

FCC RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247
FCC ID	PWQ-00EFR370000
Brand name	Geovision
Product name	WLAN USB Module, Ralink IEEE 802.11 b/g/n solution
Model No.	WN8020-00
Test Result	Pass

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Tainan Laboratory).



Approved by:

A handwritten signature in black ink, appearing to read "Jeter Wu".

Jeter Wu
Assistant Manager

Tested by:

A handwritten signature in black ink, appearing to read "Eric Lee".

Eric Lee
Engineer

Revision History

Rev.	Issue Date	Revisions	Revised By
00	August 2, 2017	Initial Issue	Vicki Huang
01	November 8, 2017	1. Modify power supply in page 4. 2. Modify test mode in page 4. 3. Revised test photo in page 75-77.	Angel Cheng

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APPENDIX 1 - PHOTOGRAPHS OF EUT		

1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	GeoVision Inc. 9F, No. 246, Sec. 1, Neihu Rd., Neihu District, Taipei 114, Taiwan
Equipment	WLAN USB Module, Ralink IEEE 802.11 b/g/n solution
Model Name	WN8020-00
Model Discrepancy	N/A
Received Date	March 30, 2017
Date of Test	May 24 ~ July 31, 2017
Output Power(W)	IEEE 802.11b mode: 0.0071 (EIRP : 0.0107) IEEE 802.11g mode: 0.0587(EIRP : 0.0889) IEEE 802.11n HT 20 MHz mode: 0.0379 (EIRP : 0.0574)
Power Supply	EUT power by Host system.

1.2 EUT CHANNEL INFORMATION

Frequency Range	2412MHz-2462MHz
Modulation Type	1. IEEE 802.11b mode: CCK 2. IEEE 802.11g mode: OFDM 3. IEEE 802.11n HT 20 MHz mode: OFDM
Bandwidth	1. IEEE 802.11b mode: 11 Channels 2. IEEE 802.11g mode: 11 Channels 3. IEEE 802.11n HT 20 MHz mode: 11 Channels

Remark:

Refer as ANSI 63.10:2013 clause 5.6.1 Table 4

Number of frequencies to be tested		
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
<input type="checkbox"/> 1 MHz or less	1	Middle
<input type="checkbox"/> 1 MHz to 10 MHz	2	1 near top and 1 near bottom
<input checked="" type="checkbox"/> More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Type	<input checked="" type="checkbox"/> PIFA <input type="checkbox"/> PCB <input type="checkbox"/> Dipole <input type="checkbox"/> Coils
Antenna Gain	Gain: 1.8dBi

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 30 to 1000 MHz	+/- 3.97
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 1 to 18GHz	+/- 3.58
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 18 to 26 GHz	+/- 3.59
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 26 to 40 GHz	+/- 3.81
Conducted Emission (Mains Terminals), 9kHz to 30MHz	+/- 2.48

Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at
No.8, Jiucengling, Xinhua Dist., Tainan City 712, Taiwan (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	Eric Lee	
Radiation	Hayden Feng	
RF Conducted	Eric Lee	

Remark: The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.6 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
BNC Coaxial Cable	CCS	BNC50	11	01/13/2017	01/12/2018
EMI Test Receiver	R&S	ESCS 30	100348	12/12/2016	12/11/2017
LISN	SCHWARZBECK	NNLK8130	8130124	11/08/2016	11/07/2017
LISN	FCC	FCC-LISN-50-32-2	08009	05/08/2017	05/07/2018
Pulse Limiter	R&S	ESH3-Z2	100116	01/13/2017	01/12/2018
BNC Coaxial Cable	CCS	BNC50	11	01/13/2017	01/12/2018

3M 966 Chamber Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Active Loop Antenna	ETS-LINDREN	6502	8905-2356	07/20/2017	07/19/2019
Amplifier	HP	8447F	2443A01671	01/18/2017	01/17/2018
Bi-Log Antenna	Sunol	JB1	A070506-2	07/22/2017	07/21/2018
Cable	HUBER+SUHNER	SUCOFLEX 104PEA	SN25737 /4PEA	01/18/2017	01/17/2018
Double Ridged Guide Horn Antenna	ETS-LINDGREN	3116	00078900	03/20/2017	03/19/2019
EMI Test Receiver	R&S	ESCS 30	100294	12/02/2016	12/01/2017
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY54430216	05/09/2017	05/08/2018
Horn Antenna	Com-Power	AH-118	071032	02/09/2017	02/08/2018
Pre-Amplifier	EMCI	EMC012645	980098	01/17/2017	01/16/2018

AC Conducted Emissions Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
BNC Coaxial Cable	CCS	BNC50	11	01/13/2017	01/12/2018
EMI Test Receiver	R&S	ESCS 30	100348	12/12/2016	12/11/2017
Four BALANCED PAIR ISN	FCC	F-071115-1057-1-09	111130	11/16/2016	11/15/2017
LISN	SCHWARZBECK	NNLK8130	8130124	11/08/2016	11/07/2017
LISN	FCC	FCC-LISN-50-32-2	08009	05/08/2017	05/07/2018
Pulse Limiter	R&S	ESH3-Z2	100116	01/13/2017	01/12/2018

Remark: Each piece of equipment is scheduled for calibration once a year.

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
	N/A				

Support Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	NB(H)	Acer	Aspire 4320 series	N/A	QDS-BRCM1018

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247, KDB 558074 D01 v03r05.

2. TEST SUMMERY

FCC Standard Section	Report Section	Test Item	Result
15.203	1.2	Antenna Requirement	Pass
15.207(a)	4.1	AC Conducted Emission	Pass
15.247(a)(2)	4.2	6 dB Bandwidth	Pass
-	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)	4.3	Output Power Measurement	Pass
15.247(e)	4.4	Power Spectral Density	Pass
15.247(d)	4.5	Conducted Band Edge	Pass
15.247(d)	4.5	Conducted Emission	Pass
15.247(d)	4.6	Radiation Band Edge	Pass
15.247(d)	4.6	Radiation Spurious Emission	Pass

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	IEEE 802.11b mode :1Mbps IEEE 802.11g mode :6Mbps IEEE 802.11n HT20 mode : MCS0
Test Channel Frequencies	IEEE 802.11b mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11g mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11n HT20 mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz
Operation Transmitter	IEEE 802.11b mode :1T1R IEEE 802.11g mode :1T1R IEEE 802.11n HT20 mode :1T1R

Remark:

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.

3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conducted Emission	
Test Condition	AC Power line conducted emission for line and neutral
Voltage/Hz	120V/60Hz
Test Mode	Mode 1: EUT power by Host system.
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4

Radiated Emission Measurement Above 1G	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Voltage/Hz	120V/60Hz
Test Mode	Mode 1: EUT power by Host system.
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4
Worst Position	<input type="checkbox"/> Placed in fixed position. <input type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input checked="" type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane)
Worst Polarity	<input type="checkbox"/> Horizontal <input checked="" type="checkbox"/> Vertical

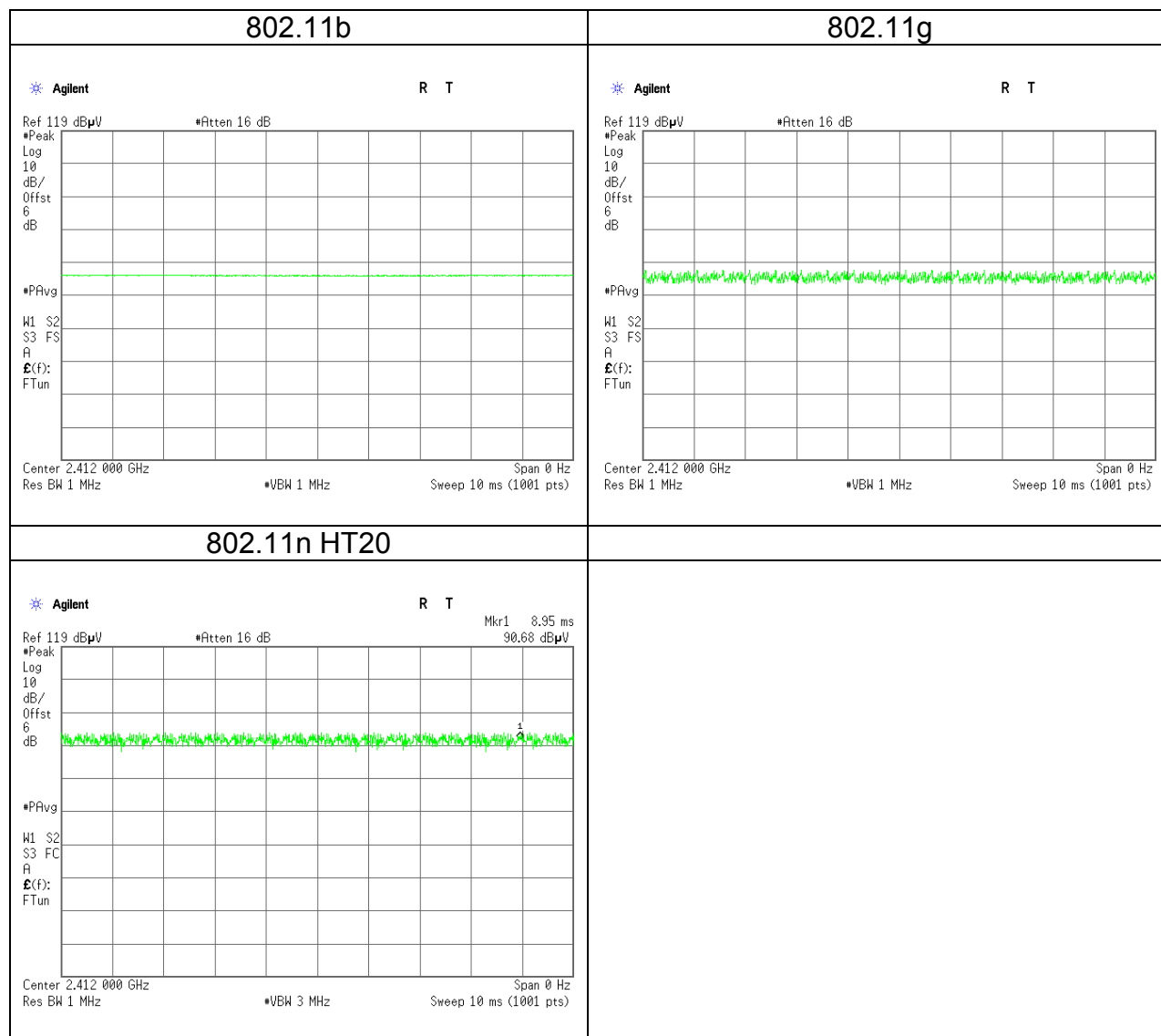
Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Voltage/Hz	120V/60Hz
Test Mode	Mode 1:EUT power by AC adapter.
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4

Remark:

1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case(Y-Plane and Vertical) were recorded in this report
3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.

3.3 EUT DUTY CYCLE

Duty Cycle				
Configuration	TX ON (ms)	TX ALL (ms)	Duty Cycle (%)	Duty Factor(dB)
802.11b	1.0000	1.0000	--	0.00
802.11g	1.0000	1.0000	--	0.00
802.11n HT20	1.0000	1.0000	--	0.00



4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a)(2)

Frequency Range (MHz)	Limits(dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

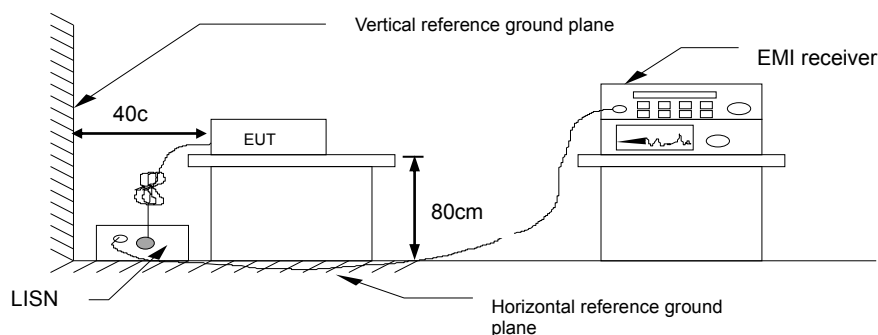
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

4.1.3 Test Setup

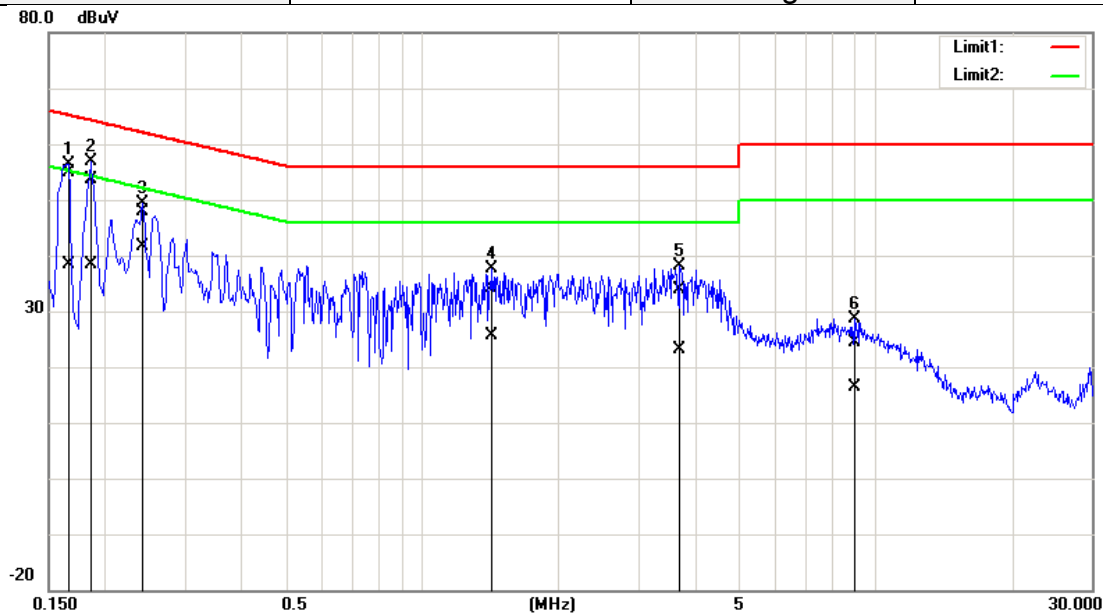


4.1.4 Test Result

Pass.

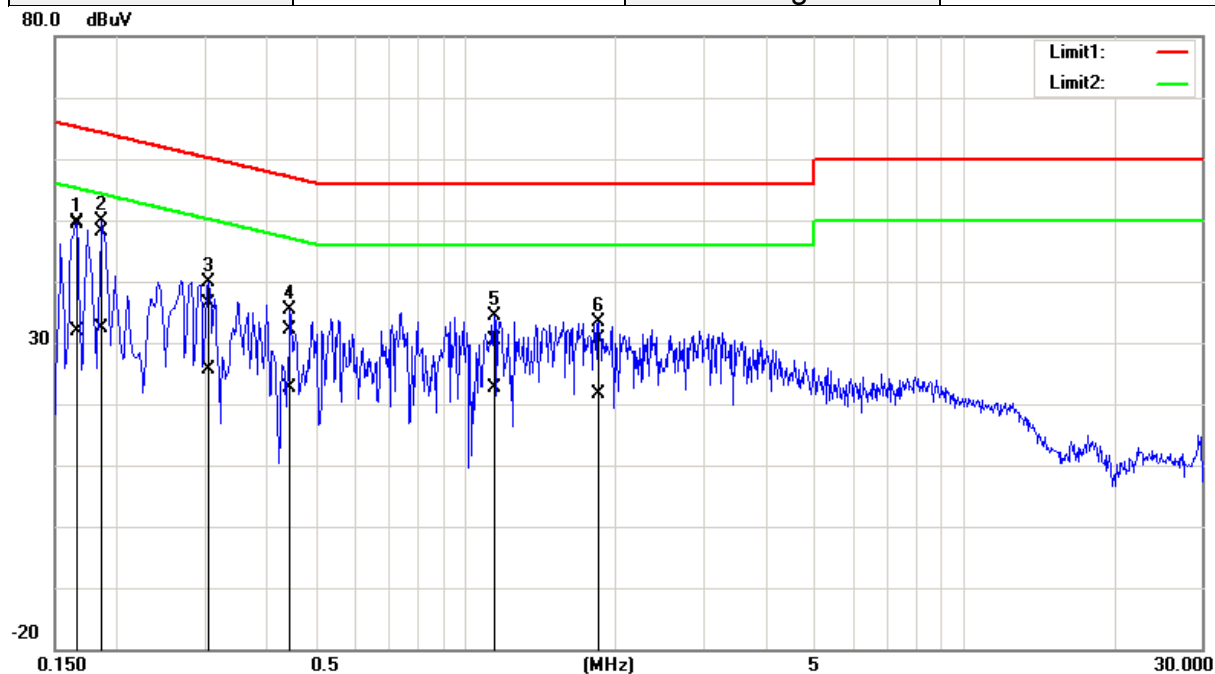
Test Data

Test Mode:	Mode 1	Temp/Hum	24(°C) / 50%RH
Test Voltage:	120Vac / 60Hz	Test Date	2017/7/31
Phase:	Line	Test Engineer	Eric.Lee



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)
1	0.1660	54.91	38.42	-0.02	54.89	38.40	65.16	55.16	-10.27	-16.76
2	0.1860	53.69	38.31	-0.03	53.66	38.28	64.21	54.21	-10.55	-15.93
3	0.2420	47.86	41.54	-0.03	47.83	41.51	62.03	52.03	-14.20	-10.52
4	1.4260	34.27	25.61	-0.05	34.22	25.56	56.00	46.00	-21.78	-20.44
5	3.7140	33.88	23.22	-0.05	33.83	23.17	56.00	46.00	-22.17	-22.83
6	8.9820	24.20	16.11	0.16	24.36	16.27	60.00	50.00	-35.64	-33.73

Test Mode:	Mode 1	Temp/Hum	24(°C)/ 50%RH
Test Voltage:	120Vac / 60Hz	Test Date	2017/7/31
Phase:	Neutral	Test Engineer	Eric.Lee



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)
1	0.1660	49.38	31.98	-0.09	49.29	31.89	65.16	55.16	-15.87	-23.27
2	0.1860	48.20	32.48	-0.10	48.10	32.38	64.21	54.21	-16.11	-21.83
3	0.3060	36.57	25.63	-0.12	36.45	25.51	60.08	50.08	-23.63	-24.57
4	0.4460	32.28	22.68	-0.13	32.15	22.55	56.95	46.95	-24.80	-24.40
5	1.1460	30.53	22.86	-0.13	30.40	22.73	56.00	46.00	-25.60	-23.27
6	1.8500	30.70	21.66	-0.14	30.56	21.52	56.00	46.00	-25.44	-24.48

4.2 6DB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)

4.2.1 Test Limit

According to §15.247(a)(2),

6 dB Bandwidth :

Limit	Shall be at least 500kHz
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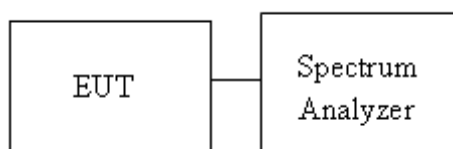
Occupied Bandwidth(99%) : For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as KDB 558074 D01 v03r05, Section 8.1 and ANSI 63.10:2013 clause 6.9.2,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth and 99% Bandwidth.
4. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

4.2.3 Test Setup



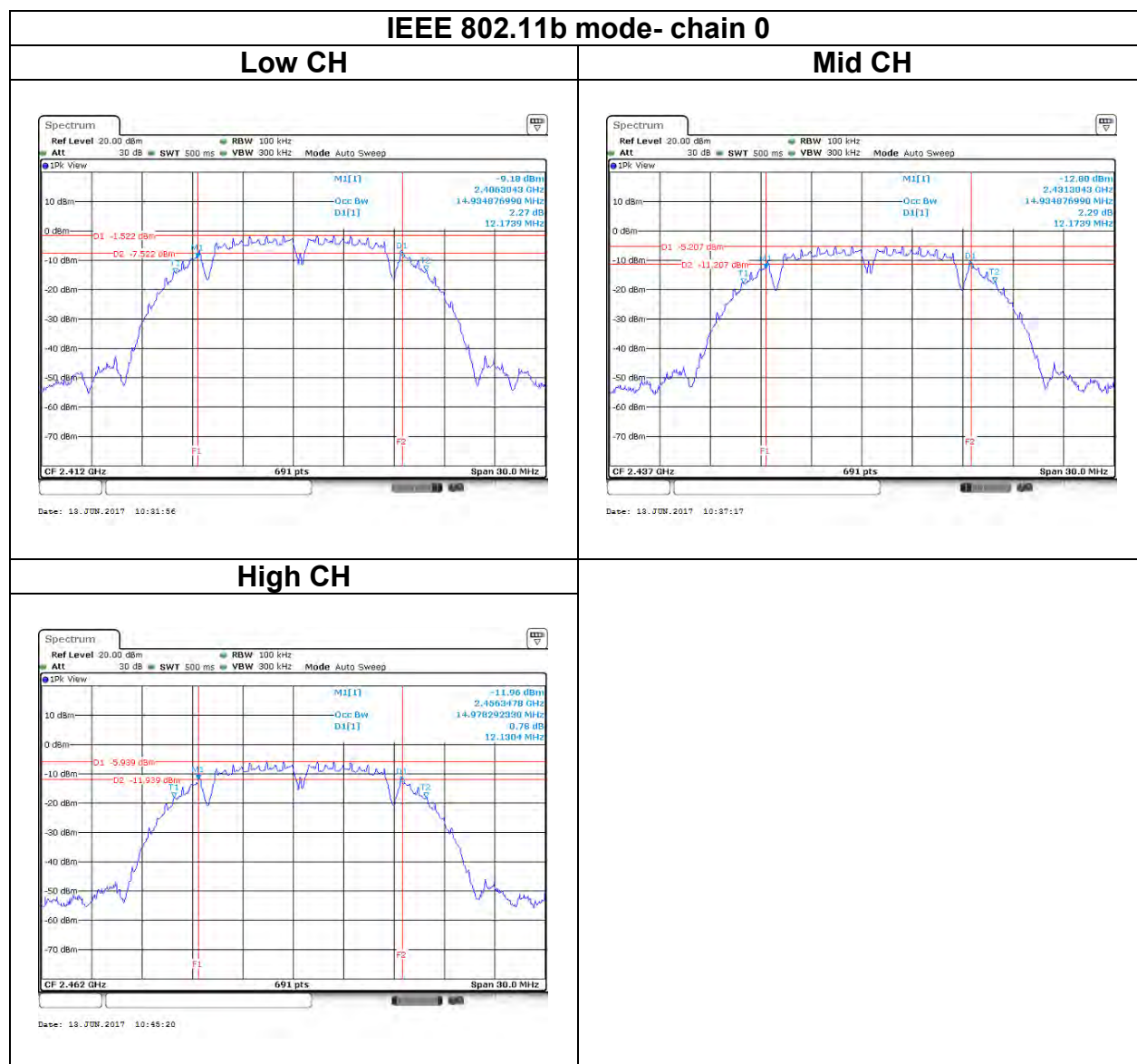
4.2.4 Test Result

Test mode: IEEE 802.11b mode / 2412-2462 MHz						
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)	6dB limit (kHz)
Low	2412	14.9348	-	12.1739	-	≥500
Mid	2437	14.9348	-	12.1739	-	
High	2462	14.9782	-	12.1304	-	

