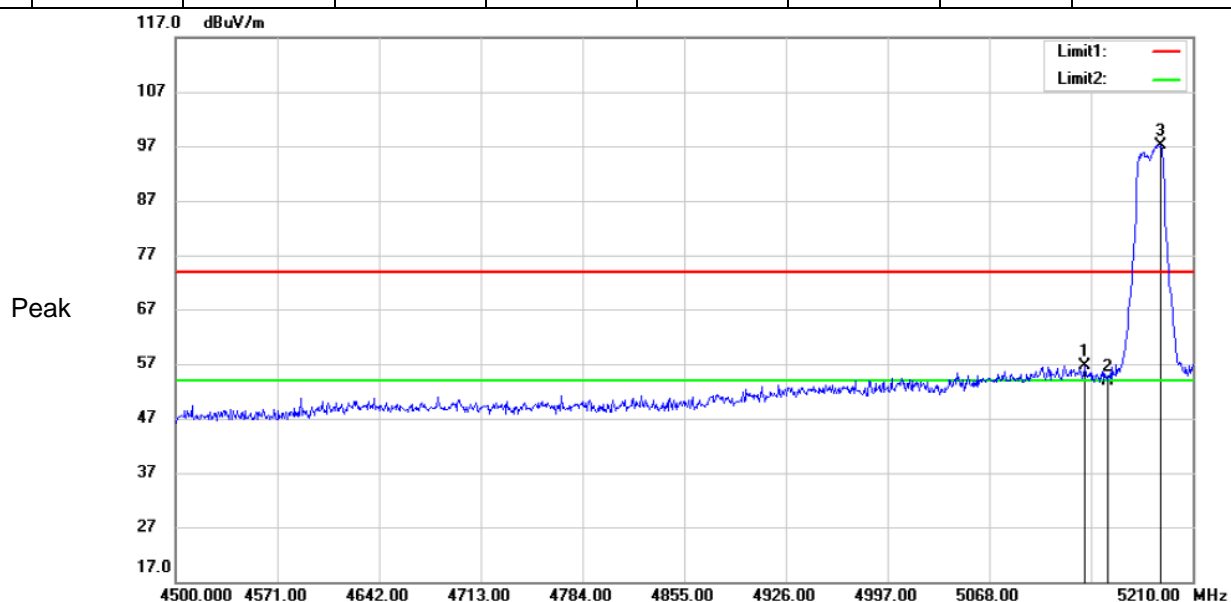


802.11 n(HT20)

Antenna 2

Channel: 36

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5134.74	49.61	7.01	56.62	74	-17.38	Peak	Horizontal
2	5150	46.84	6.92	53.76	74	-20.24	Peak	Horizontal
3	5187.99	90.51	6.71	97.22	74	23.22	Peak	Horizontal
1	5104.21	40.01	7.18	47.19	54	-6.81	AV	Horizontal
2	5150	36.84	6.92	43.76	54	-10.24	AV	Horizontal
3	5187.28	78.7	6.72	85.42	54	31.42	AV	Horizontal

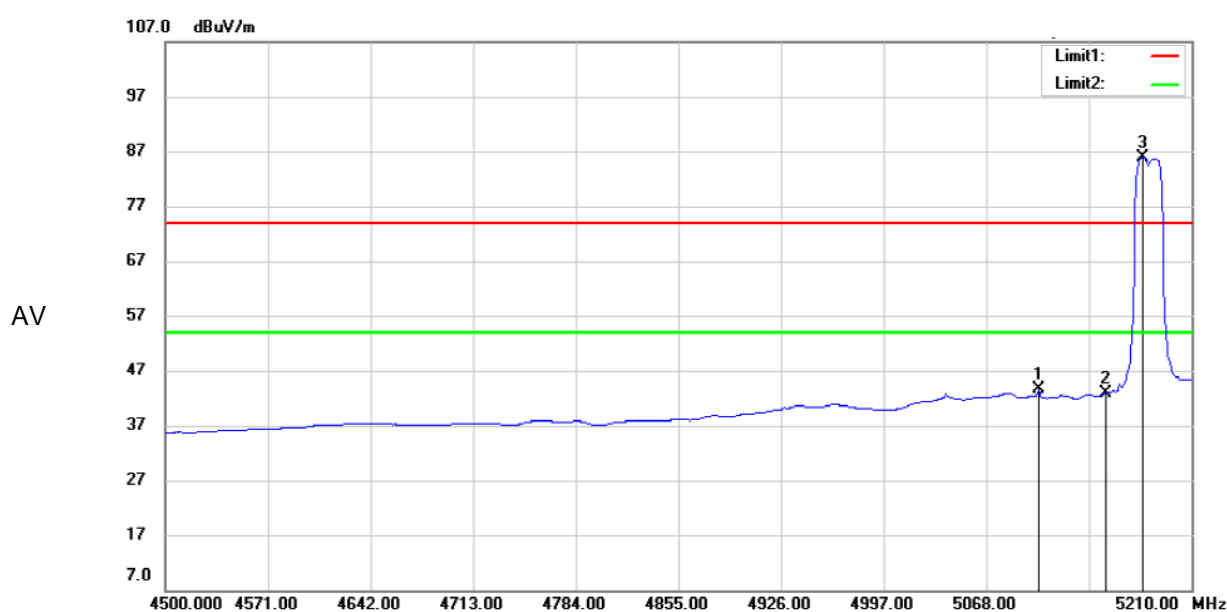
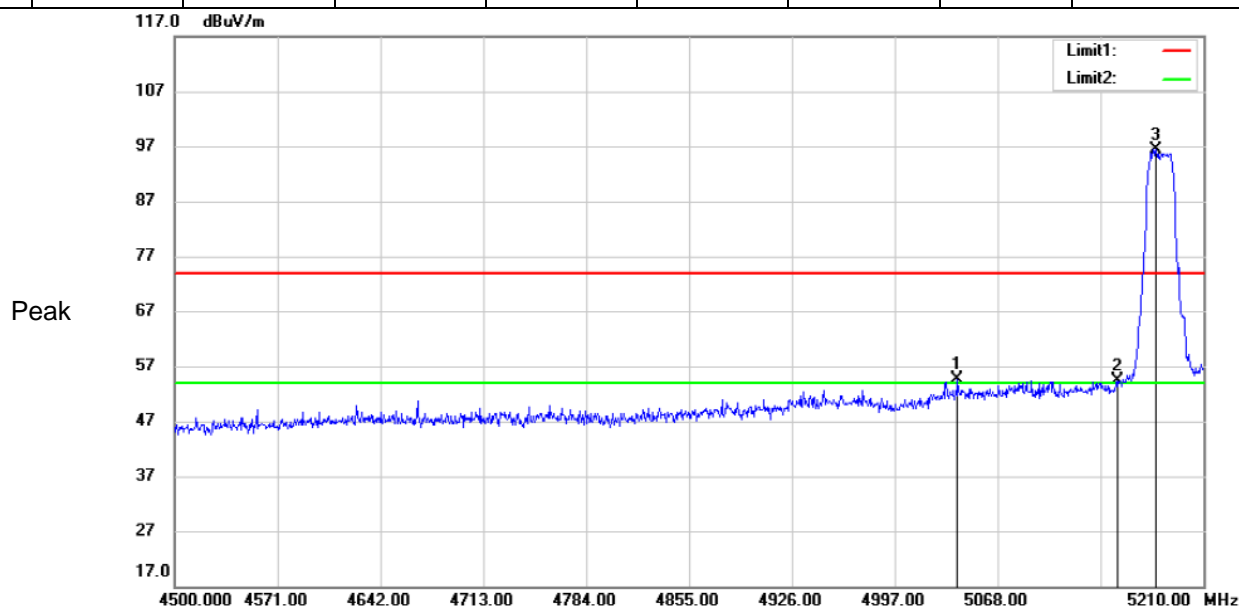


802.11 n(HT20)

Antenna 2

Channel: 36

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5040.31	47.08	7.5	54.58	74	-19.42	Peak	Vertical
2	5150	47.43	6.92	54.35	74	-19.65	Peak	Vertical
3	5177.34	89.62	6.77	96.39	74	22.39	Peak	Vertical
1	5104.21	36.34	7.18	43.52	54	-10.48	AV	Vertical
2	5150	35.99	6.92	42.91	54	-11.09	AV	Vertical
3	5176.63	79.17	6.78	85.95	54	31.95	AV	Vertical

