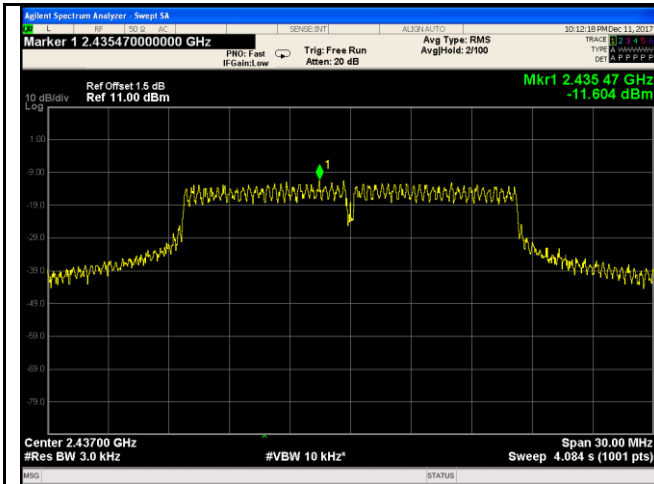
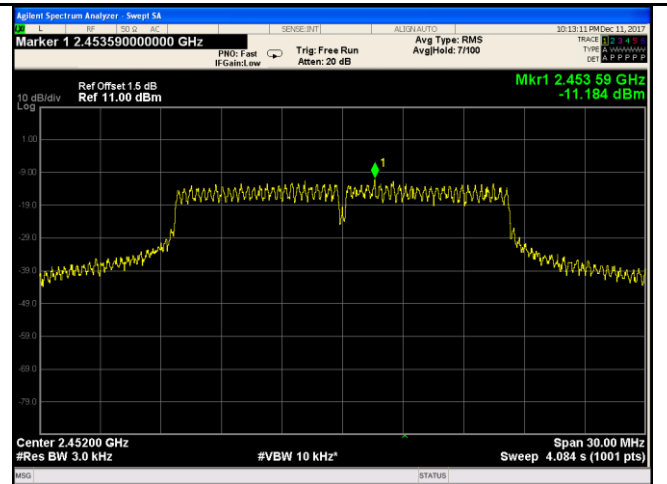
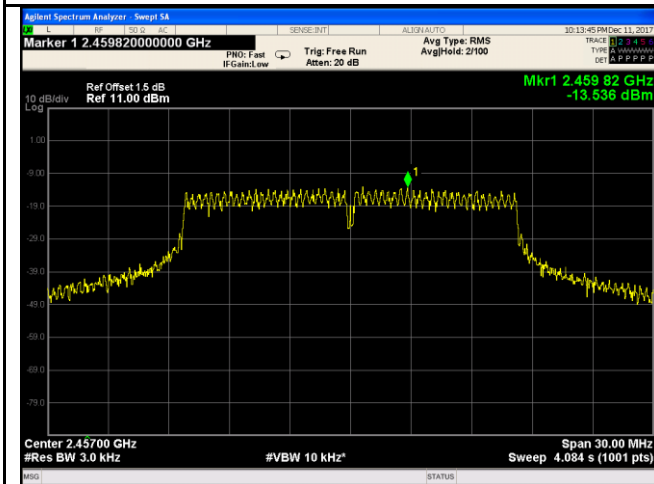




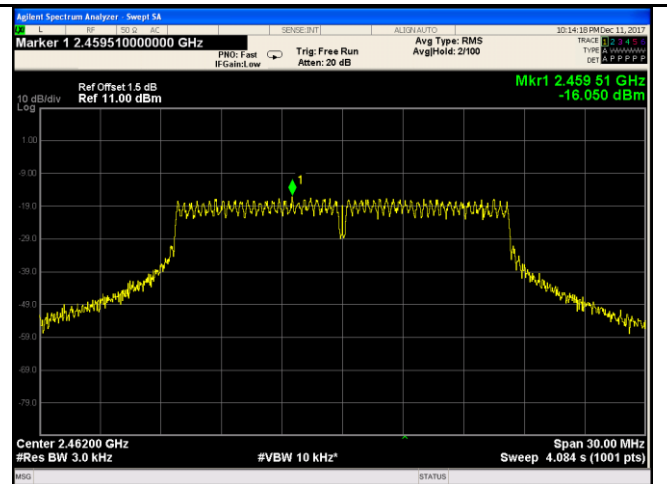
802.11g - 6 CH 2437



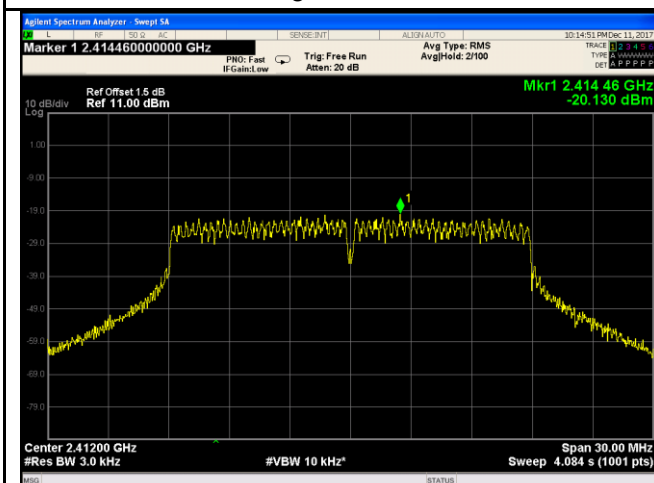
802.11g - 9 CH 2452



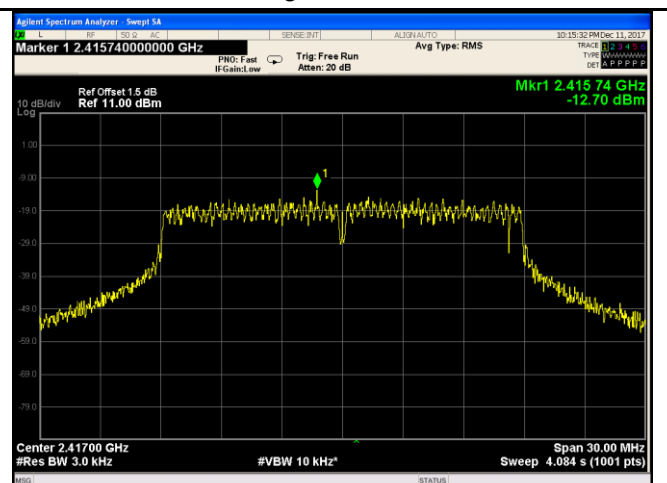
802.11g - 10 CH 2457



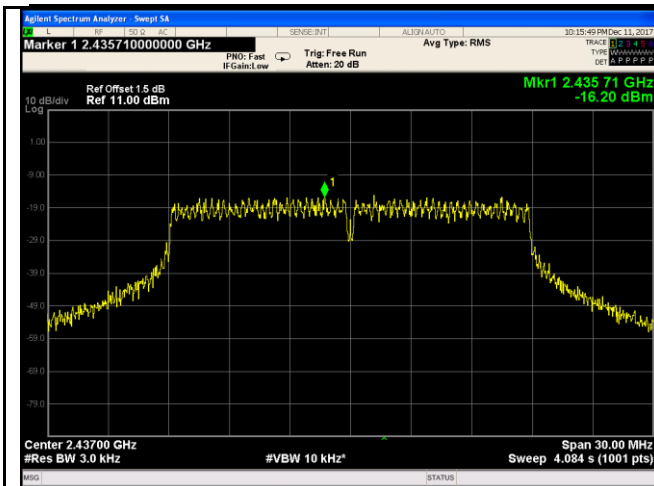
802.11g - 11 CH 2462



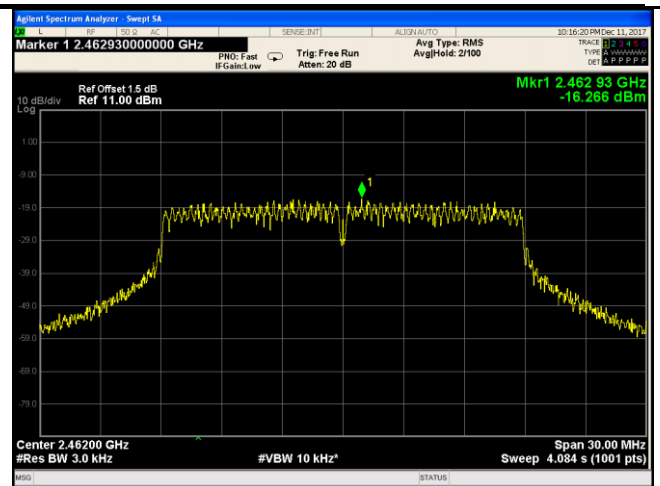
802.11n20 - 1 CH 2412



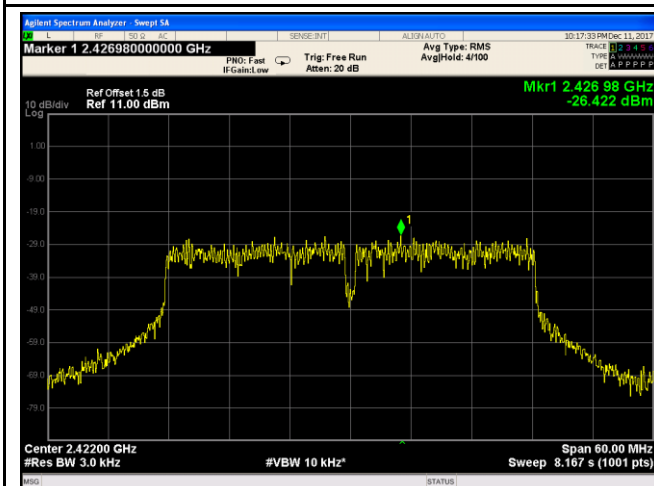
802.11n20 - 2 CH 2417



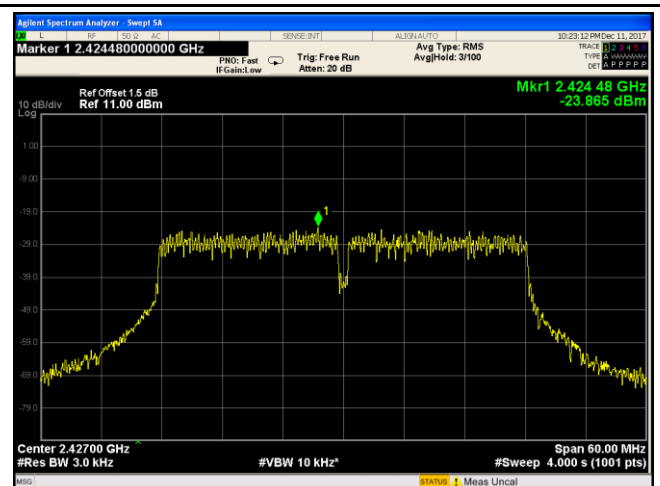
802.11n20 - 6 CH 2437



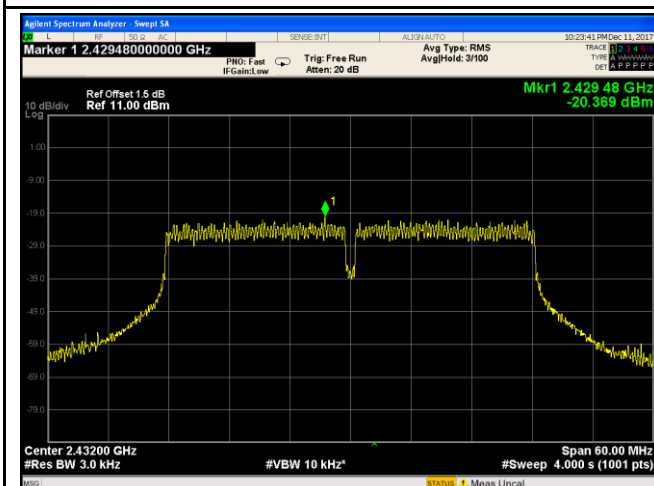
802.11n20 - 11 CH 2462



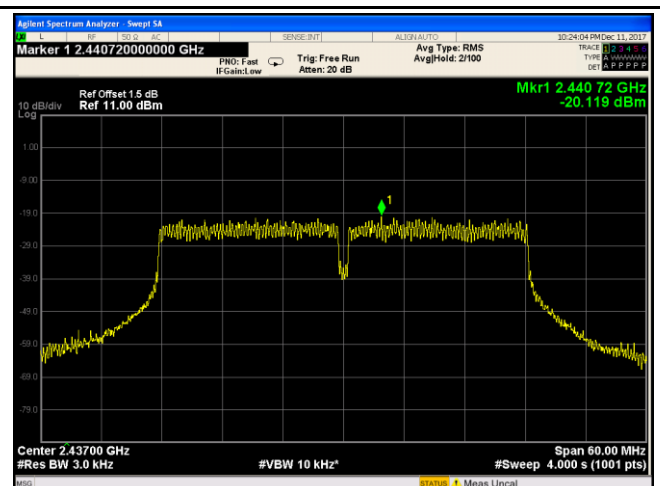
802.11n40 - 3 CH 2422



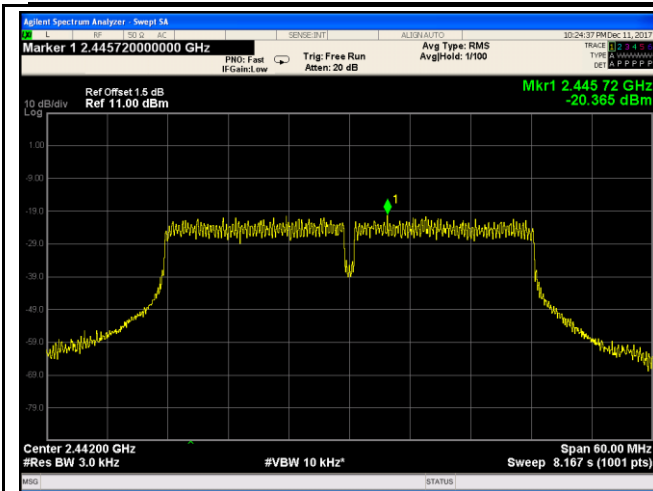
802.11n40 - 4 CH 2427



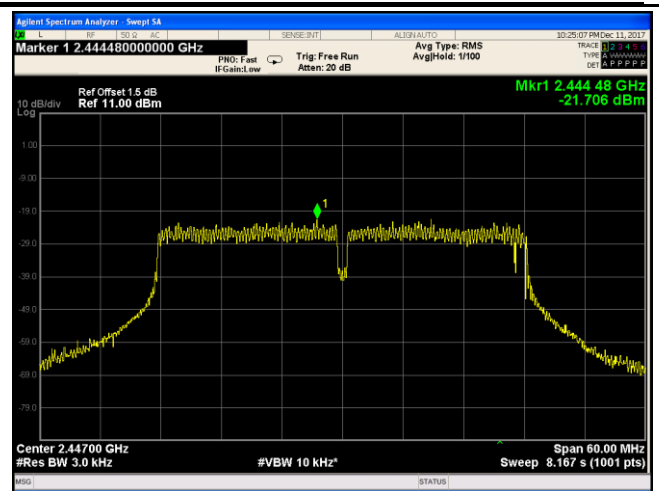
802.11n40 - 5 CH 2432



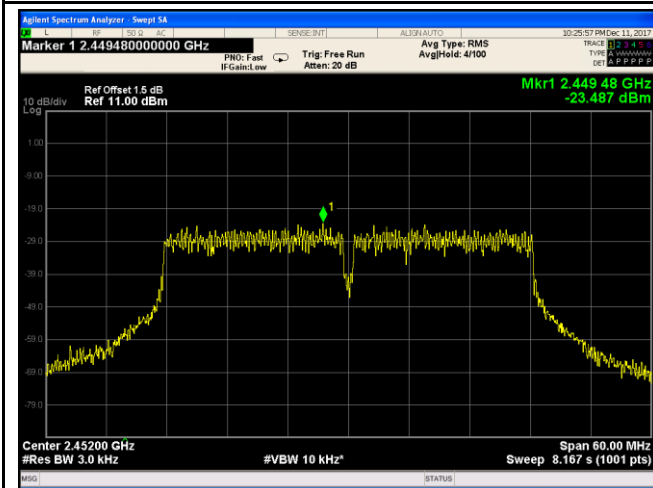
802.11n40 - 6 CH 2437



802.11n40 - 7 CH 2442



802.11n40 - 8 CH 2447



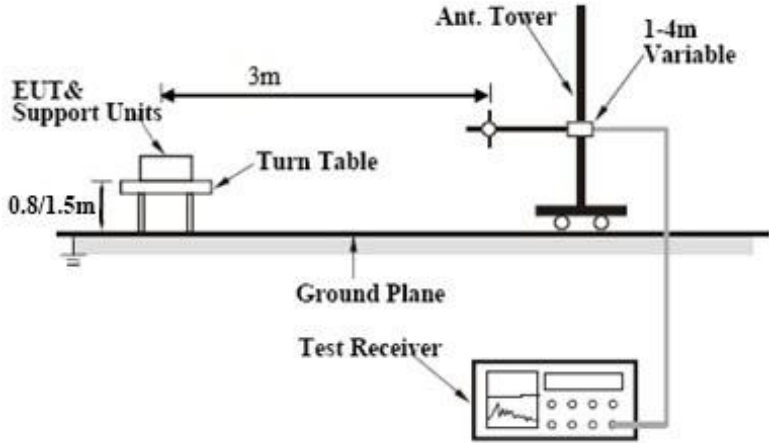
802.11n40 - 9 CH 2452

6.5 Band-Edge & Unwanted Emissions into Non-Restricted Frequency Bands

Temperature	24°C
Relative Humidity	57%
Atmospheric Pressure	1007mbar
Test date :	December 1,9 and 10,2017
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(d)	a)	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.	☒

Test Setup	 The diagram illustrates the test setup for radiated emissions. It features a Turn Table with EUT & Support Units on it, positioned 3m from an Ant. Tower. The Ant. Tower has a 1-4m Variable antenna. The setup is on a Ground Plane. A Test Receiver is connected to the antenna.
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Test Procedure	Radiated Method Only 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. 2. Position the EUT without connection to measurement instrument. Put it on the Rotated table and turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
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	- 3. First, set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, check the emission of EUT, if pass then set Spectrum Analyzer as below: a. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi Peak detection at frequency below 1GHz. b. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with Peak detection for Peak measurement at frequency above 1GHz. c. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz with Peak detection for Average Measurement as below at frequency above 1GHz. - 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency. - 5. Repeat above procedures until all measured frequencies were complete.
Remark	
Result	☒ Pass ☐ Fail

Test Data ☒ Yes ☐ N/A
 Test Plot ☒ Yes (See below) ☐ N/A

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Restricted Band)

Modulation	N(TX)	Freq.(MHz)	Measure Distance (m)	Antenna (White)		Antenna (Blue)		Antenna (Black)		Limit (dBuV/m) PK	Result
				Fre. (MHz) Pk	Level (dBuV/m) PK	Fre. (MHz) Pk	Level (dBuV/m) PK	Fre. (MHz) Pk	Level (dBuV/m) PK		
11b	1	2412	3	2386.03	64.02	2390.00	68.46	2386.11	64.53	74	Pass
11b	1	2462	3	2483.50	66.16	2483.50	63.21	2489.25	62.87	74	Pass
11g	1	2412	3	2390.00	67.14	2390.00	69.26	2390.00	70.77	74	Pass
11g	1	2417	3	2390.00	68.28	2390.00	69.84	2390.00	71.90	74	Pass
11g	1	2422	3	2390.00	69.75	/	/	2390.00	68.67	74	Pass
11g	1	2452	3	2483.50	67.63	2483.50	73.49	2483.50	72.51	74	Pass
11g	1	2457	3	2483.50	70.02	2483.50	72.36	2483.50	70.52	74	Pass
11g	1	2462	3	2483.50	68.41	2483.50	70.98	2483.50	72.44	74	Pass

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Restricted Band)

Modulation	N(TX)	Freq.(MHz)	Measure Distance(m)	Antenna (White+Blue+Black)		Limit (dBuV/m) PK	Result
				Fre.(MHz) Pk	Level(dBuV/m) PK		
HT20	3	2412	3	2388.00	73.44	74	Pass
HT20	3	2417	3	2390.00	70.08	74	Pass
HT20	3	2462	3	2485.90	72.83	74	Pass
HT40	3	2422	3	2385.53	69.85	74	Pass
HT40	3	2427	3	2390.00	71.16	74	Pass
HT40	3	2432	3	2387.76	71.29	74	Pass
HT40	3	2437	3	2390.00	69.93	74	Pass

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HT40	3	2437	3	2485.00	67.94	74	Pass
HT40	3	2442	3	2483.5	70.87	74	Pass
HT40	3	2447	3	2484.10	70.95	74	Pass
HT40	3	2452	3	2483.50	69.58	74	Pass

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Restricted Band)

Modulation	N(TX)	Freq.(MHz)	Measure Distance (m)	Antenna (White)		Antenna (Blue)		Antenna (Black)		Limit (dBuV/m) AV	Result
				Fre. (MHz) AV	Level (dBuV/m) AV	Fre. (MHz) AV	Level (dBuV/m) AV	Fre. (MHz) AV	Level (dBuV/m) AV		
11b	1	2412	3	2386.03	51.25	2390.00	51.50	2386.11	49.96	54	Pass
11b	1	2462	3	2483.50	50.38	2483.50	49.86	2489.25	49.83	54	Pass
11g	1	2412	3	2390.00	51.33	2390.00	52.10	2390.00	53.26	54	Pass
11g	1	2417	3	2390.00	49.32	2390.00	53.71	2390.00	53.21	54	Pass
11g	1	2422	3	2390.00	50.31	/	/	2390.00	51.69	54	Pass
11g	1	2452	3	2483.50	52.44	2483.50	52.91	2483.50	53.84	54	Pass
11g	1	2457	3	2483.50	52.83	2483.50	52.27	2483.50	53.25	54	Pass
11g	1	2462	3	2483.50	52.24	2483.50	53.28	2483.50	53.30	54	Pass

Test Report No.	17070869-CE-R1
Page	64 of 127

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Restricted Band)

Modulation	N(TX)	Freq.(MHz)	Measure Distance(m)	Antenna (White+Blue+Black)		Limit (dBuV/m) AV	Result
				Fre.(MHz) AV	Level(dBuV/m) AV		
HT20	3	2412	3	2390.00	53.21	54	Pass
HT20	3	2417	3	2390.00	51.43	54	Pass
HT20	3	2462	3	2485.30	53.00	54	Pass
HT40	3	2422	3	2384.57	53.03	54	Pass
HT40	3	2427	3	2390.00	52.75	54	Pass
HT40	3	2432	3	2384.57	52.54	54	Pass
HT40	3	2437	3	2390.00	52.52	54	Pass
HT40	3	2437	3	2483.50	51.14	54	Pass
HT40	3	2442	3	2483.50	52.02	54	Pass
HT40	3	2447	3	2484.10	52.78	54	Pass
HT40	3	2452	3	2483.50	52.69	54	Pass

Test Report No.	17070869-CE-R1
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2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Non-restricted Band)

Modulation	N(TX)	Test Freq,(MHz)	(i)-(O)dB			Limit(dB)	Result
			Antenna (White)	Antenna (Blue)	Antenna (Black)		
11b	1	2412	32.67	33.49	48.14	30	Pass
11g	1	2412	31.29	31.59	30.12	30	Pass
11g	1	2417	32.91	31.88	30.10	30	Pass
11g	1	2422	39.78	/	38.24	30	Pass

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2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Non-restricted Band)

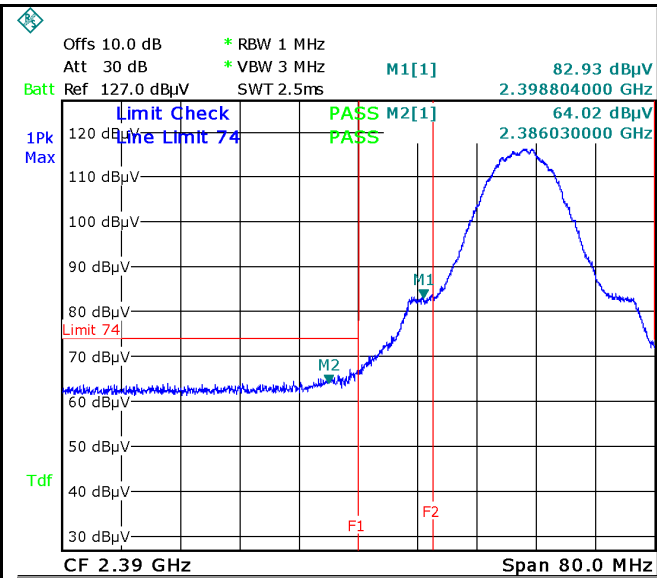
Modulation	N(TX)	Test Freq,(MHz)	(i)-(O)dB	Limit(dB)	Result
			Antenna (White+Blue+Black)		
HT20	3	2412	33.88	30	Pass
HT20	3	2417	32.65	30	Pass
HT40	3	2422	32.63	30	Pass
HT40	3	2427	39.08	30	Pass
HT40	3	2432	34.69	30	Pass
HT40	3	2437	38.69	30	Pass

Test Plots

Restricted frequency band result

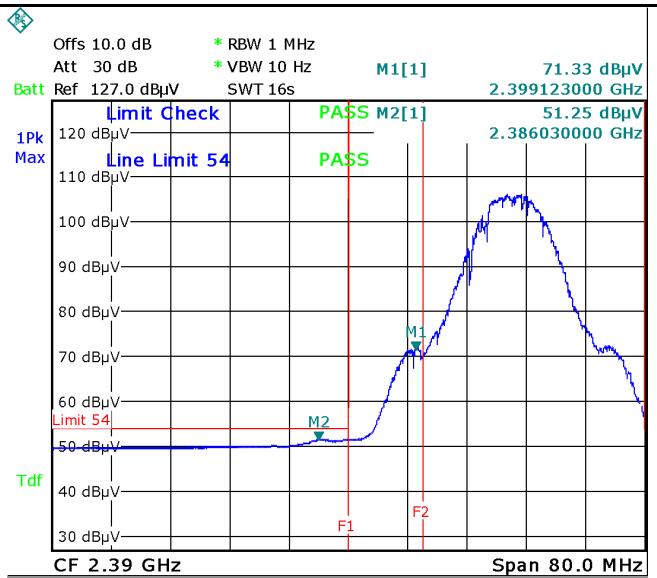
b mode

Antenna (White)