Test mode: IEEE 802.11g mode / 2412-2462 MHz						
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)	6dB limit (kHz)
Low	2412	16.4544	-	16.5652	-	≥500
Mid	2437	16.4544	-	16.5652	-	
High	2462	16.3675	-	16.5217	-	

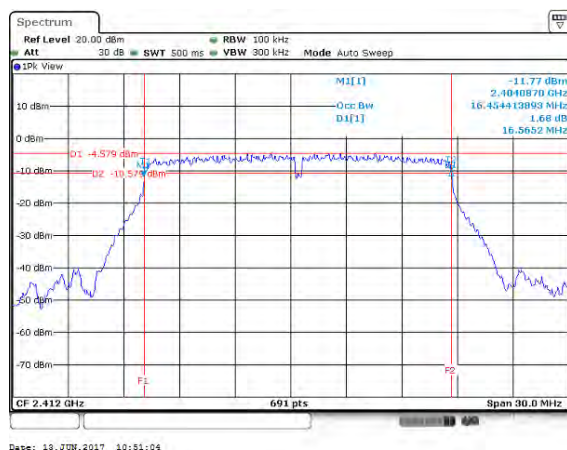
Test mode: IEEE 802.11n HT 20 MHz mode / 2412-2462 MHz						
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)	6dB limit (kHz)
Low	2412	17.5397	-	17.6522	-	≥500
Mid	2437	17.5397	-	17.6522	-	
High	2462	17.5397	-	17.6522	-	

Test Data

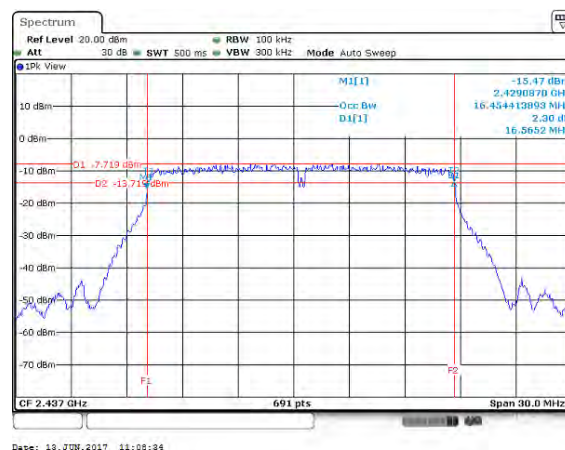


IEEE 802.11g mode- chain 0

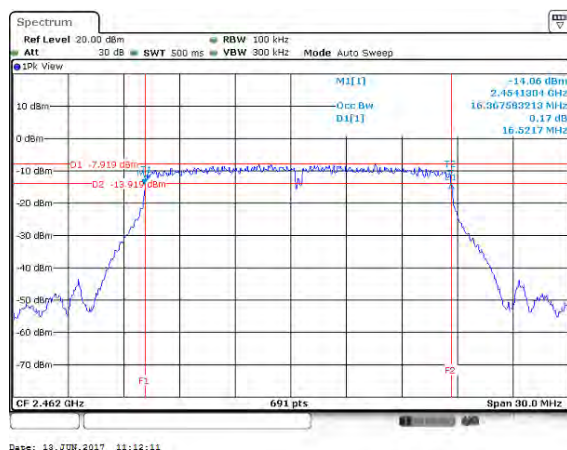
Low CH



Mid CH

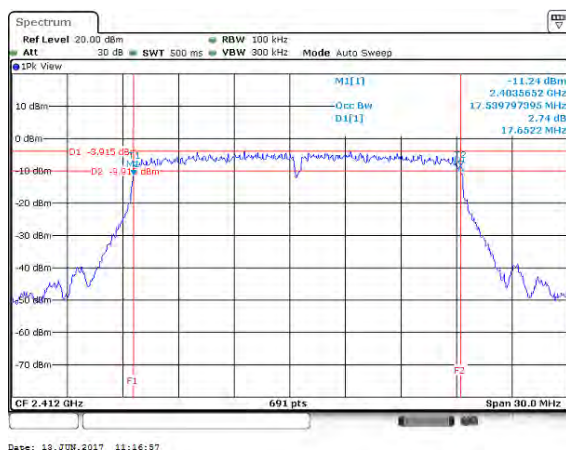


High CH

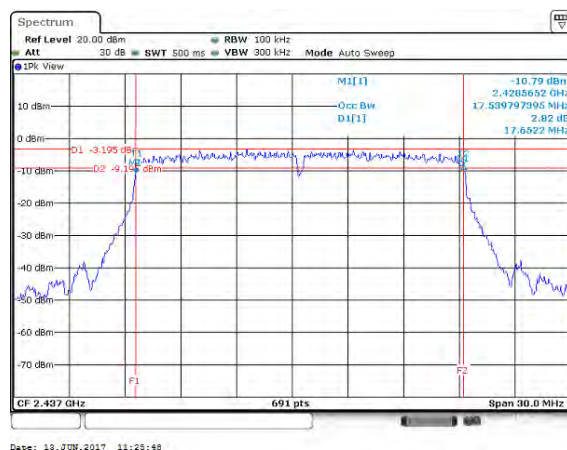


IEEE 802.11n HT20 mode- chain 0

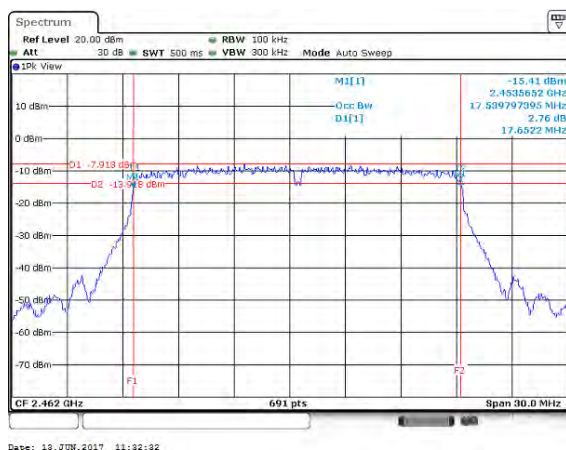
Low CH



Mid CH



High CH



4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(b)

Peak output power :

For systems using digital modulation in the 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt(30 dBm) and the e.i.r.p. shall not exceed 4Watt(36 dBm), base on the use of antennas with directional gain not exceed 6 dBi If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Limit	<input checked="" type="checkbox"/> Antenna not exceed 6 dBi : 30dBm <input type="checkbox"/> Antenna with DG greater than 6 dBi : [Limit = 30 – (DG – 6)] <input type="checkbox"/> Point-to-point operation :
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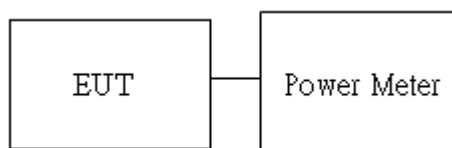
Average output power : For reporting purposes only.

4.3.2 Test Procedure

Test method Refer as KDB 558074 D01 v03r05, Section 9.1.2.

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

4.3.3 Test Setup



4.3.4 Test Result

Peak output power :

Wifi 2.4G																
Config	CH	Freq. (MHz)	power set		PK Power(dBm)		PK Total Power (dBm)	PK Total Power (W)	ERP PK Total Power (dBm)	ERP PK Total Power (W)	DG (dBi)	Limit (dBm)	ERP Limit (dBm)			
			chain0	chain1	chain0	chain1										
IEEE 802.11b Data rate: 1Mbps	Low	2412	30	-	6.93	-	6.93	0.0049	8.73	0.0075	1.8	30	36			
	Mid	2437	30	-	8.49	-	8.49	0.0071	10.29	0.0107						
	High	2462	30	-	8.27	-	8.27	0.0067	10.07	0.0102						
IEEE 802.11g Data rate: 6Mbps	Low	2412	30	-	17.69	-	17.69	0.0587	19.49	0.0889						
	Mid	2437	30	-	15.79	-	15.79	0.0379	17.59	0.0574						
	High	2462	30	-	15.76	-	15.76	0.0377	17.56	0.0570						
IEEE 802.11n HT20 Data rate: MCS8	Low	2412	30	-	14.41	-	14.41	0.0276	16.21	0.0418						
	Mid	2437	30	-	15.79	-	15.79	0.0379	17.59	0.0574						
	High	2462	30	-	14.75	-	14.75	0.0299	16.55	0.0452						

Average output power :

Wifi 2.4G					
Config	CH	Freq. (MHz)	AV Power(dBm)		AV Total Power (dBm)
			chain0	chain1	
IEEE 802.11b Data rate: 1Mbps	Low	2412	4.53	-	4.53
	Mid	2437	6.11	-	6.11
	High	2462	5.91	-	5.91
IEEE 802.11g Data rate: 6Mbps	Low	2412	8.83	-	8.83
	Mid	2437	6.12	-	6.12
	High	2462	6.09	-	6.09
IEEE 802.11n HT20 Data rate: MCS8	Low	2412	5.87	-	5.87
	Mid	2437	6.24	-	6.24
	High	2462	6.08	-	6.08

4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.247(e),

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Limit	<input checked="" type="checkbox"/> Antenna not exceed 6 dBi : 8dBm <input type="checkbox"/> Antenna with DG greater than 6 dBi : [Limit = 8 – (DG – 6)] <input type="checkbox"/> Point-to-point operation :
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4.4.2 Test Procedure

Test method Refer as KDB 558074 D01 v03r05, Section 10.2

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 3kHz, VBW = 30kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
4. The path loss and Duty Factor were compensated to the results for each measurement by SA.
5. Mark the maximum level.
6. Measure and record the result of power spectral density. in the test report.

4.4.3 Test Setup



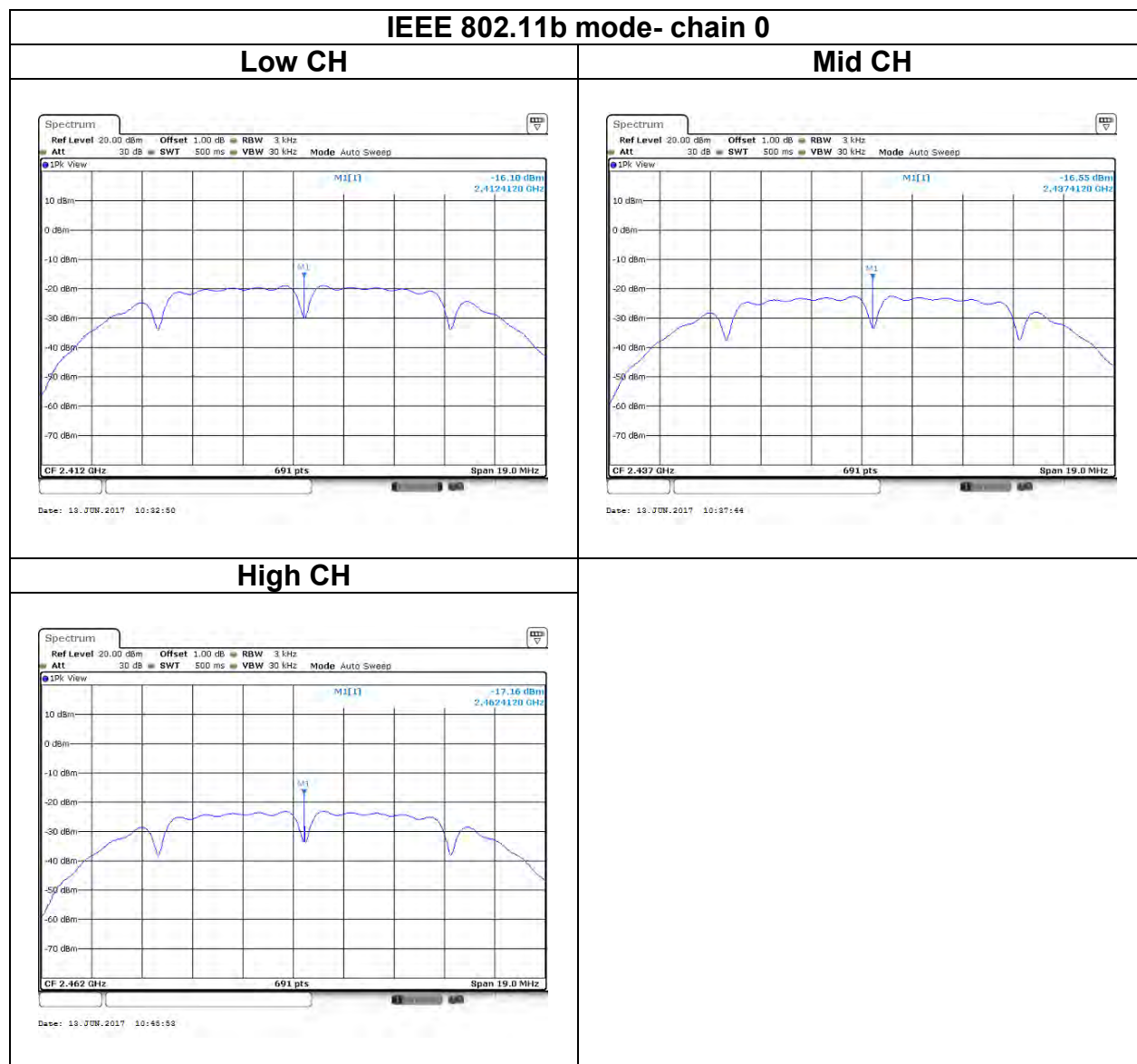
4.4.4 Test Result

Test mode: IEEE 802.11b mode / 2412-2462 MHz					
Channel	Frequency (MHz)	Chain 0 PPSSD (dBm)	Chain 1 PPSSD (dBm)	Total PPSSD (dBm)	Limit (dBm)
Low	2412	-16.10	-	-16.10	8
Mid	2437	-16.55	-	-16.55	
High	2462	-17.16	-	-17.16	

Test mode: IEEE 802.11g mode / 2412-2462 MHz					
Channel	Frequency (MHz)	Chain 0 PPSSD (dBm)	Chain 1 PPSSD (dBm)	Total PPSSD (dBm)	Limit (dBm)
Low	2412	-16.79	-	-16.79	8
Mid	2437	-16.21	-	-16.21	
High	2462	-16.70	-	-16.70	

Test mode: IEEE 802.11n HT 20 MHz mode / 2412-2462 MHz					
Channel	Frequency (MHz)	Chain 0 PPSSD (dBm)	Chain 1 PPSSD (dBm)	Total PPSSD (dBm)	Limit (dBm)
Low	2412	-16.71	-	-16.71	8
Mid	2437	-16.40	-	-16.40	
High	2462	-16.60	-	-16.60	

Test Data



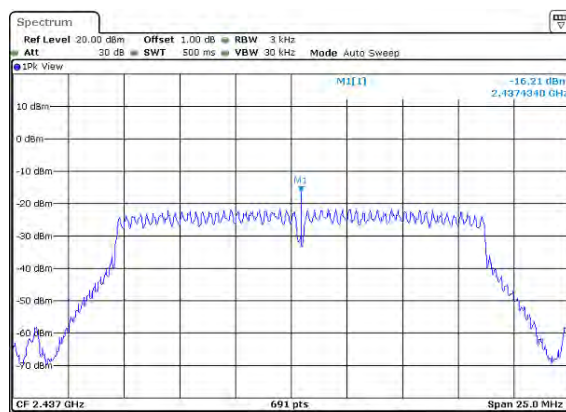
IEEE 802.11g mode- chain 0

Low CH



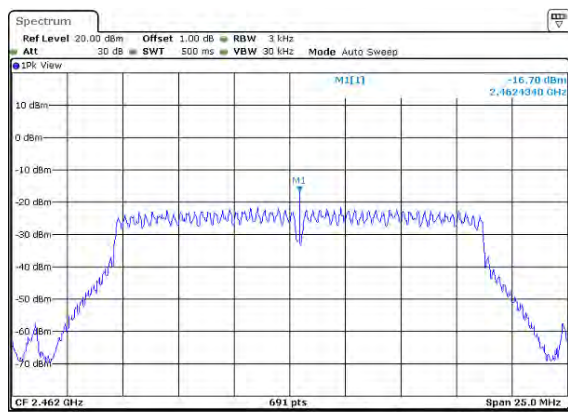
Date: 19.JUN.2017 10:51:06

Mid CH



Date: 19.JUN.2017 11:09:00

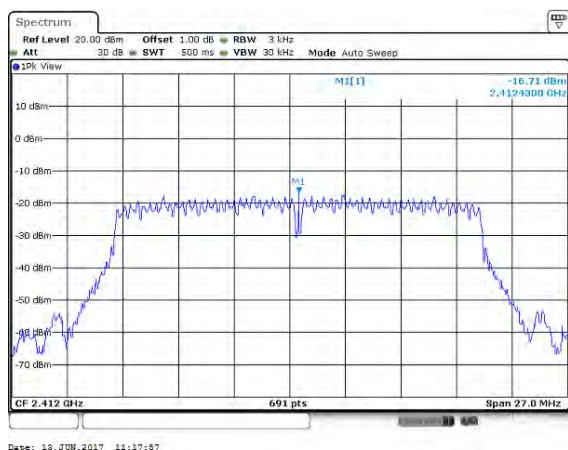
High CH



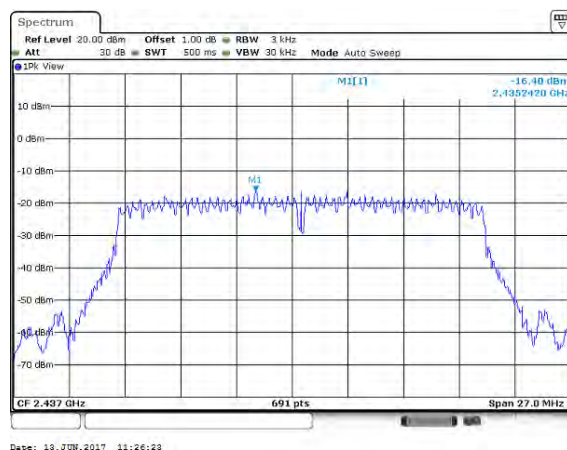
Date: 19.JUN.2017 11:12:39

IEEE 802.11n HT20 mode- chain 0

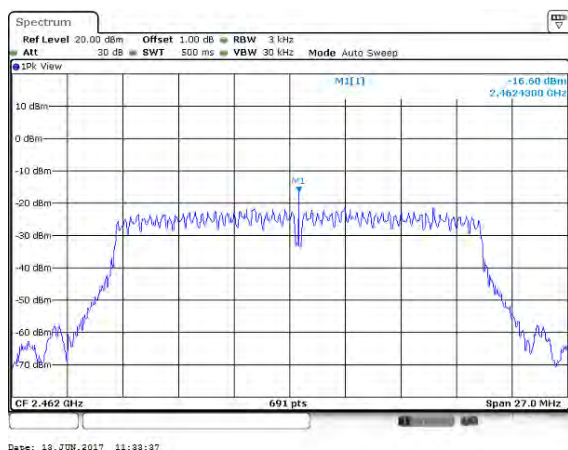
Low CH



Mid CH



High CH



4.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

4.5.1 Test Limit

According to §15.247(d)

In any 100 kHz bandwidth outside the authorized frequency band,

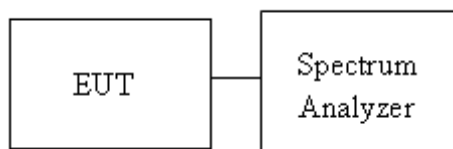
Non-restricted bands shall be attenuated at least 20 dB/30 dB relative to the maximum PSD level in 100 kHz by RF conducted or a radiated measurement which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

4.5.2 Test Procedure

Test method Refer as KDB 558074 D01 v03r05, Section 11.

