

FCC TEST REPORT

for

Shenzhen Amdolla Cloud Technology Corporation

intelligence Interactive touch Integrated machine

Model No.: AME65IBD, AME65IGD, AME65IGW, AME75IGD,
AME75IGW, AME75IBD, AME80IGD, AME80IGW, AME80IBD

Prepared for : Shenzhen Amdolla Cloud Technology Corporation
Address : Unit JKLM, B14, Building 7, Baoneng Science & Technology
Park, Qinghu Industrial Park, Longhua Sub-district, Longhua
New District, Shenzhen City, China

Prepared By : Shenzhen Anbotek Compliance Laboratory Limited
Address : 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road,
Nanshan District, Shenzhen, Guangdong, China
Tel: (86) 755-26066544
Fax: (86) 755-26014772

Report Number : R011609289I
Date of Test : Oct. 08~ Nov. 07, 2016
Date of Report : Nov. 08, 2016

TABLE OF CONTENT

Description

Page

Test Report

1. GENERAL INFORMATION.....	4
1.1. Description of Device (EUT).....	4
1.2. Auxiliary Equipment Used during Test.....	5
1.3. Description of Test Facility.....	5
1.4. Measurement Uncertainty.....	5
2. TEST METHODOLOGY.....	6
2.1. Summary of Test Results.....	6
2.2. Description of Test Modes.....	6
2.3. List of channels:.....	7
3. CONDUCTED EMISSION TEST.....	8
3.1. Block Diagram of Test Setup.....	8
3.2. Power Line Conducted Emission Measurement Limits (15.207).....	8
3.3. Configuration of EUT on Measurement.....	8
3.4. Operating Condition of EUT.....	8
3.5. Test Procedure.....	9
3.6. Test equipment.....	9
3.7. Power Line Conducted Emission Measurement Results.....	9
4. FCC PART 15.247 REQUIREMENTS FOR DSSS & OFDM MODULATION.....	14
4.1 Test Setup.....	14
4.2 6dB Bandwidth.....	14
4.3. Maximum Output Power Test.....	22
4.4. Band Edges Measurement.....	26
4.5. Peak Power Spectral Density.....	62
4.6. Radiated Emissions.....	66
5. ANTENNA APPLICATION.....	77
5.1. Antenna requirement.....	77
5.2. Result.....	77
6. PHOTOGRAPH.....	78
6.1. Photo of Conducted Emission Measurement.....	78
6.2. Photo of Radiation Emission Test.....	78
APPENDIX I (EXTERNAL PHOTOS).....	80
APPENDIX II (INTERNAL PHOTOS).....	84

TEST REPORT

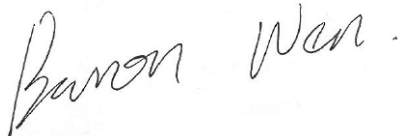
Applicant : Shenzhen Amdolla Cloud Technology Corporation
Manufacturer : Shenzhen Amdolla Cloud Technology Corporation
EUT : intelligence Interactive touch Integrated machine
Model No. : AME65IBD, AME65IGD, AME65IGW, AME75IGD, AME75IGW,
AME75IBD, AME80IGD, AME80IGW, AME80IBD
Serial No. : N.A.
Trade Mark : 
Rating : AC 100-240V 50-60Hz, 2A

Measurement Procedure Used:
FCC Part15 Subpart C 2016, Paragraph 15.247

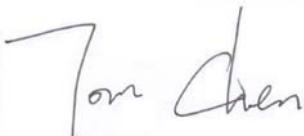
The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : Oct. 08~ Nov. 07, 2016

Prepared by : 
(Tested Engineer / Baron Wen)

Reviewer : 
(Project Manager / Amy Ding)

Approved & Authorized Signer : 
(Manager / Tom Chen)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	: intelligence Interactive touch Integrated machine
Model Number	: AME65IBD, AME65IGD, AME65IGW, AME75IGD, AME75IGW, AME75IBD, AME80IGD, AME80IGW, AME80IBD (Note: All samples are the same except the model number and colour, so we prepare “AME65IBD” for test only.)
Test Power Supply	: AC 120V, 60Hz/ AC 240V, 60Hz
RF Transmission Frequency	: 2412MHz~2462MHz (802.11b/802.11g/802.11n(HT20)) 2422MHz~2452MHz (802.11n(HT40))
Channels	: 11 For (802.11b/802.11g/802.11n(HT20)) 7 For (802.11n(HT40))
Modulation	: 802.11b CCK; 802.11g OFDM; 802.11n MCS
Antenna Gain:	: 5dBi
Applicant Address	: Shenzhen Amdolla Cloud Technology Corporation Unit JKLM, B14, Building 7, Baoneng Science & Technology Park, Qinghu Industrial Park, Longhua Sub-district, Longhua New District, Shenzhen City, China
Manufacturer Address	: Shenzhen Amdolla Cloud Technology Corporation Unit JKLM, B14, Building 7, Baoneng Science & Technology Park, Qinghu Industrial Park, Longhua Sub-district, Longhua New District, Shenzhen City, China
Factory Address	: Dongguan Amdolla Information Science&Techonolgy Co., Ltd. South Street, Beichong Industry Zone, Tiantou Village, Hengli Town, Dongguan City, Guangdong, China
Date of receipt	: Oct. 08, 2016
Date of Test	: Oct. 08~ Nov. 07, 2016

1.2. Auxiliary Equipment Used during Test

N/A

1.3. Description of Test Facility

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

FCC-Registration No.: 752021

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 752021, July 06, 2016.

IC-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A, Jun. 13, 2016.

Test Location

All Emissions tests were performed at
Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

1.4. Measurement Uncertainty

Radiation Uncertainty : Ur = 4.1 dB (Horizontal)
Ur = 4.3 dB (Vertical)

Conduction Uncertainty : Uc = 3.4dB

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10: 2013 and FCC Part 15, Paragraph 15.247.

2.1. Summary of Test Results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107, 15.207	Conducted Emission Test	PASS	Complies
FCC Part 15, Paragraph 15.247(b)(1)	Maximum Output Power	PASS	Complies
FCC Part 15, Paragraph 15.247(a)(2)	6dB Bandwidth	PASS	Complies
FCC Part 15, Paragraph 15.247(c)	100kHz Bandwidth of Frequency Band Edges	PASS	Complies
FCC Part 15, Paragraph 15.209(a)(f)	Spurious Emission	PASS	Complies
FCC Part 15, Paragraph 15.247(a)(1)	Frequency Separation	-	N/A
FCC Part 15, Paragraph 15.247(a)(1)(iii)	Number of Hopping Frequency	-	N/A
FCC Part 15, Paragraph 15.247(a)(1)(iii)	Time of Occupancy	-	N/A
FCC Part 15, Paragraph 15.247(c)	Peak Power Density	PASS	Complies

2.2. Description of Test Modes

The EUT has been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

IEEE802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 1 Mbps lowest data rate (worst case) are chosen for the final testing.

IEEE802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6 Mbps lowest data rate (the worst case) are chosen for the final testing.

IEEE802.11n (HT20): Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with MCS 0 Mbps lowest data rate (the worst case) are chosen for the final testing.

IEEE802.11n (HT40): Channel 3(2422MHz), Channel 6(2437MHz) and Channel 9(2452MHz) with MCS 0 Mbps lowest data rate (the worst case) are chosen for the final testing.

2.3. List of channels:

√ - available

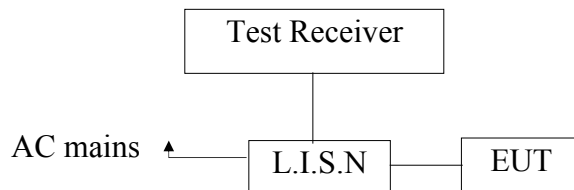
X - tested

Number	Frequency(MHz)		802.11 b/g/n (HT20)	802.11 b/g/n (HT40)
1	2412	√	X	
2	2417	√		
3	2422	√		X
4	2427	√		
5	2432	√		
6	2437	√	X	X
7	2442	√		
8	2447	√		
9	2452	√		X
10	2457	√		
11	2462	√	X	

3. Conducted Emission Test

3.1. Block Diagram of Test Setup

3.1.1. Block diagram of connection between the EUT and simulators



3.2. Power Line Conducted Emission Measurement Limits (15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.3. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4. Operating Condition of EUT

- 3.4.1. Setup the EUT and simulator as shown as Section 3.1.
- 3.4.2. Turn on the power of all equipment.
- 3.4.3. Let the EUT work in test mode (WiFi Playing Mode) and measure it.

3.5. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10-2013 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test results are reported on Section 3.6.

3.6. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Two-Line V-network	Rohde & Schwarz	ENV216	100055	Apr. 16, 2016	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Apr. 16, 2016	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr. 16, 2016	1 Year

3.7. Power Line Conducted Emission Measurement Results

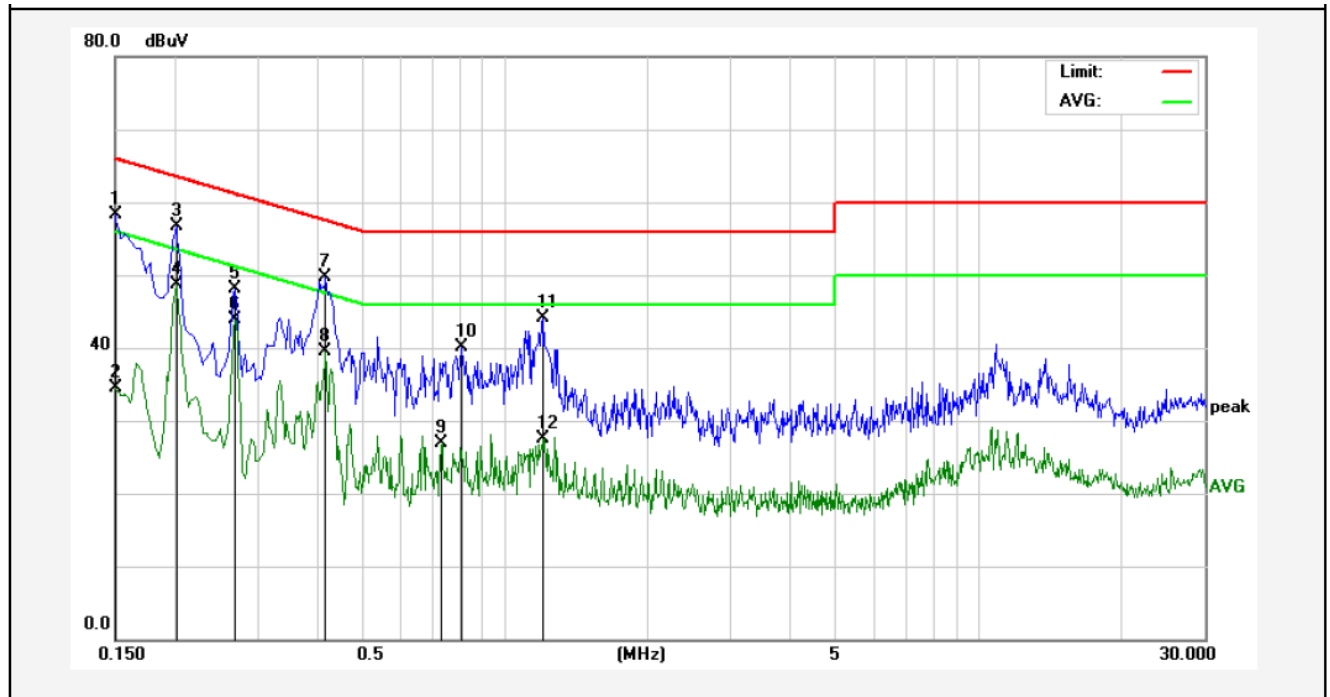
PASS.

The frequency range from 150KHz to 30 MHz is investigated.

Please refer the following pages.

CONDUCTED EMISSION TEST DATA

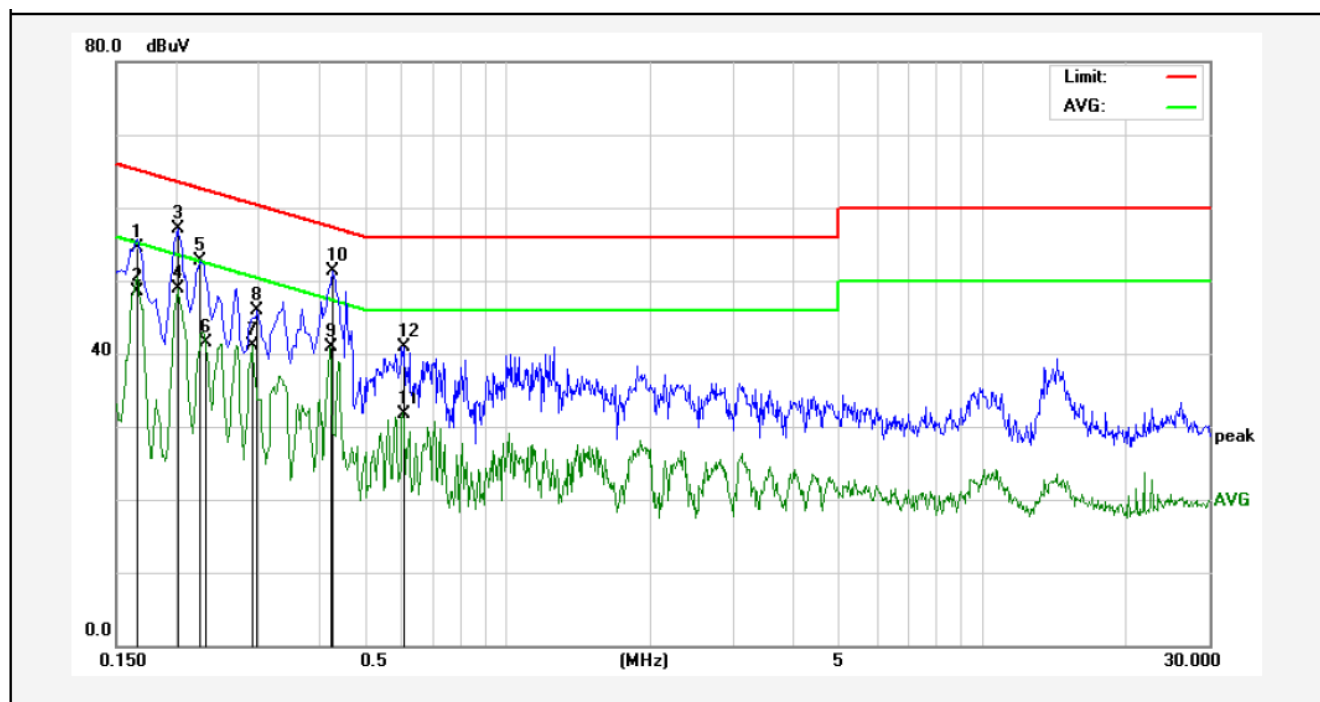
Test Site: 1# Shielded Room
Operating Condition: WiFi Playing Mode
Test Specification: AC 120V, 60Hz
Comment: Live Line
Tem.:25°C Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1500	38.27	19.90	58.17	66.00	-7.83	AVG	
2	0.1500	14.48	19.90	34.38	56.00	-21.62	AVG	
3	0.2020	36.61	19.89	56.50	63.52	-7.02	QP	
4	0.2020	28.75	19.89	48.64	53.52	-4.88	QP	
5	0.2700	28.18	19.89	48.07	61.12	-13.05	AVG	
6	0.2700	23.84	19.89	43.73	51.12	-7.39	QP	
7	0.4179	29.78	19.95	49.73	57.49	-7.76	QP	
8	0.4179	19.48	19.95	39.43	47.49	-8.06	AVG	
9	0.7378	6.96	20.06	27.02	46.00	-18.98	AVG	
10	0.8100	20.09	20.08	40.17	56.00	-15.83	AVG	
11	1.2059	24.02	20.10	44.12	56.00	-11.88	QP	
12	1.2059	7.51	20.10	27.61	46.00	-18.39	QP	

CONDUCTED EMISSION TEST DATA

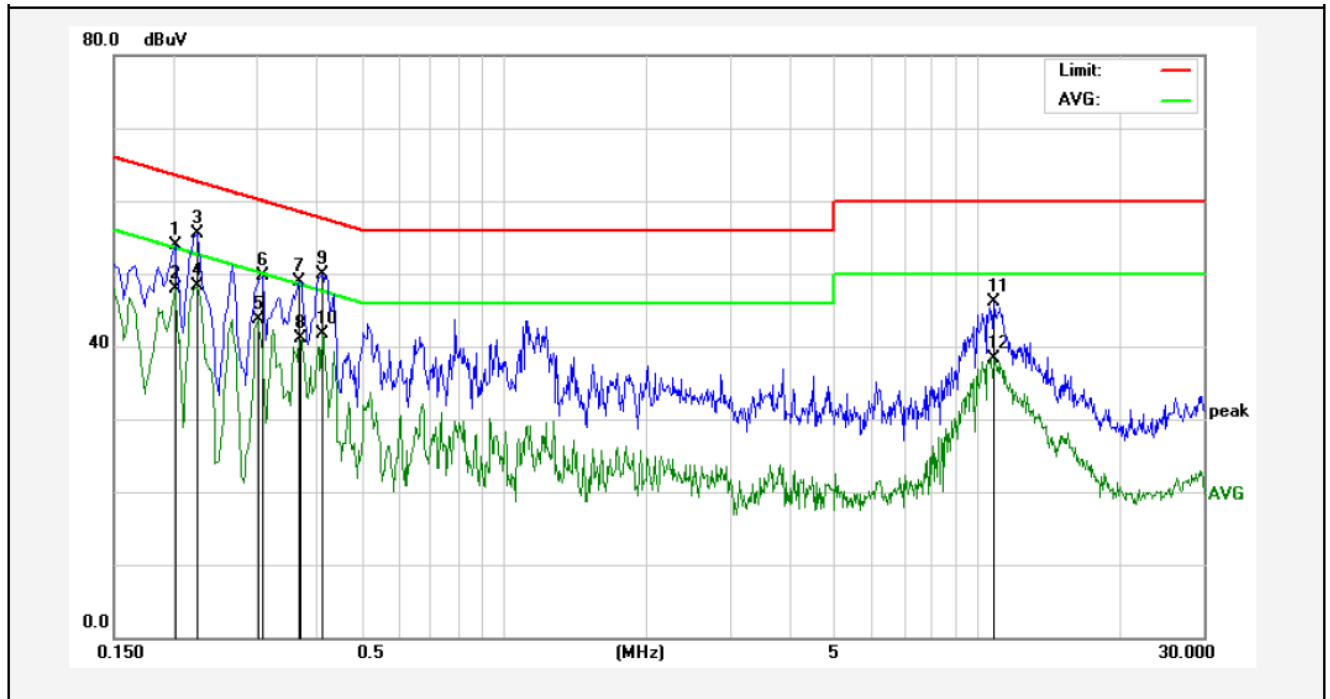
Test Site: 1# Shielded Room
Operating Condition: WiFi Playing Mode
Test Specification: AC 120V, 60Hz
Comment: Neutral Line
Tem.:25°C Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1660	34.60	19.90	54.50	65.15	-10.65	QP	
2	0.1660	28.60	19.90	48.50	55.15	-6.65	QP	
3	0.2020	37.10	19.89	56.99	63.52	-6.53	AVG	
4	0.2020	28.82	19.89	48.71	53.52	-4.81	QP	
5	0.2243	32.66	19.89	52.55	62.65	-10.10	AVG	
6	0.2316	21.53	19.89	41.42	52.39	-10.97	QP	
7	0.2900	21.11	19.89	41.00	50.52	-9.52	AVG	
8	0.2980	25.96	19.89	45.85	60.30	-14.45	QP	
9	0.4220	20.84	19.95	40.79	47.41	-6.62	AVG	
10	0.4300	31.27	19.95	51.22	57.25	-6.03	AVG	
11	0.6020	11.80	20.02	31.82	46.00	-14.18	AVG	
12	0.6060	21.00	20.02	41.02	56.00	-14.98	QP	