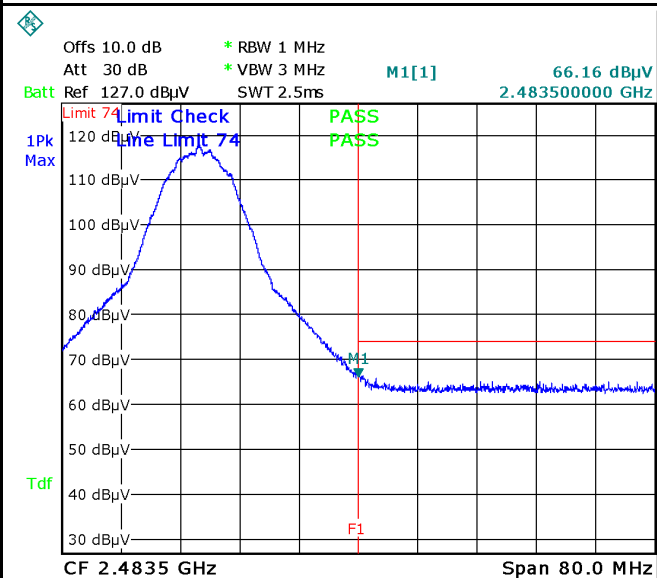
1 CH (Peak) - 802.11b

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



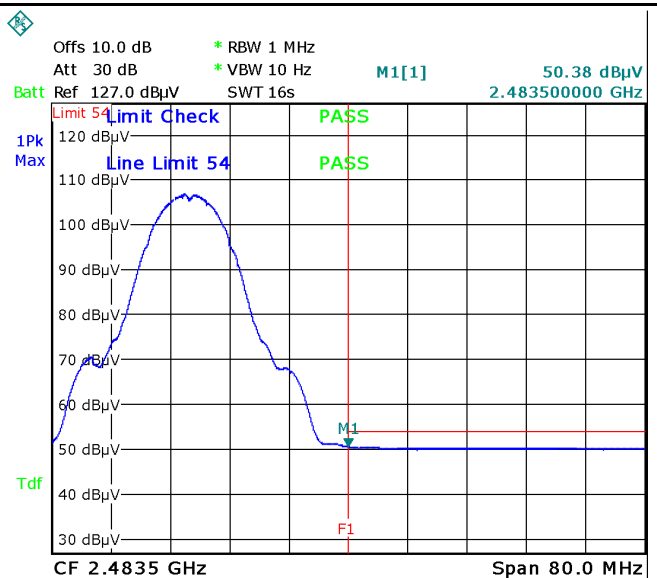
1 CH (Average) - 802.11b

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



11 CH (Peak) - 802.11b

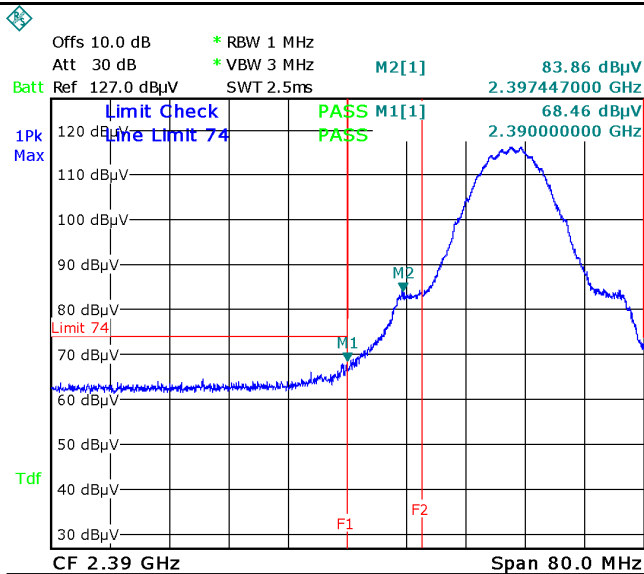
Note: F1 is frequency 2483.5MHz



11 CH (Average) - 802.11b

Note: F1 is frequency 2483.5MHz

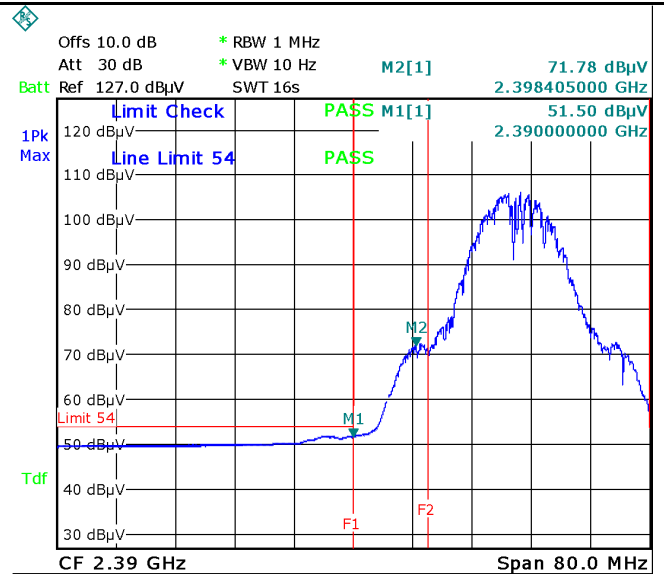
Antenna (Blue):



Date: 1.DEC.2017 10:37:54

1 CH (Peak) - 802.11b

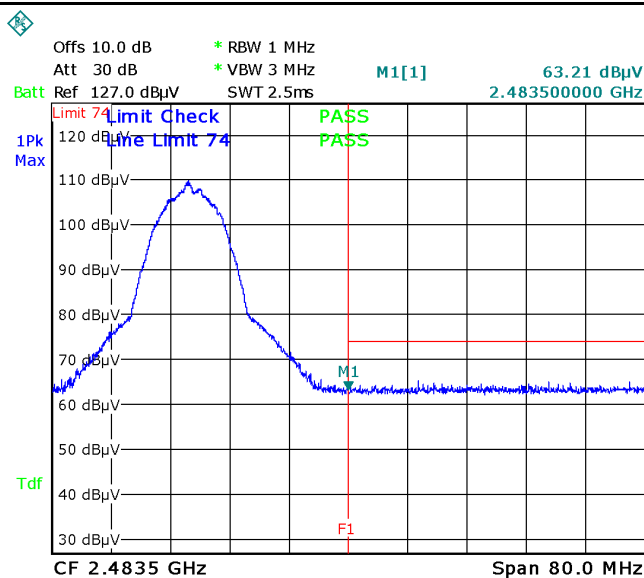
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 1.DEC.2017 10:40:10

1 CH (Average) - 802.11b

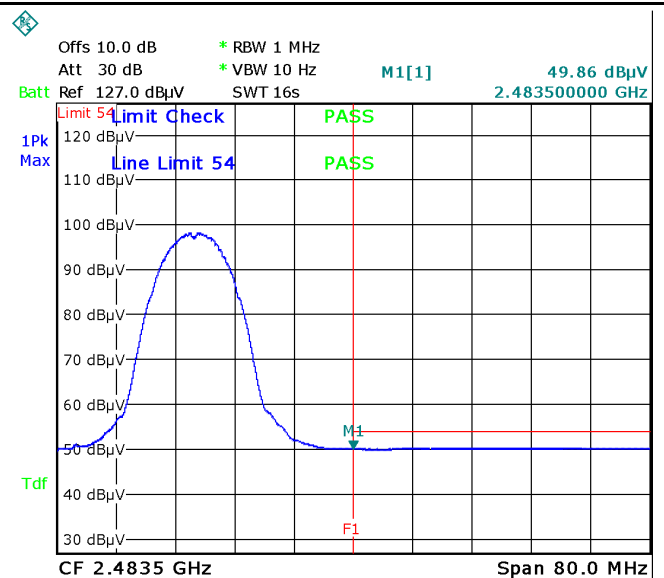
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 1.DEC.2017 10:33:50

11 CH (Peak) - 802.11b

Note: F1 is frequency 2483.5MHz

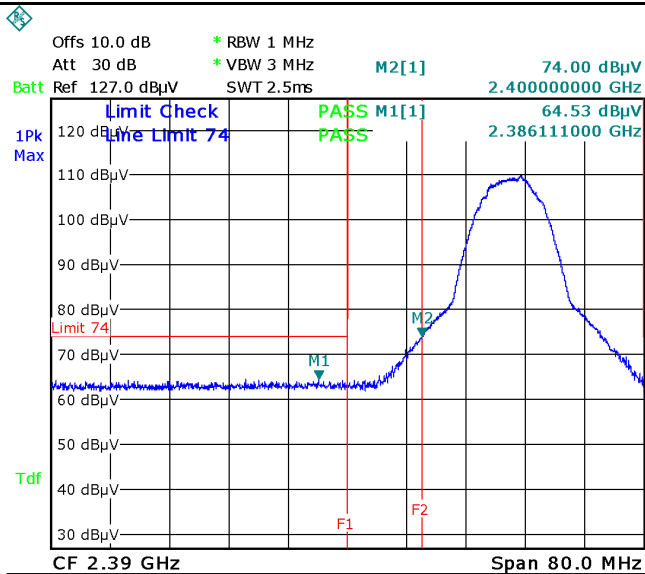


Date: 1.DEC.2017 10:34:36

11 CH (Average) - 802.11b

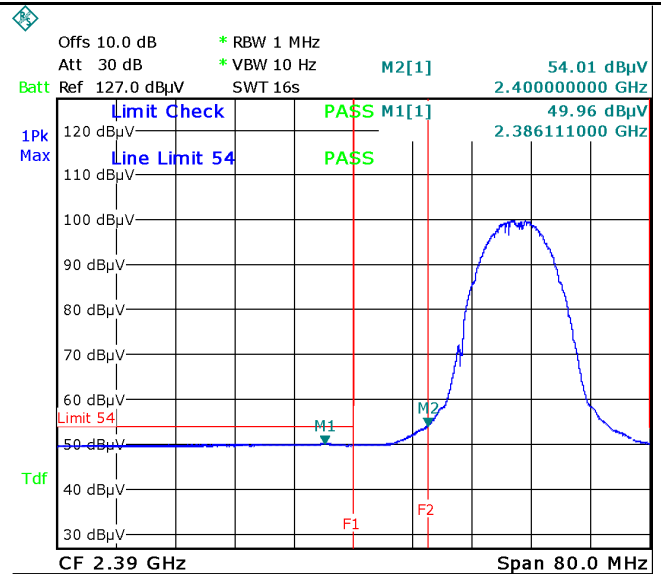
Note: F1 is frequency 2483.5MHz

Antenna (Black):



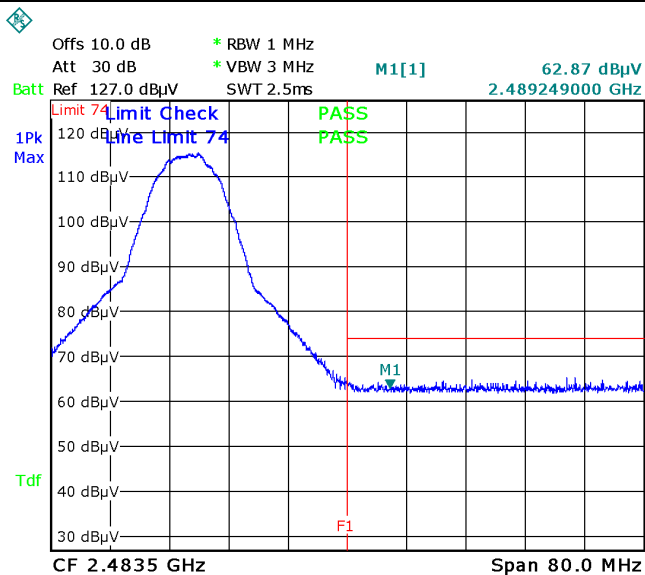
1 CH (Peak) - 802.11b

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



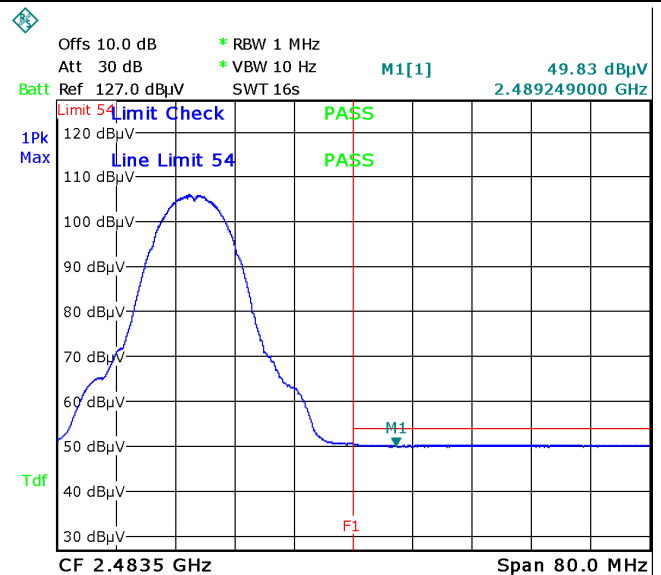
1 CH (Average) - 802.11b

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



1 CH (Peak) - 802.11b

Note: F1 is frequency 2483.5MHz

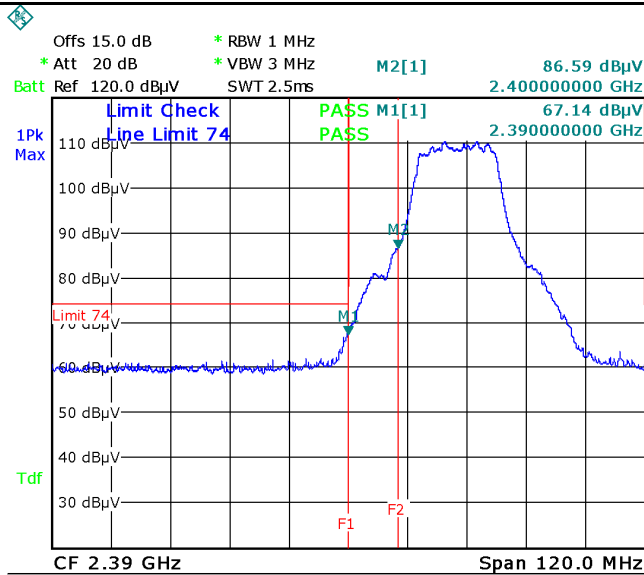


11 CH (Average) - 802.11b

Note: F1 is frequency 2483.5MHz

g mode:

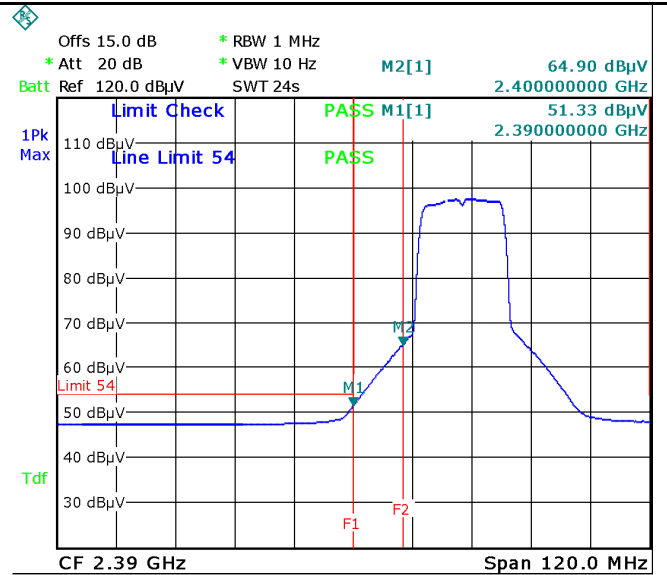
Antenna (White):



Date: 9.DEC.2017 15:04:56

1 CH (Peak) - 802.11g

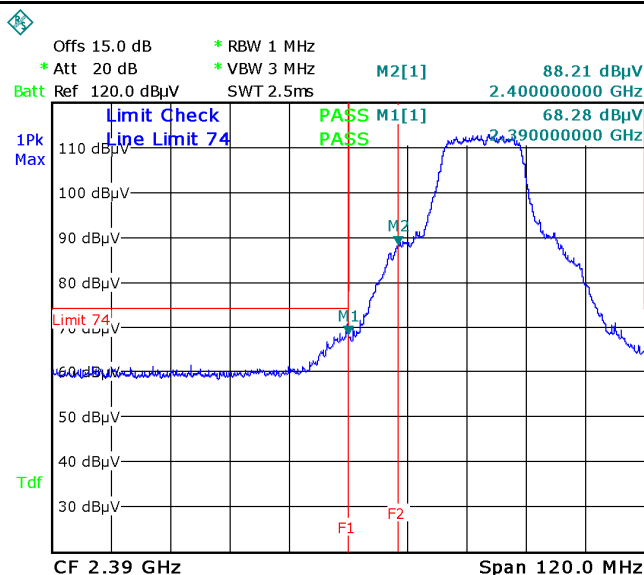
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 9.DEC.2017 15:03:56

1CH (Average) - 802.11g

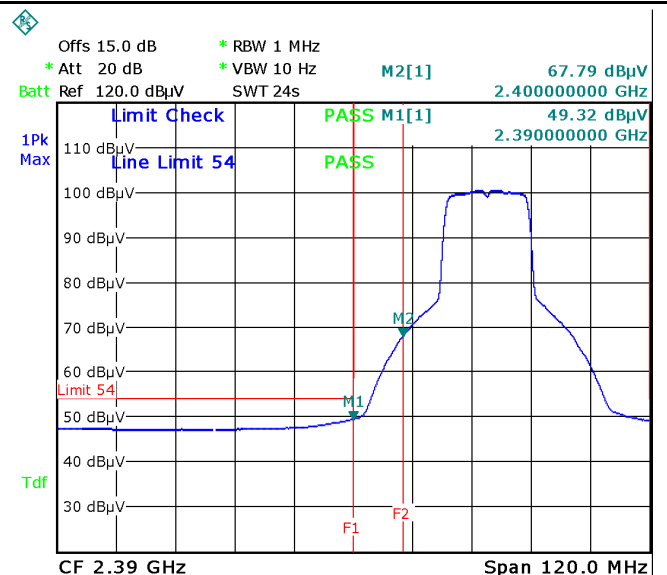
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 9.DEC.2017 15:04:01

2 CH (Peak) - 802.11g

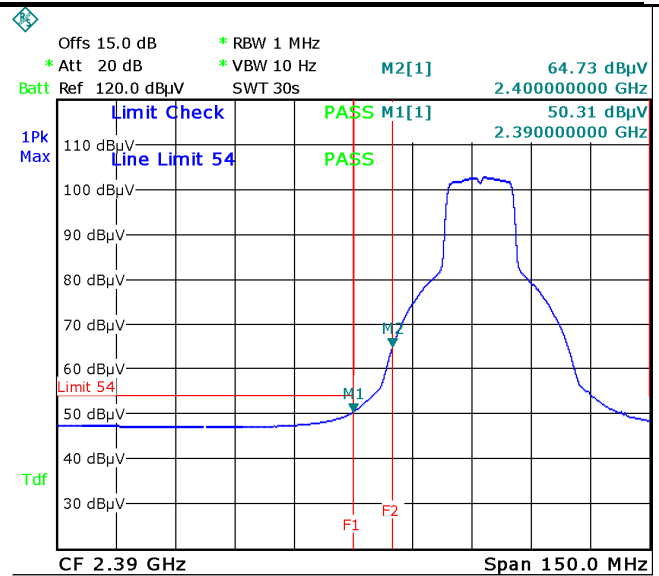
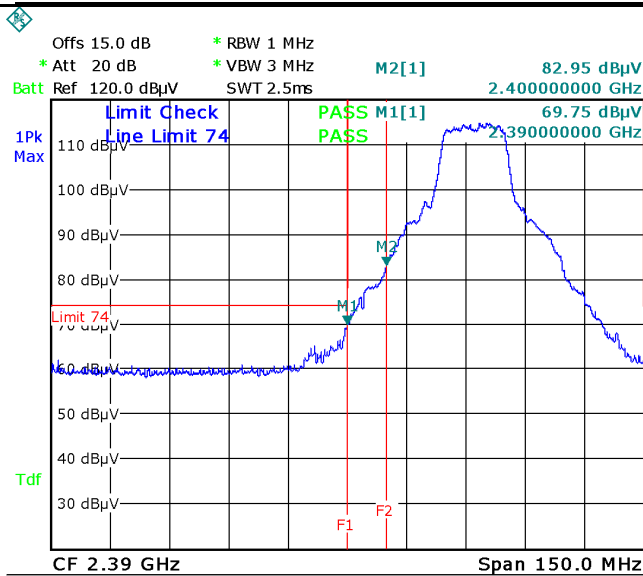
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 9.DEC.2017 15:33:07

2 CH (Average) - 802.11g

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

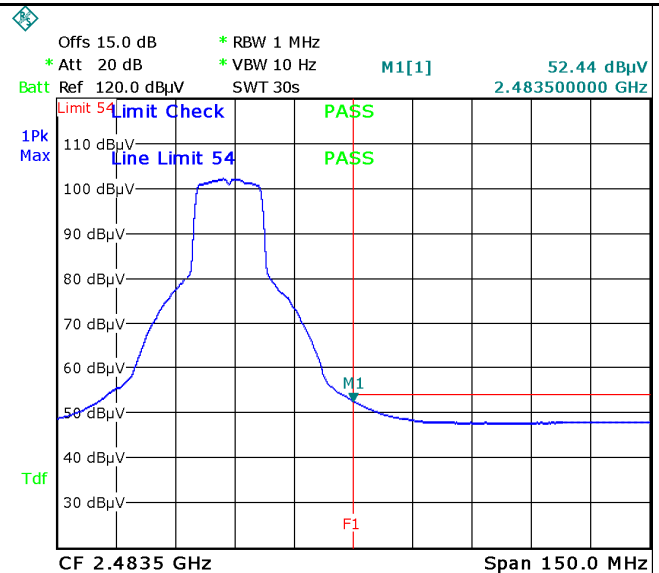
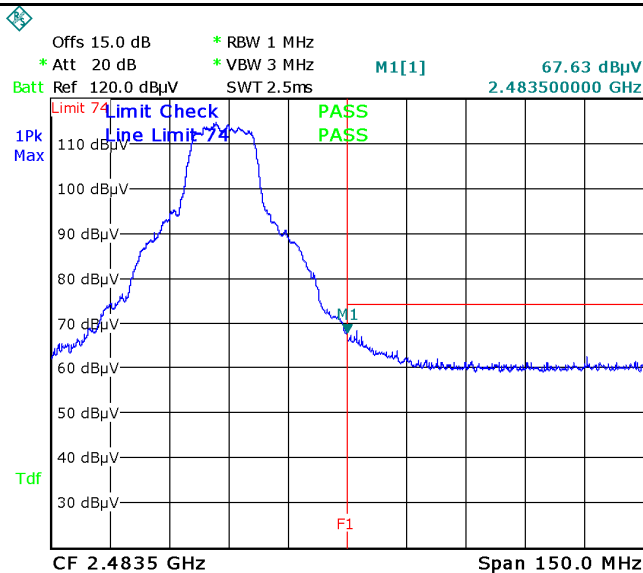


3 CH (Peak) - 802.11g

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

3 CH (Average) - 802.11g

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

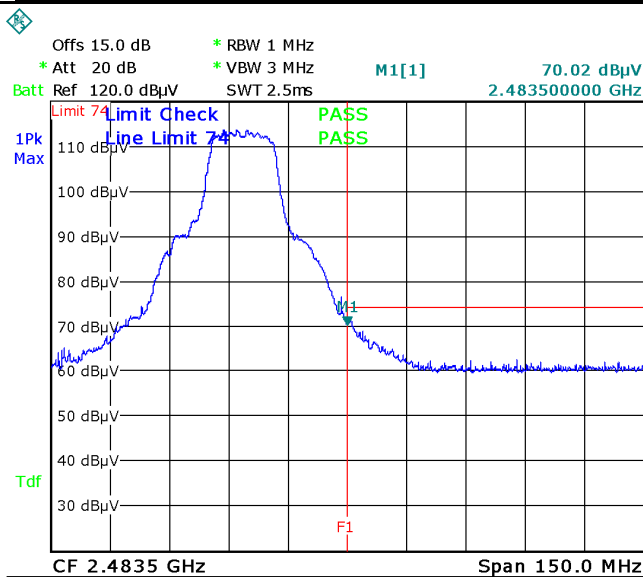


9 CH (Peak) - 802.11g

Note: F1 is frequency 2483.5MHz

9 CH (Average) - 802.11g

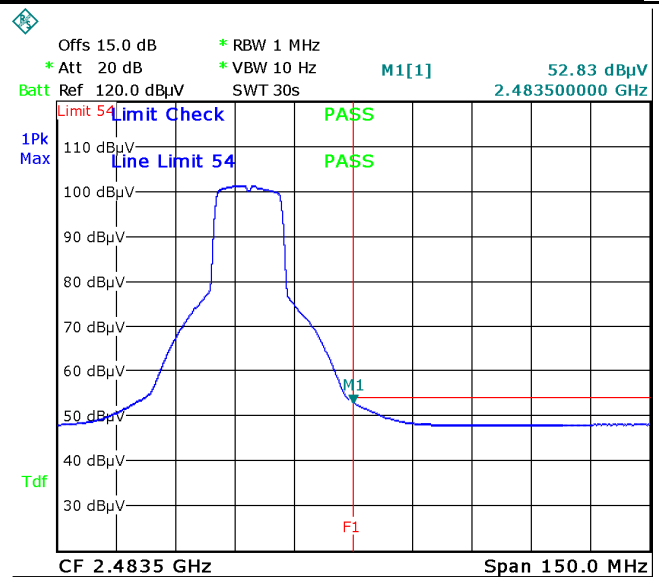
Note: F1 is frequency 2483.5MHz



Date: 9.DEC.2017 16:07:25

10 CH (Peak) - 802.11g

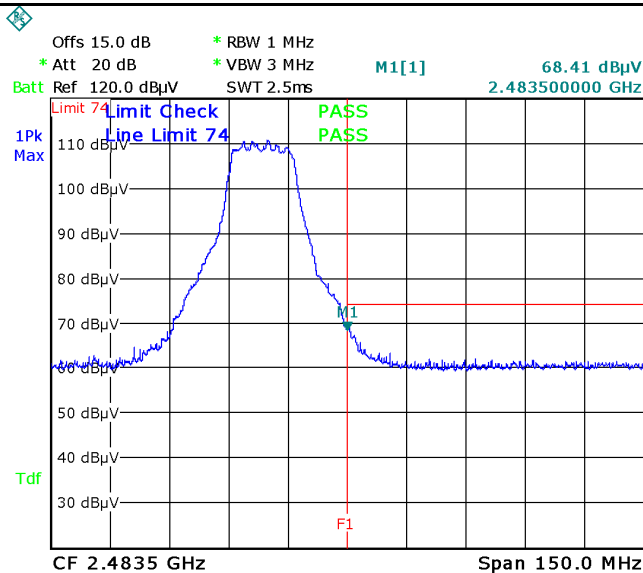
Note: F1 is frequency 2483.5MHz



Date: 9.DEC.2017 16:09:48

10 CH (Average) - 802.11g

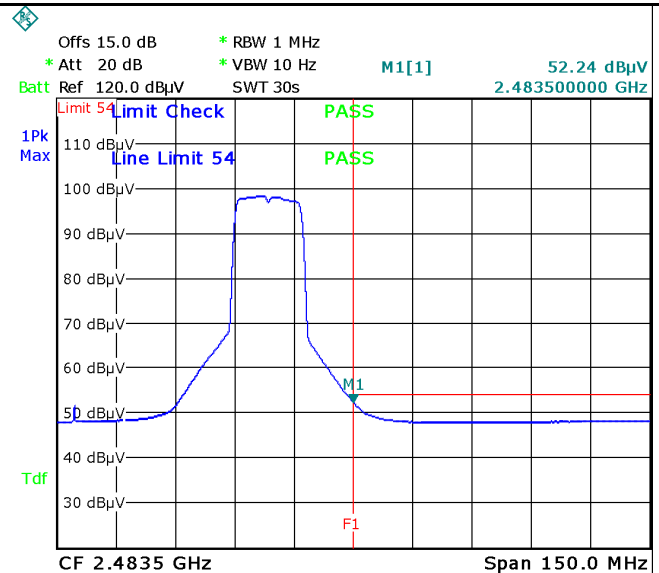
Note: F1 is frequency 2483.5MHz



Date: 9.DEC.2017 16:00:04

11 CH (Peak) - 802.11g

Note: F1 is frequency 2483.5MHz

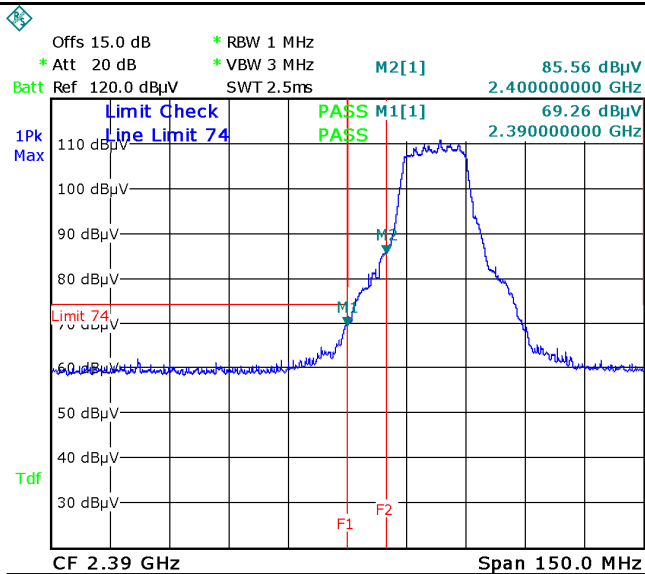


Date: 9.DEC.2017 15:59:15

11 CH (Average) - 802.11g

Note: F1 is frequency 2483.5MHz

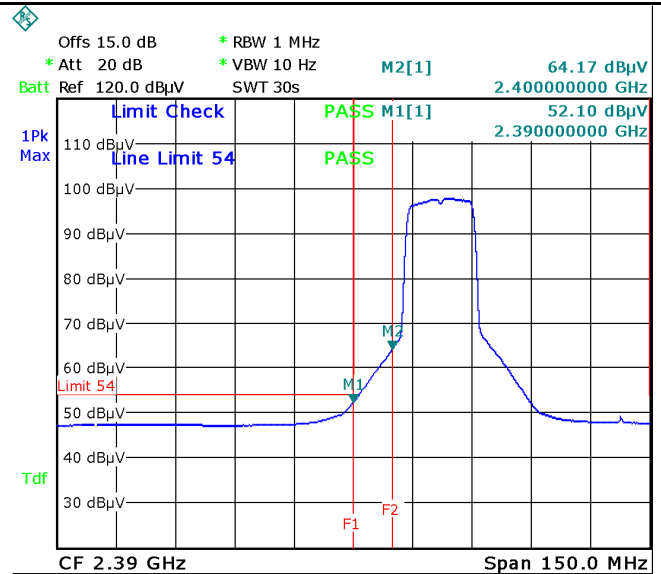
Antenna (Blue):