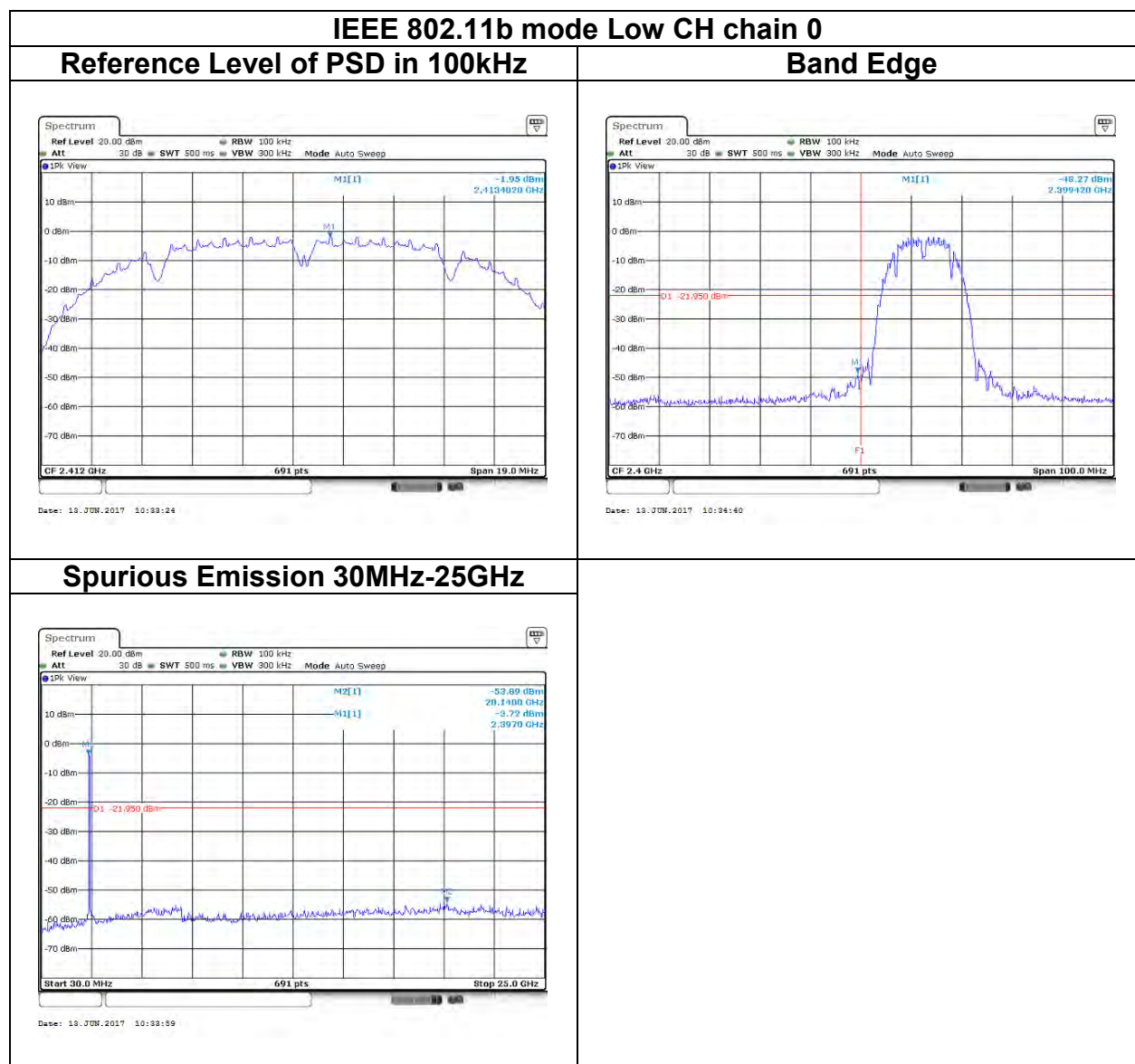
1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.
2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.
3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

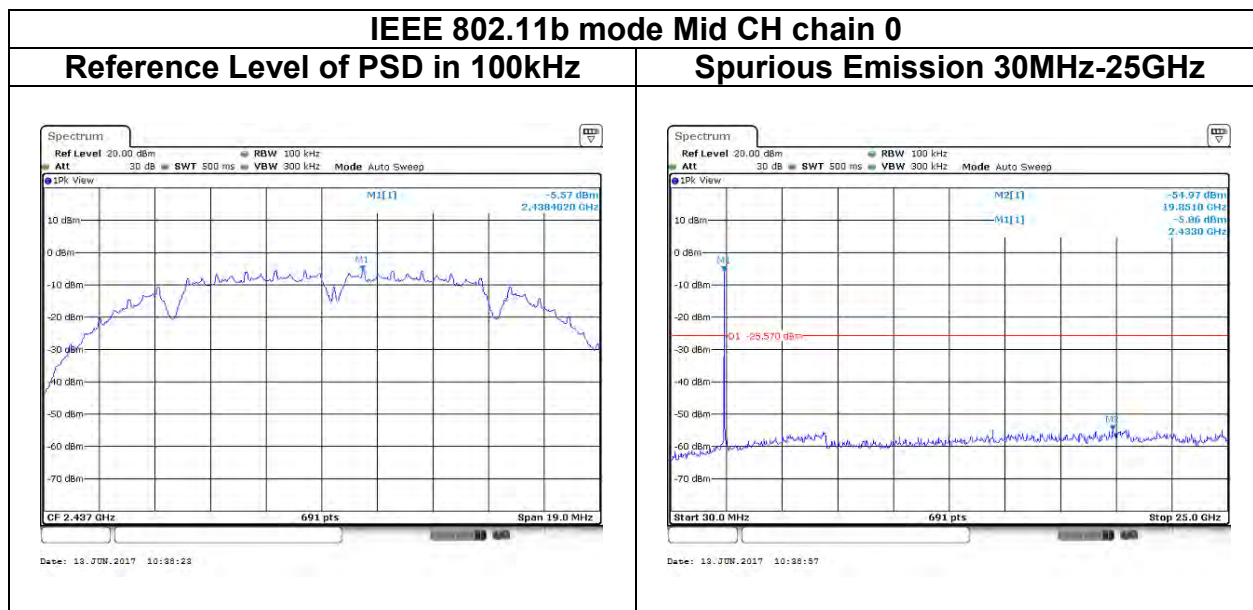
4.5.3 Test Setup



4.5.4 Test Result

Test Data





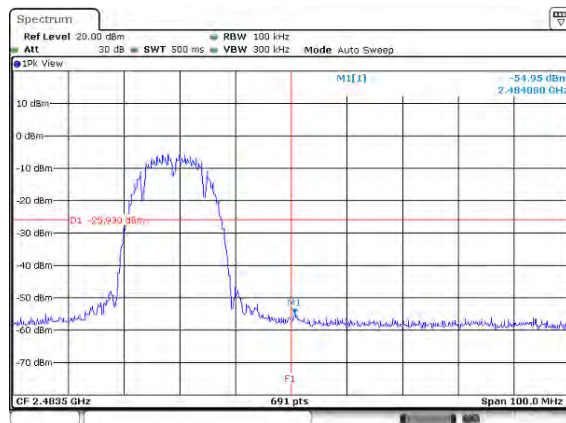
IEEE 802.11b mode High CH chain 0

Reference Level of PSD in 100kHz



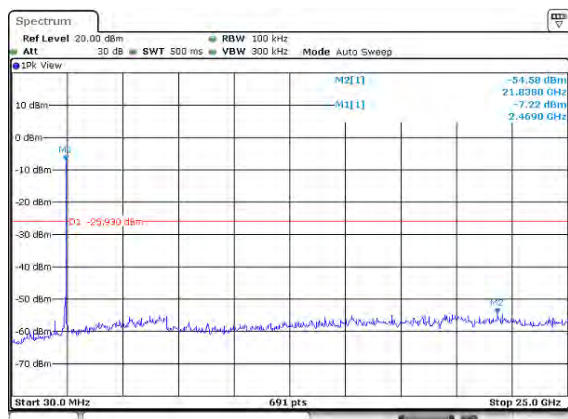
Date: 19.JUN.2017 10:46:30

Band Edge



Date: 19.JUN.2017 10:47:51

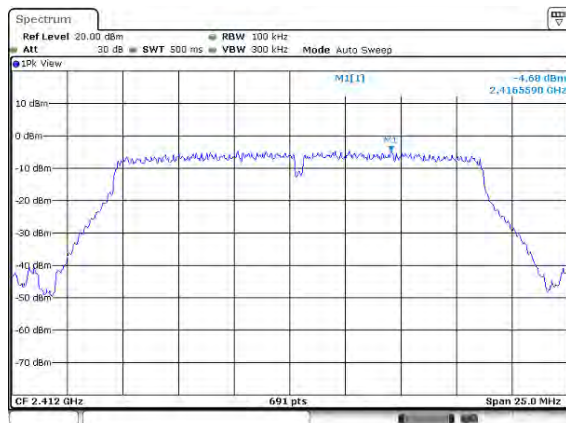
Spurious Emission 30MHz-25GHz



Date: 19.JUN.2017 10:47:09

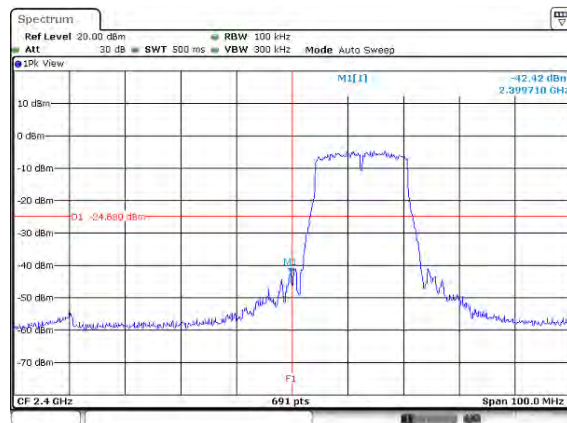
IEEE 802.11g mode Low CH chain 0

Reference Level of PSD in 100kHz



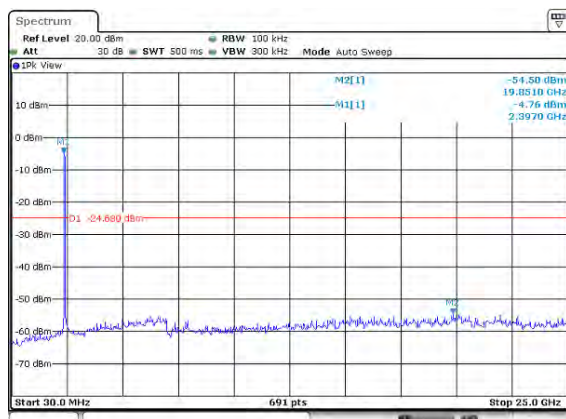
Date: 19.JUN.2017 10:52:13

Band Edge



Date: 19.JUN.2017 10:53:26

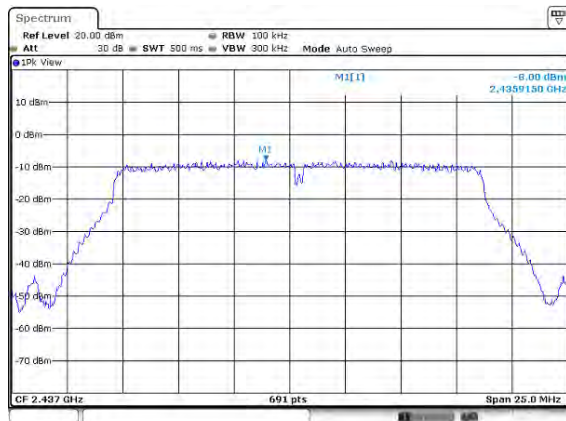
Spurious Emission 30MHz-25GHz



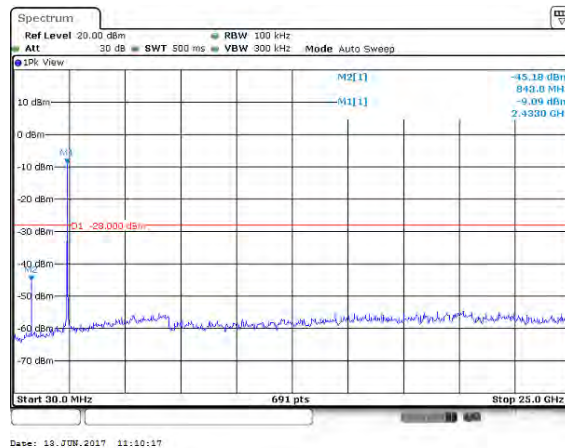
Date: 19.JUN.2017 10:52:46

IEEE 802.11g mode Mid CH chain 0

Reference Level of PSD in 100kHz



Spurious Emission 30MHz-25GHz



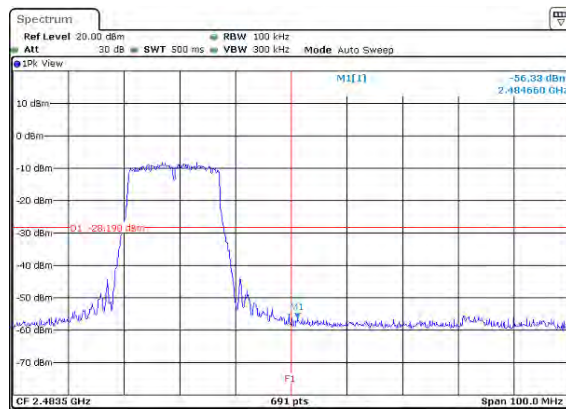
IEEE 802.11g mode High CH chain 0

Reference Level of PSD in 100kHz



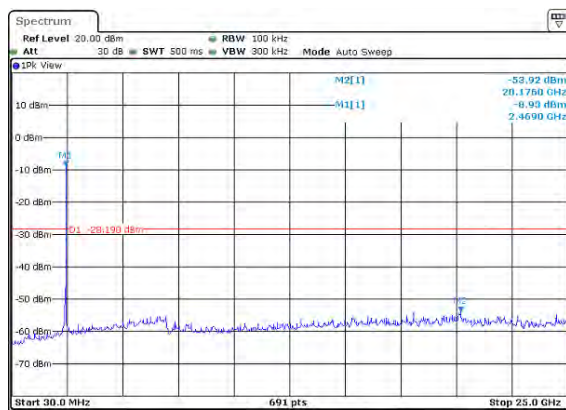
Date: 19.JUN.2017 11:13:15

Band Edge



Date: 19.JUN.2017 11:14:47

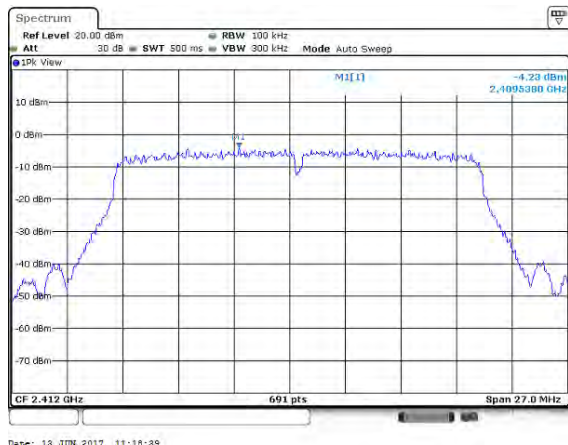
Spurious Emission 30MHz-25GHz



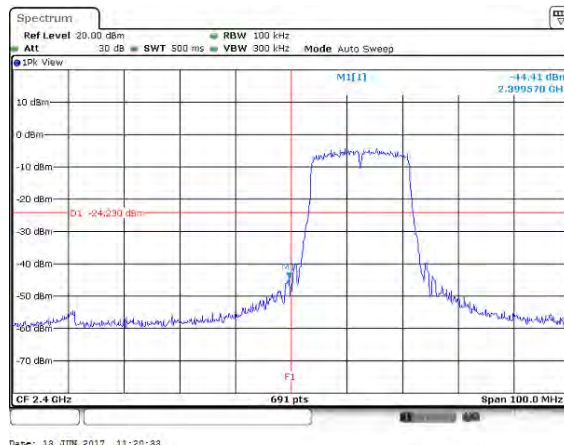
Date: 19.JUN.2017 11:14:00

IEEE 802.11 n HT20 mode Low CH chain 0

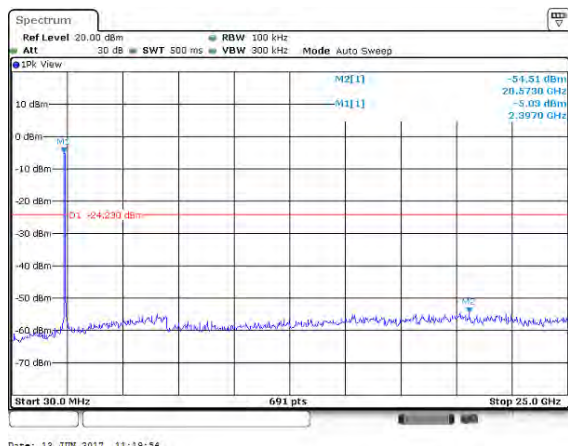
Reference Level of PSD in 100kHz

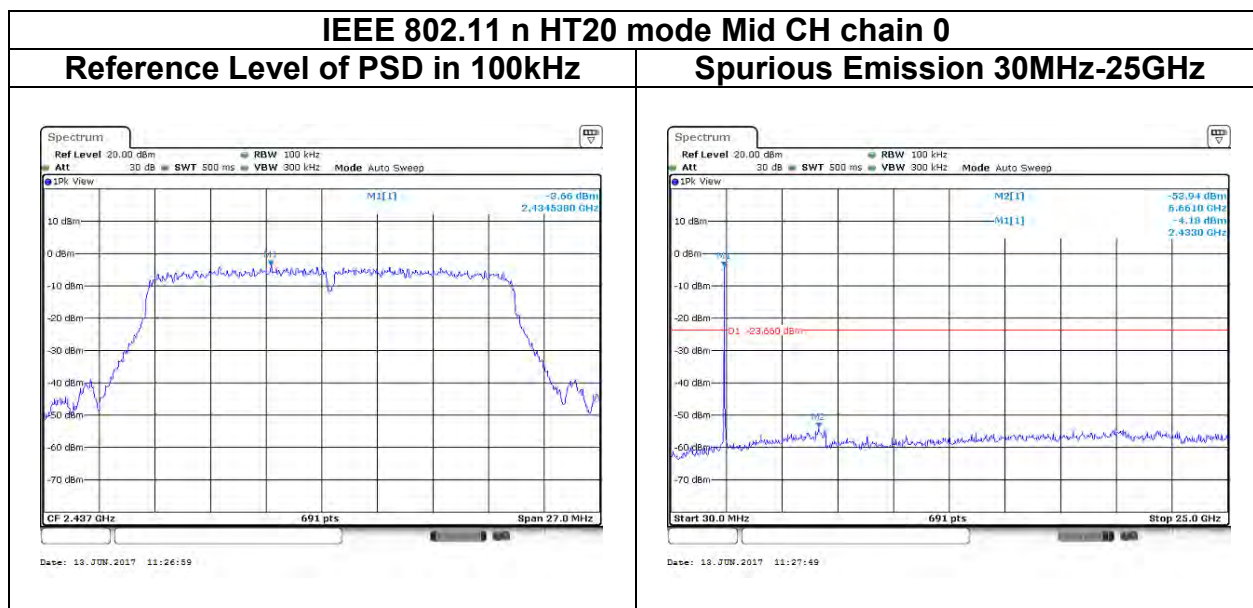


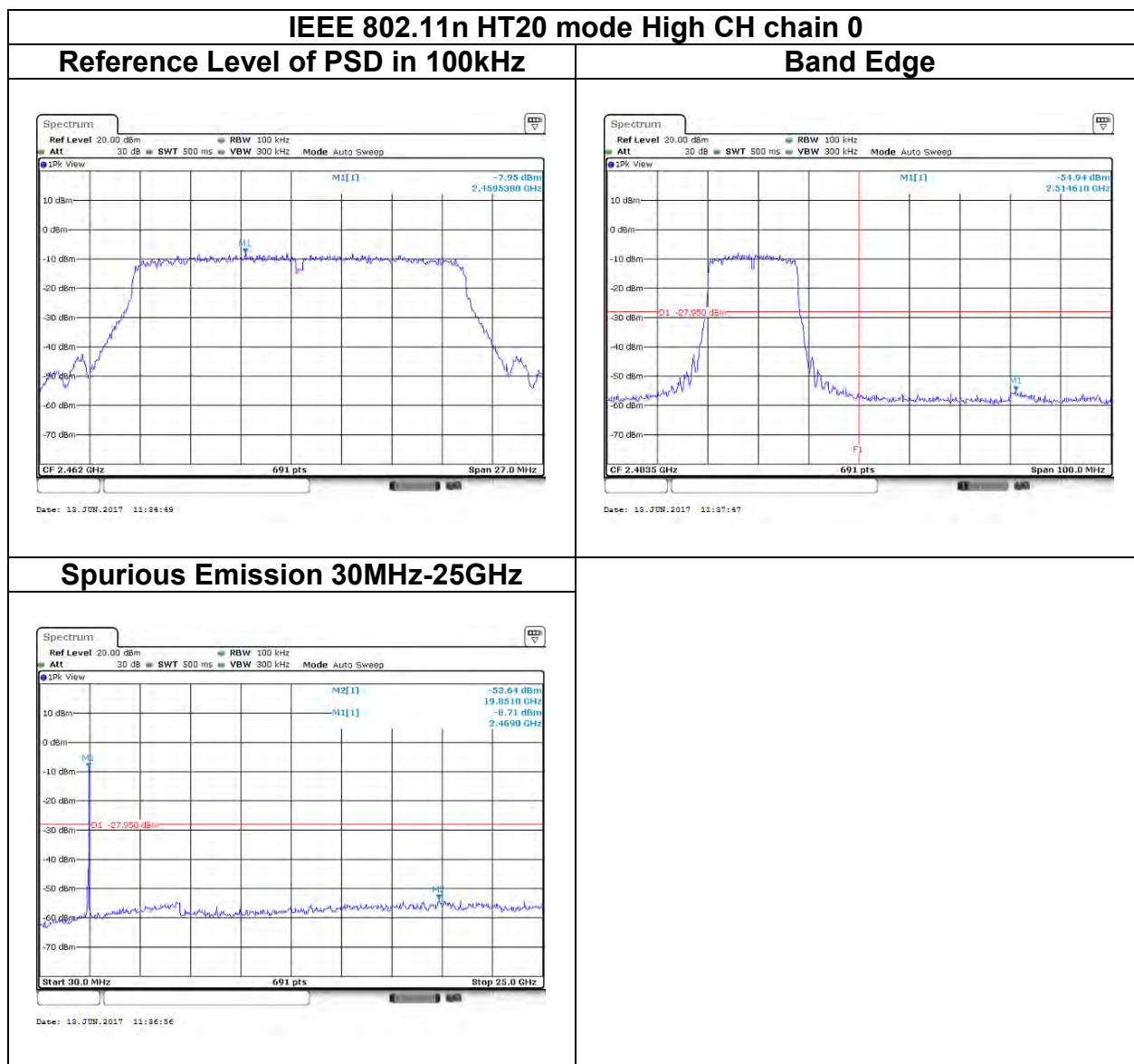
Band Edge



Spurious Emission 30MHz-25GHz







4.6 RADIATION BANDEDGE AND SPURIOUS EMISSION

4.6.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Above 30 MHz

Frequency	Field Strength (microvolts/m)	Measurement Distance (metres)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