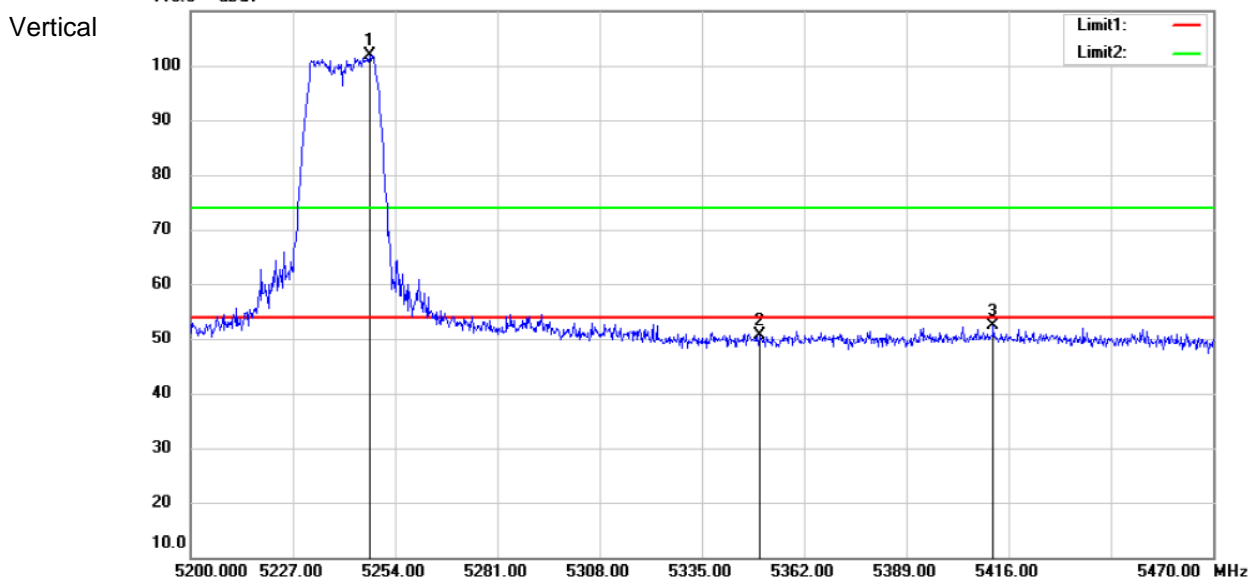
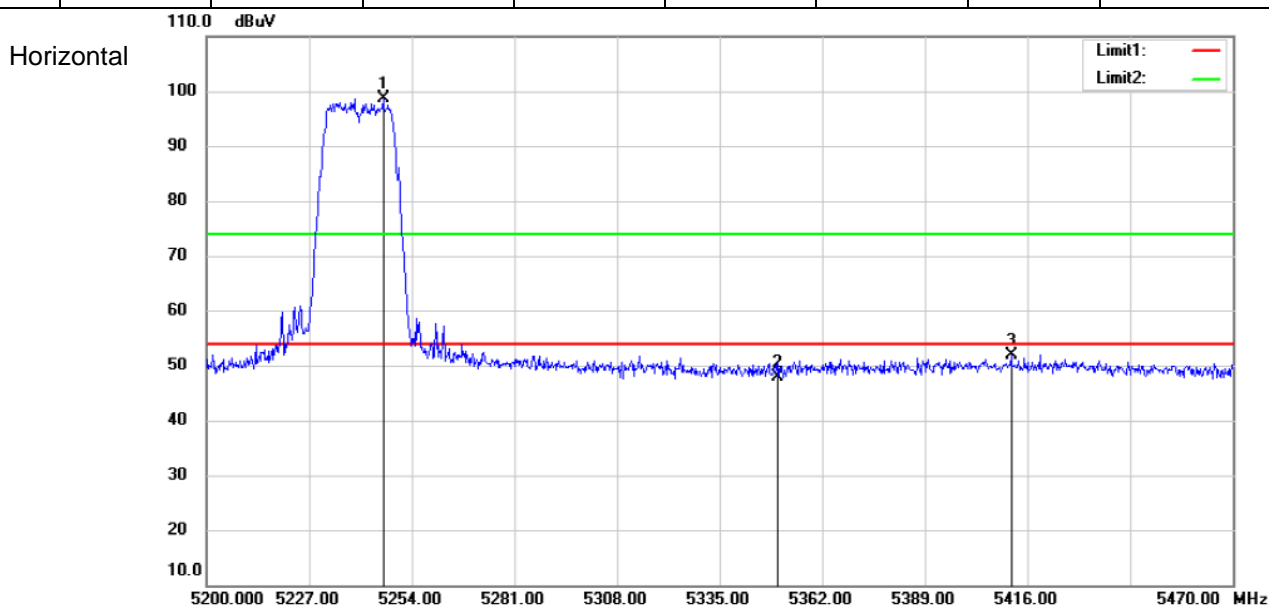


802.11 n(HT20)

Antenna 2

Channel: 48

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5246.44	91.96	6.64	98.6	54	44.6	Peak	Horizontal
2	5350	40.9	6.98	47.88	54	-6.12	Peak	Horizontal
3	5411.68	44.53	7.28	51.81	54	-2.19	Peak	Horizontal
1	5247.25	95.33	6.65	101.98	54	47.98	Peak	Vertical
2	5350	43.72	6.98	50.7	54	-3.3	Peak	Vertical
3	5411.95	44.98	7.28	52.26	54	-1.74	Peak	Vertical

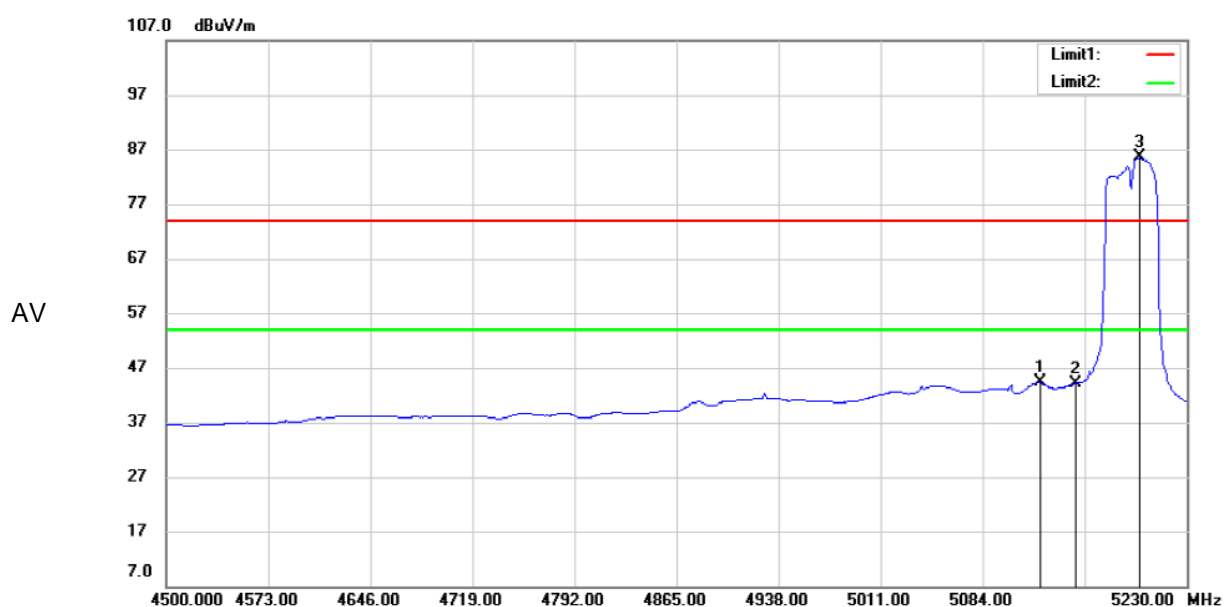
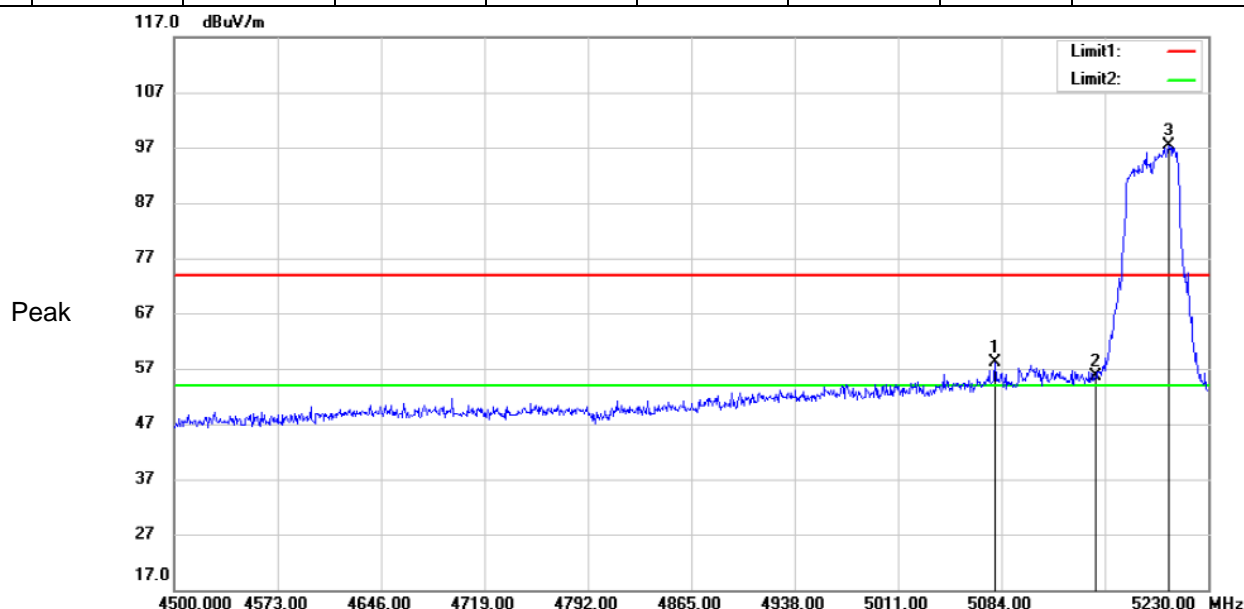