Date: 9.DEC.2017 16:35:18

1 CH (Peak) - 802.11g

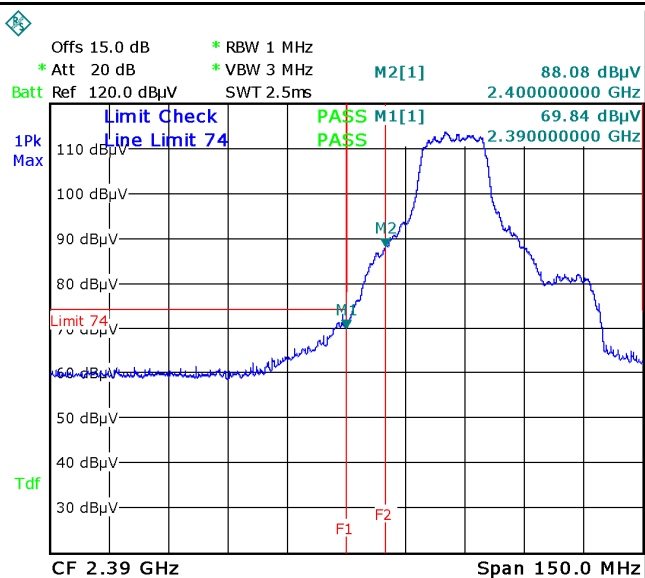
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 9.DEC.2017 16:34:52

1 CH (Average) - 802.11g

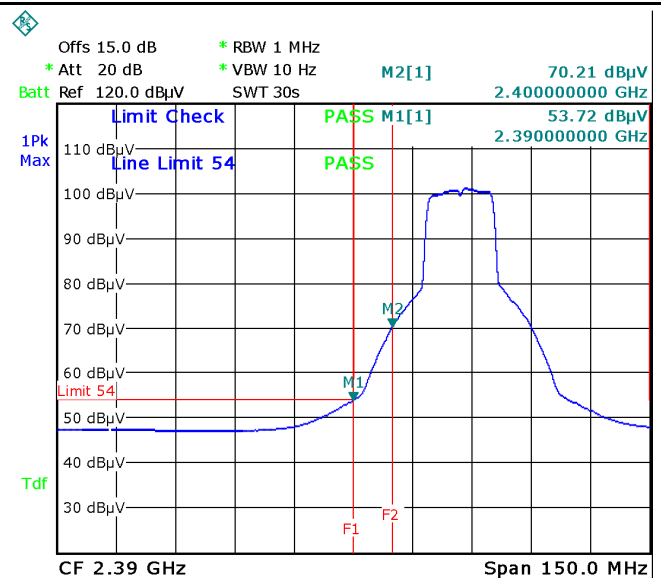
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 9.DEC.2017 16:39:57

2 CH (Peak) - 802.11g

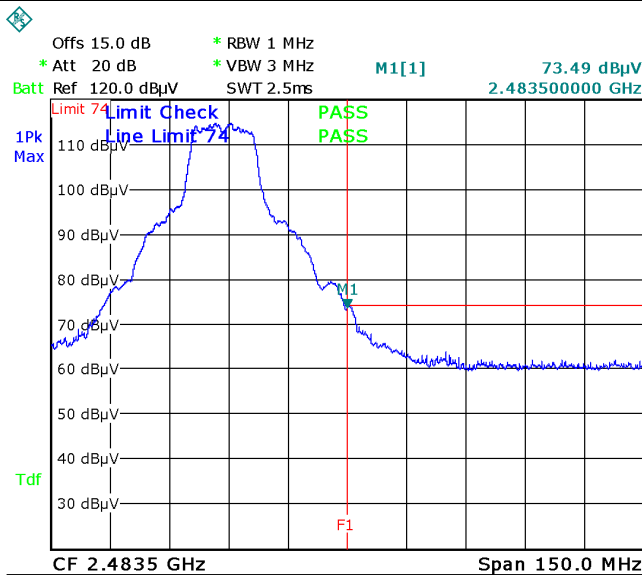
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 9.DEC.2017 16:40:50

2 CH (Average) - 802.11g

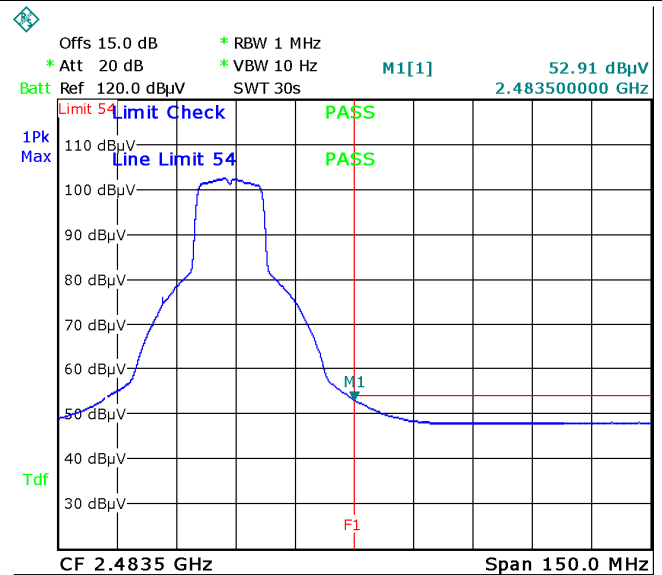
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 9.DEC.2017 17:16:52

9 CH (Peak) - 802.11g

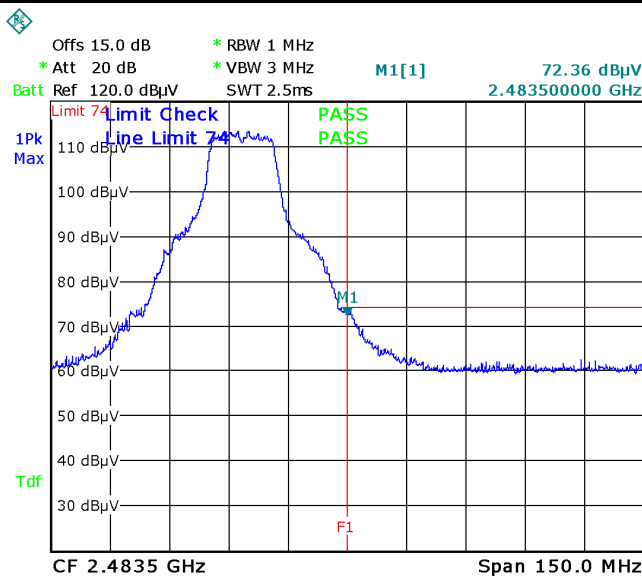
Note: F1 is frequency 2483.5MHz



Date: 9.DEC.2017 17:17:50

9 CH (Average) - 802.11g

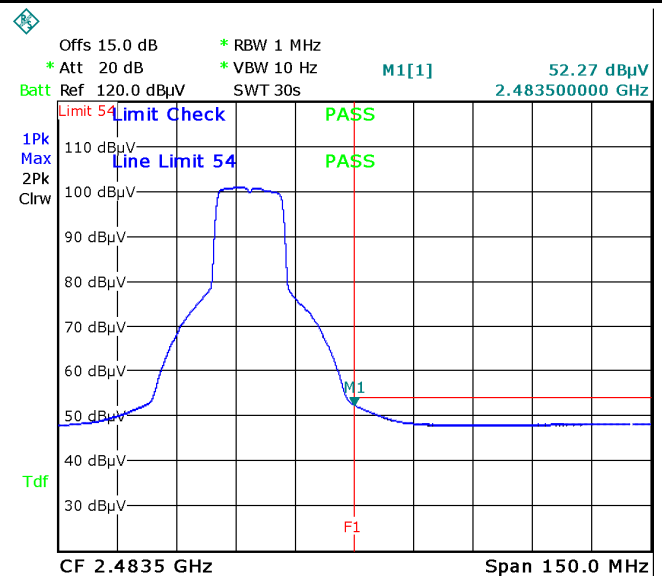
Note: F1 is frequency 2483.5MHz



Date: 9.DEC.2017 17:13:49

10 CH (Peak) - 802.11g

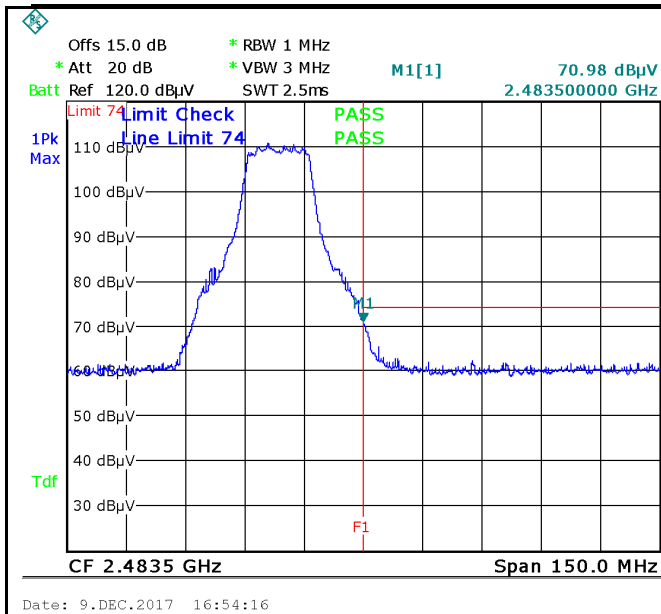
Note: F1 is frequency 2483.5MHz



Date: 9.DEC.2017 17:01:06

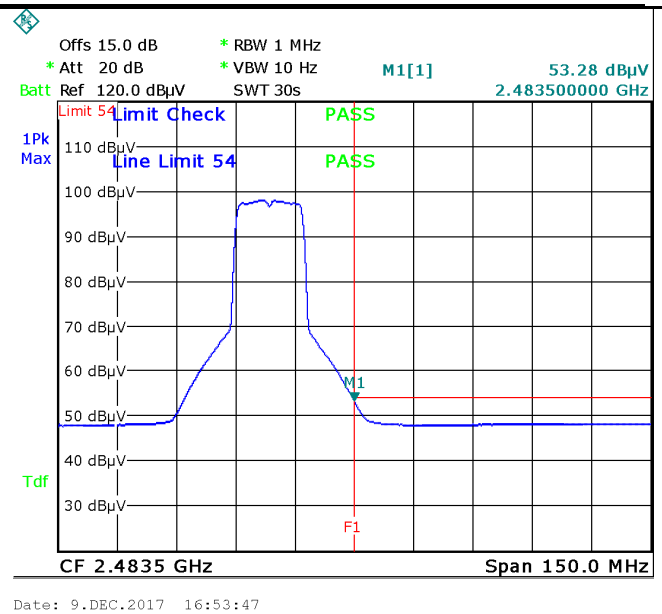
10 CH (Average) - 802.11g

Note: F1 is frequency 2483.5MHz



11 CH (Peak) - 802.11g

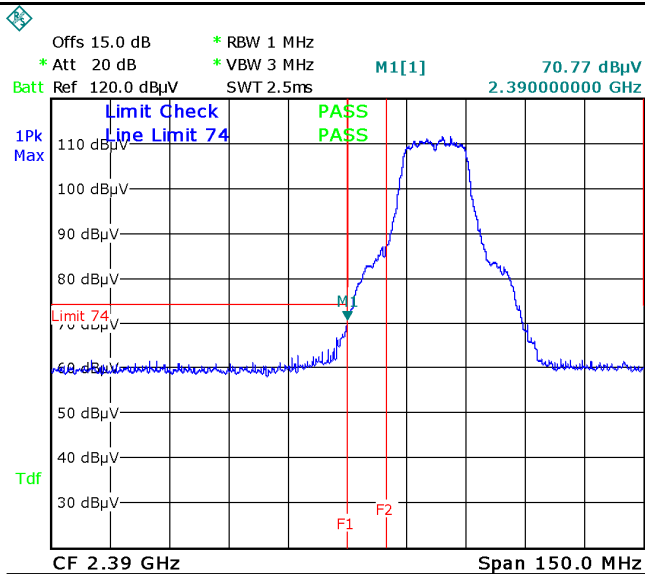
Note: F1 is frequency 2483.5MHz



11 CH (Average) - 802.11g

Note: F1 is frequency 2483.5MHz

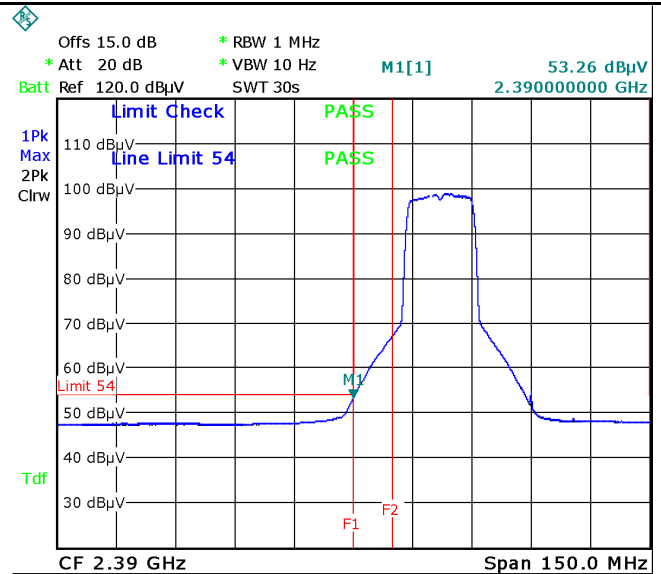
Antenna (Black):



Date: 9.DEC.2017 17:48:19

1 CH (Peak) - 802.11g

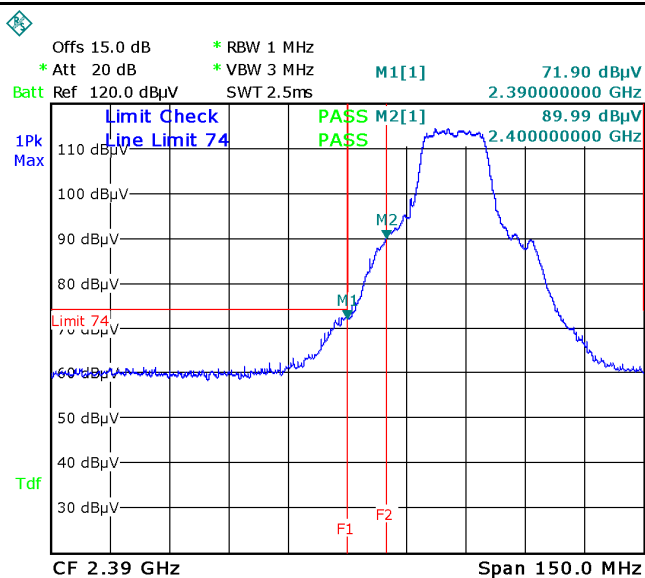
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 9.DEC.2017 17:47:40

1CH (Average) - 802.11g

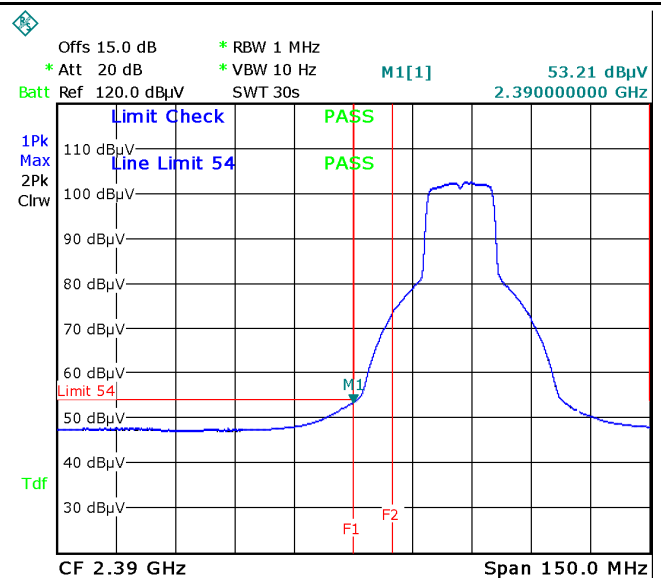
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 9.DEC.2017 18:37:00

2 CH (Peak) - 802.11g

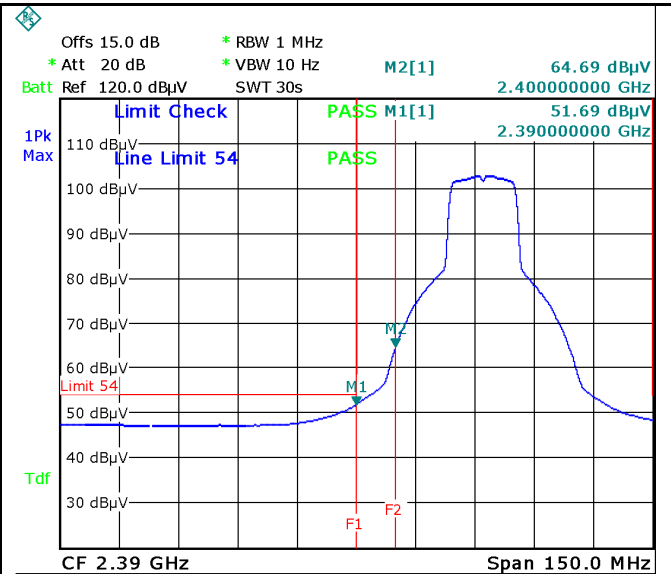
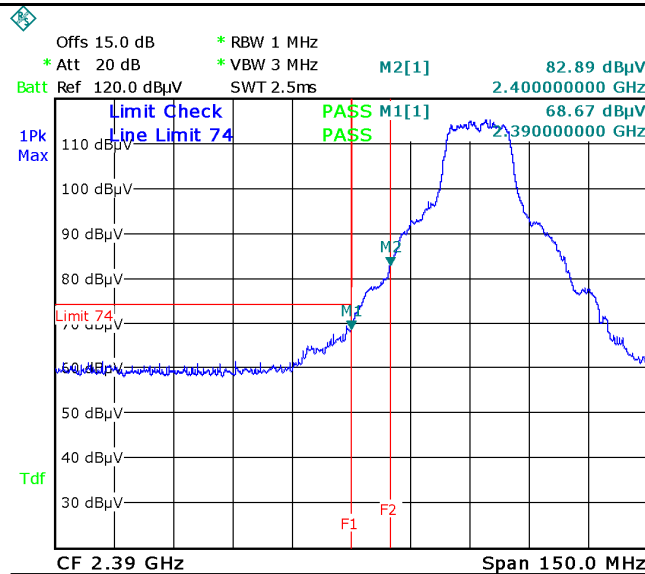
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 9.DEC.2017 17:52:41

2 CH (Average) - 802.11g

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

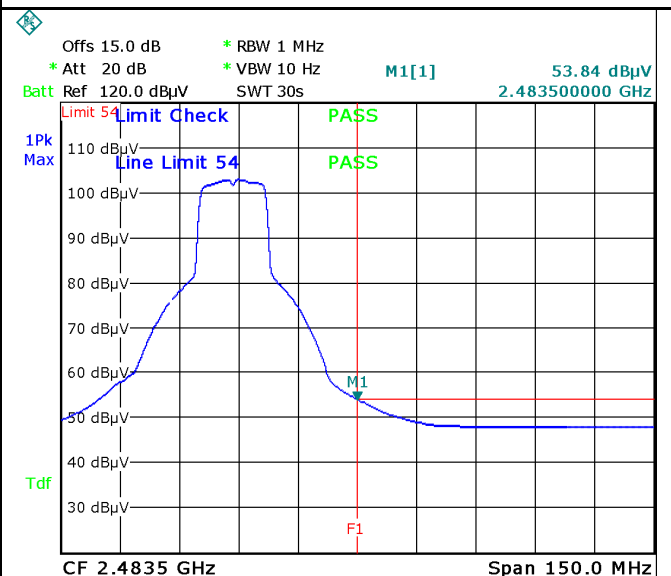
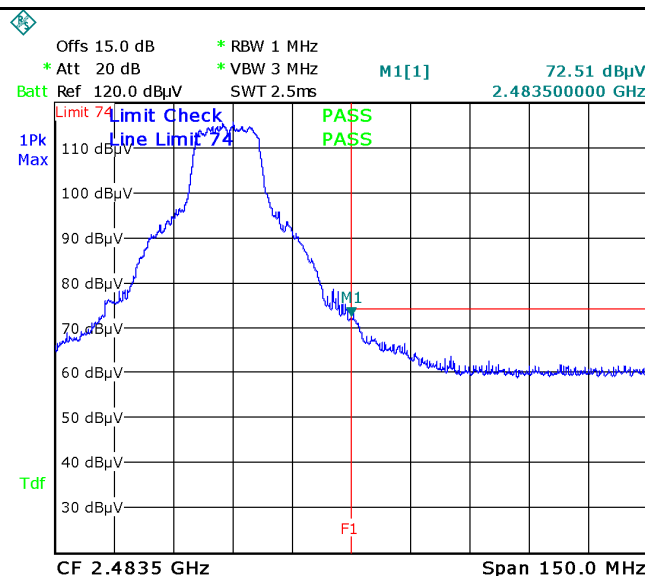


3 CH (Peak) - 802.11g

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

3 CH (Average) - 802.11g

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

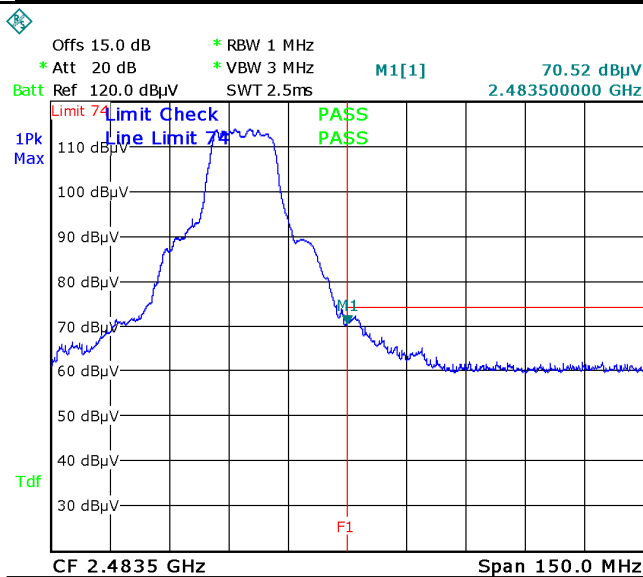


9 CH (Peak) - 802.11g

Note: F1 is frequency 2483.5MHz

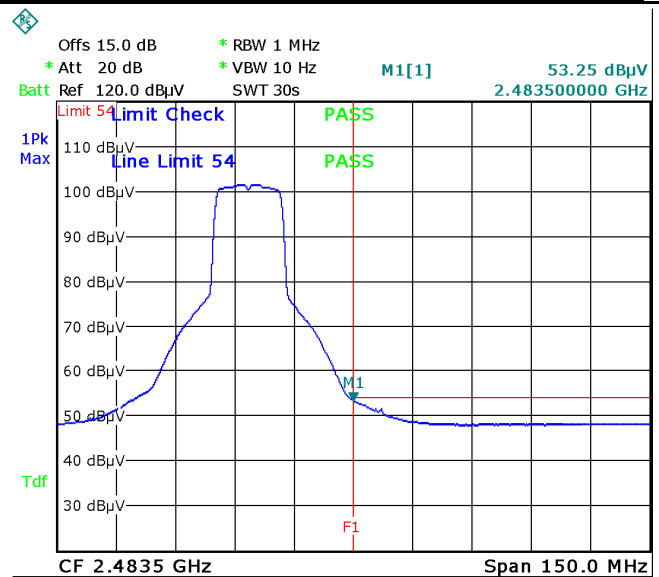
9 CH (Average) - 802.11g

Note: F1 is frequency 2483.5MHz



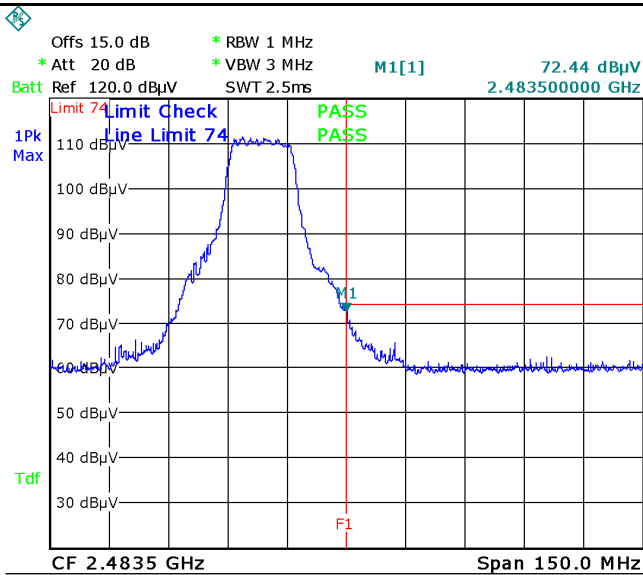
10 CH (Peak) - 802.11g

Note: F1 is frequency 2483.5MHz



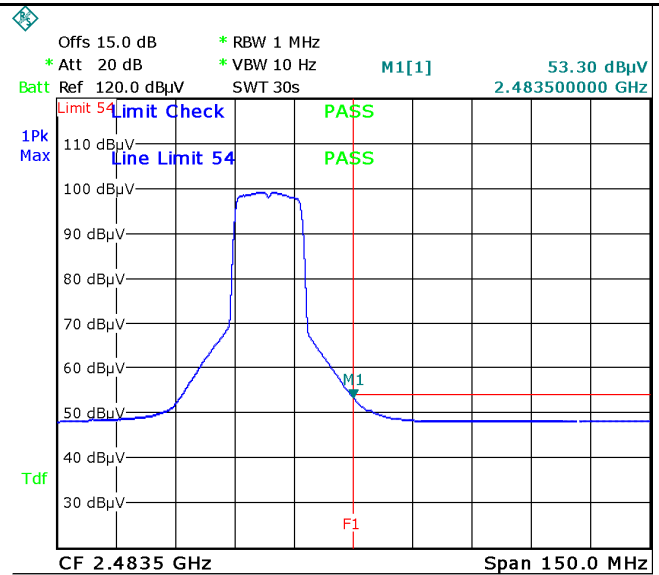
10 CH (Average) - 802.11g

Note: F1 is frequency 2483.5MHz



11 CH (Peak) - 802.11g

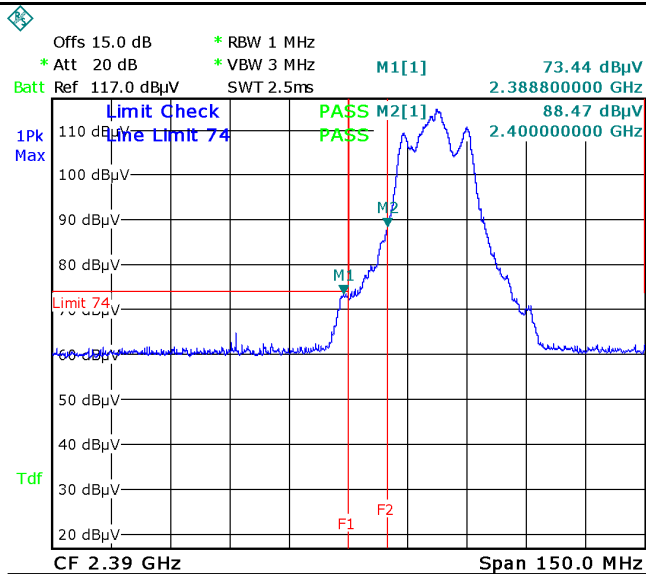
Note: F1 is frequency 2483.5MHz



11 CH (Average) - 802.11g

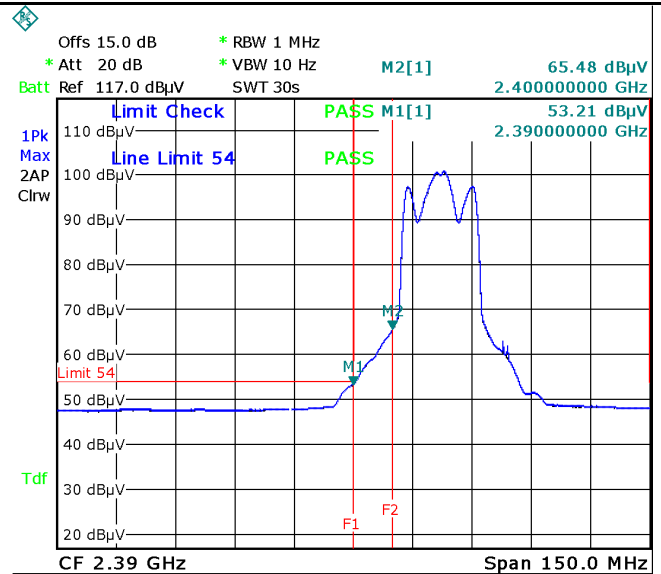
Note: F1 is frequency 2483.5MHz

N20 mode:



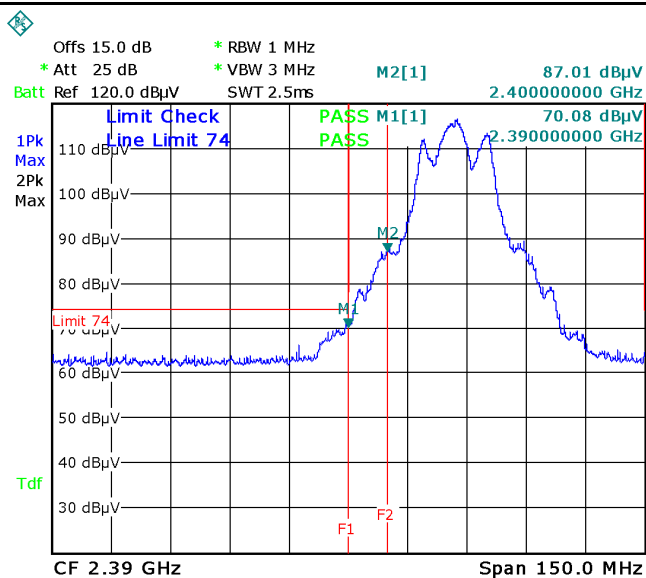
1 CH (Peak) - 802.11n20

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



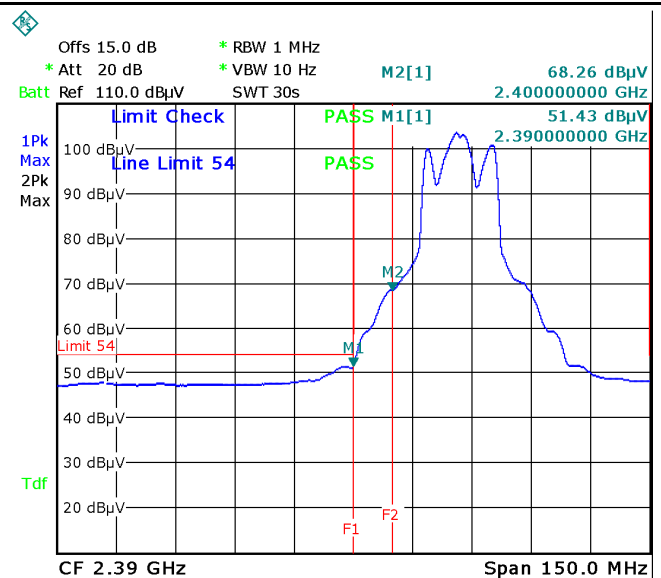
1CH (Average) - 802.11n20

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



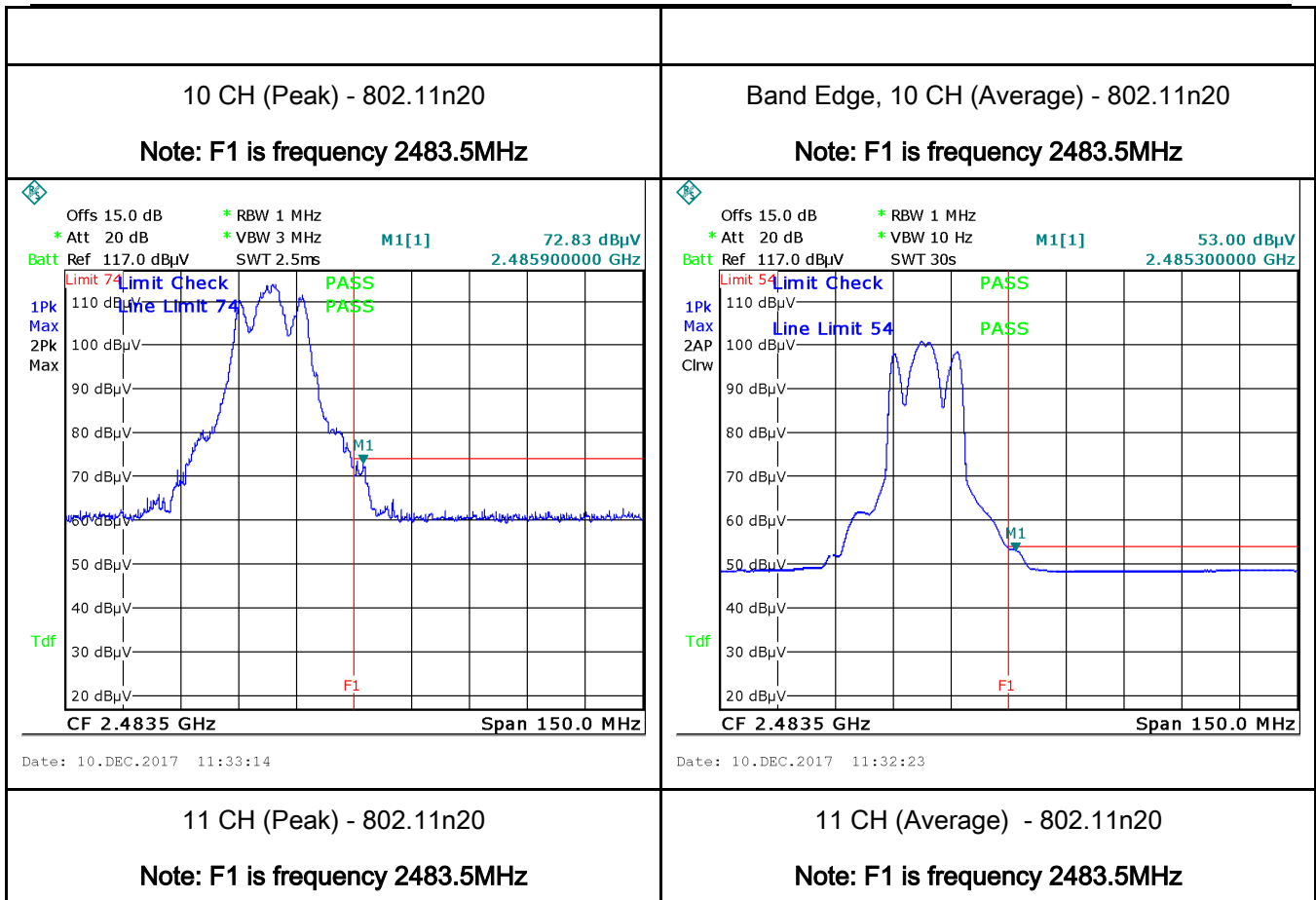
2 CH (Peak) - 802.11n20

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

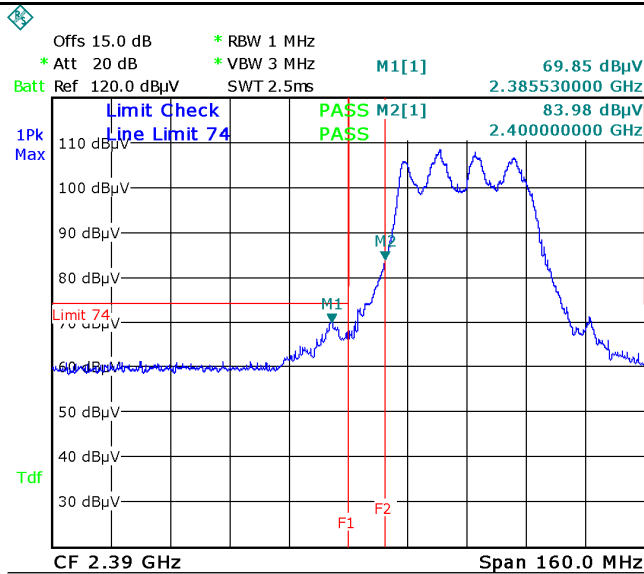


2 CH (Average) - 802.11n20

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

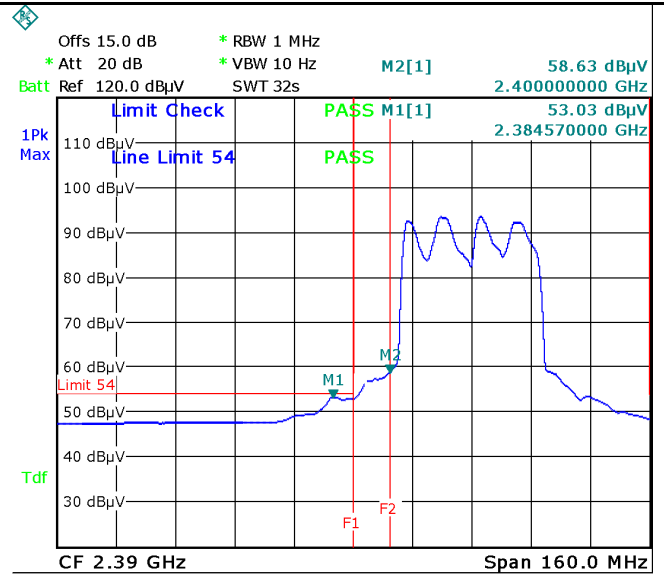


N40 mode:



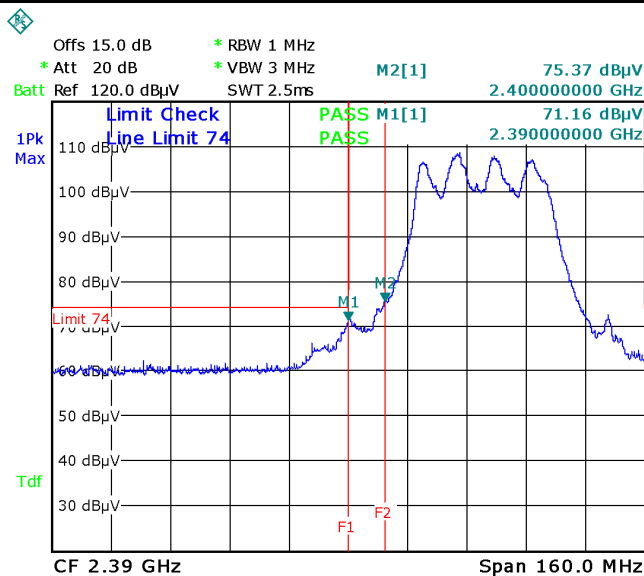
CH 3 (Peak) - 802.11n40

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



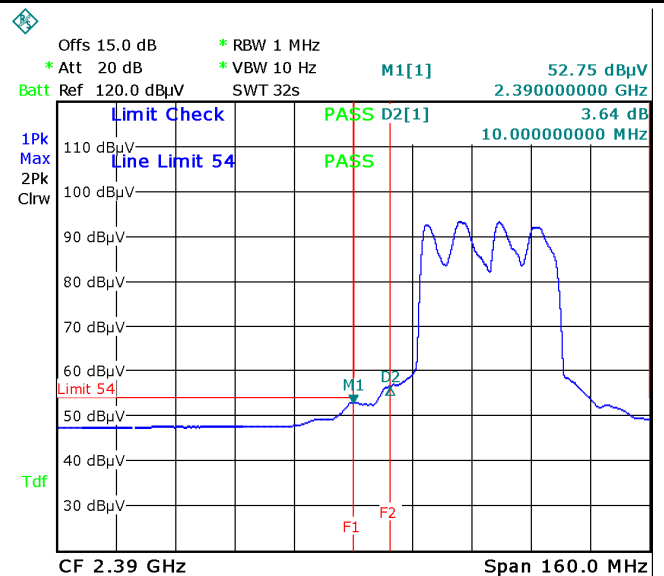
CH 3 (Average) - 802.11n40

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



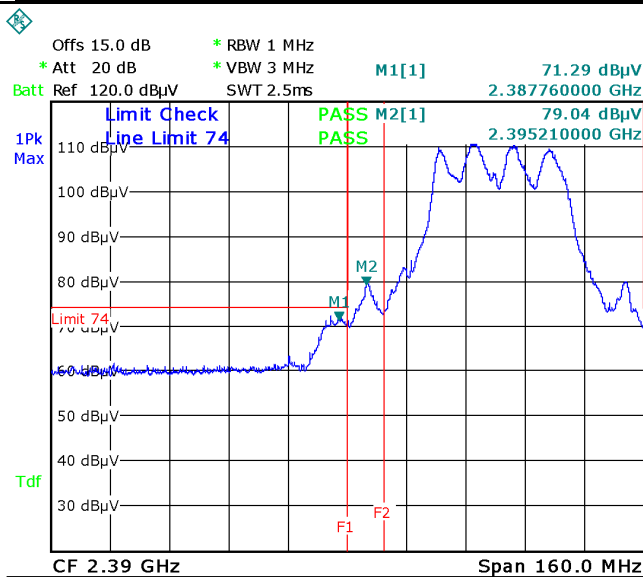
CH 4 (Peak) - 802.11n40

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



CH 4 (Average) - 802.11n40

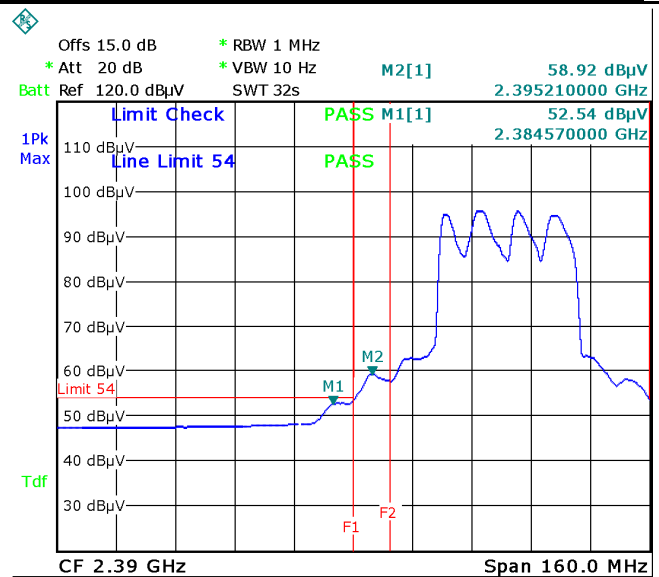
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 10.DEC.2017 15:22:52

CH 5 (Peak) - 802.11n40

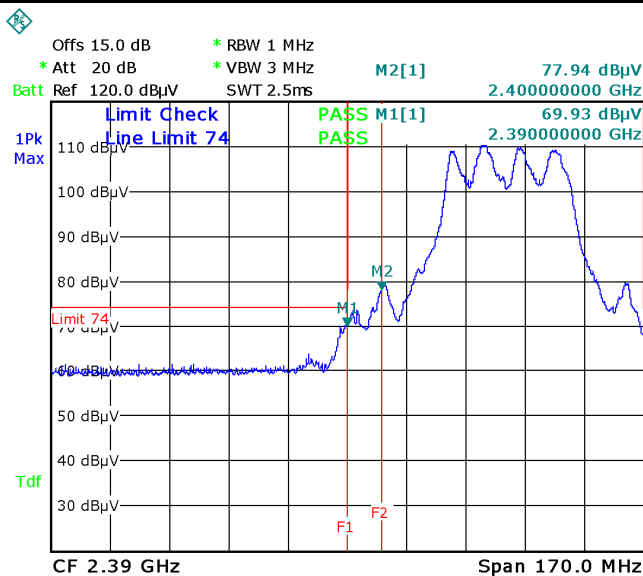
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 10.DEC.2017 15:22:22

CH 5 (Average) - 802.11n40

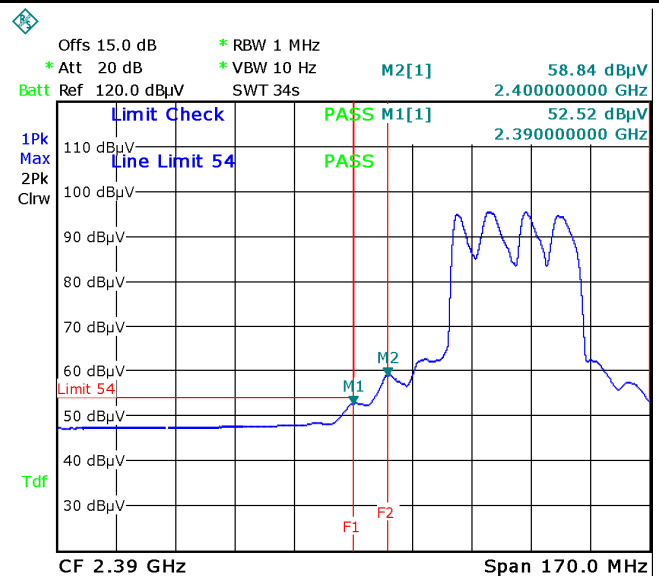
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 10.DEC.2017 15:33:59

CH 6 (Peak) - 802.11n40

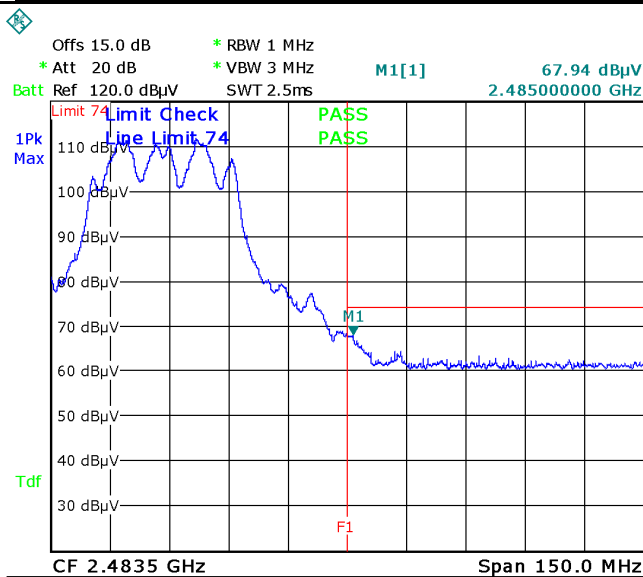
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



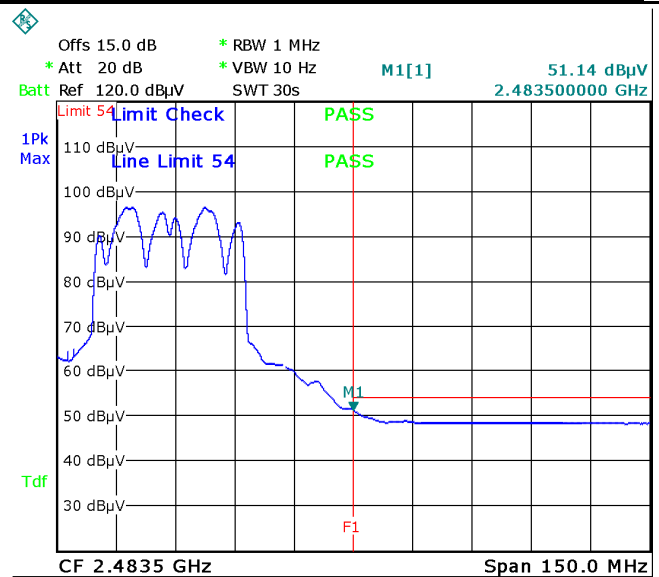
Date: 10.DEC.2017 15:33:17

CH 6 (Average) - 802.11n40

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 10.DEC.2017 17:10:59



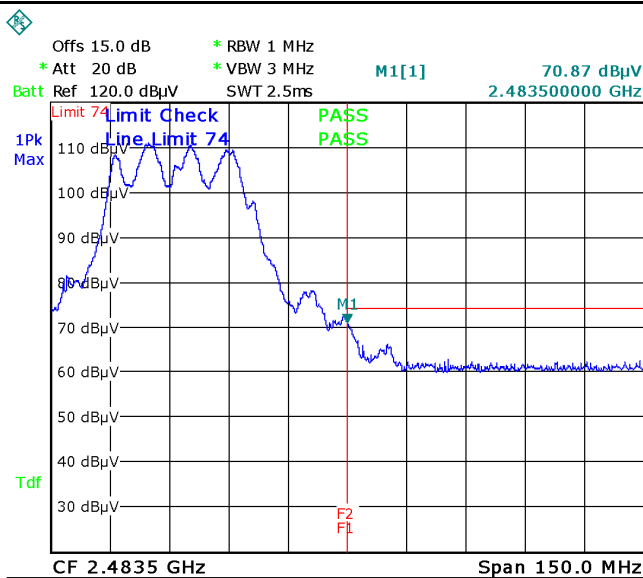
Date: 10.DEC.2017 17:12:00

CH 6 (Peak) - 802.11n40

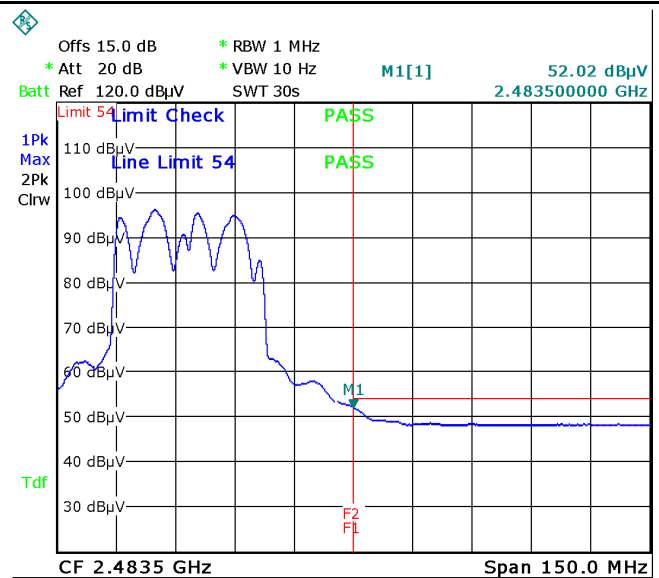
Note: F1 is frequency 2483.5MHz

CH 6 (Average) - 802.11n40

Note: F1 is frequency 2483.5MHz



Date: 10.DEC.2017 16:24:24



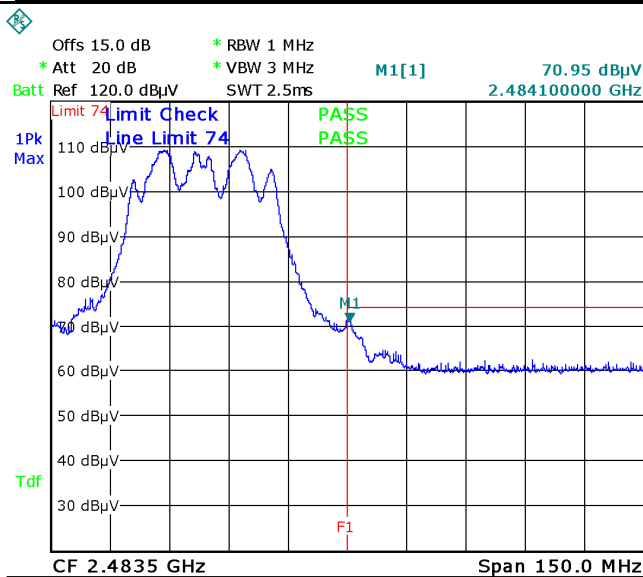
Date: 10.DEC.2017 16:23:47

CH 7 (Peak) - 802.11n40

Note: F1 is frequency 2483.5MHz

CH 7 (Average) - 802.11n40

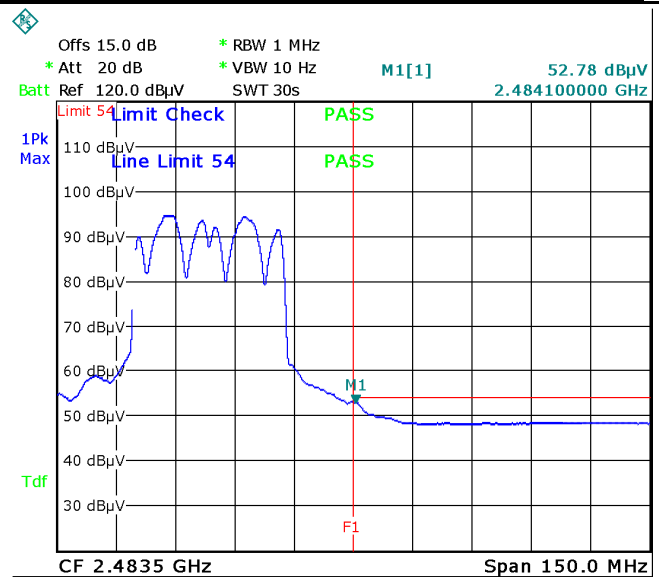
Note: F1 is frequency 2483.5MHz



Date: 10.DEC.2017 16:47:40

CH 8 (Peak) - 802.11n40

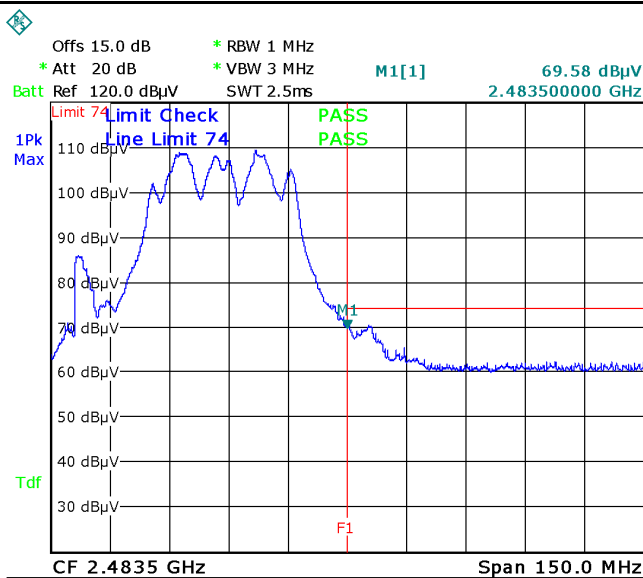
Note: F1 is frequency 2483.5MHz



Date: 10.DEC.2017 16:47:09

CH 8 (Average) - 802.11n40

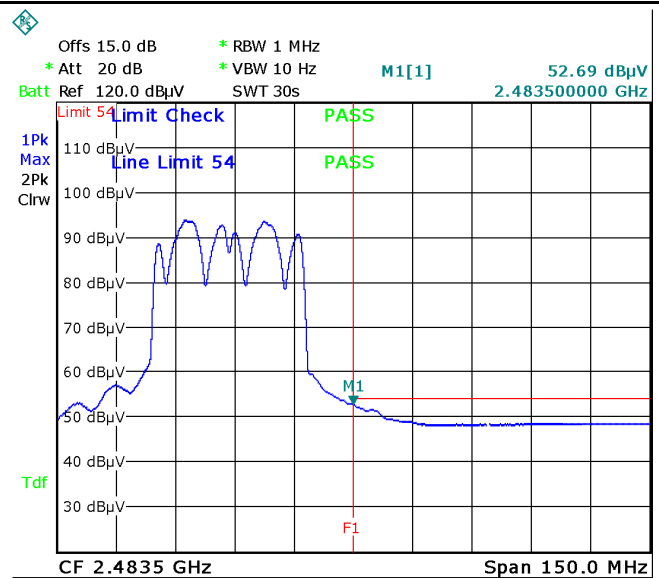
Note: F1 is frequency 2483.5MHz



Date: 10.DEC.2017 17:06:29

CH 9 (Peak) - 802.11n40

Note: F1 is frequency 2483.5MHz



Date: 10.DEC.2017 17:05:27

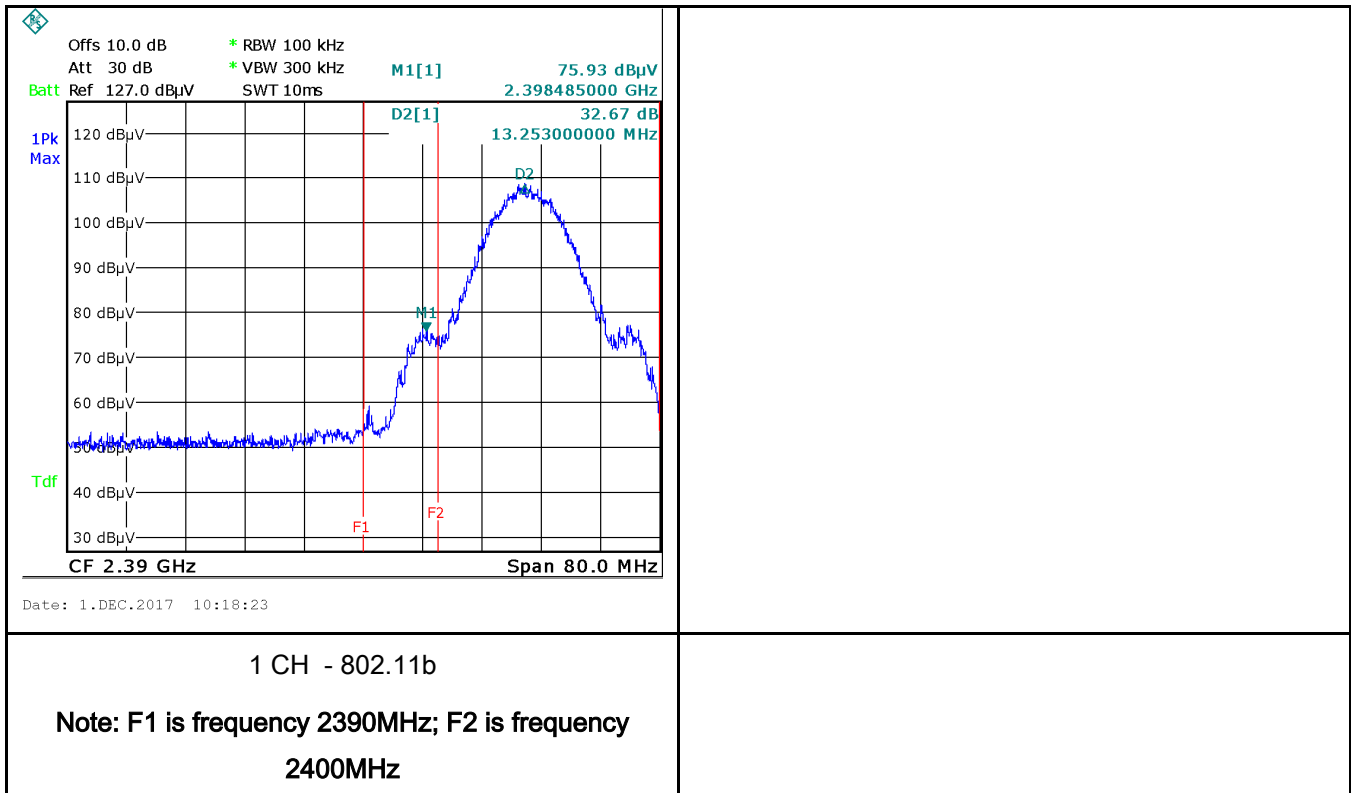
CH 9 (Average) - 802.11n40

Note: F1 is frequency 2483.5MHz

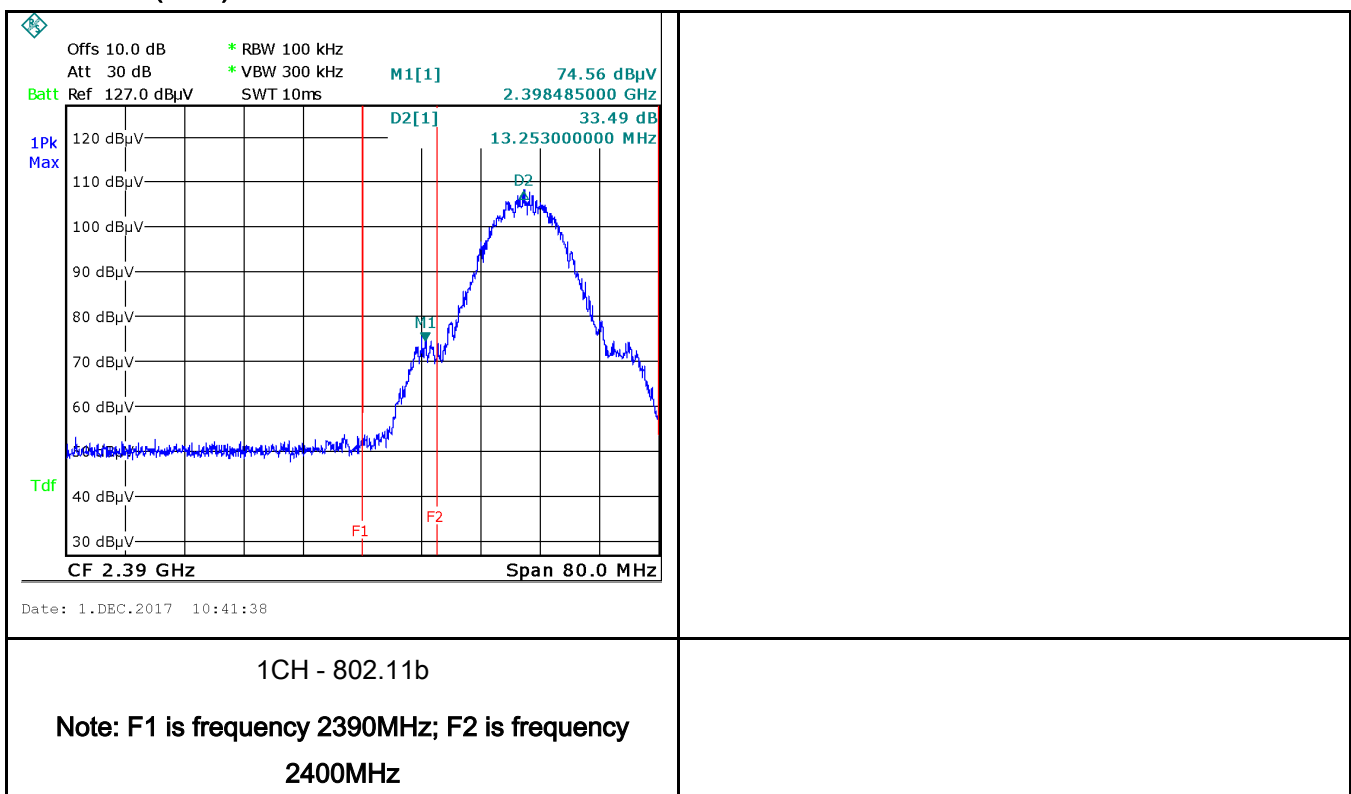
Bandedge result

b mode

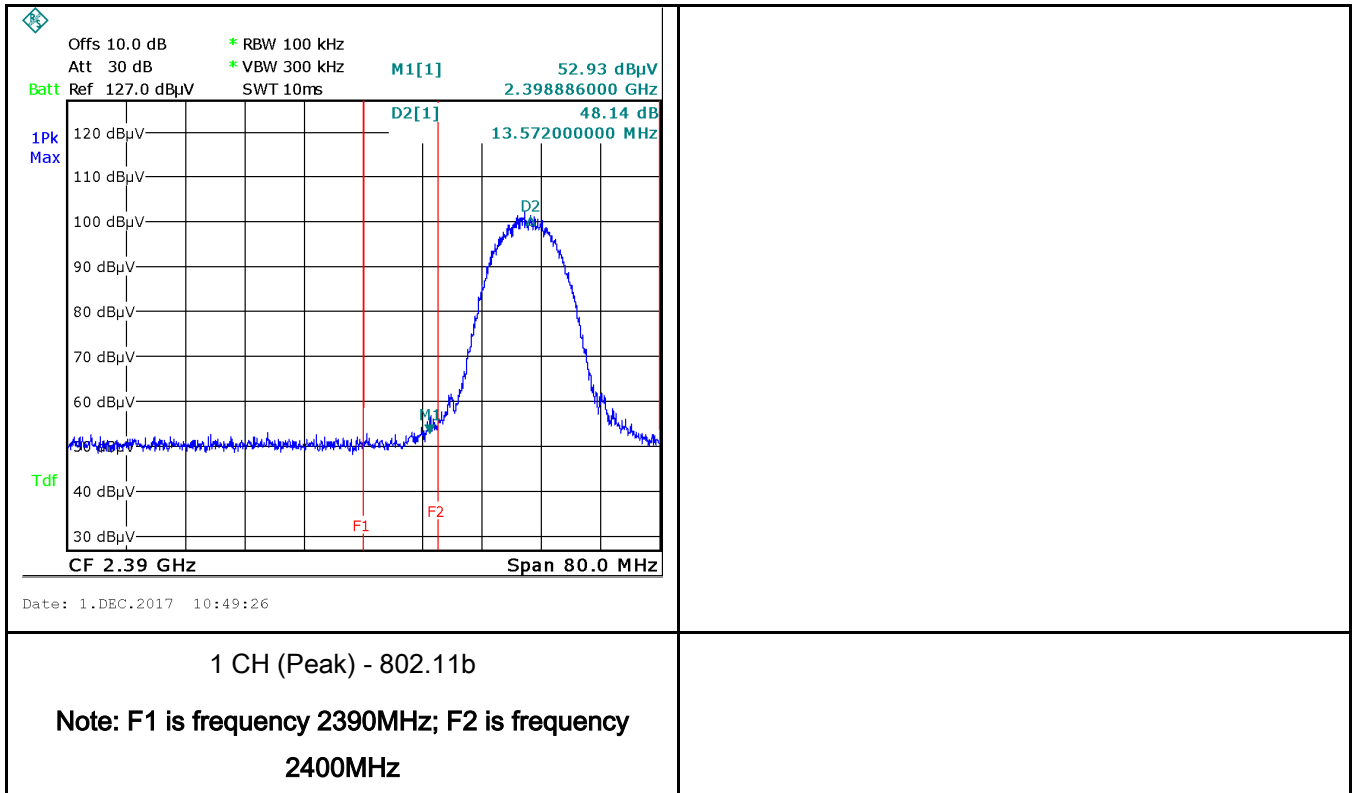
Antenna (White)



Antenna (Blue):

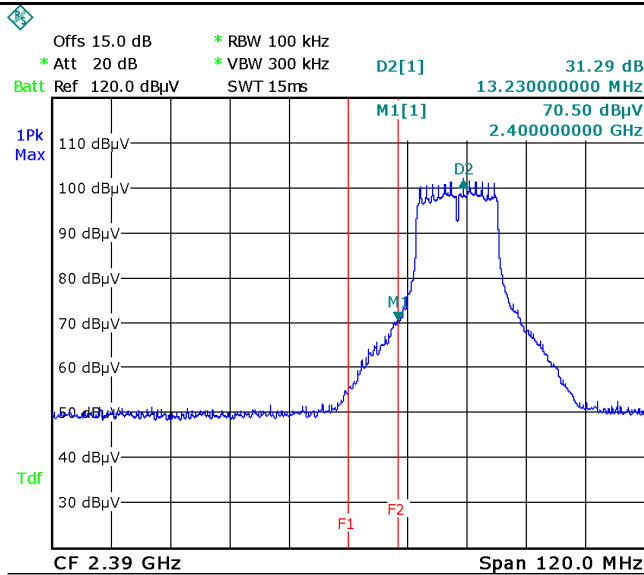


Antenna (Black):



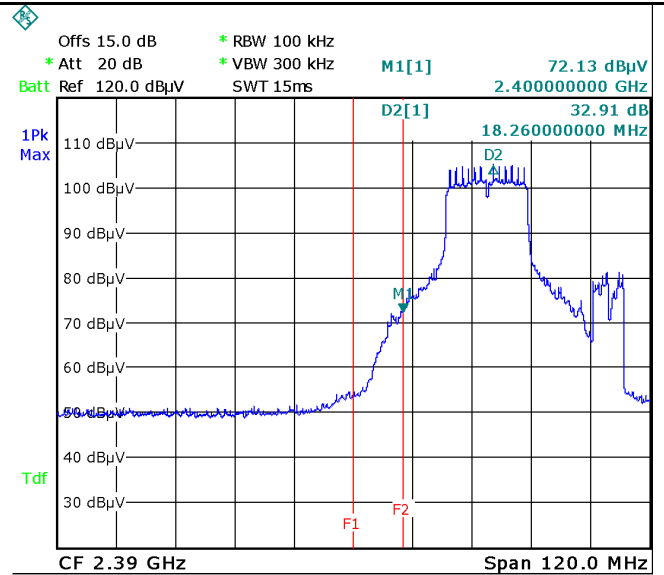
g mode:

Antenna (White):



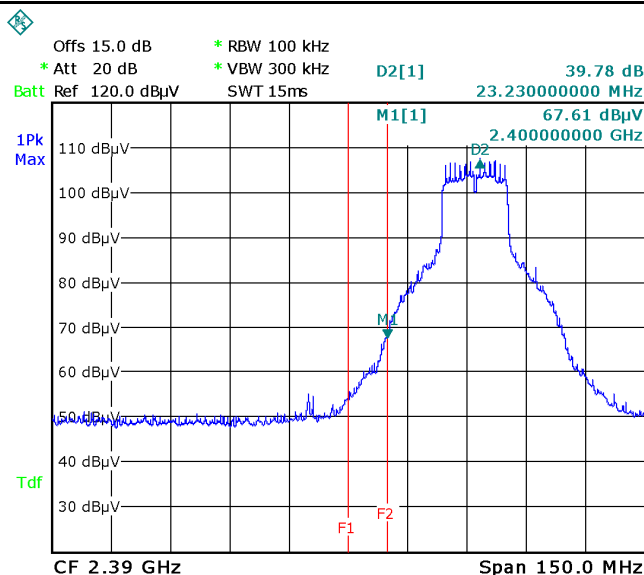
1 CH (Peak) - 802.11g

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



2 CH (Peak) - 802.11g

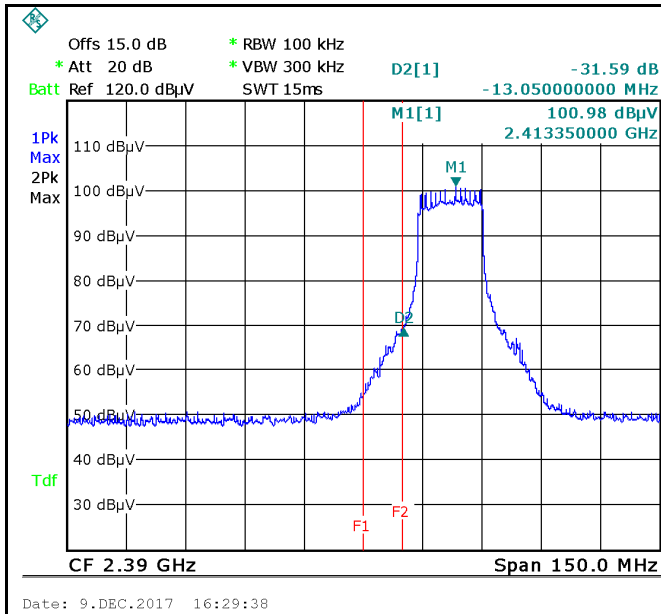
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



3 (Peak) - 802.11g

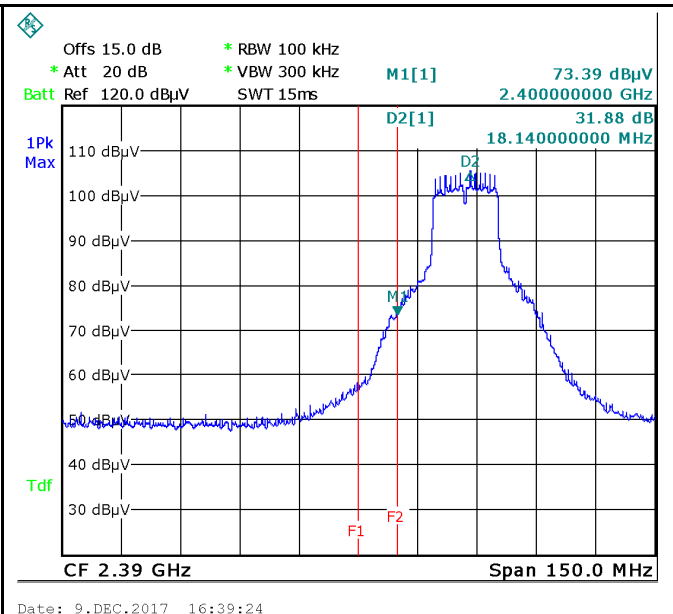
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

Antenna (Blue):



1 CH (Peak) - 802.11g

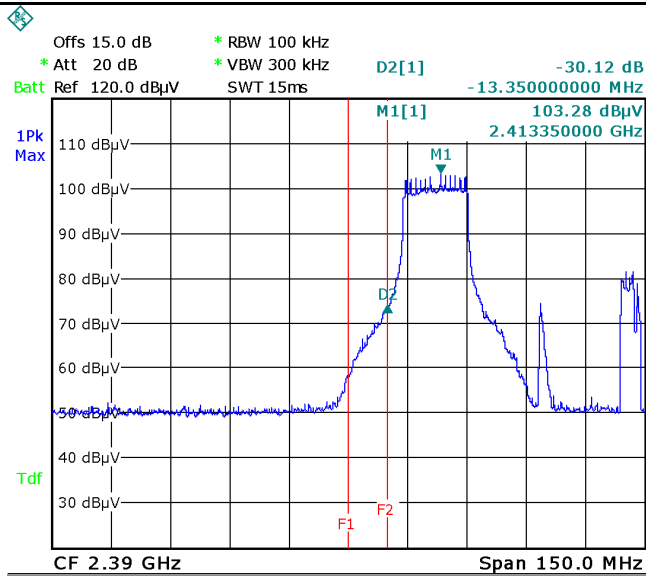
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



2 CH (Peak) - 802.11g

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

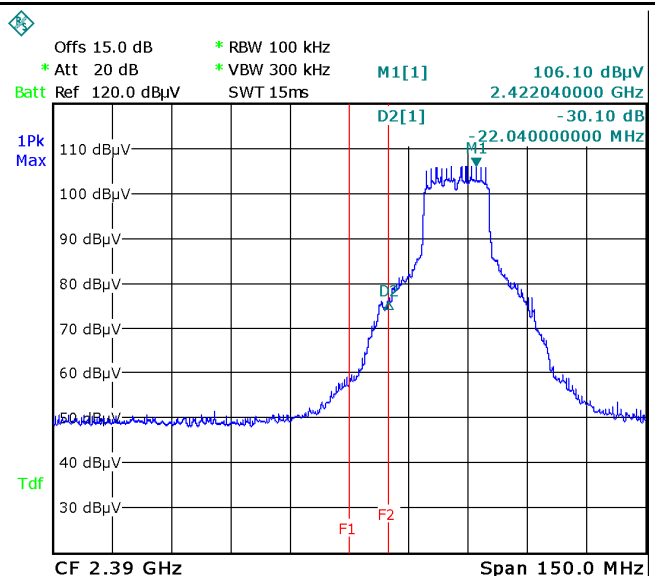
Antenna (Black):



Date: 9.DEC.2017 18:01:05

1 CH (Peak) - 802.11g

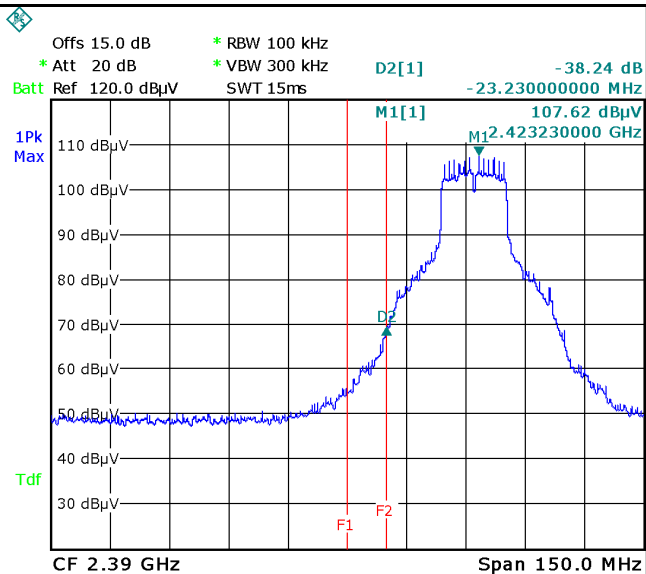
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 9.DEC.2017 18:02:34

2 CH (Peak) - 802.11g

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

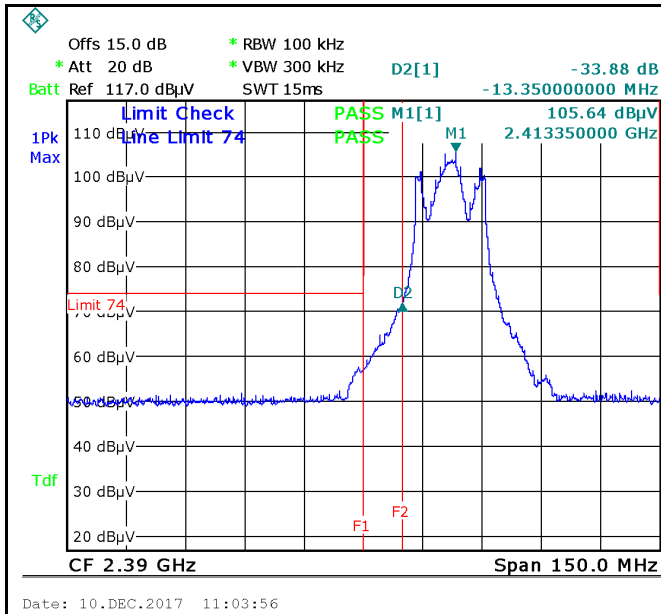


Date: 9.DEC.2017 18:08:16

3 CH (Peak) - 802.11g

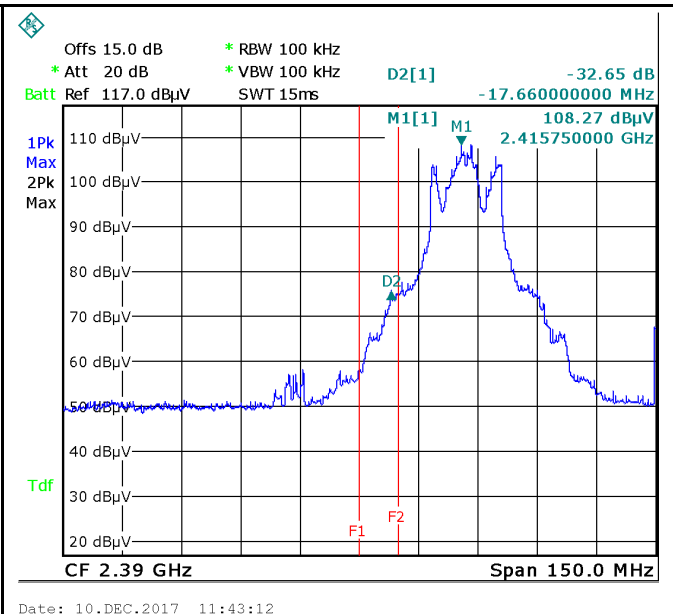
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

N20 mode:



1 CH (Peak) - 802.11n20

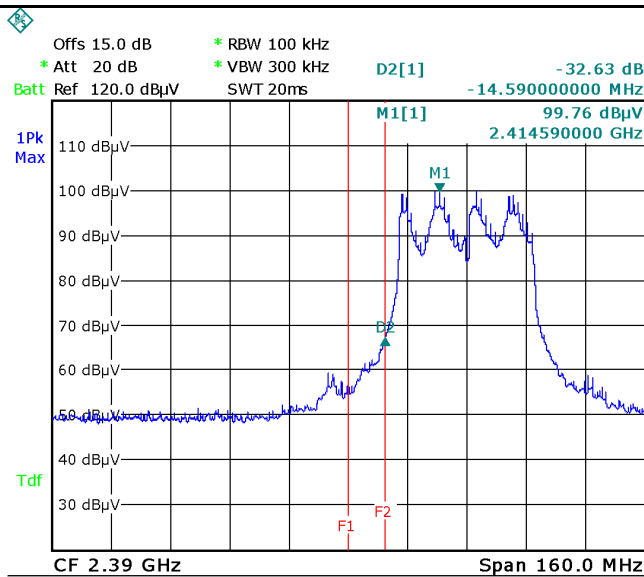
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



2 CH (Peak) - 802.11n20

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

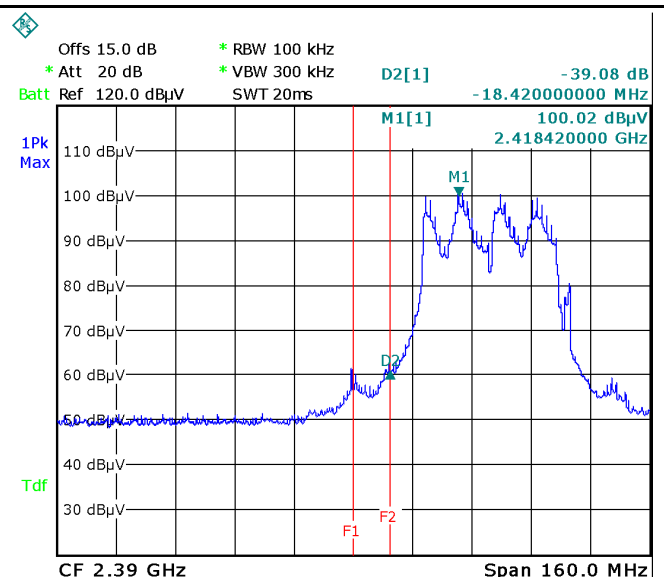
N40 mode:



Date: 10.DEC.2017 14:53:27

CH 3 (Peak) - 802.11n40

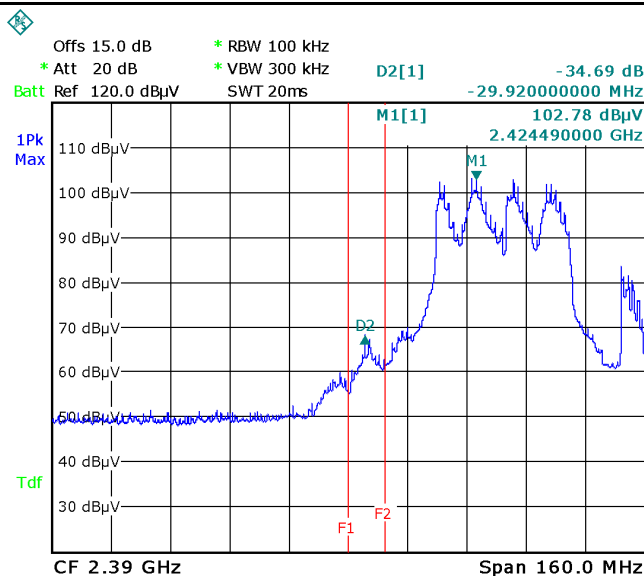
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 10.DEC.2017 15:04:28

CH 4 (Peak) - 802.11n40

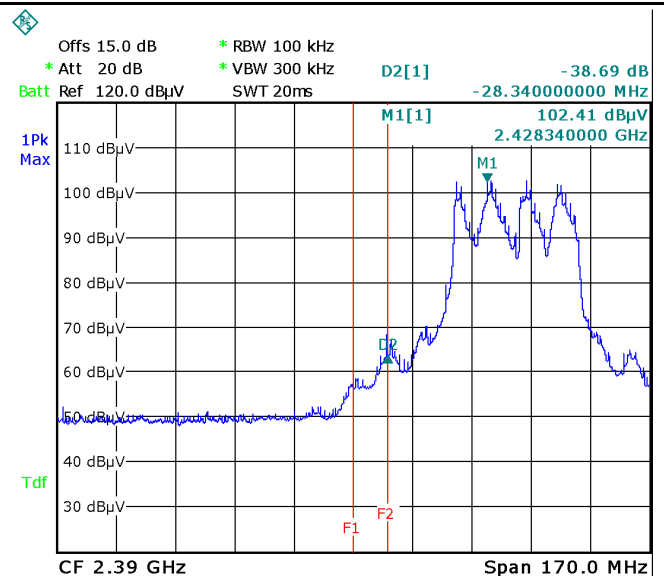
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 10.DEC.2017 15:23:33

CH 5 (Peak) - 802.11n40

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 10.DEC.2017 15:34:31

CH 6 (Peak) - 802.11n40

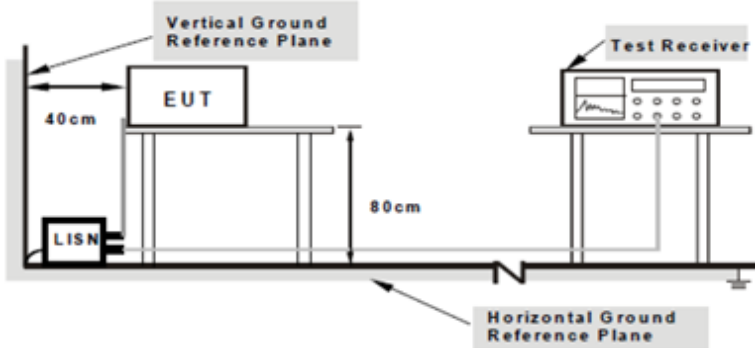
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

6.6 AC Power Line Conducted Emissions

Temperature	23°C
Relative Humidity	56%
Atmospheric Pressure	1006mbar
Test date :	November 15 , 2017
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable		
47CFR§15.207, RSS210 (A8.1)	a)	For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 [mu] H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequencies ranges.	☒		
		Frequency ranges (MHz)		Limit (dBµV)	
				QP	Average
		0.15 ~ 0.5		66 – 56	56 – 46
		0.5 ~ 5		56	46
5 ~ 30	60	50			

Test Setup	 Note: 1. Support units were connected to second LISN. 2. Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.
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Procedure	- The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table. - The power supply for the EUT was fed through a 50W/50mH EUT LISN, connected to filtered mains. - The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss
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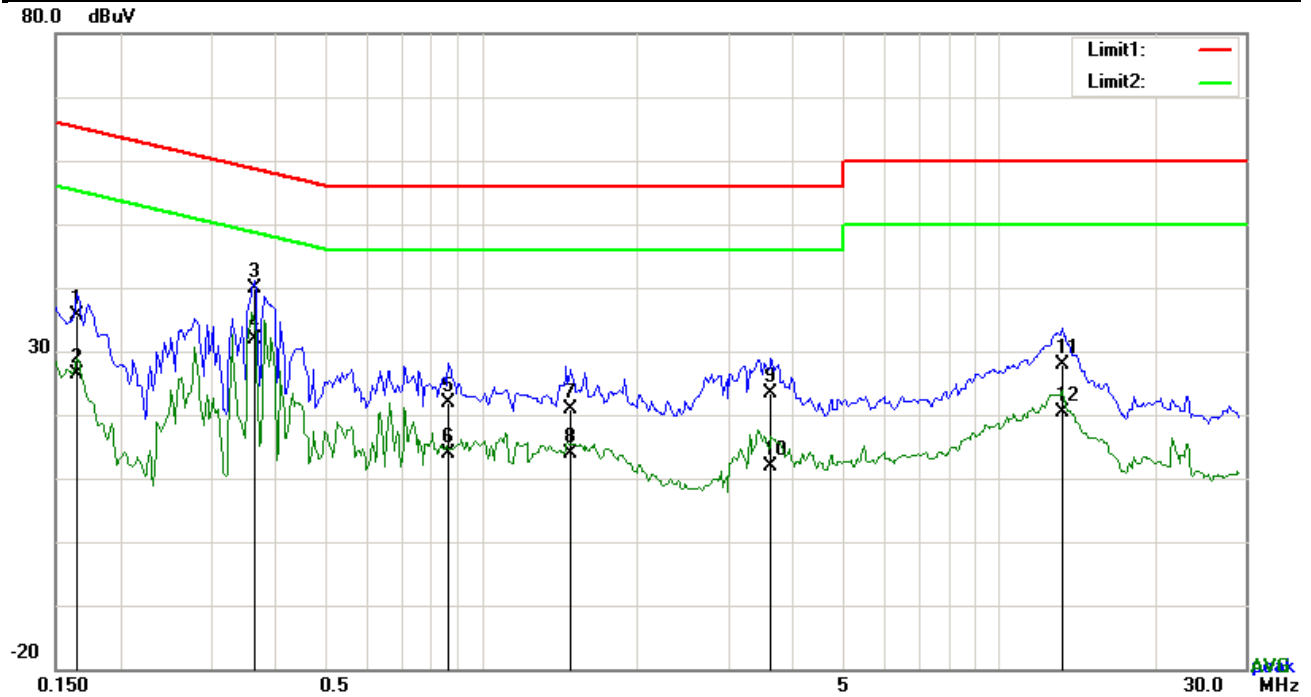
Test Report No.	17070869-CE-R1
Page	93 of 127

	coaxial cable. 4. All other supporting equipment were powered separately from another main supply. 5. The EUT was switched on and allowed to warm up to its normal operating condition. 6. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver. 7. High peaks, relative to the limit line, The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 kHz. 8. Step 7 was then repeated for the LIVE line (for AC mains) or DC line (for DC power).
Remark	
Result	☒ Pass ☐ Fail

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

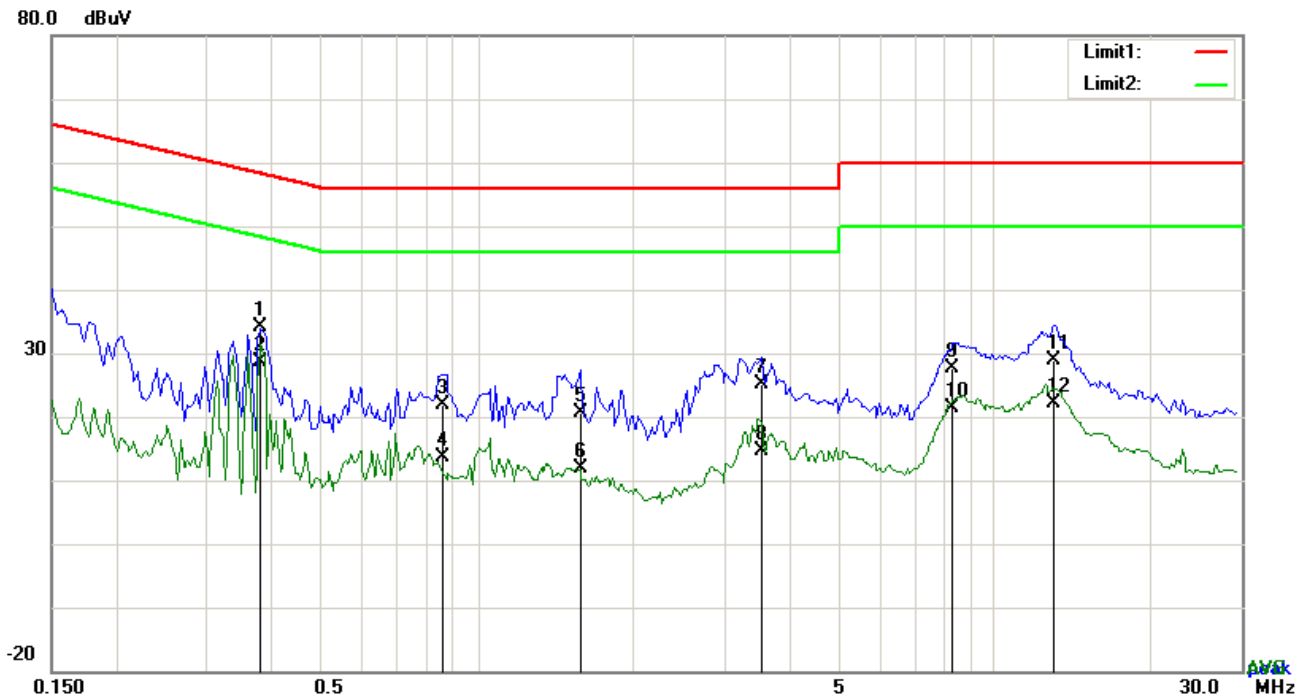
Test Model: 2.4G WIFI



Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB}	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	L	0.1656	25.56	QP	10.02	35.58	65.18	-29.60
2	L	0.1656	16.44	AVG	10.02	26.46	55.18	-28.72
3	L	0.3645	29.96	QP	10.02	39.98	58.63	-18.65
4	L	0.3645	21.79	AVG	10.02	31.81	48.63	-16.82
5	L	0.8637	11.81	QP	10.03	21.84	56.00	-34.16
6	L	0.8637	3.94	AVG	10.03	13.97	46.00	-32.03
7	L	1.4874	10.89	QP	10.03	20.92	56.00	-35.08
8	L	1.4874	3.78	AVG	10.03	13.81	46.00	-32.19
9	L	3.6396	13.29	QP	10.06	23.35	56.00	-32.65
10	L	3.6396	1.81	AVG	10.06	11.87	46.00	-34.13
11	L	13.3077	17.80	QP	10.18	27.98	60.00	-32.02
12	L	13.3077	10.29	AVG	10.18	20.47	50.00	-29.53



Test Data

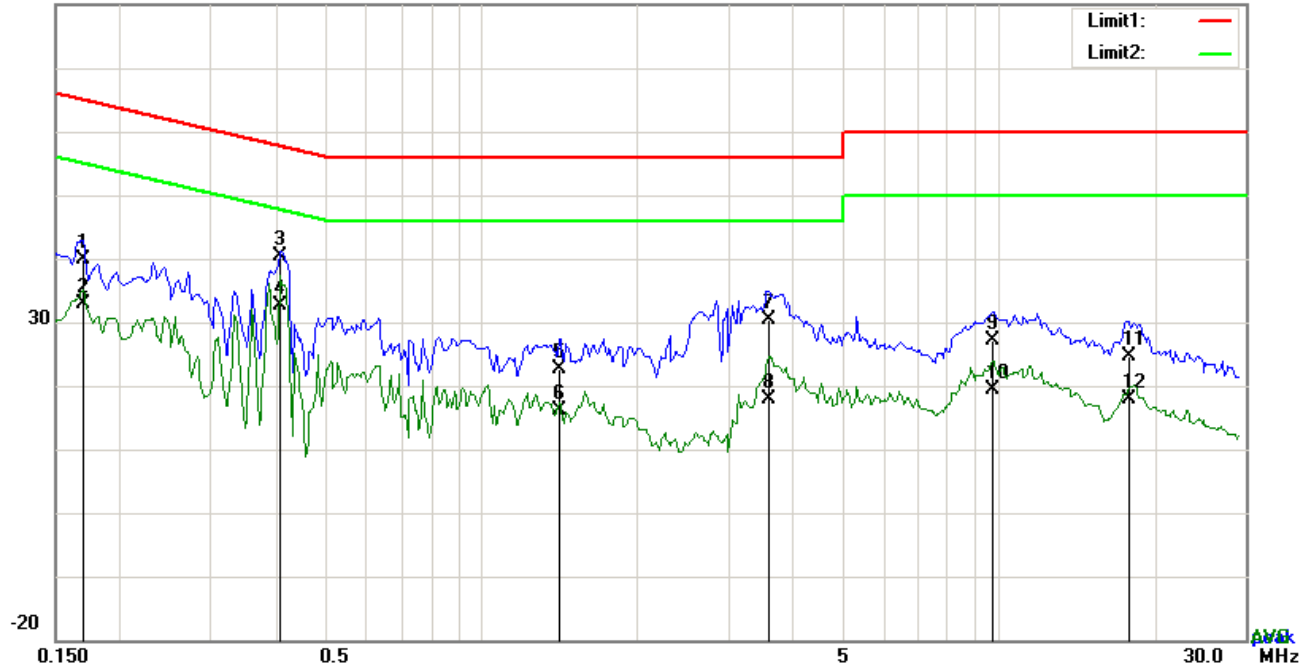
Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	N	0.3801	24.07	QP	10.02	34.09	58.28	-24.19
2	N	0.3801	18.68	AVG	10.02	28.70	48.28	-19.58
3	N	0.8559	11.81	QP	10.03	21.84	56.00	-34.16
4	N	0.8559	3.61	AVG	10.03	13.64	46.00	-32.36
5	N	1.5813	10.58	QP	10.04	20.62	56.00	-35.38
6	N	1.5813	1.74	AVG	10.04	11.78	46.00	-34.22
7	N	3.5421	15.00	QP	10.06	25.06	56.00	-30.94
8	N	3.5421	4.55	AVG	10.06	14.61	46.00	-31.39
9	N	8.3196	17.61	QP	10.12	27.73	60.00	-32.27
10	N	8.3196	11.25	AVG	10.12	21.37	50.00	-28.63
11	N	13.0386	18.79	QP	10.18	28.97	60.00	-31.03
12	N	13.0386	12.04	AVG	10.18	22.22	50.00	-27.78

Test Mode: 2.4GWIFI

240V/60Hz

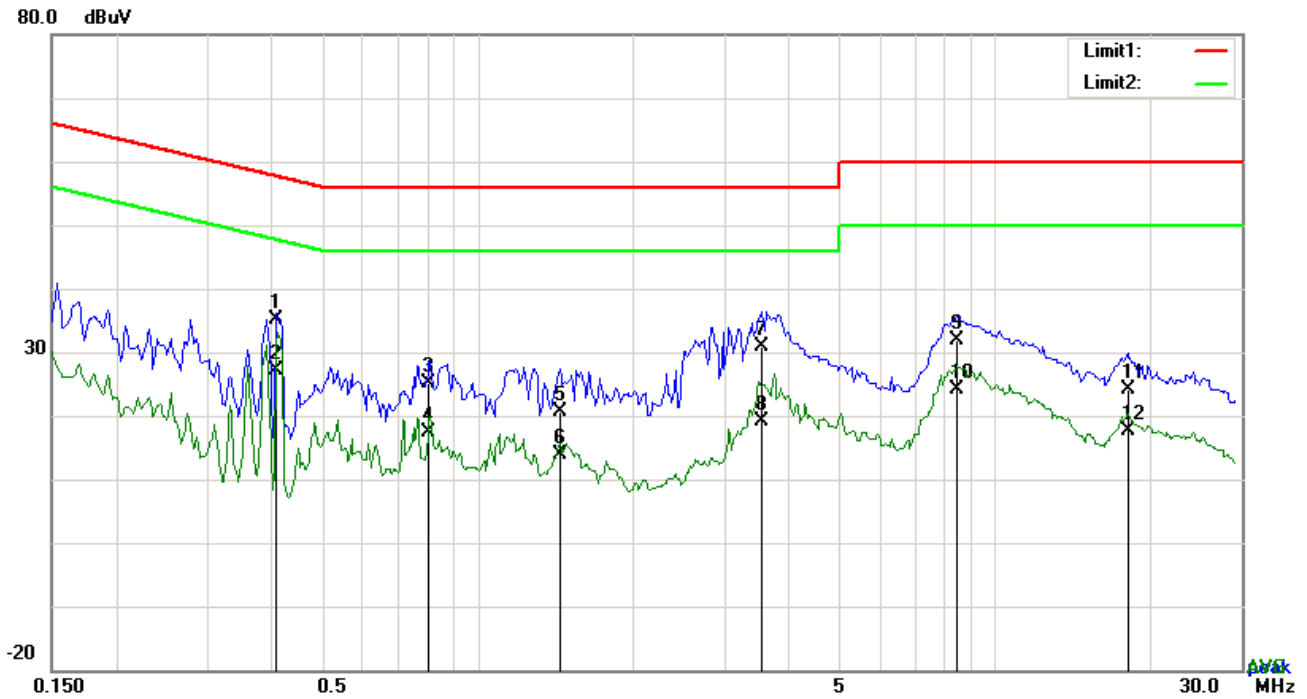
80.0 dBμV



Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
1	L1	0.1695	29.81	QP	10.03	39.84	64.98	-25.14
2	L1	0.1695	22.84	AVG	10.03	32.87	54.98	-22.11
3	L1	0.4074	30.31	QP	10.03	40.34	57.70	-17.36
4	L1	0.4074	22.57	AVG	10.03	32.60	47.70	-15.10
5	L1	1.4175	12.55	QP	10.04	22.59	56.00	-33.41
6	L1	1.4175	5.99	AVG	10.04	16.03	46.00	-29.97
7	L1	3.5889	20.31	QP	10.06	30.37	56.00	-25.63
8	L1	3.5889	7.86	AVG	10.06	17.92	46.00	-28.08
9	L1	9.7470	16.98	QP	10.15	27.13	60.00	-32.87
10	L1	9.7470	9.29	AVG	10.15	19.44	50.00	-30.56
11	L1	17.8512	14.25	QP	10.27	24.52	60.00	-35.48
12	L1	17.8512	7.49	AVG	10.27	17.76	50.00	-32.24



Test Data

Phase Neutral Plot at 240Vac, 60Hz

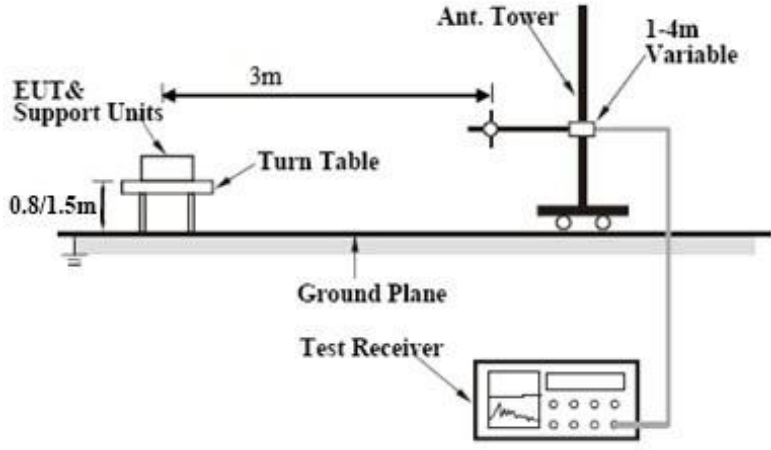
No.	P/L	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
1	N	0.4074	25.00	QP	10.03	35.03	57.70	-22.67
2	N	0.4074	17.16	AVG	10.03	27.19	47.70	-20.51
3	N	0.8052	15.00	QP	10.03	25.03	56.00	-30.97
4	N	0.8052	7.45	AVG	10.03	17.48	46.00	-28.52
5	N	1.4409	10.68	QP	10.04	20.72	56.00	-35.28
6	N	1.4409	3.86	AVG	10.04	13.90	46.00	-32.10
7	N	3.5421	20.72	QP	10.06	30.78	56.00	-25.22
8	N	3.5421	9.00	AVG	10.06	19.06	46.00	-26.94
9	N	8.4405	21.65	QP	10.13	31.78	60.00	-28.22
10	N	8.4405	14.05	AVG	10.13	24.18	50.00	-25.82
11	N	18.1242	13.91	QP	10.27	24.18	60.00	-35.82
12	N	18.1242	7.45	AVG	10.27	17.72	50.00	-32.28

6.7 Radiated Spurious Emissions

Temperature	25°C
Relative Humidity	54%
Atmospheric Pressure	1006mbar
Test date :	December 10 and 11, 2015
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable										
47CFR§15.247(d), RSS210 (A8.5)	a)	Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges <table><tr><th>Frequency range (MHz)</th><th>Field Strength (µV/m)</th></tr><tr><td>30 – 88</td><td>100</td></tr><tr><td>88 – 216</td><td>150</td></tr><tr><td>216 960</td><td>200</td></tr><tr><td>Above 960</td><td>500</td></tr></table>	Frequency range (MHz)	Field Strength (µV/m)	30 – 88	100	88 – 216	150	216 960	200	Above 960	500	☒
	Frequency range (MHz)	Field Strength (µV/m)											
	30 – 88	100											
	88 – 216	150											
216 960	200												
Above 960	500												
b)	For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required ☒ 20 dB down ☐ 30 dB down	☒											
c)	or restricted band, emission must also comply with the radiated emission limits specified in 15.209	☒											

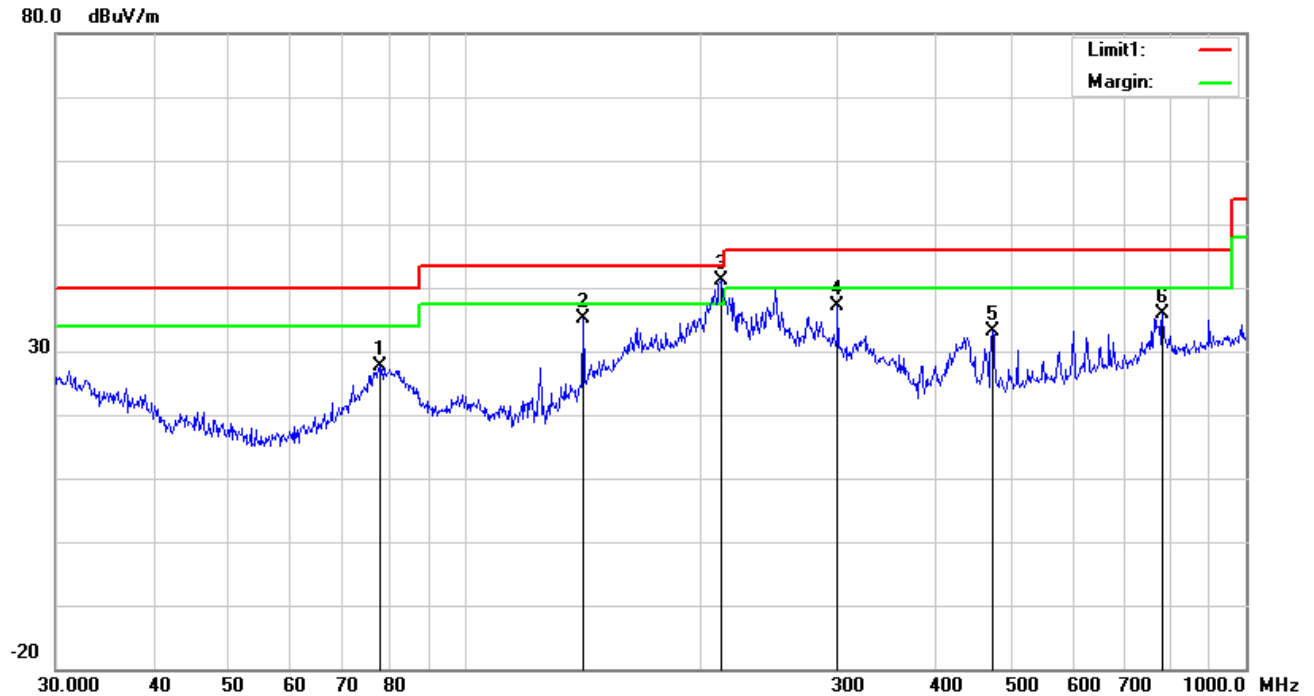
Test Setup	
Procedure	- The EUT was switched on and allowed to warm up to its normal operating condition. - The test was carried out at the selected frequency points obtained from the EUT characterization. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: - Vertical or horizontal polarization (whichever gave the higher emission level over a full rotation of the EUT) was chosen. - The EUT was then rotated to the direction that gave the maximum emission. - Finally, the antenna height was adjusted to the height that gave the maximum emission. - The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi Peak detection at frequency below 1GHz. - The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with Peak detection for Peak measurement at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz with Peak detection for Average Measurement as below at frequency above 1GHz. - Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.
Remark	Different RF configuration has been evaluated but not much difference was found. The data presented here is the worst case data with EUT under 802.11n – HT20-2437MHz mode.
Result	☒ Pass ☐ Fail

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test Model: 2.4G WIFI

(Below 1GHz)

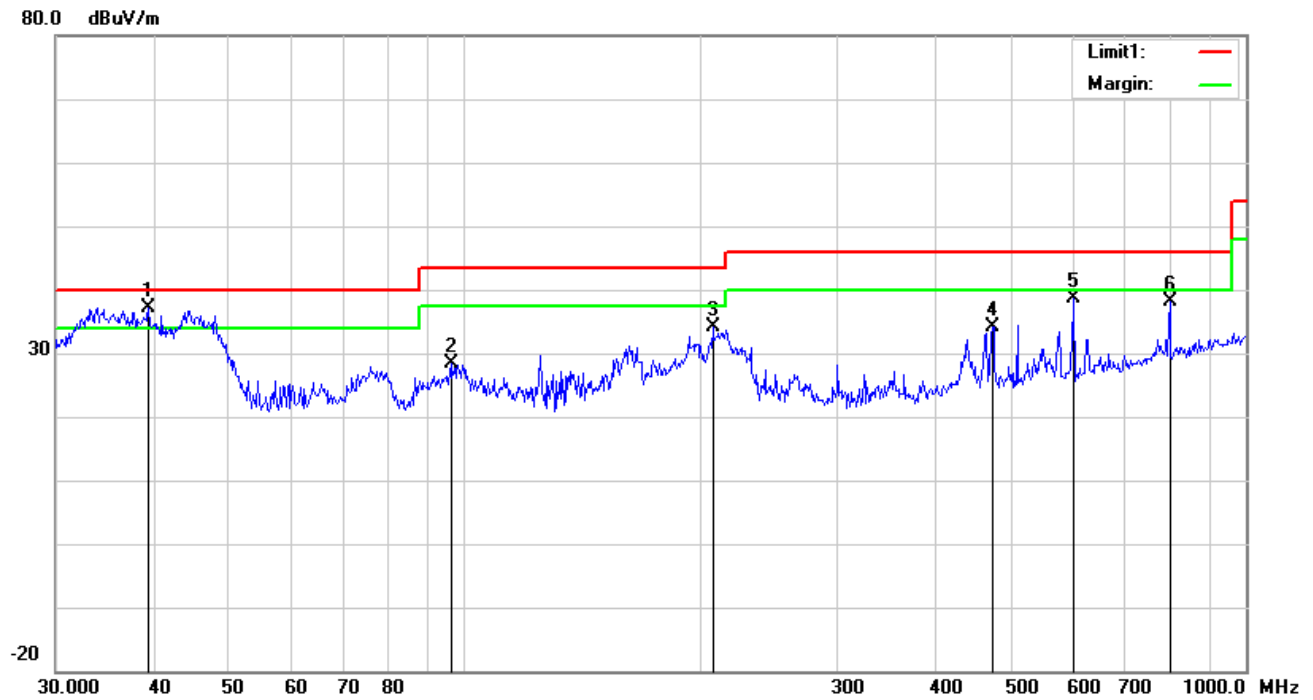


Test Data

Horizontal Polarity Plot @3m

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree
1	78.1389	41.34	peak	7.64	22.41	1.02	27.59	40.00	-12.41	100	239
2	141.8262	43.53	peak	12.60	22.40	1.28	35.01	43.50	-8.49	100	339
3	213.0151	50.03	QP	11.92	22.36	1.58	41.17	43.50	-2.33	100	270
4	300.3673	43.93	peak	13.61	22.29	1.79	37.04	46.00	-8.96	100	105
5	473.8347	35.66	peak	17.18	21.86	2.27	33.25	46.00	-12.75	100	282
6	782.3453	32.85	peak	21.19	21.19	2.93	35.78	46.00	-10.22	100	217

(Below 1GHz)



Test Data

Vertical Polarity Plot @3m

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree
1	39.4372	44.42	QP	14.31	22.28	0.79	37.24	40.00	-2.76	200	276
2	96.0986	40.13	peak	9.46	22.32	1.02	28.29	43.50	-15.21	100	188
3	207.8501	42.98	peak	11.99	22.37	1.57	34.17	43.50	-9.33	100	82
4	473.8347	36.63	peak	17.18	21.86	2.27	34.22	46.00	-11.78	100	311
5	601.4265	38.72	peak	19.12	21.58	2.49	38.75	46.00	-7.25	100	144
6	798.9797	34.91	peak	21.39	21.15	2.96	38.11	46.00	-7.89	100	63

Test Mode:	Transmitting Mode
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(Above 1GHz)

Note: Other modes were verified, only the result of worst case basic rate mode was presented.

Mode: 802.11b

Antenna (Black)

Low Channel (2412 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4830.532	54.05	AV	V	33.42	46.11	7.92	49.28	54	-4.72
4830.532	53.81	AV	H	33.42	46.11	7.92	49.04	54	-4.96
4830.532	64.14	PK	V	33.42	46.11	7.92	59.37	74	-14.63
4830.532	64.18	PK	H	33.42	46.11	7.92	59.41	74	-14.59
3840.534	58.47	AV	V	31.44	48.97	6.64	47.58	54	-6.42
3840.534	58.13	AV	H	31.44	48.97	6.64	47.24	54	-6.76
3840.534	62.2	PK	V	31.44	48.97	6.64	51.31	74	-22.69
3840.534	59.87	PK	H	31.44	48.97	6.64	48.98	74	-25.02

Middle Channel (2437 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4874.002	53.92	AV	V	33.53	45.93	7.94	49.46	54	-4.54
4874.002	54.05	AV	H	33.53	45.93	7.94	49.59	54	-4.41
4874.002	66.72	PK	V	33.53	45.93	7.94	62.26	74	-11.74
4874.002	64.69	PK	H	33.53	45.93	7.94	60.23	74	-13.77
1393.022	62.32	AV	V	25.25	48.31	3.99	43.25	54	-10.75
3840.534	58.47	AV	H	31.44	48.97	6.64	47.58	54	-6.42
1393.022	64.48	PK	V	25.25	48.31	3.99	45.41	74	-28.59
3840.534	61.83	PK	H	31.44	48.97	6.64	50.94	74	-23.06

High Channel (2462 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4926.683	51.37	AV	V	33.67	45.72	7.96	47.28	54	-6.72
4926.683	52.33	AV	H	33.67	45.72	7.96	48.24	54	-5.76
4926.683	64.2	PK	V	33.67	45.72	7.96	60.11	74	-13.89
4926.683	62.93	PK	H	33.67	45.72	7.96	58.84	74	-15.16
3840.534	59.44	AV	V	31.44	48.97	6.64	48.55	54	-5.45
1332	66.56	AV	H	25.09	48.3	3.89	47.24	54	-6.76
3840.534	62.28	PK	V	31.44	48.97	6.64	51.39	74	-22.61
1332	60.34	PK	H	25.09	48.3	3.89	41.02	74	-32.98

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Note:

- 1, The testing has been conformed to $10 \times 2462\text{MHz} = 24,620\text{MHz}$*
- 2, All other emissions more than 30 dB below the limit*
- 3, The radiated spurious test above 18GHz is subcontracted to SIEMIC (Nanjing-China) Laboratories. and found 30dB below the limit at least.*

Mode: 802.11g

Antenna (White)

Channel (2412 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4917.863	46.28	AV	V	33.64	45.76	7.96	42.12	54	-11.88
4685.613	47.3	AV	H	33.09	46.69	7.63	41.33	54	-12.67
4917.863	57.28	PK	V	33.64	45.76	7.96	53.12	74	-20.88
4685.613	58	PK	H	33.09	46.69	7.63	52.03	74	-21.97
1395.52	58.31	AV	V	25.26	48.31	3.99	39.25	54	-14.75
1019.905	62.82	AV	H	24.33	48.23	3.4	42.32	54	-11.68
1395.52	61.09	PK	V	25.26	48.31	3.99	42.03	74	-31.97
1019.905	65.69	PK	H	24.33	48.23	3.4	45.19	74	-28.81

Channel (2417 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4830.532	53.82	AV	V	33.42	46.11	7.92	49.05	54	-4.95
4830.532	53.85	AV	H	33.42	46.11	7.92	49.08	54	-4.92
4830.532	64.4	PK	V	33.42	46.11	7.92	59.63	74	-14.37
4830.532	65.95	PK	H	33.42	46.11	7.92	61.18	74	-12.82
1018.079	60.63	AV	V	24.33	48.23	3.4	40.13	54	-13.87
1019.905	60.63	AV	H	24.33	48.23	3.4	40.13	54	-13.87
1018.079	63.92	PK	V	24.33	48.23	3.4	43.42	74	-30.58
1019.905	64.49	PK	H	24.33	48.23	3.4	43.99	74	-30.01

Channel (2422 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4847.873	54.73	AV	V	33.46	46.04	7.93	50.08	54	-3.92
4847.873	54.62	AV	H	33.46	46.04	7.93	49.97	54	-4.03
4847.873	69.29	PK	V	33.46	46.04	7.93	64.64	74	-9.36
4847.873	67.99	PK	H	33.46	46.04	7.93	63.34	74	-10.66
1393.022	64.4	AV	V	25.25	48.31	3.99	45.33	54	-8.67
1019.905	60.71	AV	H	24.33	48.23	3.4	40.21	54	-13.79
1393.022	67.82	PK	V	25.25	48.31	3.99	48.75	74	-25.25
1019.905	63.78	PK	H	24.33	48.23	3.4	43.28	74	-30.72

Channel (2437 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4874.002	53.67	AV	V	33.53	45.93	7.94	49.21	54	-4.79
4874.002	53.47	AV	H	33.53	45.93	7.94	49.01	54	-4.99
4874.002	65.9	PK	V	33.53	45.93	7.94	61.44	74	-12.56
4874.002	67.2	PK	H	33.53	45.93	7.94	62.74	74	-11.26
1393.022	58.19	AV	V	25.25	48.31	3.99	39.12	54	-14.88
1390.528	57.62	AV	H	25.25	48.31	3.98	38.54	54	-15.46
1393.022	59.55	PK	V	25.25	48.31	3.99	40.48	74	-33.52
1390.528	58.73	PK	H	25.25	48.31	3.98	39.65	74	-34.35

Channel (2452 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4909.06	54.06	AV	V	33.62	45.79	7.95	49.84	54	-4.16
4900.272	51.53	AV	H	33.59	45.83	7.95	47.24	54	-6.76
4909.06	66.35	PK	V	33.62	45.79	7.95	62.13	74	-11.87
4900.272	63.85	PK	H	33.59	45.83	7.95	59.56	74	-14.44
3840.534	56.1	AV	V	31.44	48.97	6.64	45.21	54	-8.79
1019.905	60.53	AV	H	24.33	48.23	3.4	40.03	54	-13.97
3840.534	61.48	PK	V	31.44	48.97	6.64	50.59	74	-23.41
1019.905	65.25	PK	H	24.33	48.23	3.4	44.75	74	-29.25

Channel (2457 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4917.863	51.4	AV	V	33.64	45.76	7.96	47.24	54	-6.76
4830.532	52.35	AV	H	33.42	46.11	7.92	47.58	54	-6.42
4917.863	63.35	PK	V	33.64	45.76	7.96	59.19	74	-14.81
4830.532	69.39	PK	H	33.42	46.11	7.92	64.62	74	-9.38
1018.079	60.38	AV	V	24.33	48.23	3.4	39.88	54	-14.12
3840.534	53.81	AV	H	31.44	48.97	6.64	42.92	54	-11.08
1018.079	62.39	PK	V	24.33	48.23	3.4	41.89	74	-32.11
3840.534	62.82	PK	H	31.44	48.97	6.64	51.93	74	-22.07

Channel (2462 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4926.683	52.3	AV	V	33.67	45.72	7.96	48.21	54	-5.79
4926.683	51.88	AV	H	33.67	45.72	7.96	47.79	54	-6.21
4926.683	59.35	PK	V	33.67	45.72	7.96	55.26	74	-18.74
4926.683	58.27	PK	H	33.67	45.72	7.96	54.18	74	-19.82
3840.534	56.14	AV	V	31.44	48.97	6.64	45.25	54	-8.75
1019.905	60.71	AV	H	24.33	48.23	3.4	40.21	54	-13.79
3840.534	63.92	PK	V	31.44	48.97	6.64	53.03	74	-20.97
1019.905	63.5	PK	H	24.33	48.23	3.4	43	74	-31

Note:

- 1, The testing has been conformed to $10 \times 2462 \text{ MHz} = 24,620 \text{ MHz}$
- 2, All other emissions more than 30 dB below the limit
- 3, The radiated spurious test above 18GHz is subcontracted to SIEMIC (Nanjing-China) Laboratories. and found 30dB below the limit at least.

Mode: 802.11n20

Antenna (White+ Blue+ Black)

Channel (2412 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4830.532	48.98	AV	V	33.42	46.11	7.92	44.21	54	-9.79
4830.532	49.02	AV	H	33.42	46.11	7.92	44.25	54	-9.75
4830.532	58.26	PK	V	33.42	46.11	7.92	53.49	74	-20.51
4830.532	57	PK	H	33.42	46.11	7.92	52.23	74	-21.77
1395.52	58.64	AV	V	25.26	48.31	3.99	39.58	54	-14.42
3840.534	52.28	AV	H	31.44	48.97	6.64	41.39	54	-12.61
1395.52	63.57	PK	V	25.26	48.31	3.99	44.51	74	-29.49
3840.534	60.95	PK	H	31.44	48.97	6.64	50.06	74	-23.94

Channel (2417 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4830.532	54.75	AV	V	33.42	46.11	7.92	49.98	54	-4.02
4830.532	53.23	AV	H	33.42	46.11	7.92	48.46	54	-5.54
4830.532	66.89	PK	V	33.42	46.11	7.92	62.12	74	-11.88
4830.532	63.89	PK	H	33.42	46.11	7.92	59.12	74	-14.88
3840.534	62.82	AV	V	31.44	48.97	6.64	51.93	74	-22.07
3840.534	54.17	AV	H	31.44	48.97	6.64	43.28	54	-10.72
3840.534	56.57	PK	V	31.44	48.97	6.64	45.68	54	-8.32
3840.534	60.54	PK	H	31.44	48.97	6.64	49.65	74	-24.35

Channel (2437 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4874.002	53.7	AV	V	33.53	45.93	7.94	49.24	54	-4.76
4874.002	52.59	AV	H	33.53	45.93	7.94	48.13	54	-5.87
4874.002	64.66	PK	V	33.53	45.93	7.94	60.2	74	-13.8
4874.002	62.81	PK	H	33.53	45.93	7.94	58.35	74	-15.65
3840.534	55.26	AV	V	31.44	48.97	6.64	44.37	54	-9.63
3840.534	54.54	AV	H	31.44	48.97	6.64	43.65	54	-10.35
3840.534	62.79	PK	V	31.44	48.97	6.64	51.9	74	-22.1
3840.534	59.93	PK	H	31.44	48.97	6.64	49.04	74	-24.96

Channel (2457 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4926.683	54.37	AV	V	33.67	45.72	7.96	50.28	54	-3.72
4909.06	53.46	AV	H	33.62	45.79	7.95	49.24	54	-4.76
4926.683	66.92	PK	V	33.67	45.72	7.96	62.83	74	-11.17
4909.06	65.87	PK	H	33.62	45.79	7.95	61.65	74	-12.35
3840.534	57.12	AV	V	31.44	48.97	6.64	46.23	54	-7.77
3840.534	56.57	AV	H	31.44	48.97	6.64	45.68	54	-8.32
3840.534	61.87	PK	V	31.44	48.97	6.64	50.98	74	-23.02
3840.534	61.46	PK	H	31.44	48.97	6.64	50.57	74	-23.43

Channel (2462 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4935.518	52.6	AV	V	33.7	45.69	7.96	48.57	54	-5.43
4935.518	54.92	AV	H	33.7	45.69	7.96	50.89	54	-3.11
4935.518	63.44	PK	V	33.7	45.69	7.96	59.41	74	-14.59
4935.518	68.02	PK	H	33.7	45.69	7.96	63.99	74	-10.01
3840.534	53.45	AV	V	31.44	48.97	6.64	42.56	54	-11.44
1019.905	61.58	AV	H	24.33	48.23	3.4	41.08	54	-12.92
3840.534	58.9	PK	V	31.44	48.97	6.64	48.01	74	-25.99
1019.905	64.25	PK	H	24.33	48.23	3.4	43.75	74	-30.25

Note:

- 1, The testing has been conformed to $10 \times 2462 \text{ MHz} = 24,620 \text{ MHz}$
- 2, All other emissions more than 30 dB below the limit
- 3, The radiated spurious test above 18GHz is subcontracted to SIEMIC (Nanjing-China) Laboratories. and found 30dB below the limit at least.

Mode: 802.11n40

Antenna (White+ Blue+ Black)

Channel (2422 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4891.499	48.62	AV	V	33.57	45.86	7.95	44.28	54	-9.72
4847.873	49.98	AV	H	33.46	46.04	7.93	45.33	54	-8.67
4891.499	57.09	PK	V	33.57	45.86	7.95	52.75	74	-21.25
4847.873	58.7	PK	H	33.46	46.04	7.93	54.05	74	-19.95
3840.534	53.05	AV	V	31.44	48.97	6.64	42.16	54	-11.84
3840.534	53.94	AV	H	31.44	48.97	6.64	43.05	54	-10.95
3840.534	60.43	PK	V	31.44	48.97	6.64	49.54	74	-24.46
3840.534	60.28	PK	H	31.44	48.97	6.64	49.39	74	-24.61

Channel (2427 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4926.683	50.11	AV	V	33.67	45.72	7.96	46.02	54	-7.98
4865.277	50.11	AV	H	33.5	45.97	7.94	45.58	54	-8.42
4926.683	57.9	PK	V	33.67	45.72	7.96	53.81	74	-20.19
4865.277	57.76	PK	H	33.5	45.97	7.94	53.23	74	-20.77
3840.534	53.4	AV	V	31.44	48.97	6.64	42.51	54	-11.49
1393.022	58.95	AV	H	25.25	48.31	3.99	39.88	54	-14.12
3840.534	61.4	PK	V	31.44	48.97	6.64	50.51	74	-23.49
1393.022	63.61	PK	H	25.25	48.31	3.99	44.54	74	-29.46

Channel (2432 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4856.567	49.84	AV	V	33.48	46	7.93	45.25	54	-8.75
4865.277	49.08	AV	H	33.5	45.97	7.94	44.55	54	-9.45
4856.567	59.94	PK	V	33.48	46	7.93	55.35	74	-18.65
4865.277	60.54	PK	H	33.5	45.97	7.94	56.01	74	-17.99
3840.534	54.17	AV	V	31.44	48.97	6.64	43.28	54	-10.72
1018.079	60.78	AV	H	24.33	48.23	3.4	40.28	54	-13.72
3840.534	61.19	PK	V	31.44	48.97	6.64	50.3	74	-23.7
1018.079	64.14	PK	H	24.33	48.23	3.4	43.64	74	-30.36

Channel (2437 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4882.743	51.54	AV	V	33.55	45.9	7.94	47.13	54	-6.87
4882.743	51.69	AV	H	33.55	45.9	7.94	47.28	54	-6.72
4882.743	60.84	PK	V	33.55	45.9	7.94	56.43	74	-17.57
4882.743	62.71	PK	H	33.55	45.9	7.94	58.3	74	-15.7
3840.534	54.17	AV	V	31.44	48.97	6.64	43.28	54	-10.72
3840.534	53.07	AV	H	31.44	48.97	6.64	42.18	54	-11.82
3840.534	62.35	PK	V	31.44	48.97	6.64	51.46	74	-22.54
3840.534	59.08	PK	H	31.44	48.97	6.64	48.19	74	-25.81

Channel (2442 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4900.272	51.54	AV	V	33.59	45.83	7.95	47.25	54	-6.75
4900.272	52.54	AV	H	33.59	45.83	7.95	48.25	54	-5.75
4900.272	60.43	PK	V	33.59	45.83	7.95	56.14	74	-17.86
4900.272	62.67	PK	H	33.59	45.83	7.95	58.38	74	-15.62
3840.534	53.94	AV	V	31.44	48.97	6.64	43.05	54	-10.95
3840.534	53.45	AV	H	31.44	48.97	6.64	42.56	54	-11.44
3840.534	61.59	PK	V	31.44	48.97	6.64	50.7	74	-23.3
3840.534	59.39	PK	H	31.44	48.97	6.64	48.5	74	-25.5

Channel (2447 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4900.272	51.54	AV	V	33.59	45.83	7.95	47.25	54	-6.75
4900.272	52.54	AV	H	33.59	45.83	7.95	48.25	54	-5.75
4900.272	60.43	PK	V	33.59	45.83	7.95	56.14	74	-17.86
4900.272	62.67	PK	H	33.59	45.83	7.95	58.38	74	-15.62
3840.534	53.94	AV	V	31.44	48.97	6.64	43.05	54	-10.95
3840.534	53.45	AV	H	31.44	48.97	6.64	42.56	54	-11.44
3840.534	61.59	PK	V	31.44	48.97	6.64	50.7	74	-23.3
3840.534	59.39	PK	H	31.44	48.97	6.64	48.5	74	-25.5

Channel (2452 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4891.499	49.92	AV	V	33.57	45.86	7.95	45.58	54	-8.42
4909.06	51.47	AV	H	33.62	45.79	7.95	47.25	54	-6.75
4891.499	57.7	PK	V	33.57	45.86	7.95	53.36	74	-20.64
4909.06	59.64	PK	H	33.62	45.79	7.95	55.42	74	-18.58
3840.534	53.45	AV	V	31.44	48.97	6.64	42.56	54	-11.44
3840.534	52.17	AV	H	31.44	48.97	6.64	41.28	54	-12.72
3840.534	61.43	PK	V	31.44	48.97	6.64	50.54	74	-23.46
3840.534	59.15	PK	H	31.44	48.97	6.64	48.26	74	-25.74

Note:

- 1, The testing has been conformed to $10 \times 2462 \text{ MHz} = 24,620 \text{ MHz}$
- 2, All other emissions more than 30 dB below the limit
- 3, The radiated spurious test above 18GHz is subcontracted to SIEMIC (Nanjing-China) Laboratories. and found 30dB below the limit at least.

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted					
EMI test receiver	ESCS30	8471241027	09/15/2017	09/14/2018	☒
Line Impedance	LI-125A	191106	09/23/2017	09/22/2018	☒
Line Impedance	LI-125A	191107	09/23/2017	09/22/2018	☒
ISN	ISN T800	34373	09/23/2017	09/22/2018	☐
Transient Limiter	LIT-153	531118	08/30/2017	08/29/2018	☐
RF conducted test					
Agilent ESA-E SERIES	E4407B	MY45108319	09/15/2017	09/14/2018	☒
Power Splitter	1#	1#	08/30/2017	08/29/2018	☒
DC Power Supply	E3640A	MY40004013	09/15/2017	09/14/2018	☒
Radiated Emissions					
EMI test receiver	ESL6	100262	09/15/2017	09/14/2018	☒
Positioning Controller	UC3000	MF780208282	11/18/2016	11/17/2017	☒
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	08/30/2017	08/29/2018	☒
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/23/2017	03/22/2018	☒
Horn Antenna	BBHA9170	3145226D1	09/27/2017	09/26/2018	☒
Active Antenna (9kHz-30MHz)	AL-130	121031	10/12/2017	10/11/2018	☒
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/19/2017	09/18/2018	☒
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/22/2017	09/21/2018	☒
Universal Radio Communication Tester	CMU200	121393	09/23/2017	09/22/2018	☒

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May 06,17	May 05,18
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Dec. 16,16	Dec. 15,17
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jul. 24,17	Jul. 23,18
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 10,17	Mar. 09,18
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Jul. 24,17	Jul. 23,18

Annex B. EUT and Test Setup Photographs

Annex B.i. Photograph EUT External Photo

Whole Package View



Adapter - Front View



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EUT - Front View



EUT - Rear View



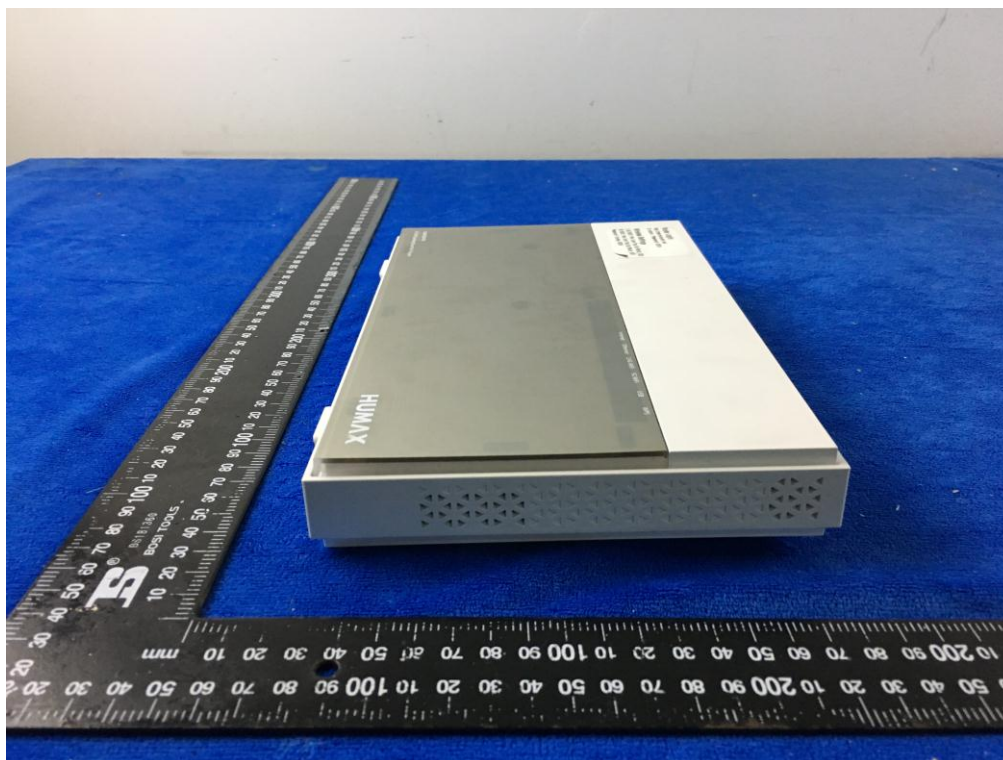
EUT - Top View



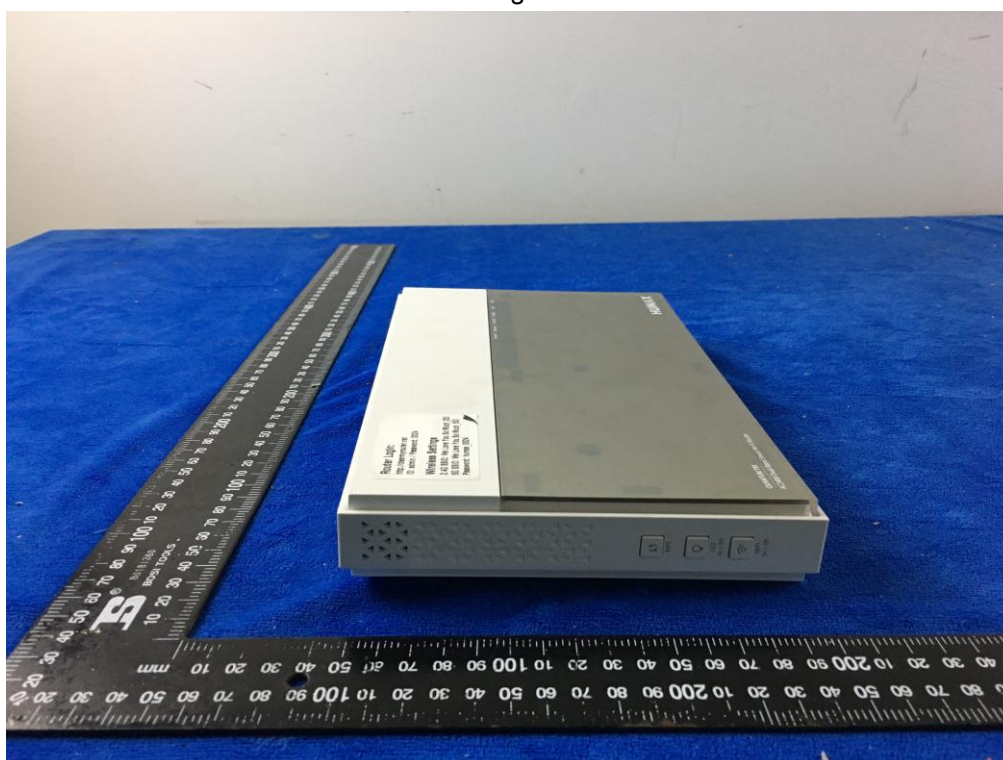
EUT - Bottom View



EUT - Left View



EUT - Right View

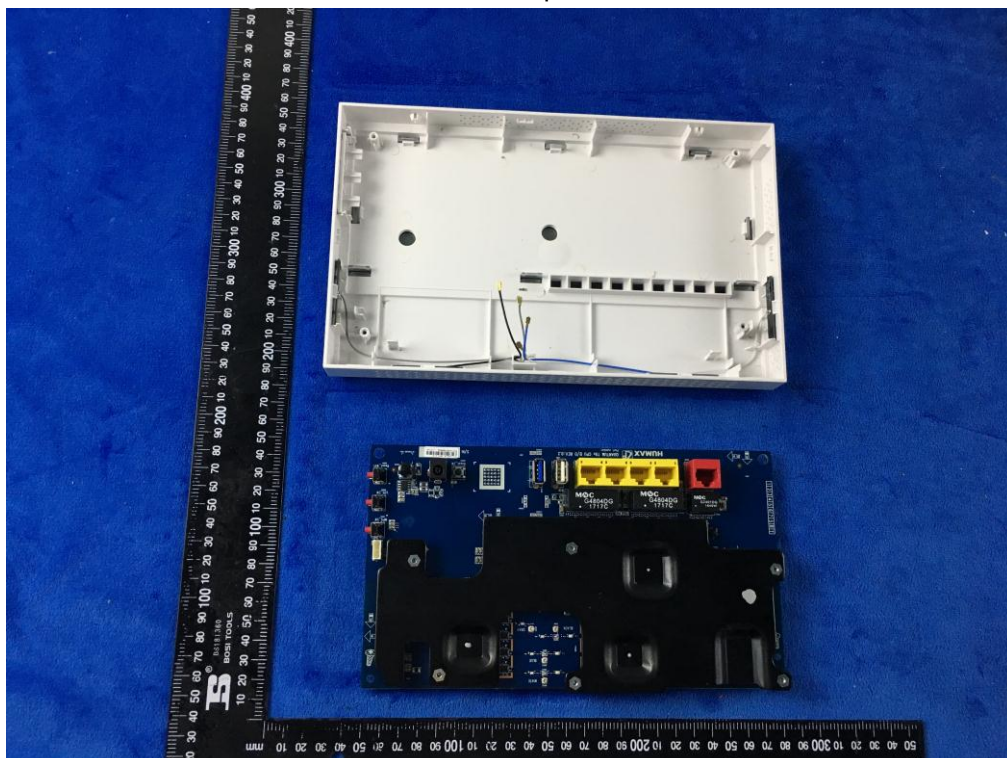


Annex B.ii. Photograph: EUT Internal Photo

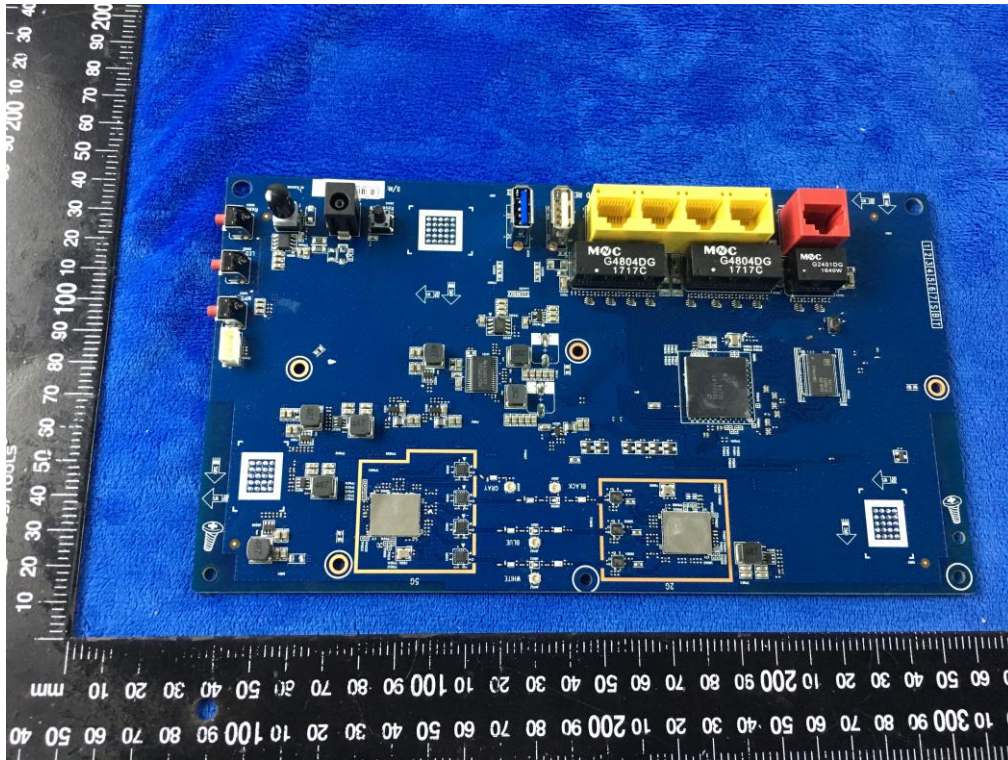
Cover Off - Top View 1



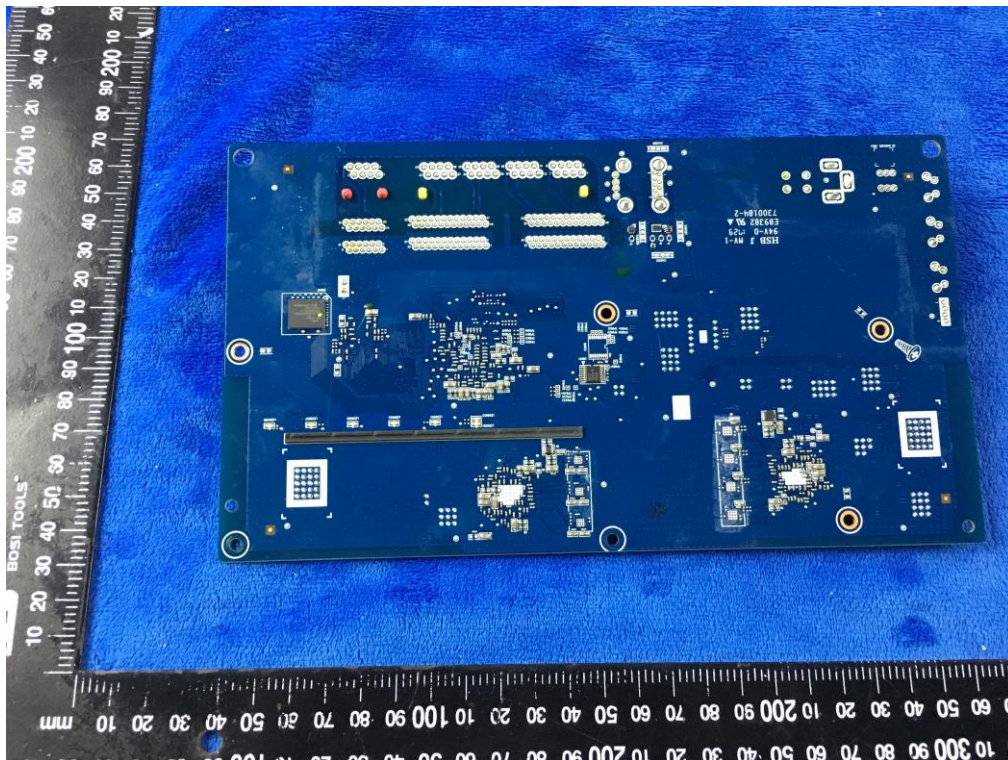
Cover Off - Top View 2



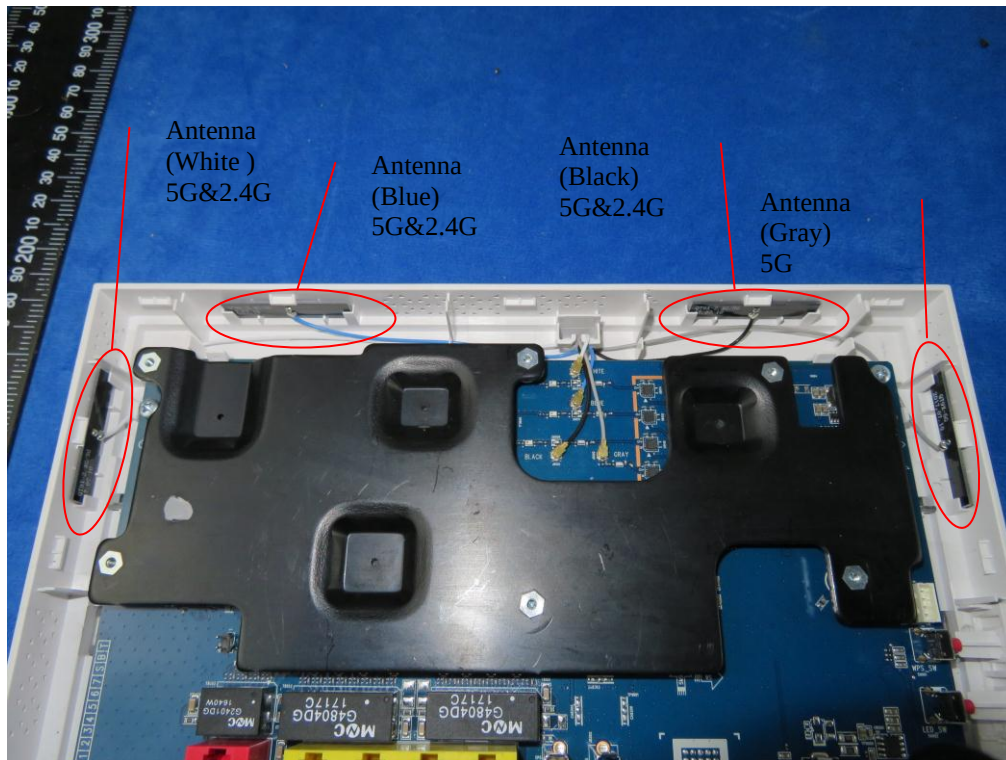
Mainboard with Shielding - Front View



Mainboard without Shielding - Front View

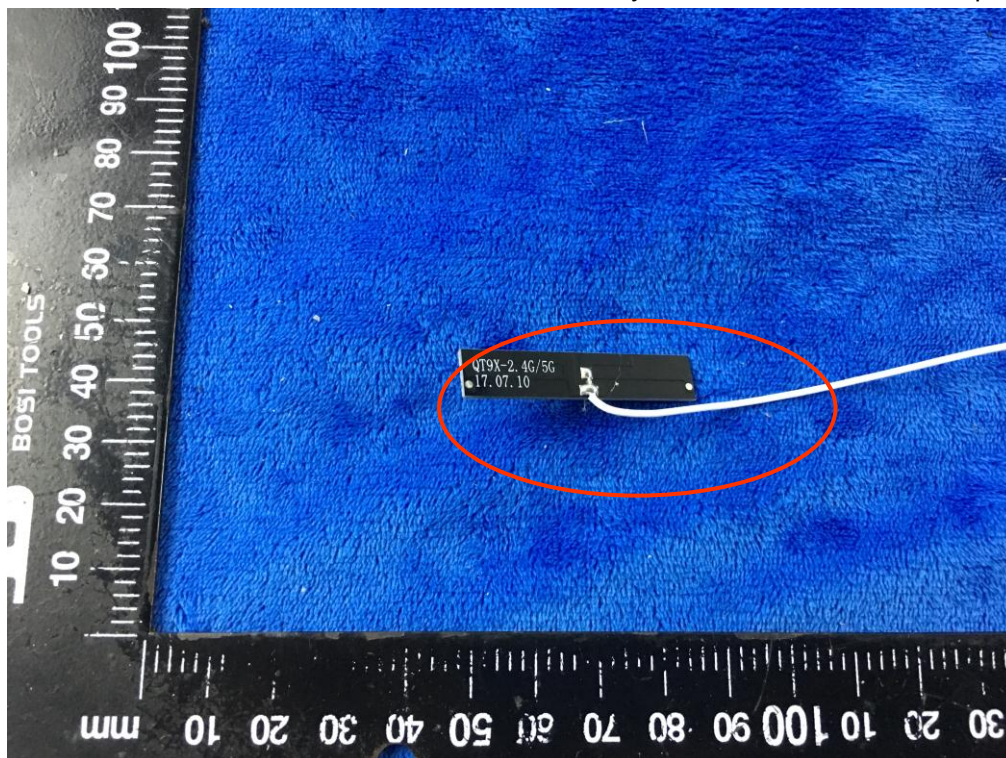


2.4G&5G Antenna View



Close-up View

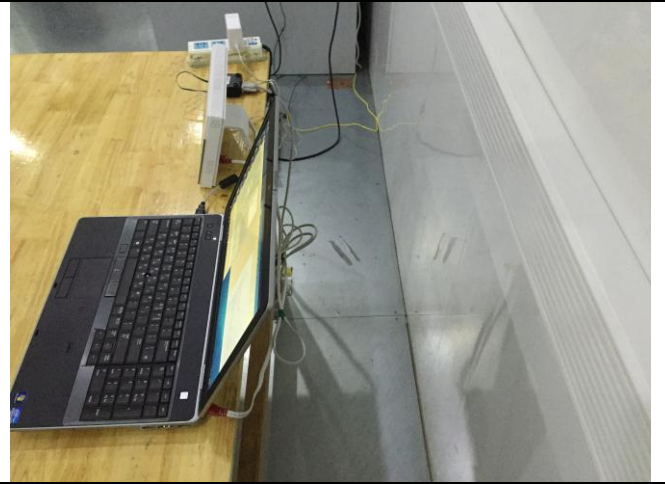
Note : Because all of the antenna are same, we only show the one, as a Close-up.



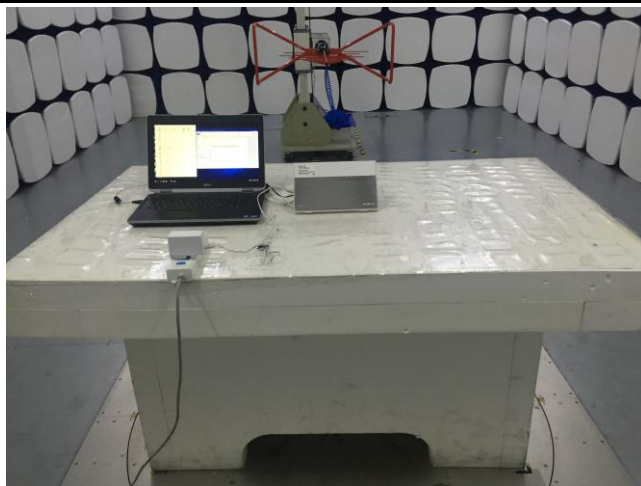
Annex B.iii. Photograph: Test Setup Photo



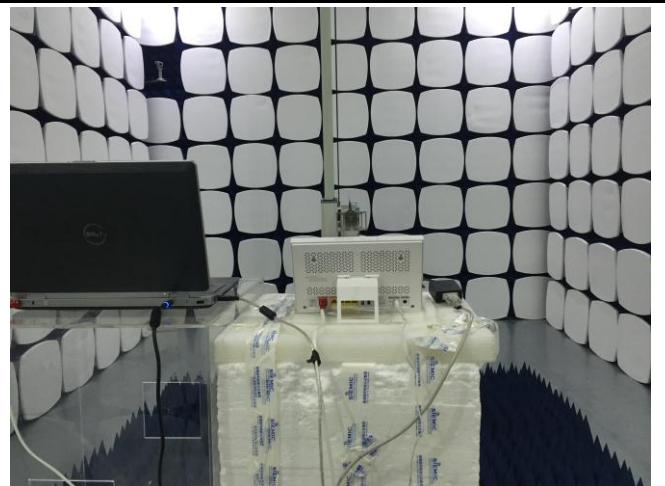
Conducted Emissions Test Setup Front View



Conducted Emissions Test Setup Side View



Radiated Spurious Emissions Test Setup Below 1GHz

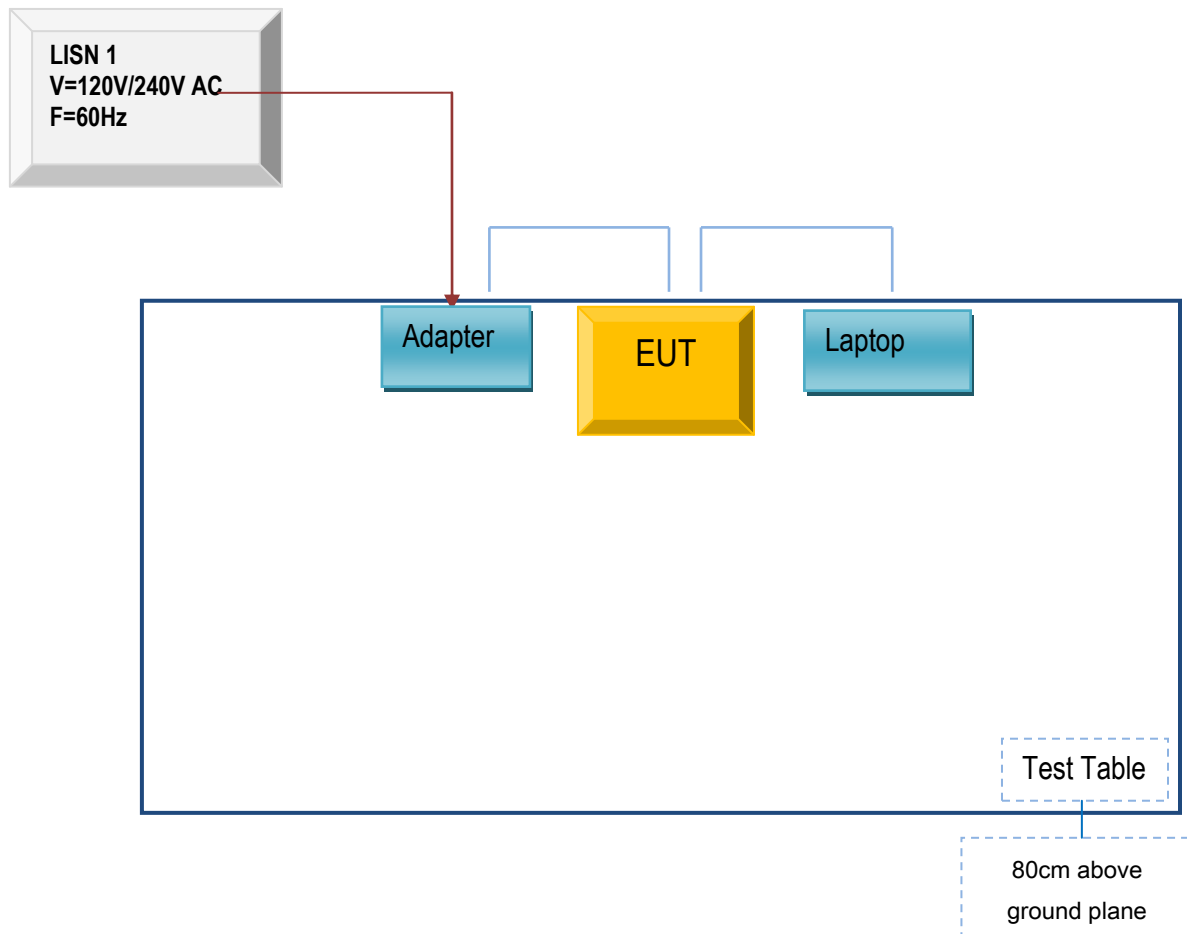


Radiated Spurious Emissions Test Setup Above
1GHz

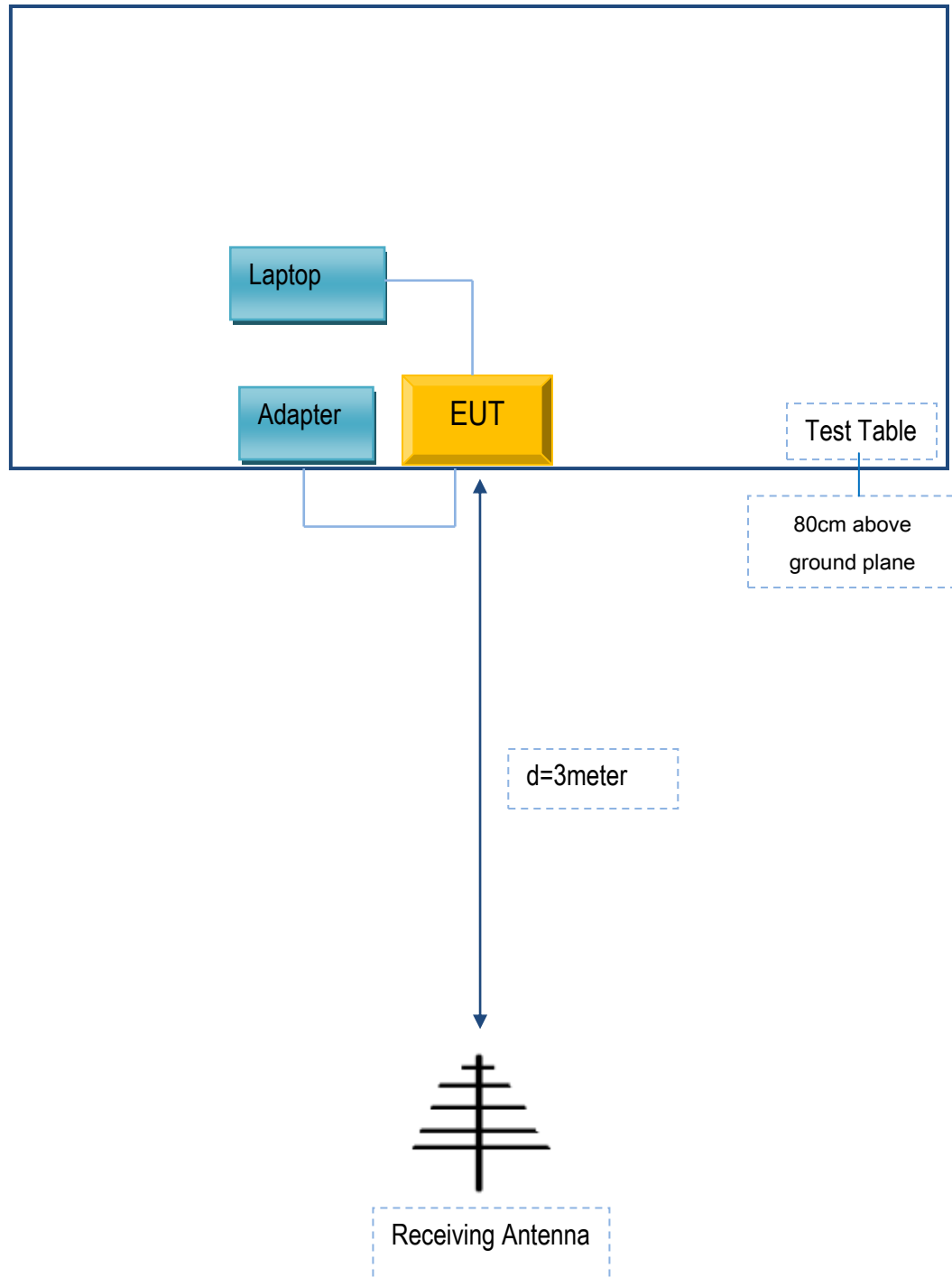
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

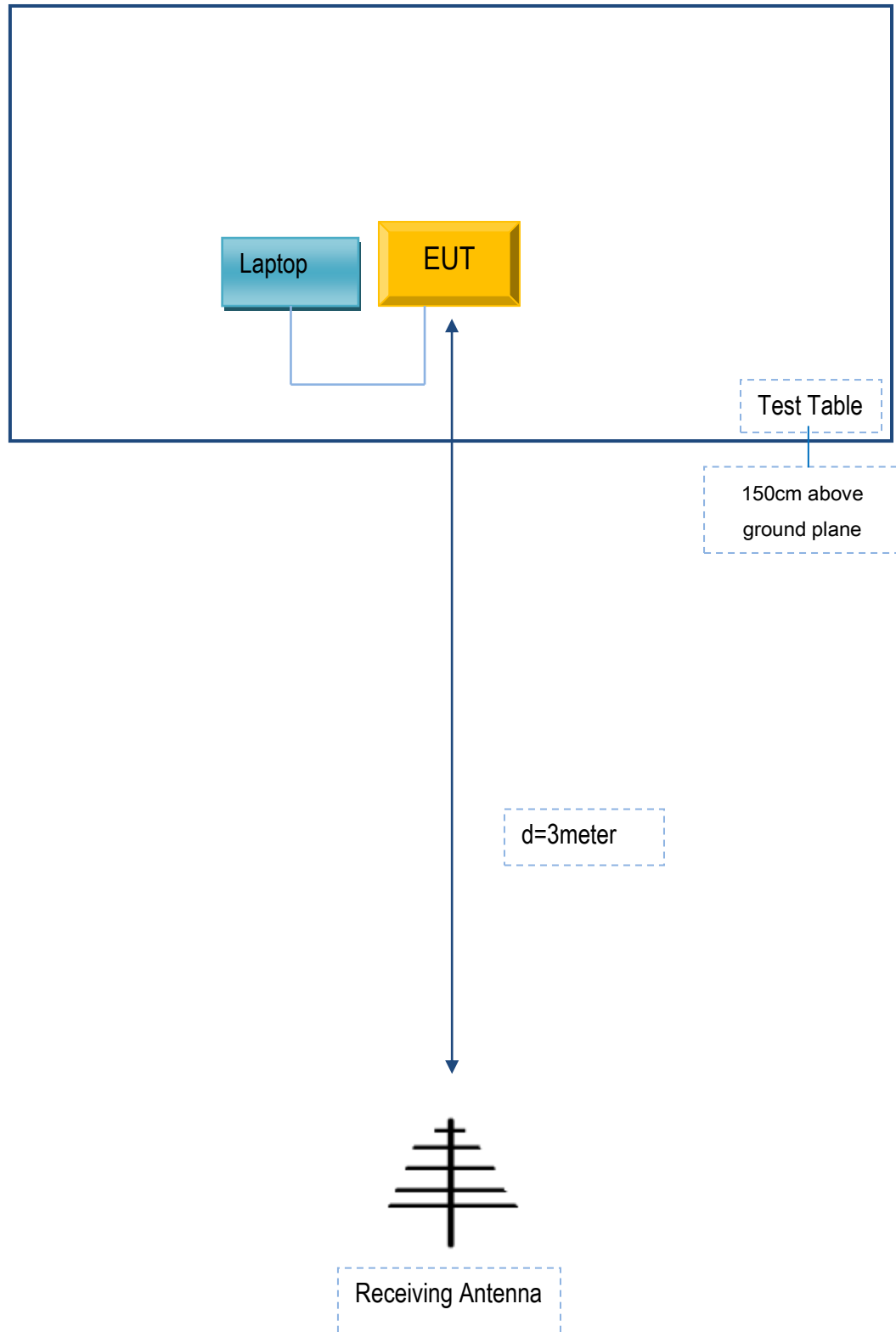
Block Configuration Diagram for AC Line Conducted Emissions



Block Configuration Diagram for Radiated Emissions (Below 1GHz) .



Block Configuration Diagram for Radiated Emissions (Above 1GHz) .



Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Manufacturer	Equipment Description	Model	Serial No
Humax Co., Ltd.	Adapter	ADS-30FD-12 12030E	N/A
Lenovo	Laptop	E40	N/A

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Annex D. User Manual / Block Diagram / Schematics / Partlist

Please see attachment

Annex E. DECLARATION OF SIMILARITY

Humax Co., Ltd.

To: SIEMIC ,775 Montague Expressway, Milpitas, CA 95035,USA

Declaration Letter

Dear Sir,

For our business issue and marketing requirement, we would like to list 3 model numbers on the **FCC&CE** certificates and reports, as following:

Model No.: QUANTUM T9x,QUANTUM T7x ,QUANTUM T5x

FCC ID: O6ZT9X

We declare that, All the model PCB, Antenna and appearance shape, accessories are the same. The difference of these is listed as below:

Main Model No	Serial Model No	Difference
QUANTUM T9x	QUANTUM T7x ,QUANTUM T5x	only unused antennas is removed

Thank you!

Signature:



Printed name/ title: Inseok Seo / Senior Engineer

Address: HUMAX Village, 11-4, Sunae-dong, Bundang-gu, Seongnam city, Gyeonggi-do, South Korea 463-825