CONDUCTED EMISSION TEST DATA

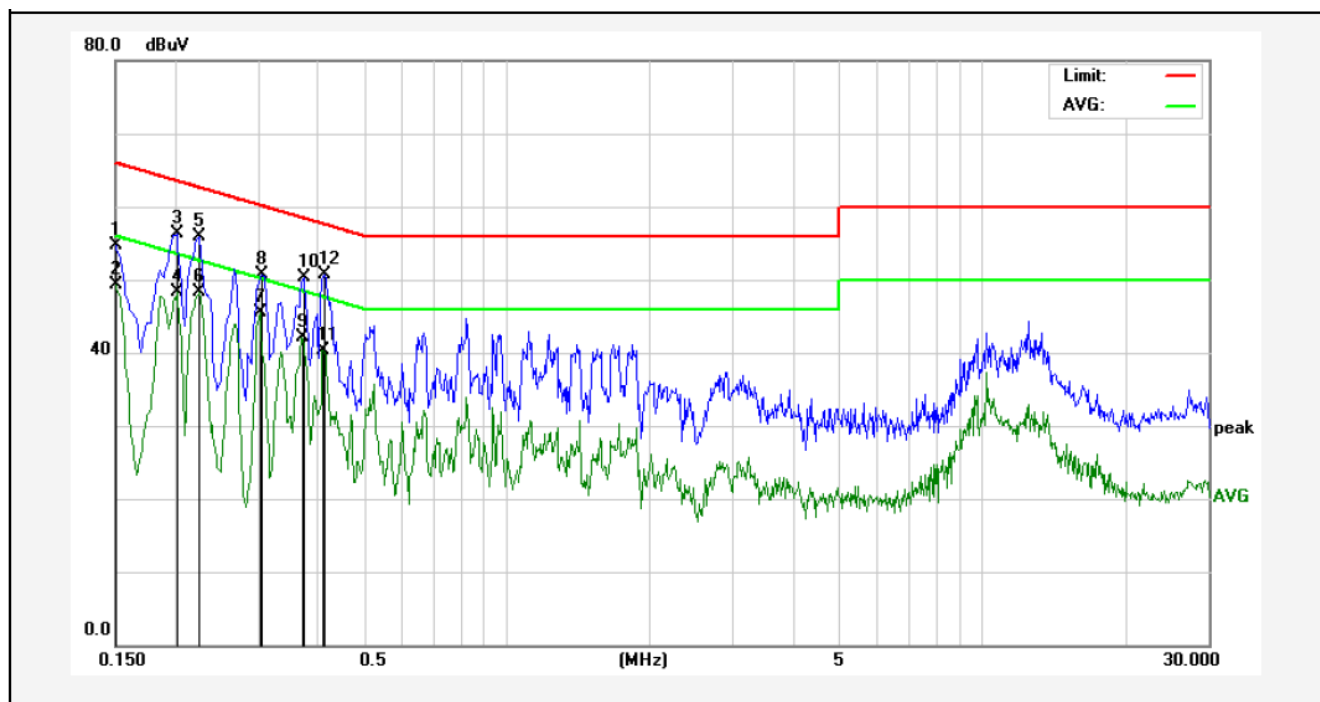
Test Site: 1# Shielded Room
Operating Condition: WiFi Playing Mode
Test Specification: AC 240V, 60Hz
Comment: Live Line
Tem.:25°C Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.2020	33.93	19.90	53.83	63.52	-9.69	QP	
2	0.2020	27.86	19.90	47.76	53.52	-5.76	AVG	
3	0.2260	35.54	19.89	55.43	62.59	-7.16	QP	
4	0.2260	28.29	19.89	48.18	52.59	-4.41	AVG	
5	0.3019	23.72	19.91	43.63	50.19	-6.56	QP	
6	0.3099	29.79	19.94	49.73	59.97	-10.24	AVG	
7	0.3699	28.98	19.95	48.93	58.50	-9.57	QP	
8	0.3738	21.08	19.95	41.03	48.41	-7.38	AVG	
9	0.4139	29.84	19.99	49.83	57.57	-7.74	AVG	
10	0.4139	21.77	20.04	41.81	47.57	-5.76	AVG	
11	10.7939	26.08	20.05	46.13	60.00	-13.87	QP	
12	10.7939	18.34	20.13	38.47	50.00	-11.53	QP	

CONDUCTED EMISSION TEST DATA

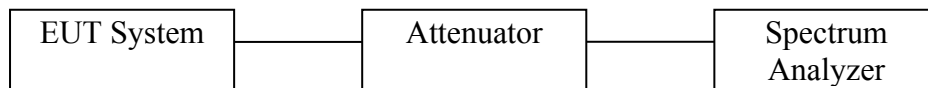
Test Site: 1# Shielded Room
Operating Condition: WiFi Playing Mode
Test Specification: AC 240V, 60Hz
Comment: Neutral Line
Tem.:25°C Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1500	34.74	19.90	54.64	66.00	-11.36	QP	
2	0.1500	29.21	19.90	49.11	56.00	-6.89	AVG	
3	0.2020	36.25	19.90	56.15	63.52	-7.37	AVG	
4	0.2020	28.33	19.90	48.23	53.52	-5.29	QP	
5	0.2260	35.94	19.89	55.83	62.59	-6.76	QP	
6	0.2260	28.27	19.89	48.16	52.59	-4.43	AVG	
7	0.3020	25.58	19.91	45.49	50.19	-4.70	AVG	
8	0.3060	30.73	19.91	50.64	60.08	-9.44	QP	
9	0.3700	22.08	19.94	42.02	48.50	-6.48	AVG	
10	0.3740	30.22	19.94	50.16	58.41	-8.25	QP	
11	0.4100	20.38	19.97	40.35	47.65	-7.30	QP	
12	0.4140	30.76	19.97	50.73	57.57	-6.84	AVG	

4. FCC Part 15.247 Requirements for DSSS & OFDM Modulation

4.1 Test Setup



4.2 6dB Bandwidth

a. Limit

For the direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

b. Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as:
RBW = 100kHz, VBW $\geq 3 \times$ RBW = 300kHz,
Detector= Peak
Trace mode= Max hold.
Sweep- auto couple.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

20dB Bandwidth:

C63.10

Occupied Bandwidth (OBW=20dB Bandwidth)

1. Set RBW=1%~5% OBW
2. Set the VBW $\geq 3 \times$ RBW
3. Set the span range between 2 times and 5 times of the OBW
4. Sweep Time= Auto
Detector= Peak
Trace= Max hold
5. Once the reference level is established, the equipment is conditioned with typical modulating signals to produce the worst case (i.e. the widest) bandwidth. Unless otherwise specified for an unlicensed wireless device, measure the bandwidth at the -20dB levels with respect to the reference level.

c. Test Setup See 4.1

d. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Apr. 16, 2016	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Apr. 16, 2016	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 16, 2016	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 19, 2016	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 19, 2016	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 16, 2016	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
8	Power Sensor	DAER	RPR3006W	15I00041SN046	Jun 30, 2016	1 Year
9	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Jun 30, 2016	1 Year
10	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Jun 30, 2016	1 Year
11	Signal Generator	Agilent	E4421B	MY41000743	Jun 30, 2016	1 Year
12	DC Power supply	IV	IV-8080	YQSB0096	Jun 30, 2016	1 Year
13	TEMP&HUMI PROGRAMMABLE CHAMBER	Bell Group	BE-THK-150M8	SE-0137	Mar. 16, 2016	1 Year

e. Test Results

Pass.

f. Test Data

6dB Bandwidth

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Results
Low	2412	10.04		Pass
Mid	2437	10.03	>500	Pass
High	2462	9.568		Pass

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Results
Low	2412	16.56		Pass
Mid	2437	16.57	>500	Pass
High	2462	16.56		Pass

Test mode: IEEE 802.11n (HT20)

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Results
Low	2412	16.57		Pass
Mid	2437	16.57	>500	Pass
High	2462	16.56		Pass

Test mode: IEEE 802.11n (HT40)

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Results
Low	2422	35.15		Pass
Mid	2437	35.16	>500	Pass
High	2452	35.15		Pass

Test Plots See the following page.





20dB Bandwidth

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Bandwidth (MHz)	Results
Low	2412	17.07	Pass
Mid	2437	16.72	Pass
High	2462	16.70	Pass

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Bandwidth (MHz)	Results
Low	2412	19.20	Pass
Mid	2437	19.20	Pass
High	2462	19.17	Pass

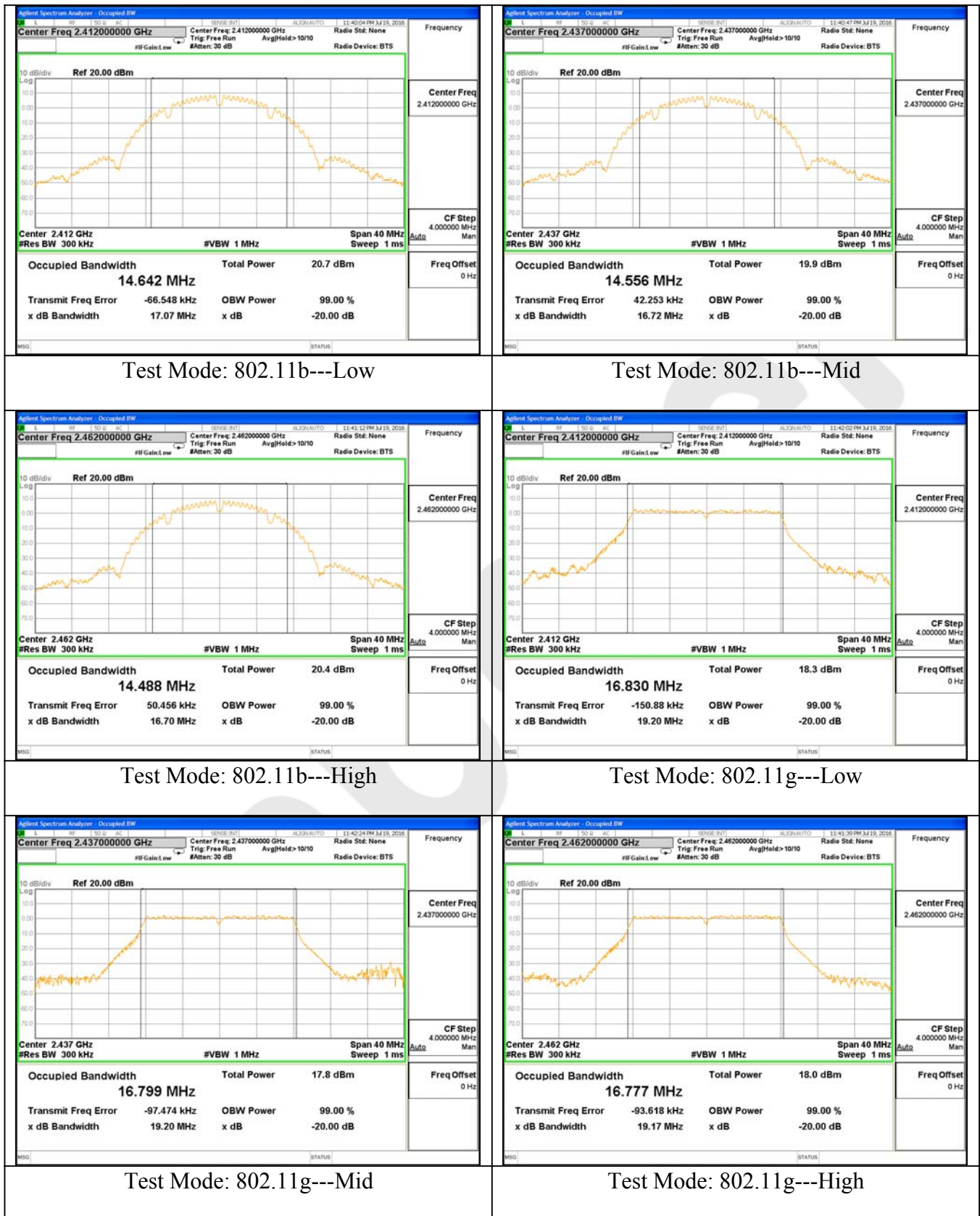
Test mode: IEEE 802.11n (HT20)

Channel	Frequency (MHz)	Bandwidth (MHz)	Results
Low	2412	19.16	Pass
Mid	2437	19.30	Pass
High	2462	19.05	Pass

Test mode: IEEE 802.11n (HT40)

Channel	Frequency (MHz)	Bandwidth (MHz)	Results
Low	2422	39.13	Pass
Mid	2437	39.03	Pass
High	2452	39.17	Pass

Test Plots See the following page.





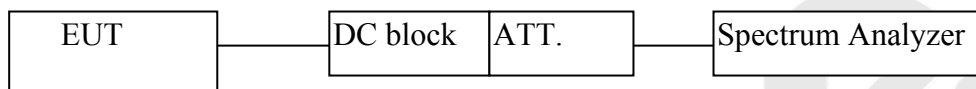
4.3. Maximum Output Power Test

a. Limit

The maximum output power of the intentional radiator shall not exceed the following:

1. For systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 watt (30dBm).
2. Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antenna of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

b. Configuration of Measurement



c. Data Rates

IEEE802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 1 Mbps data rate (worst case) are chosen for the final testing.

IEEE802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6 Mbps data rate (the worst case) are chosen for the final testing.

IEEE802.11n (HT20): Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6.5Mbps data rate (the worst case) are chosen for the final testing.

IEEE802.11n (HT40): Channel 3(2422MHz), Channel 6(2437MHz) and Channel 9(2452MHz) with 13.5Mbps data rate (the worst case) are chosen for the final testing.

d. Test Procedure

This test was according the kDB 558074 D01 DTS Meas Guidance v03r05 9.1.1:

1. Set span to at least 1.5 times the OBW.
2. Set the RBW = 1~5% of the OBW, not to exceed 1MHz.
3. Set VBW $\geq 3 \times$ RBW.
4. Detector = Average.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

e. Test Equipment

Same as the equipment listed in 4.2.

f. Test Results

Pass.

g. Test Data

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Maximum transmit power	Limit		Result
		(dBm)	(dBm)	(watts)	
Low	2412	17.90	30	1	Pass
Mid	2437	16.94			Pass
High	2462	17.42			Pass

Test mode: IEEE 802.11g

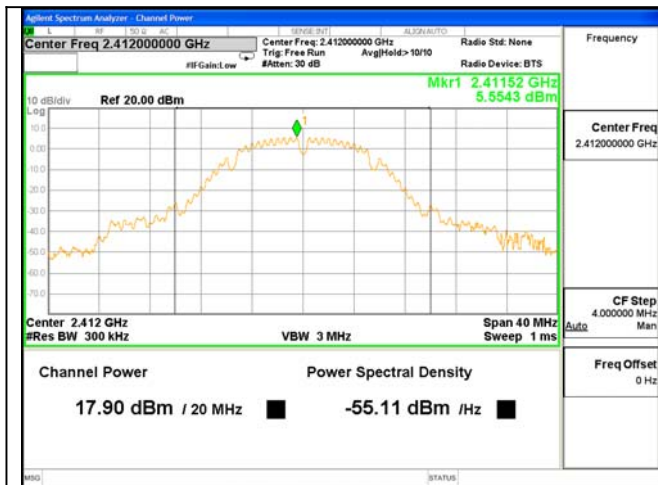
Channel	Frequency (MHz)	Maximum transmit power	Limit		Result
		(dBm)	(dBm)	(watts)	
Low	2412	14.10	30	1	Pass
Mid	2437	15.42			Pass
High	2462	15.21			Pass

Test mode: IEEE 802.11n (HT20)

Channel	Frequency (MHz)	Maximum transmit power	Limit		Result
		(dBm)	(dBm)	(watts)	
Low	2412	13.84	30	1	Pass
Mid	2437	14.21			Pass
High	2462	14.43			Pass

Test mode: IEEE 802.11n (HT40)

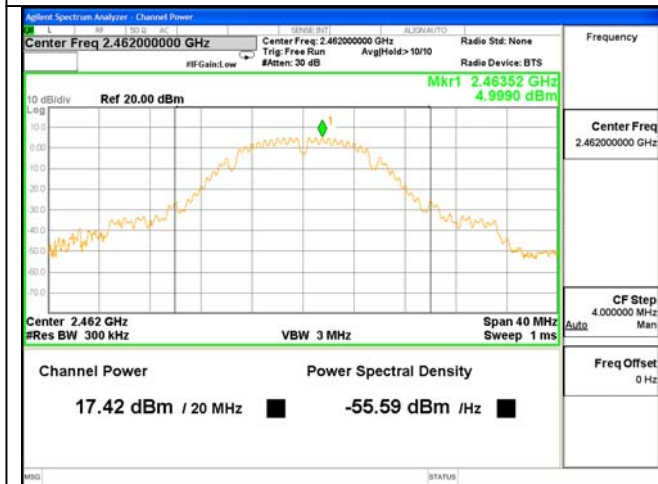
Channel	Frequency (MHz)	Maximum transmit power	Limit		Result
		(dBm)	(dBm)	(watts)	
Low	2422	11.10	30	1	Pass
Mid	2437	13.93			Pass
High	2452	12.69			Pass



