

FCC RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247
FCC ID	M82-MITW101A1
Brand name	ADVANTECH
Product name	Computer
Model No.	MIT-W101;MIT-W101XXXXXXXXXXXXXXXXXXXX (where "X" may be any alphanumeric character , "-" or blank)
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 CCS. Inc.

The sample selected for test was production product and was provided by manufacturer.



Approved by:

Tested by:

Handwritten signature of Sam Chuang in black ink.

Handwritten signature of Ed Chiang in black ink.

Sam Chuang
Manager

Ed Chiang
Engineer

Revision History

Rev.	Issue Date	Revisions	Revised By
00	June 27, 2017	Initial Issue	Vicki Huang
01	August 31, 2017	<ol style="list-style-type: none"> 1. Modify model name in P.1, 4 2. Add the measured uncertainty of conducted emission test in P.6 3. Remove the test mode 3 from AC power line conducted emission test in P.11 4. Modify 99% occupied bandwidth in P.17, 22~25 	Vicki Huang
02	September 11, 2017	<ol style="list-style-type: none"> 1. Added Antenna description in P.5 2. Modify Duty cycle data in P.12 	Vicki Huang

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APPENDIX 1 - PHOTOGRAPHS OF EUT

1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Advantech Co.Ltd. No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.
Equipment	Computer
Model Name	MIT-W101;MIT-W101XXXXXXXXXXXXXXXXXXXX (where "X" may be any alphanumeric character , "-" or blank)
Model Discrepancy	All models are electrically identical, different model names are for marketing purpose
Received Date	April 11, 2017
Date of Test	May 8 ~ June 22, 2017
Output Power(W)	IEEE 802.11b mode: 0.0995 (EIRP : 0.2466) IEEE 802.11g mode: 0.2312(EIRP : 0.5728) IEEE 802.11n HT 20 MHz mode: 0.1914 (EIRP : 0.4742) IEEE 802.11n HT 40 MHz mode: 0.1936 (EIRP : 0.4797)
Power Supply	1. VDC from Power Adapter (1)FSP / FSP065-REBN2 I/P: 100-240Vac, 1.5A, 50-60Hz O/P: 19Vdc, 3.42A (2)SINPRO/ HPU63A-107 I/P: 100-240Vac, 1.62-0.72A, 47-63Hz O/P: 18Vdc, 3.5A max 2. Battery (1) ADVANTECH / MIT101-BATC Rating: 11.1V, 2860mAh

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 4. IEEE 802.11n HT 40 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 4. IEEE 802.11n HT 40 MHz mode: 9 Channels

Remark:

Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 and RSS-GEN Table A1 for test channels

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	Main Antenna Model: BJTEK NAVIGATION,INC. Part number: BJHEM851101830B00A-A Gain: 3.94dBi Aux Antenna Model: INVAX System Technology Corp. Part number: IVX0035-C30BLF Gain: 2.70dBi

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
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 1.4003
RF output power, conducted	+/- 1.1372
Power density, conducted	+/- 1.4003

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.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	Stemmi Guo	
Radiation	Ed Chiang	
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
Power Meter	Anritsu	ML2495A	1012009	07/04/2016	07/03/2017
Power Sensor	Anritsu	MA2411B	917072	07/04/2016	07/03/2017
Spectrum Analyzer	R&S	FSV 40	101073	10/05/2016	10/04/2017

3M 966 Chamber Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Bilog Antenna	Sunol Sciences	JB3	A030105	07/03/2016	07/02/2017
Horn Antenna	EMCO	3117	00055165	02/20/2017	02/19/2018
Pre-Amplifier	EMCI	EMC 012635	980151	06/21/2017	06/20/2018
Pre-Amplifier	E MEC	EM330	060609	06/16/2017	06/15/2018
Spectrum Analyzer	Agilent	E4446A	US42510252	12/05/2016	12/04/2017
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R

AC Conducted Emissions Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
LISN	R&S	ENV216	101054	05/18/2017	05/17/2018
LISN	SCHWARZBECK	NSLK 8127	8127-541	02/14/2017	02/13/2018
Receiver	R&S	ESCI	101073	08/20/2016	08/19/2017

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
	N/A				

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, RSS-247 Issue 2 and RSS-GEN Issue 4.

1.9 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	 FCC MRA: TW1039
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	 IC 2324G-1 IC 2324G-2

2. TEST SUMMERY

FCC Standard Section	IC Standard Section	Report Section	Test Item	Result
15.203	-	1.2	Antenna Requirement	Pass
15.207(a)	RSS-GEN 8.8	4.1	AC Conducted Emission	Pass
15.247(a)(2)	RSS-247(5.2)(a)	4.2	6 dB Bandwidth	Pass
-	RSS-GEN 6.6	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)	RSS-247(5.4)(d)	4.3	Output Power Measurement	Pass
15.247(e)	RSS-247(5.2)(b)	4.4	Power Spectral Density	Pass
15.247(d)	RSS-247(5.5)	4.5	Conducted Band Edge	Pass
15.247(d)	RSS-247(5.5)	4.5	Conducted Emission	Pass
15.247(d)	RSS-GEN 8.9, 8.10	4.6	Radiation Band Edge	Pass
15.247(d)	RSS-GEN 8.9, 8.10	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 :MCS8 IEEE 802.11n HT40 mode :MCS8
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 IEEE 802.11n HT40 mode : 1. Lowest Channel : 2422MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2452MHz
Operation Transmitter	IEEE 802.11b mode :1T1R IEEE 802.11g mode :1T1R IEEE 802.11n HT20 mode :1T1R IEEE 802.11n HT40 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 AC adapter via power cable.(HPU63A-107) Mode 2: EUT power by AC adapter via power cable. (FSP065-REBN2)
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 AC adapter via power cable.(HPU63A-107) Mode 2: EUT power by AC adapter via power cable. (FSP065-REBN2) Mode 3: EUT power by Battery
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 type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input checked="" type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane)
Worst Polarity	<input checked="" type="checkbox"/> Horizontal <input type="checkbox"/> Vertical

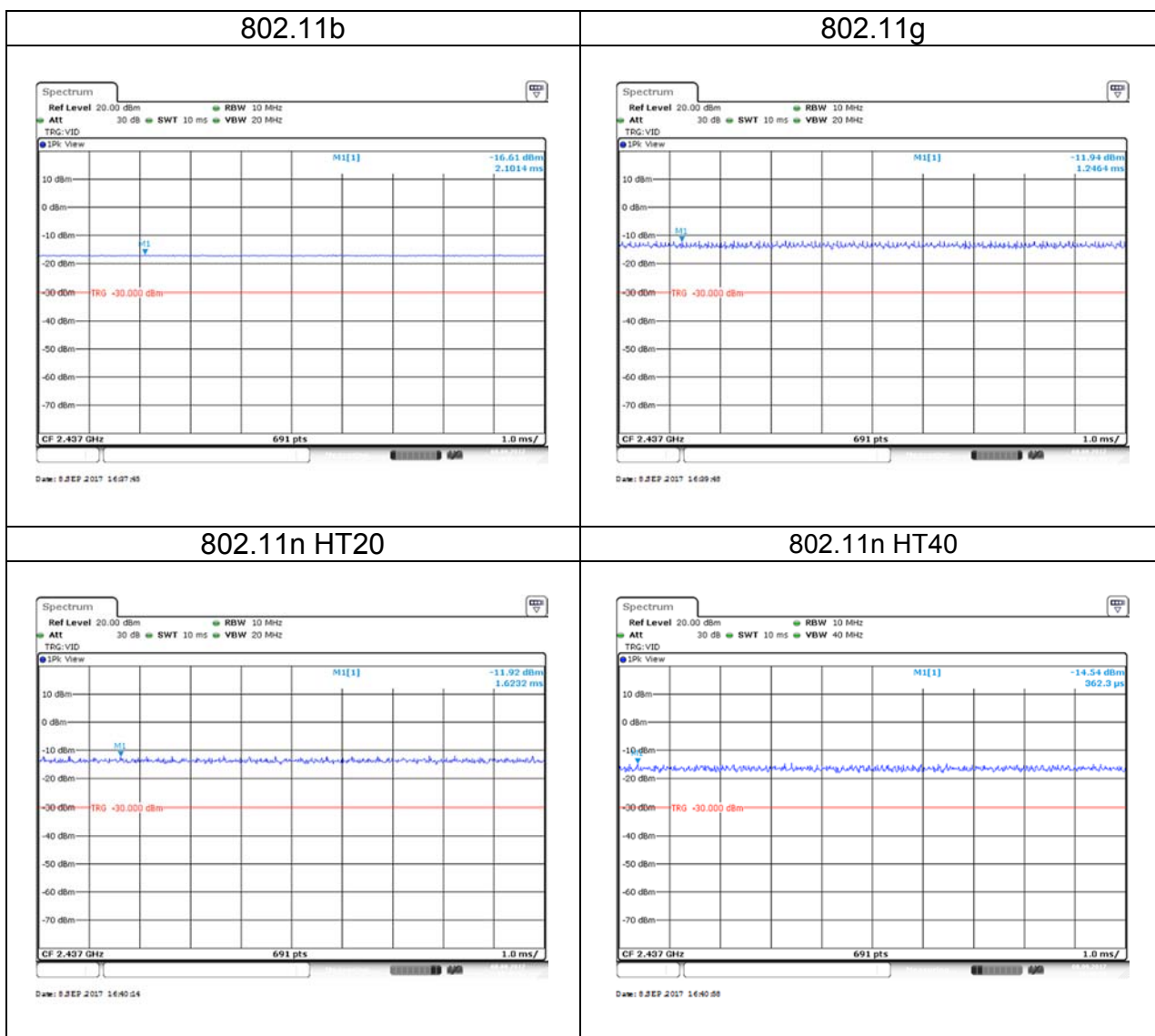
Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Voltage/Hz	120V/60Hz
Test Mode	Mode 1: EUT power by AC adapter via power cable.(HPU63A-107) Mode 2: EUT power by AC adapter via power cable. (FSP065-REBN2) Mode 3: EUT power by Battery
Worst Mode	<input checked="" type="checkbox"/> 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(Z-Plane and Horizontal) 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	100.0000	100.0000	--	0.00
802.11g	100.0000	100.0000	--	0.00
802.11n HT20	100.0000	100.0000	--	0.00
802.11n HT40	100.0000	100.0000	--	0.00



4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a)(2) and RSS-GEN section 8.8,

Frequency Range (MHz)	Limits(dBμV)	
	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

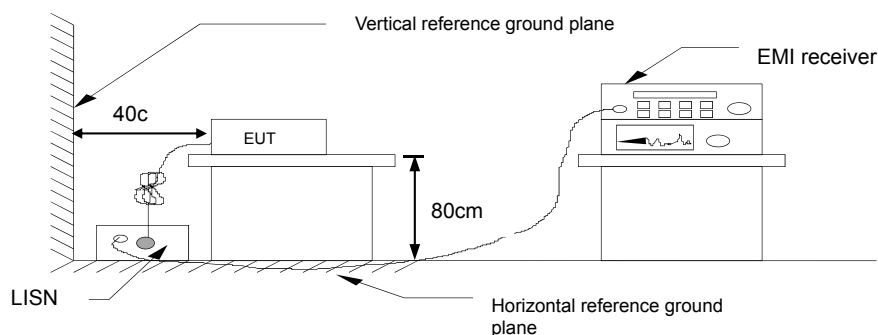
* Decreases with the logarithm of the frequency.

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

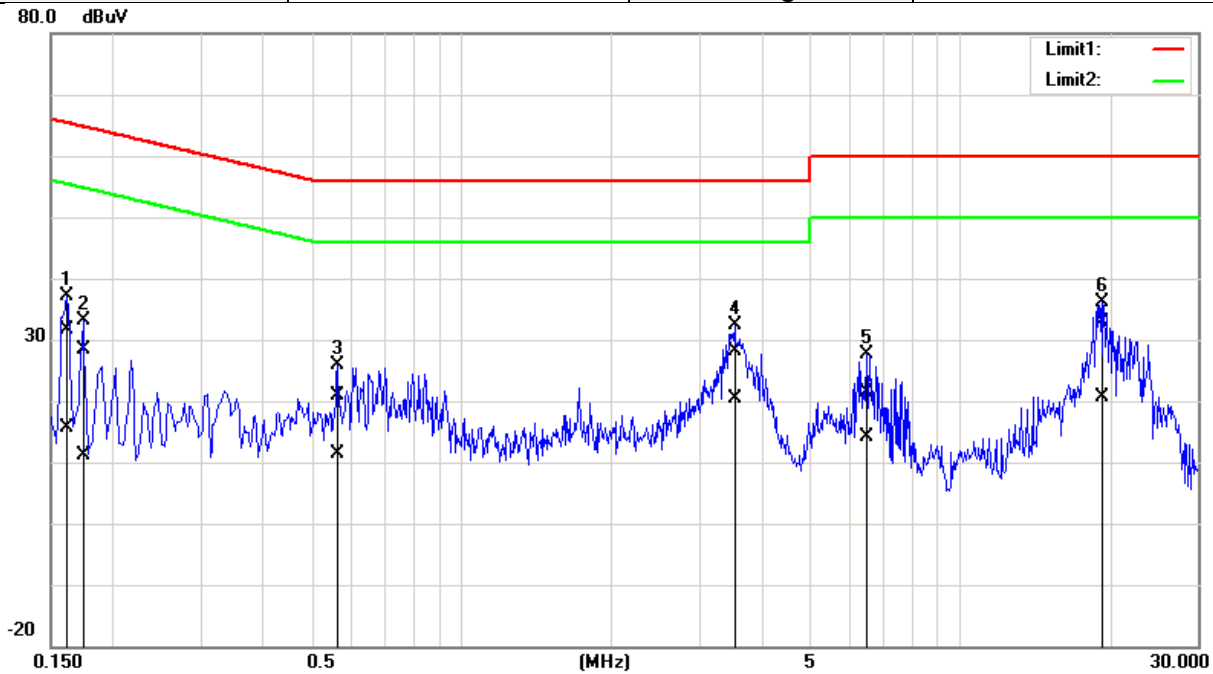


4.1.4 Test Result

Pass.

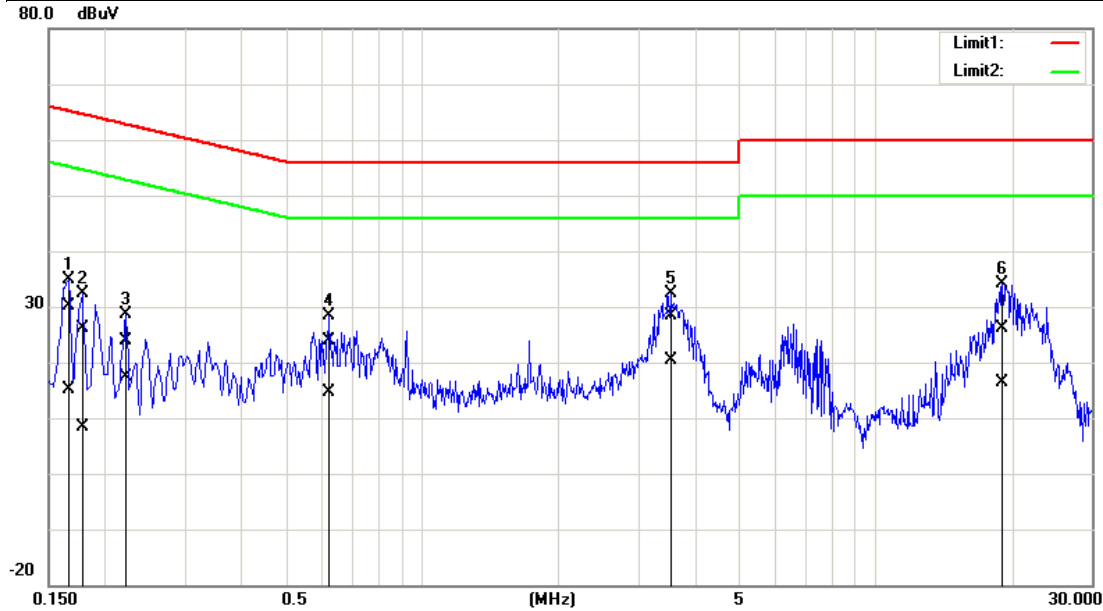
Test Data

Test Mode:	Mode 1	Temp/Hum	24(°C)/ 50%RH
Test Voltage:	120Vac / 60Hz	Test Date	2017/6/22
Phase:	Line	Test Engineer	Stemmi Guo



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	0.1620	31.54	15.68	-0.02	31.52	15.66	65.36	55.36	-33.84	-39.70
2	0.1740	28.35	11.10	-0.02	28.33	11.08	64.77	54.77	-36.44	-43.69
3	0.5660	21.00	11.48	-0.05	20.95	11.43	56.00	46.00	-35.05	-34.57
4	3.5460	28.26	20.32	-0.05	28.21	20.27	56.00	46.00	-27.79	-25.73
5	6.5220	21.39	14.08	0.06	21.45	14.14	60.00	50.00	-38.55	-35.86
6	19.3540	33.25	20.91	-0.31	32.94	20.60	60.00	50.00	-27.06	-29.40

Test Mode:	Mode 1	Temp/Hum	27(°C)/ 53%RH
Test Voltage:	120Vac / 60Hz	Test Date	2017/6/22
Phase:	Neutral	Test Engineer	Stemmi Guo



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	30.16	15.28	-0.09	30.07	15.19	65.16	55.16	-35.09	-39.97
2	0.1780	26.33	8.60	-0.10	26.23	8.50	64.58	54.58	-38.35	-46.08
3	0.2220	24.09	17.47	-0.10	23.99	17.37	62.74	52.74	-38.75	-35.37
4	0.6260	23.95	14.66	-0.13	23.82	14.53	56.00	46.00	-32.18	-31.47
5	3.5460	28.55	20.63	-0.13	28.42	20.50	56.00	46.00	-27.58	-25.50
6	19.0980	26.52	16.62	-0.33	26.19	16.29	60.00	50.00	-33.81	-33.71

4.2 6DB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)

4.2.1 Test Limit

According to §15.247(a)(2) and RSS-247 section 5.2(a),

6 dB Bandwidth :

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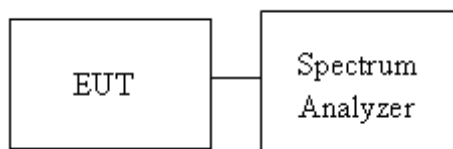
Occupied Bandwidth(99%) : For reporting purposes only.

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	15.0651	-	10.1304	-	≥500
Mid	2437	15.1085	-	10.1304	-	
High	2462	15.1085	-	10.1304	-	

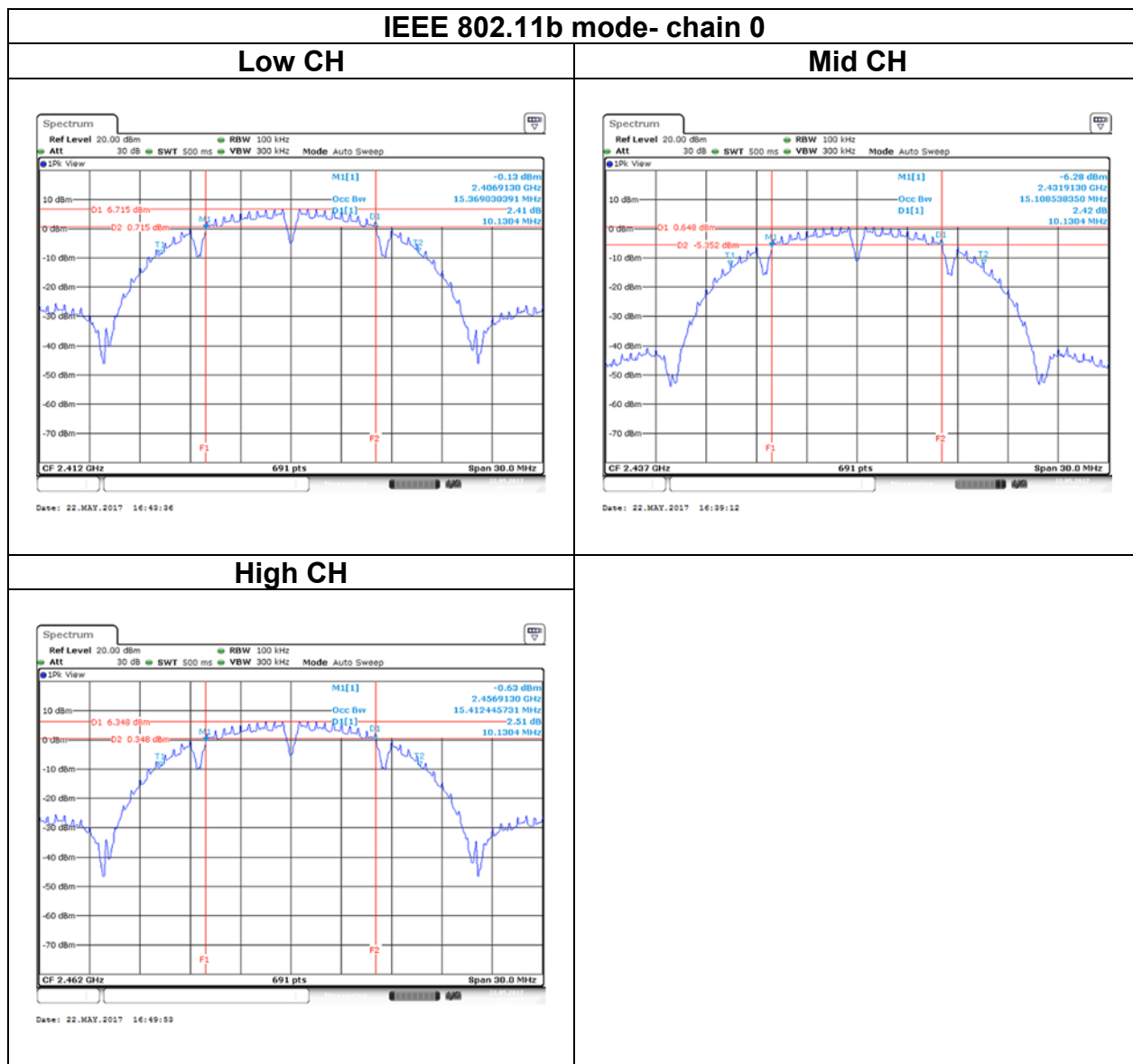
Test mode: IEEE 802.11g mode / 2412-2462 MHz						
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)	6dB limit (kHz)
Low	2412	16.5845	-	16.6522	-	≥500
Mid	2437	16.6280	-	16.6522	-	
High	2462	16.6280	-	16.6522	-	

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	17.8002	-	17.7391	-	≥500
Mid	2437	17.7568	-	17.7826	-	
High	2462	17.7568	-	17.7391	-	

Test mode: IEEE 802.11n HT 40 MHz mode / 2422-2452 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	2422	36.3531	-	36.5220	-	>500
Mid	2437	36.8162	-	36.6380	-	
High	2452	36.8162	-	36.6380	-	