4.6.2 Test Procedure

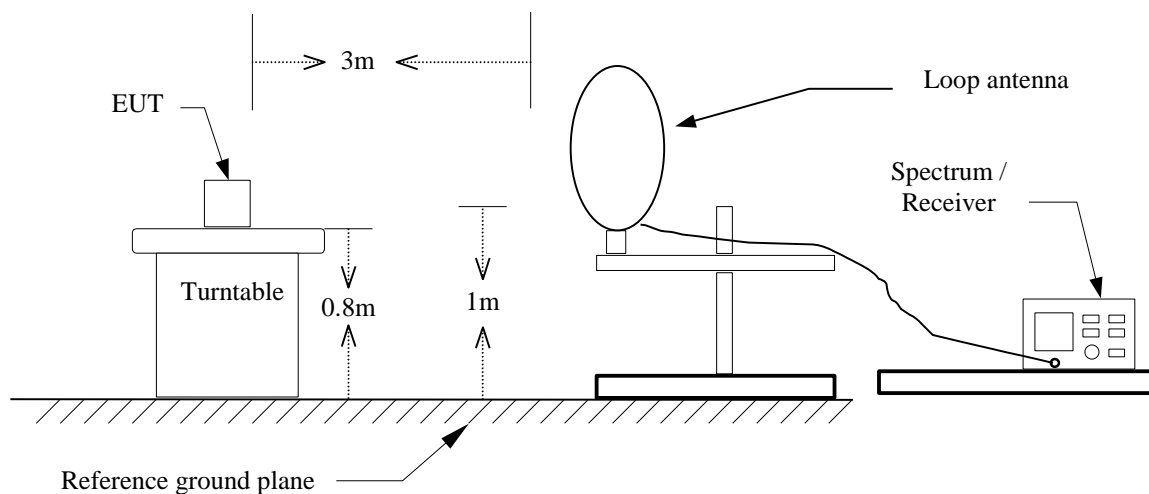
Test method Refer as KDB 558074 D01 v03r05, Section 12.1.

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10, and the EUT set in a continuous mode.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.
3. Span shall wide enough to full capture the emission measured. The SA from 30MHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.
5. The SA setting following :
 - (1) Below 1G : RBW = 100kHz, VBW \geq 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
 - (2) Above 1G :
 - (2.1) For Peak measurement : RBW = 1MHz, VBW \geq 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
 - (2.2) For Average measurement : RBW = 1MHz, VBW
 - If Duty Cycle \geq 98%, VBW=10Hz.
 - If Duty Cycle < 98%, VBW=1/T.

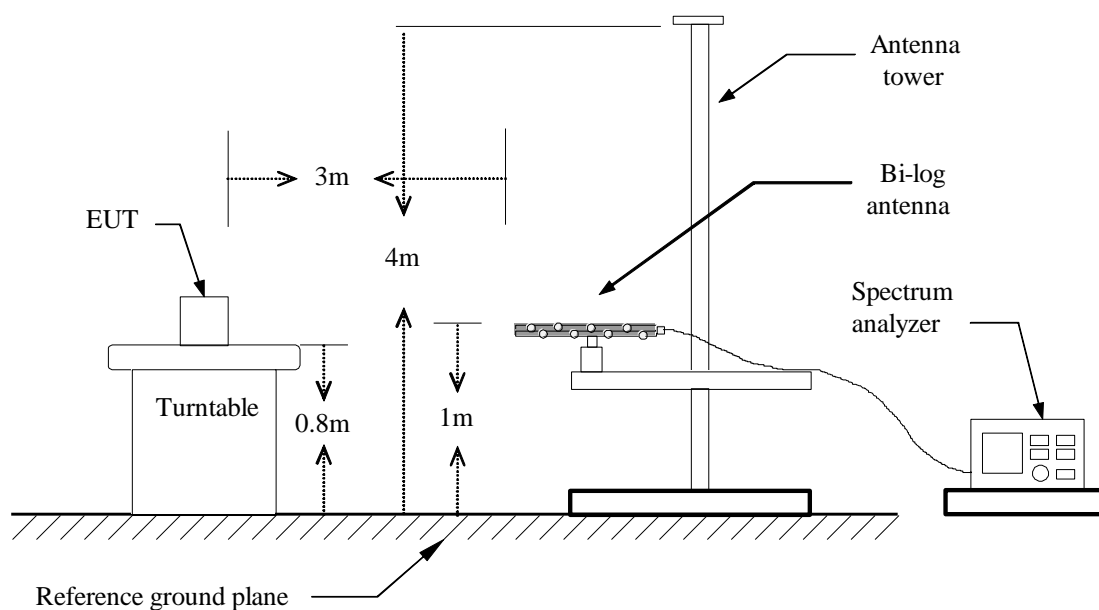
Configuration	Duty Cycle (%)	T(ms)	1/T (kHz)	VBW Setting
802.11b	100%	1.0000	-	10Hz
802.11g	100%	1.0000	-	10Hz
802.11n HT20	100%	1.0000	-	10Hz

4.6.3 Test Setup

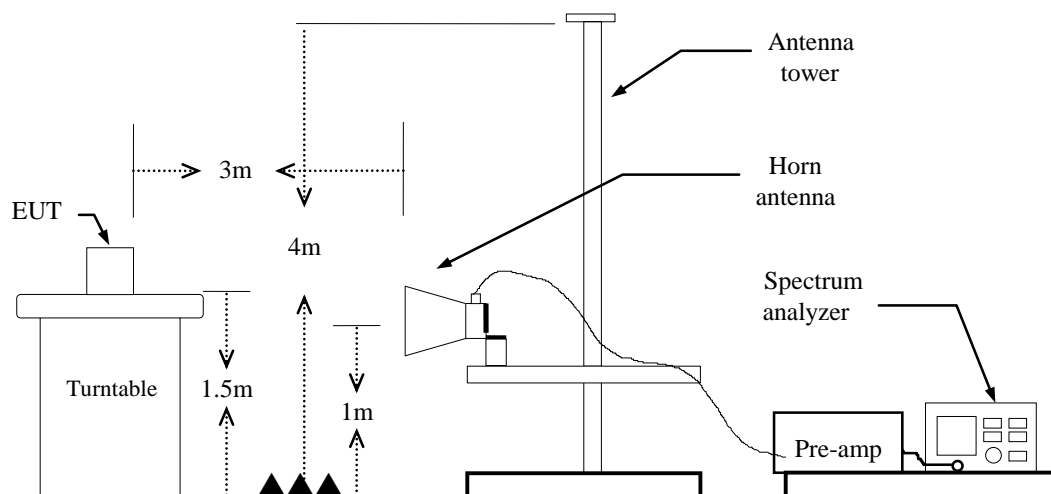
9kHz ~ 30MHz



30MHz ~ 1GHz



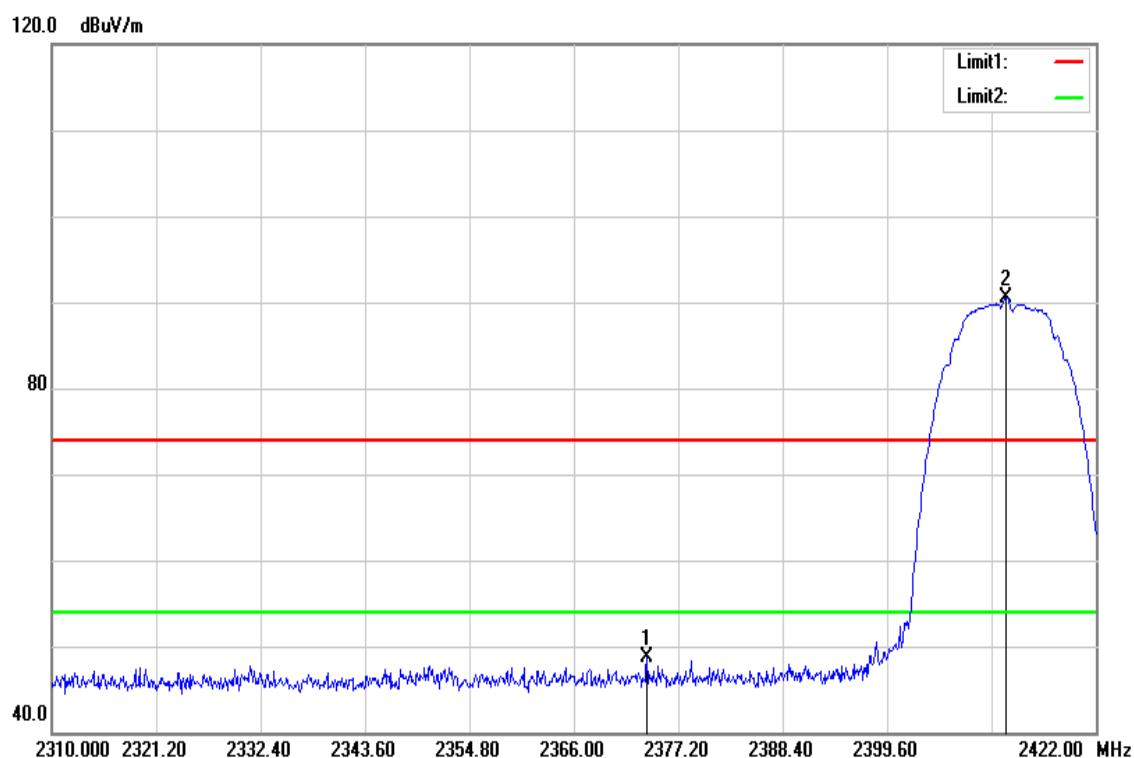
Above 1 GHz



4.6.4 Test Result

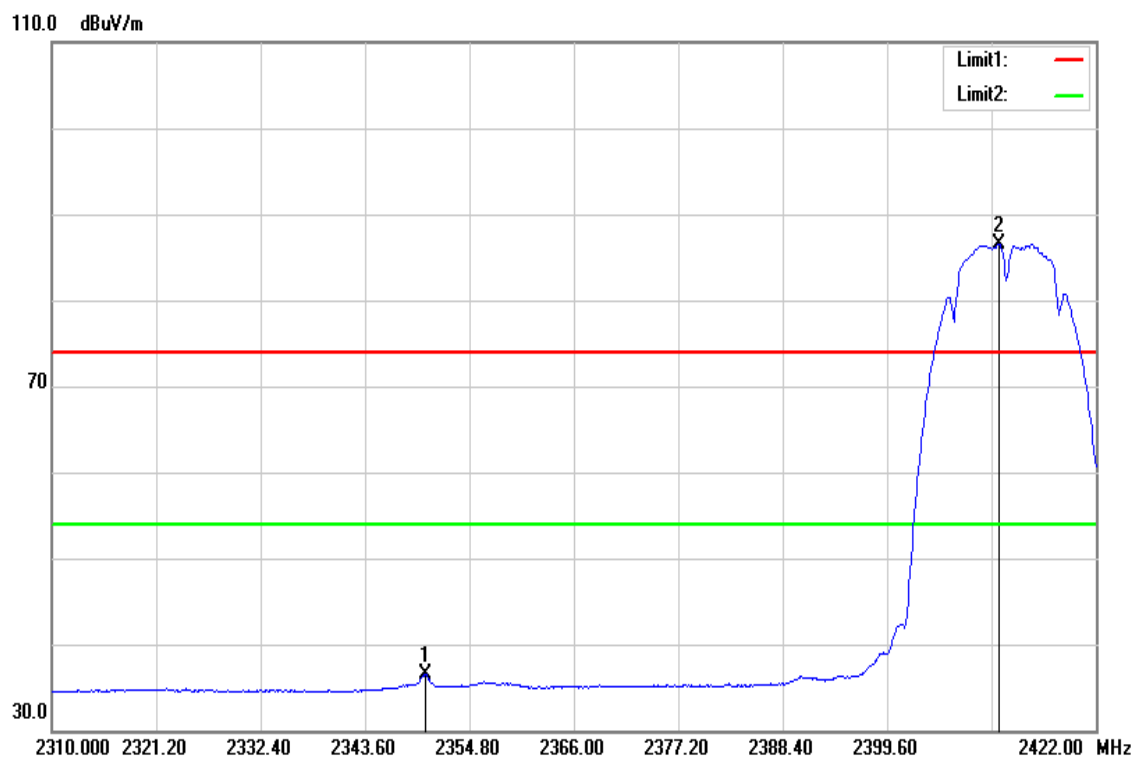
Band Edge Test Data

Test Mode	IEEE 802.11b Low CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak	Test Voltage	120Vac / 60Hz



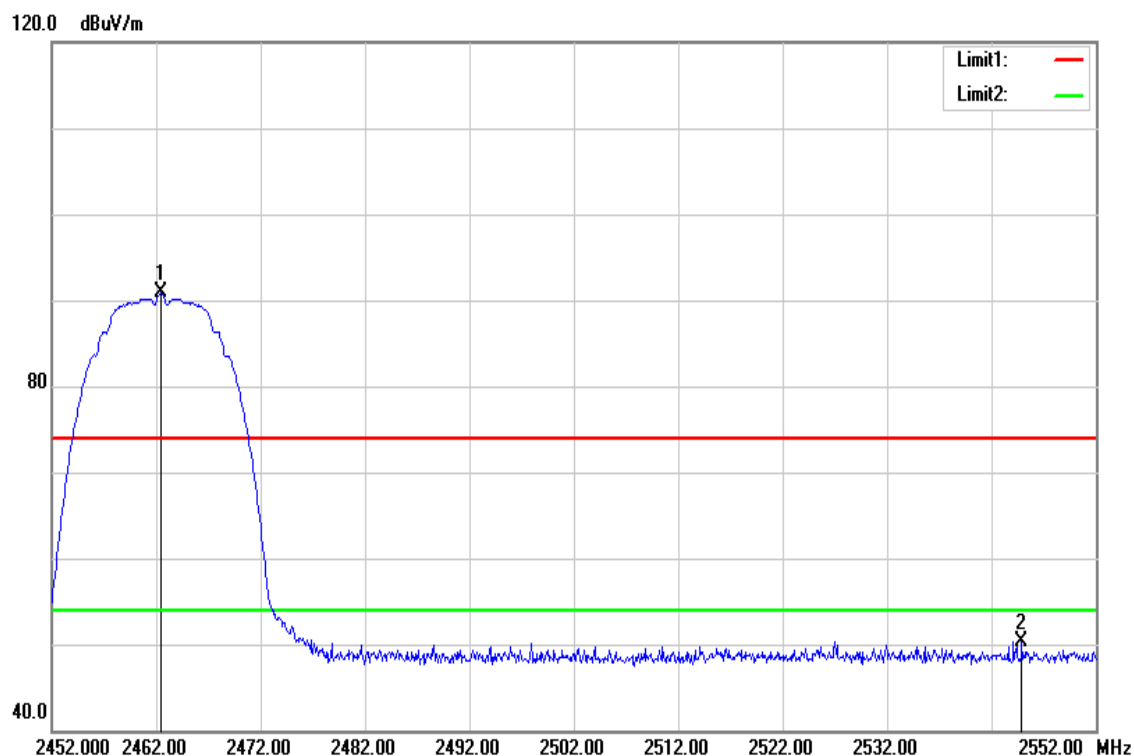
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2373.840	51.36	-2.62	48.74	74.00	-25.26	peak
2412.368	92.96	-2.41	90.55	--	--	peak

Test Mode	IEEE 802.11b Low CH	Temperature:	23(°C) / 35%RH
Test Item	Band Edge	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Average	Test Voltage	120Vac / 60Hz



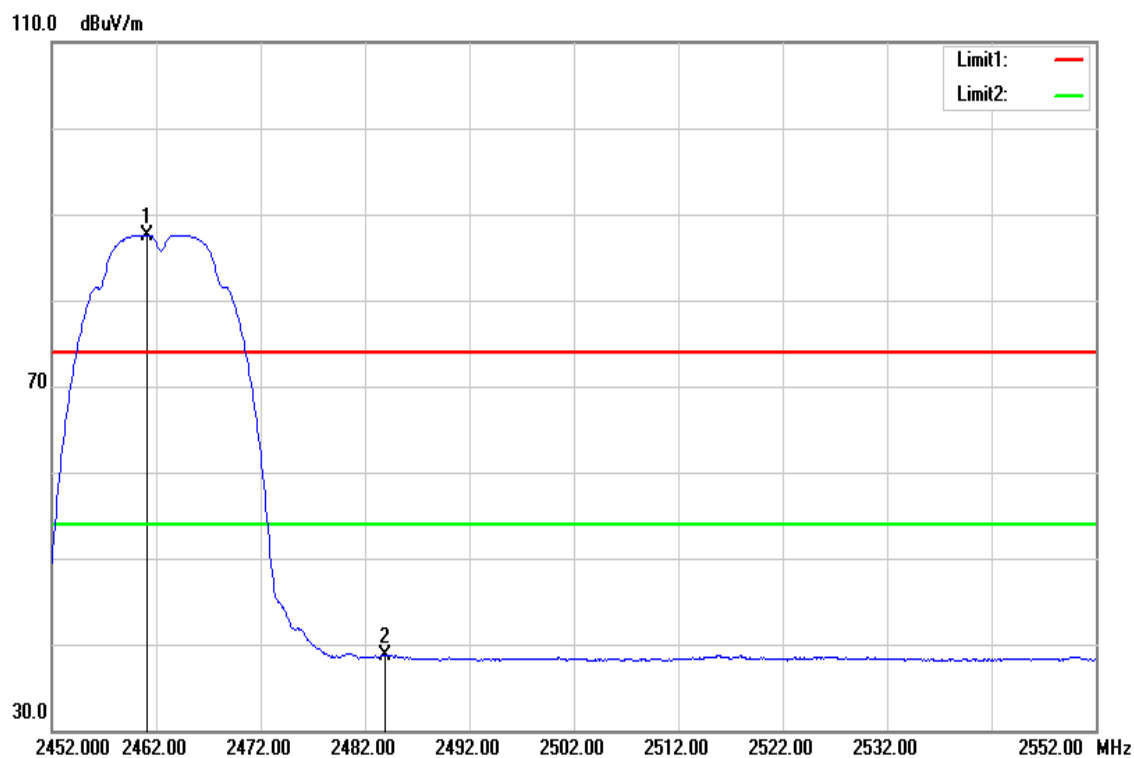
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2350.096	39.31	-2.80	36.51	54.00	-17.49	AVG
2411.584	88.92	-2.42	86.50	--	--	AVG

Test Mode	IEEE 802.11b High CH	Temp/Hum	23(°C) / 35%RH
Test Item	Band Edge	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak	Test Voltage	120Vac / 60Hz