802.11 n(HT40)

Antenna 2

Channel: 38

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5079.62	50.94	7.3	58.24	74	-15.76	Peak	Horizontal
2	5150	48.63	6.92	55.55	74	-18.45	Peak	Horizontal
3	5202.26	90.75	6.65	97.4	74	23.4	Peak	Horizontal
1	5124.88	37.31	7.06	44.37	54	-9.63	AV	Horizontal
2	5150	37.25	6.92	44.17	54	-9.83	AV	Horizontal
3	5196.42	78.87	6.66	85.53	54	31.53	AV	Horizontal

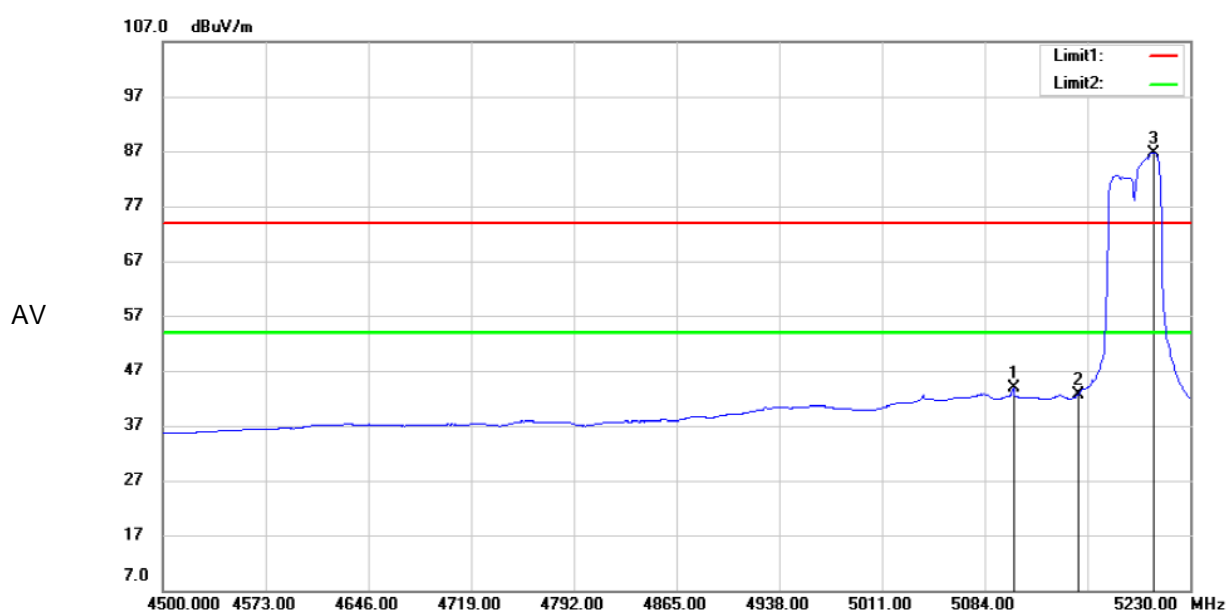
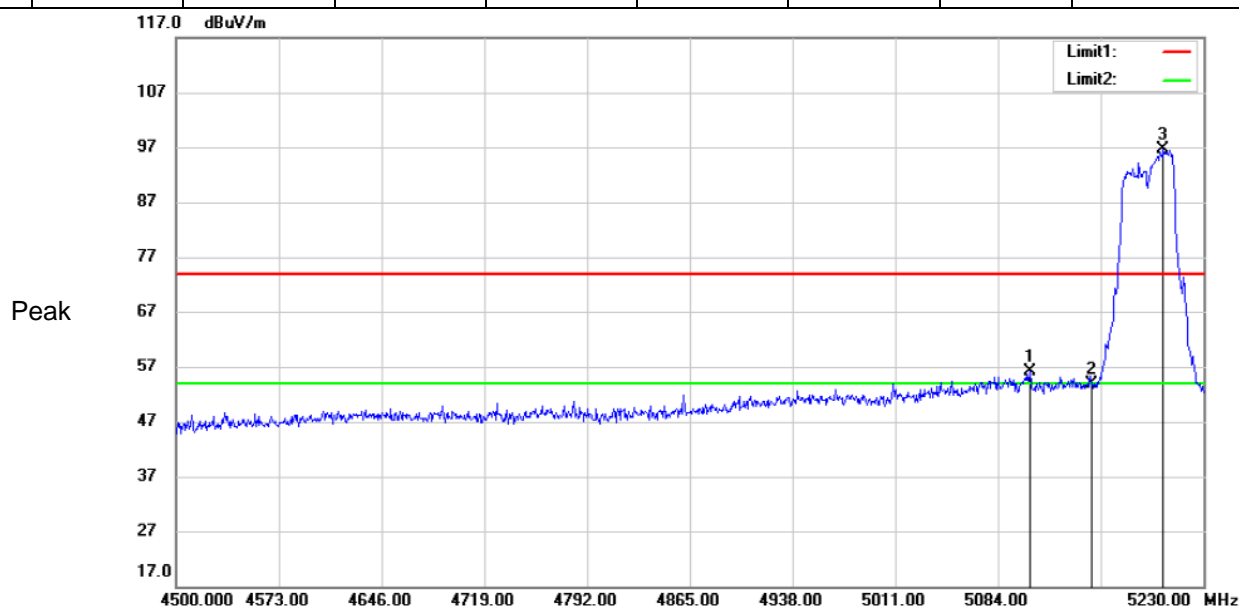


802.11 n(HT40)

Antenna 2

Channel: 38

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5106.63	48.86	7.16	56.02	74	-17.98	Peak	Vertical
2	5150	47.03	6.92	53.95	74	-20.05	Peak	Vertical
3	5201.53	90.03	6.65	96.68	74	22.68	Peak	Vertical
1	5104.44	36.7	7.18	43.88	54	-10.12	AV	Vertical
2	5150	35.75	6.92	42.67	54	-11.33	AV	Vertical
3	5203.72	80.02	6.65	86.67	54	32.67	AV	Vertical