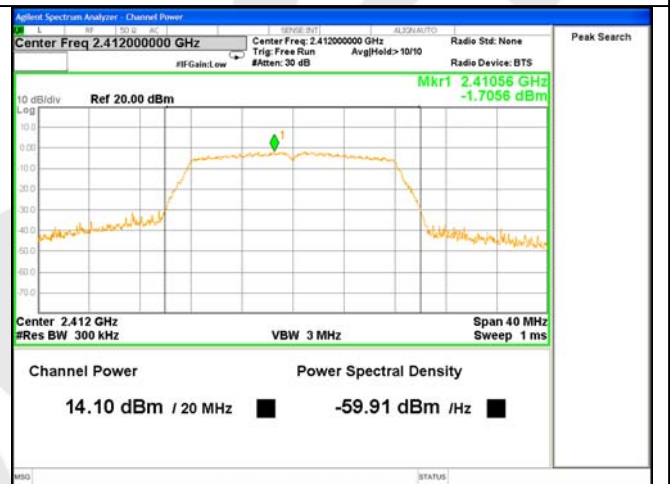
Test Mode: 802.11b---Low



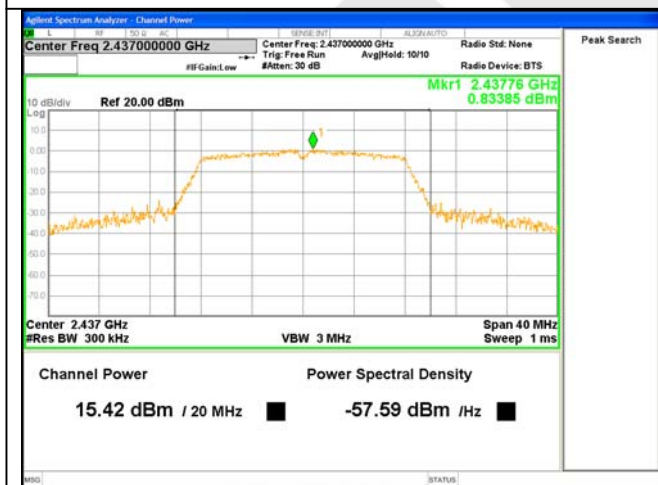
Test Mode: 802.11b---Mid



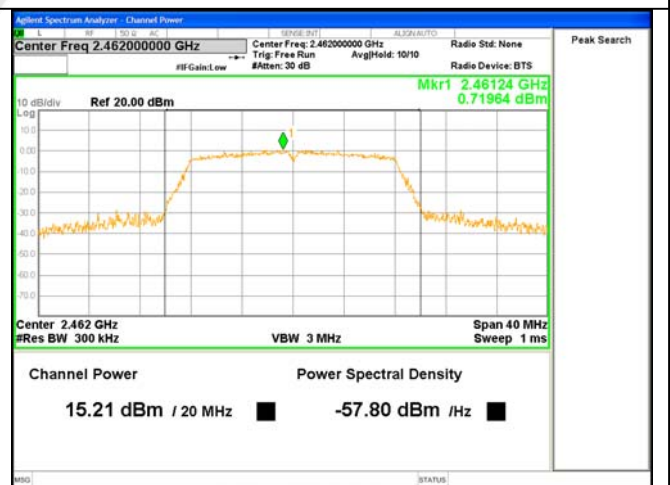
Test Mode: 802.11b---High



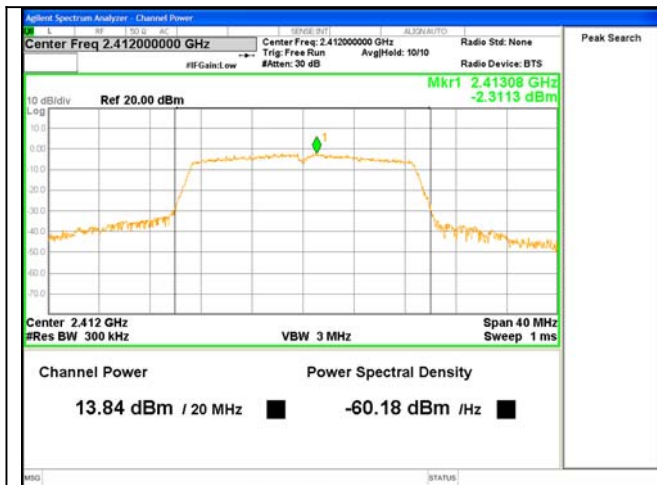
Test Mode: 802.11g---Low



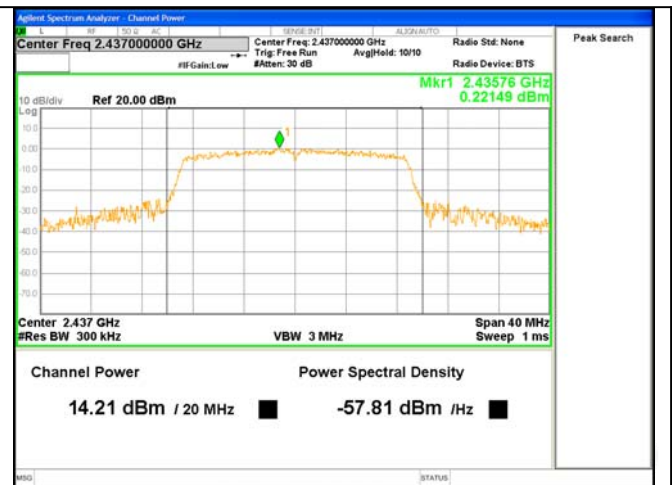
Test Mode: 802.11g---Mid



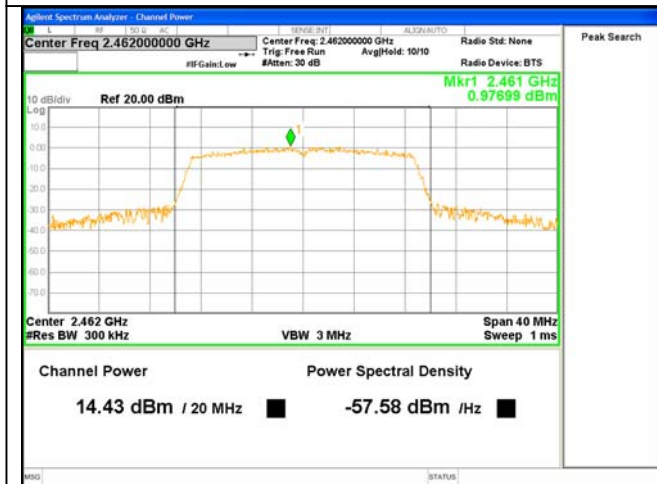
Test Mode: 802.11g---High



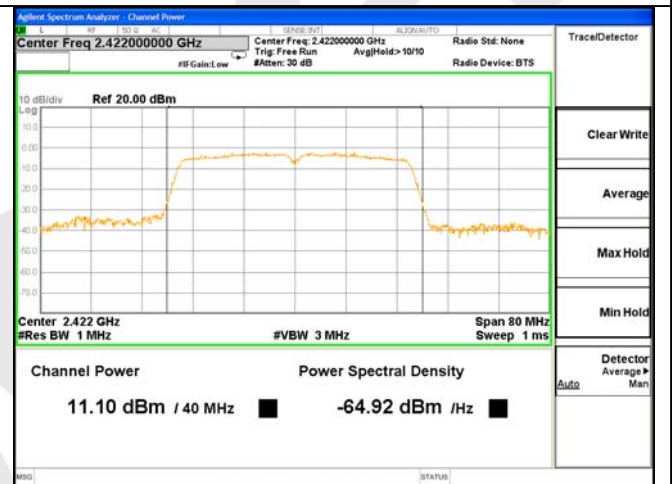
Test Mode: 802.11n20---Low



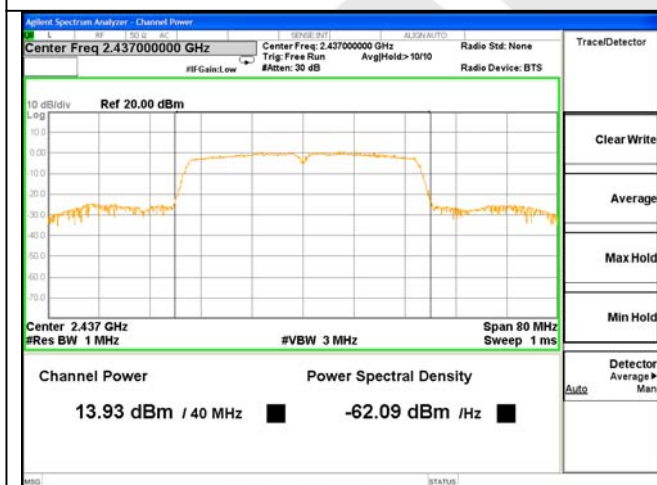
Test Mode: 802.11n20---Mid



Test Mode: 802.11n20---High



Test Mode: 802.11n40---Low



Test Mode: 802.11n40---Mid



Test Mode: 802.11n40---High

4.4. Band Edges Measurement

a. Limit

According to §15.247(c), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

b. Test Procedure

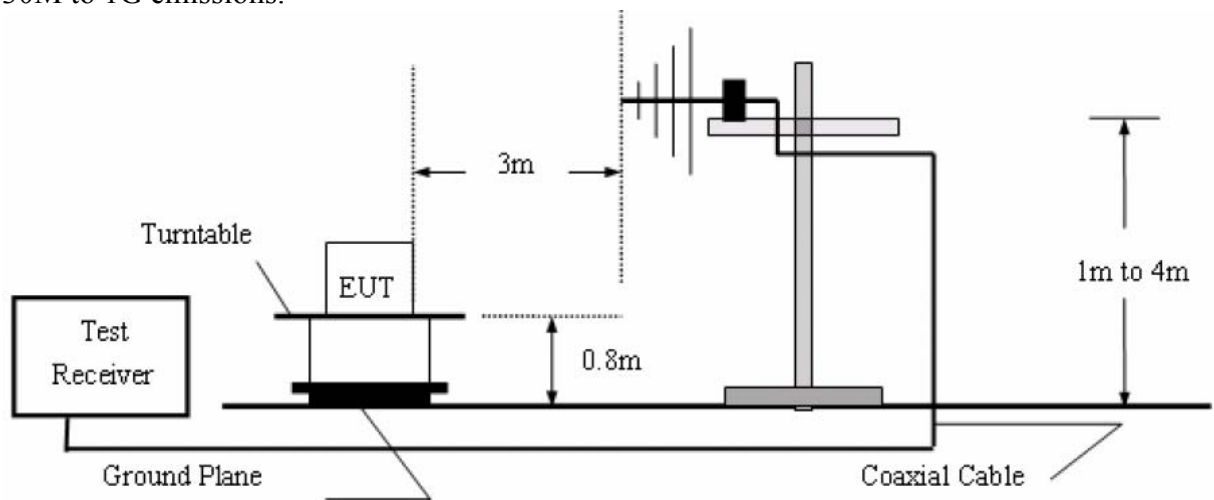
1. Conducted Method:

- 1) Set RBW=100KHz, VBW=300KHz
- 2) Detector=peak
- 3) Sweep time= auto
- 4) Trace mode=max hold.

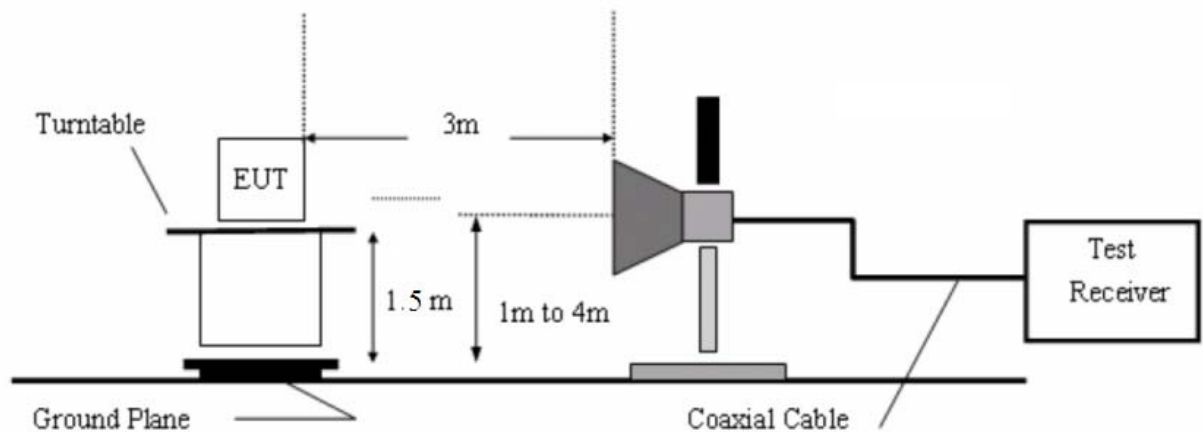
2. Radiated Method:

- 1) For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane. The EUT is tested in 9*6*6 Chamber.
For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane. The EUT is tested in 9*6*6 Chamber.
- 2) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3) EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4) Peak detector: RBW=1MHz, VBW=3MHz, SWT=AUTO
Average detector: RBW=1MHz, VBW=10Hz, SWT=AUTO
The EUT is tested in 9*6*6 Chamber.
- 5) Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

30M to 1G emissions:



1G to 40G emissions:



c. Test Equipment

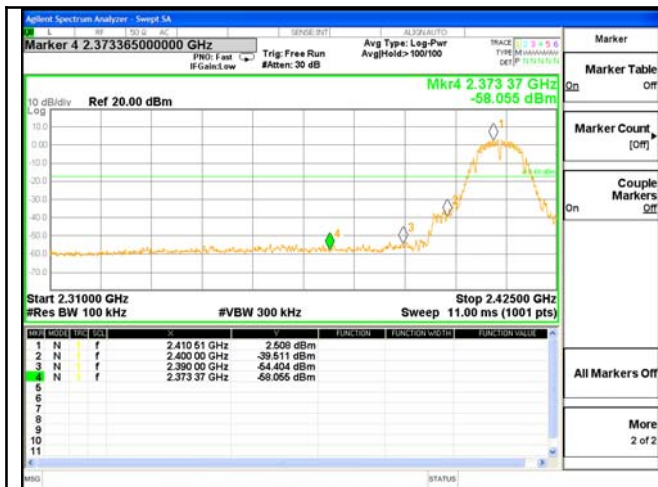
Same as the equipment listed in 4.2.

d. Test Results

Pass.

e. Test Plots

See the following page.



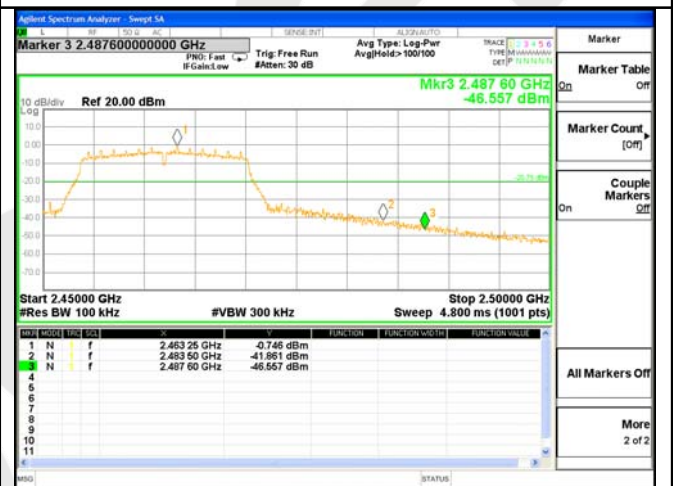
Test Mode: 802.11b---Low



Test Mode: 802.11b---High



Test Mode: 802.11g---Low



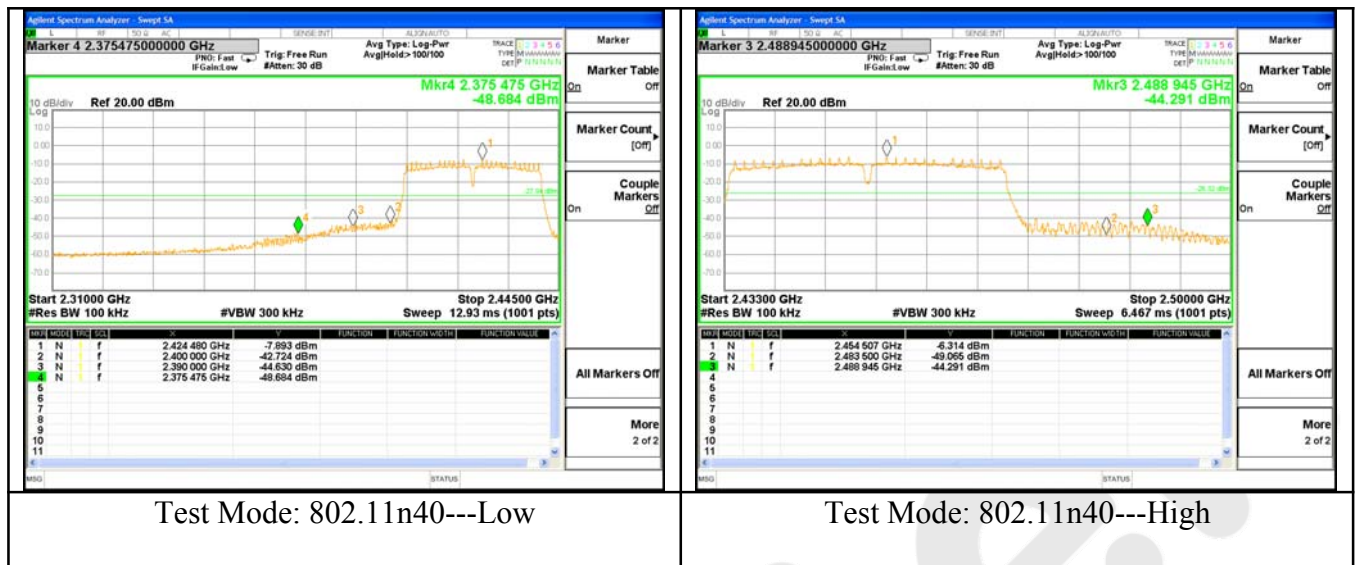
Test Mode: 802.11g---High



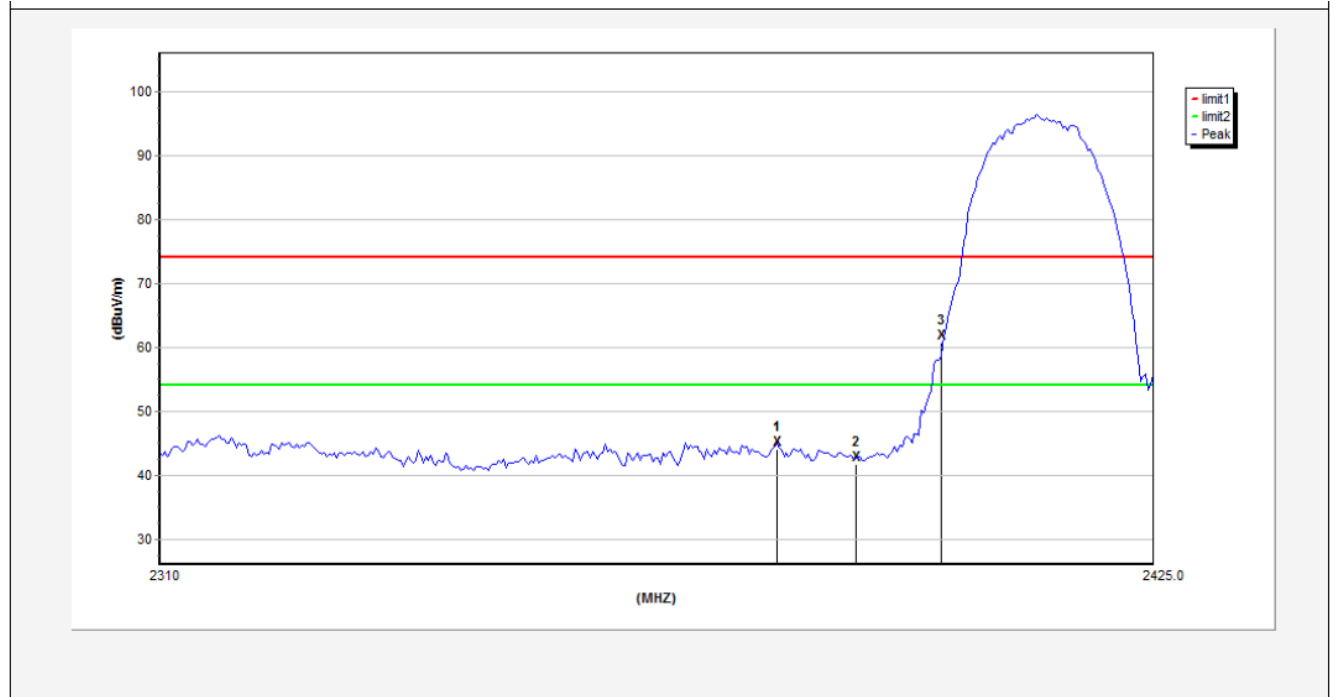
Test Mode: 802.11n20---Low



Test Mode: 802.11n20---High

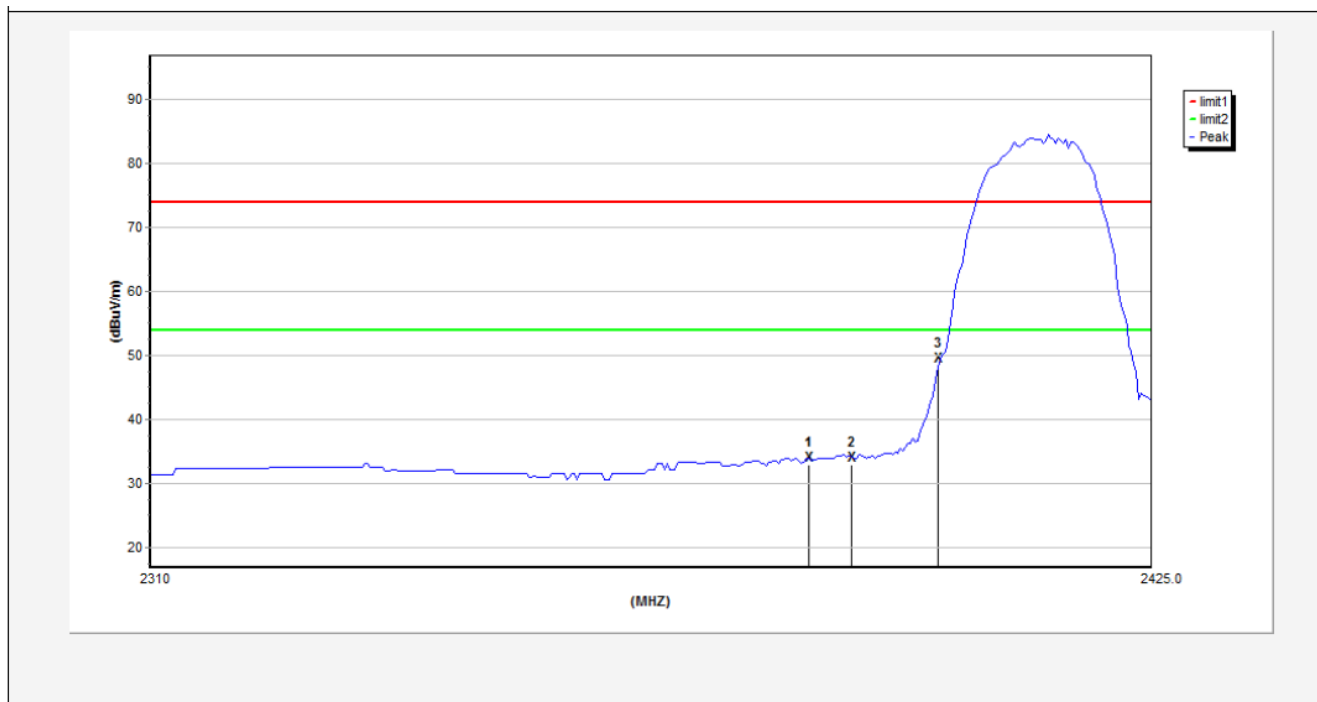


Test Mode: 802.11b
2412MHz
Horizontal-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2380.7250	46.59	29.13	34.01	3.4	45.11	74.00	-28.89	peak	---	---
2	2390.0000	44.13	29.15	34.01	3.41	42.68	74.00	-31.32	peak	---	---
3	2400.0000	63.19	29.16	34.01	3.43	61.77	74.00	-12.23	peak	---	---

Horizontal-AV:

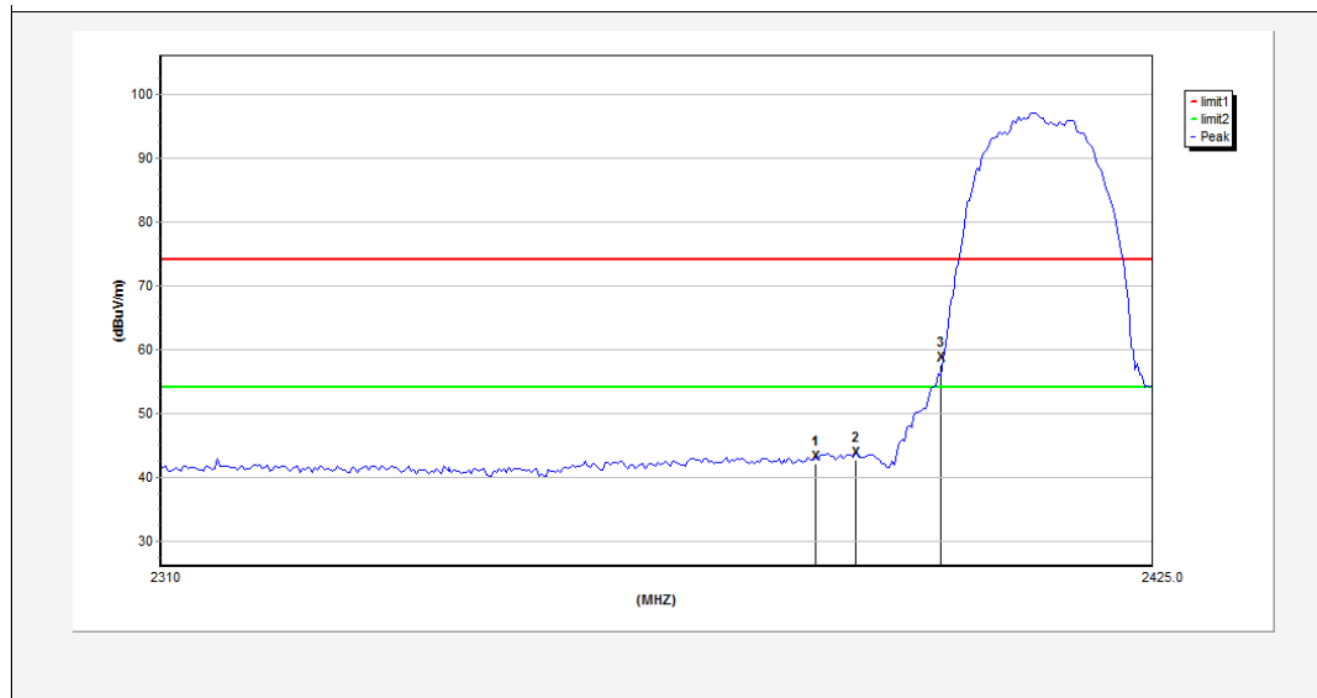


No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2385.0374	35.51	29.14	34.01	3.41	34.05	54.00	-19.95	AVG	---	---
2	2390.0000	35.50	29.15	34.01	3.41	34.05	54.00	-19.95	AVG	---	---
3	2400.0000	50.87	29.16	34.01	3.43	49.45	54.00	-4.55	AVG	---	---