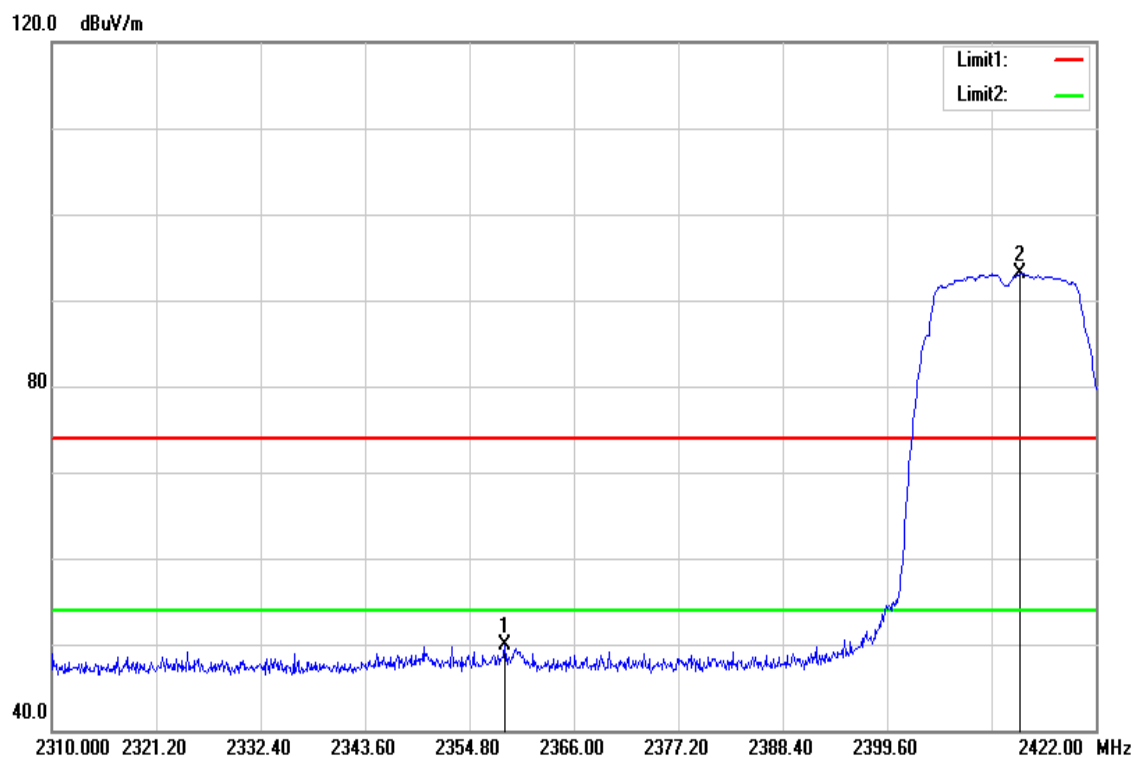
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2462.400	92.91	-2.09	90.82	--	--	peak
2544.900	52.10	-1.75	50.35	74.00	-23.65	peak

Test Mode	IEEE 802.11b High CH	Temperature:	23(°C) / 35%RH
Test Item	Band Edge	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Average	Test Voltage	120Vac / 60Hz



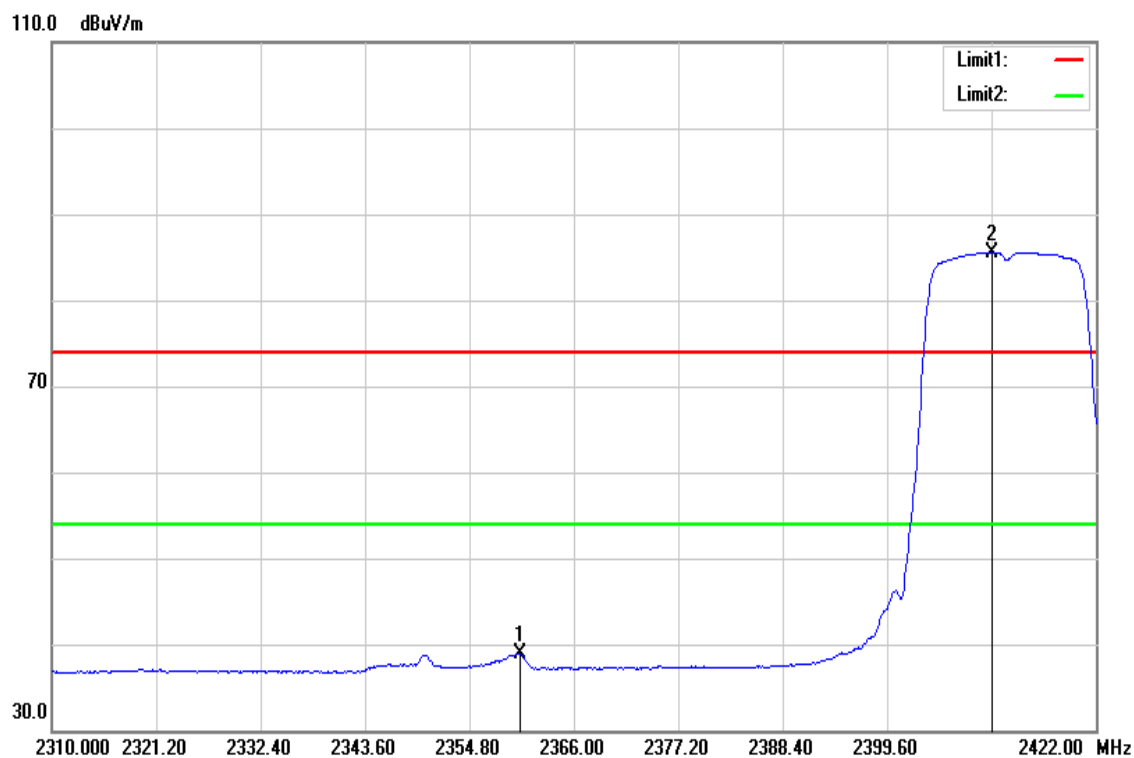
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2461.200	89.69	-2.10	87.59	--	--	AVG
2483.900	40.73	-1.99	38.74	54.00	-15.26	AVG

Test Mode	IEEE 802.11g Low CH	Temp/Hum	23(°C) / 35%RH
Test Item	Band Edge	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak	Test Voltage	120Vac / 60Hz



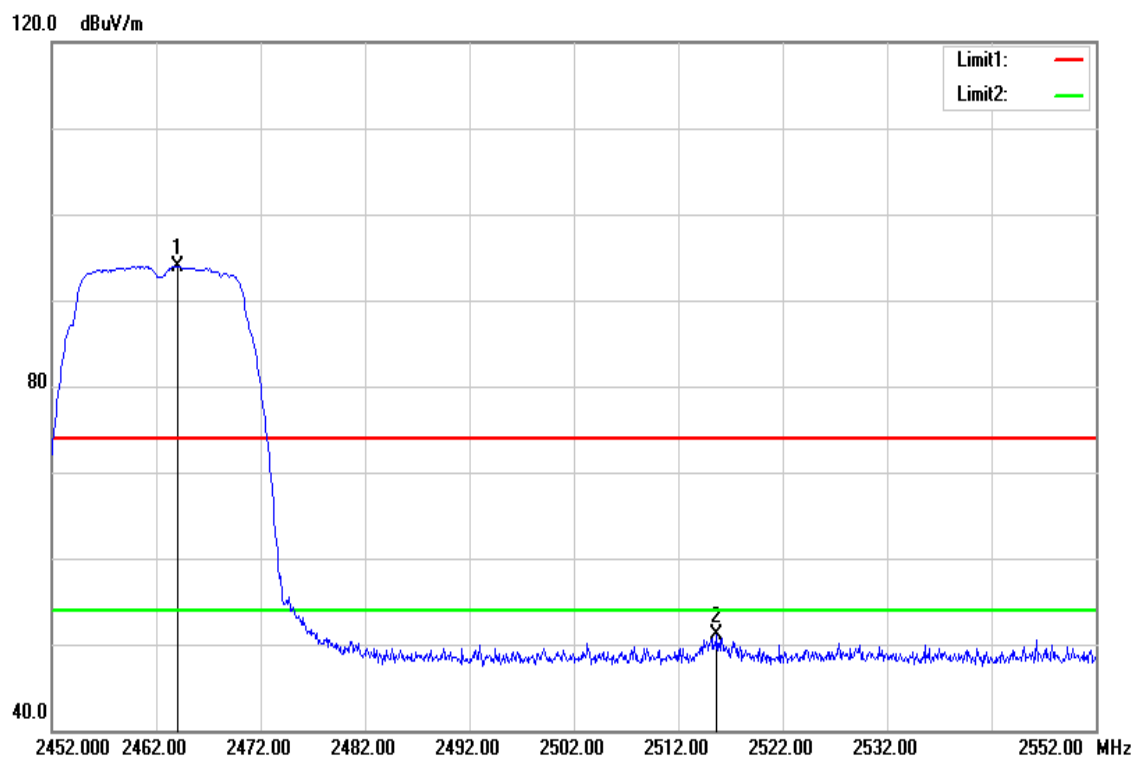
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2358.608	52.64	-2.81	49.83	74.00	-24.17	peak
2413.824	95.44	-2.40	93.04	--	--	peak

Test Mode	IEEE 802.11g Low CH	Temperature:	23(°C) / 35%RH
Test Item	Band Edge	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Average	Test Voltage	120Vac / 60Hz



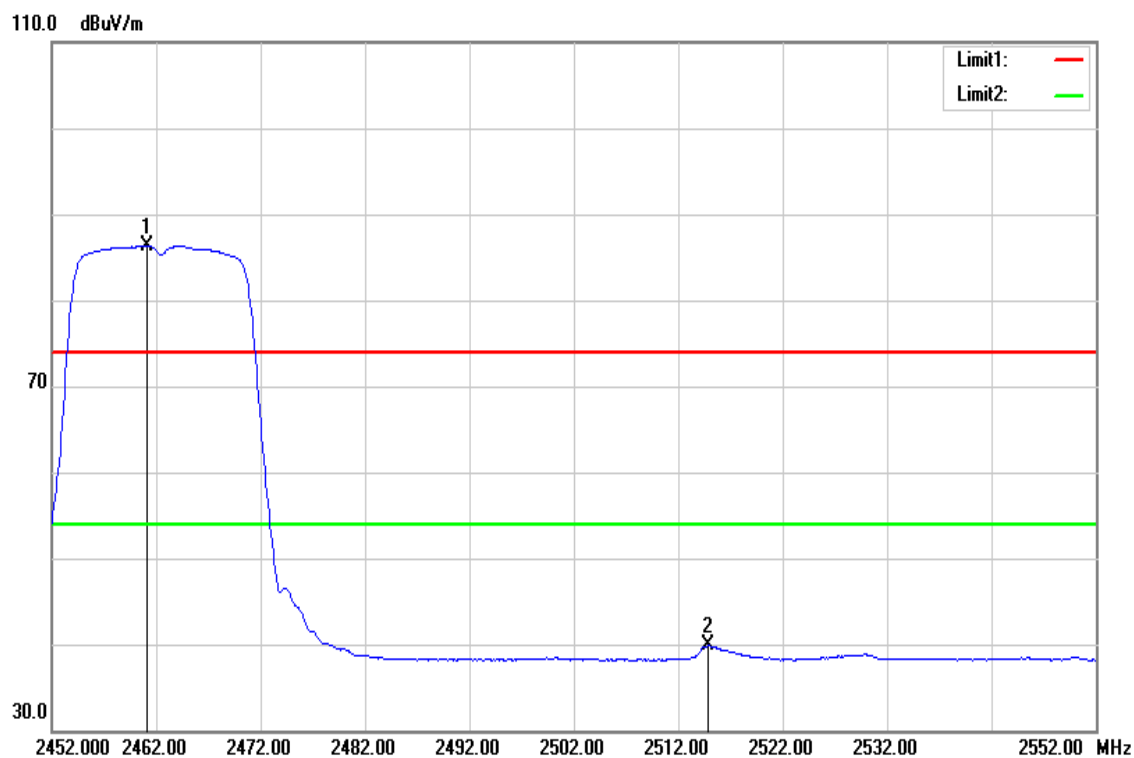
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2360.176	41.70	-2.81	38.89	54.00	-15.11	AVG
2410.912	87.99	-2.42	85.57	--	--	AVG

Test Mode	IEEE 802.11g High CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak	Test Voltage	120Vac / 60Hz



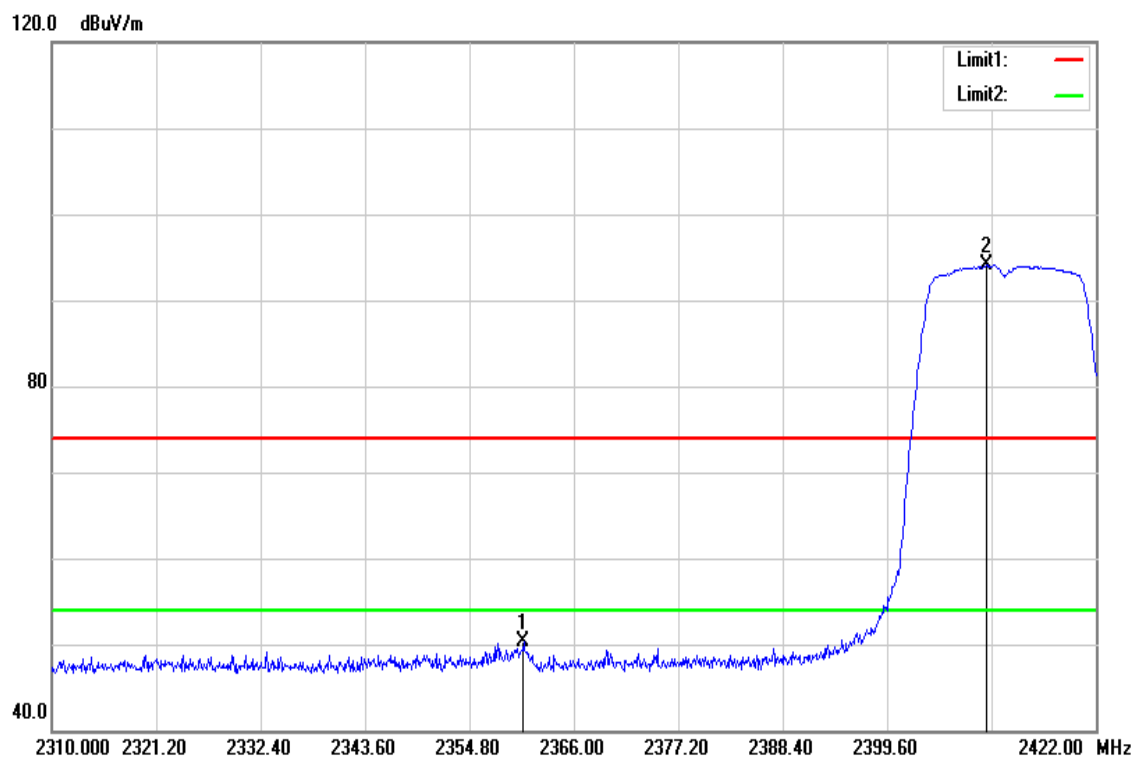
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2464.000	96.06	-2.09	93.97	--	--	peak
2515.700	52.87	-1.82	51.05	74.00	-22.95	peak

Test Mode	IEEE 802.11g High CH	Temperature:	23(°C) / 35%RH
Test Item	Band Edge	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Average	Test Voltage	120Vac / 60Hz



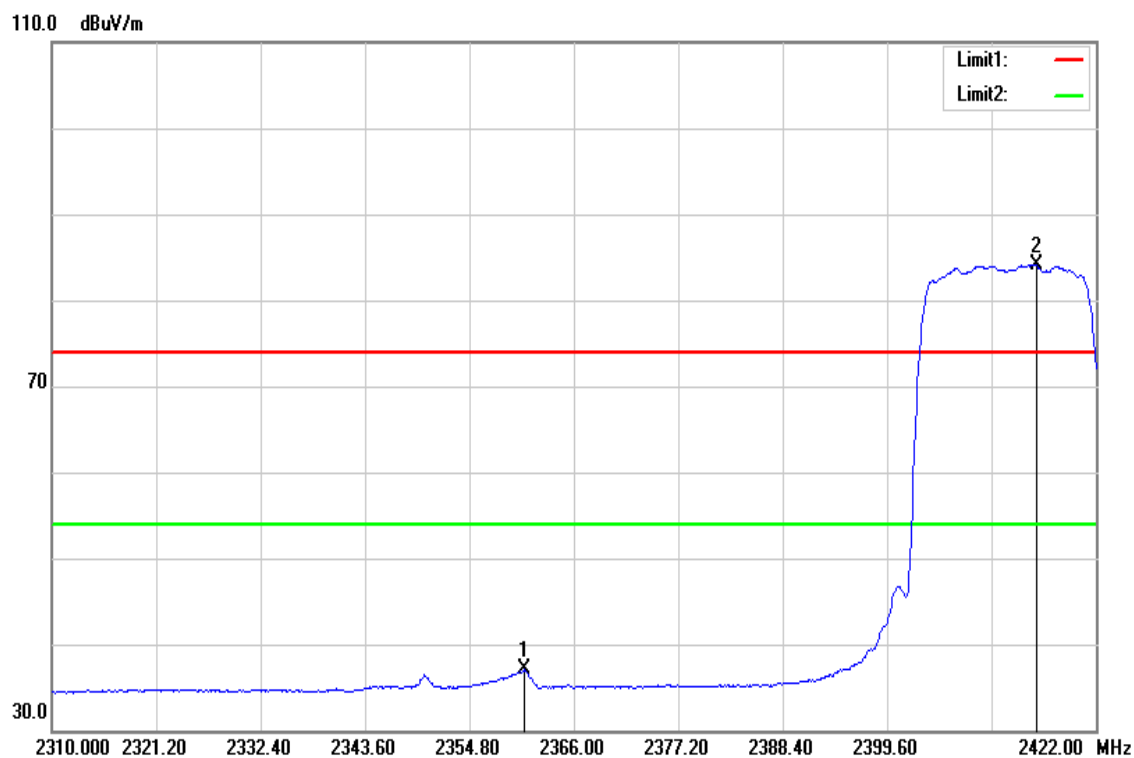
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2461.200	88.37	-2.10	86.27	--	--	AVG
2514.800	41.64	-1.82	39.82	54.00	-14.18	AVG

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	23(°C) / 35%RH
Test Item	Band Edge	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak	Test Voltage	120Vac / 60Hz



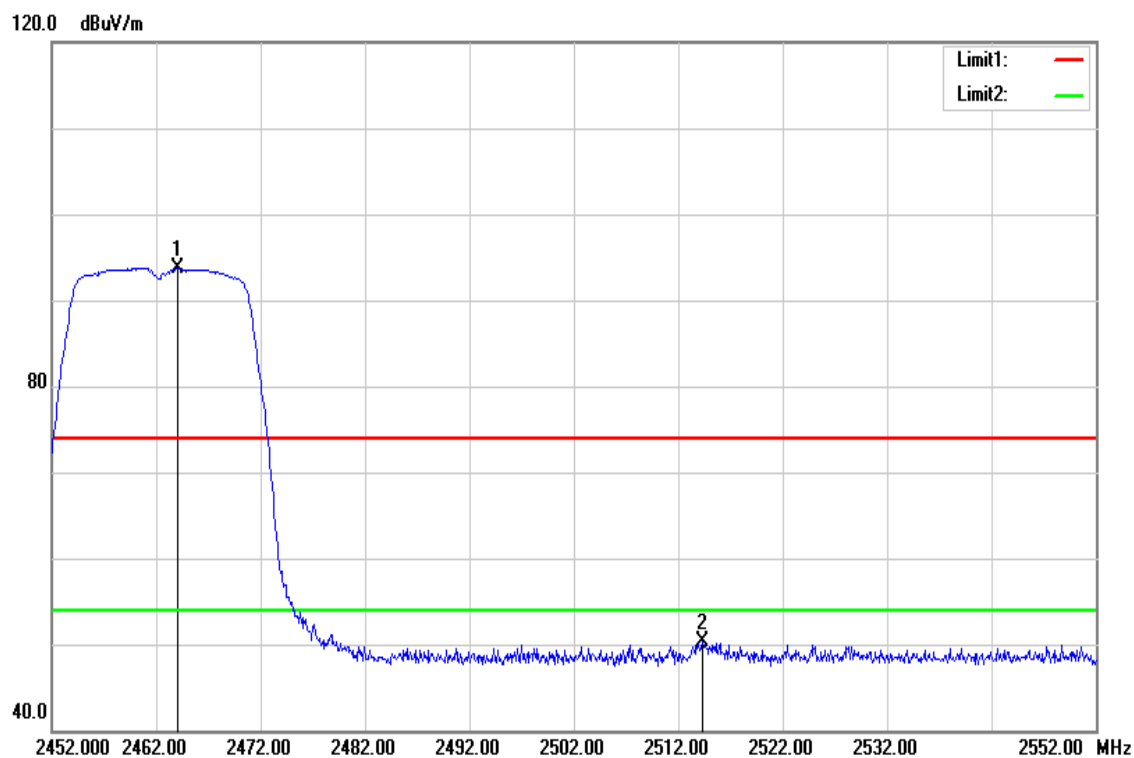
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2360.624	53.15	-2.80	50.35	74.00	-23.65	peak
2410.240	96.46	-2.43	94.03	--	--	peak

Test Mode	IEEE 802.11n HT20 Low CH	Temperature:	23(°C) / 35%RH
Test Item	Band Edge	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Average	Test Voltage	120Vac / 60Hz