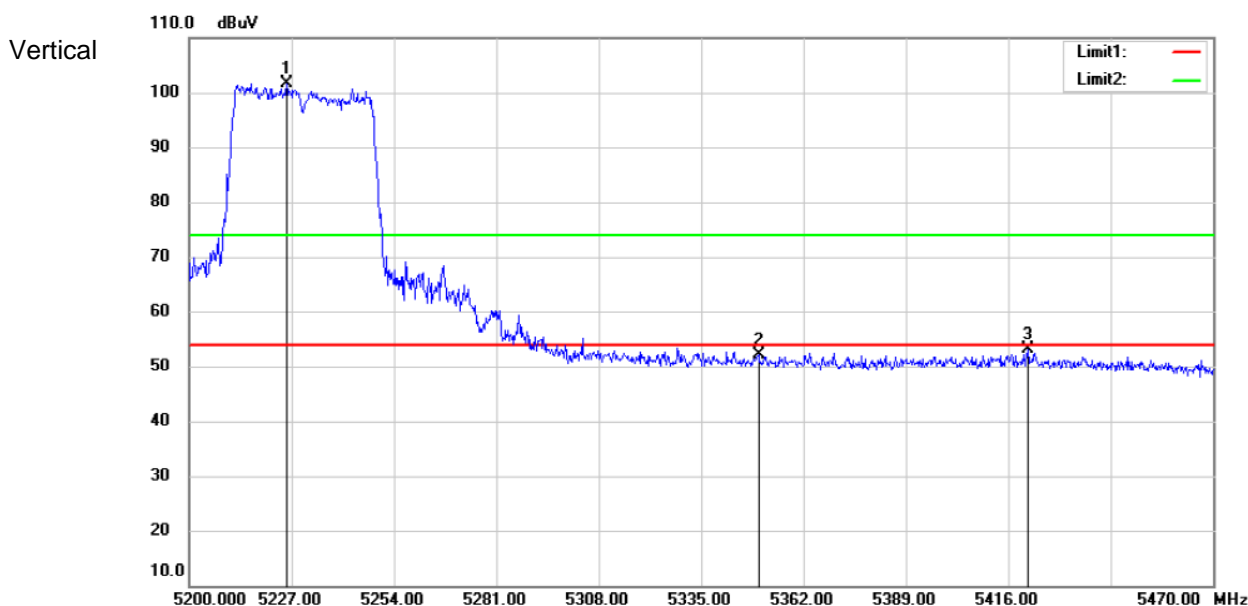
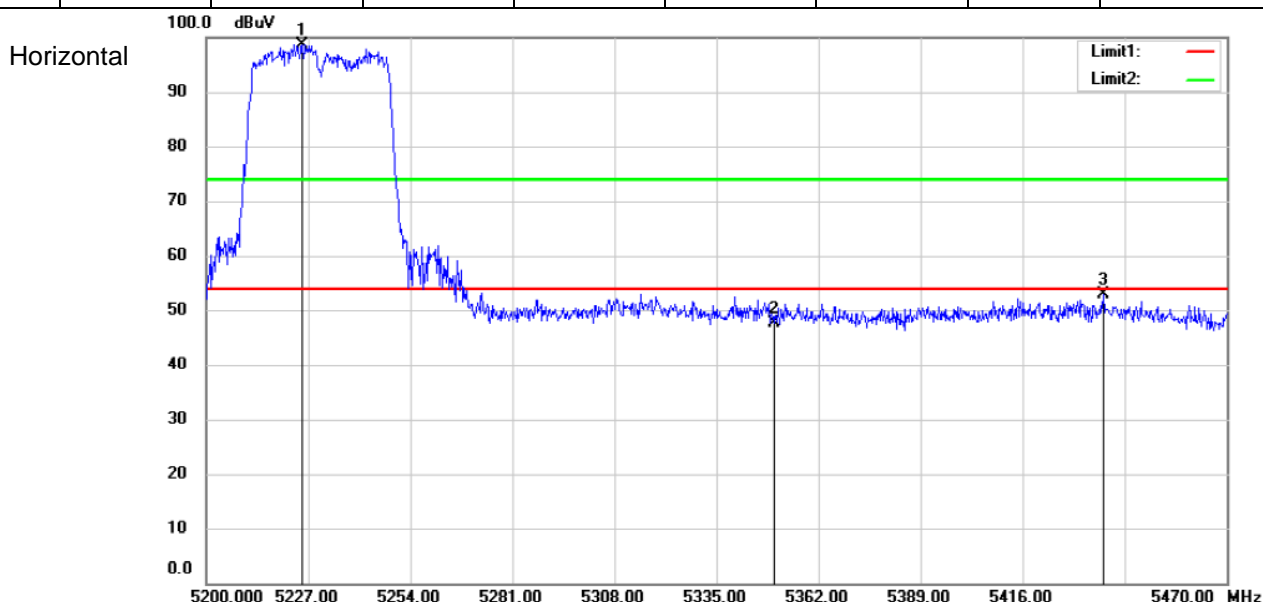


802.11 n(HT40)

Antenna 2

Channel: 46

MK.	Frequency (MHz)	Reading (dBUV/m)	Corrected factor(dB)	Result (dBUV/m)	Limit (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	5225.38	91.91	6.65	98.56	54	44.56	Peak	Horizontal
2	5350	40.66	6.98	47.64	54	-6.36	Peak	Horizontal
3	5437.33	45.75	7.18	52.93	54	-1.07	Peak	Horizontal
1	5225.65	94.89	6.65	101.54	54	47.54	Peak	Vertical
2	5350	45.1	6.98	52.08	54	-1.92	Peak	Vertical
3	5421.13	45.81	7.24	53.05	54	-0.95	Peak	Vertical

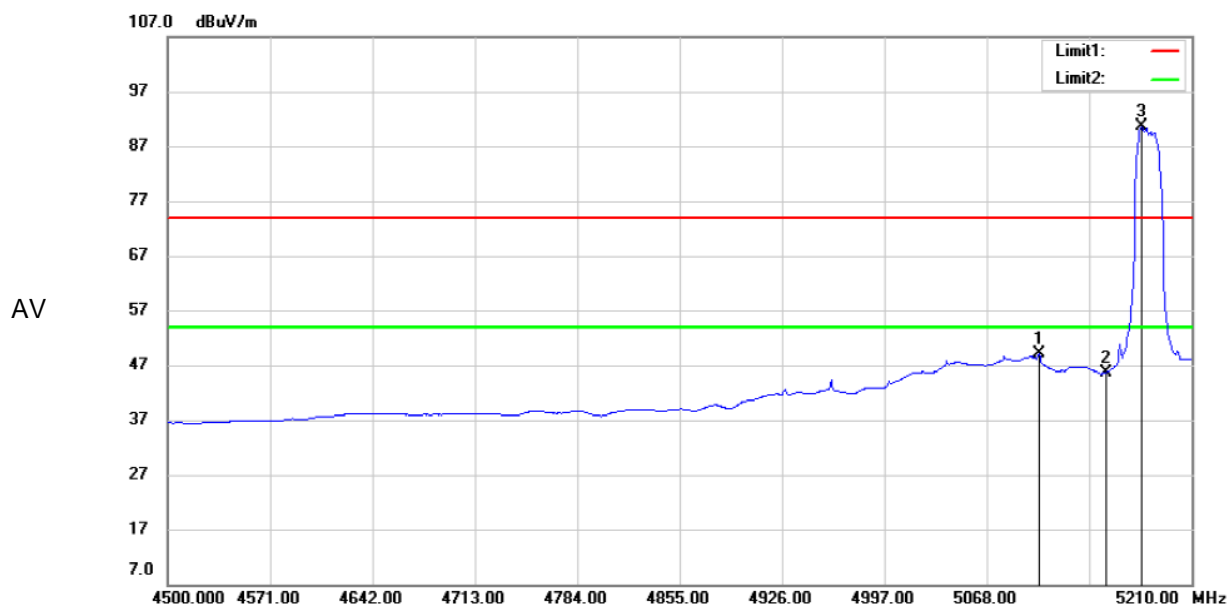
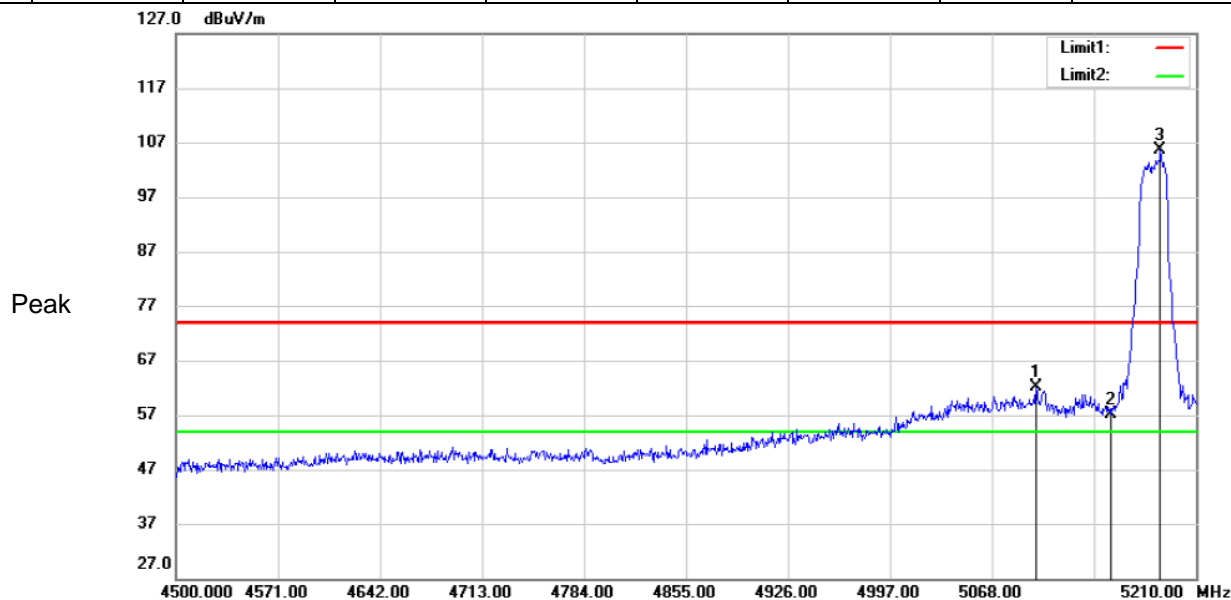