Test Mode: 802.11b

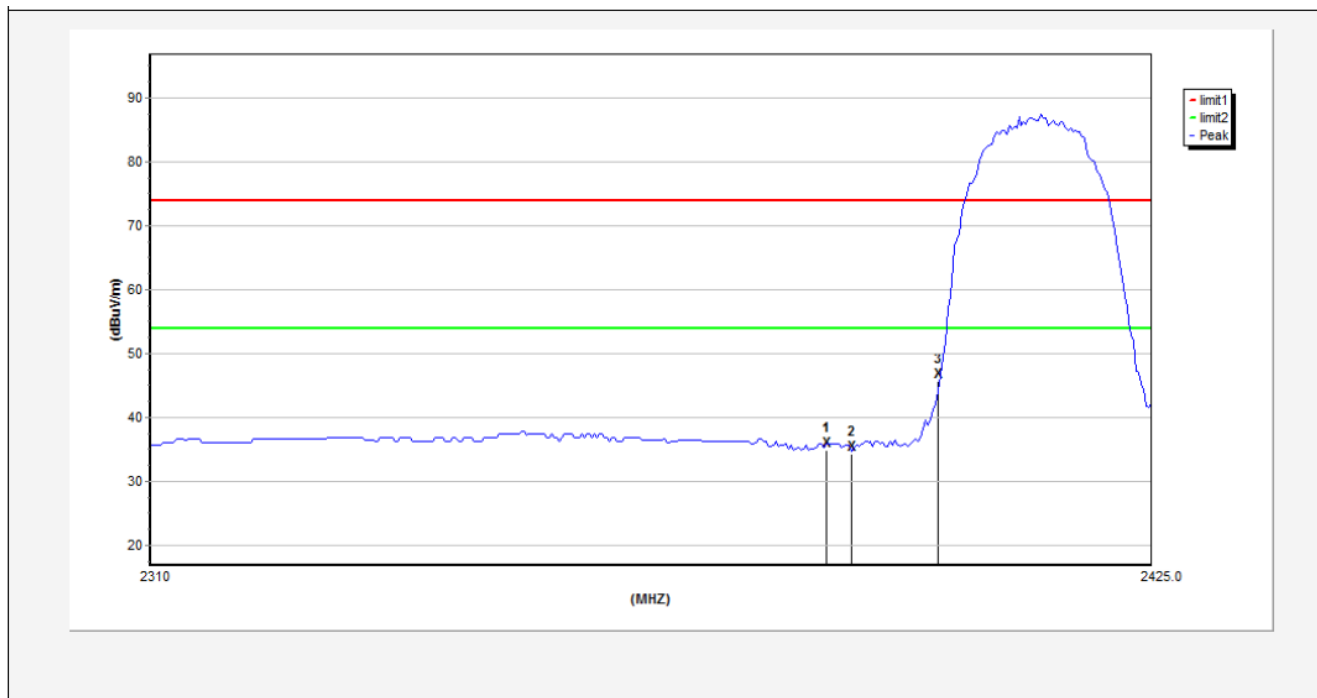
2412MHz

Vertical-PEAK:



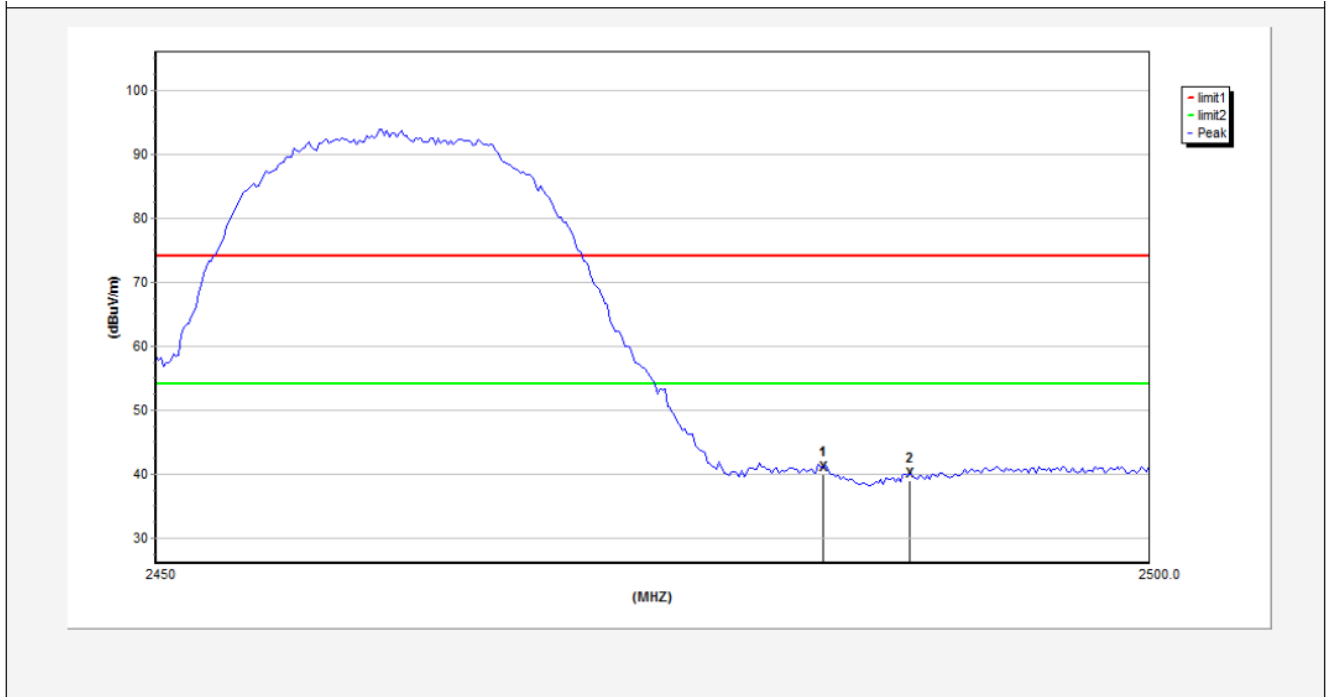
No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2385.3250	44.49	29.14	34.01	3.41	43.03	74.00	-30.97	peak	---	---
2	2390.0000	45.09	29.15	34.01	3.41	43.64	74.00	-30.36	peak	---	---
3	2400.0000	59.92	29.16	34.01	3.43	58.50	74.00	-15.50	peak	---	---

Vertical-AV:



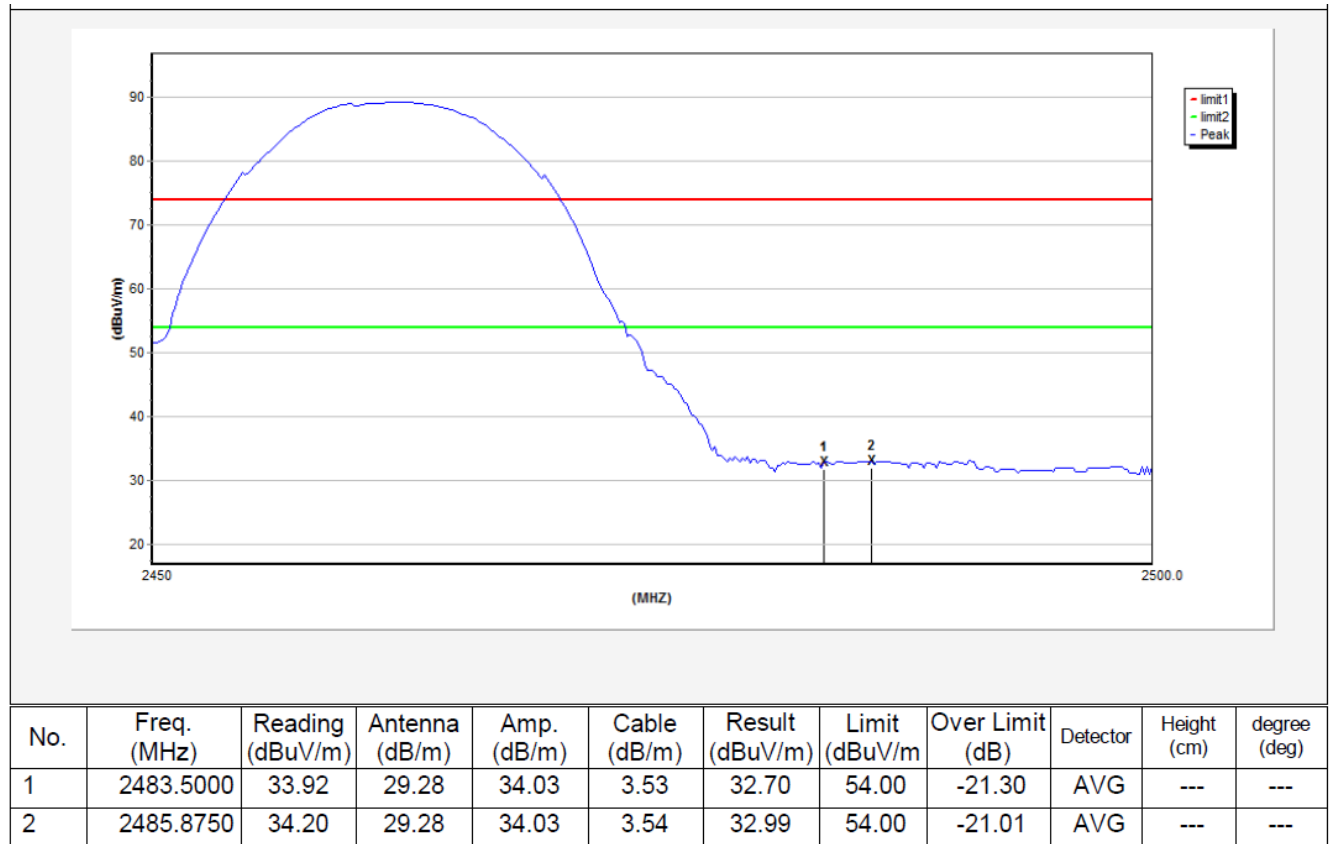
No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2387.0500	37.35	29.14	34.01	3.41	35.89	54.00	-18.11	AVG	---	---
2	2390.0000	36.87	29.15	34.01	3.41	35.42	54.00	-18.58	AVG	---	---
3	2400.0000	48.11	29.16	34.01	3.43	46.69	54.00	-7.31	AVG	---	---

Test Mode: 802.11b
2462MHz
Horizontal-PEAK:

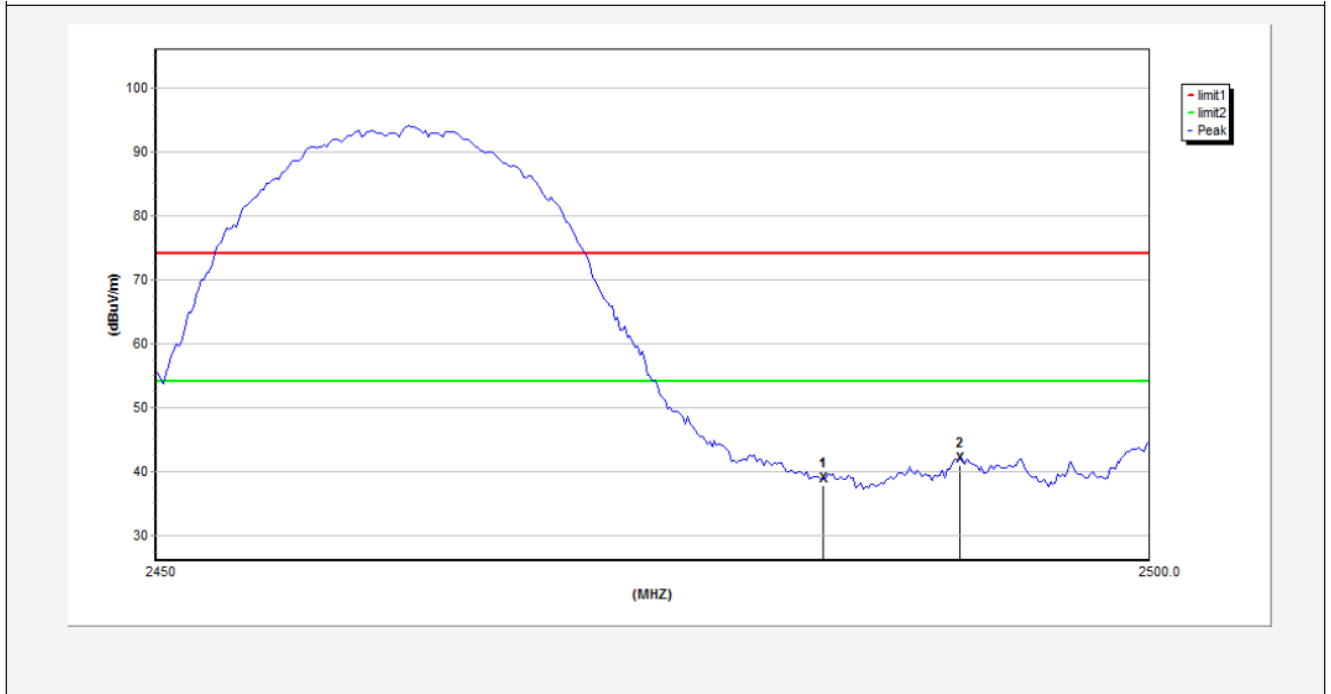


No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2483.5000	42.14	29.28	34.03	3.53	40.92	74.00	-33.08	peak	---	---
2	2487.8750	41.09	29.28	34.03	3.54	39.88	74.00	-34.12	peak	---	---

Horizontal-AV:

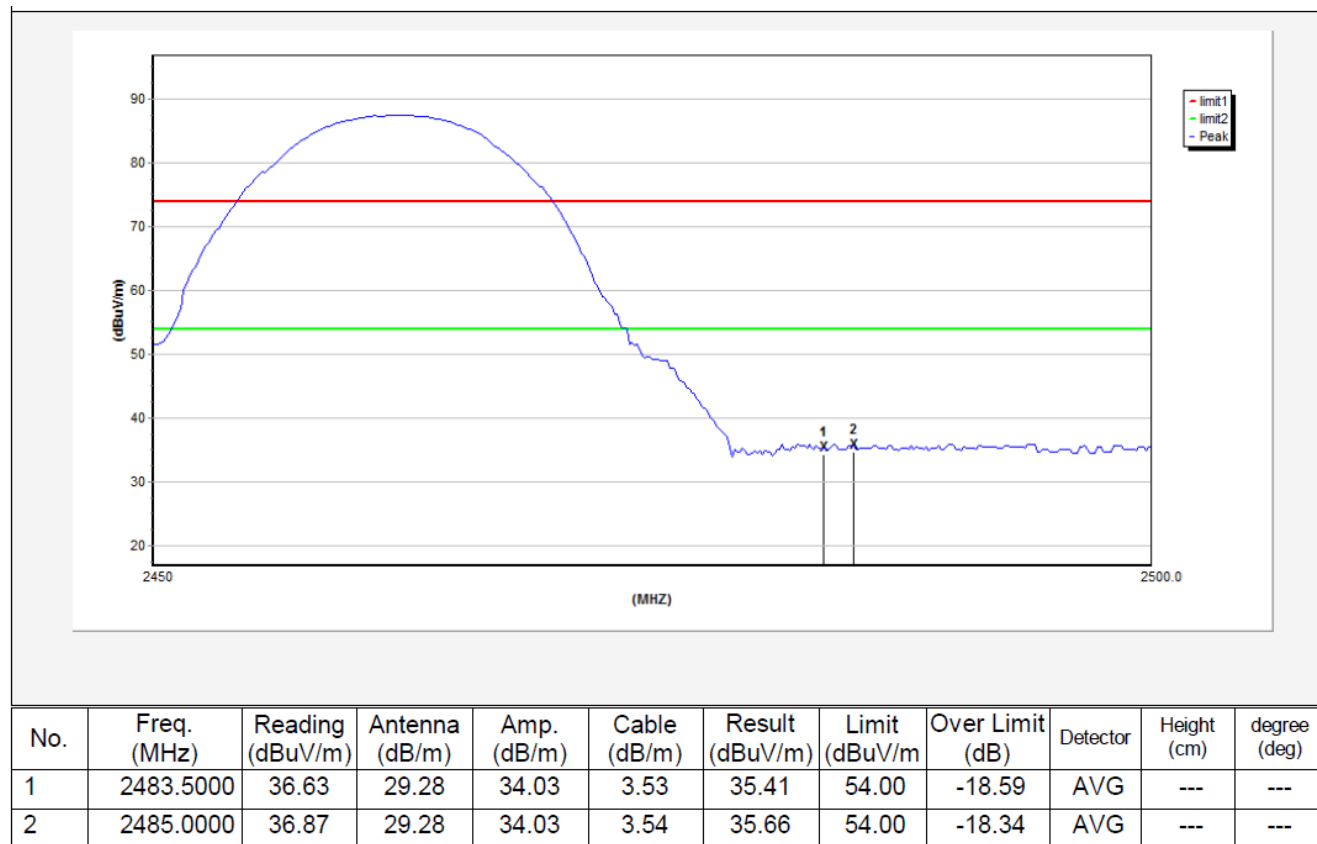


Test Mode: 802.11b
2462MHz
Vertical-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2483.5000	39.89	29.28	34.03	3.53	38.67	74.00	-35.33	peak	---	---
2	2490.3750	43.13	29.29	34.03	3.54	41.93	74.00	-32.07	peak	---	---

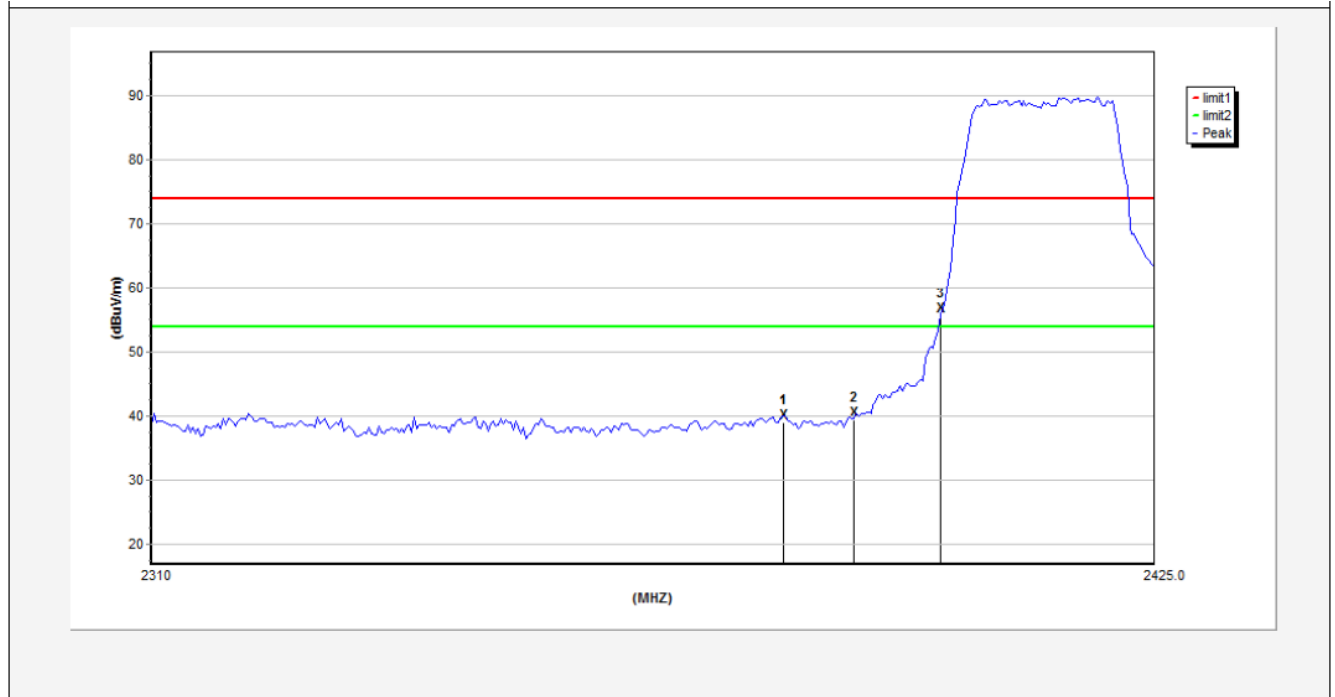
Vertical-AV:



Test Mode: 802.11g

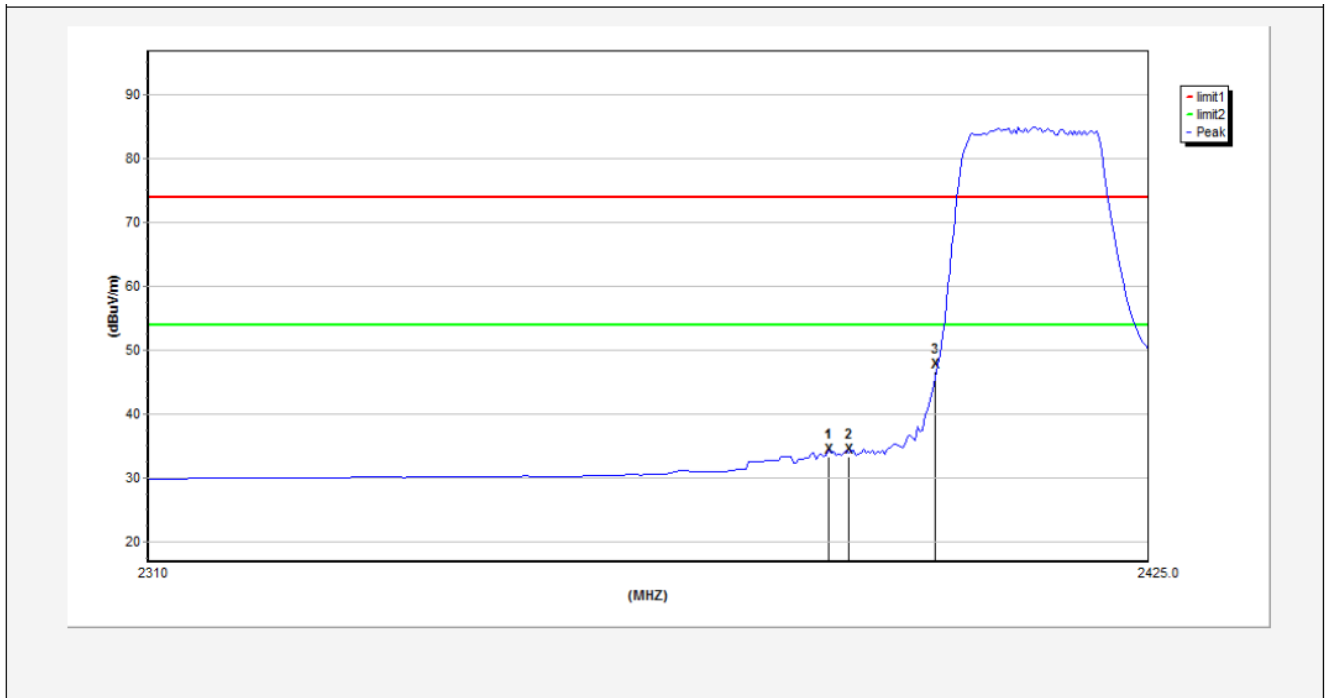
2412MHz

Horizontal-PEAK:



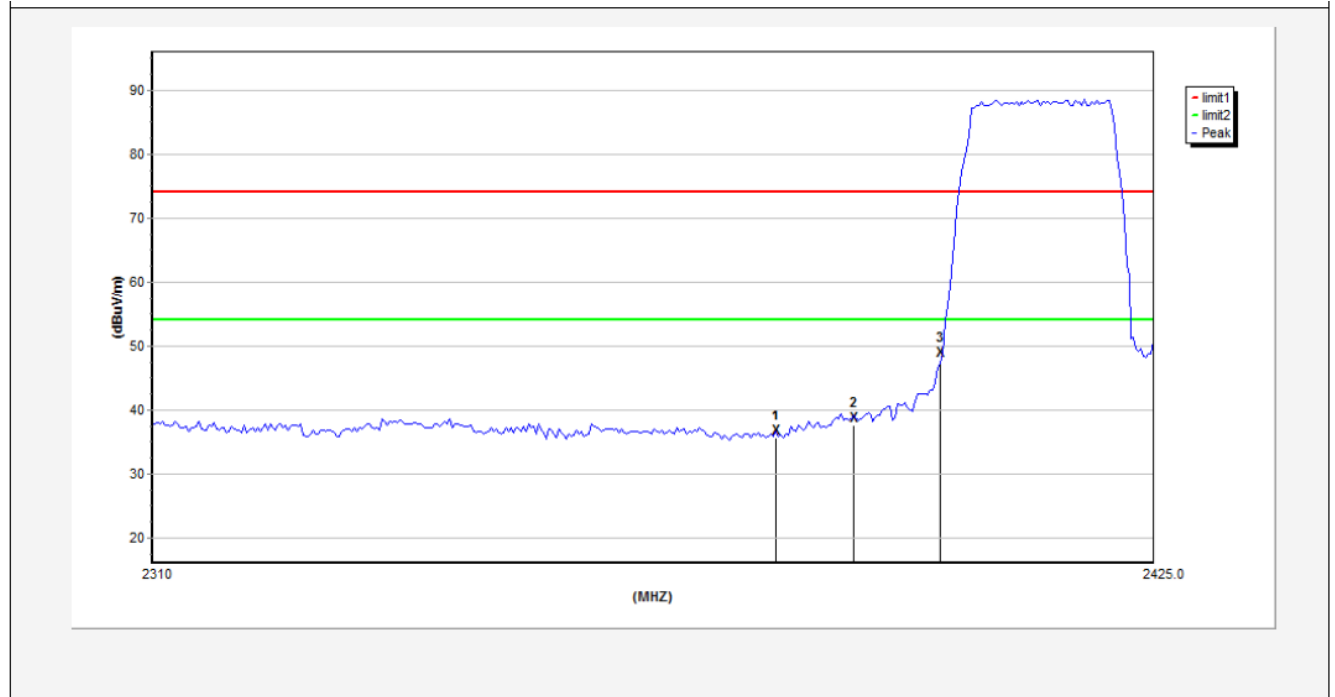
No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2381.8750	41.44	29.13	34.01	3.4	39.96	74.00	-34.04	peak	---	---
2	2390.0000	41.84	29.15	34.01	3.41	40.39	74.00	-33.61	peak	---	---
3	2400.0000	58.18	29.16	34.01	3.43	56.76	74.00	-17.24	peak	---	---

Horizontal-AV:



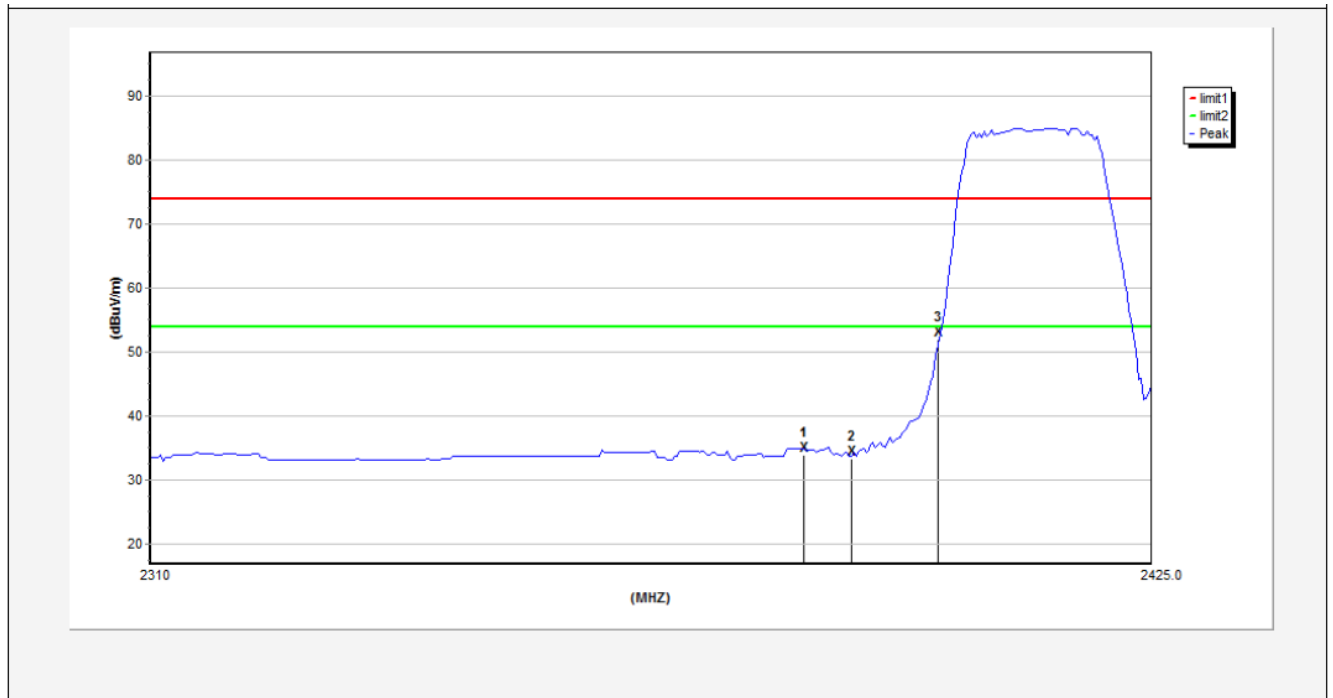
No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2387.6250	35.75	29.14	34.01	3.41	34.29	54.00	-19.71	AVG	---	---
2	2390.0000	35.78	29.15	34.01	3.41	34.33	54.00	-19.67	AVG	---	---
3	2400.0000	49.03	29.16	34.01	3.43	47.61	54.00	-6.39	AVG	---	---

Test Mode: 802.11g
2412MHz
Vertical-PEAK:



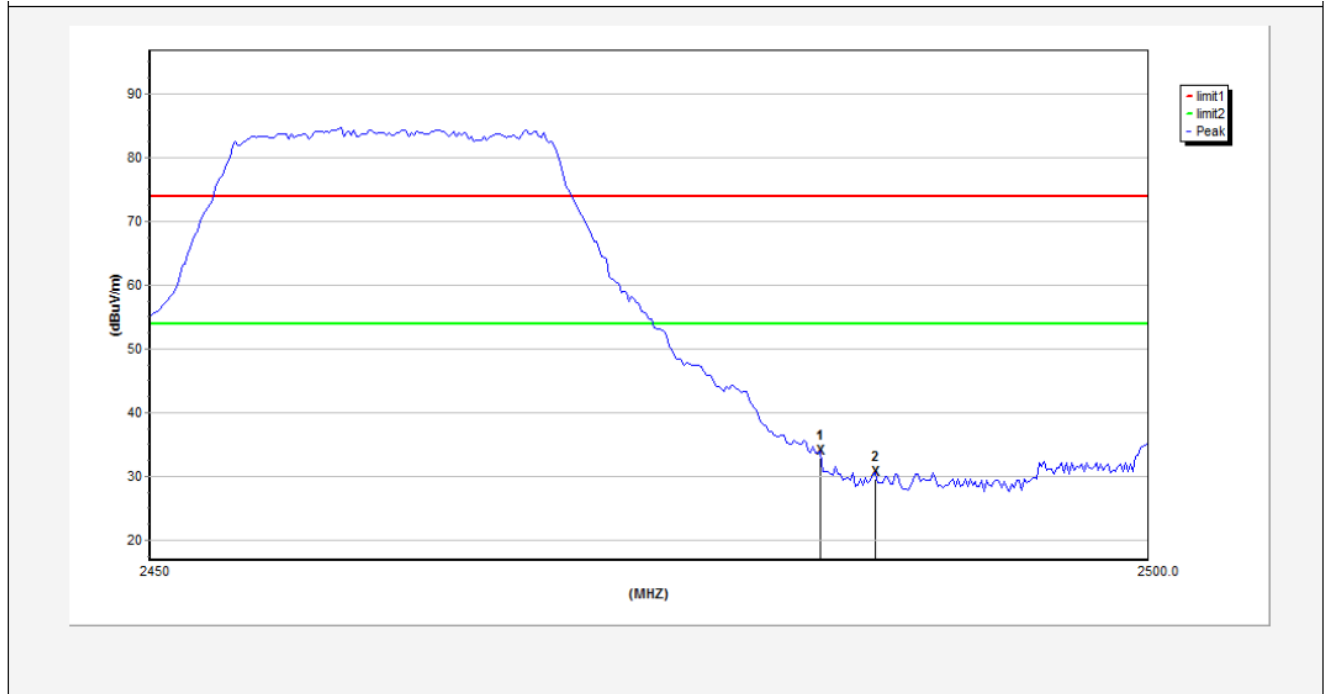
No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2381.0124	38.01	29.13	34.01	3.4	36.53	74.00	-37.47	peak	---	---
2	2390.0000	40.08	29.15	34.01	3.41	38.63	74.00	-35.37	peak	---	---
3	2400.0000	50.15	29.16	34.01	3.43	48.73	74.00	-25.27	peak	---	---

Vertical-AV:



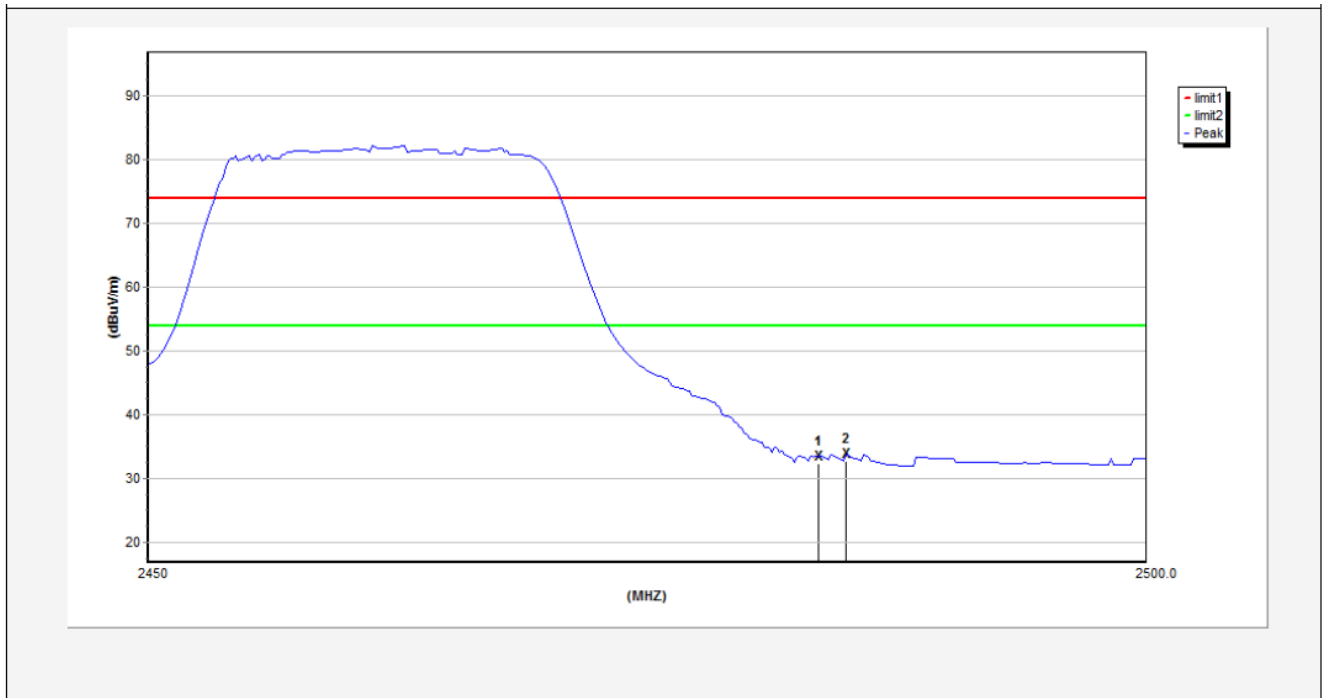
No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2384.4625	36.49	29.14	34.01	3.4	35.02	54.00	-18.98	AVG	---	---
2	2390.0000	35.72	29.15	34.01	3.41	34.27	54.00	-19.73	AVG	---	---
3	2400.0000	54.33	29.16	34.01	3.43	52.91	54.00	-1.09	AVG	---	---

Test Mode: 802.11g
2462MHz
Horizontal-PEAK:



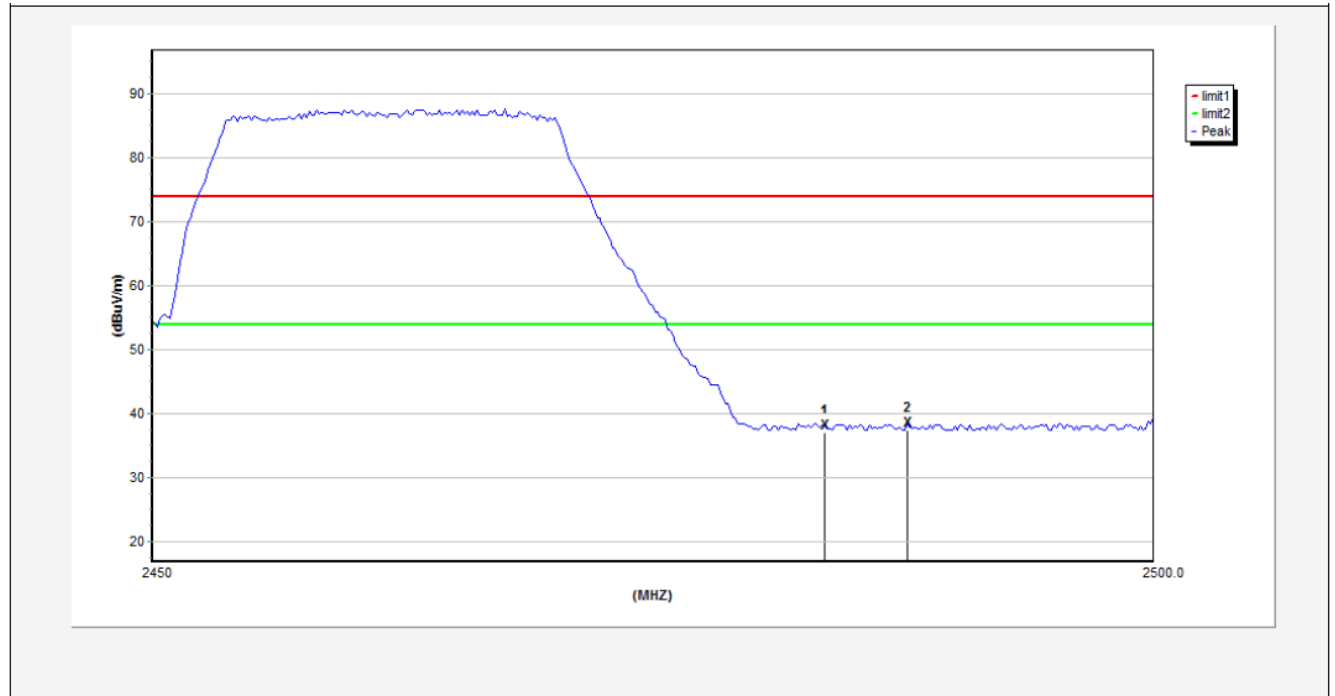
No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2483.5000	35.19	29.28	34.03	3.53	33.97	74.00	-40.03	peak	---	---
2	2486.2500	31.74	29.28	34.03	3.54	30.53	74.00	-43.47	peak	---	---

Horizontal-AV:



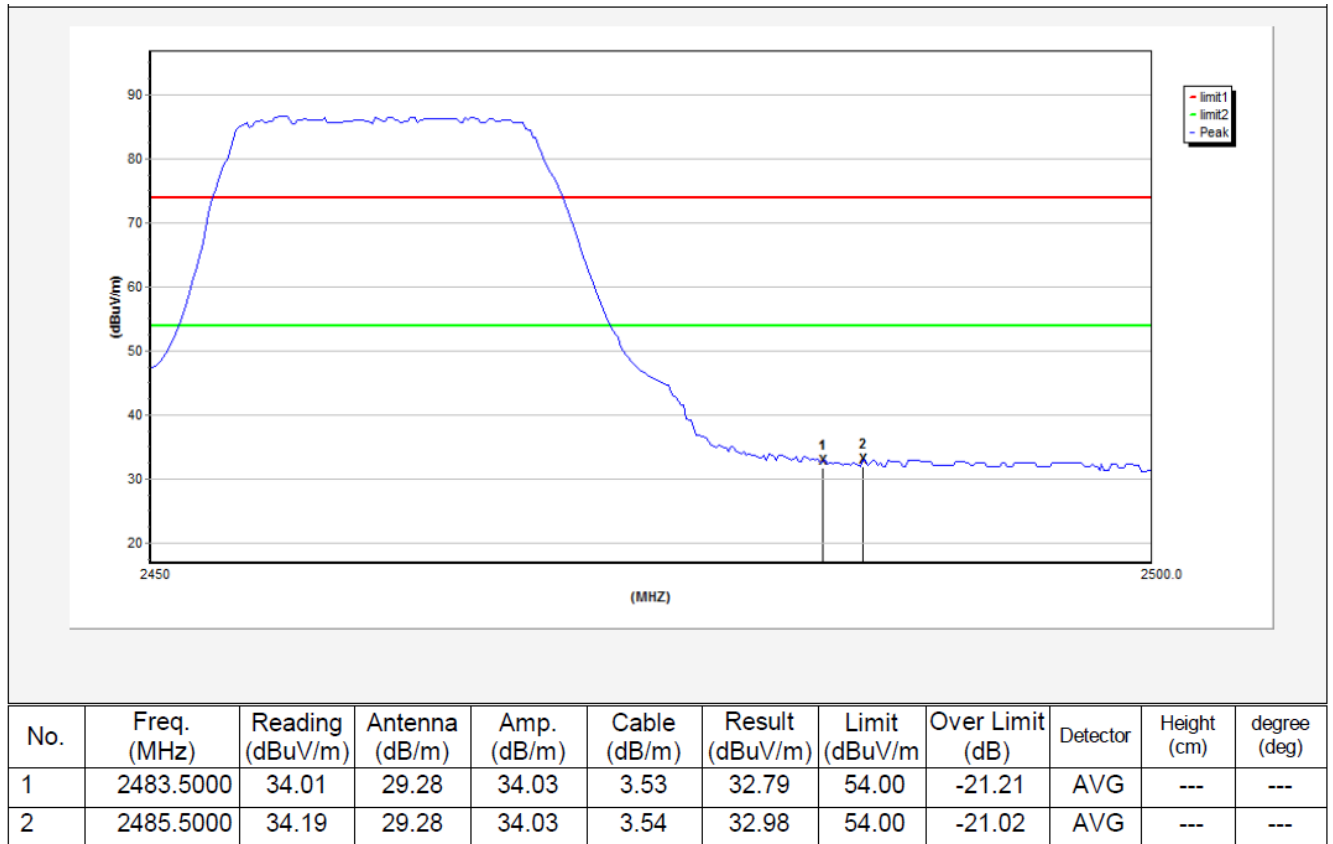
No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2483.5000	34.61	29.28	34.03	3.53	33.39	54.00	-20.61	AVG	---	---
2	2484.8750	34.89	29.28	34.03	3.54	33.68	54.00	-20.32	AVG	---	---