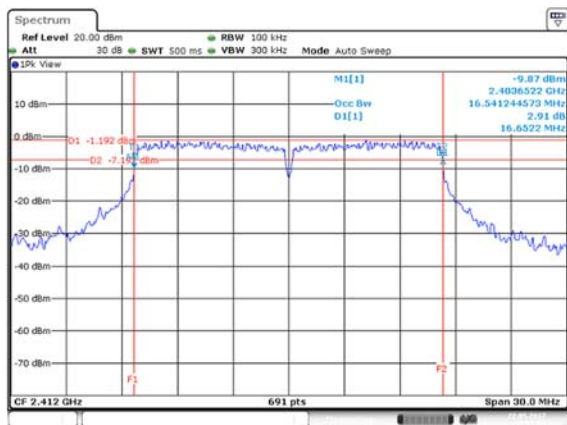
Test Data

For 6dB BW

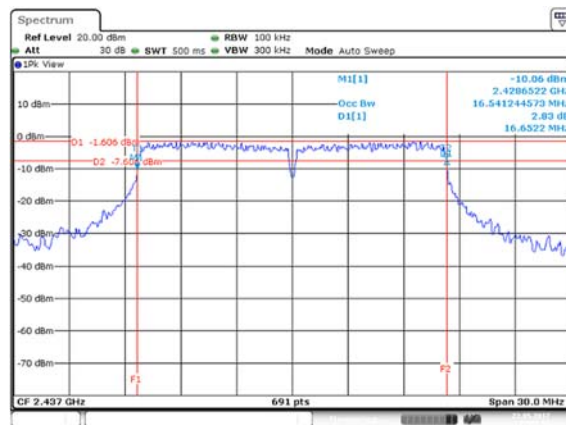


IEEE 802.11g mode- chain 0

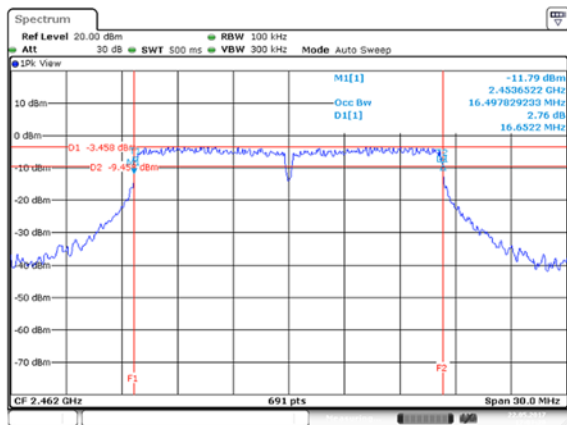
Low CH



Mid CH

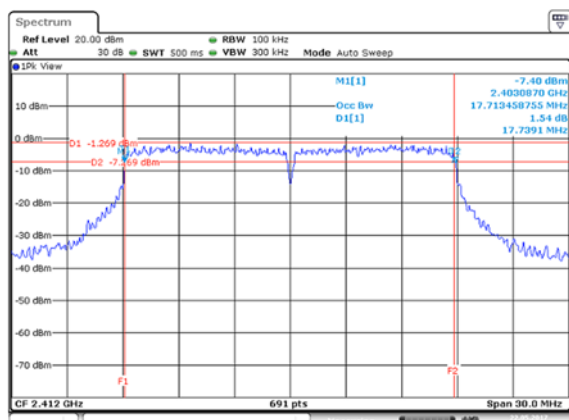


High CH

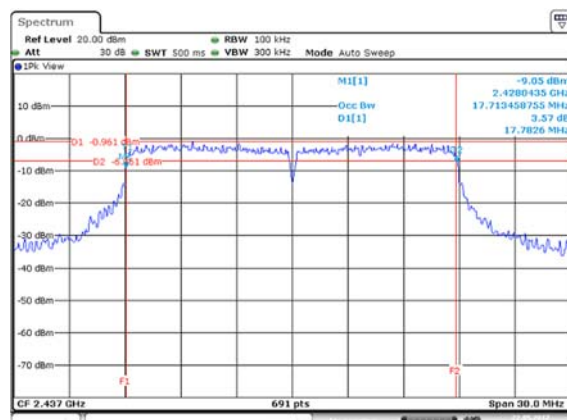


IEEE 802.11n HT20 mode- chain 0

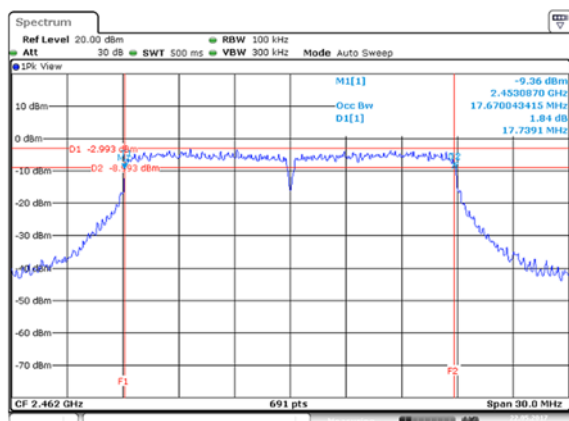
Low CH



Mid CH

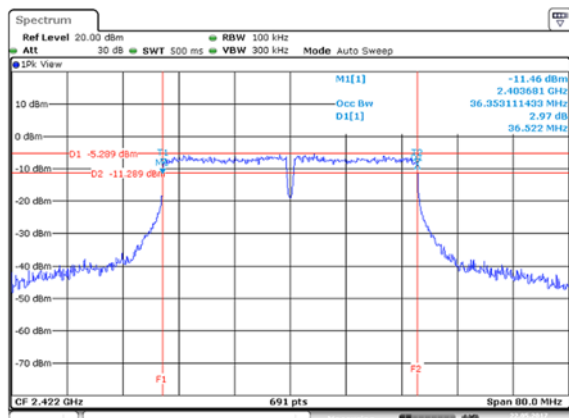


High CH

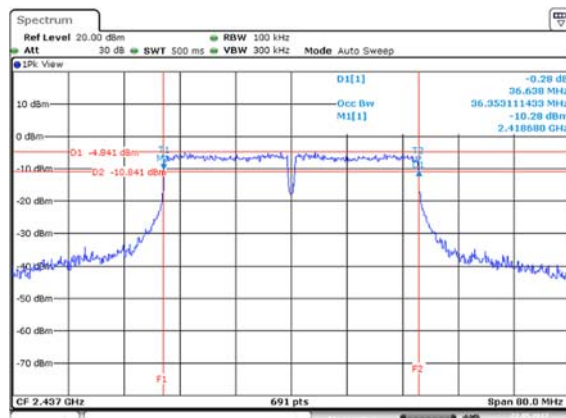


IEEE 802.11n HT40 mode- chain 0

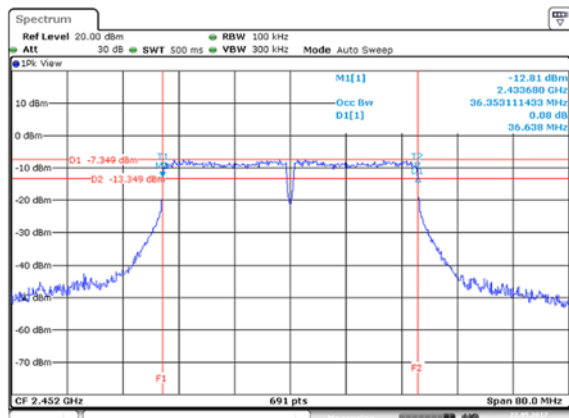
Low CH



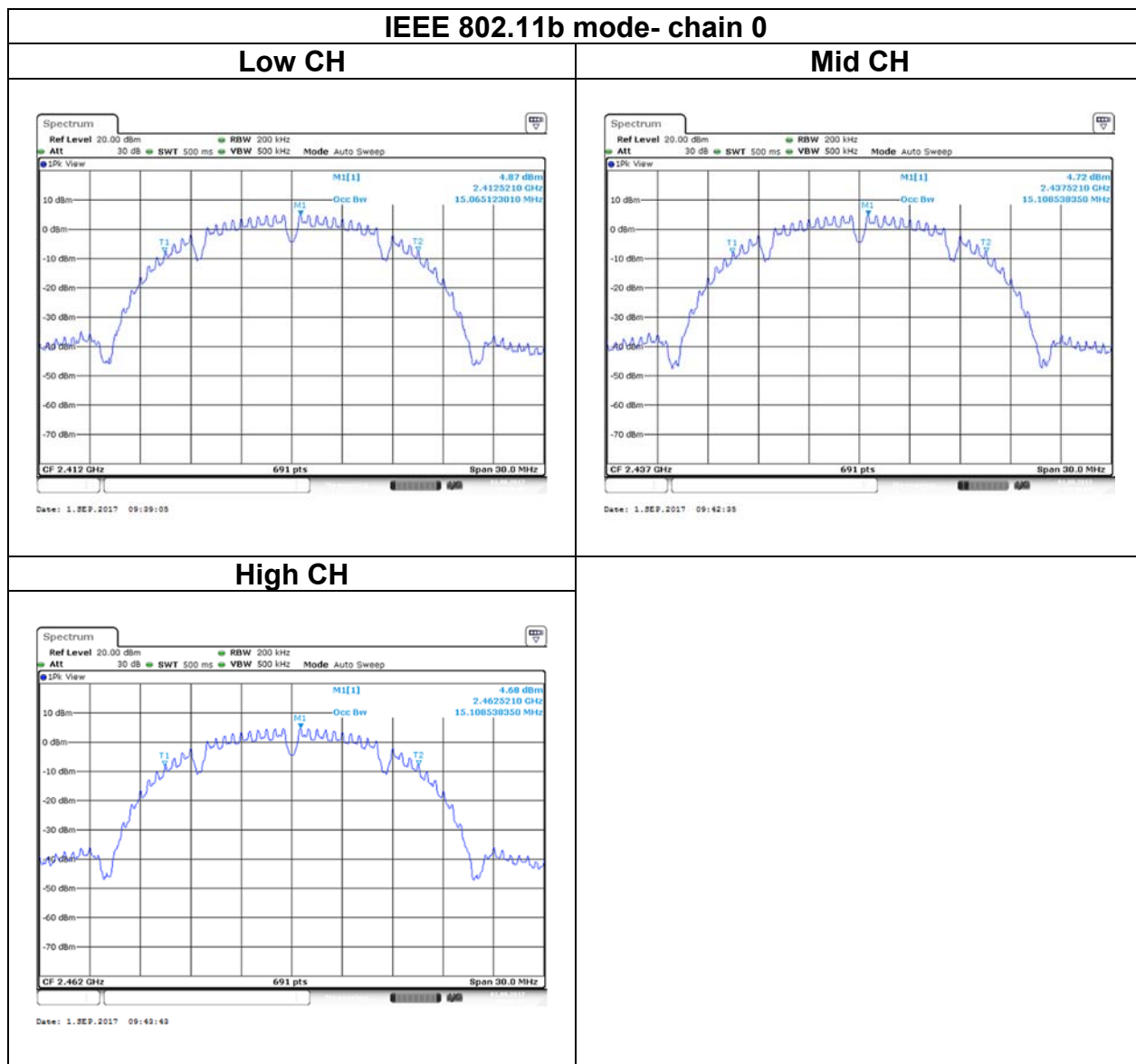
Mid CH

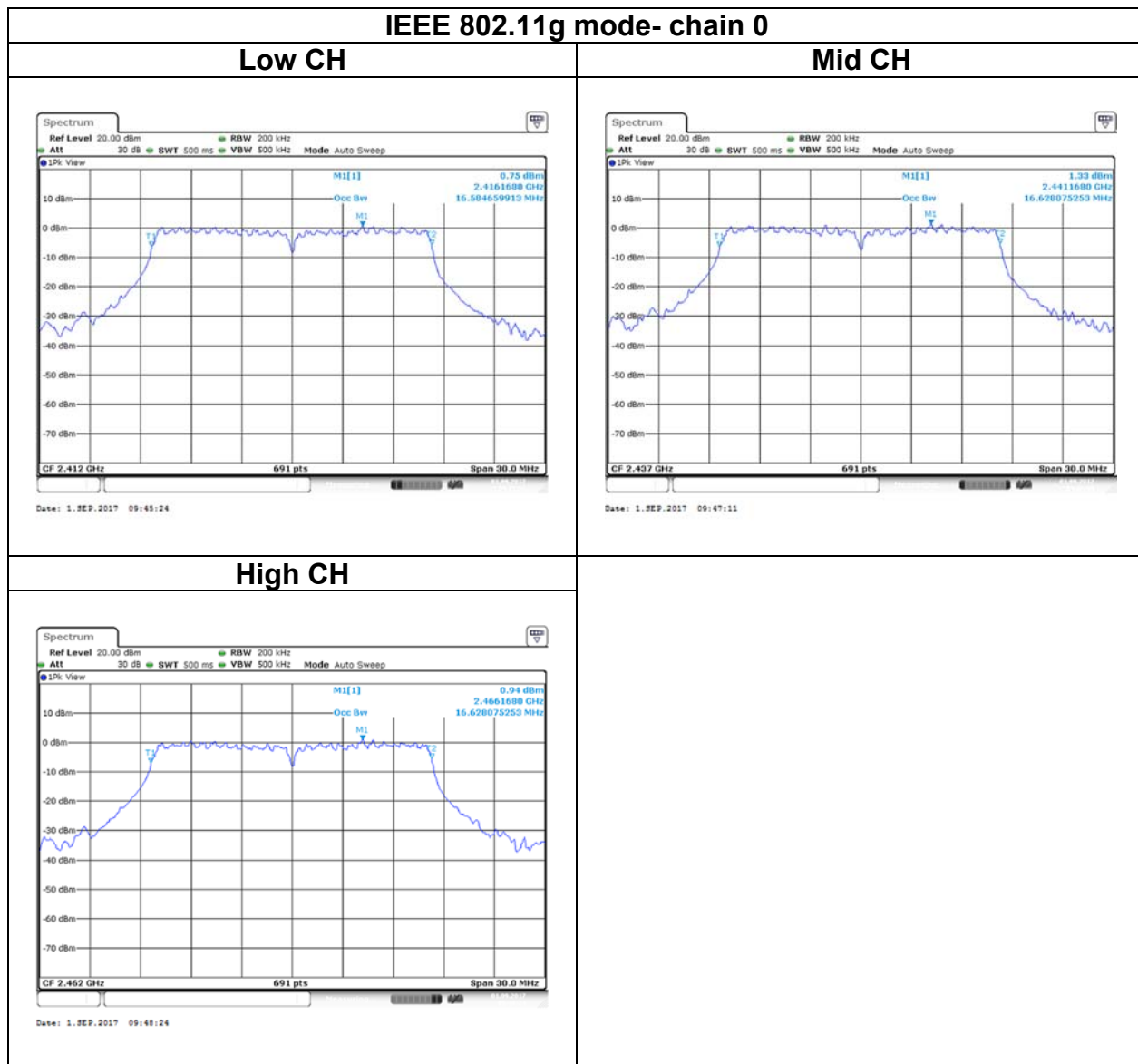


High CH



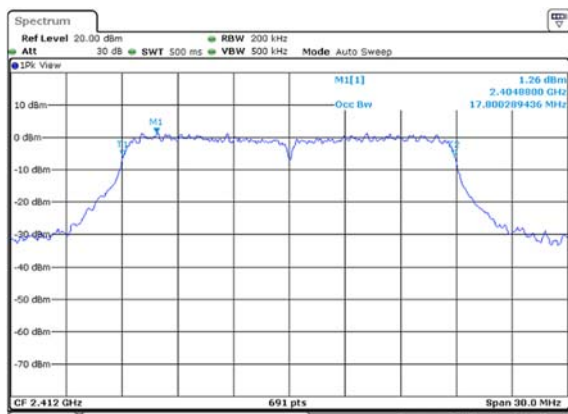
For OBW(99%)





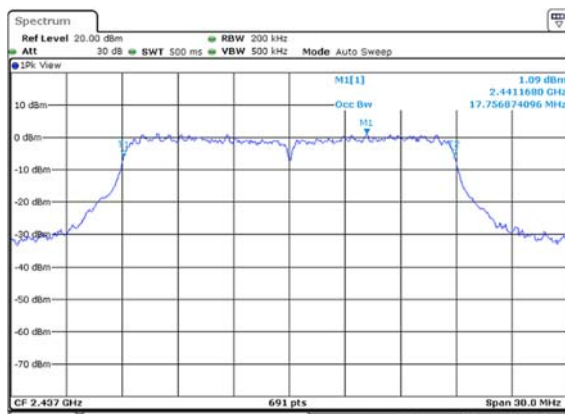
IEEE 802.11n HT20 mode- chain 0

Low CH



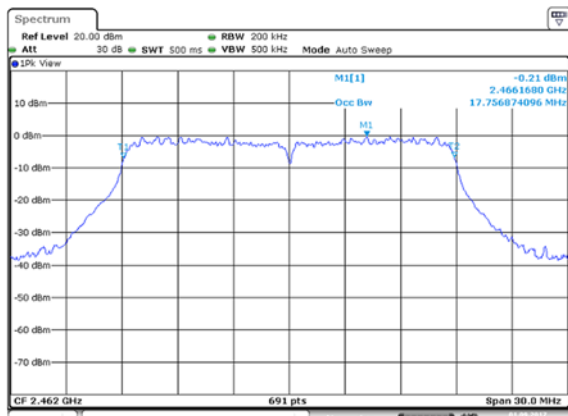
Date: 1. SEP. 2017 09:50:43

Mid CH



Date: 1. SEP. 2017 09:51:53

High CH



Date: 1. SEP. 2017 09:52:50

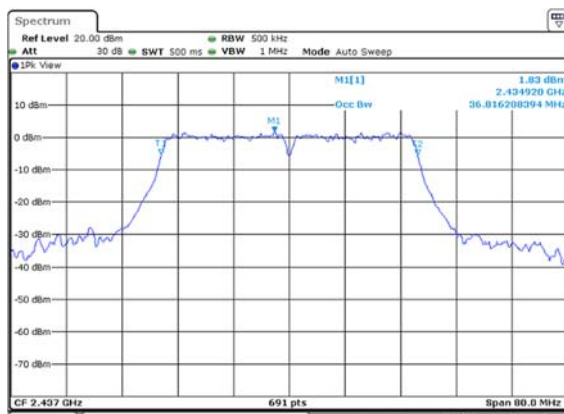
IEEE 802.11n HT40 mode- chain 0

Low CH



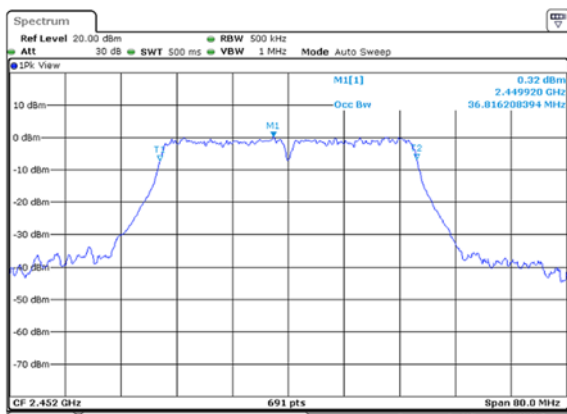
Date: 1.2EP.2017 09:57:08

Mid CH



Date: 1.2EP.2017 09:58:04

High CH



Date: 1.2EP.2017 09:58:50

4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(b) and RSS-247 section 5.4(d),

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 :
-------	---

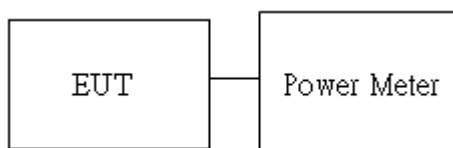
Average output power : For reporting purposes only.

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	63	-	19.98	-	19.98	0.0995	23.92	0.2466	3.94	30	36
	Mid	2437	63	-	19.57	-	19.57	0.0906	23.51	0.2244			
	High	2462	63	-	19.22	-	19.22	0.0836	23.16	0.2070			
IEEE 802.11g Data rate: 6Mbps	Low	2412	63	-	23.64	-	23.64	0.2312	27.58	0.5728			
	Mid	2437	63	-	23.51	-	23.51	0.2244	27.45	0.5559			
	High	2462	63	-	22.21	-	22.21	0.1663	26.15	0.4121			
IEEE 802.11n HT20 Data rate: MCS8	Low	2412	63	-	22.64	-	22.64	0.1837	26.58	0.4550			
	Mid	2437	63	-	22.82	-	22.82	0.1914	26.76	0.4742			
	High	2462	63	-	21.54	-	21.54	0.1426	25.48	0.3532			
IEEE 802.11n HT40 Data rate: MCS8	Low	2422	63	-	22.28	-	22.28	0.1690	26.22	0.4188			
	Mid	2437	63	-	22.87	-	22.87	0.1936	26.81	0.4797			
	High	2452	63	-	20.91	-	20.91	0.1233	24.85	0.3055			

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	17.85	-	17.85
	Mid	2437	17.95	-	17.95
	High	2462	17.42	-	17.42
IEEE 802.11g Data rate: 6Mbps	Low	2412	15.60	-	15.60
	Mid	2437	15.32	-	15.32
	High	2462	13.67	-	13.67
IEEE 802.11n HT20 Data rate: MCS8	Low	2412	14.87	-	14.87
	Mid	2437	14.89	-	14.89
	High	2462	13.07	-	13.07
IEEE 802.11n HT40 Data rate: MCS8	Low	2422	13.82	-	13.82
	Mid	2437	14.67	-	14.67
	High	2452	12.10	-	12.10

4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.247(e) and RSS-247 section 5.2(2),

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.

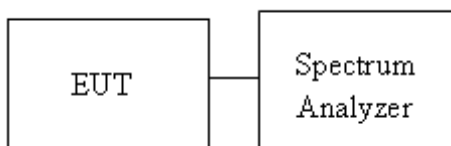
Limit	<input checked="" type="checkbox"/> Antenna not exceed 6 dBi : 8dBm <input type="checkbox"/> Antenna with DG greater than 6 dBi : [Limit = 8 – (DG – 6)] <input type="checkbox"/> Point-to-point operation :
-------	---

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

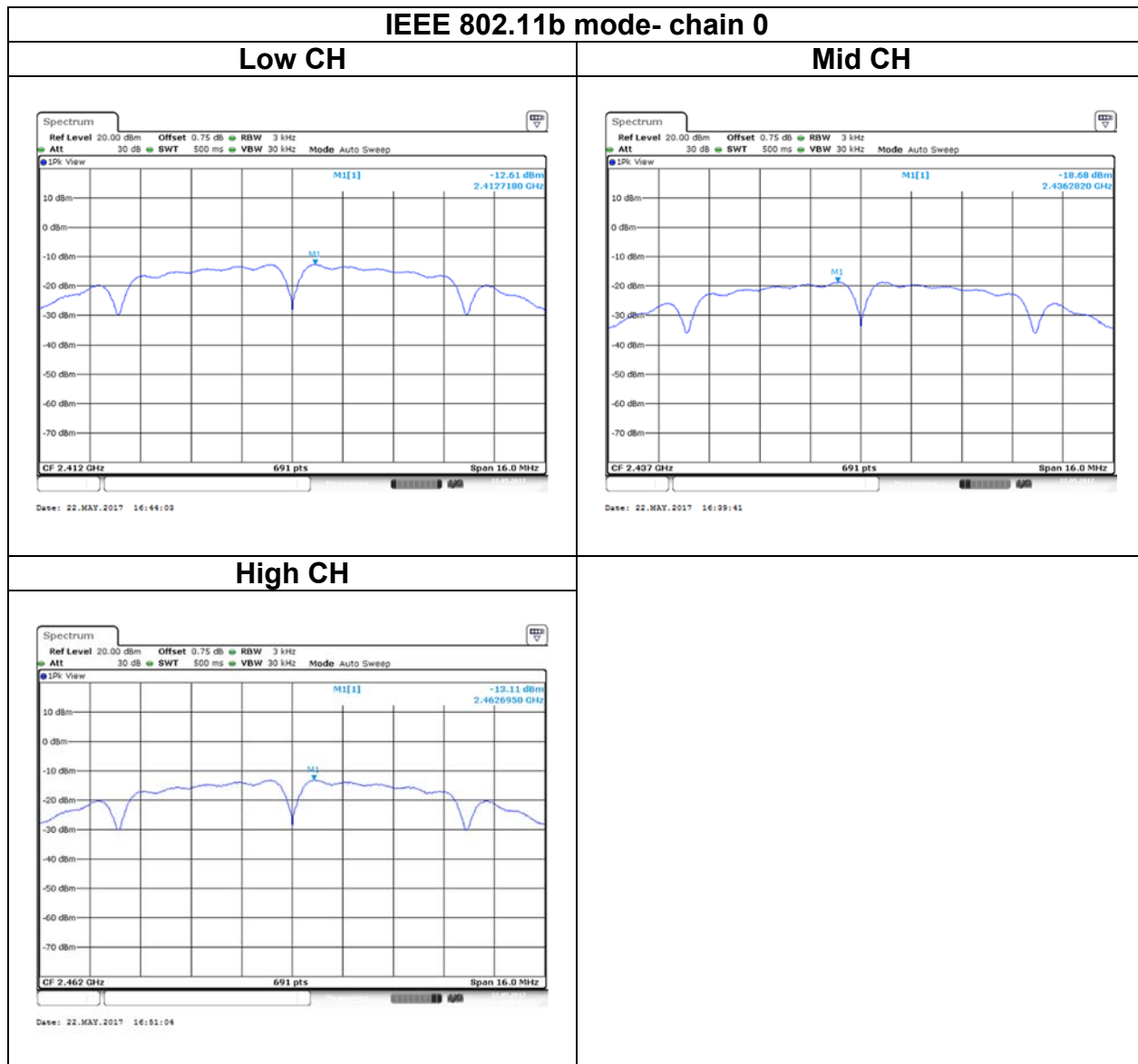
Test mode: IEEE 802.11b mode / 2412-2462 MHz					
Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PSSD (dBm)	Limit (dBm)
Low	2412	-12.61	-	-12.61	5.50
Mid	2437	-18.68	-	-18.68	
High	2462	-13.11	-	-13.11	

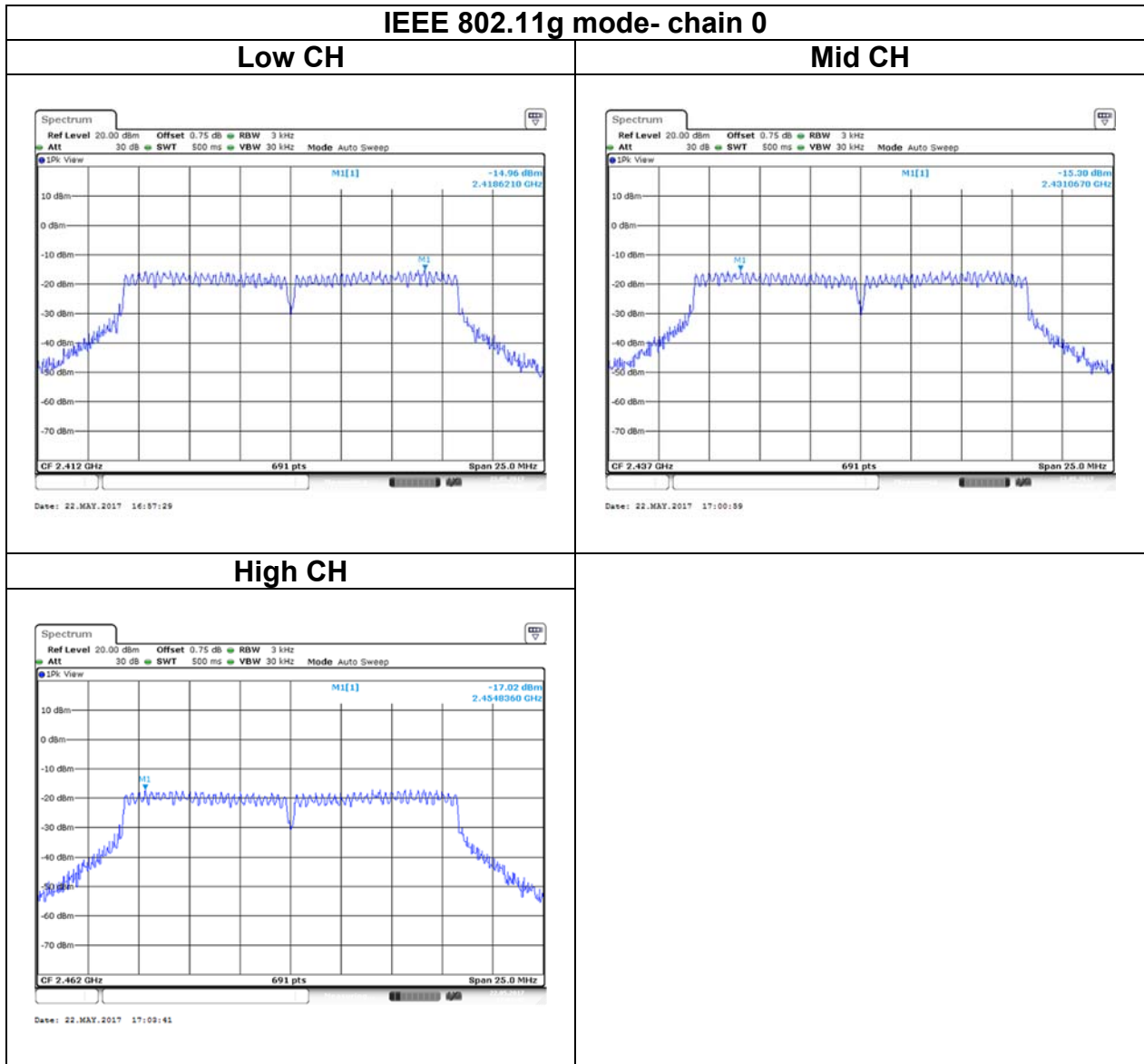
Test mode: IEEE 802.11g mode / 2412-2462 MHz					
Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PSSD (dBm)	Limit (dBm)
Low	2412	-14.96	-	-14.96	5.50
Mid	2437	-15.30	-	-15.30	
High	2462	-17.02	-	-17.02	

Test mode: IEEE 802.11n HT 20 MHz mode / 2412-2462 MHz					
Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PSSD (dBm)	Limit (dBm)
Low	2412	-14.00	-	-14.00	5.50
Mid	2437	-14.51	-	-14.51	
High	2462	-16.57	-	-16.57	

Test mode: IEEE 802.11n HT 40 MHz mode / 2422-2452 MHz					
Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PSSD (dBm)	Limit (dBm)
Low	2422	-17.38	-	-17.38	5.50
Mid	2437	-16.80	-	-16.80	
High	2452	-18.07	-	-18.07	

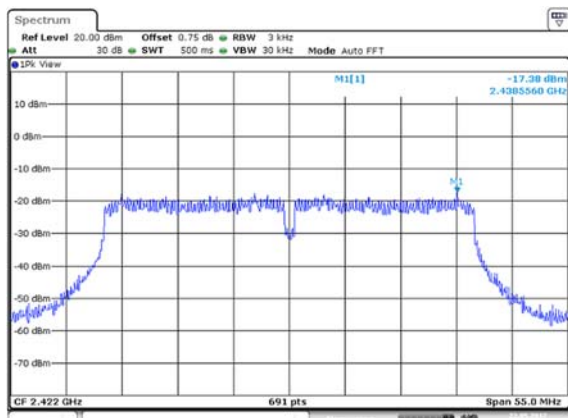
Test Data



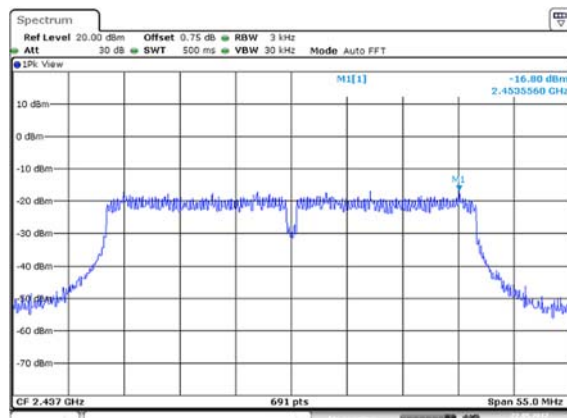


IEEE 802.11n HT40 mode-chain 0

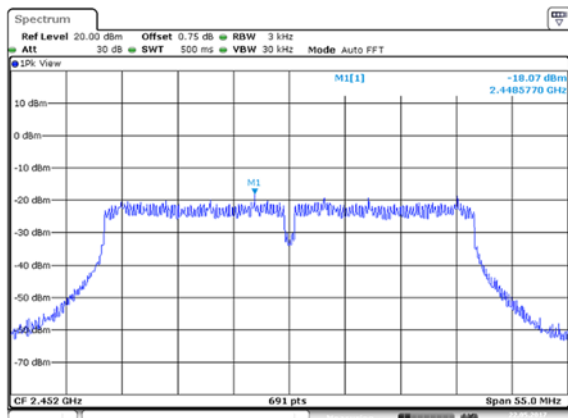
Low CH



Mid CH



High CH



4.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

4.5.1 Test Limit

According to §15.247(d) and RSS-247 section 5.5,

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.