802.11 n(HT20)

MIMO

Channel: 36

MK.	Frequency (MHz)	Reading (dBUV/m)	Corrected factor(dB)	Result (dBUV/m)	Limit (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	5098.53	54.87	7.21	62.08	74	-11.92	Peak	Horizontal
2	5150	50.23	6.92	57.15	74	-16.85	Peak	Horizontal
3	5185.15	98.85	6.74	105.59	74	31.59	Peak	Horizontal
1	5104.21	41.92	7.18	49.1	54	-4.9	AV	Horizontal
2	5150	38.72	6.92	45.64	54	-8.36	AV	Horizontal
3	5175.21	83.85	6.79	90.64	54	36.64	AV	Horizontal

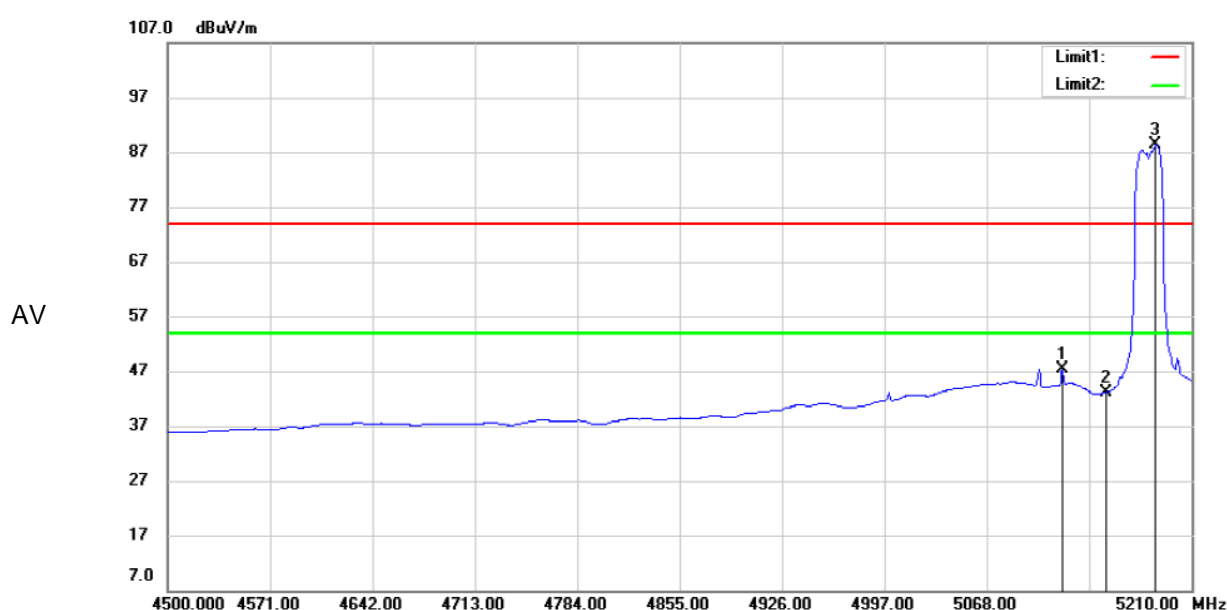
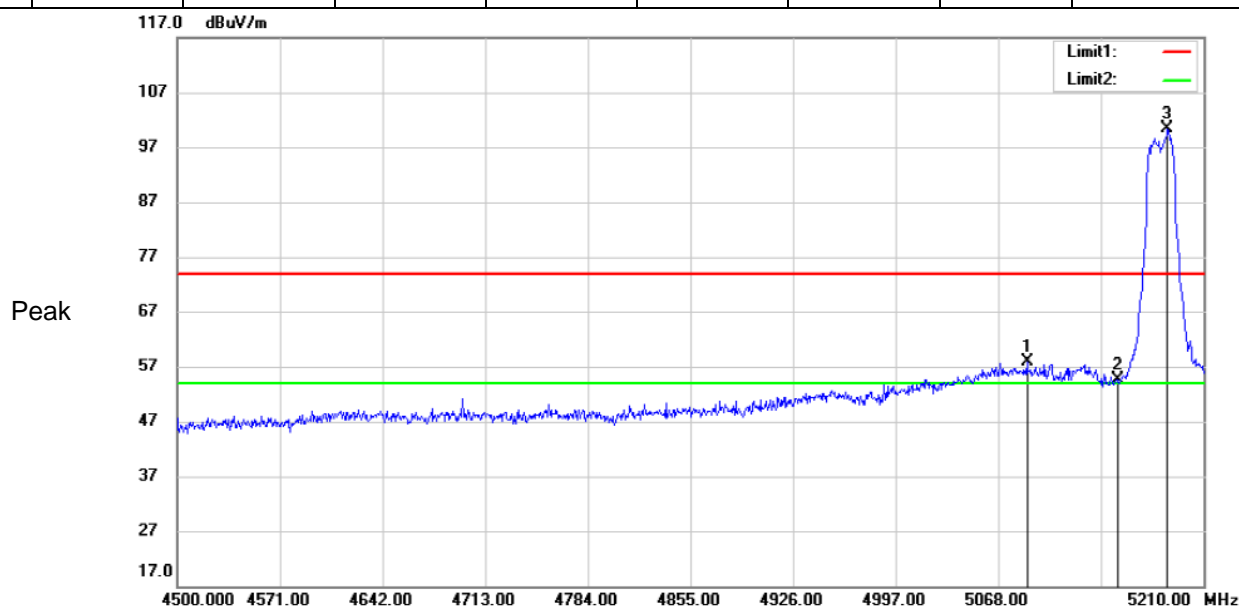


802.11 n(HT20)