Test Mode: 802.11g
2462MHz
Vertical-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2483.5000	39.24	29.28	34.03	3.53	38.02	74.00	-35.98	peak	---	---
2	2487.6250	39.59	29.28	34.03	3.54	38.38	74.00	-35.62	peak	---	---

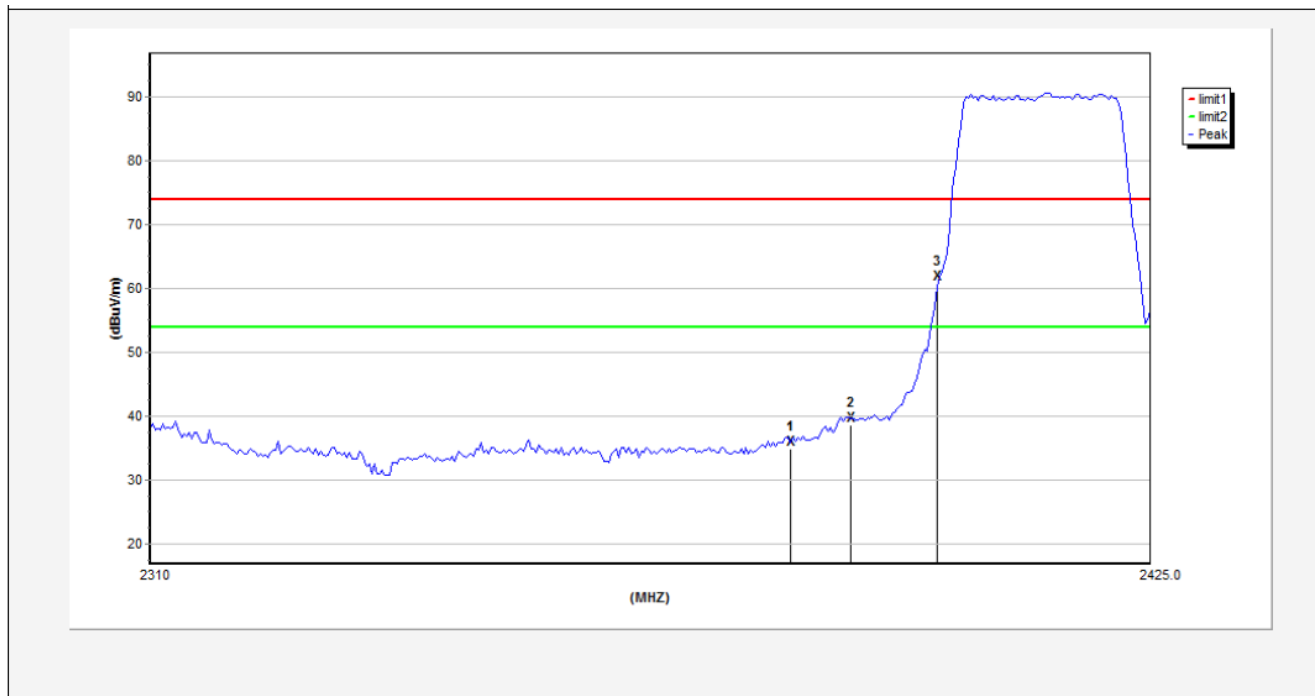
Vertical-AV:



Test Mode: 802.11n (HT20)

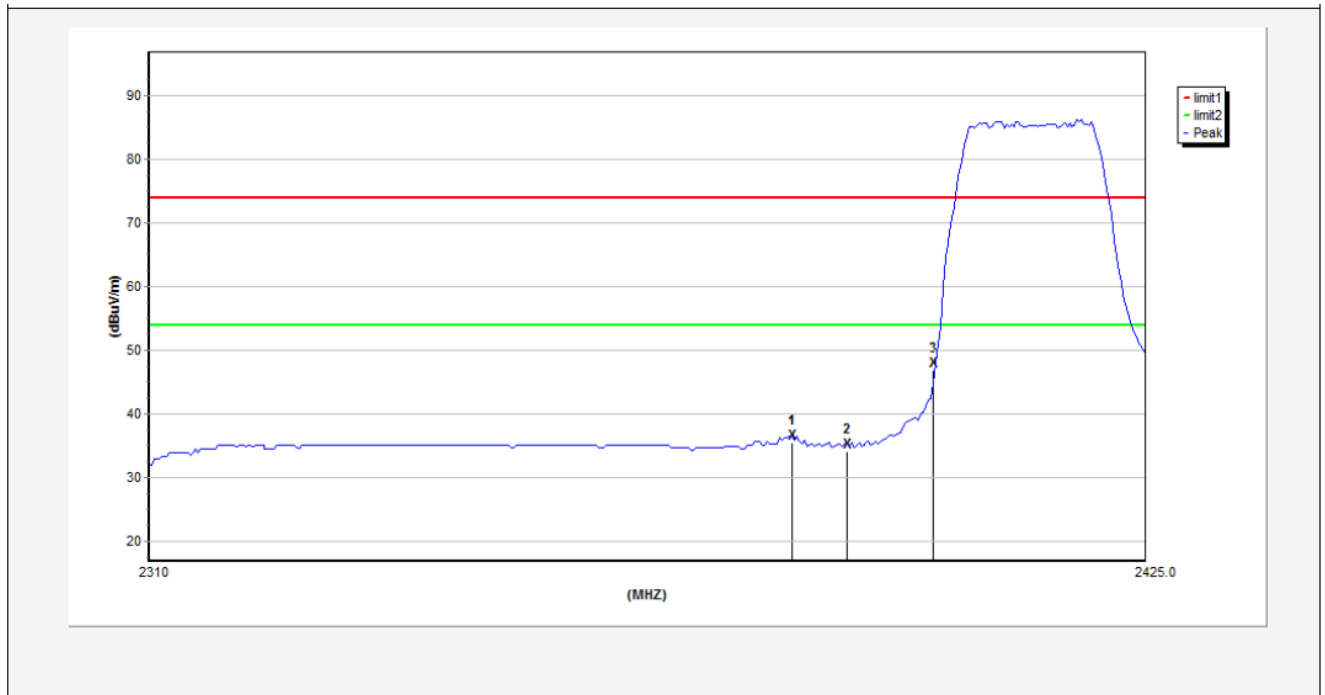
2412MHz

Horizontal-PEAK:



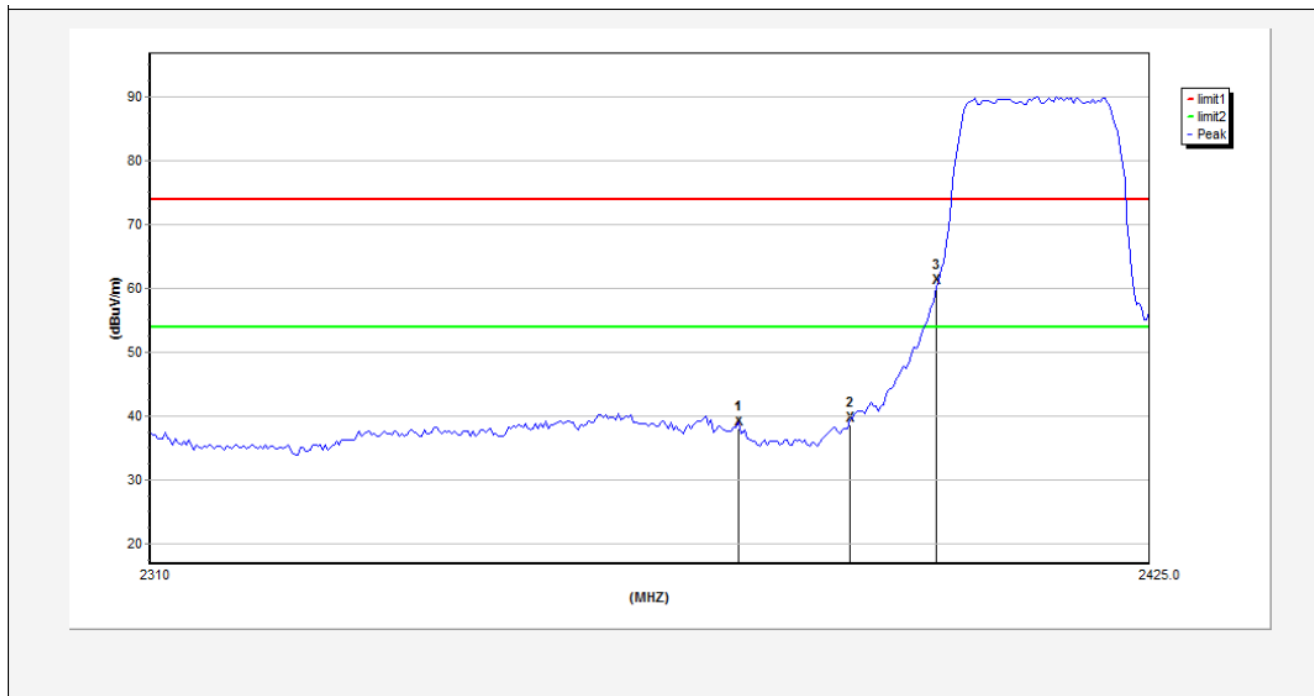
No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2383.0250	37.39	29.14	34.01	3.4	35.92	74.00	-38.08	peak	---	---
2	2390.0000	41.07	29.15	34.01	3.41	39.62	74.00	-34.38	peak	---	---
3	2400.0000	63.24	29.16	34.01	3.43	61.82	74.00	-12.18	peak	---	---

Horizontal-AV:



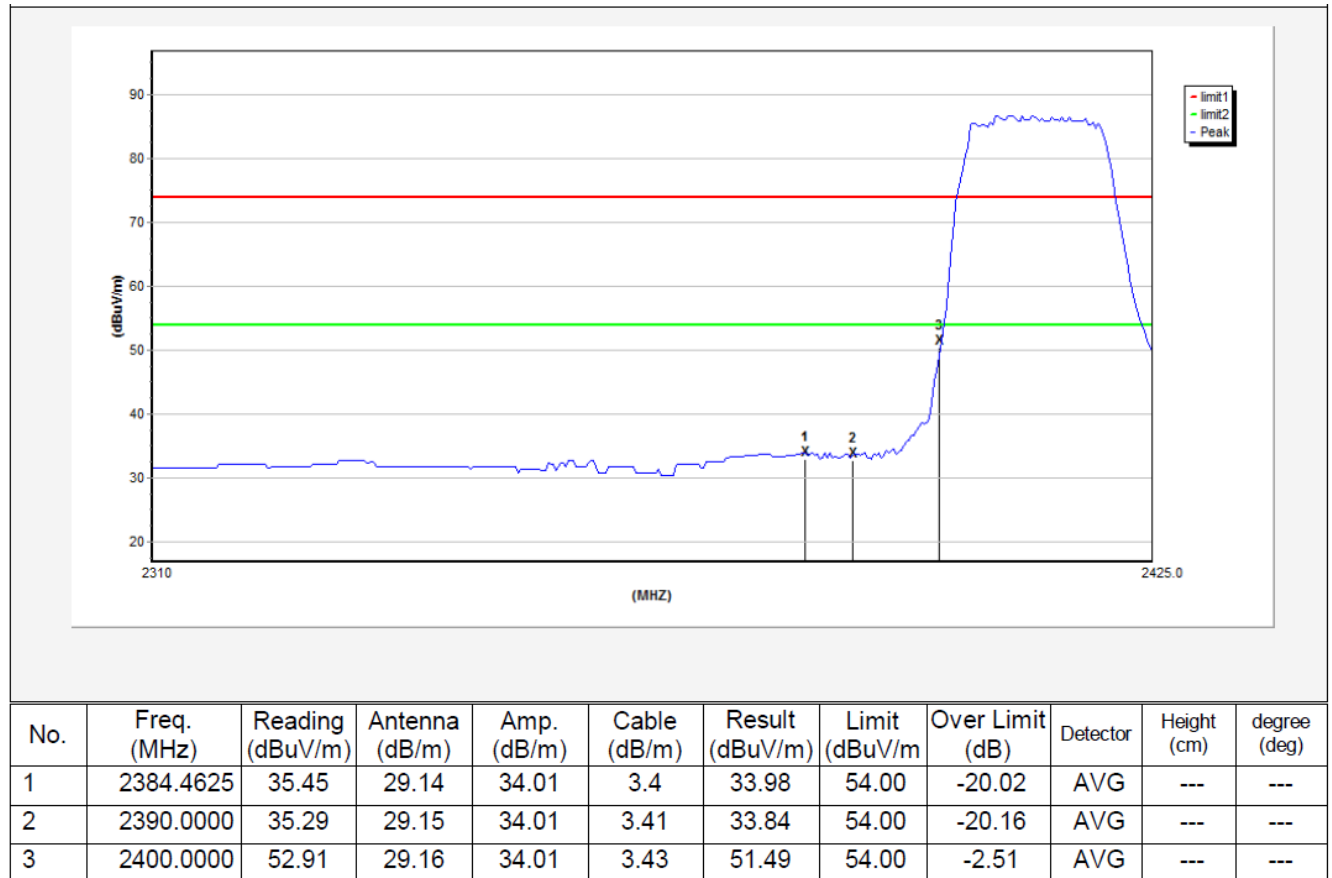
No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2383.6000	37.93	29.14	34.01	3.4	36.46	54.00	-17.54	AVG	---	---
2	2390.0000	36.68	29.15	34.01	3.41	35.23	54.00	-18.77	AVG	---	---
3	2400.0000	49.35	29.16	34.01	3.43	47.93	54.00	-6.07	AVG	---	---

Test Mode: 802.11n (HT20)
2412MHz
Vertical-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2376.9875	40.55	29.13	34.01	3.4	39.07	74.00	-34.93	peak	---	---
2	2390.0000	41.15	29.15	34.01	3.41	39.70	74.00	-34.30	peak	---	---
3	2400.0000	62.59	29.16	34.01	3.43	61.17	74.00	-12.83	peak	---	---

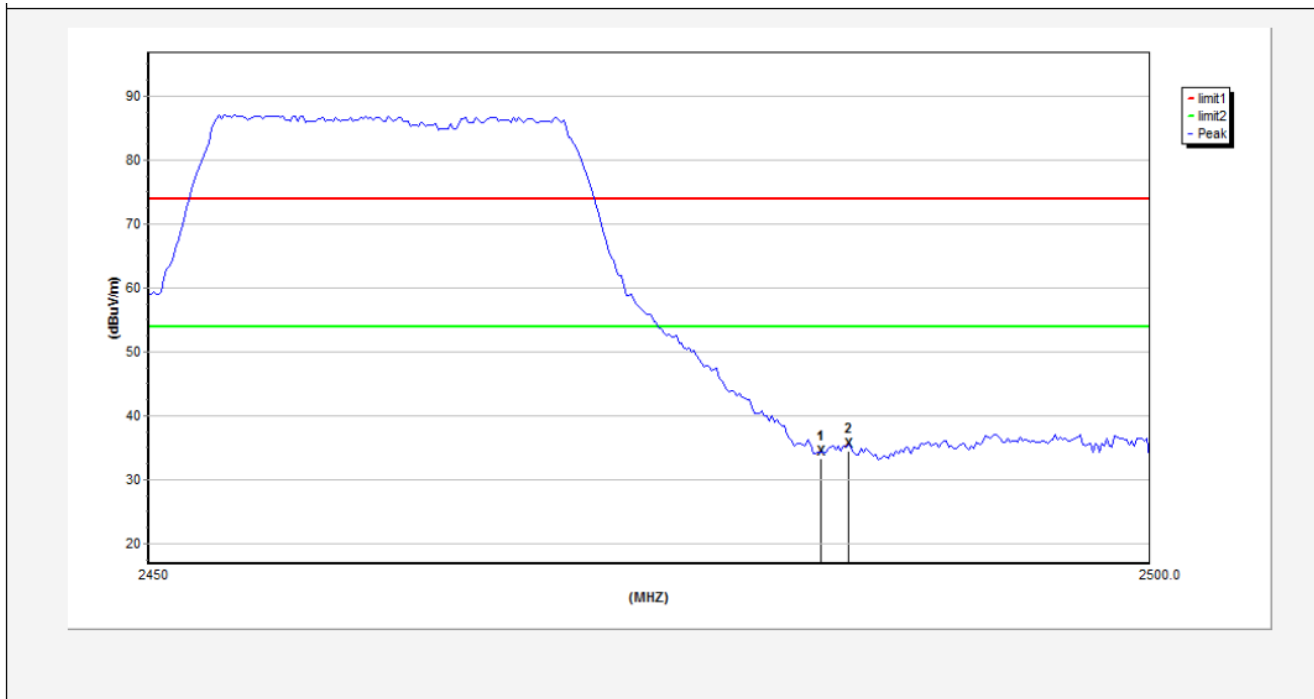
Vertical-AV:



Test Mode: 802.11n (HT20)

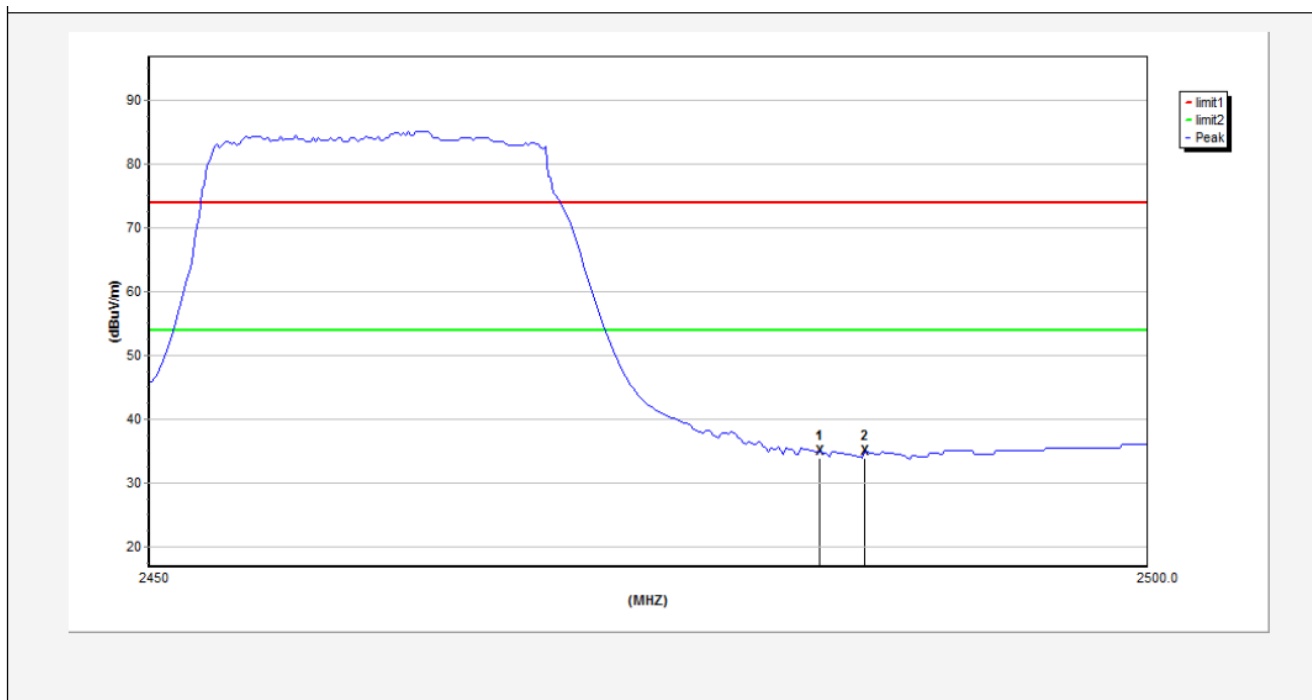
2462MHz

Horizontal-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2483.5000	35.61	29.28	34.03	3.53	34.39	74.00	-39.61	peak	---	---
2	2484.8750	36.70	29.28	34.03	3.54	35.49	74.00	-38.51	peak	---	---

Horizontal-AV:

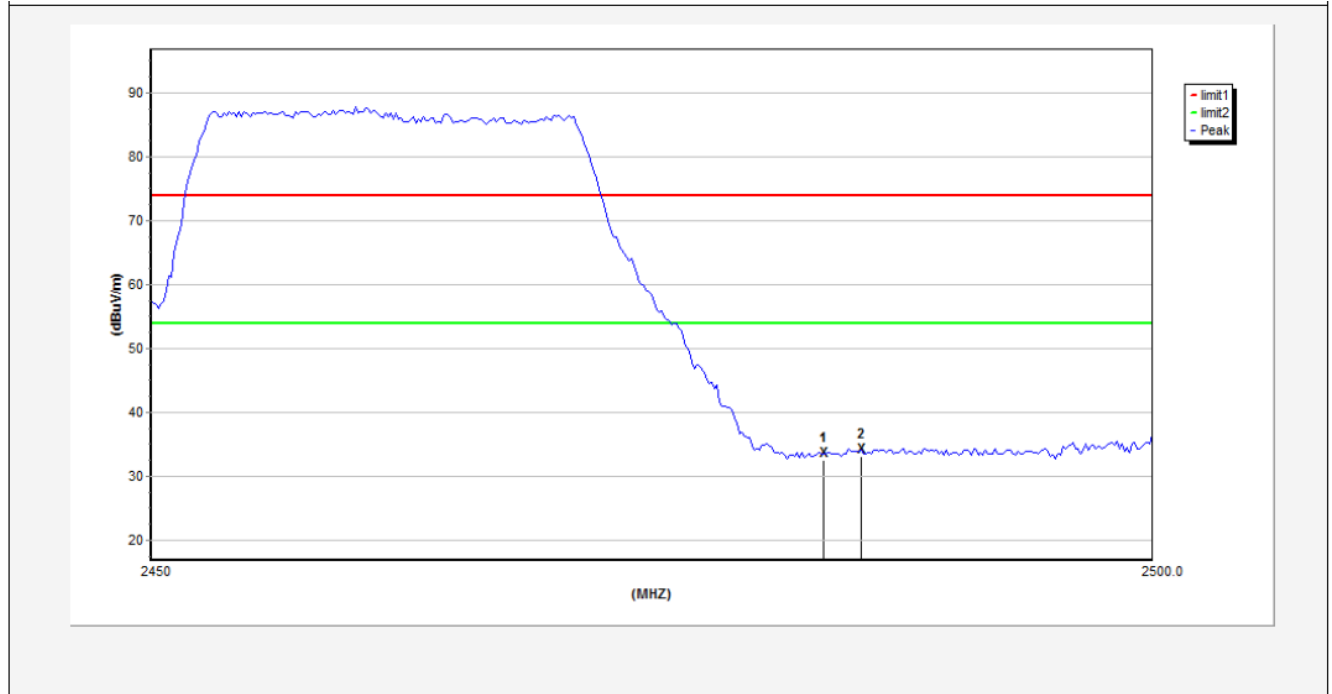


No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2483.5000	36.08	29.28	34.03	3.53	34.86	54.00	-19.14	AVG	---	---
2	2485.7500	36.14	29.28	34.03	3.54	34.93	54.00	-19.07	AVG	---	---