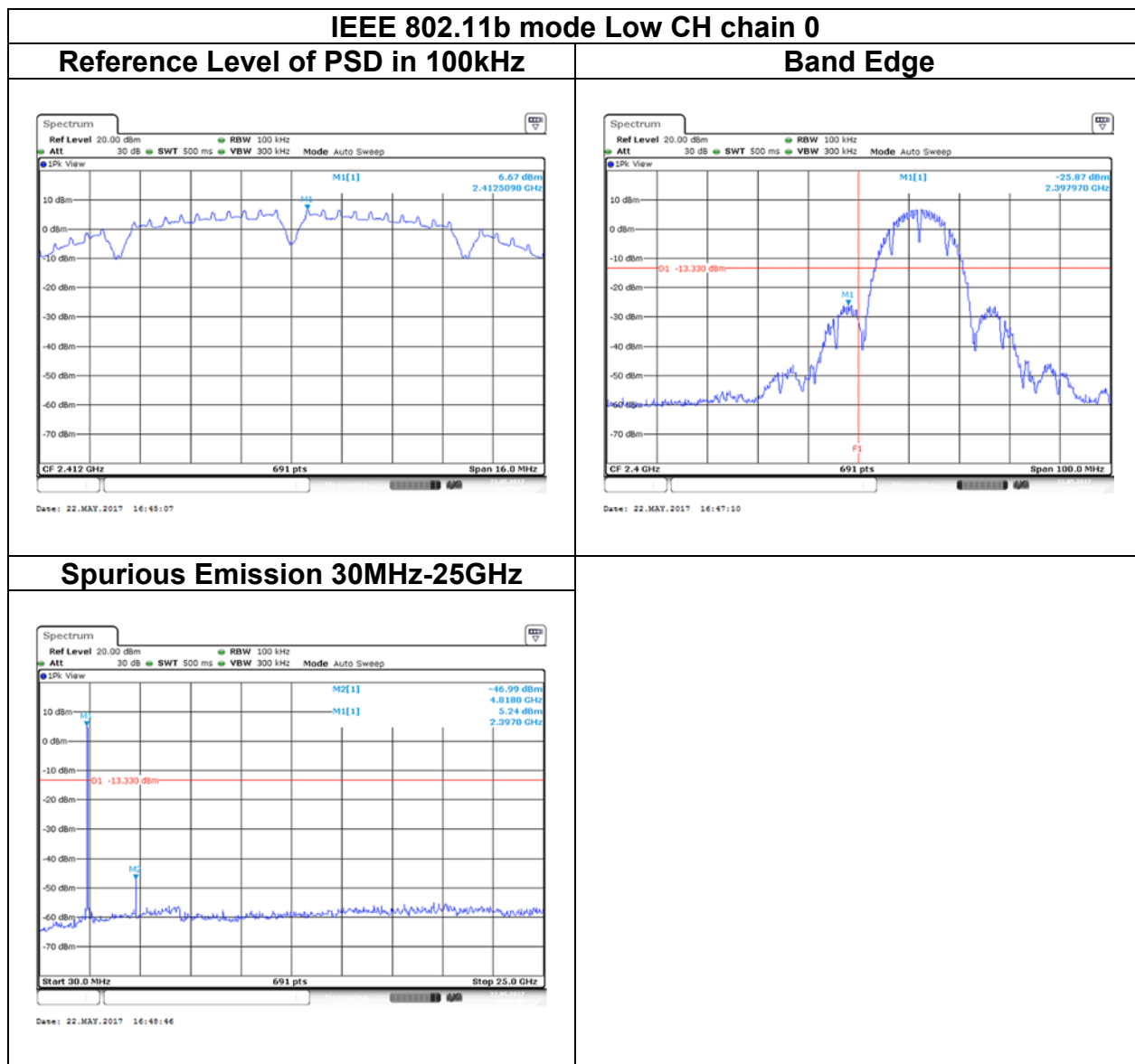
1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.
2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.
3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to 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.

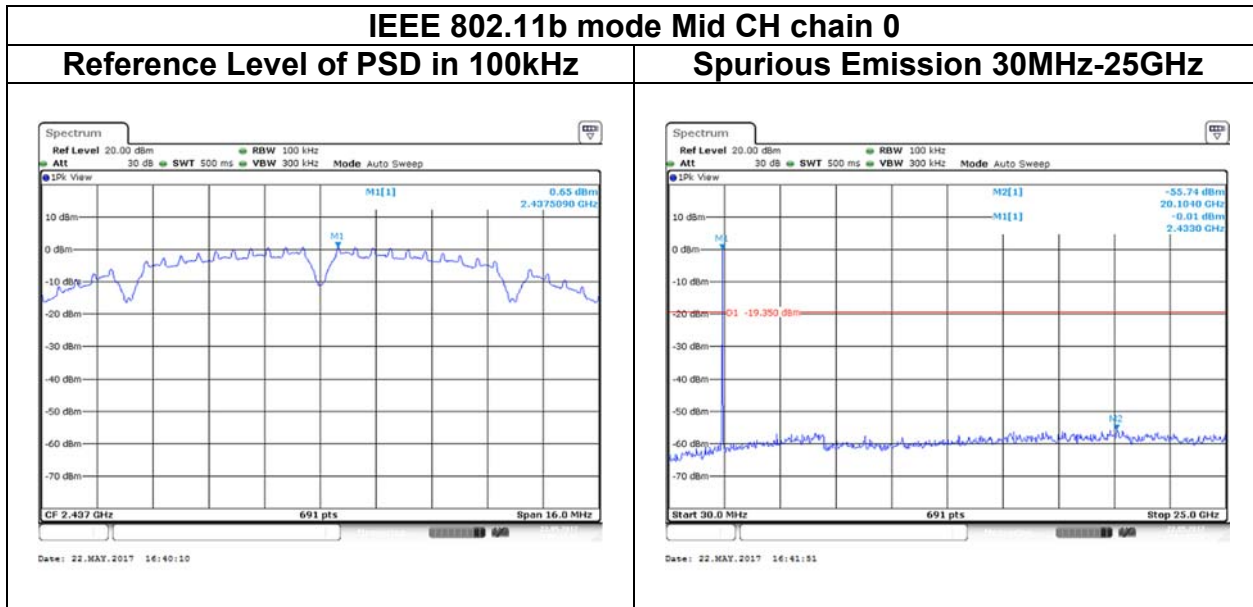
4.5.3 Test Setup



4.5.4 Test Result

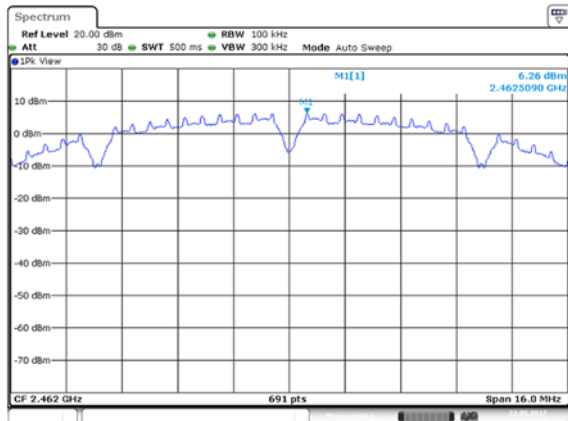
Test Data





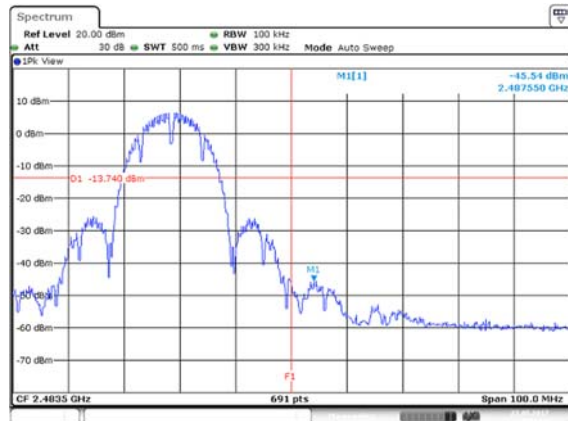
IEEE 802.11b mode High CH chain 0

Reference Level of PSD in 100kHz



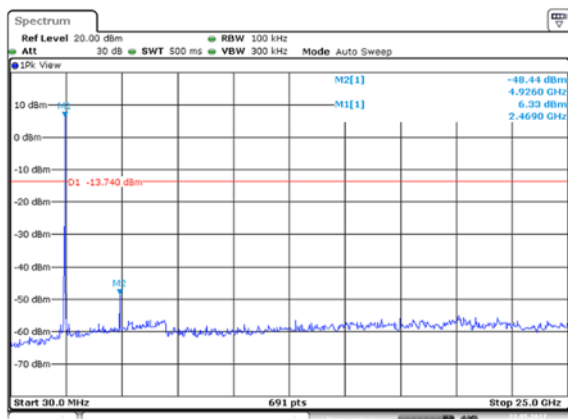
Date: 22.MAY.2017 16:51:05

Band Edge



Date: 22.MAY.2017 16:54:24

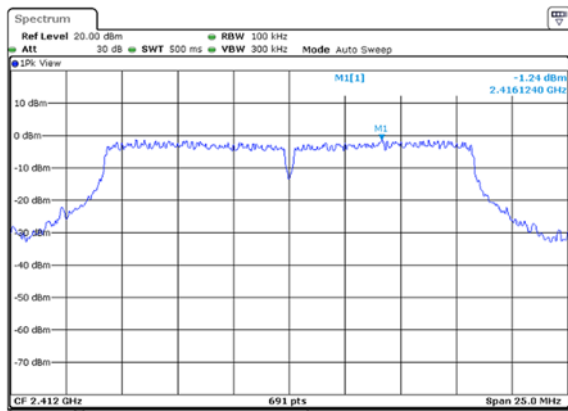
Spurious Emission 30MHz-25GHz



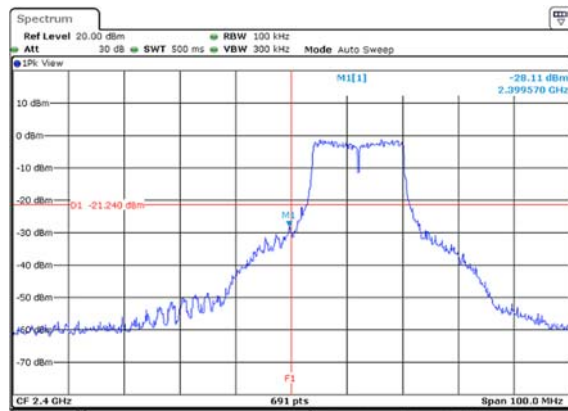
Date: 22.MAY.2017 16:55:49

IEEE 802.11g mode Low CH chain 0

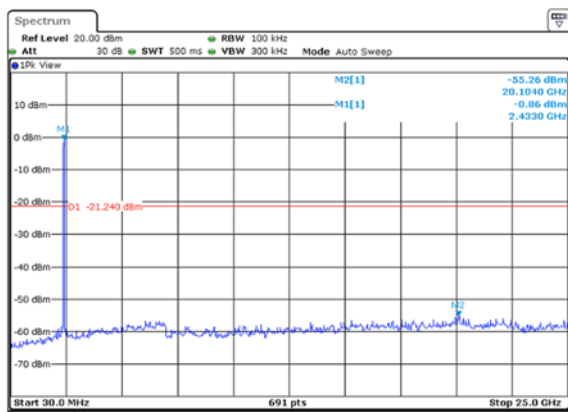
Reference Level of PSD in 100kHz

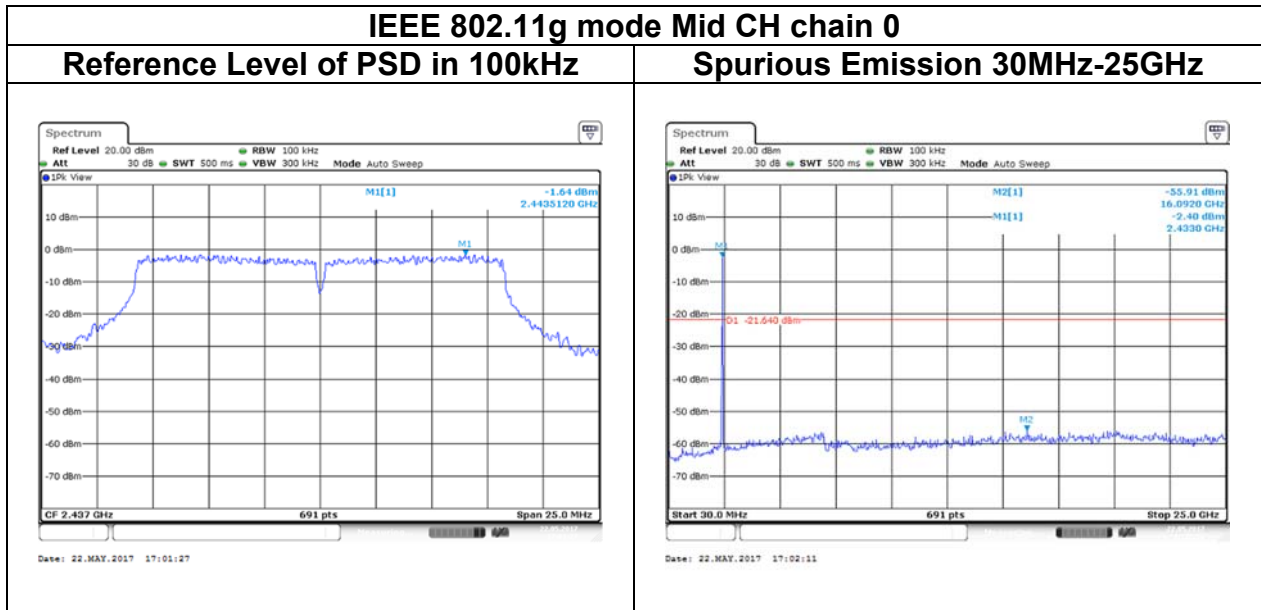


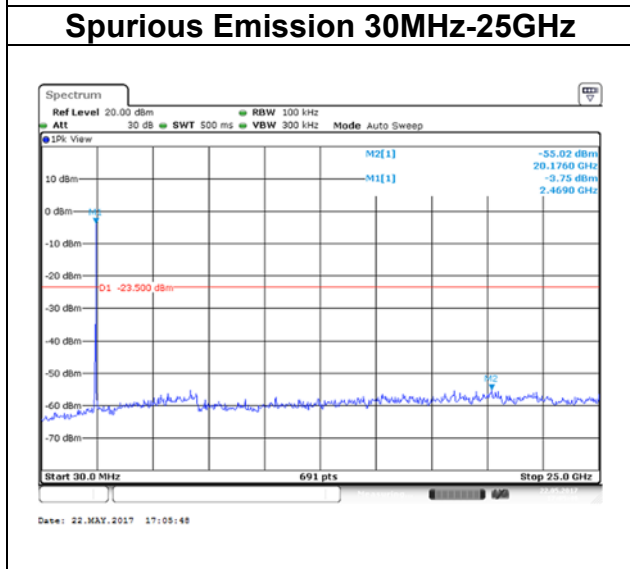
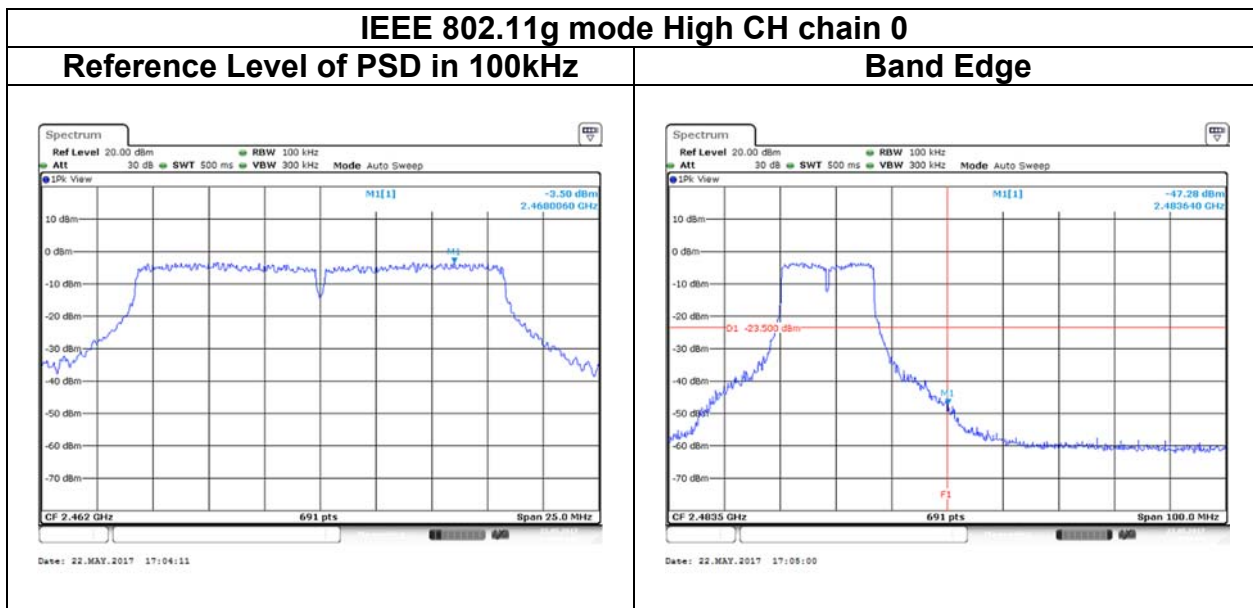
Band Edge

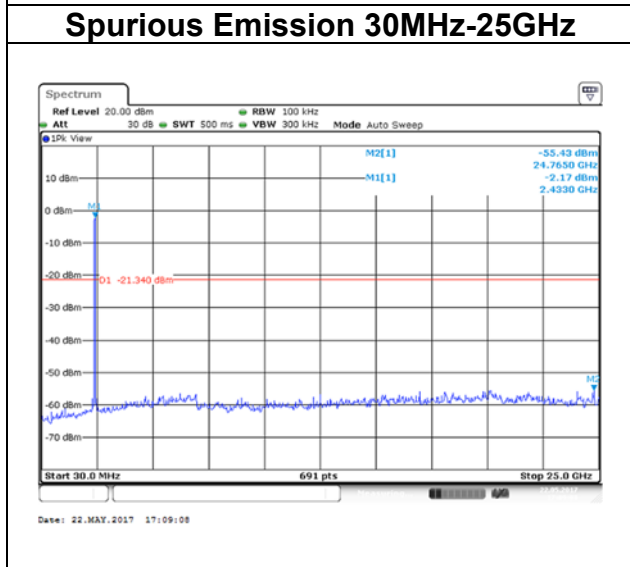
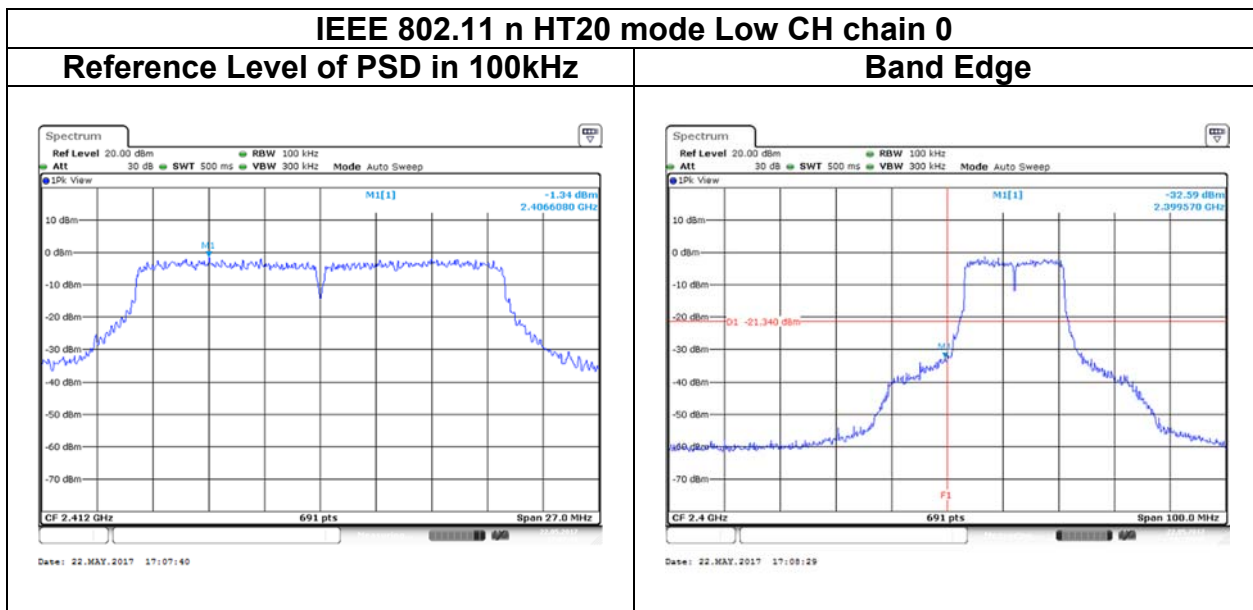


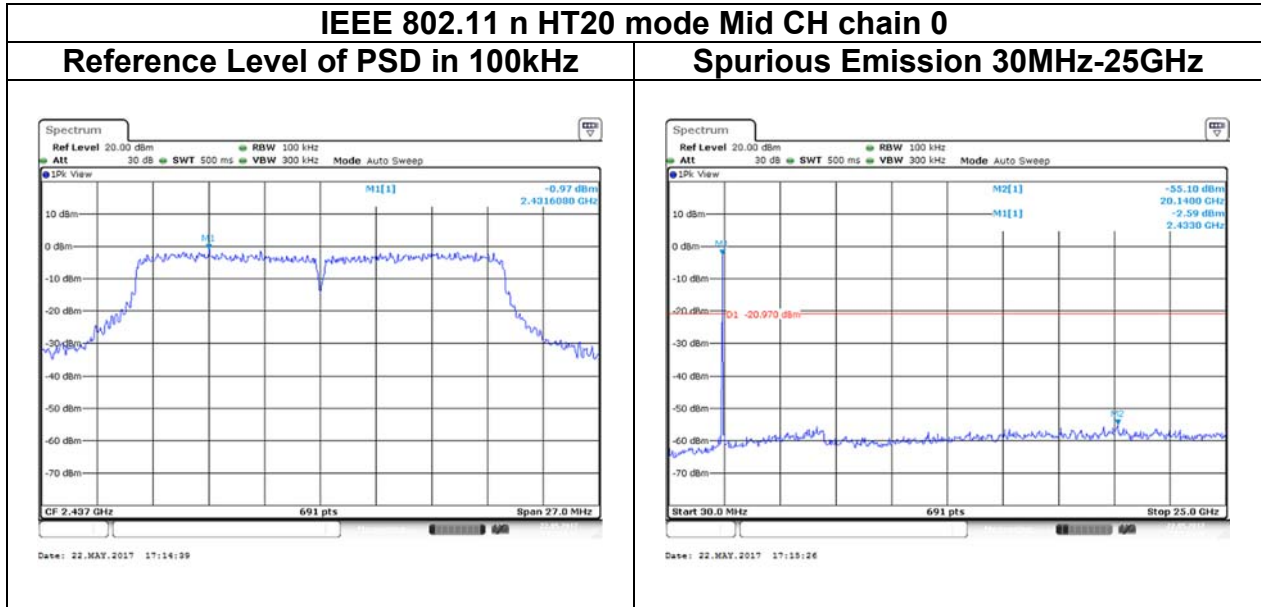
Spurious Emission 30MHz-25GHz





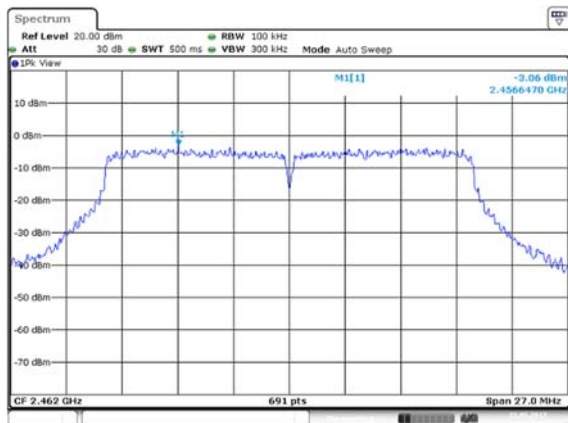




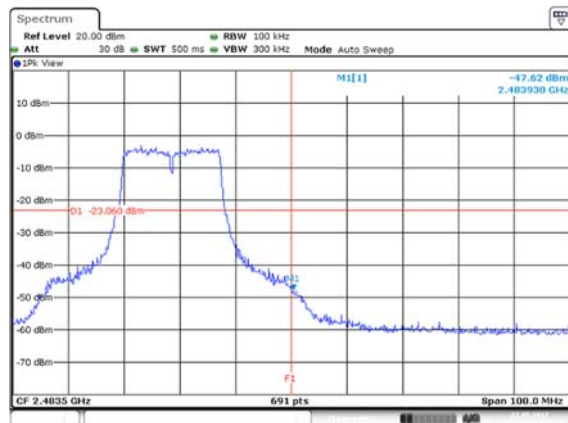


IEEE 802.11n HT20 mode High CH chain 0

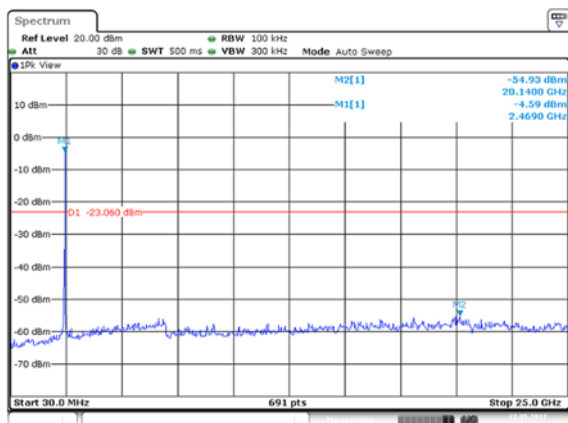
Reference Level of PSD in 100kHz

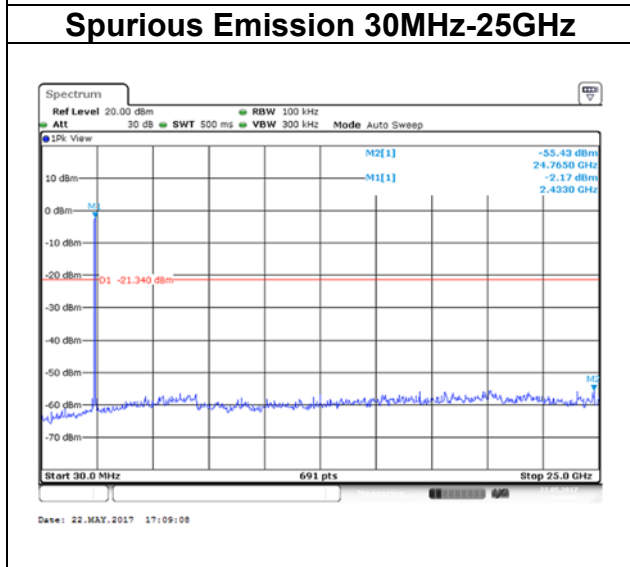
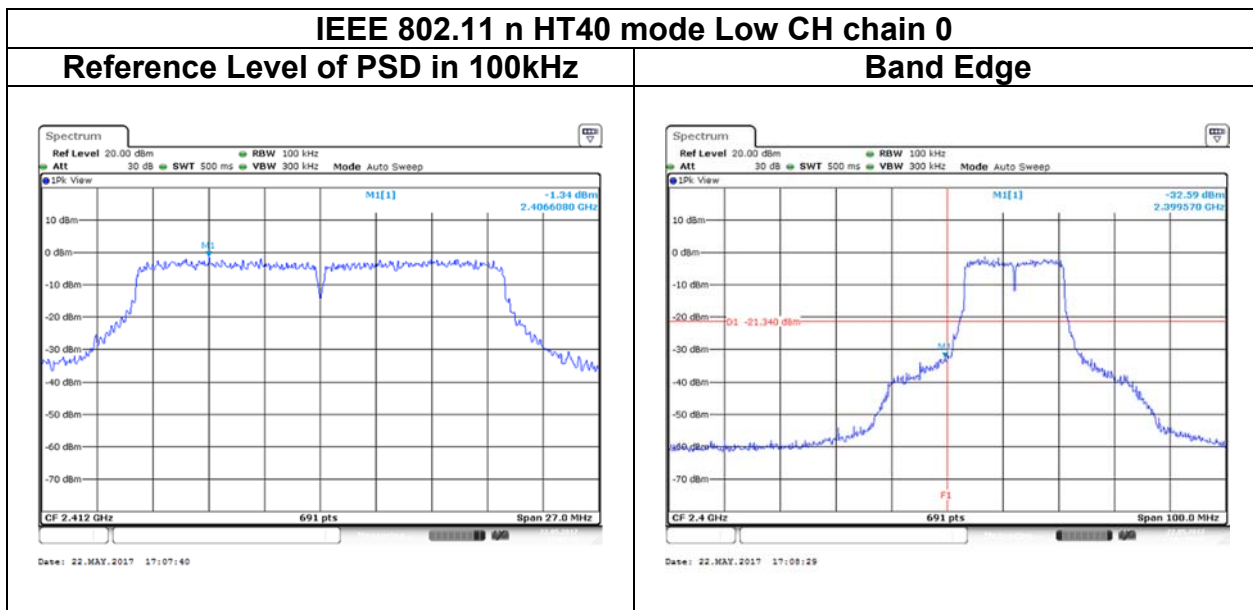


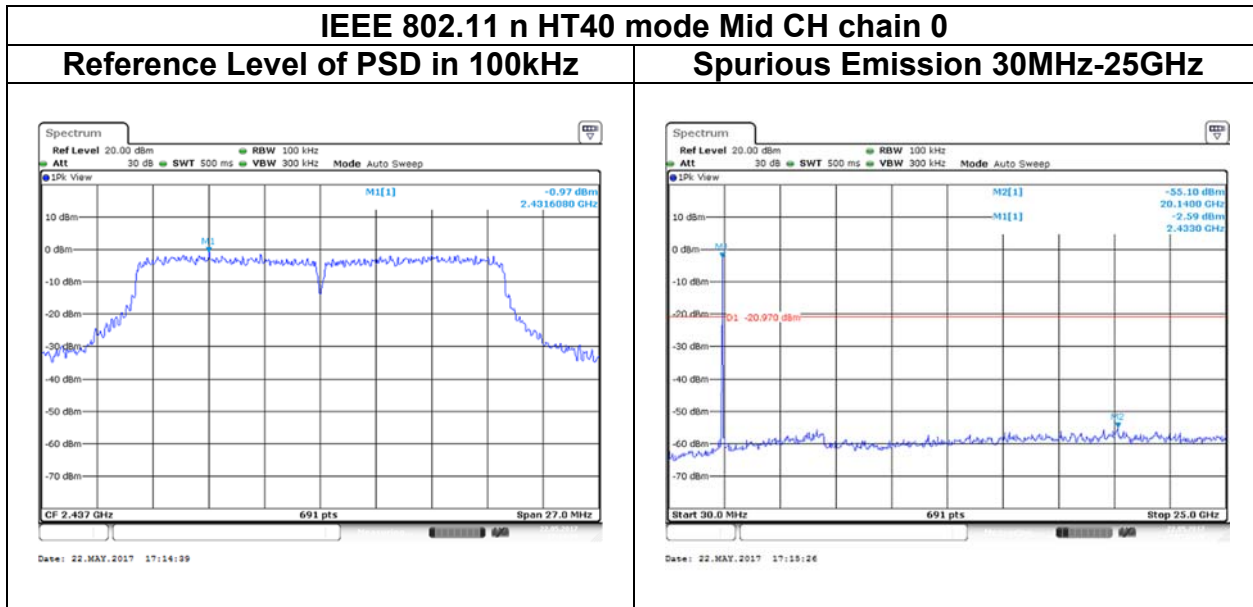
Band Edge



Spurious Emission 30MHz-25GHz

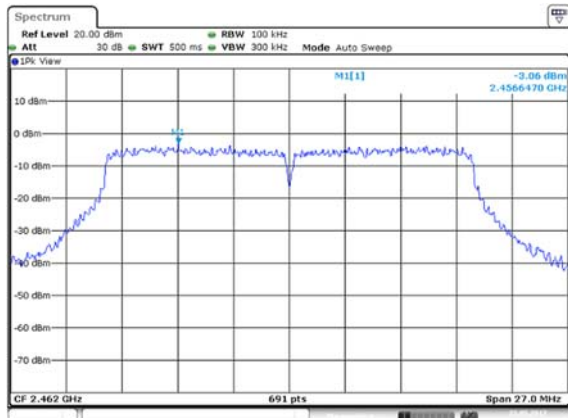




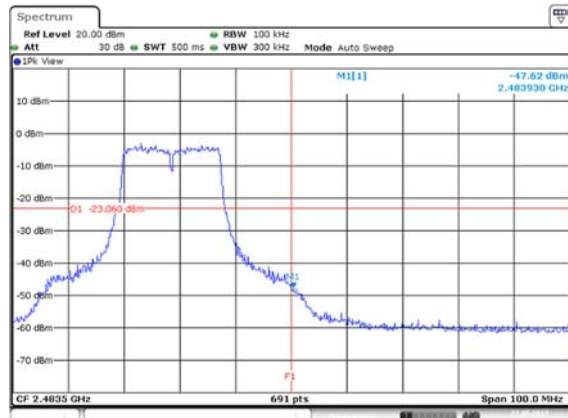


IEEE 802.11n HT40 mode High CH chain 0

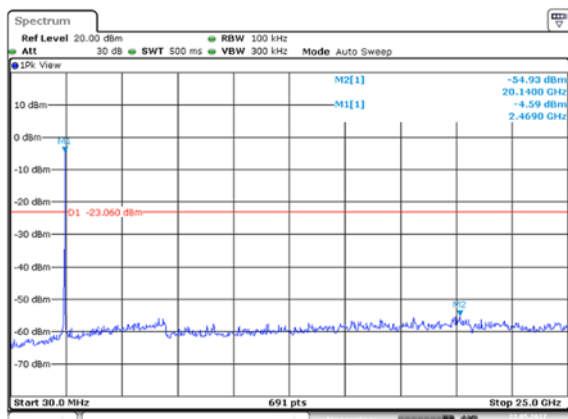
Reference Level of PSD in 100kHz



Band Edge



Spurious Emission 30MHz-25GHz



4.6 RADIATION BANDEGE AND SPURIOUS EMISSION

4.6.1 Test Limit

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

IC according to RSS-247 section 5.5, RSS-Gen, Section 8.9 and 8.10

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

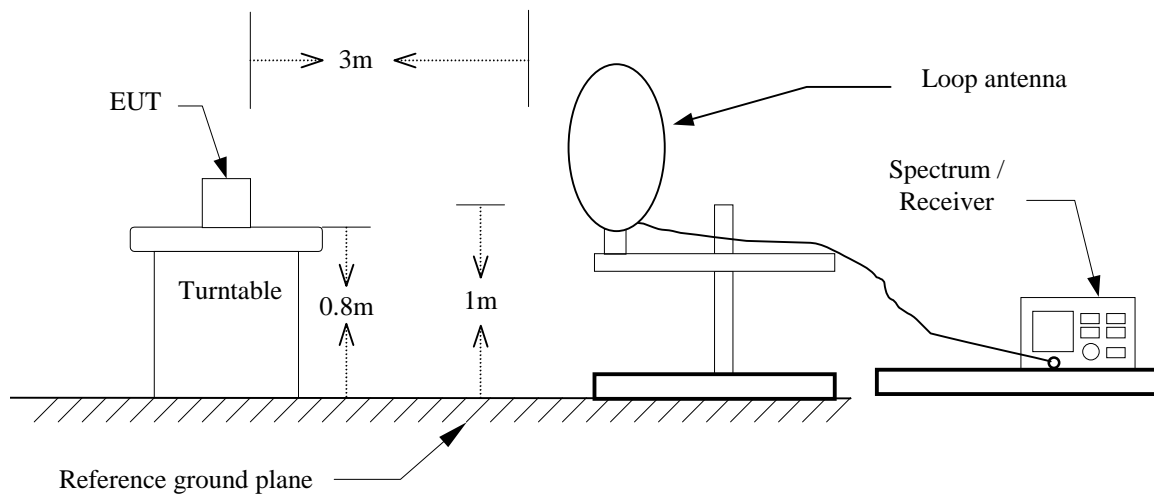
Test method Refer as KDB 558074 D01 v03r05, Section 12.1.

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.

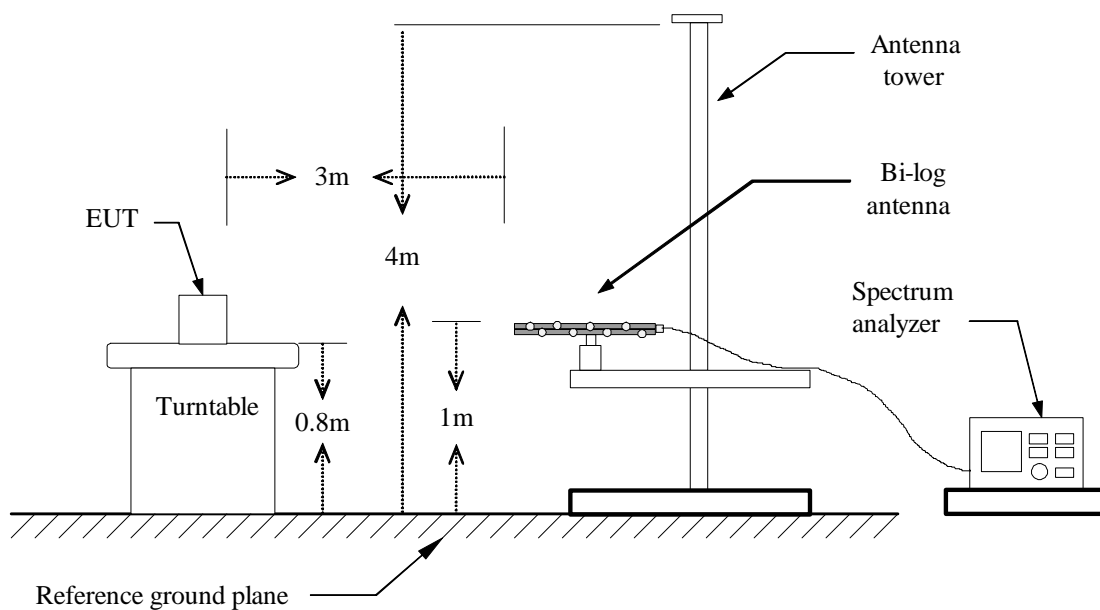
Configuration	Duty Cycle (%)	T(ms)	1/T (kHz)	VBW Setting
802.11b	100%	1.0000	-	10Hz
802.11g	100%	1.0000	-	10Hz
802.11n HT20	100%	1.0000	-	10Hz
802.11n HT40	100%	1.0000	-	10Hz

4.6.3 Test Setup

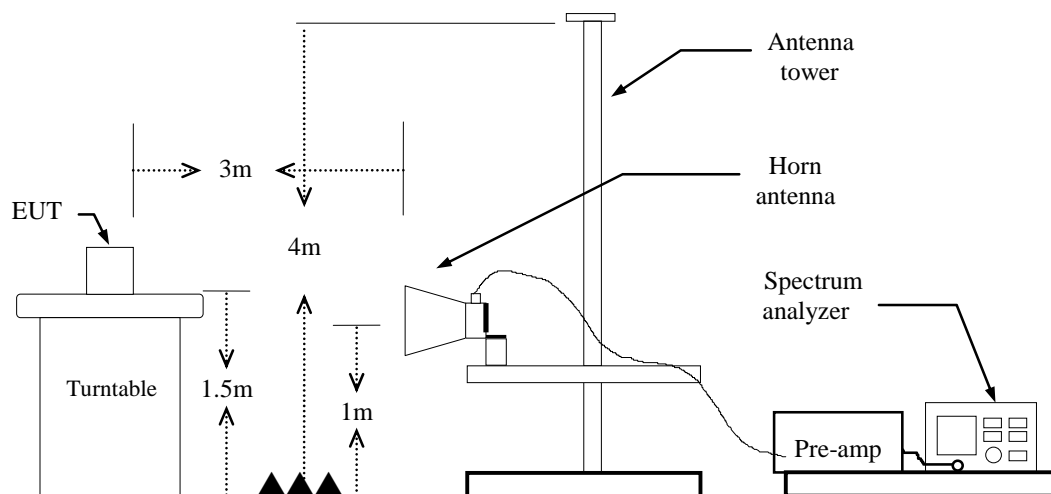
9kHz ~ 30MHz



30MHz ~ 1GHz



Above 1 GHz



4.6.4 Test Result

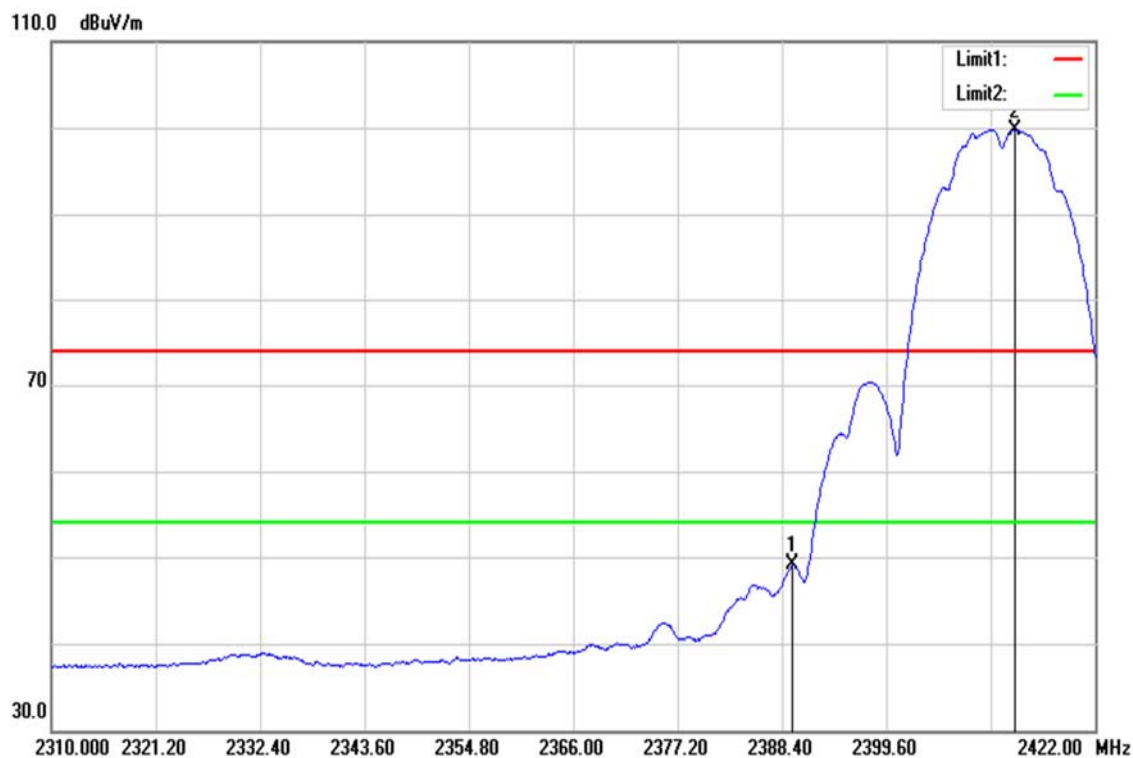
Band Edge Test Data

Test Mode	IEEE 802.11b Low CH	Temp/Hum	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2386.272	73.39	-2.52	70.87	74.00	-3.13	peak
2413.264	107.36	-2.41	104.95	--	--	peak

Test Mode	IEEE 802.11b Low CH	Temperature:	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Average	Test Voltage	120Vac / 60Hz



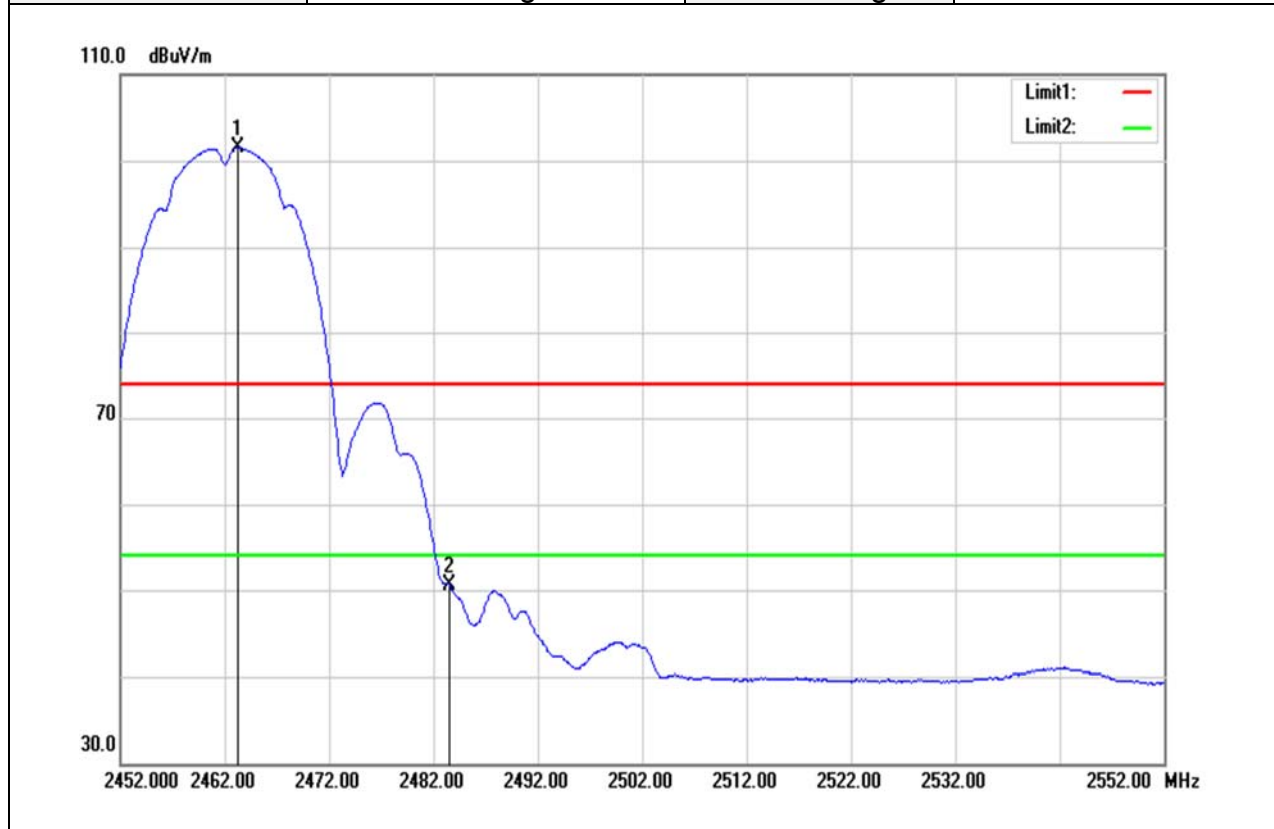
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2389.520	51.55	-2.49	49.06	54.00	-4.94	AVG
2413.376	102.15	-2.41	99.74	--	--	AVG

Test Mode	IEEE 802.11b High CH	Temp/Hum	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak	Test Voltage	120Vac / 60Hz



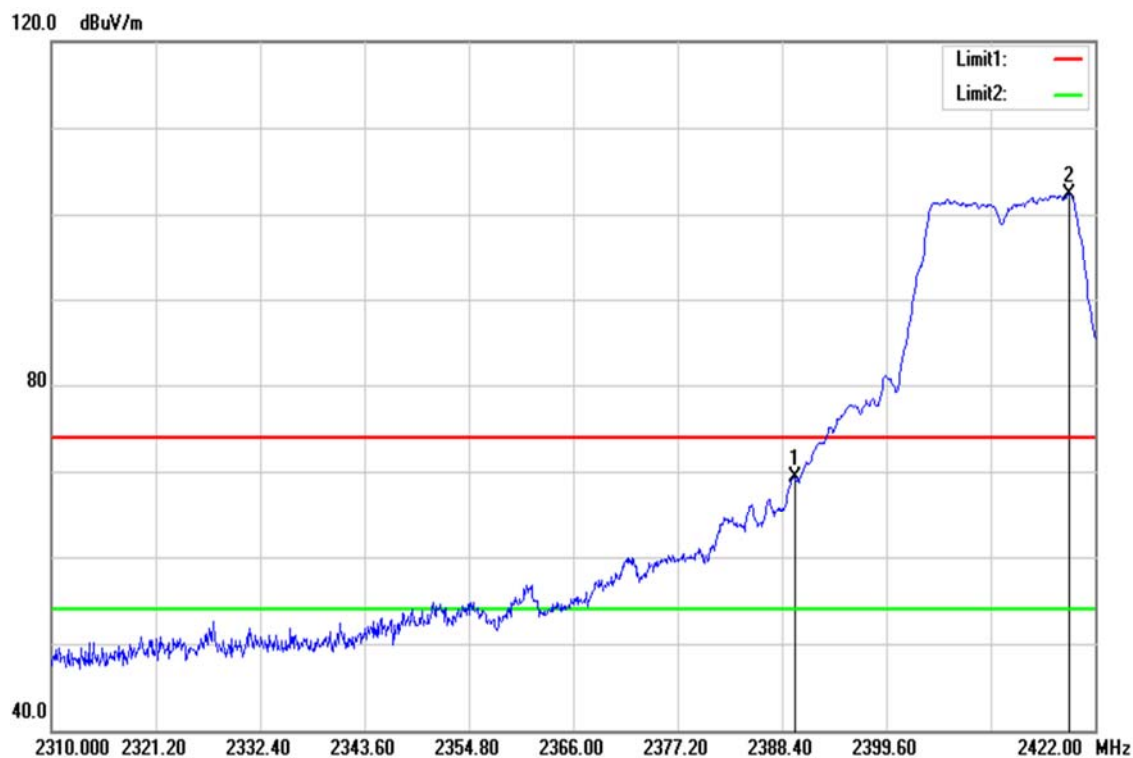
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2463.500	108.21	-2.09	106.12	--	--	peak
2487.800	73.69	-1.95	71.74	74.00	-2.26	peak

Test Mode	IEEE 802.11b High CH	Temperature:	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Average	Test Voltage	120Vac / 60Hz



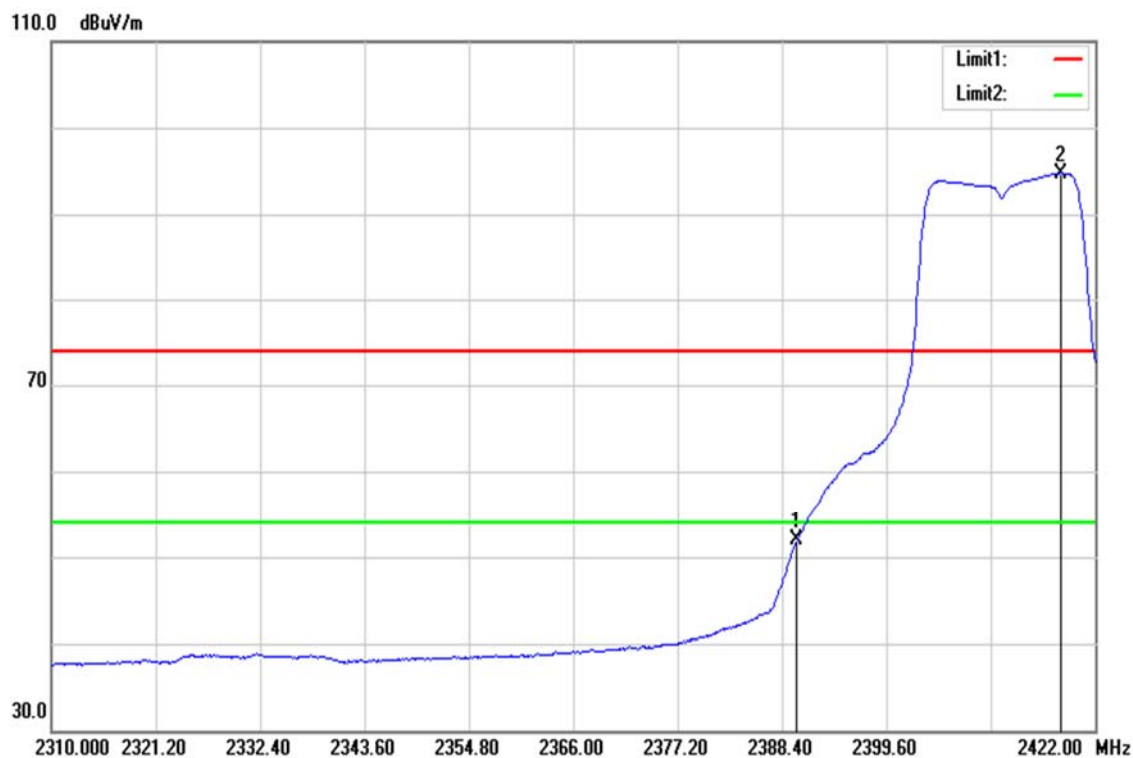
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2463.300	103.58	-2.09	101.49	--	--	AVG
2483.500	52.57	-1.99	50.58	54.00	-3.42	AVG

Test Mode	IEEE 802.11g Low CH	Temp/Hum	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak	Test Voltage	120Vac / 60Hz



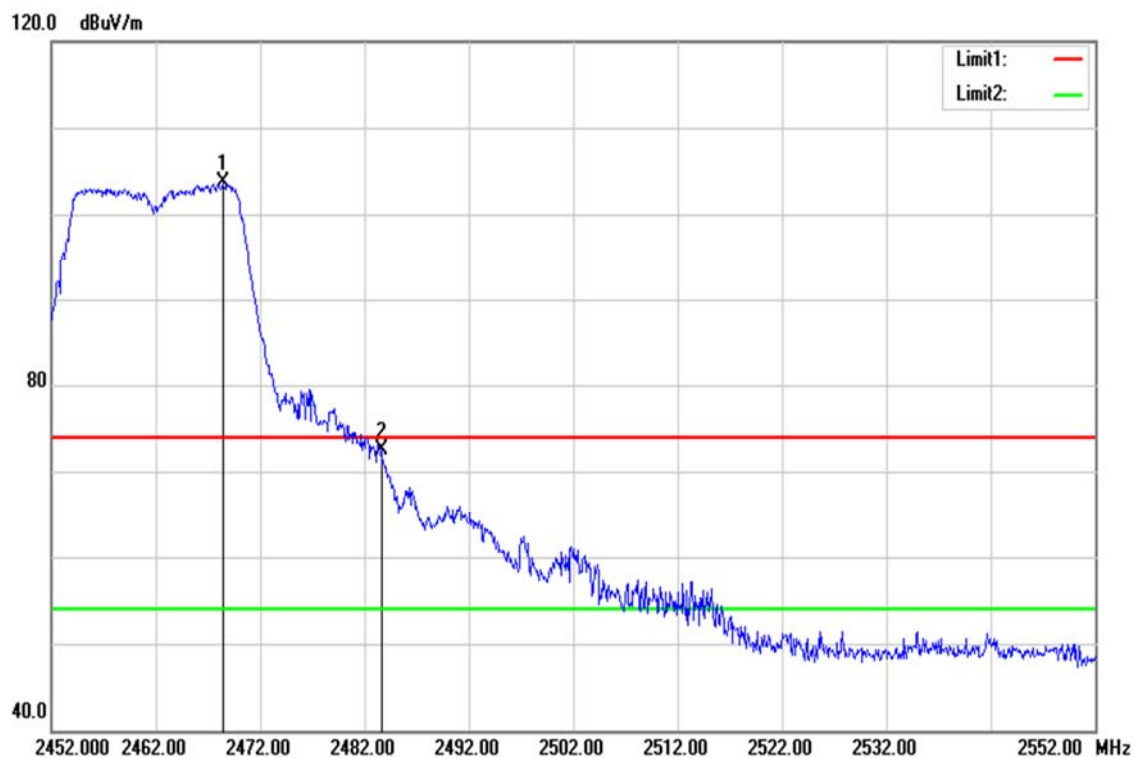
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2389.856	71.82	-2.49	69.33	74.00	-4.67	peak
2419.200	104.71	-2.36	102.35	--	--	peak

Test Mode	IEEE 802.11g Low CH	Temperature:	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Average	Test Voltage	120Vac / 60Hz



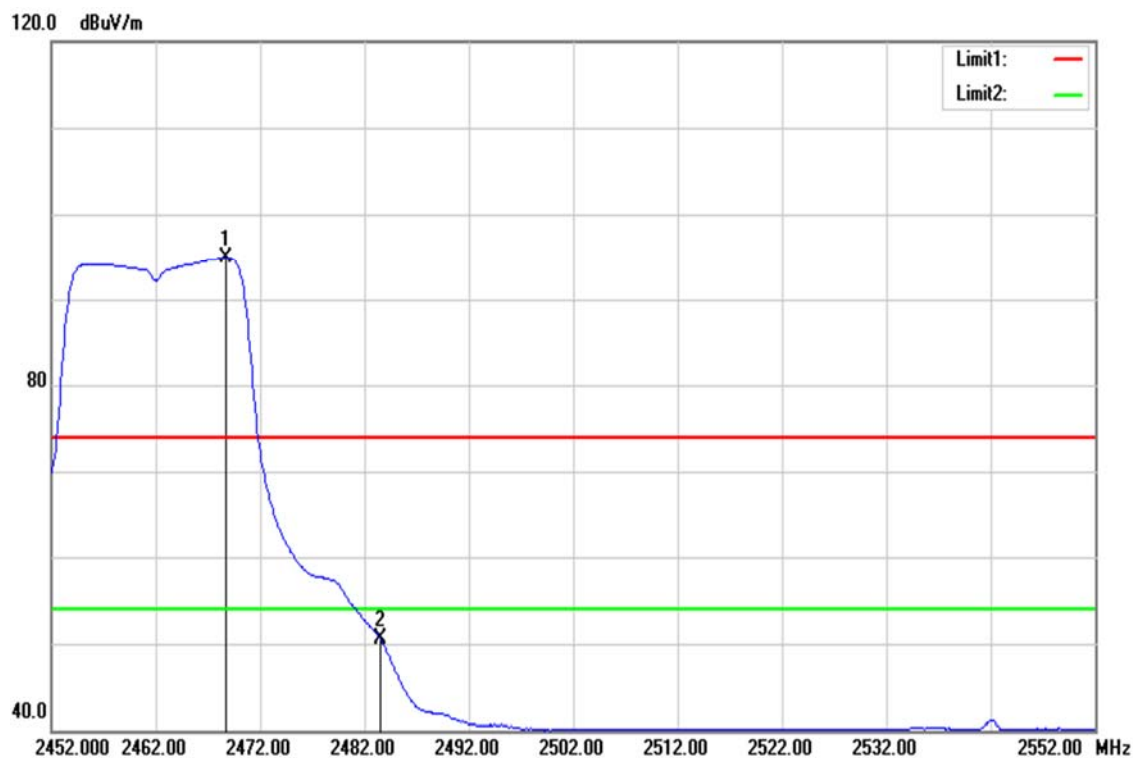
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2390.000	54.48	-2.49	51.99	54.00	-2.01	AVG
2418.304	97.17	-2.37	94.80	--	--	AVG

Test Mode	IEEE 802.11g High CH	Temp/Hum	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak	Test Voltage	120Vac / 60Hz



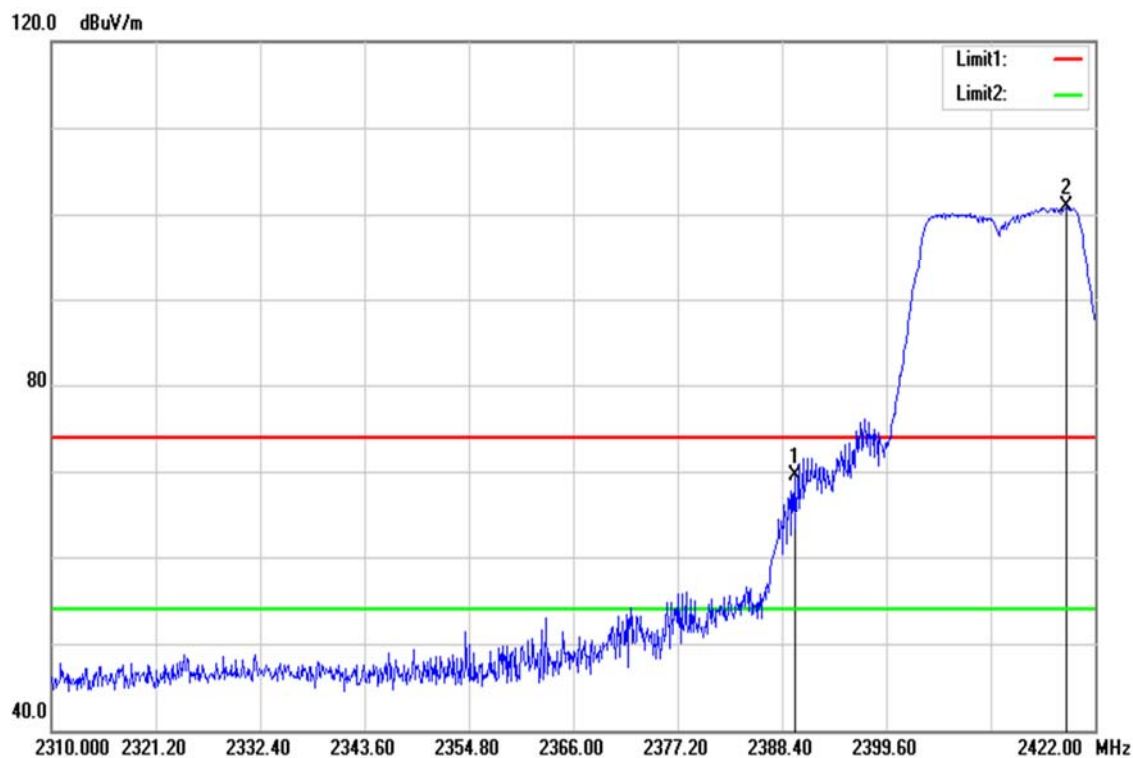
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2468.400	105.68	-2.07	103.61	--	--	peak
2483.600	74.42	-1.99	72.43	74.00	-1.57	peak

Test Mode	IEEE 802.11g High CH	Temperature:	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Average	Test Voltage	120Vac / 60Hz



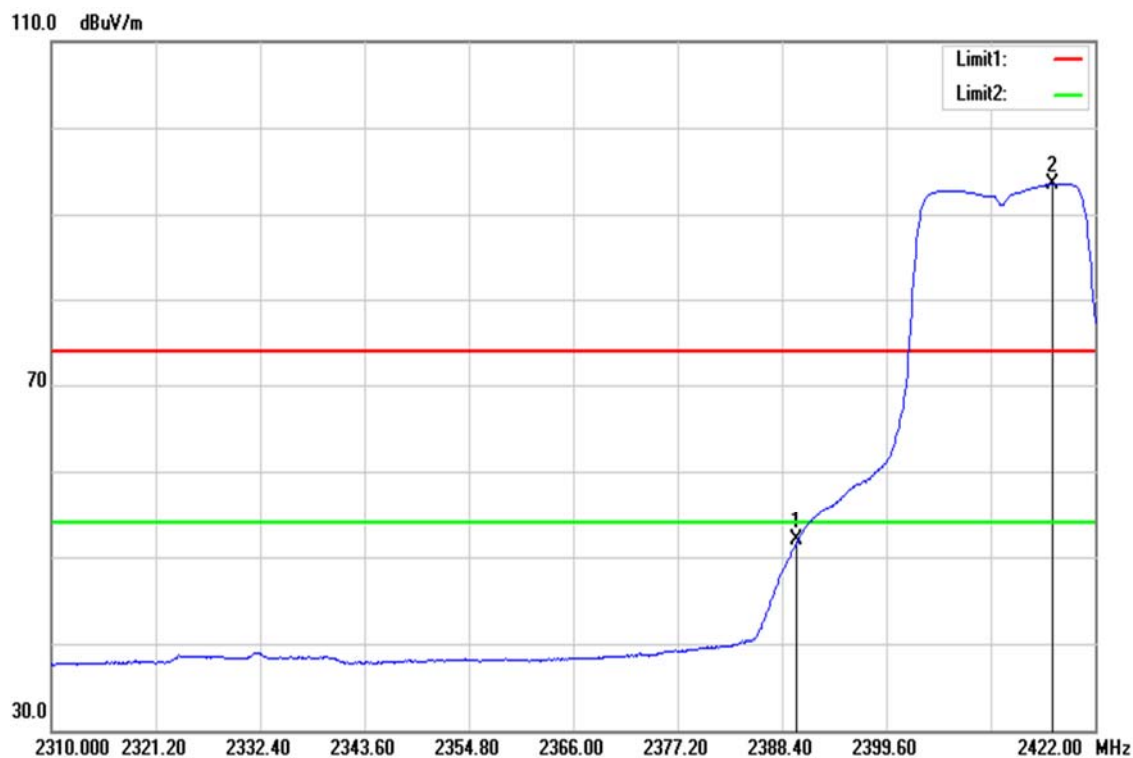
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2468.700	96.96	-2.07	94.89	--	--	AVG
2483.500	52.47	-1.99	50.48	54.00	-3.52	AVG

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak	Test Voltage	120Vac / 60Hz



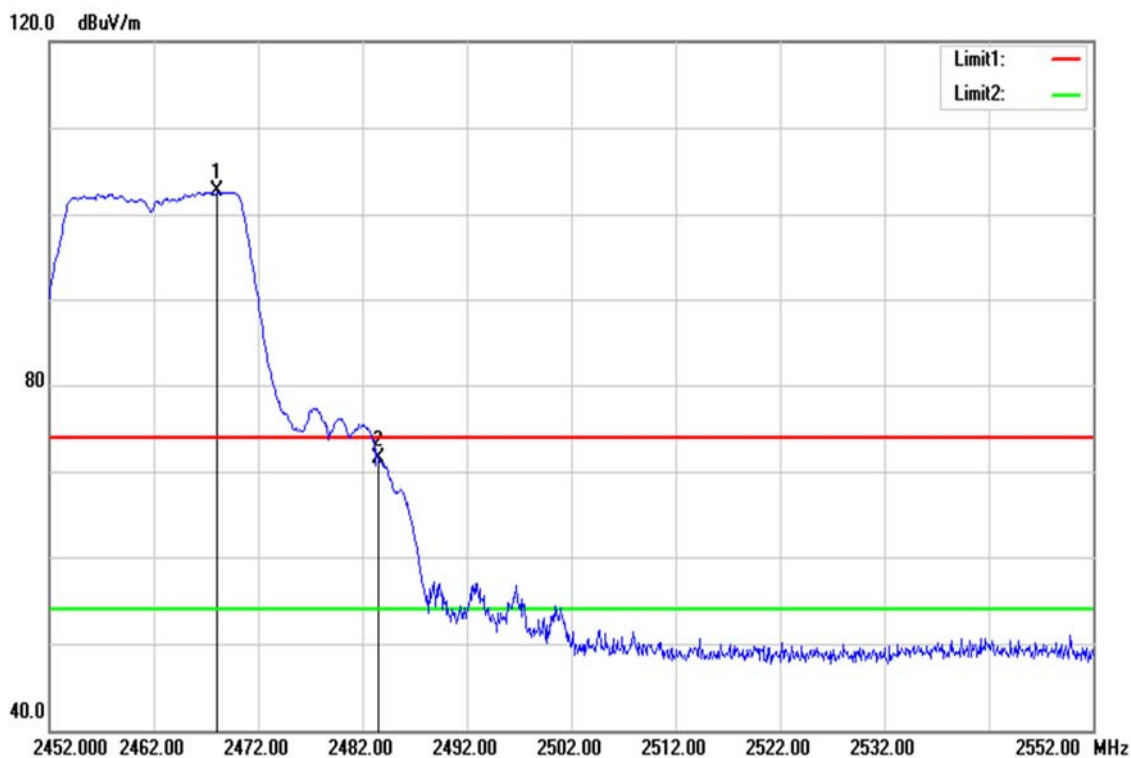
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2389.744	72.01	-2.49	69.52	74.00	-4.48	peak
2418.976	103.18	-2.36	100.82	--	--	peak

Test Mode	IEEE 802.11n HT20 Low CH	Temperature:	22(°C) / 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Average	Test Voltage	120Vac / 60Hz



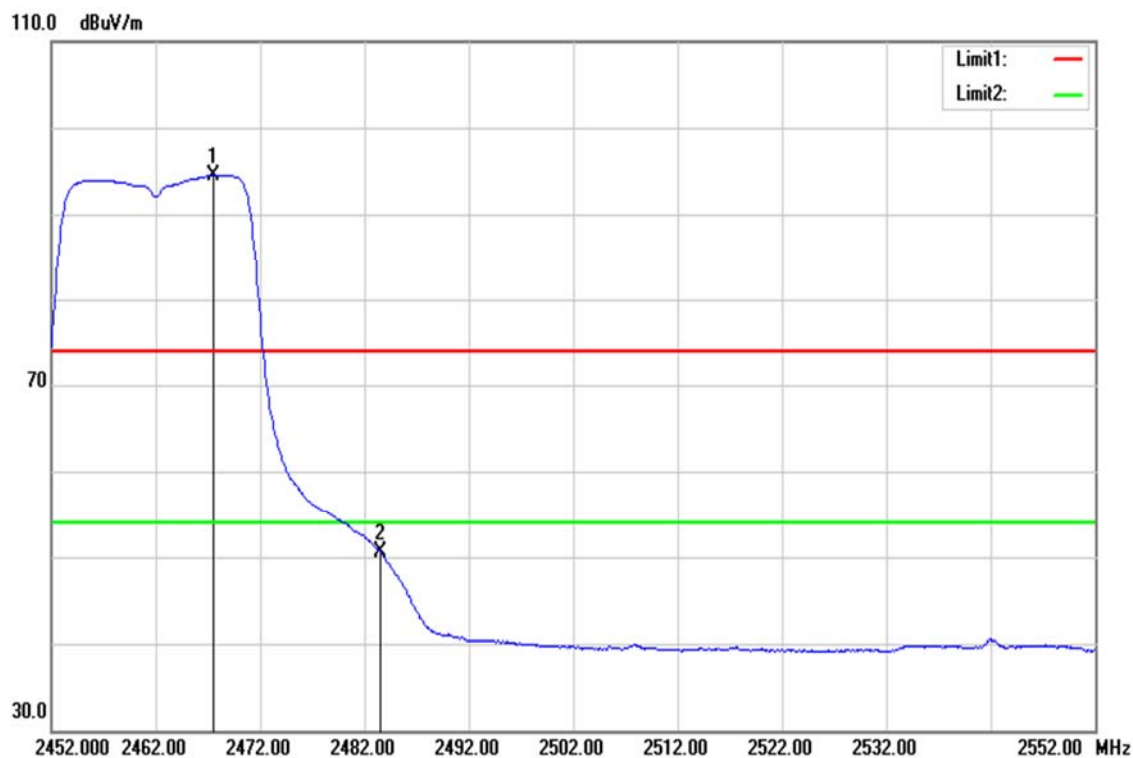
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2390.000	54.30	-2.49	51.81	54.00	-2.19	AVG
2417.408	95.97	-2.38	93.59	--	--	AVG

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak	Test Voltage	120Vac / 60Hz



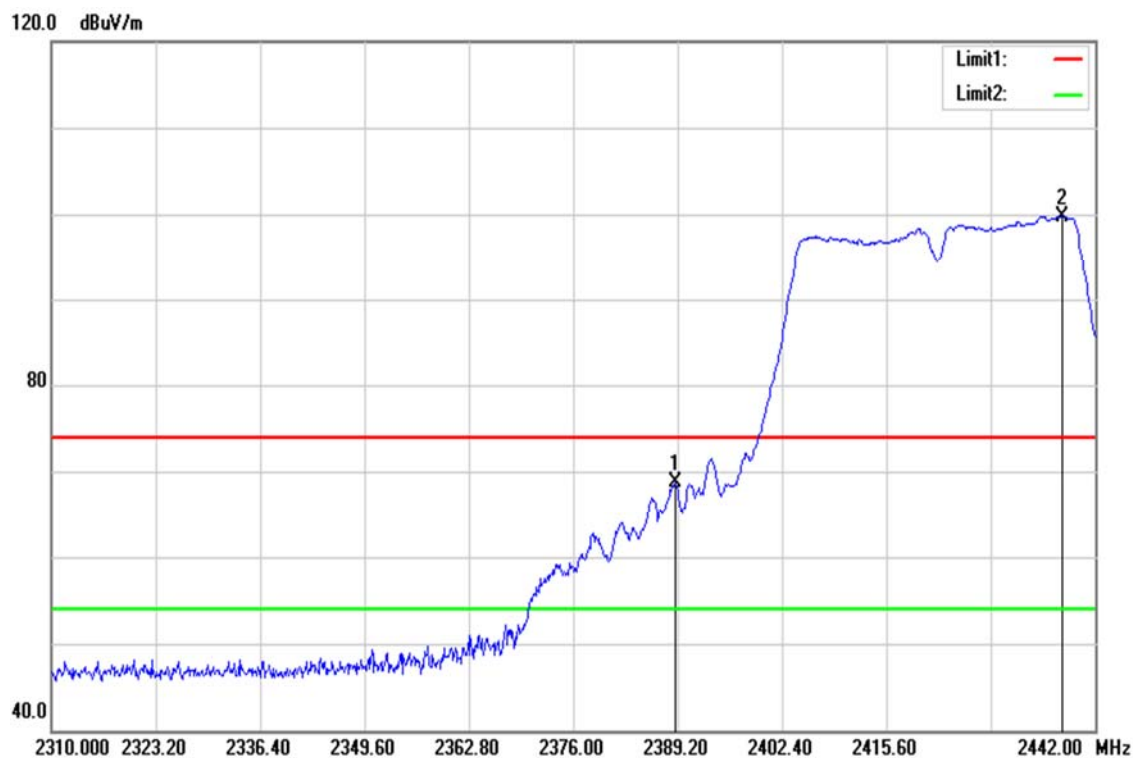
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2468.100	104.86	-2.07	102.79	--	--	peak
2483.500	73.42	-1.99	71.43	74.00	-2.57	peak

Test Mode	IEEE 802.11n HT20 High CH	Temperature:	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Average	Test Voltage	120Vac / 60Hz



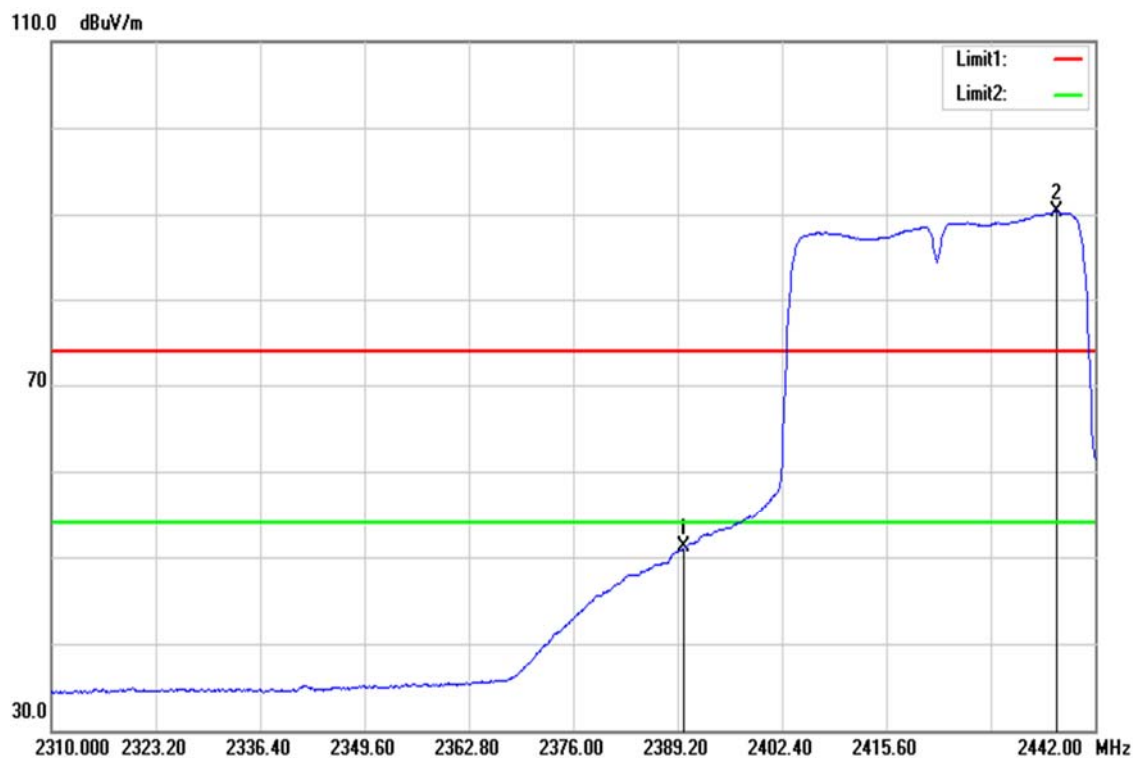
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2467.500	96.63	-2.08	94.55	--	--	AVG
2483.500	52.54	-1.99	50.55	54.00	-3.45	AVG

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak	Test Voltage	120Vac / 60Hz



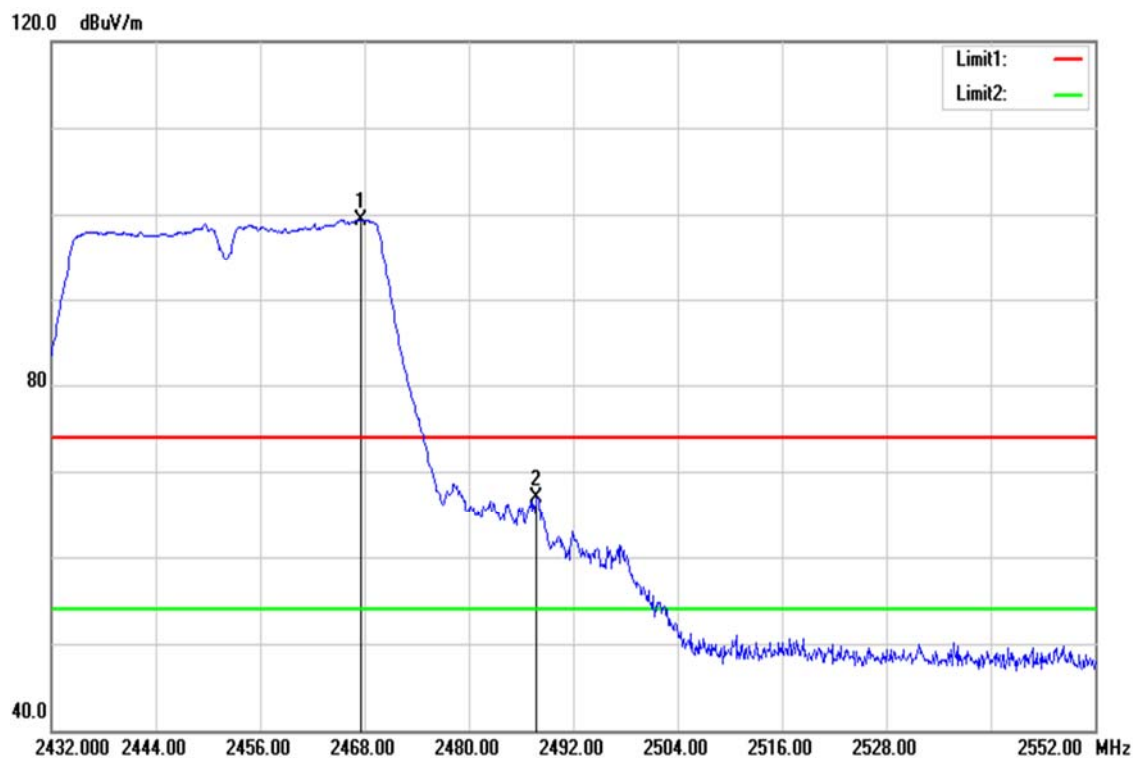
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2388.936	71.28	-2.50	68.78	74.00	-5.22	peak
2437.908	101.96	-2.23	99.73	--	--	peak

Test Mode	IEEE 802.11n HT40 Low CH	Temperature:	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Average	Test Voltage	120Vac / 60Hz



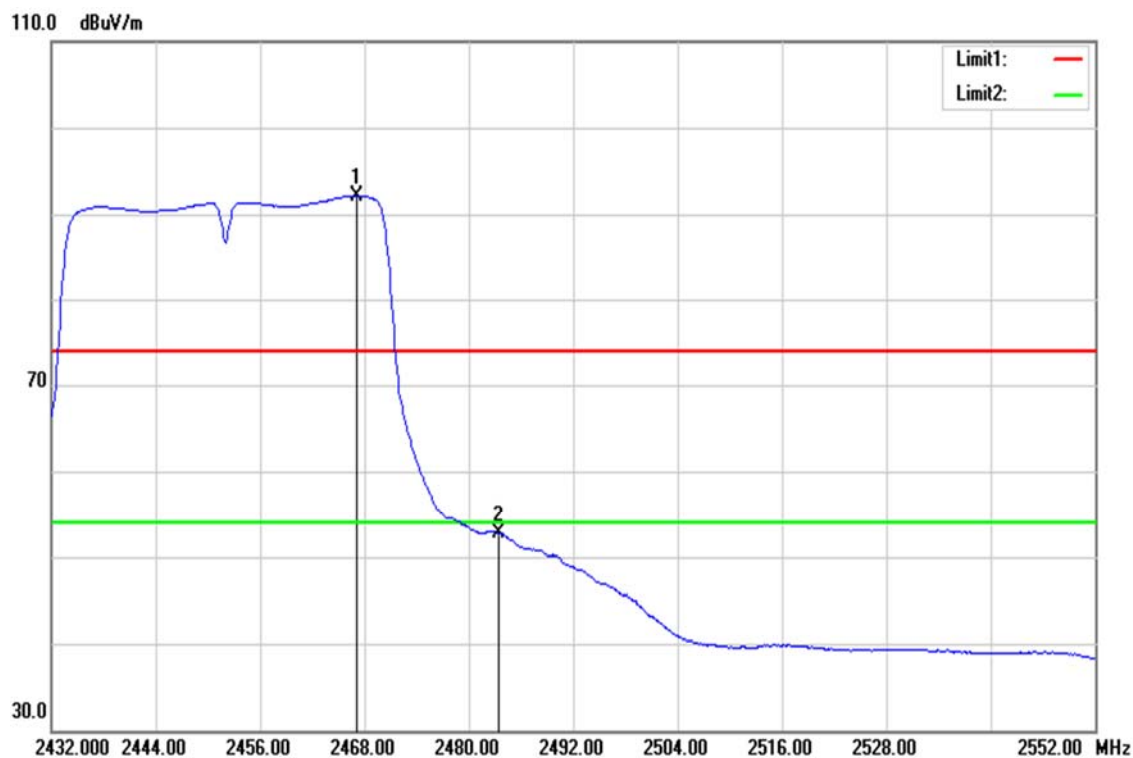
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2390.000	53.55	-2.49	51.06	54.00	-2.94	AVG
2437.116	92.49	-2.23	90.26	--	--	AVG

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2467.520	101.45	-2.08	99.37	--	--	peak
2487.800	68.83	-1.95	66.88	74.00	-7.12	peak

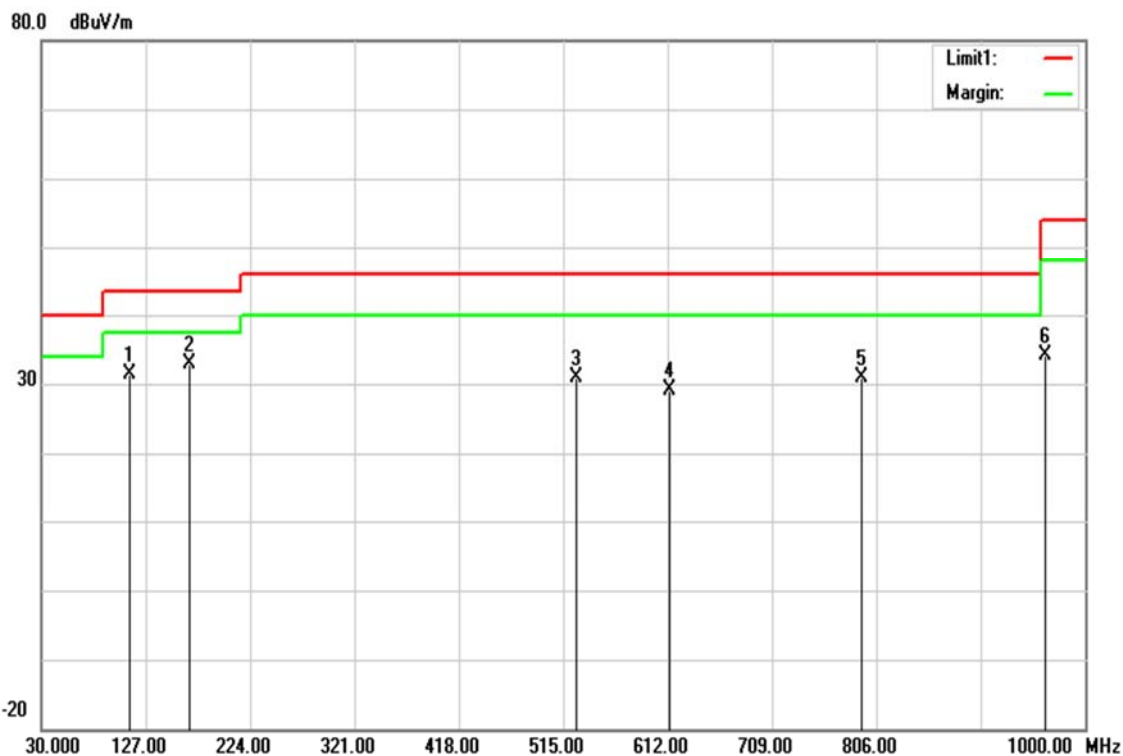
Test Mode	IEEE 802.11n HT40 High CH	Temperature:	22(°C)/ 35%RH
Test Item	Band Edge	Test Date	May 8, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2467.040	94.24	-2.08	92.16	--	--	AVG
2483.500	54.61	-1.99	52.62	54.00	-1.38	AVG

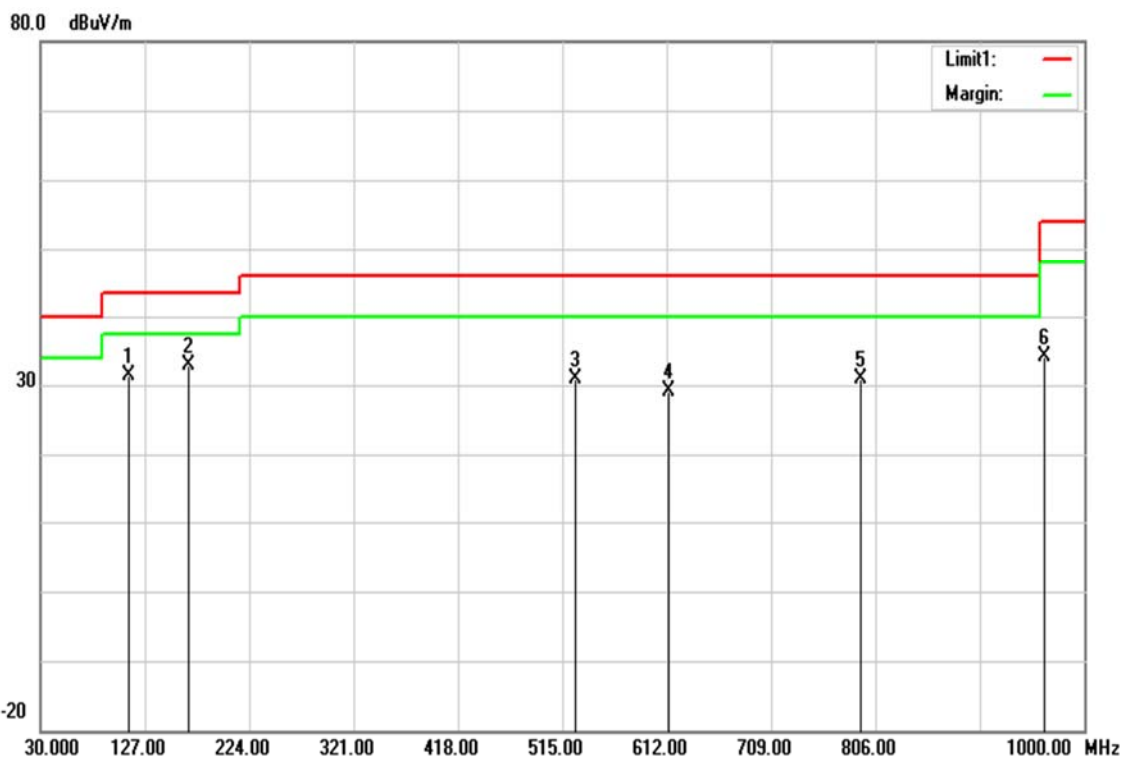
Below 1G Test Data

Test Mode	Mode 1	Temp/Hum	22(°C)/ 35%RH
Test Item	30MHz-1GHz	Test Date	May 22, 2017
Polarize	Vertical	Test Engineer	Ed.Chiang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
111.4800	48.49	-17.00	31.49	43.50	-12.01	peak
167.7400	49.50	-16.74	32.76	43.50	-10.74	peak
527.6100	39.60	-8.83	30.77	46.00	-15.23	peak
613.9400	36.51	-7.43	29.08	46.00	-16.92	peak
792.4200	35.36	-4.56	30.80	46.00	-15.20	peak
963.1400	36.33	-2.18	34.15	54.00	-19.85	peak

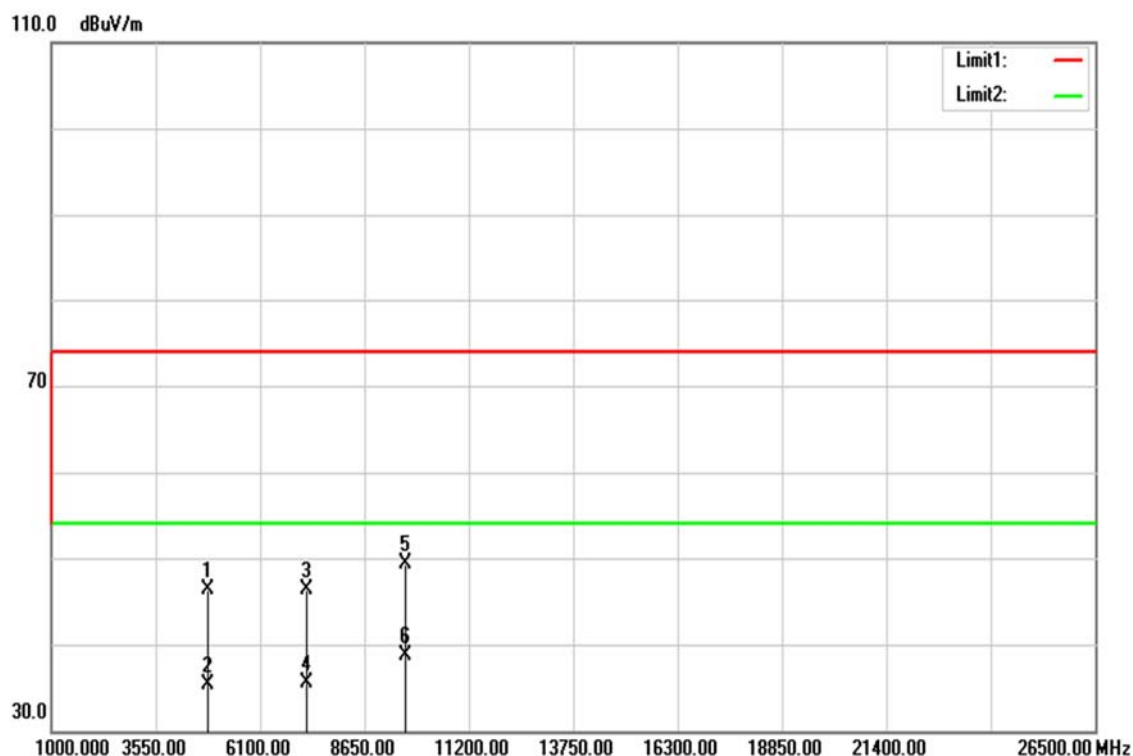
Test Mode	Mode 1	Temp/Hum	22(°C) / 35%RH
Test Item	30MHz-1GHz	Test Date	May 22, 2017
Polarize	Horizontal	Test Engineer	Ed.Chiang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
111.4800	48.49	-17.00	31.49	43.50	-12.01	peak
167.7400	49.50	-16.74	32.76	43.50	-10.74	peak
527.6100	39.60	-8.83	30.77	46.00	-15.23	peak
613.9400	36.51	-7.43	29.08	46.00	-16.92	peak
792.4200	35.36	-4.56	30.80	46.00	-15.20	peak
963.1400	36.33	-2.18	34.15	54.00	-19.85	peak

Above 1G Test Data

Test Mode	IEEE 802.11b Low CH	Temp/Hum	22(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

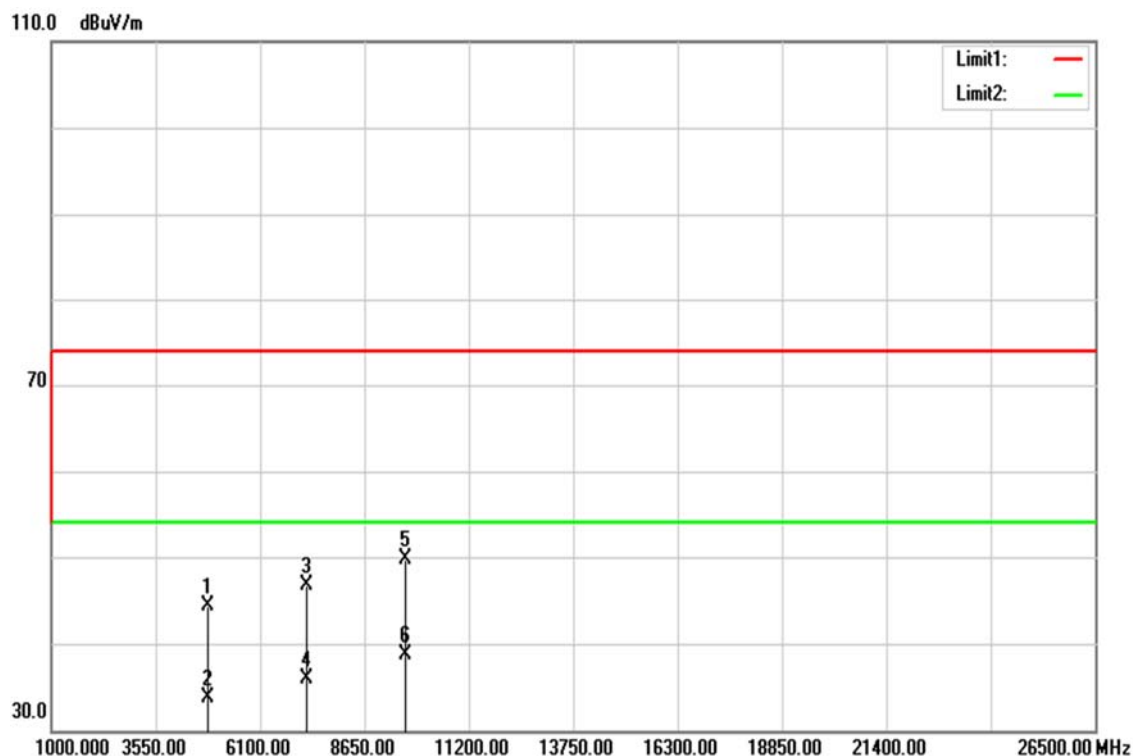


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	emark
4824.000	41.28	5.10	46.38	74.00	-27.62	peak
4824.000	30.12	5.10	35.22	54.00	-18.78	AVG
7236.000	33.49	12.71	46.20	74.00	-27.80	peak
7236.000	22.70	12.71	35.41	54.00	-18.59	AVG
9648.000	31.69	17.60	49.29	74.00	-24.71	peak
9648.000	21.14	17.60	38.74	54.00	-15.26	AVG

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	22(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

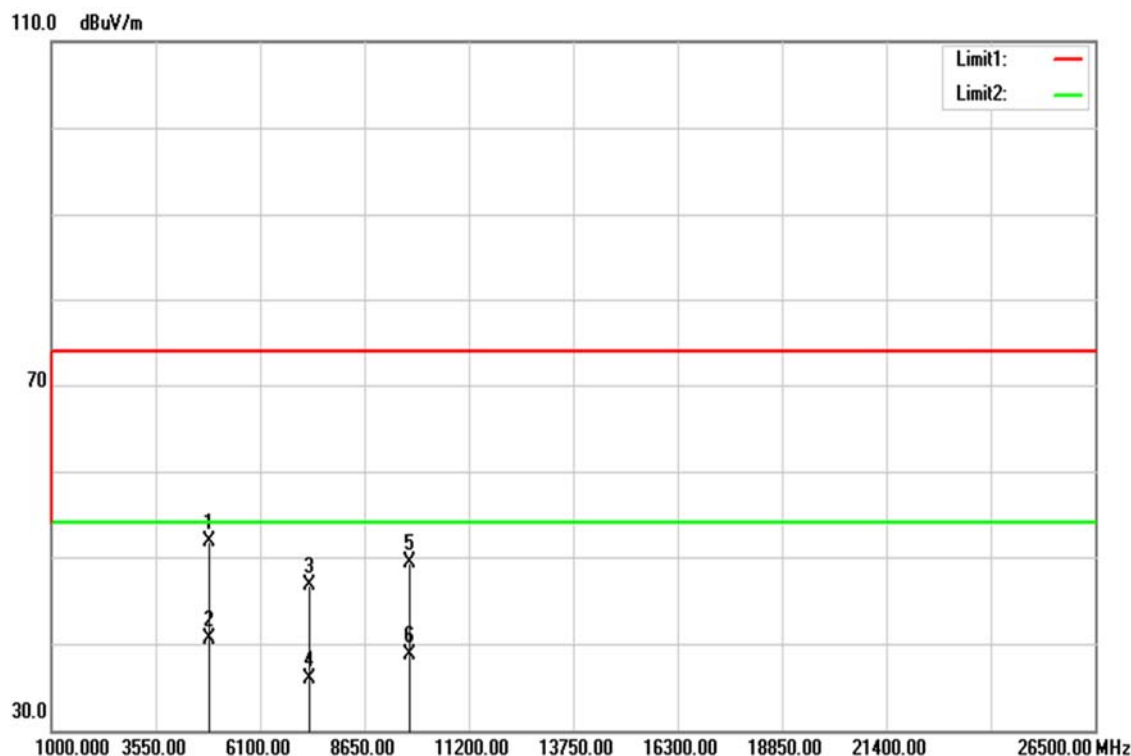


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (BuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	39.12	5.10	44.22	74.00	-29.78	peak
4824.000	28.54	5.10	33.64	54.00	-20.36	AVG
7236.000	33.99	12.71	46.70	74.00	-27.30	peak
7236.000	23.13	12.71	35.84	54.00	-18.16	AVG
9648.000	32.11	17.60	49.71	74.00	-24.29	peak
9648.000	21.03	17.60	38.63	54.00	-15.37	AVG

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	22(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

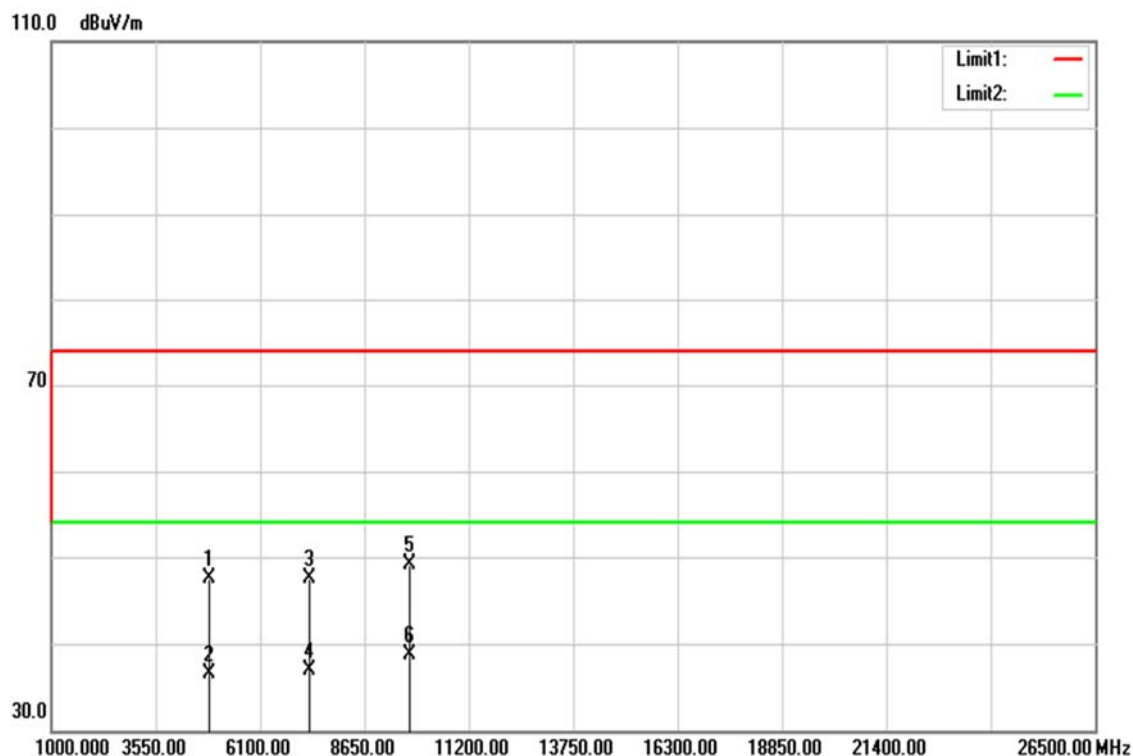


Frequency (MHz)	Reading (dBu)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	46.47	5.23	51.70	74.00	-22.30	peak
4874.000	35.32	5.23	40.55	54.00	-13.45	AVG
7311.000	33.74	12.94	46.68	74.00	-27.32	peak
7311.000	22.90	12.94	35.84	54.00	-18.16	AVG
9748.000	31.63	17.60	49.23	74.00	-24.77	peak
9748.000	21.02	17.60	38.62	54.00	-15.38	AVG

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	22(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

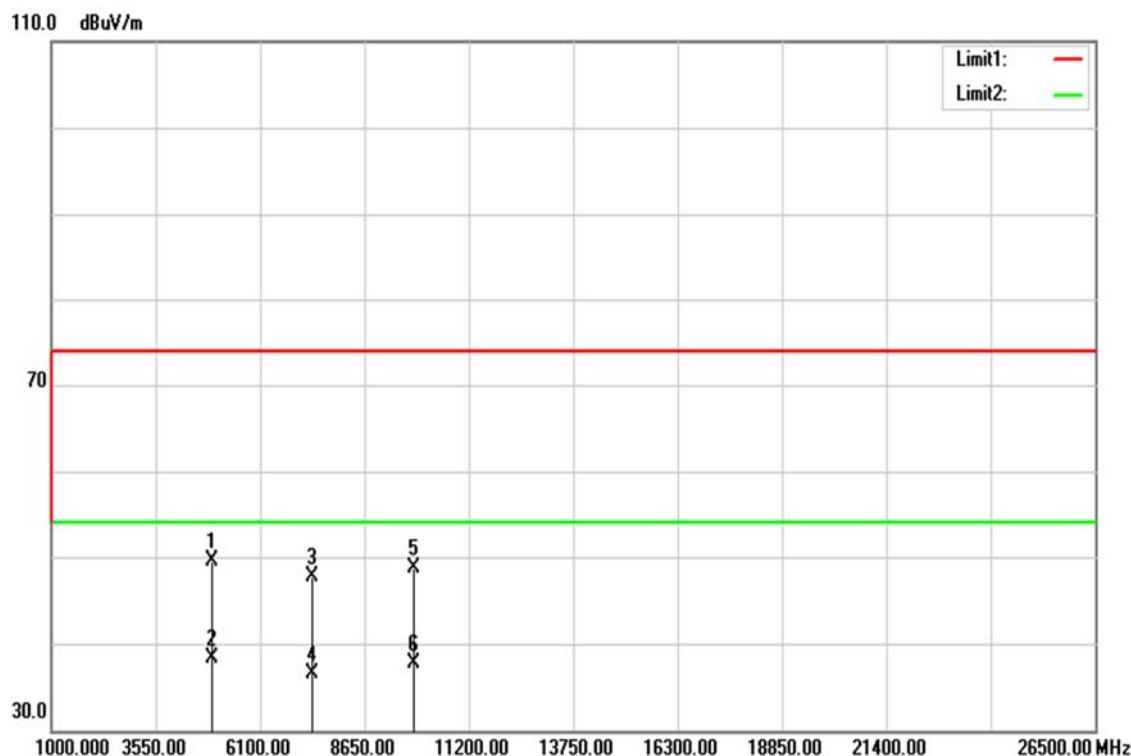


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	42.30	5.23	47.53	74.00	-26.47	peak
4874.000	31.32	5.23	36.55	54.00	-17.45	AVG
7311.000	34.59	12.94	47.53	74.00	-26.47	peak
7311.000	23.90	12.94	36.84	54.00	-17.16	AVG
9748.000	31.44	17.60	49.04	74.00	-24.96	peak
9748.000	21.02	17.60	38.62	54.00	-15.38	AVG

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	22(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

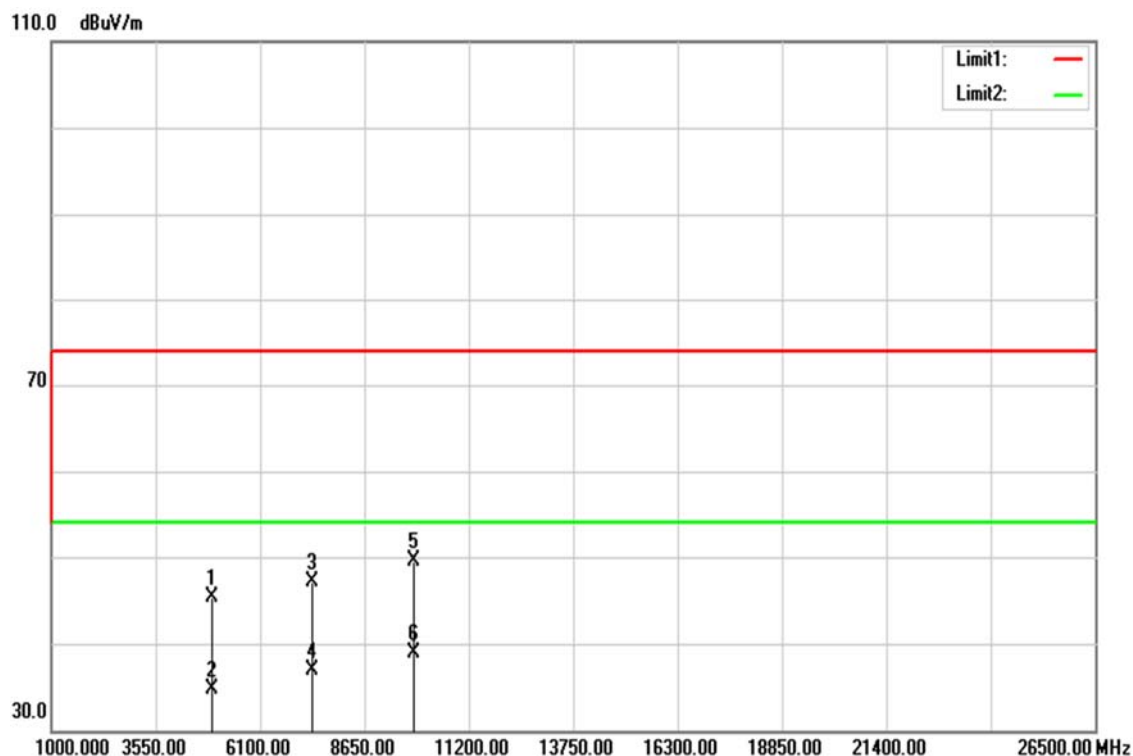


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	44.07	5.37	49.44	74.00	-24.56	peak
4924.000	32.99	5.37	38.36	54.00	-15.64	AVG
7386.000	34.57	13.17	47.74	74.00	-26.26	peak
7386.000	23.41	13.17	36.58	54.00	-17.42	AVG
9848.000	31.03	17.60	48.63	74.00	-25.37	peak
9848.000	20.17	17.60	37.77	54.00	-16.23	AVG

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	22(°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

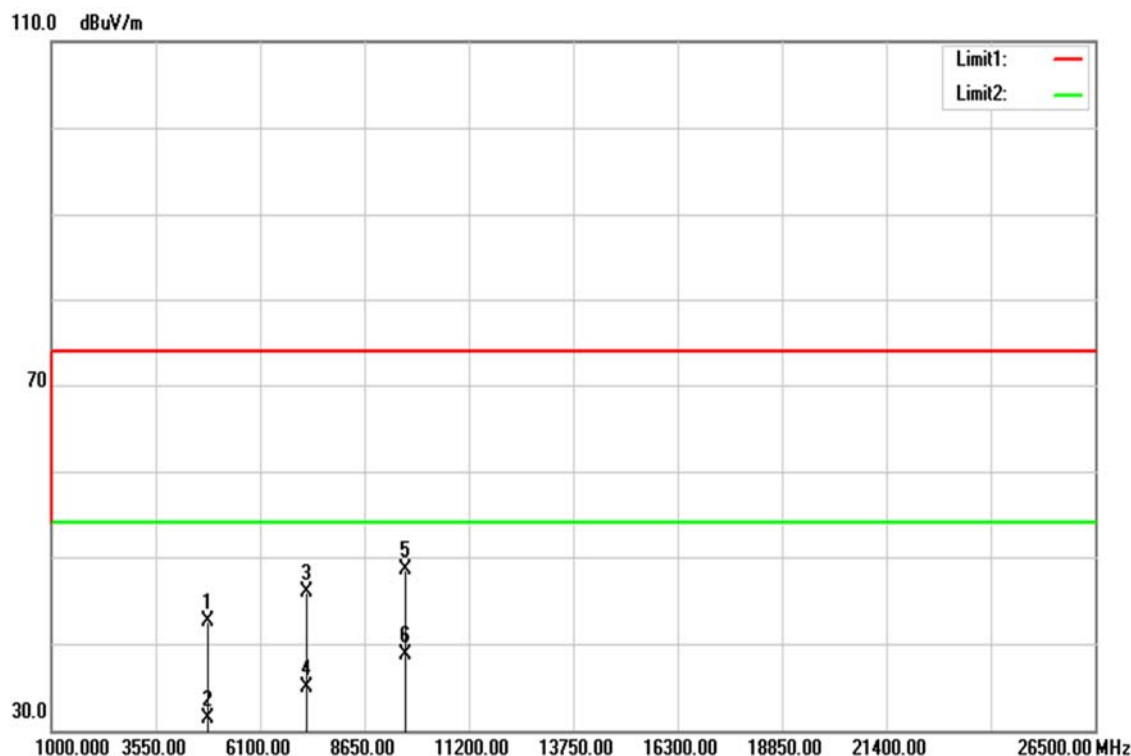


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	40.01	5.37	45.38	74.00	-28.62	peak
4924.000	29.29	5.37	34.66	54.00	-19.34	AVG
7386.000	33.96	13.17	47.13	74.00	-26.87	peak
7386.000	23.65	13.17	36.82	54.00	-17.18	AVG
9848.000	31.86	17.60	49.46	74.00	-24.54	peak
9848.000	21.32	17.60	38.92	54.00	-15.08	AVG

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	22 (°C) / 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

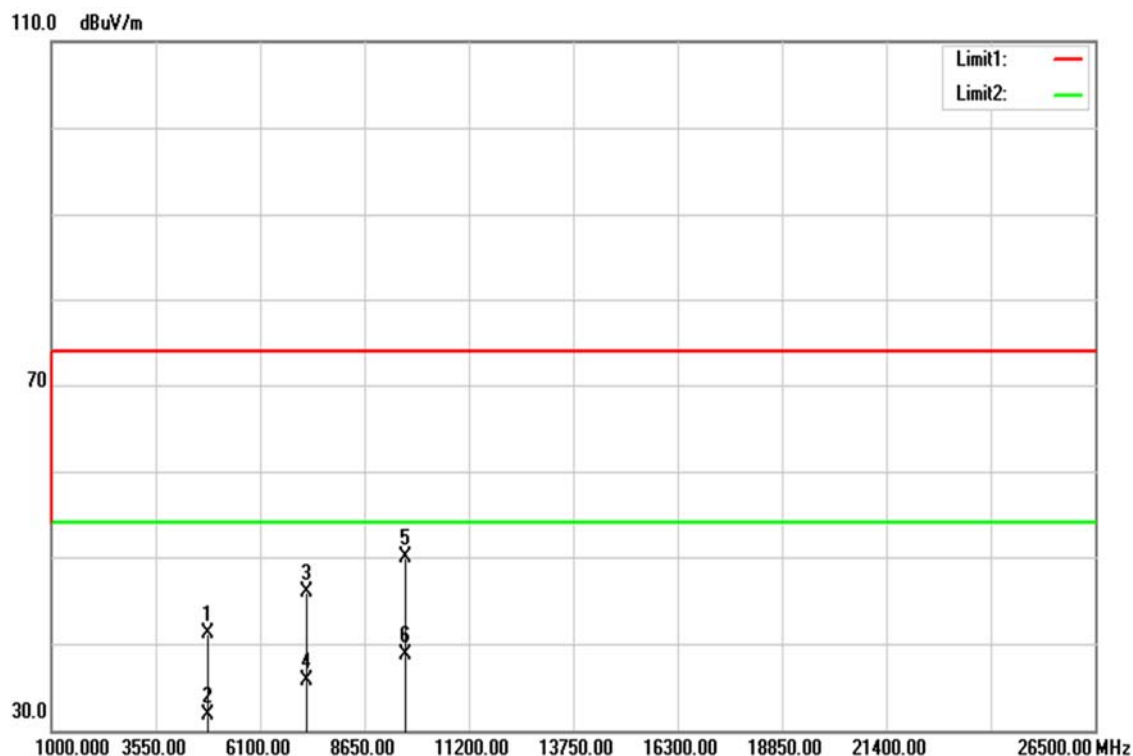


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	37.31	5.10	42.41	74.00	-31.59	peak
4824.000	26.14	5.10	31.24	54.00	-22.76	AVG
7236.000	33.19	12.71	45.90	74.00	-28.10	peak
7236.000	22.16	12.71	34.87	54.00	-19.13	AVG
9648.000	30.97	17.60	48.57	74.00	-25.43	peak
9648.000	21.09	17.60	38.69	54.00	-15.31	AVG

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	22 (°C) / 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

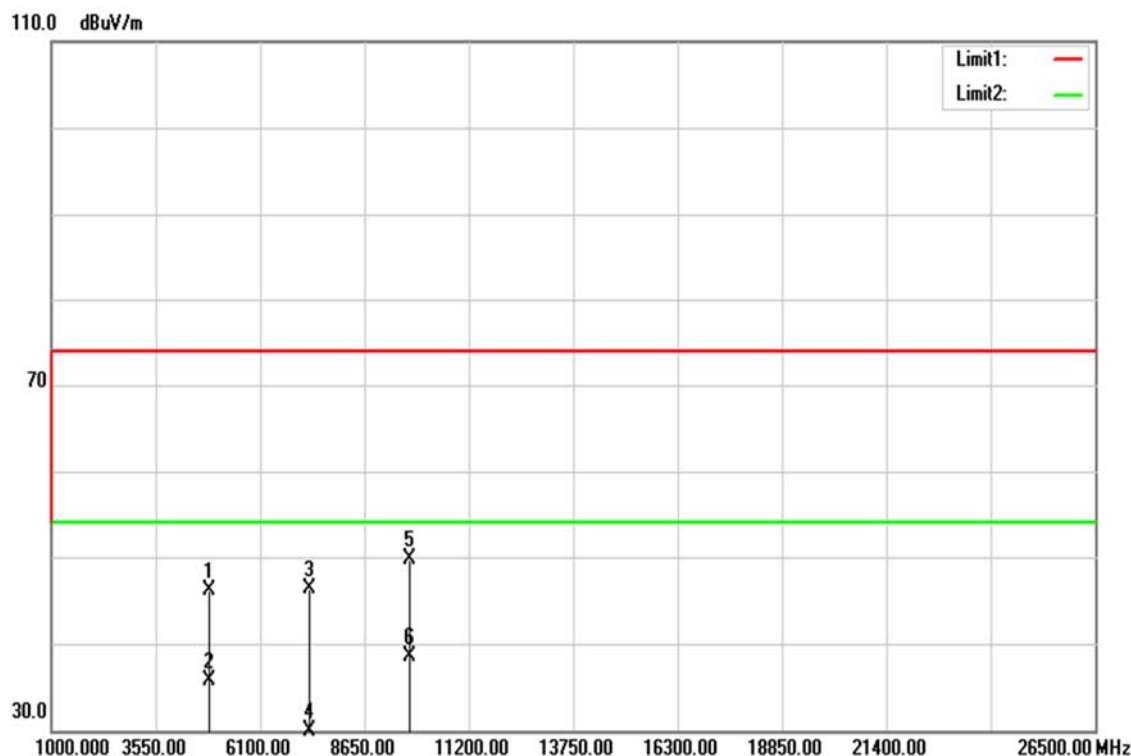


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	36.03	5.10	41.13	74.00	-32.87	peak
4824.000	26.67	5.10	31.77	54.00	-22.23	AVG
7236.000	33.28	12.71	45.99	74.00	-28.01	peak
7236.000	22.98	12.71	35.69	54.00	-18.31	AVG
9648.000	32.24	17.60	49.84	74.00	-24.16	peak
9648.000	21.14	17.60	38.74	54.00	-15.26	AVG

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	22 (°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

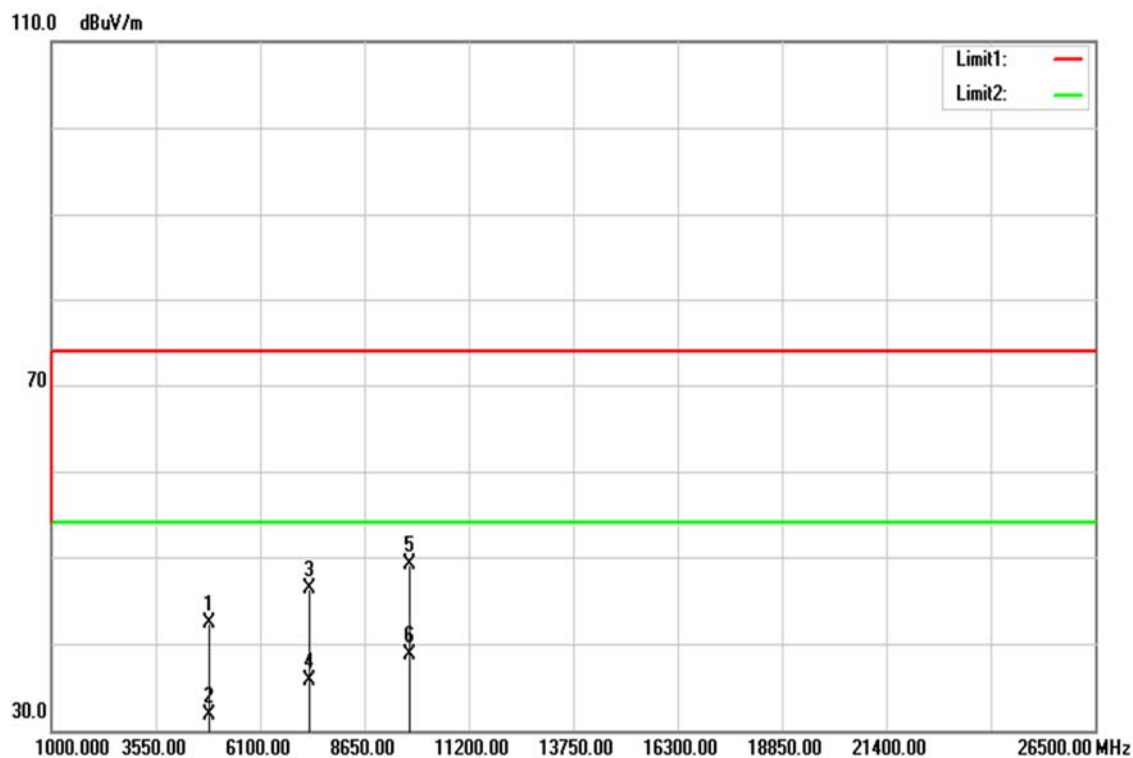


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	40.96	5.23	46.19	74.00	-27.81	peak
4874.000	30.43	5.23	35.66	54.00	-18.34	AVG
7311.000	33.39	12.94	46.33	74.00	-27.67	peak
7311.000	-7.20	12.94	5.74	54.00	-48.26	AVG
9748.000	32.08	17.60	49.68	74.00	-24.32	peak
9748.000	20.87	17.60	38.47	54.00	-15.53	AVG

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	22 (°C) / 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

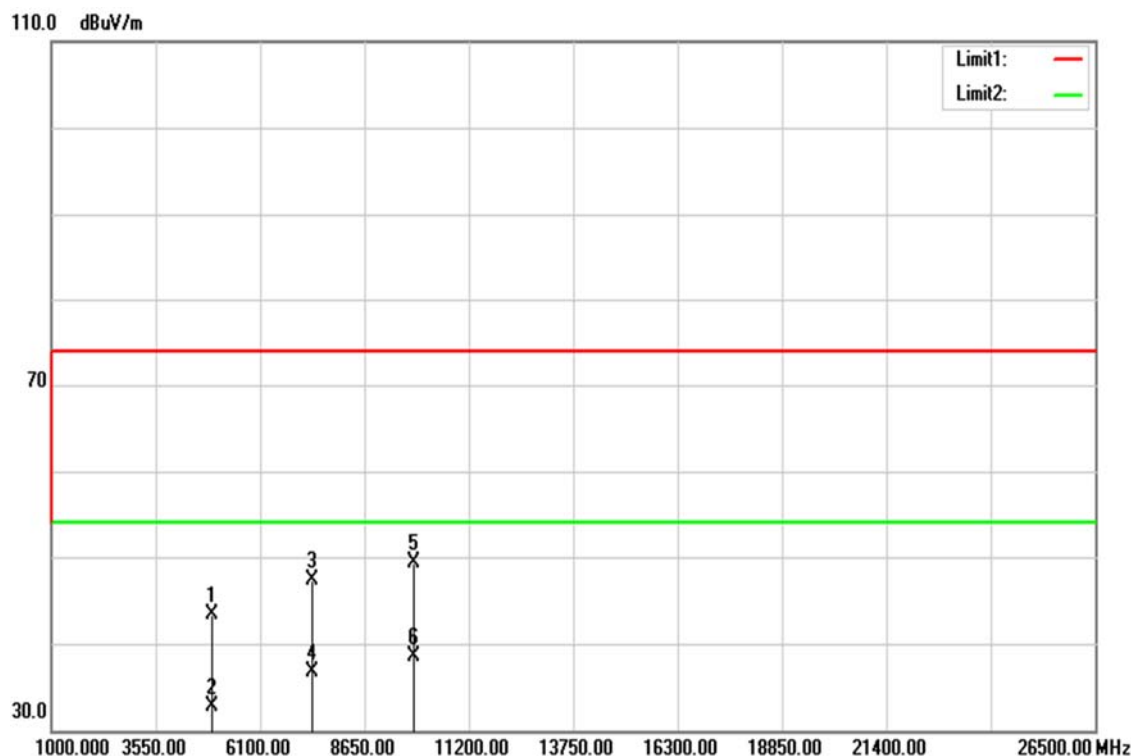


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (B)	Remark
4874.000	37.11	5.23	42.34	74.00	-31.66	peak
4874.000	26.43	5.23	31.66	54.00	-22.34	AVG
7311.000	33.30	12.94	46.24	74.00	-27.76	peak
7311.000	22.81	12.94	35.75	54.00	-18.25	AVG
9748.000	31.43	17.60	49.03	74.00	-24.97	peak
9748.000	21.07	17.60	38.67	54.00	-15.33	AVG

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	22 (°C) / 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

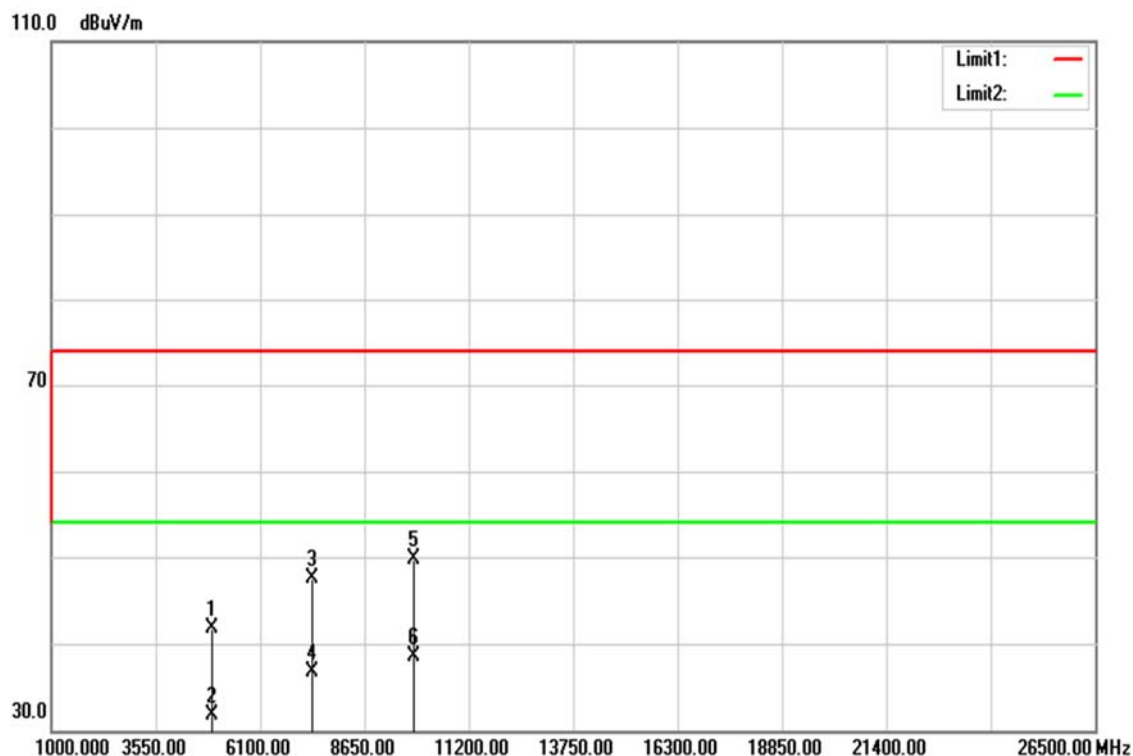


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	38.02	5.37	43.39	74.00	-30.61	peak
4924.000	27.29	5.37	32.66	54.00	-21.34	AVG
7386.000	34.12	13.17	47.29	74.00	-26.71	peak
7386.000	23.60	13.17	36.77	54.00	-17.23	AVG
9848.000	31.80	17.60	49.40	74.00	-24.60	peak
9848.000	20.98	17.60	38.58	54.00	-15.42	AVG

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	22 (°C) / 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

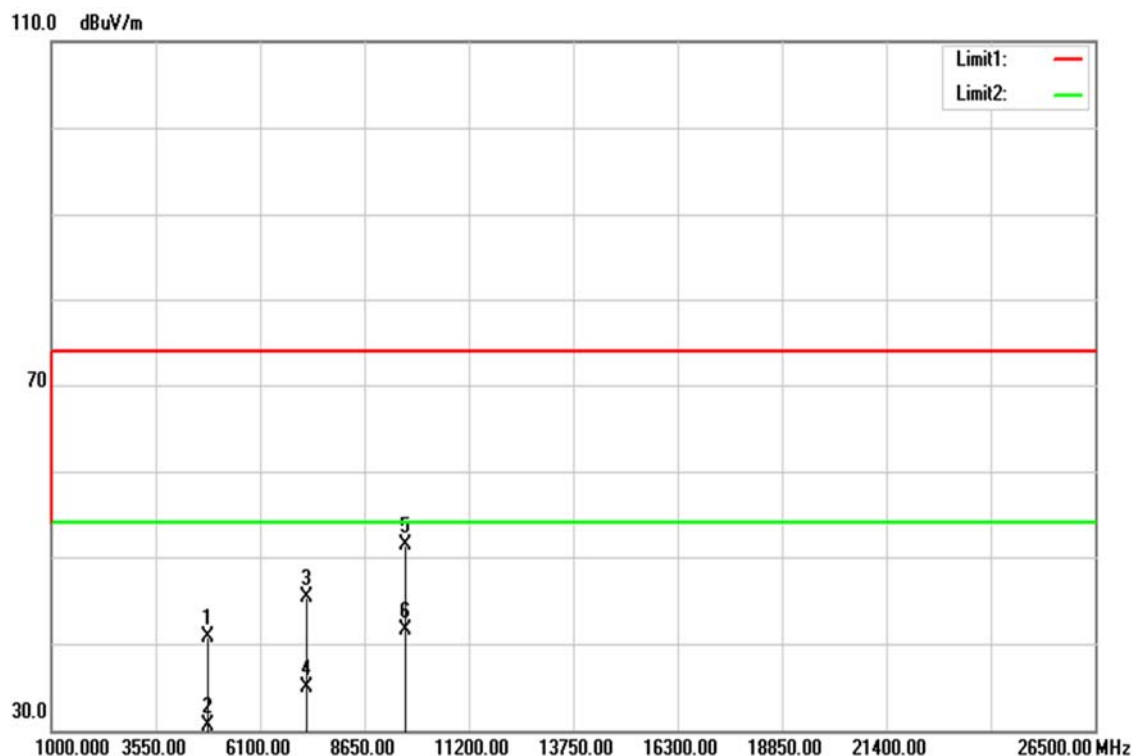


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	36.25	5.37	41.62	74.00	-32.38	peak
4924.000	26.29	5.37	31.66	54.00	-22.34	AVG
7386.000	34.36	13.17	47.53	74.00	-26.47	peak
7386.000	23.60	13.17	36.77	54.00	-17.23	AVG
9848.000	32.13	17.60	49.73	74.00	-24.27	peak
9848.000	20.98	17.60	38.58	54.00	-15.42	AVG

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	22 (°C) / 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

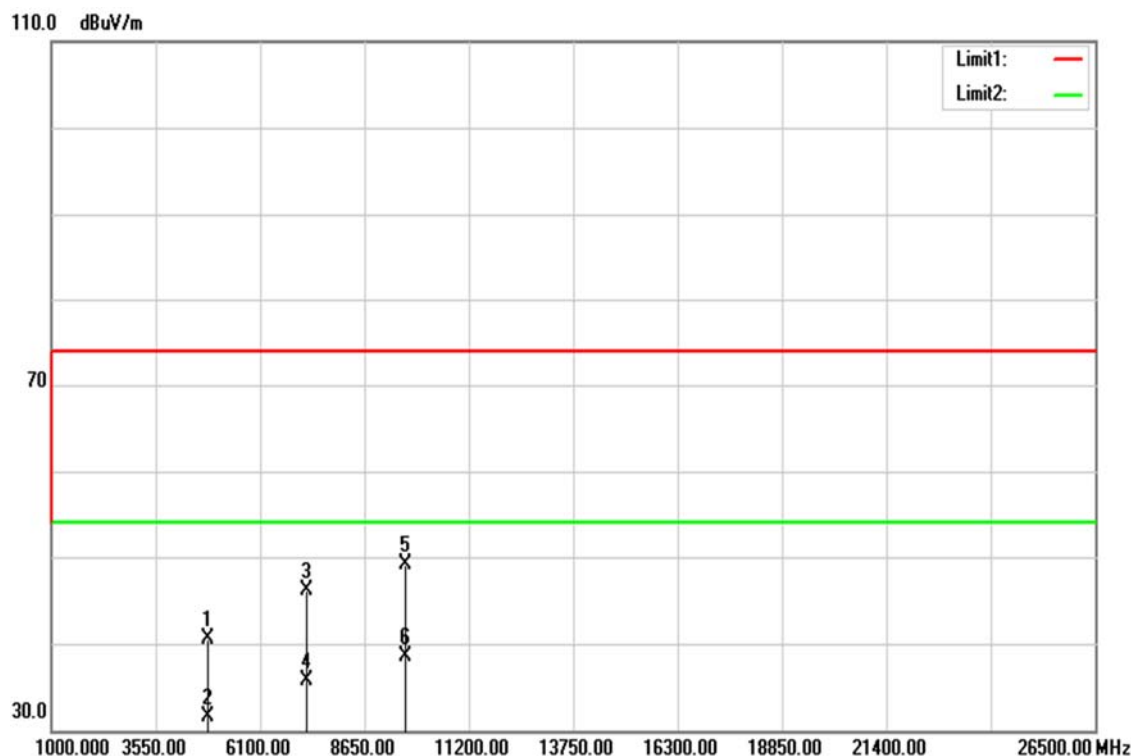


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	R mark
4824.000	35.70	5.10	40.80	74.00	-33.20	peak
4824.000	25.45	5.10	30.55	54.00	-23.45	AVG
7236.000	32.62	12.71	45.33	74.00	-28.67	peak
7236.000	22.26	12.71	34.97	54.00	-19.03	AVG
9648.000	33.78	17.60	51.38	74.00	-22.62	peak
9648.000	23.98	17.60	41.58	54.00	-12.42	AVG

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	22 (°C) / 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

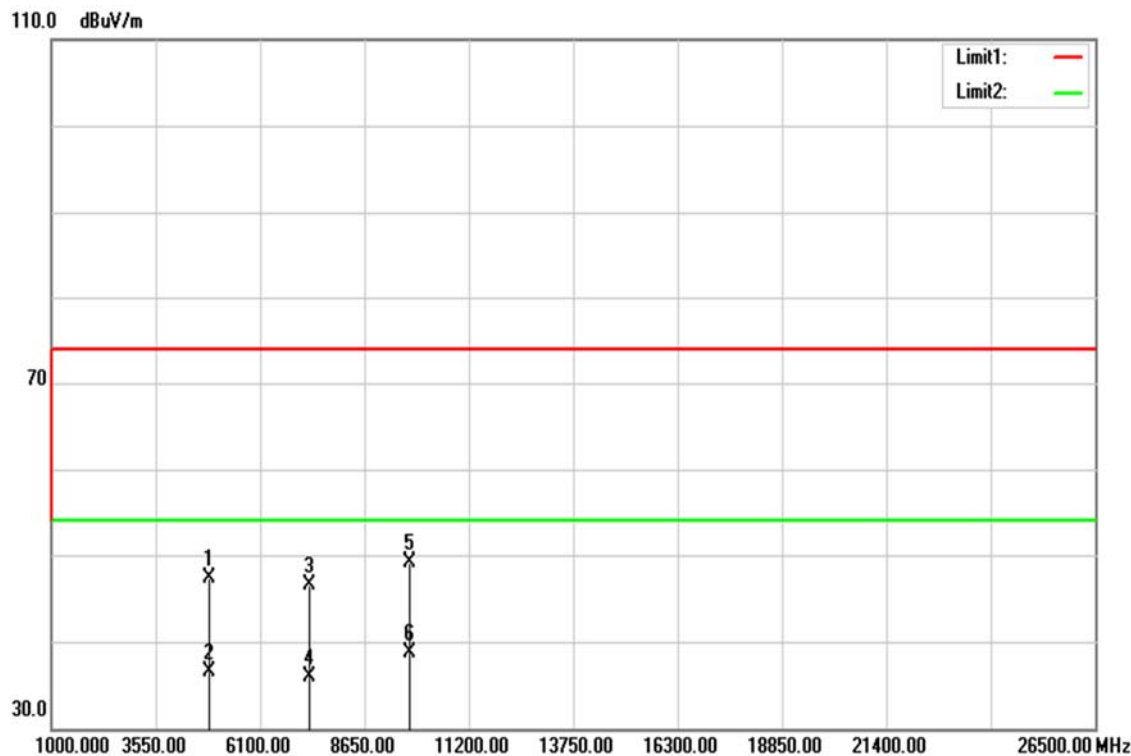


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	35.34	5.10	40.44	74.00	-33.56	peak
4824.000	26.45	5.10	31.55	54.00	-22.45	AVG
7236.000	33.30	12.71	46.01	74.00	-27.99	peak
7236.000	22.98	12.71	35.69	54.00	-18.31	AVG
9648.000	31.47	17.60	49.07	74.00	-24.93	peak
9648.000	20.87	17.60	38.47	54.00	-15.53	AVG

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	22 (°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

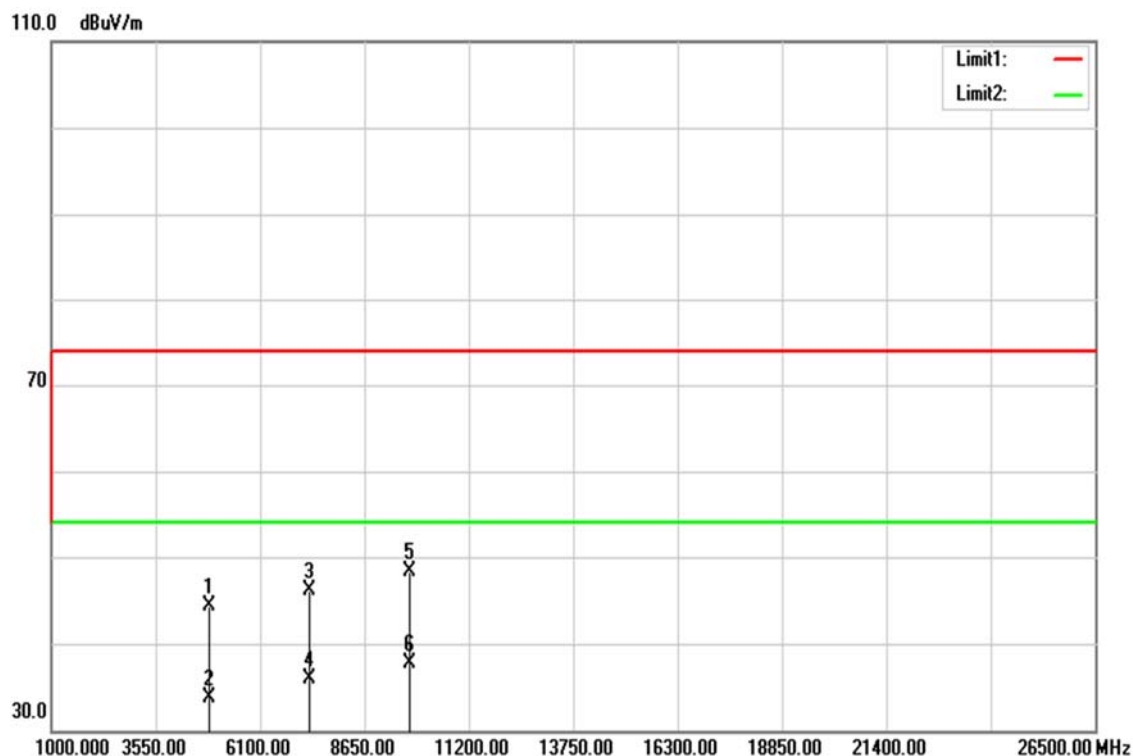


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	R mark
4874.000	42.12	5.23	47.35	74.00	-26.65	peak
4874.000	31.32	5.23	36.55	54.00	-17.45	AVG
7311.000	33.54	12.94	46.48	74.00	-27.52	peak
7311.000	23.00	12.94	35.94	54.00	-18.06	AVG
9748.000	31.55	17.60	49.15	74.00	-24.85	peak
9748.000	21.09	17.60	38.69	54.00	-15.31	AVG

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	22 (°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

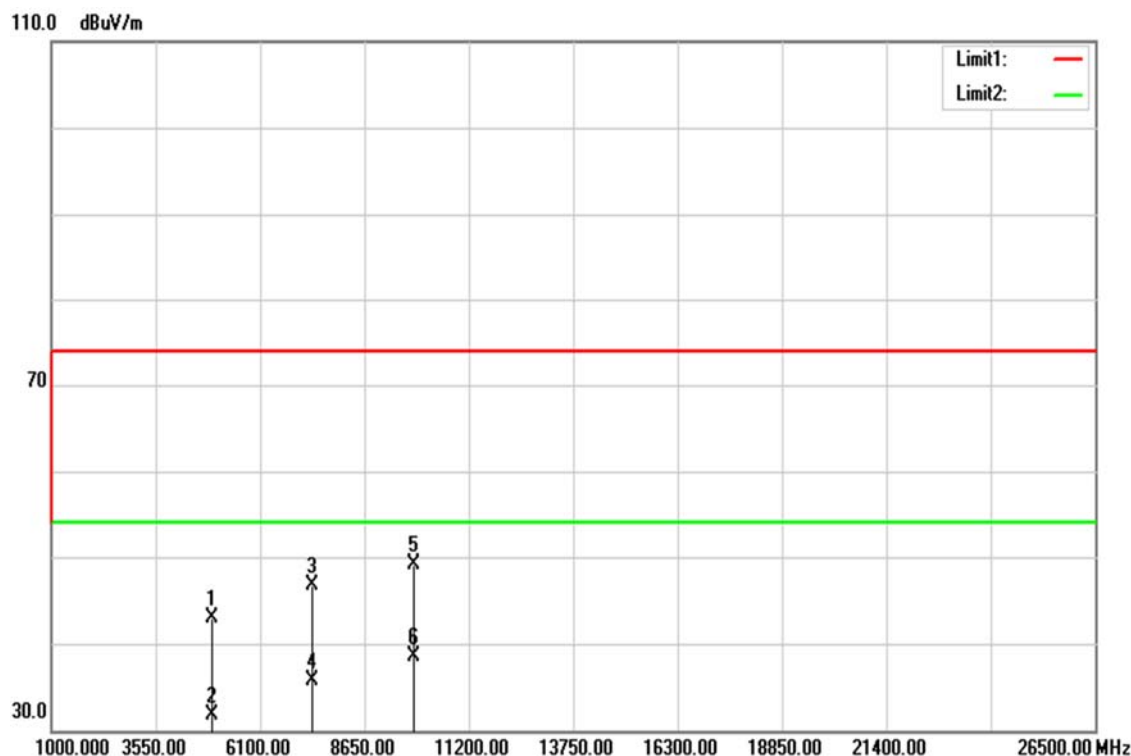


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	38.99	5.23	44.22	74.00	-29.78	peak
4874.000	28.40	5.23	33.63	54.00	-20.37	AVG
7311.000	33.15	12.94	46.09	74.00	-27.91	peak
7311.000	22.94	12.94	35.88	54.00	-18.12	AVG
9748.000	30.65	17.60	48.25	74.00	-25.75	peak
9748.000	20.14	17.60	37.74	54.00	-16.26	AVG

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	22 (°C) / 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

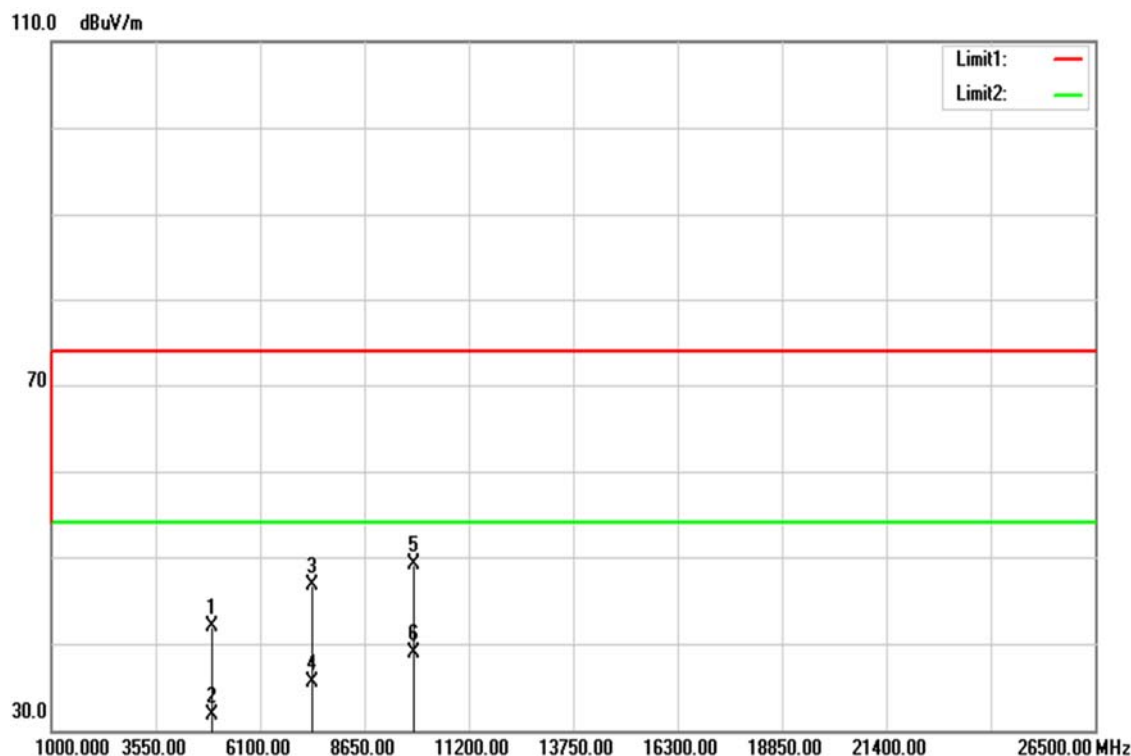


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	37.59	5.37	42.96	74.00	-31.04	peak
4924.000	26.29	5.37	31.66	54.00	-22.34	AVG
7386.000	33.49	13.17	46.66	74.00	-27.34	peak
7386.000	22.60	13.17	35.77	54.00	-18.23	AVG
9848.000	31.53	17.60	49.13	74.00	-24.87	peak
9848.000	20.88	17.60	38.48	54.00	-15.52	AVG

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	22 (°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

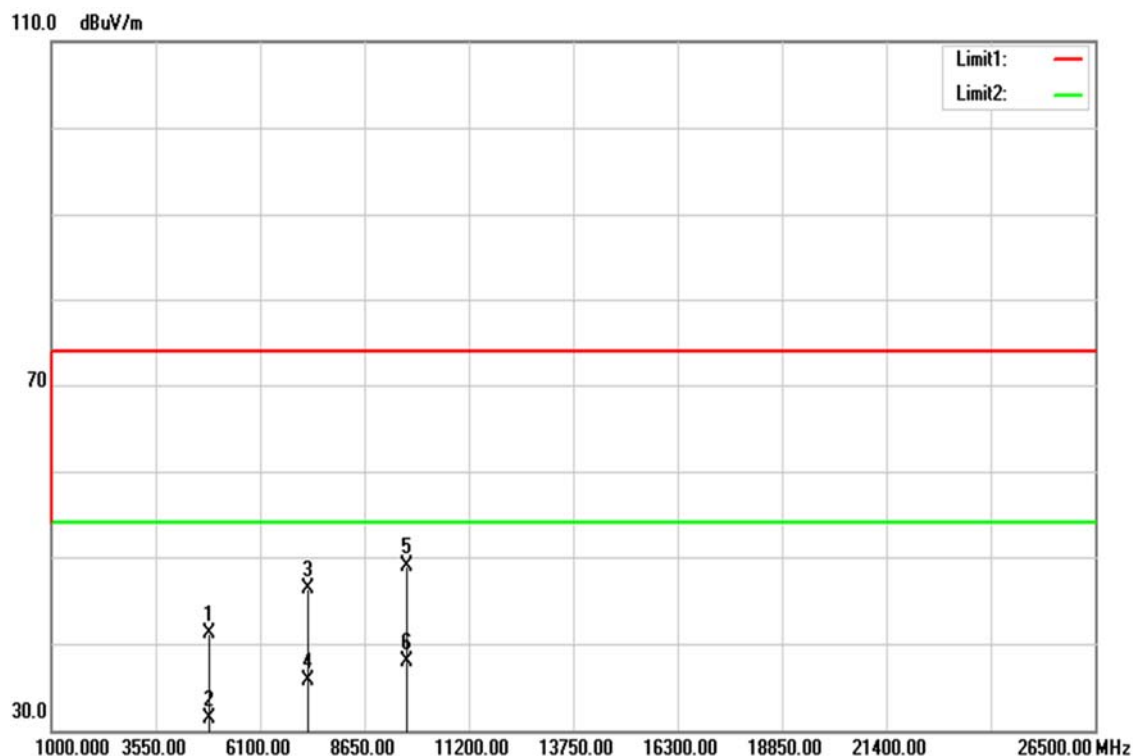


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	36.48	5.37	41.85	74.00	-32.15	peak
4924.000	26.29	5.37	31.66	54.00	-22.34	AVG
7386.000	33.54	13.17	46.71	74.00	-27.29	peak
7386.000	22.31	13.17	35.48	54.00	-18.52	AVG
9848.000	31.42	17.60	49.02	74.00	-24.98	peak
9848.000	21.35	17.60	38.95	54.00	-15.05	AVG

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 HT40 Low CH	Temp/Hum	22 (°C) / 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

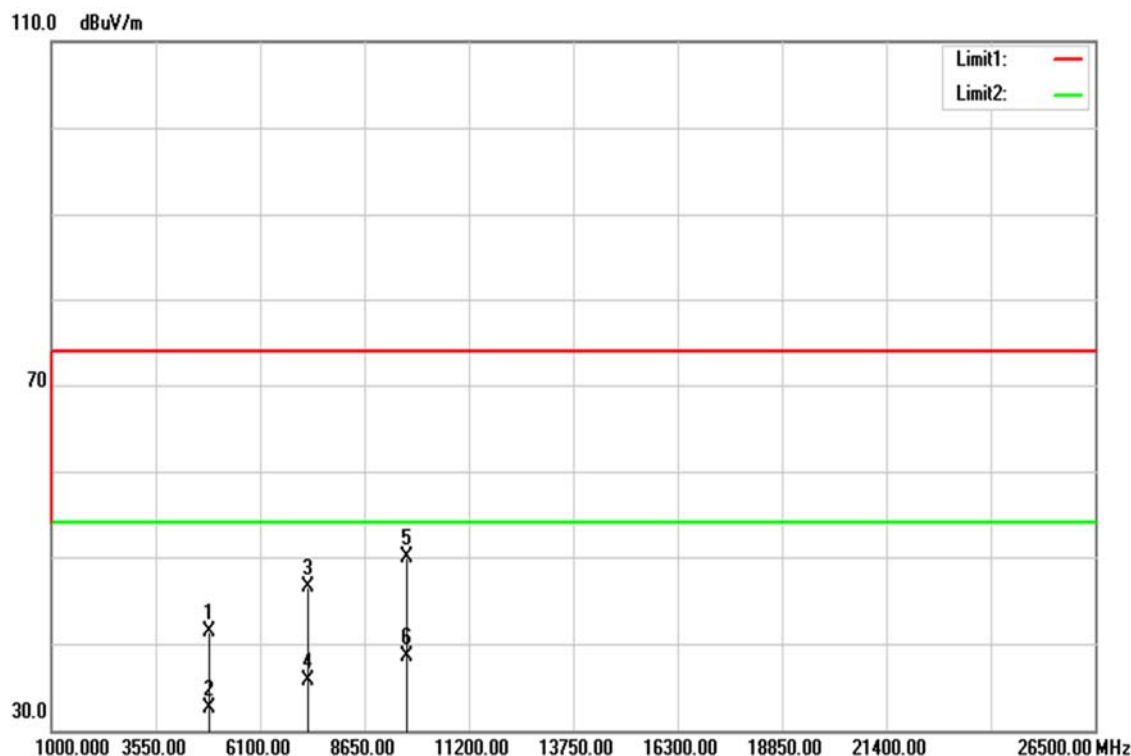


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4844.000	35.98	5.15	41.13	74.00	-32.87	peak
4844.000	26.12	5.15	31.27	54.00	-22.73	AVG
7266.000	33.50	12.80	46.30	74.00	-27.70	peak
7266.000	22.86	12.80	35.66	54.00	-18.34	AVG
9688.000	31.39	17.60	48.99	74.00	-25.01	peak
9688.000	20.24	17.60	37.84	54.00	-16.16	AVG

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 HT40 Low CH	Temp/Hum	22 (°C) / 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

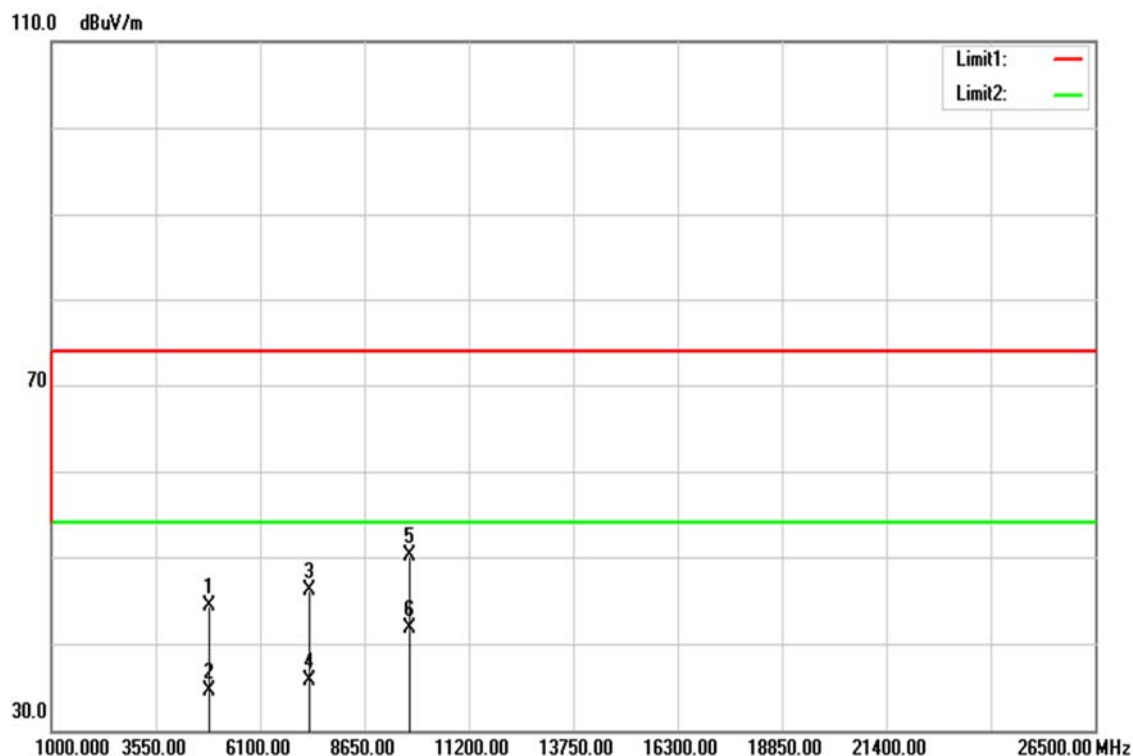


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4844.000	36.15	5.15	41.30	74.00	-32.70	peak
4844.000	27.40	5.15	32.55	54.00	-21.45	AVG
7266.000	33.73	12.80	46.53	74.00	-27.47	peak
7266.000	22.99	12.80	35.79	54.00	-18.21	AVG
9688.000	32.30	17.60	49.90	74.00	-24.10	peak
9688.000	20.82	17.60	38.42	54.00	-15.58	AVG

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 HT40 Mid CH	Temp/Hum	22 (°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

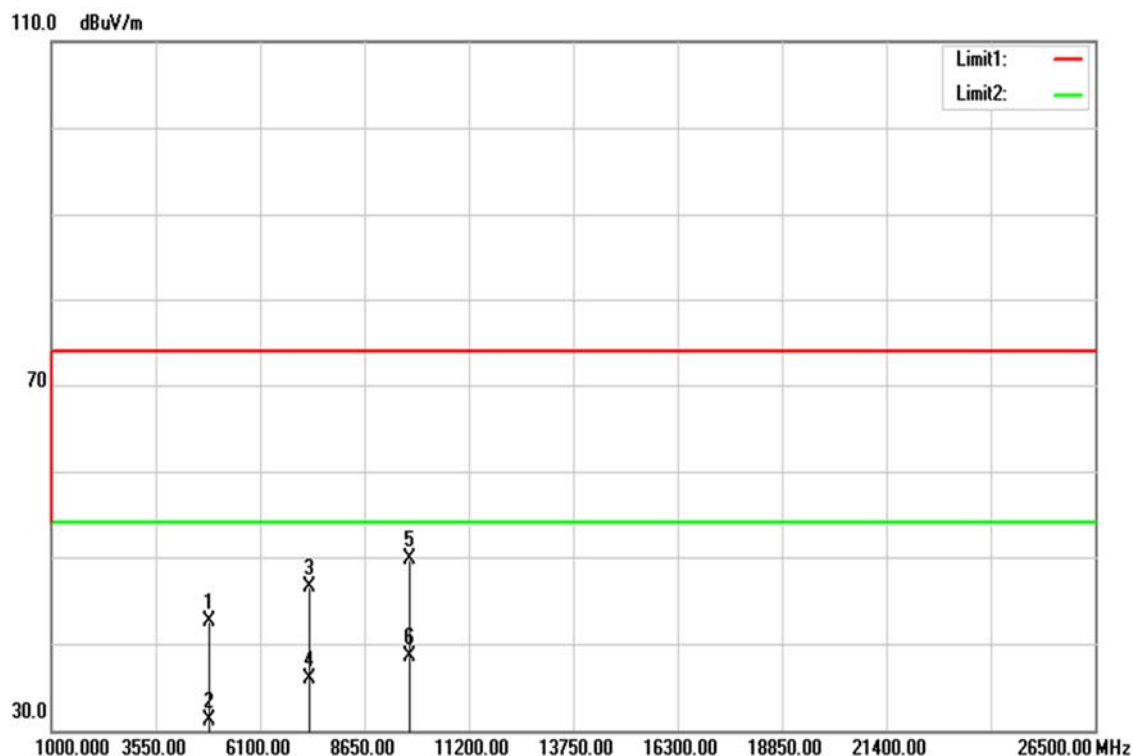


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	39.16	5.23	44.39	74.00	-29.61	peak
4874.000	29.32	5.23	34.55	54.00	-19.45	AVG
7311.000	33.14	12.94	46.08	74.00	-27.92	peak
7311.000	22.74	12.94	35.68	54.00	-18.32	AVG
9748.000	32.42	17.60	50.02	74.00	-23.98	peak
9748.000	24.14	17.60	41.74	54.00	-12.26	AVG

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 HT40 Mid CH	Temp/Hum	22 (°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

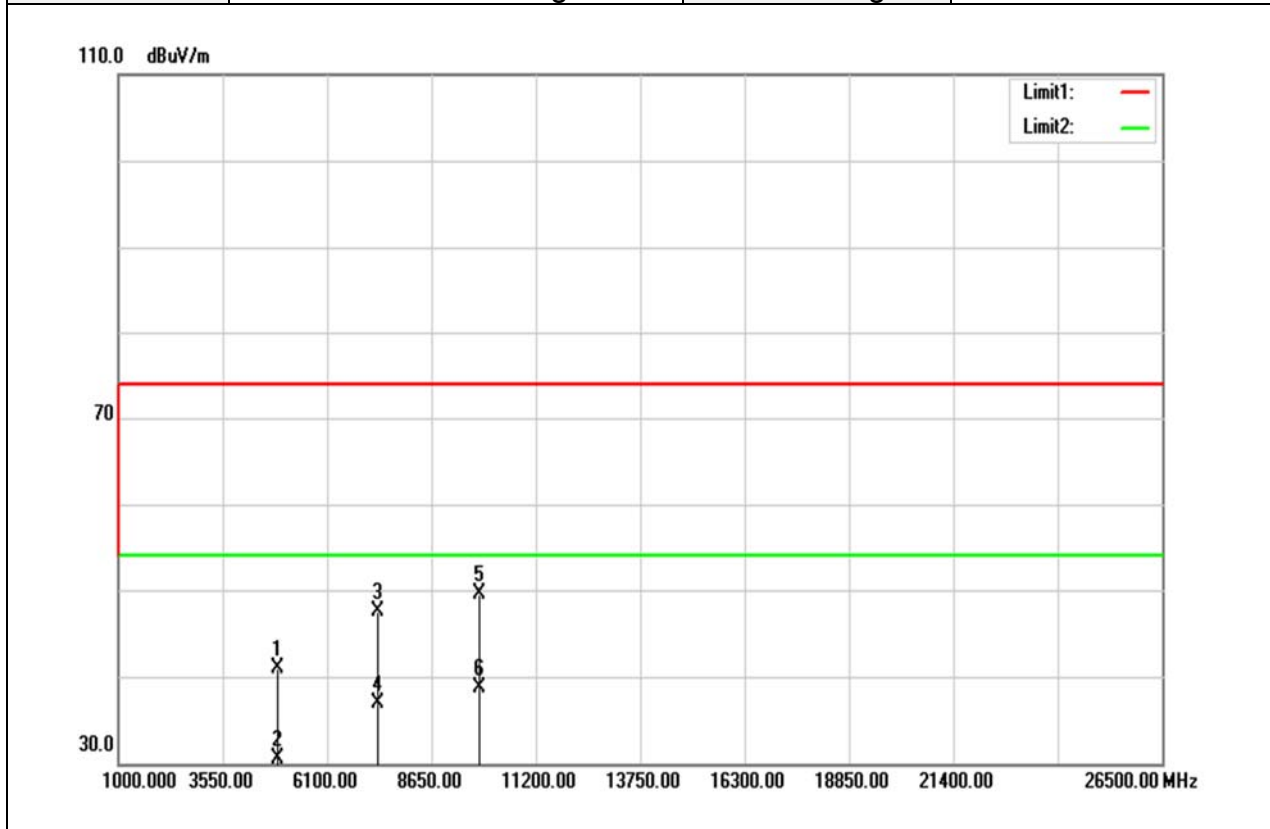


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	37.30	5.23	42.53	74.00	-31.47	peak
4874.000	25.91	5.23	31.14	54.00	-22.86	AVG
7311.000	33.49	12.94	46.43	74.00	-27.57	peak
7311.000	22.90	12.94	35.84	54.00	-18.16	AVG
9748.000	32.09	17.60	49.69	74.00	-24.31	peak
9748.000	20.92	17.60	38.52	54.00	-15.48	AVG

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 HT40 High CH	Temp/Hum	22 (°C) / 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz

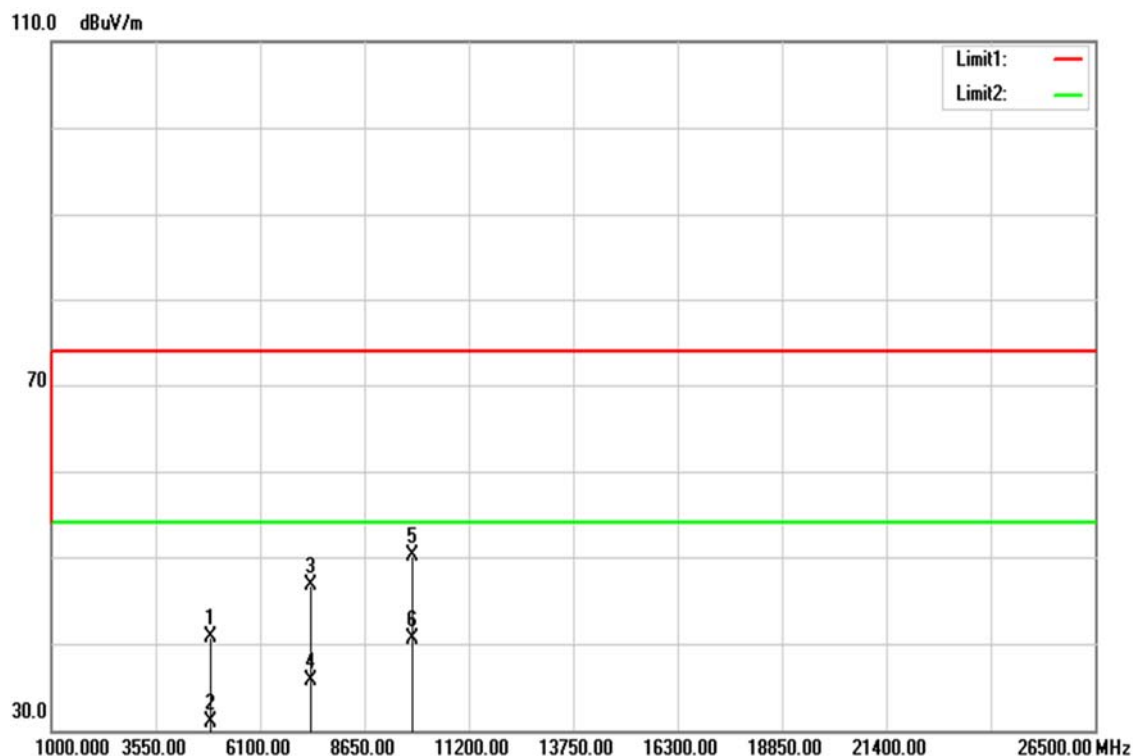


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4904.000	35.57	5.31	40.88	74.00	-33.12	peak
4904.000	25.17	5.31	30.48	54.00	-23.52	AVG
7356.000	34.39	13.08	47.47	74.00	-26.53	peak
7356.000	23.90	13.08	36.98	54.00	-17.02	AVG
9808.000	31.83	17.60	49.43	74.00	-24.57	peak
9808.000	21.17	17.60	38.77	54.00	-15.23	AVG

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 HT40 High CH	Temp/Hum	22 (°C)/ 35%RH
Test Item	Harmonic	Test Date	May 9, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
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
4904.000	35.48	5.31	40.79	74.00	-33.21	peak
4904.000	25.57	5.31	30.88	54.00	-23.12	AVG
7356.000	33.71	13.08	46.79	74.00	-27.21	peak
7356.000	22.60	13.08	35.68	54.00	-18.32	AVG
9808.000	32.56	17.60	50.16	74.00	-23.84	peak
9808.000	22.98	17.60	40.58	54.00	-13.42	AVG

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