MIMO

Channel: 36

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5087.88	50.52	7.26	57.78	74	-16.22	Peak	Vertical
2	5150	47.59	6.92	54.51	74	-19.49	Peak	Vertical
3	5185.15	93.65	6.74	100.39	74	26.39	Peak	Vertical
1	5120.54	40.34	7.09	47.43	54	-6.57	AV	Vertical
2	5150	36.2	6.92	43.12	54	-10.88	AV	Vertical
3	5185.15	81.59	6.74	88.33	54	34.33	AV	Vertical

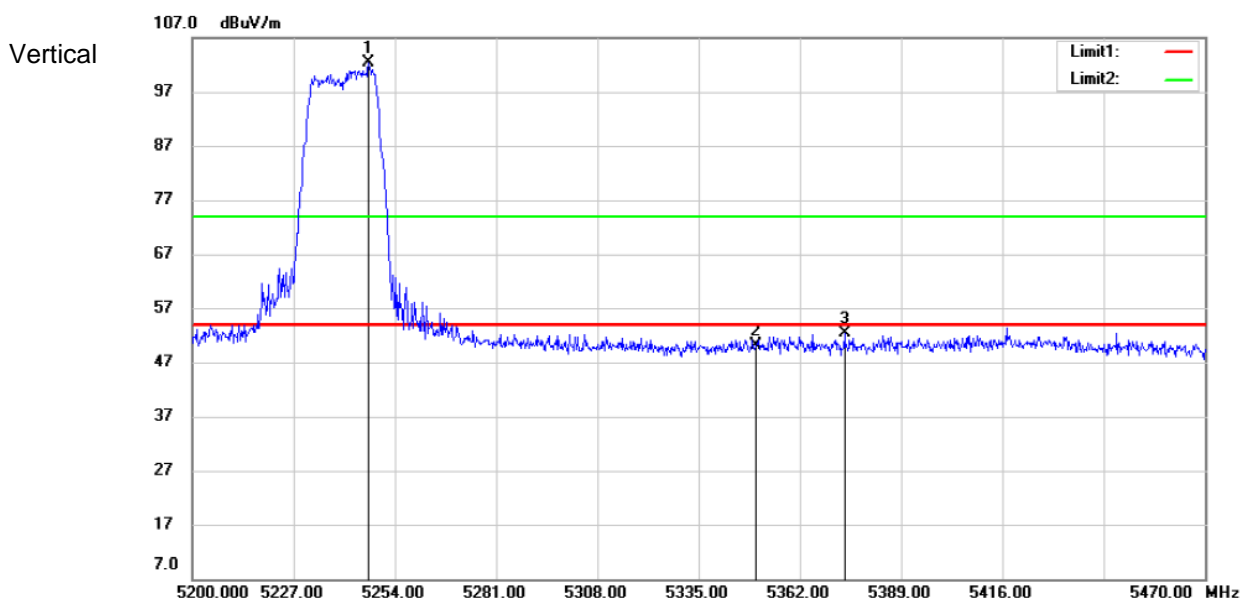
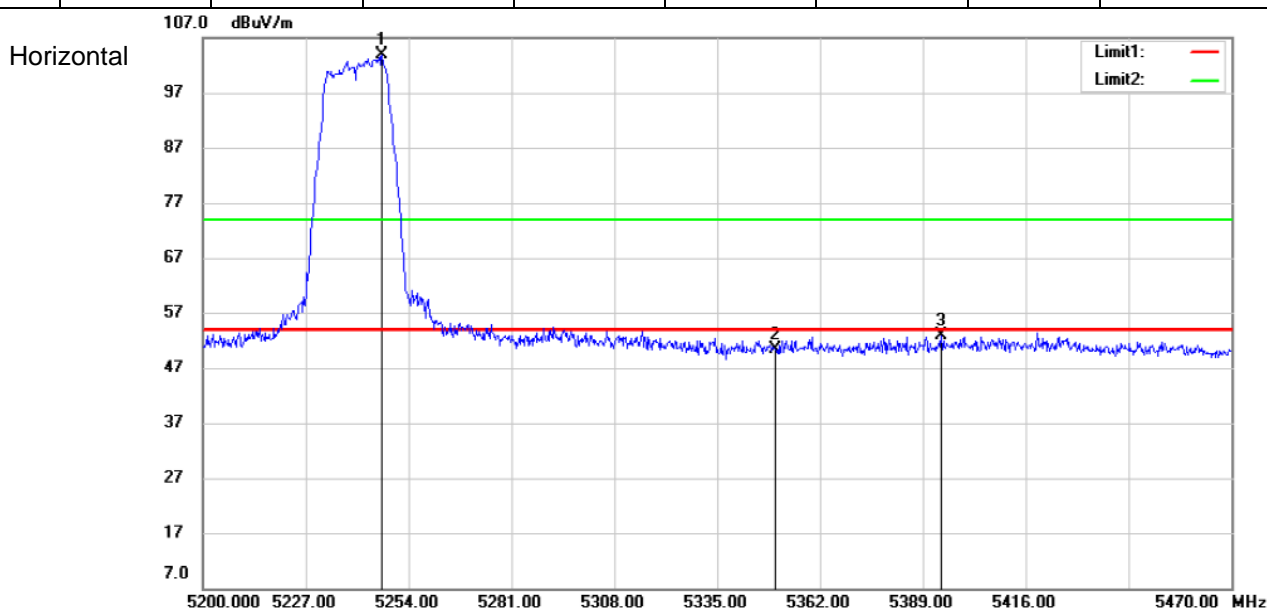


802.11 n(HT20)

MIMO

Channel: 48

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5246.98	97.33	6.65	103.98	54	49.98	Peak	Horizontal
2	5350	43.34	6.98	50.32	54	-3.68	Peak	Horizontal
3	5393.86	45.57	7.29	52.86	54	-1.14	Peak	Horizontal
1	5246.98	95.77	6.65	102.42	54	48.42	Peak	Vertical
2	5350	43.22	6.98	50.2	54	-3.8	Peak	Vertical
3	5373.88	45.23	7.15	52.38	54	-1.62	Peak	Vertical