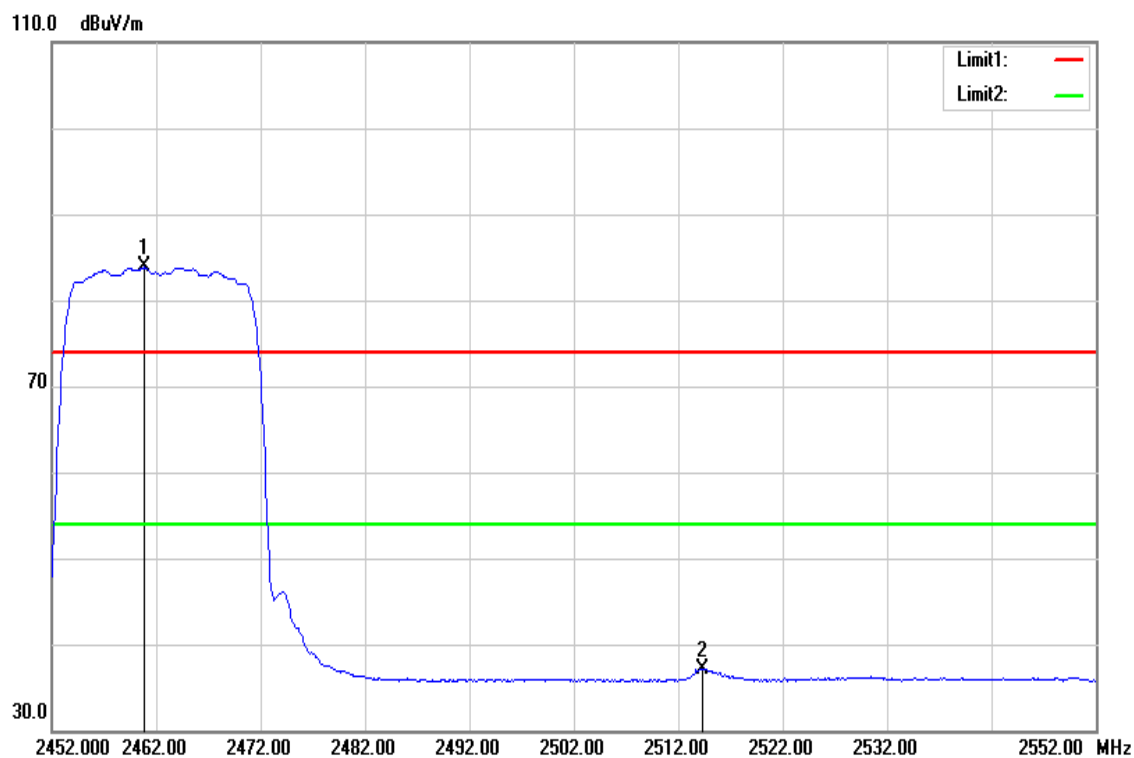
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2360.624	39.87	-2.80	37.07	54.00	-16.93	AVG
2415.616	86.50	-2.39	84.11	--	--	AVG

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	23(°C) / 35%RH
Test Item	Band Edge	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2464.100	95.84	-2.09	93.75	--	--	peak
2514.300	52.10	-1.82	50.28	74.00	-23.72	peak

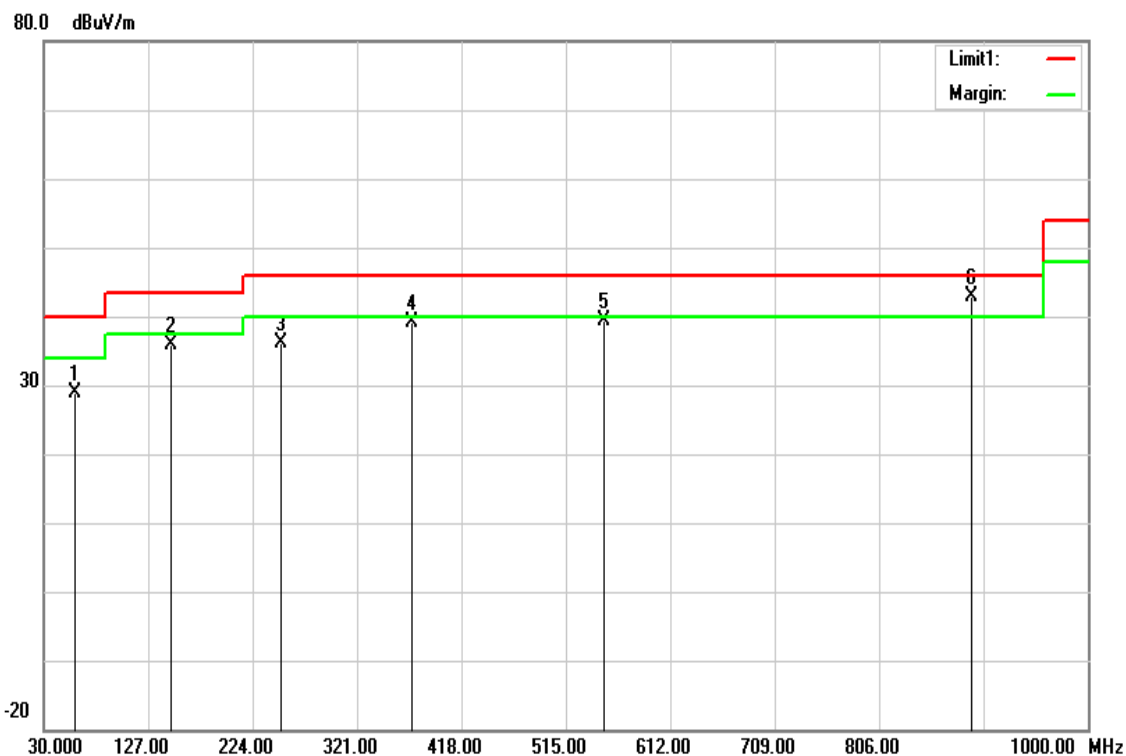
Test Mode	IEEE 802.11n HT20 High CH	Temperature:	23(°C) / 35%RH
Test Item	Band Edge	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2460.800	85.91	-2.10	83.81	--	--	AVG
2514.300	38.99	-1.82	37.17	54.00	-16.83	AVG

Below 1G Test Data

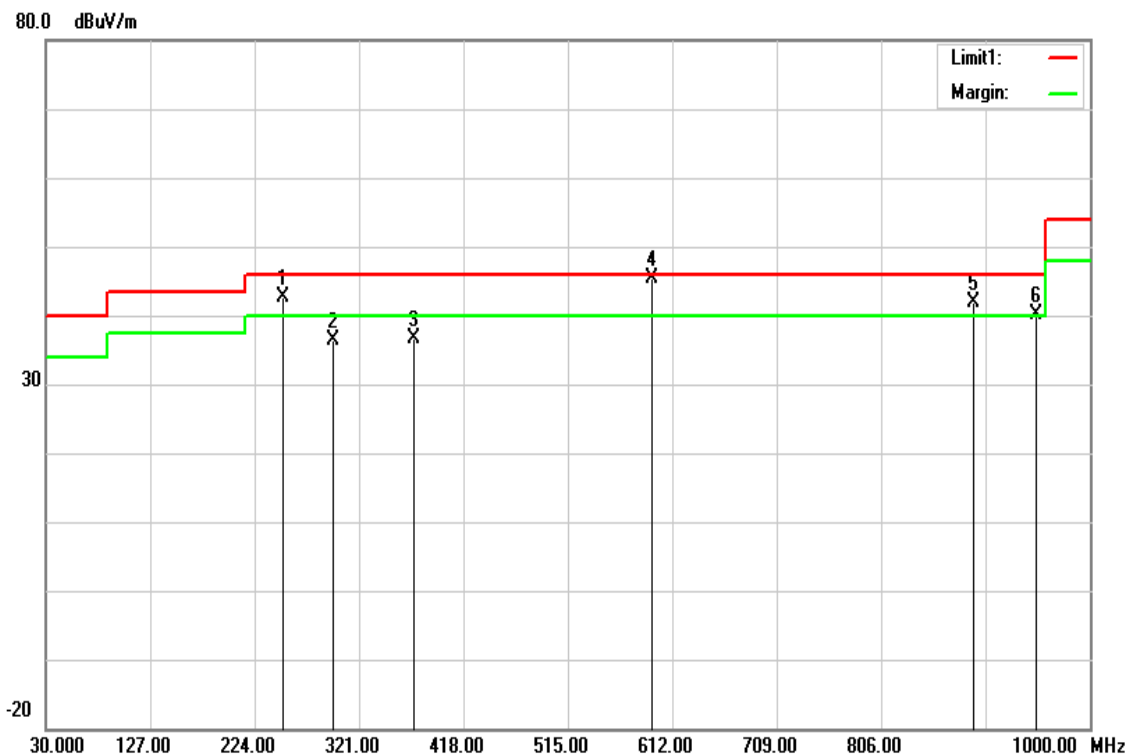
Test Mode	Mode 1	Temp/Hum	23(°C)/ 35%RH
Test Item	30MHz-1GHz	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
59.1000	50.85	-22.02	28.83	40.00	-11.17	QP
148.3400	52.01	-16.02	35.99	43.50	-7.51	peak
250.1900	52.33	-16.27	36.06	46.00	-9.94	peak
371.4400	51.59	-12.38	39.21	46.00	-6.79	peak
549.9200	47.76	-8.49	39.27	46.00	-6.73	peak
891.3600	46.12	-3.29	42.83	46.00	-3.17	QP

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

Test Mode	Mode 1	Temp/Hum	23(°C) / 35%RH
Test Item	30MHz-1GHz	Test Date	May 24, 2017
Polarize	Horizontal	Test Engineer	Hayden.feng
Detector	Peak	Test Voltage	120Vac / 60Hz

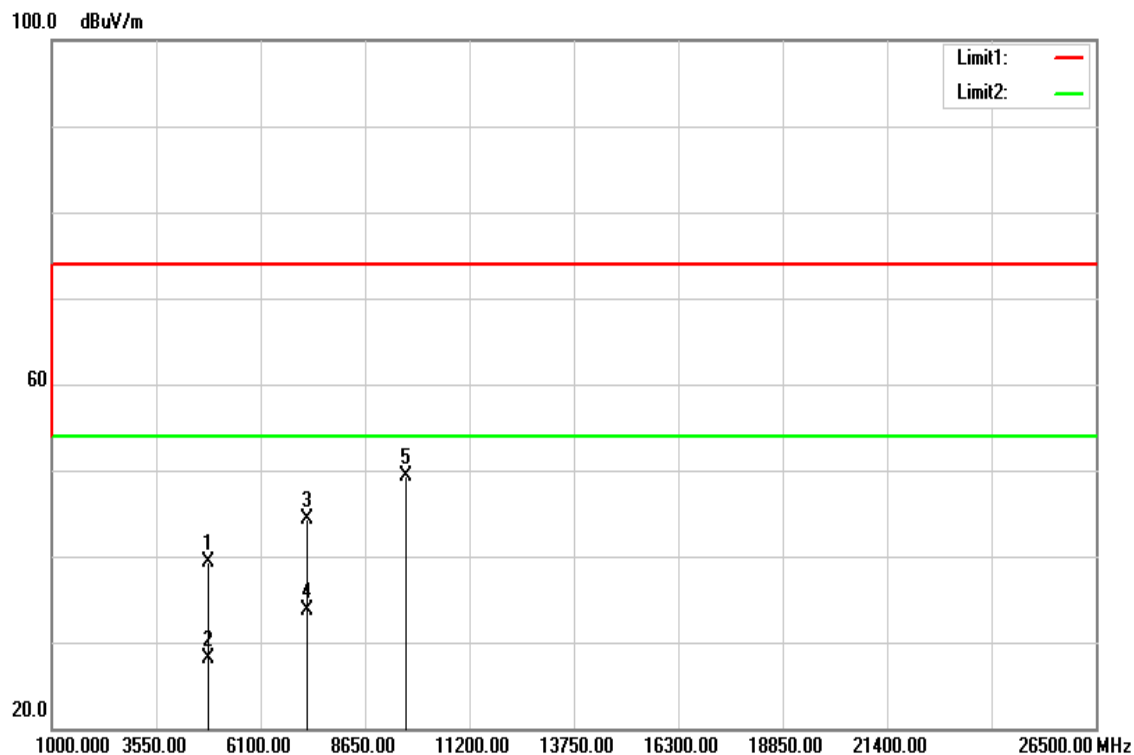


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
250.1900	58.92	-16.27	42.65	46.00	-3.35	QP
296.7500	50.62	-14.30	36.32	46.00	-9.68	peak
372.4100	49.03	-12.36	36.67	46.00	-9.33	QP
593.5700	53.19	-7.85	45.34	46.00	-0.66	QP
891.3600	45.24	-3.29	41.95	46.00	-4.05	QP
949.5600	42.59	-2.41	40.18	46.00	-5.82	QP

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

Above 1G Test Data

Test Mode	IEEE 802.11b Low CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

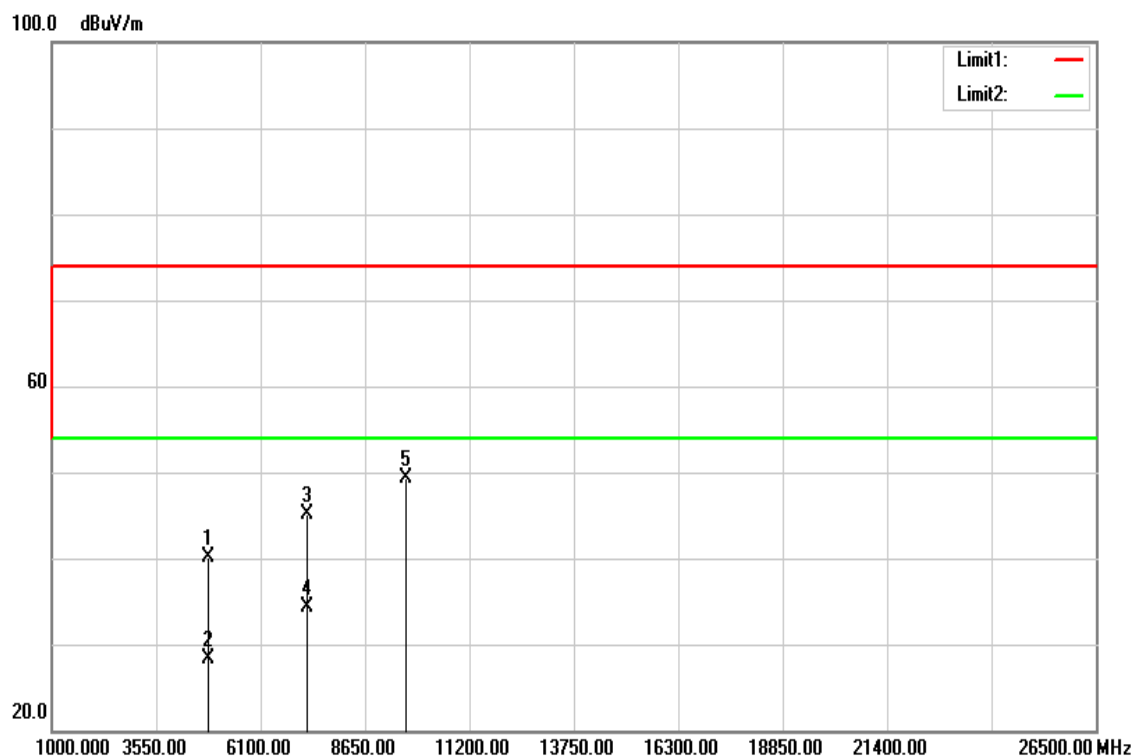


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	emark
4824.000	34.18	5.10	39.28	74.00	-34.72	peak
4824.000	22.96	5.10	28.06	54.00	-25.94	AVG
7236.000	31.61	12.71	44.32	74.00	-29.68	peak
7236.000	21.08	12.71	33.79	54.00	-20.21	AVG
9648.000	31.63	17.60	49.23	74.00	-24.77	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11b Low CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Horizontal	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

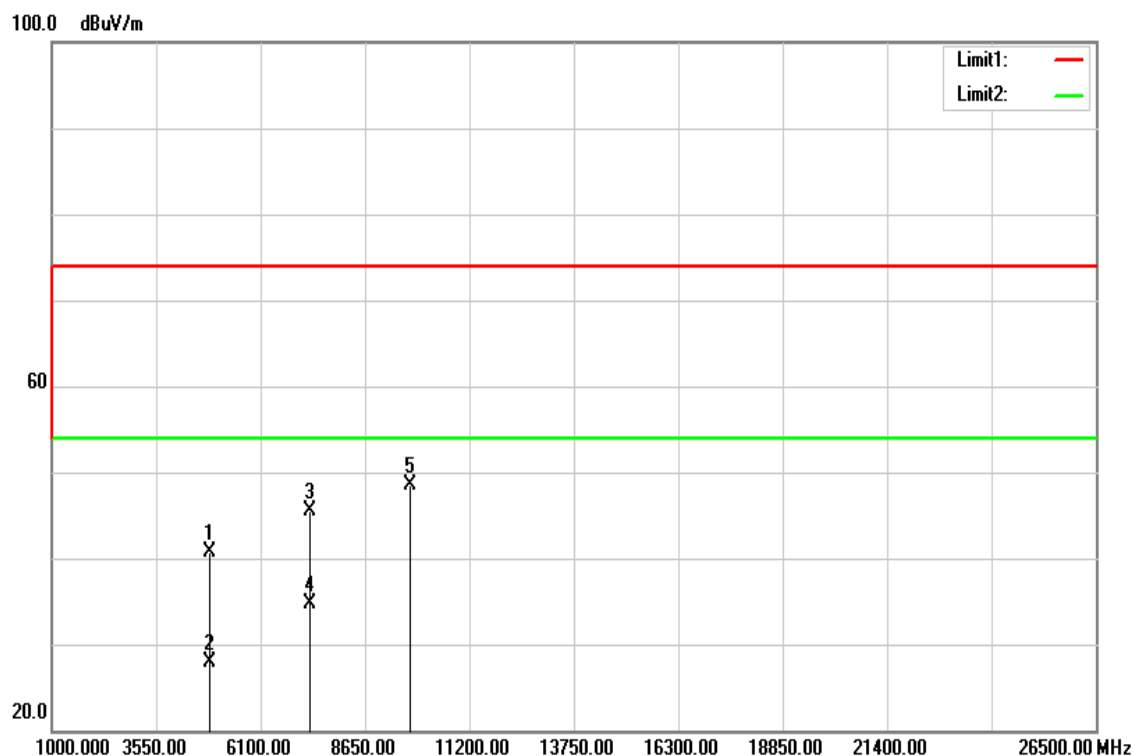


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (BuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	34.93	5.10	40.03	74.00	-33.97	peak
4824.000	23.24	5.10	28.34	54.00	-25.66	AVG
7236.000	32.43	12.71	45.14	74.00	-28.86	peak
7236.000	21.60	12.71	34.31	54.00	-19.69	AVG
9648.000	31.77	17.60	49.37	74.00	-24.63	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11b Mid CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

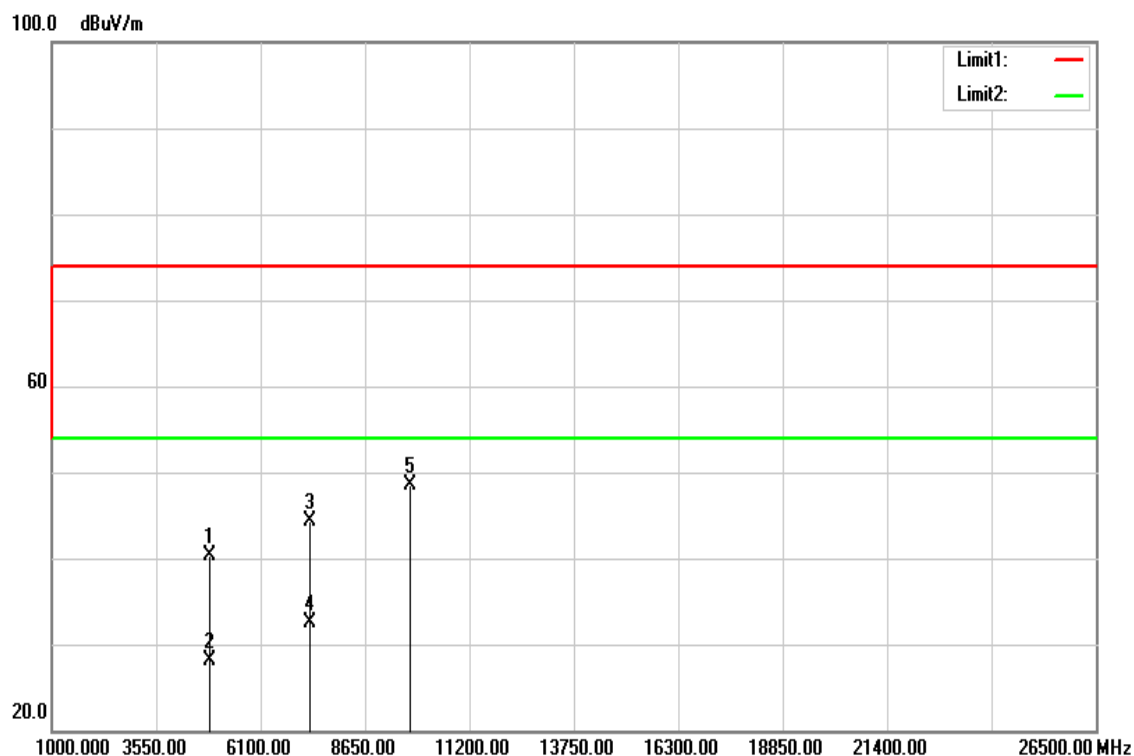


Frequency (MHz)	Reading (dBu)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	35.42	5.23	40.65	74.00	-33.35	peak
4874.000	22.65	5.23	27.88	54.00	-26.12	AVG
7311.000	32.57	12.94	45.51	74.00	-28.49	peak
7311.000	21.78	12.94	34.72	54.00	-19.28	AVG
9748.000	30.83	17.60	48.43	74.00	-25.57	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11b Mid CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Horizontal	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