Test Mode: 802.11n (HT20)

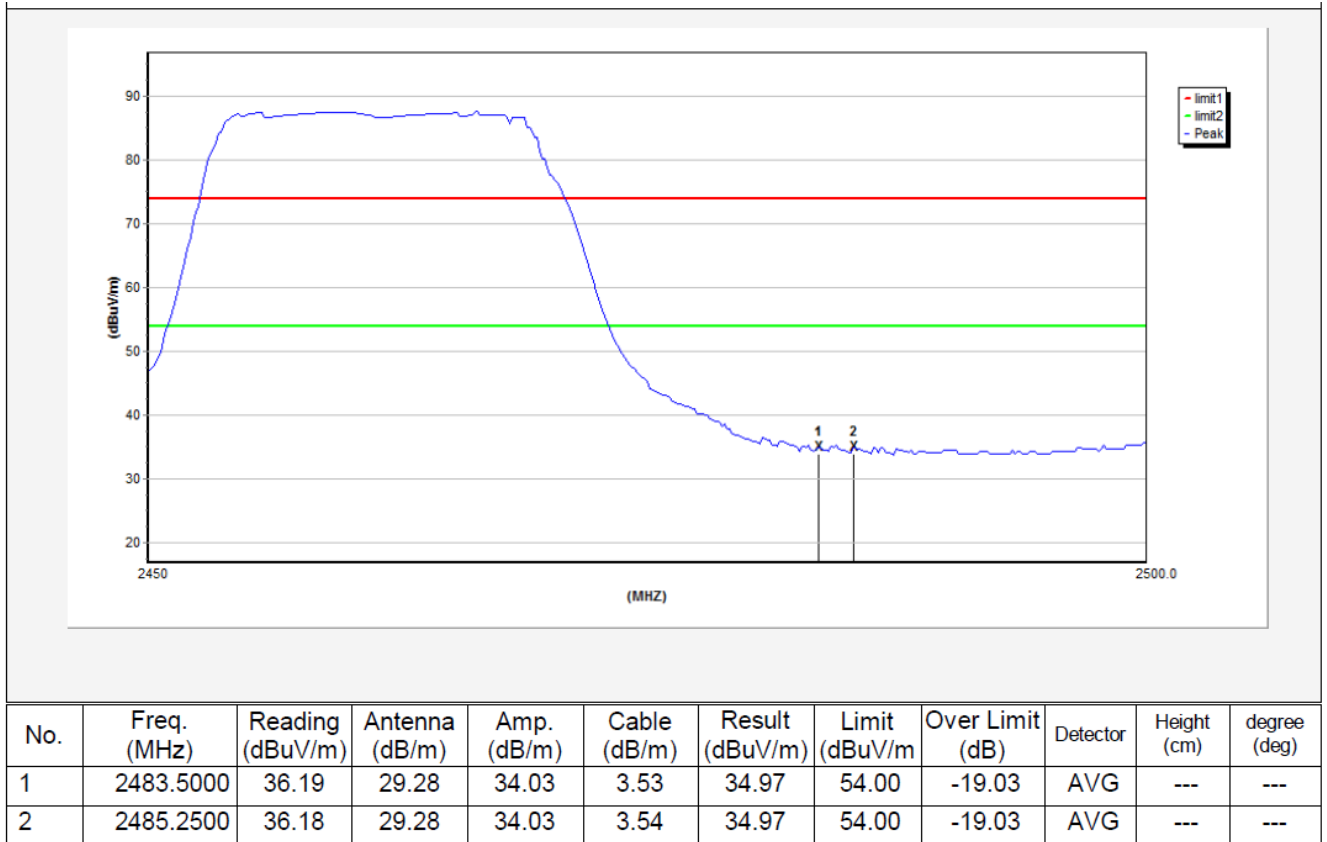
2462MHz

Vertical-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2483.5000	34.71	29.28	34.03	3.53	33.49	74.00	-40.51	peak	---	---
2	2485.3750	35.43	29.28	34.03	3.54	34.22	74.00	-39.78	peak	---	---

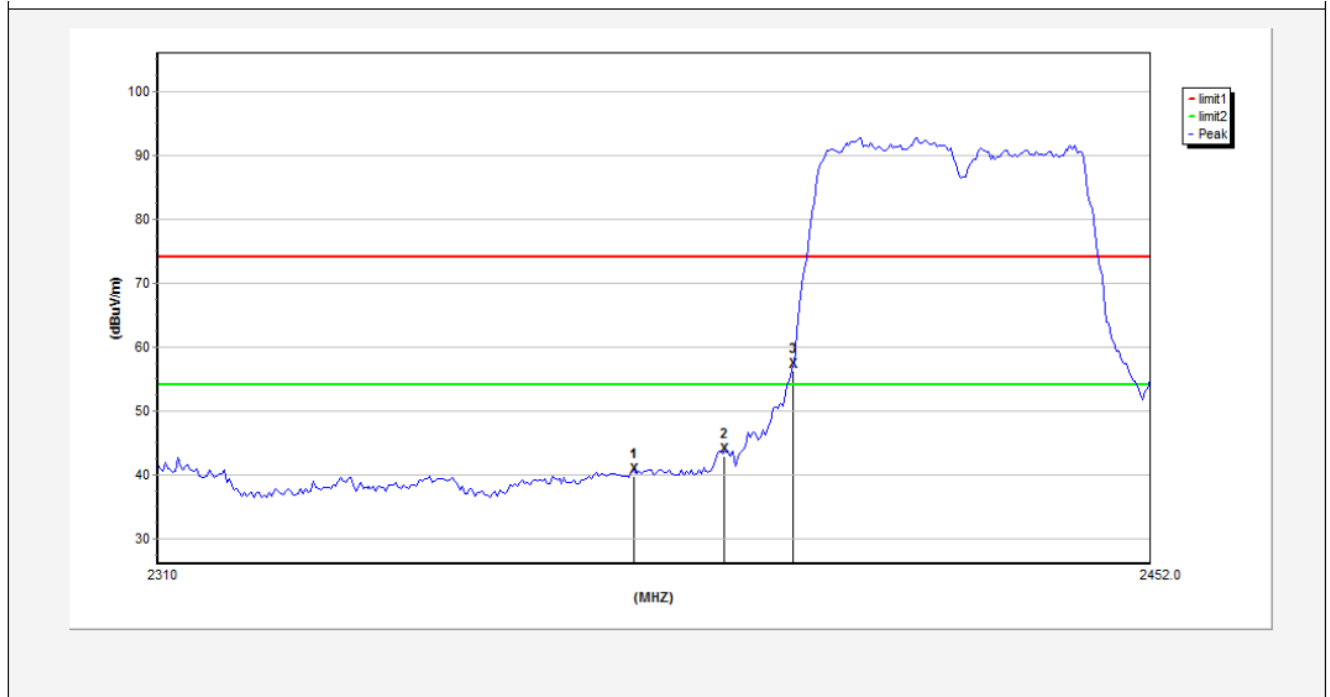
Vertical-AV:



Test Mode: 802.11n (HT40)

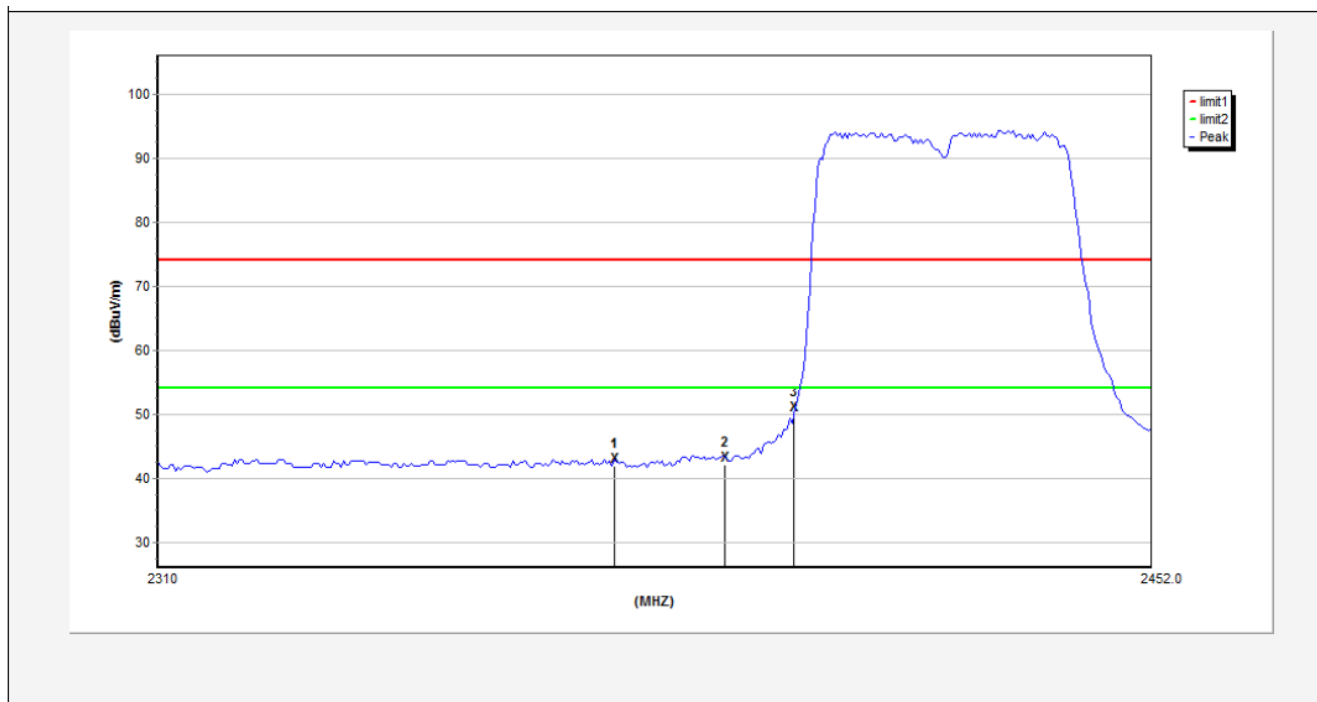
2422MHz

Horizontal-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2377.0950	43.30	-2.54	9.48	9.48	40.76	74.00	-33.24	peak	---	---
2	2390.0000	46.36	-2.51	9.55	9.55	43.85	74.00	-30.15	peak	---	---
3	2400.0000	59.61	-2.49	9.6	9.6	57.12	74.00	-16.88	peak	---	---

Horizontal-AV:

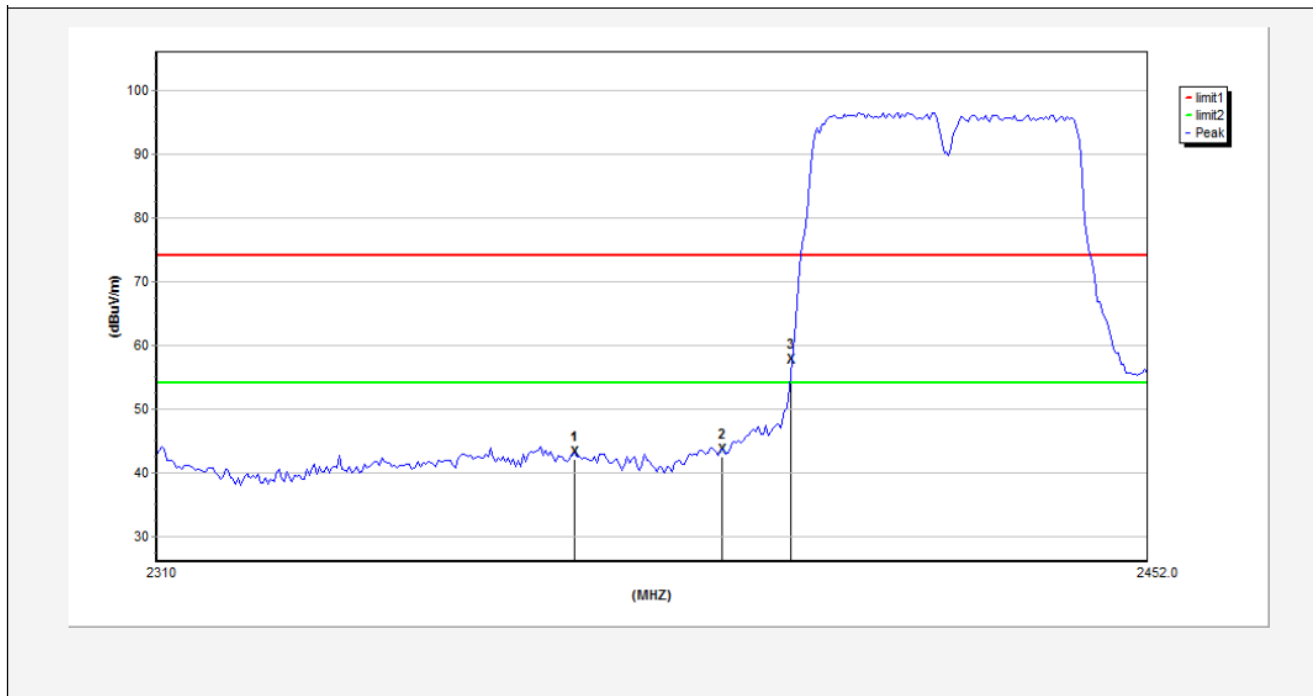


No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2374.2550	45.34	-2.55	9.47	9.47	42.79	54.00	-11.21	AVG	---	---
2	2390.0000	45.49	-2.51	9.55	9.55	42.98	54.00	-11.02	AVG	---	---
3	2400.0000	53.36	-2.49	9.6	9.6	50.87	54.00	-3.13	AVG	---	---

Test Mode: 802.11n (HT40)

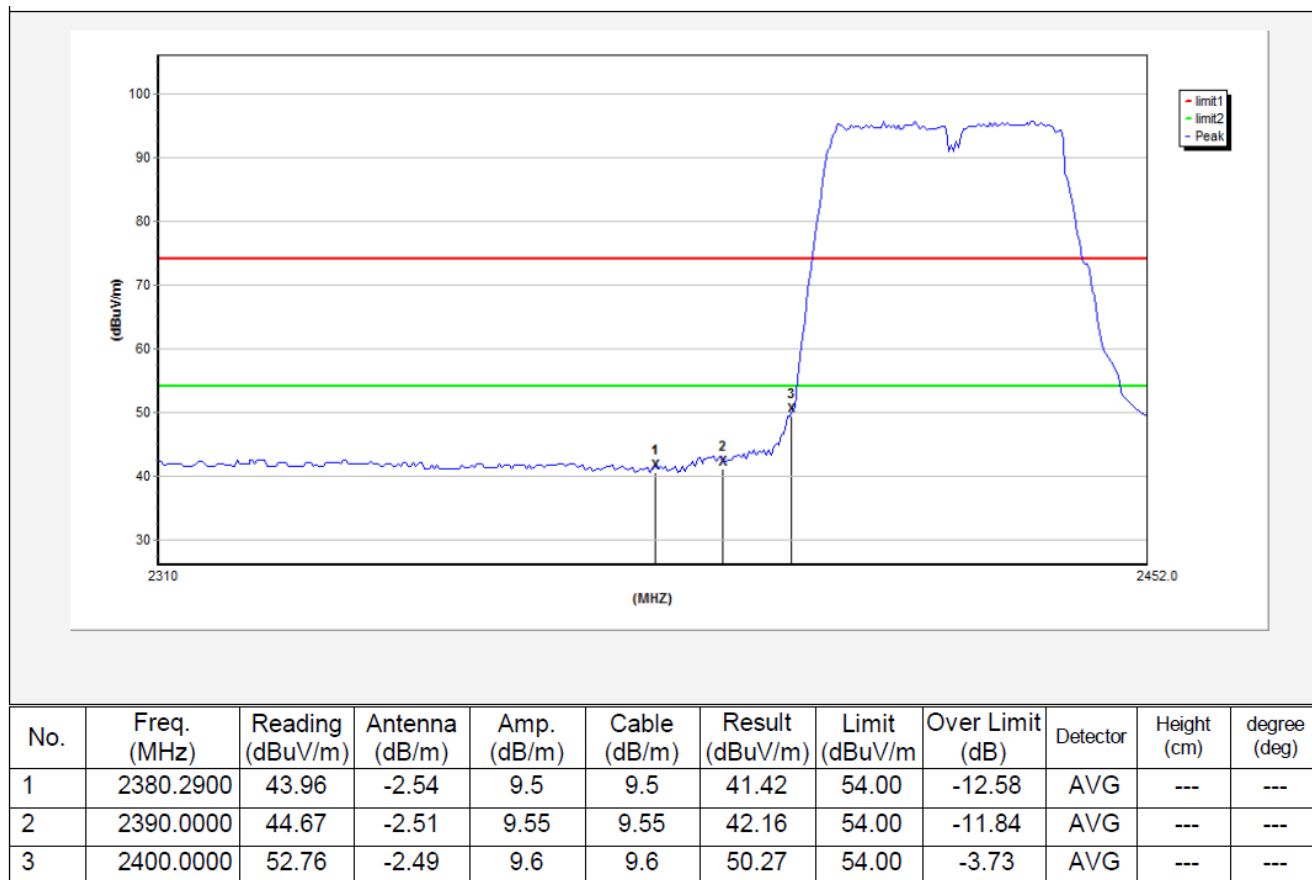
2422MHz

Vertical-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2368.9300	45.62	-2.56	9.44	9.44	43.06	74.00	-30.94	peak	---	---
2	2390.0000	45.89	-2.51	9.55	9.55	43.38	74.00	-30.62	peak	---	---
3	2400.0000	60.01	-2.49	9.6	9.6	57.52	74.00	-16.48	peak	---	---

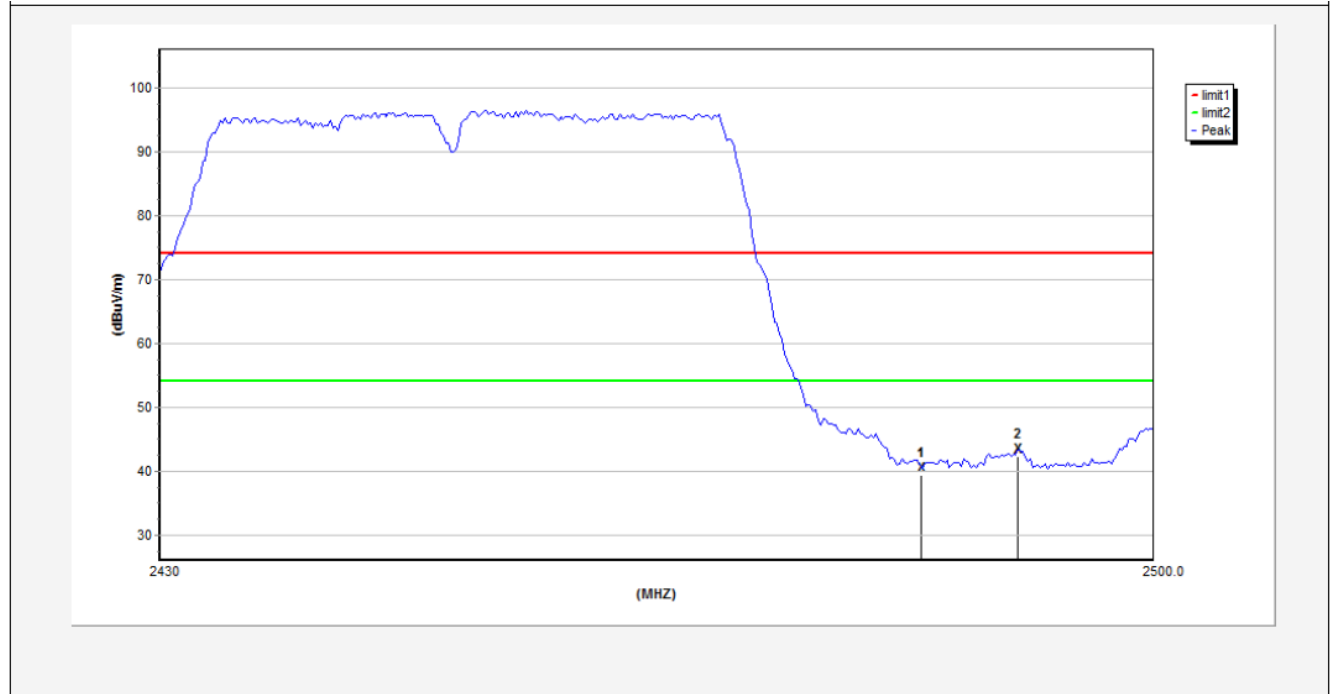
Vertical-AV:



Test Mode: 802.11n (HT40)

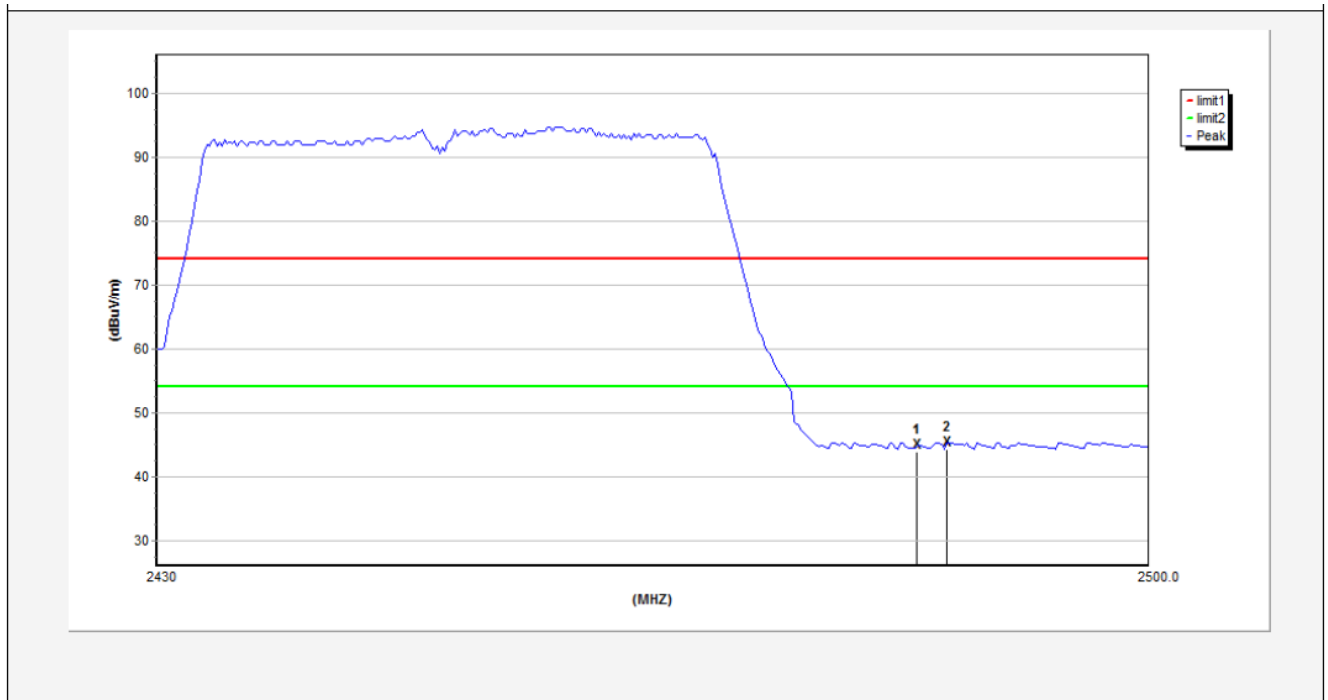
2452MHz

Horizontal-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2483.5000	42.56	-2.31	10.01	10.01	40.25	74.00	-33.75	peak	---	---
2	2490.3750	45.51	-2.29	10.04	10.04	43.22	74.00	-30.78	peak	---	---

Horizontal-AV:

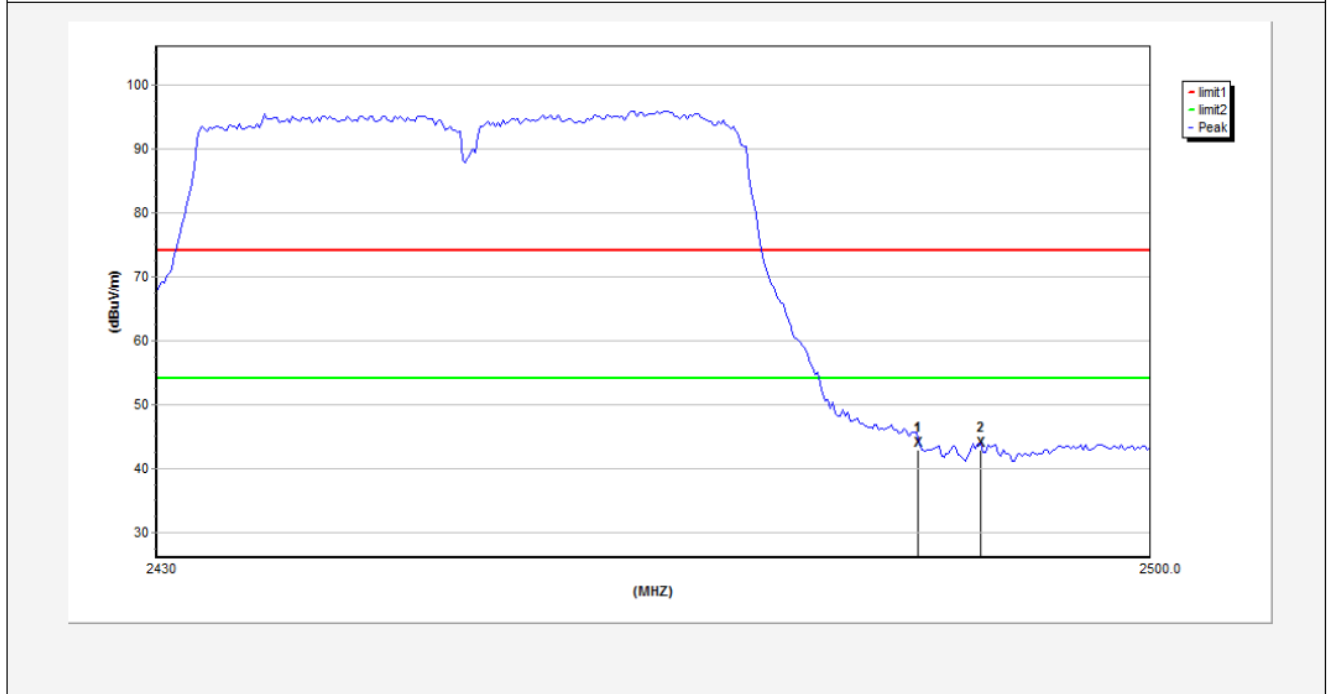


No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2483.5000	47.10	-2.31	10.01	10.01	44.79	54.00	-9.21	AVG	---	---
2	2485.6500	47.56	-2.3	10.02	10.02	45.26	54.00	-8.74	AVG	---	---

Test Mode: 802.11n (HT40)

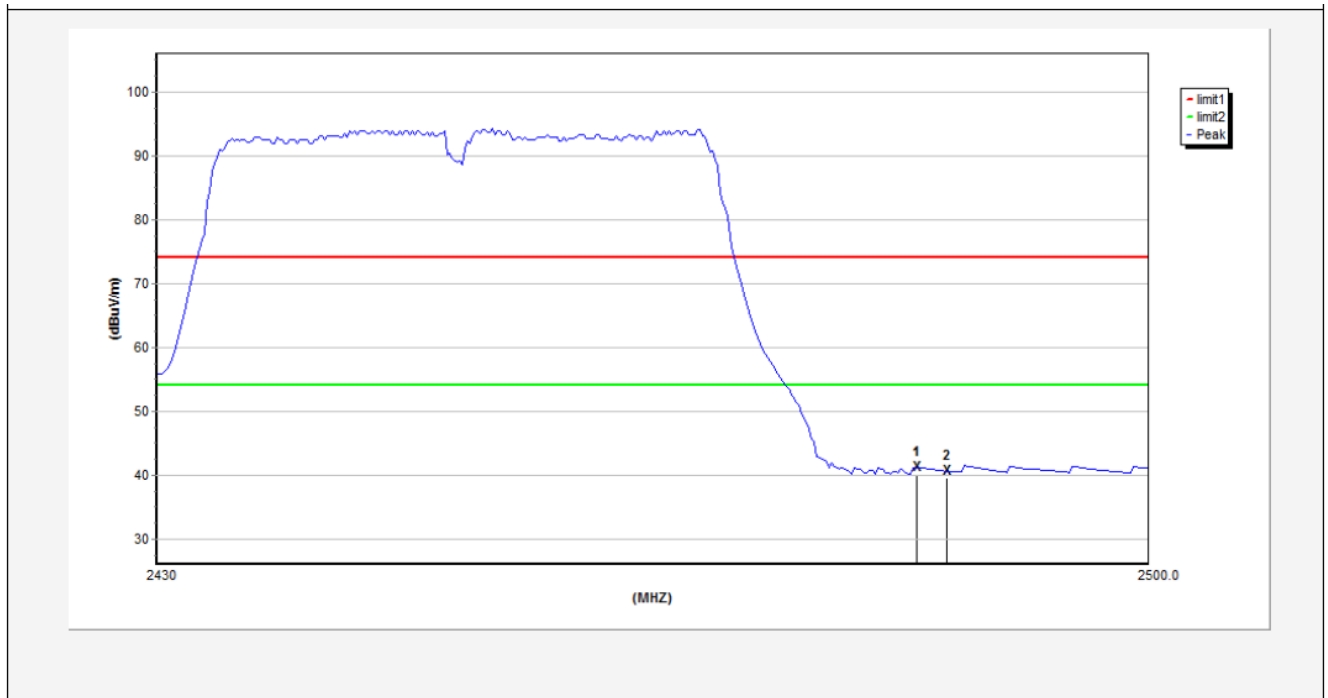
2452MHz

Vertical-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2483.5000	46.22	-2.31	10.01	10.01	43.91	74.00	-30.09	peak	---	---
2	2487.9250	46.19	-2.3	10.03	10.03	43.89	74.00	-30.11	peak	---	---

Vertical-AV:



No.	Freq. (MHz)	Reading (dBuV/m)	Antenna (dB/m)	Amp. (dB/m)	Cable (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)
1	2483.5000	43.40	-2.31	10.01	10.01	41.09	54.00	-12.91	AVG	---	---
2	2485.6500	42.87	-2.3	10.02	10.02	40.57	54.00	-13.43	AVG	---	---

4.5. Peak Power Spectral Density

a. Limit

1. For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
2. The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

b. Test Procedure

1. 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.
2. Set the spectrum analyzer as RBW = 3.0kHz, VBW = 10kHz, Span = 1.5xDTS BW
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

c. Test Equipment

Same as the equipment listed in 4.2.

d. Test Setup

See 4.1

e. Test Results

Pass

f. Test Data

Please refer to the following data.

g. Test Plot See the following pages

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	PPSD (dBm/3KHz)	Σ PPSD (dBm/3KHz)	Limit (dBm)	Result
Low	2412	-9.316	-	8.00	Pass
Mid	2437	-10.768	-		Pass
High	2462	-8.057	-		Pass

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	PPSD (dBm)	Σ PPSD (dBm)	Limit (dBm)	Result
Low	2412	-17.088	-	8.00	Pass
Mid	2437	-15.734	-		Pass
High	2462	-15.793	-		Pass

Test mode: IEEE 802.11n (HT20)

Channel	Frequency (MHz)	PPSD (dBm/3KHz)	Σ PPSD (dBm/3KHz)	Limit (dBm)	Result
Low	2412	-16.757	-	8.00	Pass
Mid	2437	-14.694	-		Pass
High	2462	-16.461	-		Pass

Test mode: IEEE 802.11n (HT40)

Channel	Frequency (MHz)	PPSD (dBm/3KHz)	Σ PPSD (dBm/3KHz)	Limit (dBm)	Result
Low	2422	-22.013	-	8.00	Pass
Mid	2437	-17.914	-		Pass
High	2452	-20.904	-		Pass



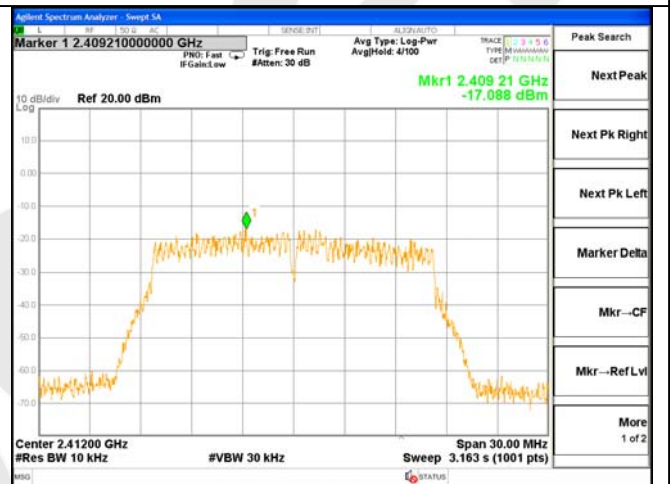
Test Mode: 802.11b---Low



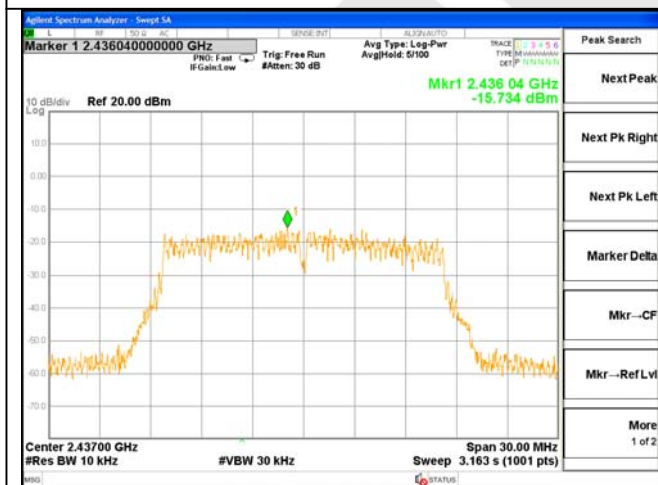
Test Mode: 802.11b---Mid



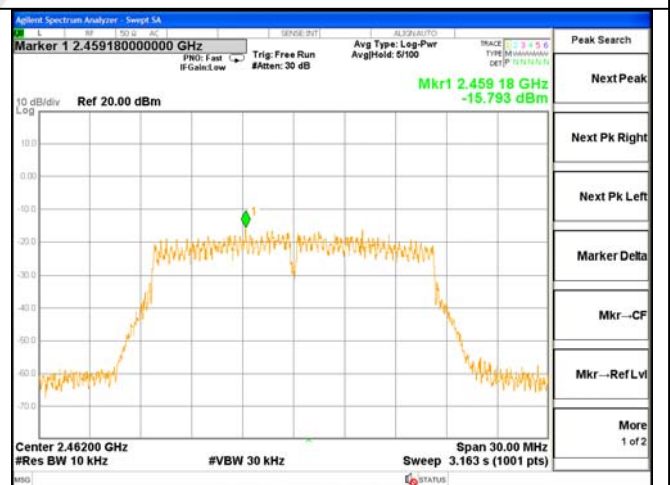
Test Mode: 802.11b---High



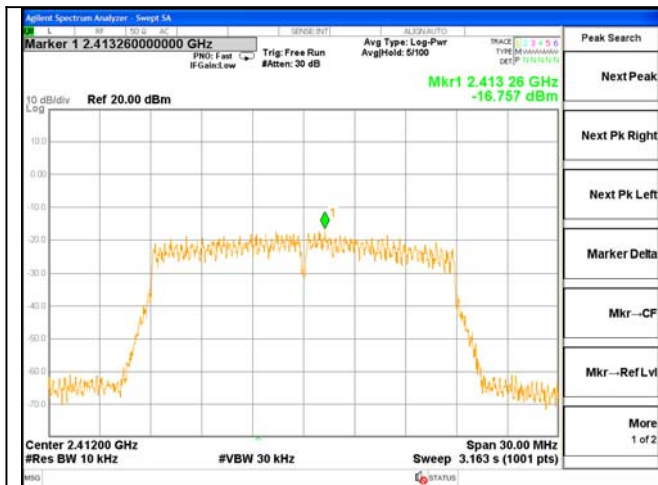
Test Mode: 802.11g---Low



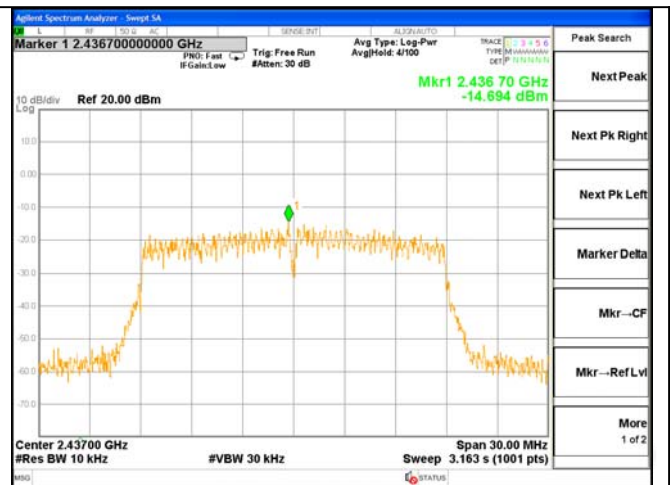
Test Mode: 802.11g---Mid



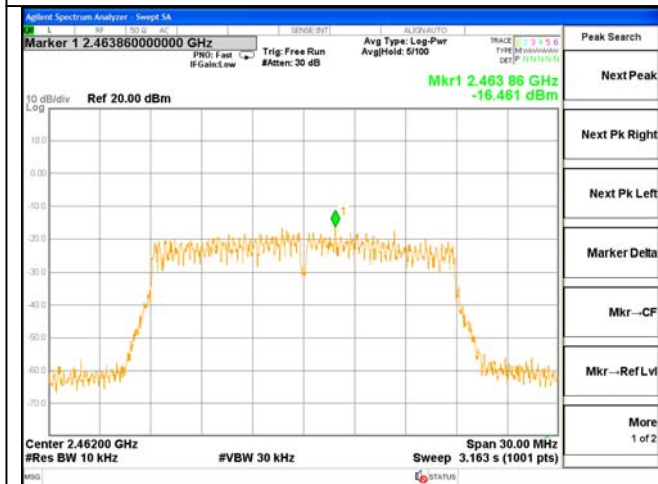
Test Mode: 802.11g---High



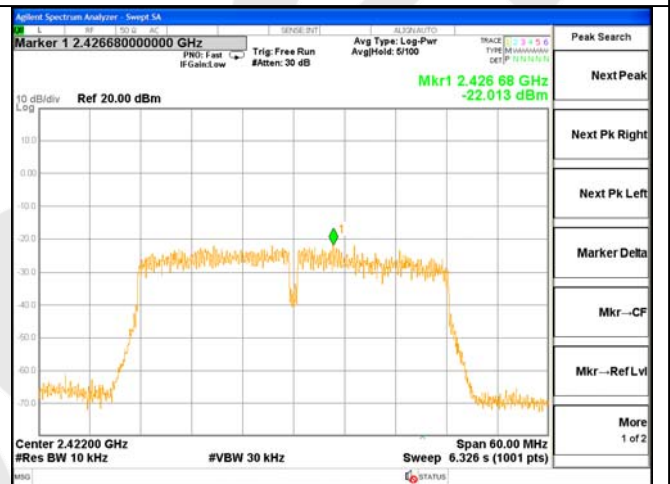
Test Mode: 802.11n20---Low



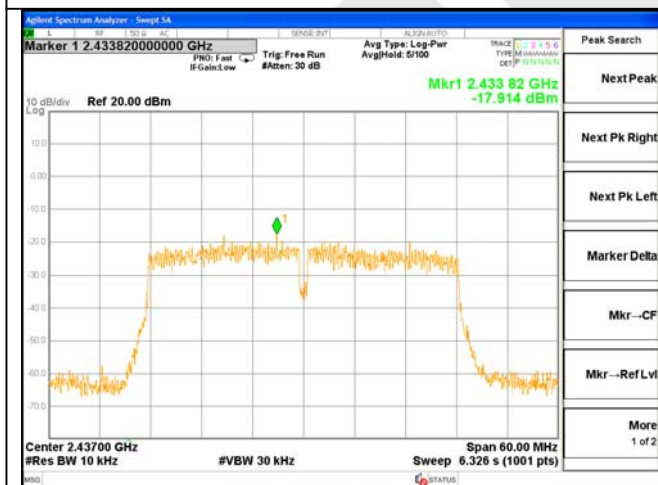
Test Mode: 802.11n20---Mid



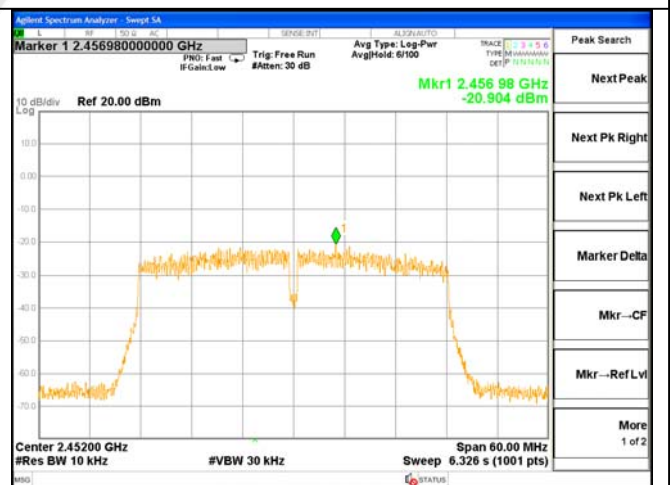
Test Mode: 802.11n20---High



Test Mode: 802.11n40---Low



Test Mode: 802.11n40---Mid



Test Mode: 802.11n40---High