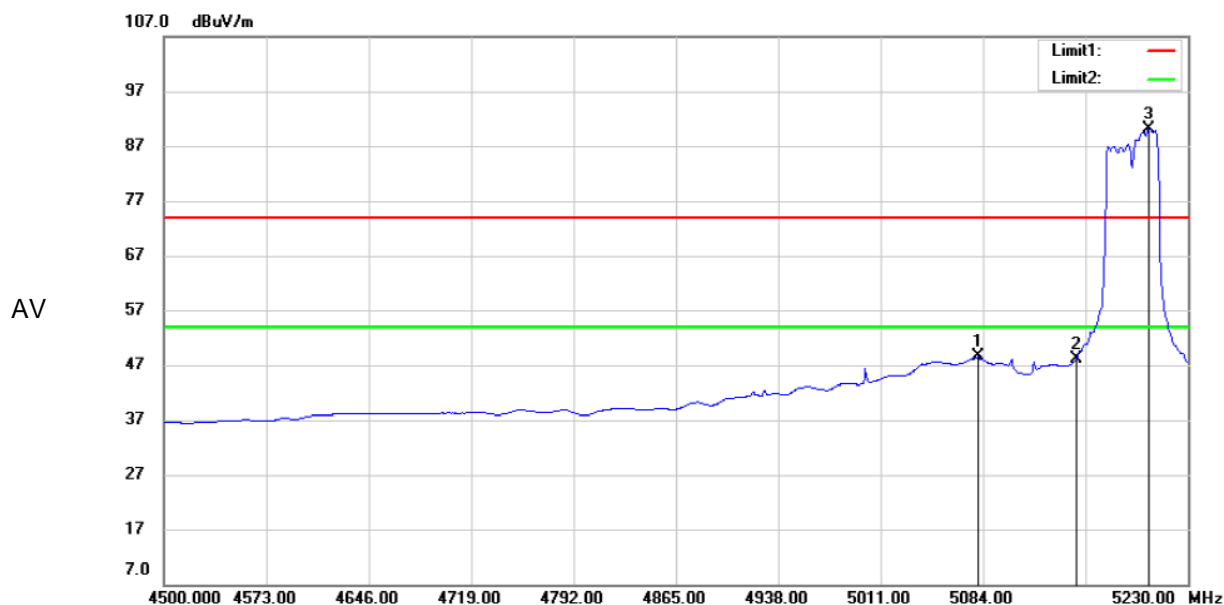
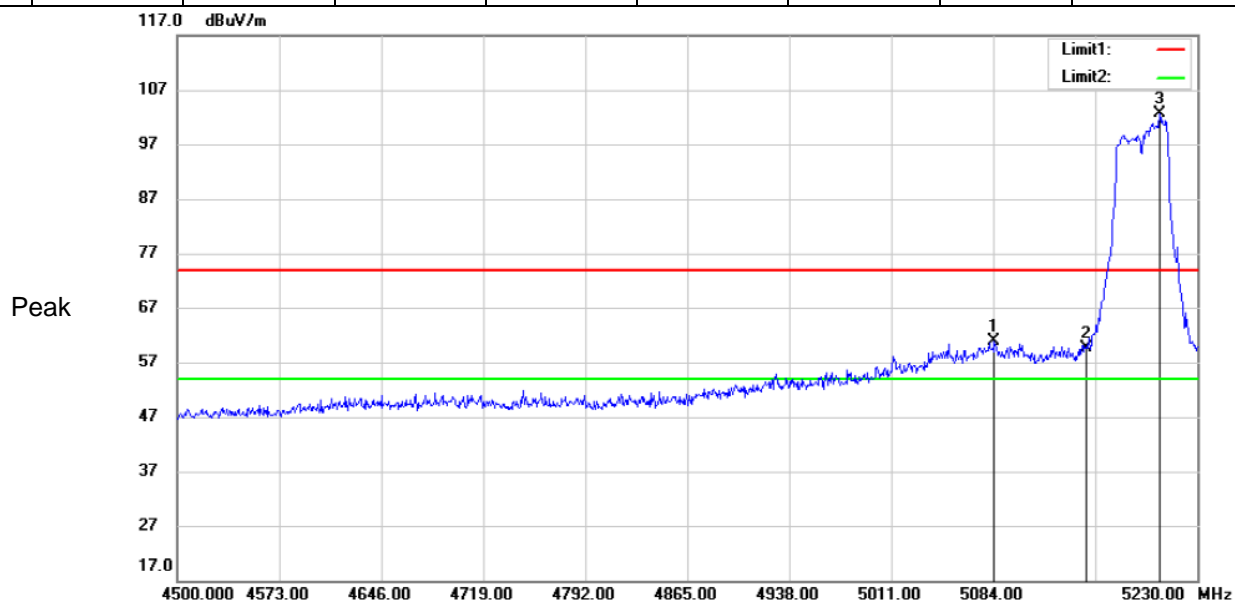


802.11 n(HT40)

MIMO

Channel: 38

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5084.73	53.7	7.28	60.98	74	-13.02	Peak	Horizontal
2	5150	52.6	6.92	59.52	74	-14.48	Peak	Horizontal
3	5202.99	96.03	6.64	102.67	74	28.67	Peak	Horizontal
1	5080.35	41.24	7.3	48.54	54	-5.46	AV	Horizontal
2	5150	41.23	6.92	48.15	54	-5.85	AV	Horizontal
3	5202.26	83.51	6.65	90.16	54	36.16	AV	Horizontal

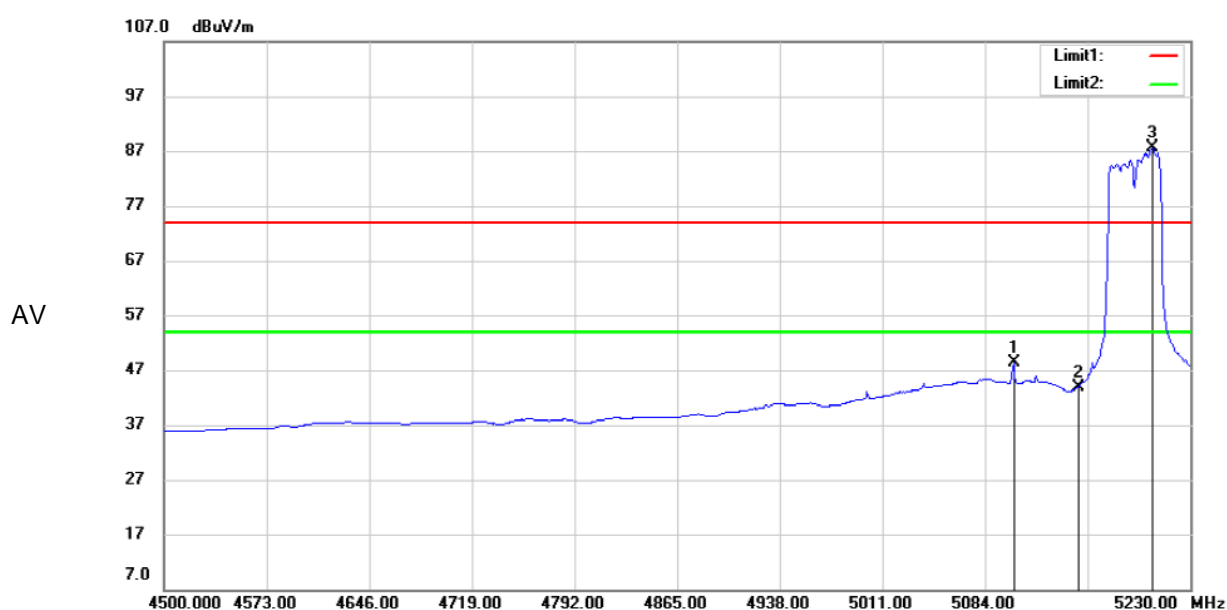
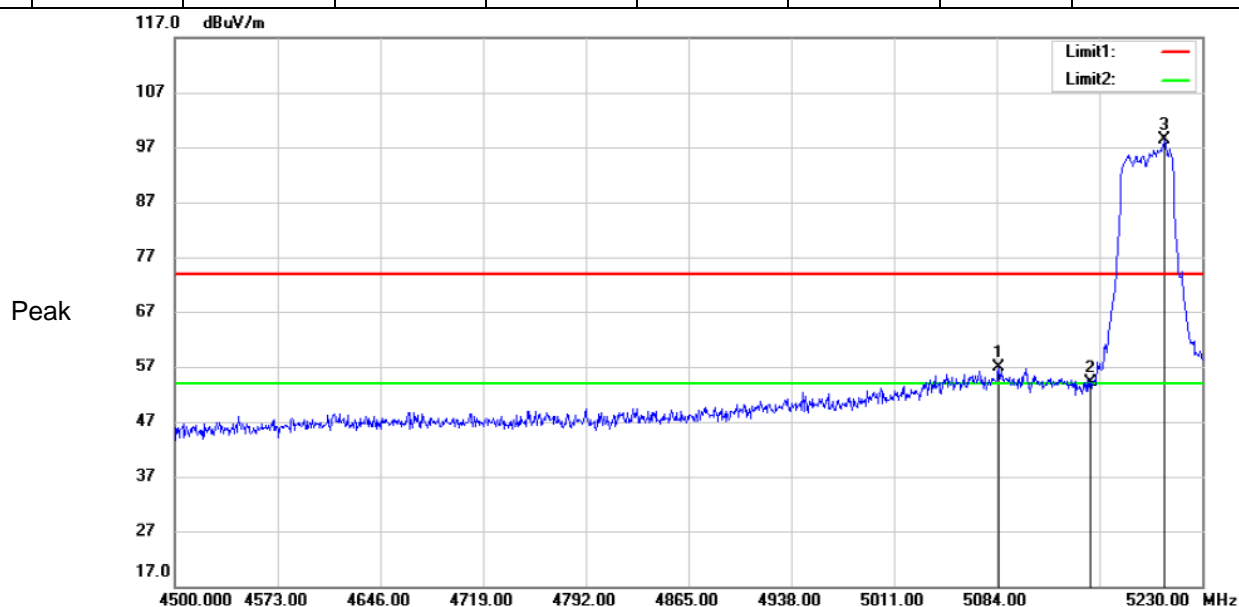


802.11 n(HT40)

MIMO

Channel: 38

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5085.46	49.5	7.28	56.78	74	-17.22	Peak	Vertical
2	5150	47.29	6.92	54.21	74	-19.79	Peak	Vertical
3	5202.99	91.84	6.64	98.48	74	24.48	Peak	Vertical
1	5104.44	41.3	7.18	48.48	54	-5.52	AV	Vertical
2	5150	37.06	6.92	43.98	54	-10.02	AV	Vertical
3	5202.99	80.92	6.64	87.56	54	33.56	AV	Vertical

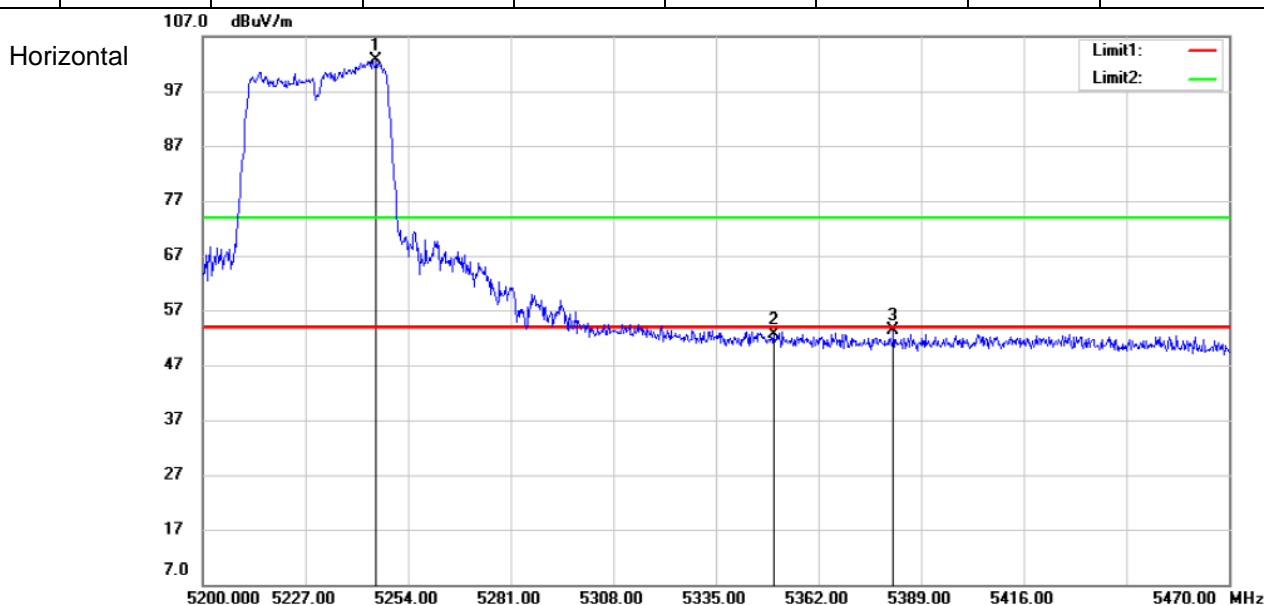


802.11 n(HT40)

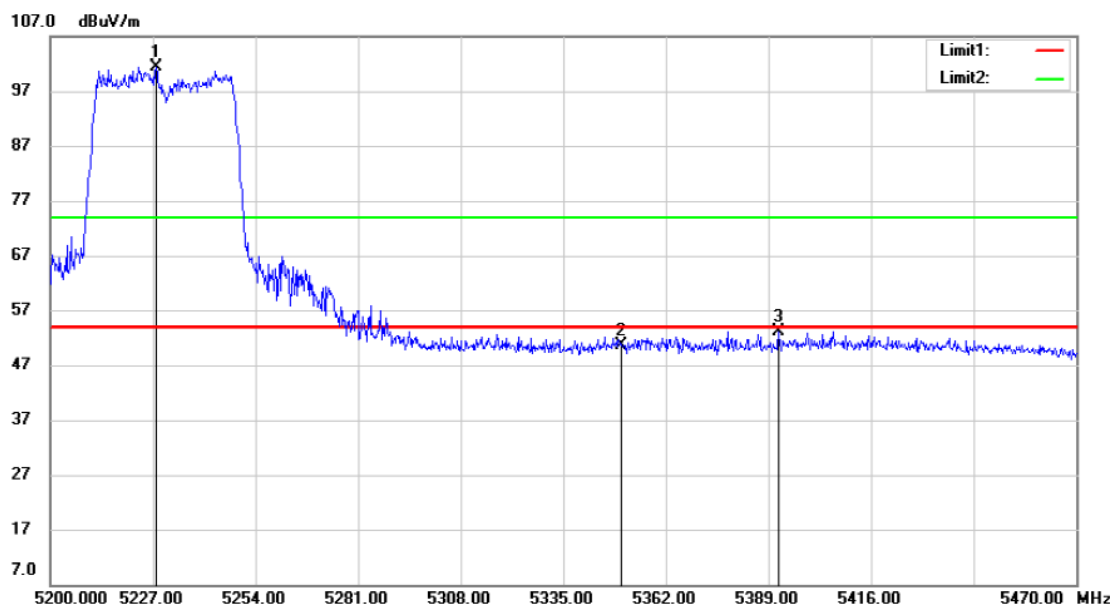
MIMO

Channel: 46

MK.	Frequency (MHz)	Reading (dBUV/m)	Corrected factor(dB)	Result (dBUV/m)	Limit (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	5245.63	95.96	6.64	102.6	54	48.6	Peak	Horizontal
2	5350	45.69	6.98	52.67	54	-1.33	Peak	Horizontal
3	5381.71	46.08	7.2	53.28	54	-0.72	Peak	Horizontal
1	5227.81	94.67	6.64	101.31	54	47.31	Peak	Vertical
2	5350	43.69	6.98	50.67	54	-3.33	Peak	Vertical
3	5391.7	45.92	7.27	53.19	54	-0.81	Peak	Vertical



Vertical



- Remark: 1. Test Level = Receiver Reading + Antenna Factor + Cable Loss- Preamplifier Factor
2. No any other emission which falls in restricted bands can be detected and be reported.
3. If the Peak value below the AV Limit, the AV test doesn't perform for this submission.

All frequencies within the "Restricted bands" have been evaluated to compliance. Section 15.205

Restricted bands of operation.

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.5 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	
13.36 - 13.41			

7.9 Transmission in the Absence of Data

7.9.1 Standard Applicable

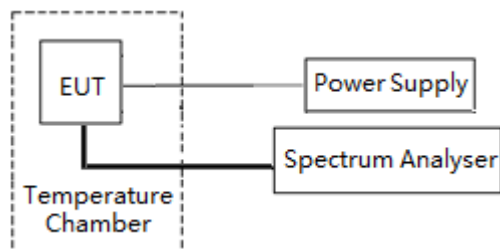
The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

7.9.2 Test Result

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

7.10 Frequency stability

Test setup:



Test Procedure:

- The EUT was placed in the temperature chamber, the DC leads and RF output cable exited the chamber through an opening made for that purpose.
- After operating the equipment in standby conditions for 15 minutes before proceeding. The temperature was varied from -20°C to +55°C at intervals of not more than 10°C. The frequency stability was read from the spectrum analyzer and the frequency stability and input voltage was recorded.

Test Limit:

The frequency of carrier signal shall be maintained within the band of operation

Test Data:

Band	Test Conditions		Operation Frequency(MHz)	Test Frequency (MHz)	Freq. Dev. (MHz)	Limit (GHz)	Result
	Volt (V AC)	Temp (°C)					
Band U-NII 1	Normal(120)	Extreme(-20)	5180	5179.9874	0.0126	5.15-5.25	Pass
		Extreme(-10)		5179.9872	0.0128		Pass
		Extreme(0)		5179.9868	0.0132		Pass
		Extreme(+10)		5179.9863	0.0137		Pass
		Extreme(+20)		5179.9866	0.0134		Pass
		Extreme(+30)		5179.9869	0.0131		Pass
		Extreme(+40)		5179.9859	0.0141		Pass
		Extreme(+55)		5179.9858	0.0142		Pass
	Extreme(102)	Norma(+20)		5179.9877	0.0123		Pass
	Extreme(138)			5179.9870	0.013		Pass

Remark: Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

8 Test Setup Photographs

Refer to the < Test Setup photos-FCC>.

9 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos >.

--End of the Report--