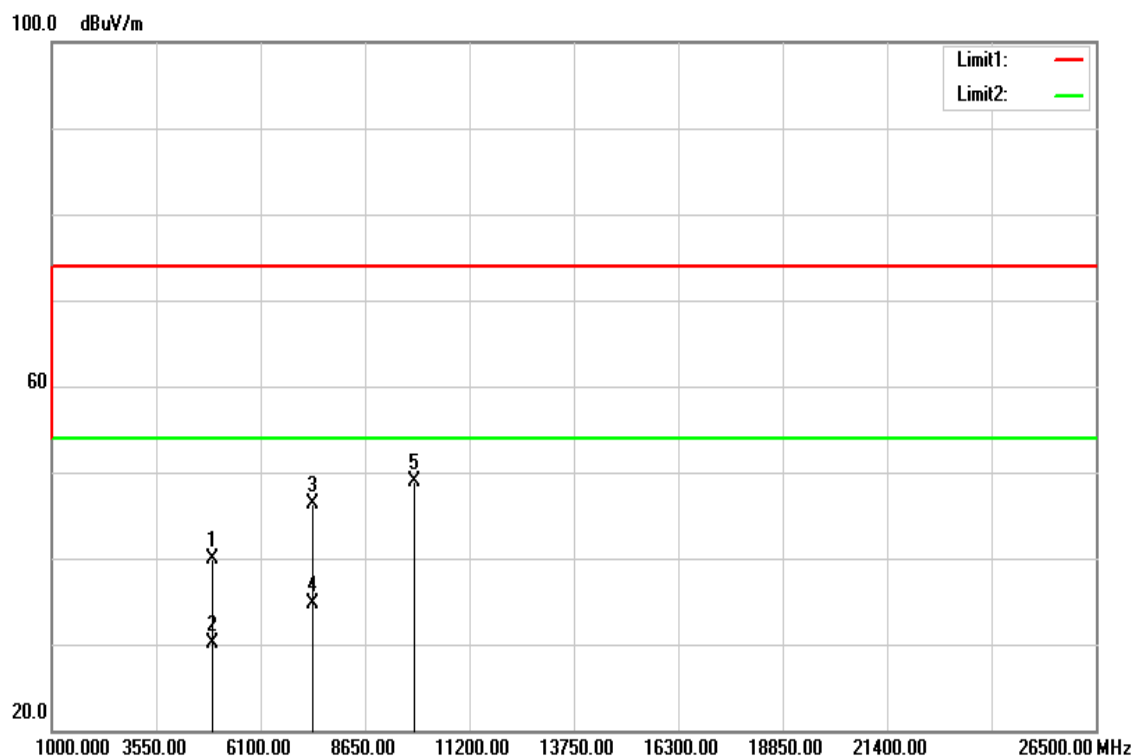


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	35.01	5.23	40.24	74.00	-33.76	peak
4874.000	22.85	5.23	28.08	54.00	-25.92	AVG
7311.000	31.41	12.94	44.35	74.00	-29.65	peak
7311.000	19.60	12.94	32.54	54.00	-21.46	AVG
9748.000	30.92	17.60	48.52	74.00	-25.48	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11b High CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

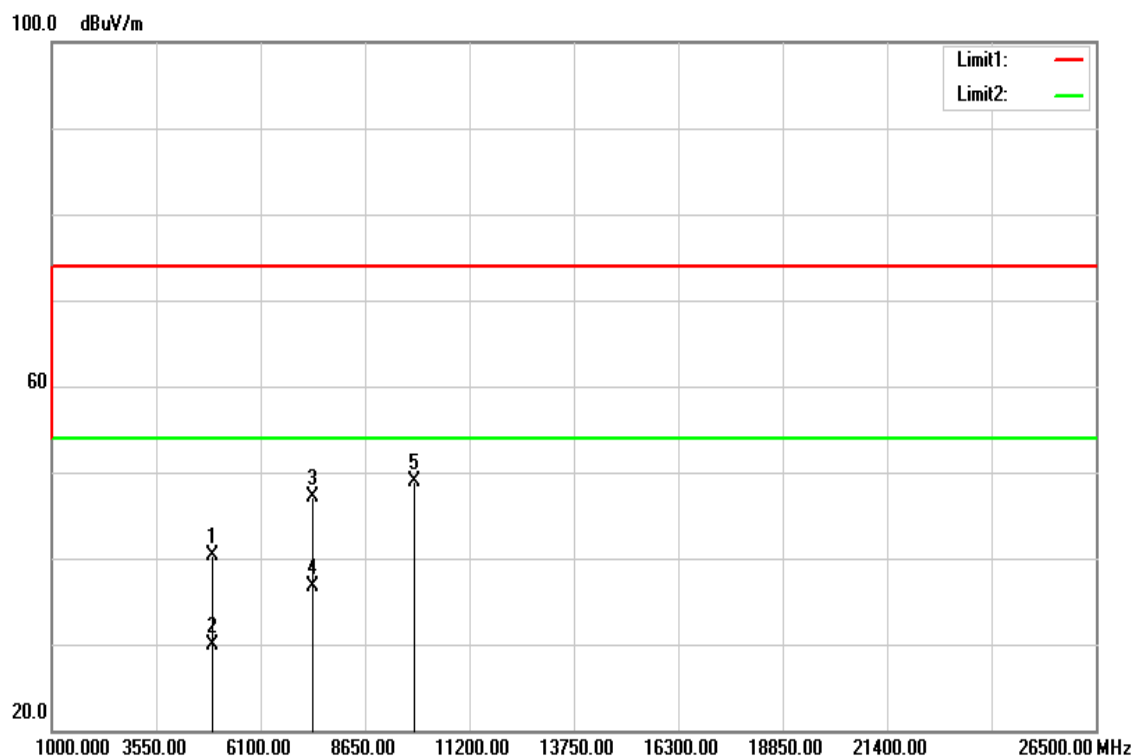


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	34.53	5.37	39.90	74.00	-34.10	peak
4924.000	24.71	5.37	30.08	54.00	-23.92	AVG
7386.000	33.14	13.17	46.31	74.00	-27.69	peak
7386.000	21.57	13.17	34.74	54.00	-19.26	AVG
9848.000	31.33	17.60	48.93	74.00	-25.07	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11b High CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Horizontal	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

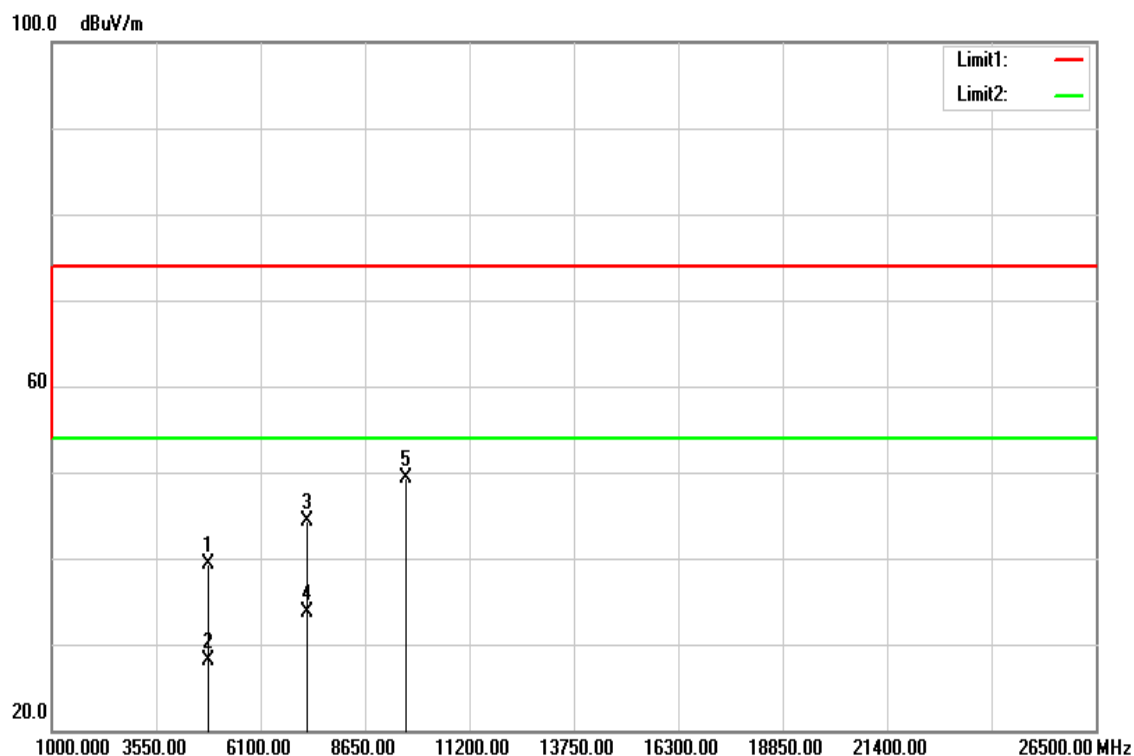


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	34.96	5.37	40.33	74.00	-33.67	peak
4924.000	24.50	5.37	29.87	54.00	-24.13	AVG
7386.000	33.95	13.17	47.12	74.00	-26.88	peak
7386.000	23.57	13.17	36.74	54.00	-17.26	AVG
9848.000	31.32	17.60	48.92	74.00	-25.08	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11g Low CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

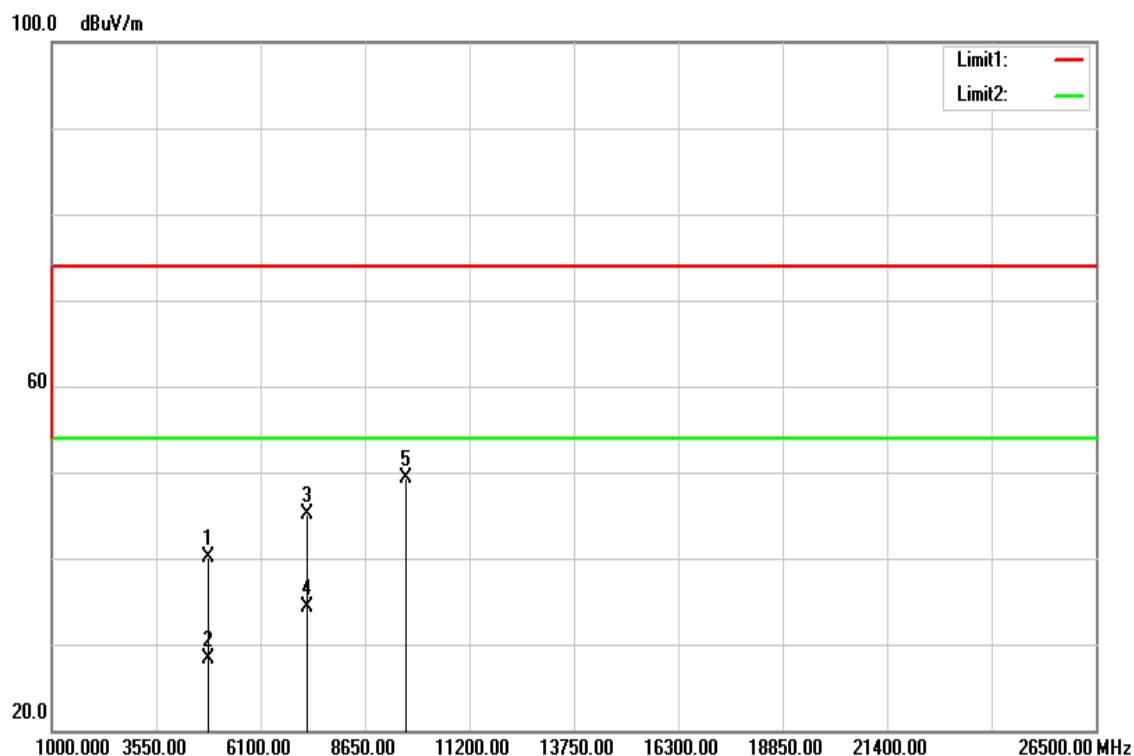


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	34.18	5.10	39.28	74.00	-34.72	peak
4824.000	22.96	5.10	28.06	54.00	-25.94	AVG
7236.000	31.61	12.71	44.32	74.00	-29.68	peak
7236.000	21.08	12.71	33.79	54.00	-20.21	AVG
9648.000	31.63	17.60	49.23	74.00	-24.77	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11g Low CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Horizontal	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

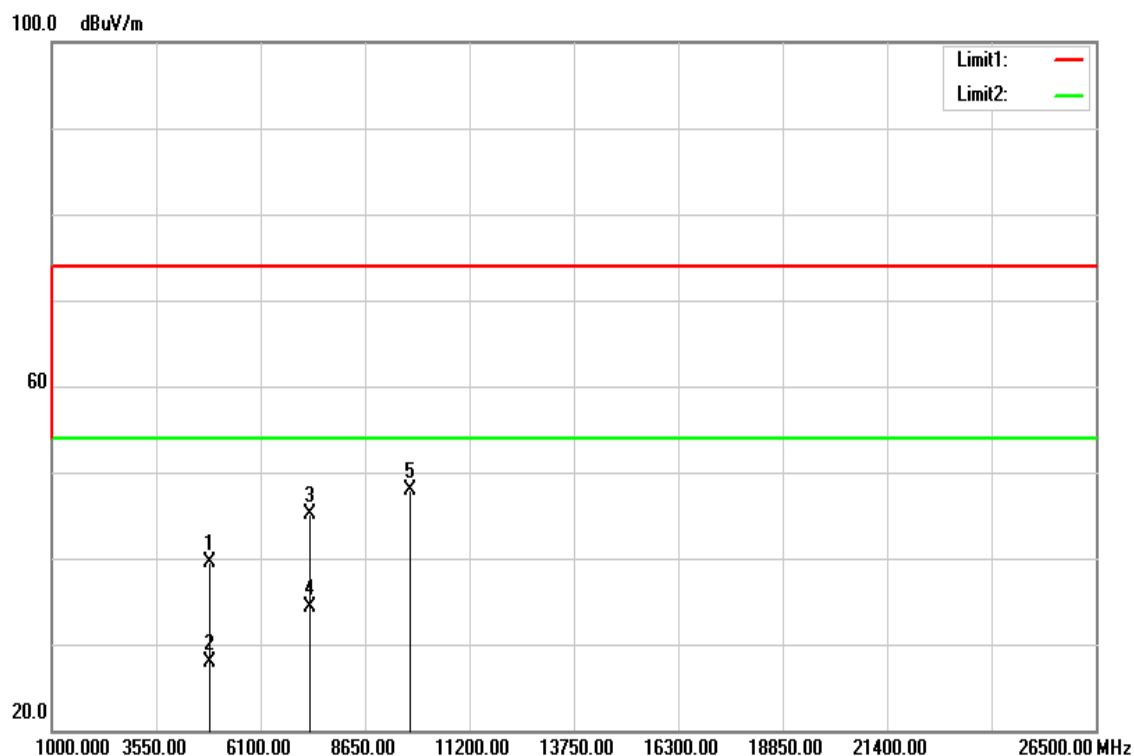


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	34.93	5.10	40.03	74.00	-33.97	peak
4824.000	23.24	5.10	28.34	54.00	-25.66	AVG
7236.000	32.43	12.71	45.14	74.00	-28.86	peak
7236.000	21.60	12.71	34.31	54.00	-19.69	AVG
9648.000	31.77	17.60	49.37	74.00	-24.63	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11g Mid CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

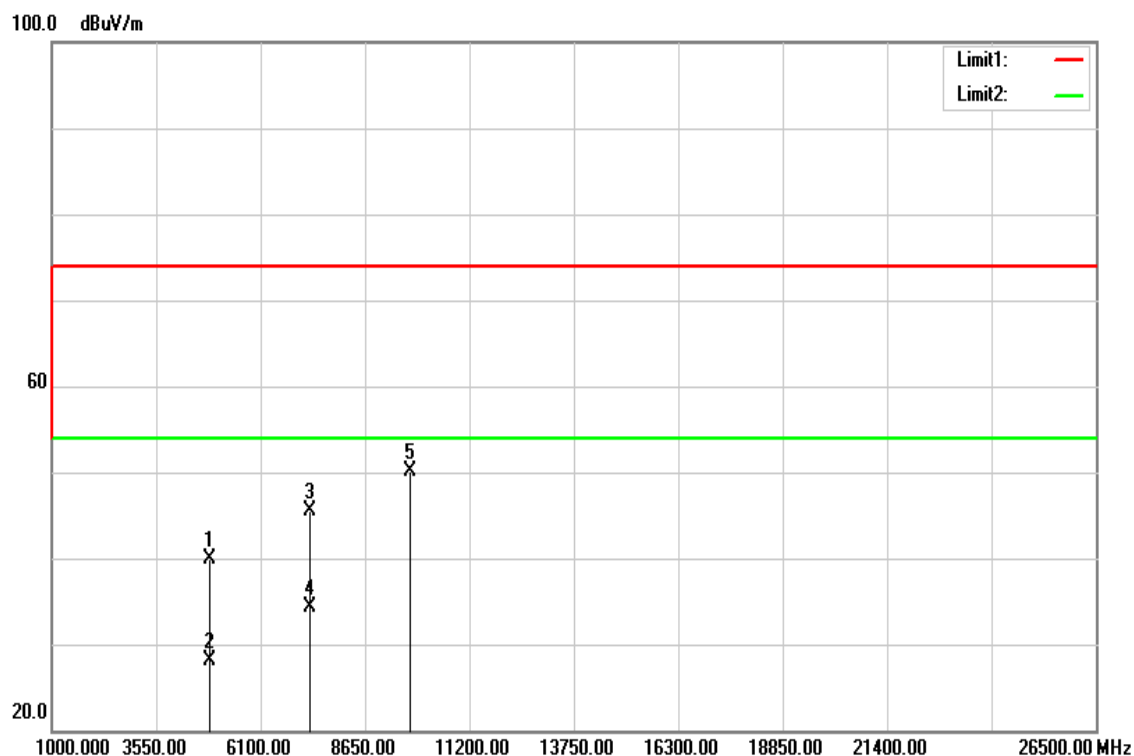


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	34.29	5.23	39.52	74.00	-34.48	peak
4874.000	22.72	5.23	27.95	54.00	-26.05	AVG
7311.000	32.18	12.94	45.12	74.00	-28.88	peak
7311.000	21.35	12.94	34.29	54.00	-19.71	AVG
9748.000	30.39	17.60	47.99	74.00	-26.01	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11g Mid CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Horizontal	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

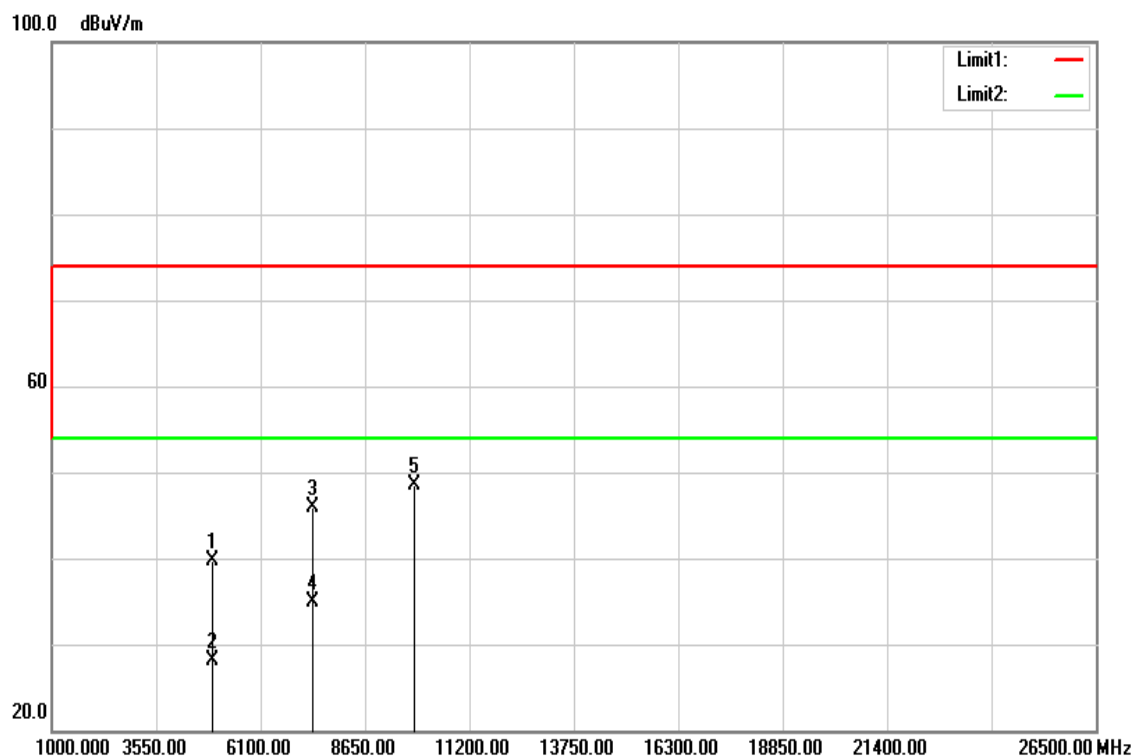


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	34.61	5.23	39.84	74.00	-34.16	peak
4874.000	22.92	5.23	28.15	54.00	-25.85	AVG
7311.000	32.62	12.94	45.56	74.00	-28.44	peak
7311.000	21.31	12.94	34.25	54.00	-19.75	AVG
9748.000	32.46	17.60	50.06	74.00	-23.94	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11g High CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

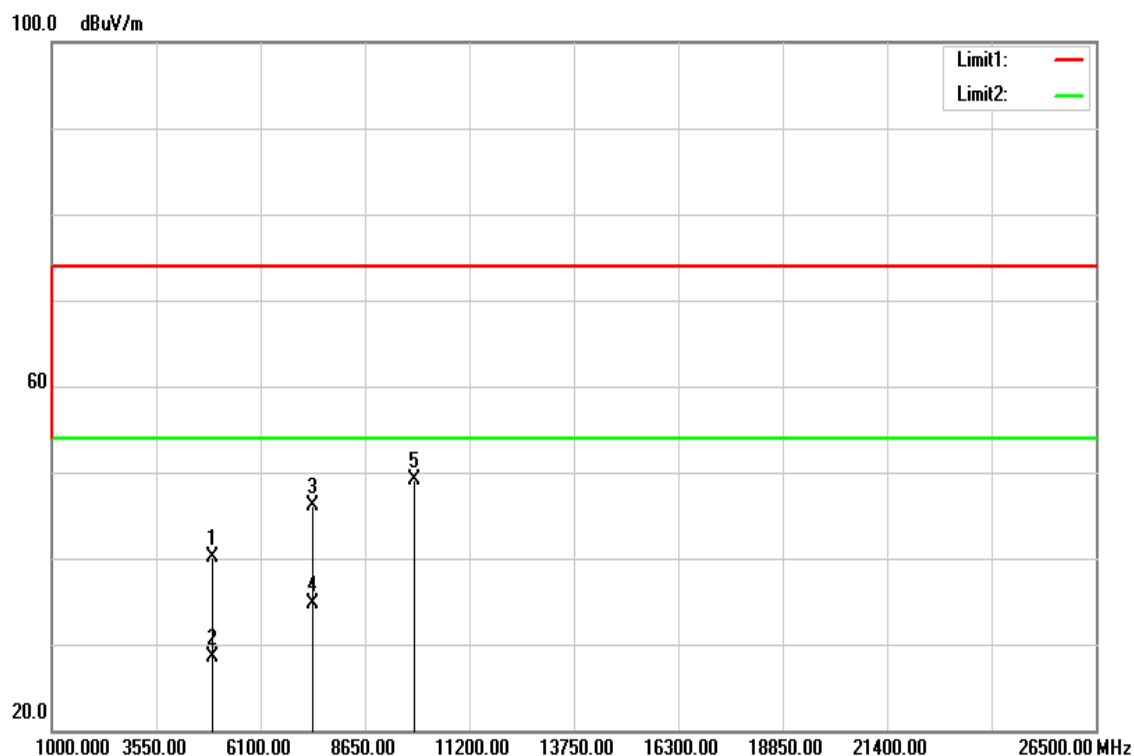


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	34.27	5.37	39.64	74.00	-34.36	peak
4924.000	22.65	5.37	28.02	54.00	-25.98	AVG
7386.000	32.81	13.17	45.98	74.00	-28.02	peak
7386.000	21.71	13.17	34.88	54.00	-19.12	AVG
9848.000	30.85	17.60	48.45	74.00	-25.55	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11g High CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Horizontal	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

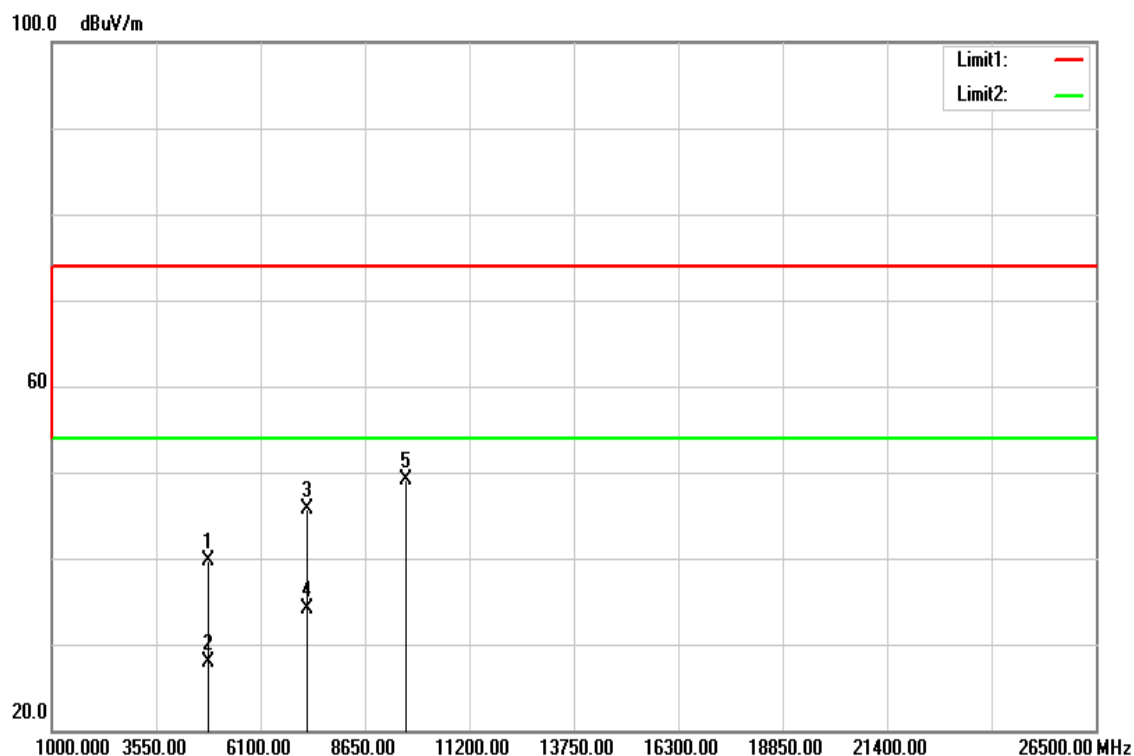


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	34.75	5.37	40.12	74.00	-33.88	peak
4924.000	23.09	5.37	28.46	54.00	-25.54	AVG
7386.000	32.98	13.17	46.15	74.00	-27.85	peak
7386.000	21.61	13.17	34.78	54.00	-19.22	AVG
9848.000	31.57	17.60	49.17	74.00	-24.83	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

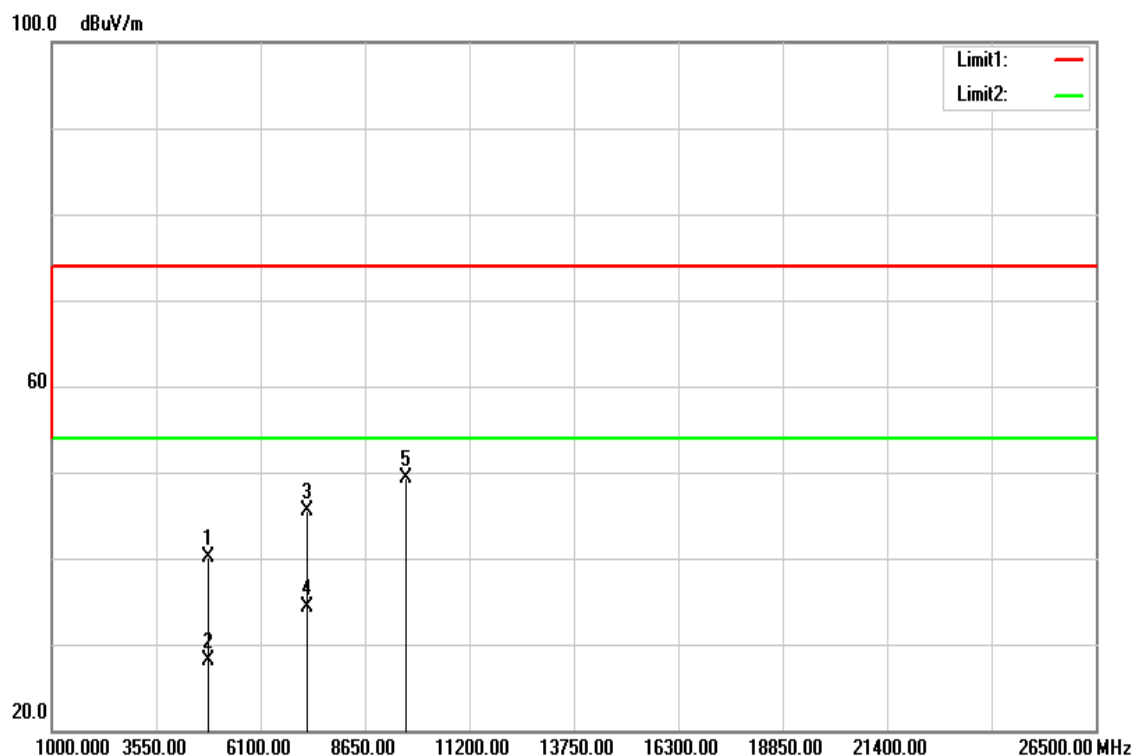


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	R mark
4824.000	34.61	5.10	39.71	74.00	-34.29	peak
4824.000	22.84	5.10	27.94	54.00	-26.06	AVG
7236.000	33.08	12.71	45.79	74.00	-28.21	peak
7236.000	21.46	12.71	34.17	54.00	-19.83	AVG
9648.000	31.46	17.60	49.06	74.00	-24.94	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Horizontal	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

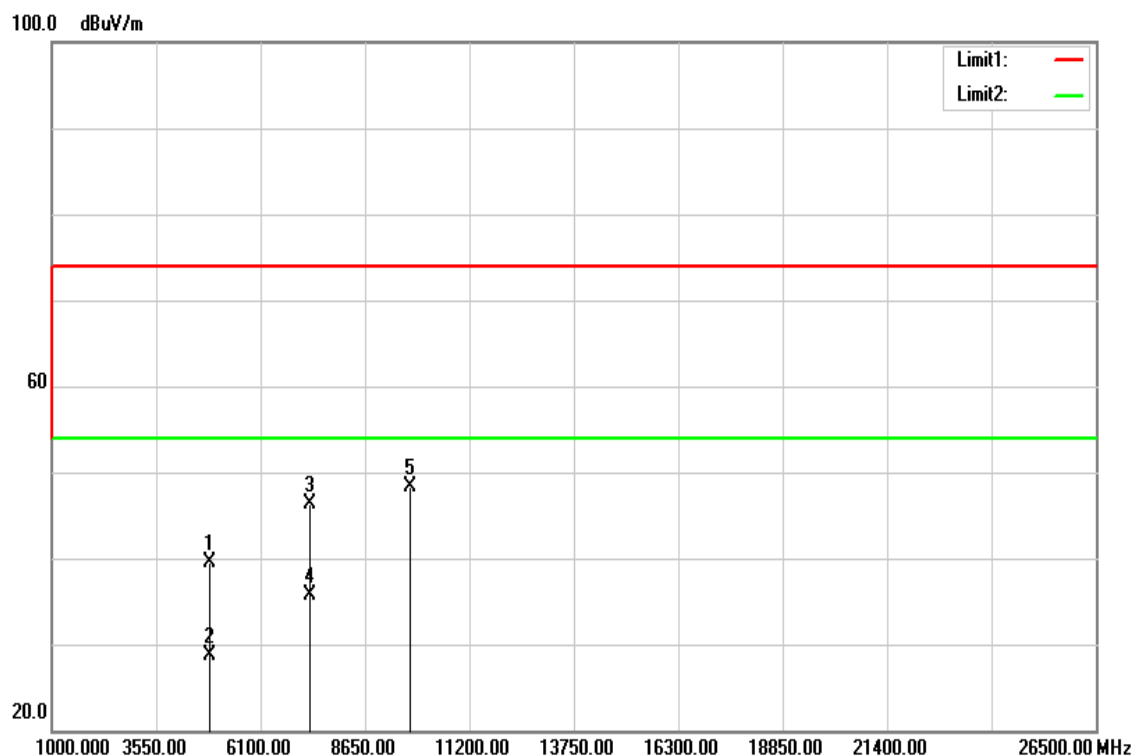


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	34.95	5.10	40.05	74.00	-33.95	peak
4824.000	23.04	5.10	28.14	54.00	-25.86	AVG
7236.000	32.73	12.71	45.44	74.00	-28.56	peak
7236.000	21.68	12.71	34.39	54.00	-19.61	AVG
9648.000	31.73	17.60	49.33	74.00	-24.67	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

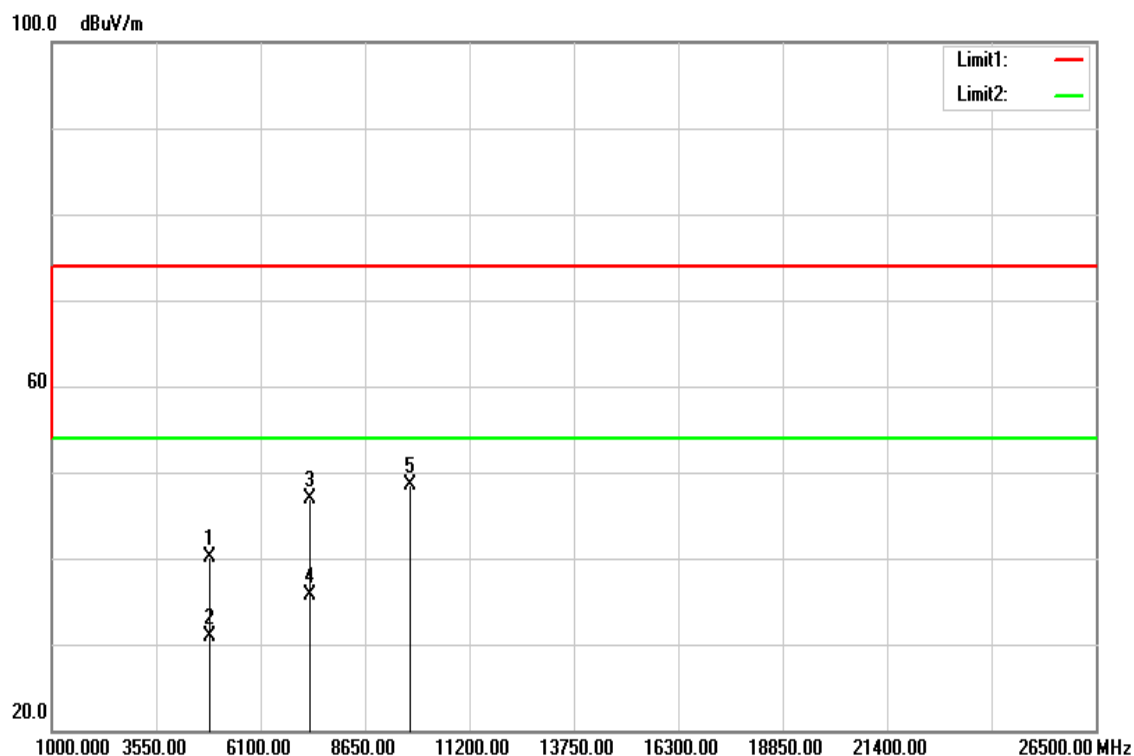


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	R mark
4874.000	34.29	5.23	39.52	74.00	-34.48	peak
4874.000	23.44	5.23	28.67	54.00	-25.33	AVG
7311.000	33.45	12.94	46.39	74.00	-27.61	peak
7311.000	22.80	12.94	35.74	54.00	-18.26	AVG
9748.000	30.79	17.60	48.39	74.00	-25.61	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Horizontal	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

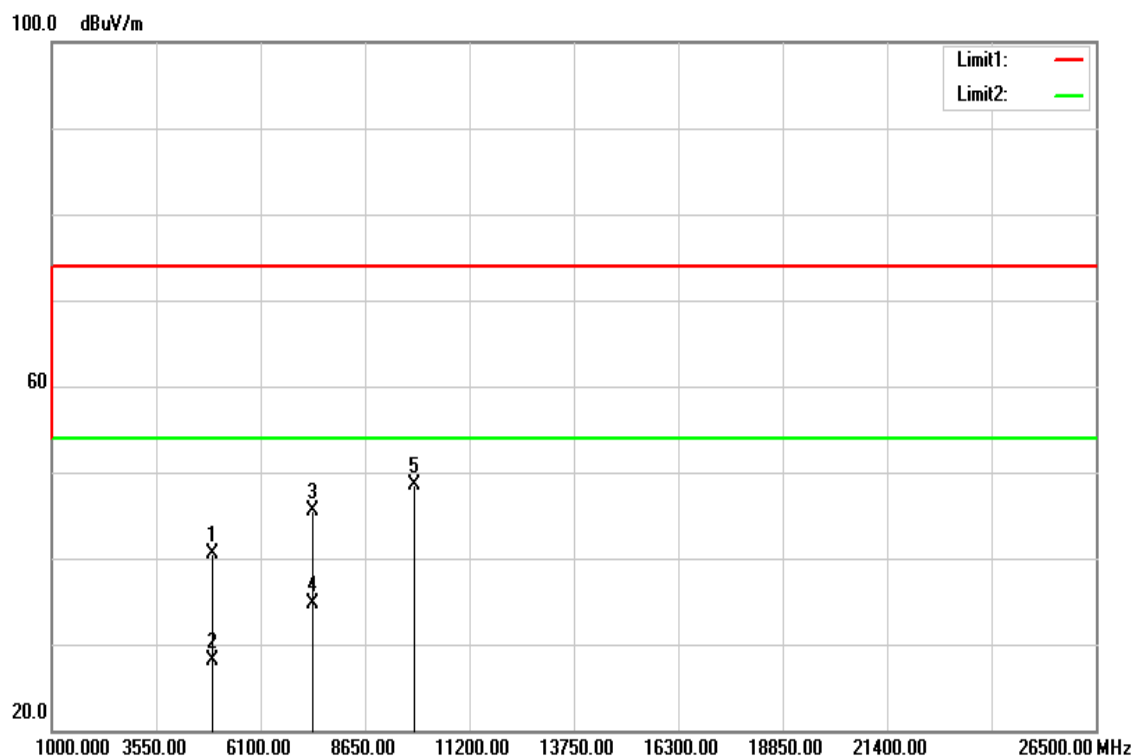


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	34.79	5.23	40.02	74.00	-33.98	peak
4874.000	25.63	5.23	30.86	54.00	-23.14	AVG
7311.000	33.91	12.94	46.85	74.00	-27.15	peak
7311.000	22.77	12.94	35.71	54.00	-18.29	AVG
9748.000	30.82	17.60	48.42	74.00	-25.58	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Vertical	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

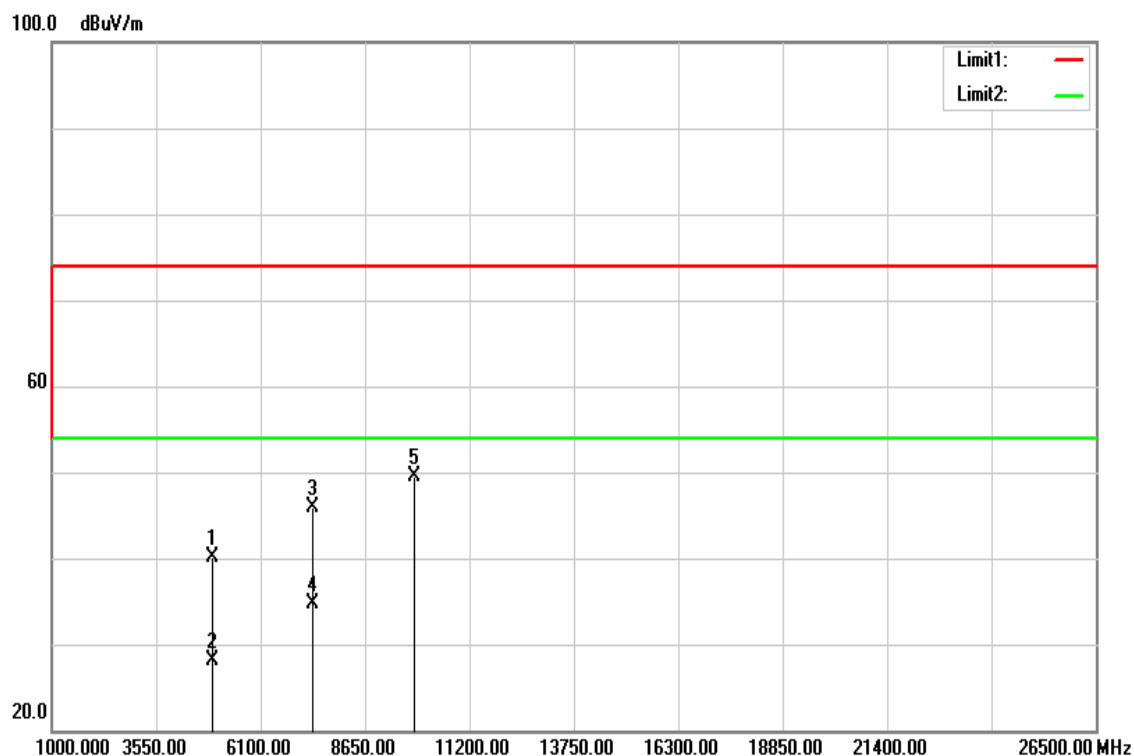


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	35.09	5.37	40.46	74.00	-33.54	peak
4924.000	22.79	5.37	28.16	54.00	-25.84	AVG
7386.000	32.38	13.17	45.55	74.00	-28.45	peak
7386.000	21.56	13.17	34.73	54.00	-19.27	AVG
9848.000	30.87	17.60	48.47	74.00	-25.53	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	23(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 24, 2017
Polarize	Horizontal	Test Engineer	Hayden.feng
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	34.75	5.37	40.12	74.00	-33.88	peak
4924.000	22.72	5.37	28.09	54.00	-25.91	AVG
7386.000	32.74	13.17	45.91	74.00	-28.09	peak
7386.000	21.47	13.17	34.64	54.00	-19.36	AVG
9848.000	31.94	17.60	49.54	74.00	-24.46	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit