FCC RADIO TEST REPORT
FCC 47 CFR PART 15 SUBPART E

Test Standard	**FCC Part 15.407**
FCC ID	**2AKOR10101**
Product name	**360livecam**
Brand name	**Tamaggo**
Model No.	**10101**
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. (Wugu Laboratory).

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

Approved by:

Sam Chuang
Manager

Tested by:

Ed Chiang
Engineer

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	March 27, 2017	Initial Issue	Doris Chu
01	July 4, 2017	1. Added equipment list of DFS in page 7. 2. Modify worst polarity in page 10. 3. Added conduction data in Page 13-14. 4. Modify PSD limit in 5755-5795MHz in page 41 5. Added PSD test data in 5670MHz in page 40.	Angel Cheng

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APPENDIX 1 - PHOTOGRAPHS OF EUT

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Tamaggo Enterprises S.A. Rue du Mont-Blanc 14, Geneva, CH, 1201, Switzerland
Manufacturer	Altek (Kunshan) Co., Ltd. No. 77, 3rd Main Street, Kunshan Free Trade Zone, Jiangsu Province, P.R. China
Equipment	360livecam
Model Name	10101
Model Discrepancy	N/A
Trade Name	Tamaggo
Received Date	February 15, 2017
Date of Test	February 14 ~ June 13, 2017
Power Operation	DC 3.7V
Output Power(W)	

Band	Mode	Frequency Range (MHz)	Output Power (W)
U-NII-1	IEEE 802.11a	5180 ~ 5240	0.0124
	IEEE 802.11n HT 20 MHz	5180 ~ 5240	0.0119
	IEEE 802.11n HT 40 MHz	5190 ~ 5230	0.0112
U-NII-2a	IEEE 802.11a	5260 ~ 5320	0.0119
	IEEE 802.11n HT 20 MHz	5260 ~ 5320	0.0111
	IEEE 802.11n HT 40 MHz	5270 ~ 5310	0.0112
U-NII-2c	IEEE 802.11a	5500 ~ 5700	0.0121
	IEEE 802.11n HT 20 MHz	5500 ~ 5700	0.0109
	IEEE 802.11n HT 40 MHz	5510 ~ 5670	0.0111
UNII-3	IEEE 802.11a	5745 ~ 5825	0.0119
	IEEE 802.11n HT 20 MHz	5745 ~ 5825	0.0116
	IEEE 802.11n HT 40 MHz	5755 ~ 5795	0.0112

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1.2 EUT CHANNEL INFORMATION

Frequency Range	**UNII-1**	
	IEEE 802.11a	5180 ~ 5240 MHz
	IEEE 802.11n HT 20 MHz	5180 ~ 5240 MHz
	IEEE 802.11n HT 40 MHz	5190 ~ 5230 MHz
	UNII-2a	
	IEEE 802.11a	5260 ~ 5320 MHz
	IEEE 802.11n HT 20 MHz	5260 ~ 5320 MHz
	IEEE 802.11n HT 40 MHz	5270 ~ 5310 MHz
	UNII-2c	
	IEEE 802.11a	5500 ~ 5700 MHz
	IEEE 802.11n HT 20 MHz	5500 ~ 5700 MHz
	IEEE 802.11n HT 40 MHz	5510 ~ 5670 MHz
	UNII-3	
	IEEE 802.11a	5745 ~ 5825 MHz
	IEEE 802.11n HT 20 MHz	5745 ~ 5825 MHz
	IEEE 802.11n HT 40 MHz	5755 ~ 5795 MHz
Modulation Type	1. IEEE 802.11a mode: OFDM 2. IEEE 802.11n HT 20 MHz mode: OFDM 3. IEEE 802.11n HT 40 MHz mode: OFDM	

Remark:
Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	**Number of frequencies**	**Location in frequency range of operation**
☐ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☒ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Type	☐ PIFA ☐ PCB ☐ Dipole ☒ FPC
Antenna Gain	4 (dBi)

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1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 1.4003
RF output power, conducted	+/- 1.1372
Power density, conducted	+/- 1.4003
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683
3M Semi Anechoic Chamber / 40G~60G	+/- 1.8509
3M Semi Anechoic Chamber / 60G~75G	+/- 1.9869
3M Semi Anechoic Chamber / 75G~110G	+/- 2.9651
3M Semi Anechoic Chamber / 110G~170G	+/- 2.7807
3M Semi Anechoic Chamber / 170G~220G	+/- 3.6437
3M Semi Anechoic Chamber / 220G~325G	+/- 4.2982

***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	Eric Lee	
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.*

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1.6 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration 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

Wugu 966 Chamber A					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Bilog Antenna	Sunol Sciences	JB3	A030105	07/03/2016	07/02/2017
Horn Antenna	EMCO	3117	00055165	02/20/2017	02/19/2018
Horn Antenna	ETS LINDGREN	3116	00026370	01/12/2017	01/11/2018
Pre-Amplifier	EMCI	EMC 012635	980151	06/22/2017	06/21/2018
Pre-Amplifier	EMEC	EM330	060609	06/07/2017	06/06/2018
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
Software	EZ-EMC (CCS-3A1RE)				

Conducted Emission Room # B					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration 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

DFS Room					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Vector Signal Generator	R&S	SMU 200A	102239	03/13/2017	03/12/2018
SMA Power Divider	CCS	STI08-0015	008	07/27/2016	07/26/2017
RF Power Splitter	Marvelous Microwave	MVE 8586	6011206	07/19/2016	07/18/2017
Spectrum Analyzer	R&S	FSU 8GHz	200114	07/28/2016	07/27/2017
Directional Coupler	Agilent	87301D	MY44350252	07/18/2016	07/17/2017

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

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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	Notebook	Lenovo	IBM 7663	N/A	N/A
2	DC Power Source	GWINSTEK	SPS-3610	N/A	N/A
3	NB	ASUS	M5200AE	N/A	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 15.407, KDB 662911 D01 v02r01, KDB 789033 D02 v01r03, KDB 644545 D03 v01.

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

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2. TEST SUMMERY

FCC Standard Sec.	Chapter	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207	4.1	AC Conducted Emission	Pass
15.403(i)	4.2	6dB and 26dB and 99% Bandwidth	Pass
15.407(a)	4.3	Output Power Measurement	Pass
15.407(a)	4.4	Power Spectral Density	Pass
15.407(b)	4.5	Radiation Band Edge	Pass
15.407(b)	4.5	Radiation Spurious Emission	Pass
15.407(g)	4.6	Frequency Stability	Pass
15.407 (h)	4.7	Dynamic frequency selection	Pass

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3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	1. IEEE 802.11a mode: 6Mbps 2. IEEE 802.11n HT 20 MHz mode: MCS8 3. IEEE 802.11n HT 40 MHz mode: MCS8
Operating Frequency Range & Number of Channels	

	Mode	Frequency Range (MHz)	Number of Channels
U-NII-1	IEEE 802.11a	5180 ~ 5240	4 Channels
	IEEE 802.11n HT 20 MHz	5180 ~ 5240	4 Channels
	IEEE 802.11n HT 40 MHz	5190 ~ 5230	2 Channels
U-NII-2a	IEEE 802.11a	5260 ~ 5320	5 Channels
	IEEE 802.11n HT 20 MHz	5260 ~ 5320	5 Channels
	IEEE 802.11n HT 40 MHz	5270 ~ 5310	2 Channels
U-NII-2c	IEEE 802.11a	5500 ~ 5700	11 Channels
	IEEE 802.11n HT 20 MHz	5500 ~ 5700	11 Channels
	IEEE 802.11n HT 40 MHz	5510 ~ 5670	5 Channels
U-NII-3	IEEE 802.11a	5745 ~ 5825	5 Channels
	IEEE 802.11n HT 20 MHz	5745 ~ 5825	5 Channels
	IEEE 802.11n HT 40 MHz	5755 ~ 5795	2 Channels

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

Radiated Emission Measurement Above 1G	
Test Condition	**Band edge, Emission for Unwanted and Fundamental**
DC Voltage	**3.7V**
Test Mode	**Mode 1:EUT power by DC source.**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**
Worst Position	☐ **Placed in fixed position.** ☒ **Placed in fixed position at X-Plane (E2-Plane)** ☐ **Placed in fixed position at Y-Plane (E1-Plane)** ☐ **Placed in fixed position at Z-Plane (H-Plane)**
Worst Polarity	☒ **Horizontal** ☐ **Vertical**

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
DC Voltage	**3.7V**
Test Mode	**Mode 1:EUT power by DC source.**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **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(X-Plane and Vertical) were recorded in this report

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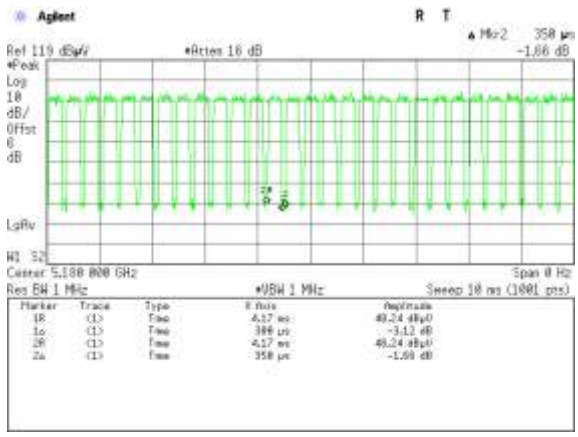
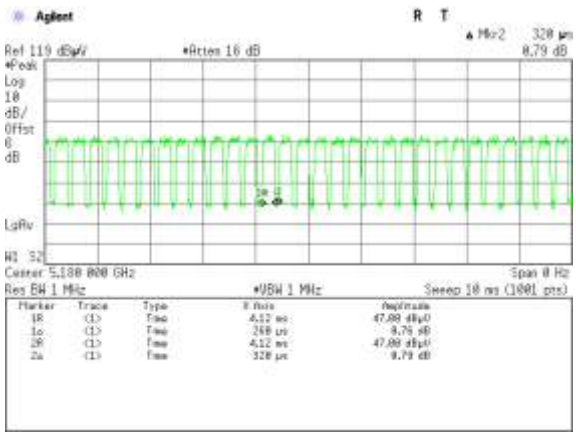
3.3 EUT DUTY CYCLE

Duty Cycle				
Configuration	TX ON (ms)	TX ALL (ms)	Duty Cycle (%)	Duty Factor(dB)
802.11a	0.3000	0.3500	85.71	0.67
802.11n HT20	0.2600	0.3200	81.25	0.90
802.11n HT40	0.6700	0.7400	90.54%	0.43

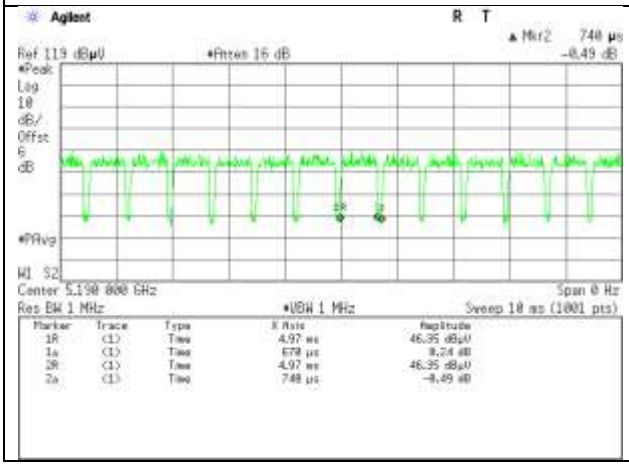
802.11a



802.11n HT20



802.11n HT40



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4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a),

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

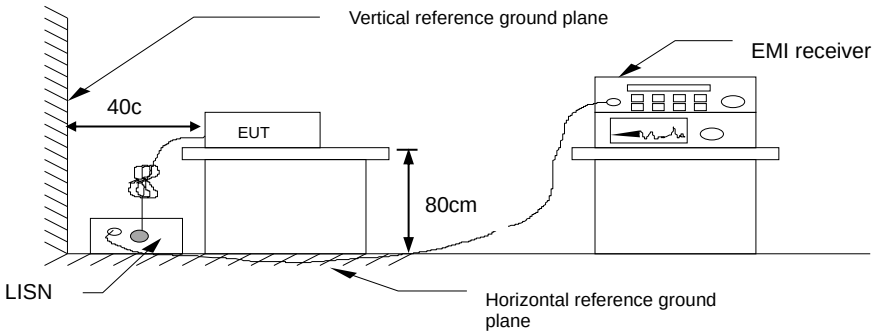
* Decreases with the logarithm of the frequency.

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



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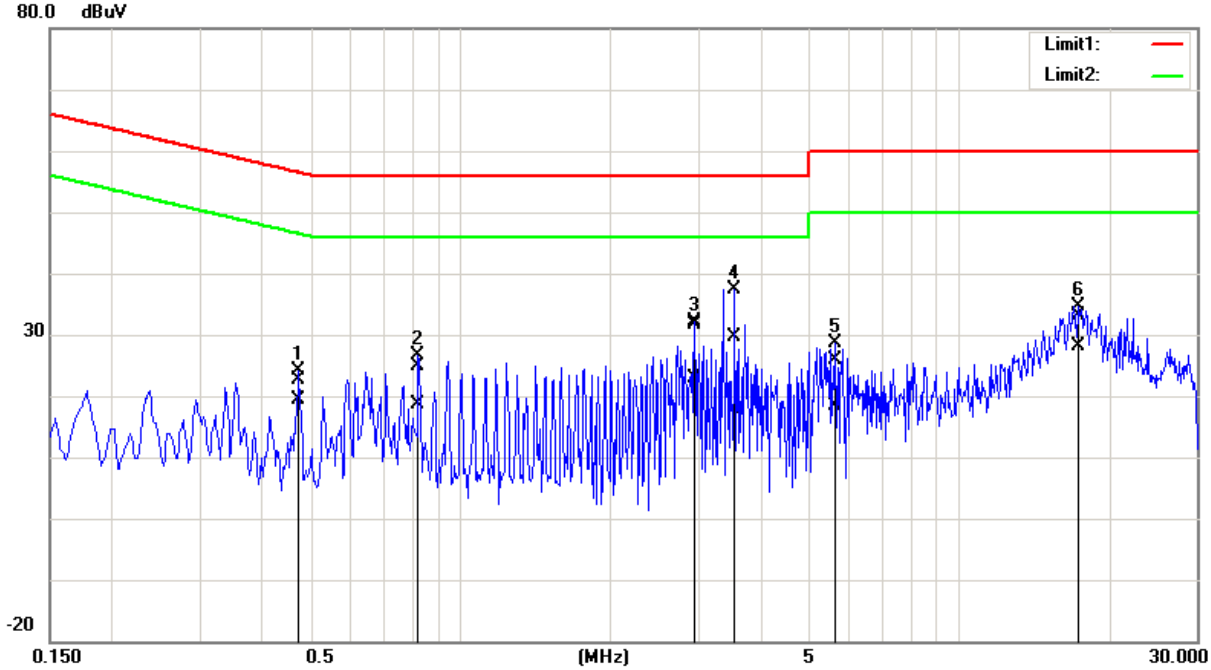
4.1.4 Test Result

Test Data

Test Mode:	Mode 1	Temp/Hum	24(℃)/ 50%RH
Test Voltage:	120Vac / 60Hz	Test Date	2017/6/13
Phase:	Line	Test Engineer	Eric Lee



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)
1	0.4740	22.74	19.41	-0.05	22.69	19.36	56.44	46.44	-33.75	-27.08
2	0.8260	24.90	18.72	-0.05	24.85	18.67	56.00	46.00	-31.15	-27.33
3	2.9539	31.68	23.06	-0.06	31.62	23.00	56.00	46.00	-24.38	-23.00
4	3.5500	29.78	17.88	-0.05	29.73	17.83	56.00	46.00	-26.27	-28.17
5	5.6740	25.97	18.36	0.02	25.99	18.38	60.00	50.00	-34.01	-31.62
6*	17.4300	33.23	28.25	-0.20	33.03	28.05	60.00	50.00	-26.97	-21.95

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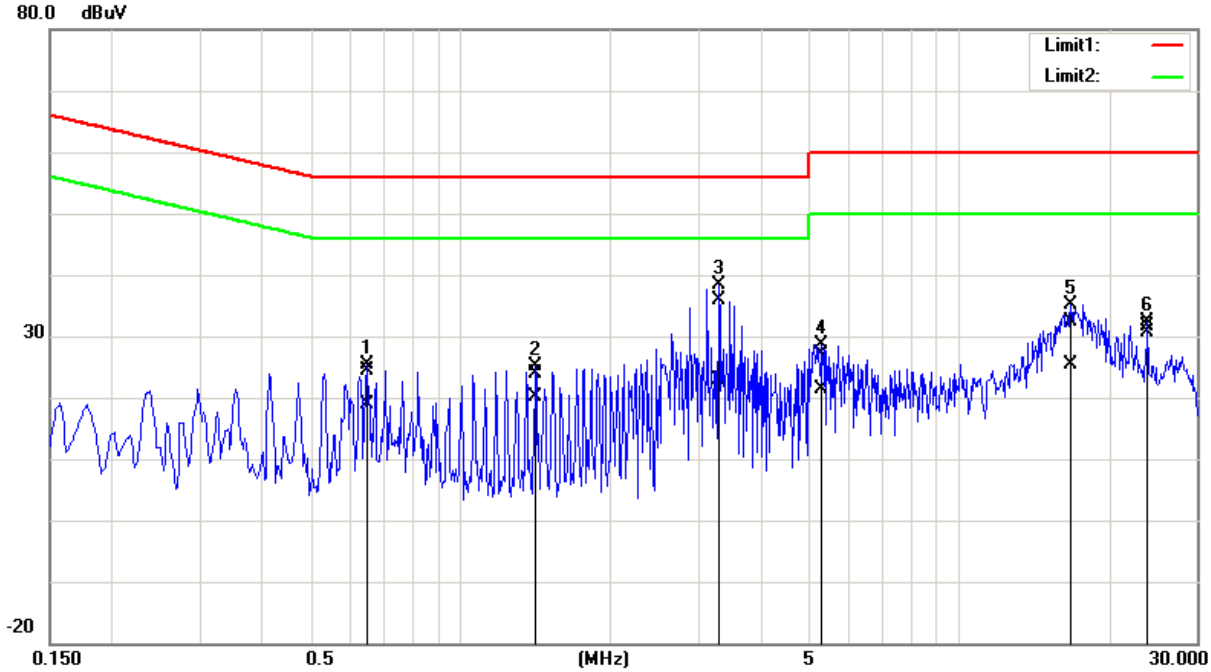
Test Mode:	Mode 1	Temp/Hum	27(℃)/ 53%RH
Test Voltage:	120Vac / 60Hz	Test Date	2017/6/13
Phase:	Neutral	Test Engineer	Eric Lee



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)
1	0.6500	24.40	18.93	-0.13	24.27	18.80	56.00	46.00	-31.73	-27.20
2	1.4180	23.98	20.21	-0.13	23.85	20.08	56.00	46.00	-32.15	-25.92
3	3.3060	35.92	23.03	-0.13	35.79	22.90	56.00	46.00	-20.21	-23.10
4	5.3140	27.24	21.41	-0.15	27.09	21.26	60.00	50.00	-32.91	-28.74
5	16.8340	32.60	25.73	-0.31	32.29	25.42	60.00	50.00	-27.71	-24.58
6*	23.9260	32.10	31.05	-0.39	31.71	30.66	60.00	50.00	-28.29	-19.34

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4.2 6DB AND 26DB AND 99% BANDWIDTH

4.2.1 Test Limit

26 dB & 99% Bandwidth ：For reporting purposes only.

6 dB Bandwidth ：Least 500kHz.

4.2.2 Test Procedure

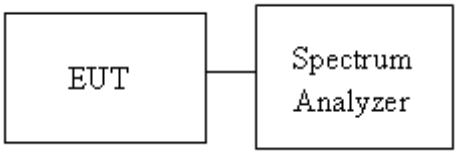
Test method Refer as KDB 789033 D02 v01r03 Section C, D, and ANSI 63.10:2013 clause 6.9.2,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. UNII-1, UNII-2a and UNII-2c,

   (1) BW=20MHz : SA set RBW = 300kHz, VBW = 1MHz and Detector = Peak, to measurement 26 dB Bandwidthh

   (2) BW=40MHz : SA set RBW = 1MHz, VBW = 3MHz and Detector = Peak, to measurement 26 dB Bandwidth
4. UNII-3, SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth
5. Measure and record the result. in the test report.

4.2.3 Test Setup



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4.2.4 Test Result

UNII-1 5150-5250 MHz			
Test mode: IEEE 802.11a mode			
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**26dB BW (MHz)**
Low	5180	16.6425	19.2029
Mid	5220	16.6425	19.2754
High	5240	16.6425	19.2029
Test mode: IEEE 802.11n HT20 mode			
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**26dB BW (MHz)**
Low	5180	17.5832	19.2754
Mid	5220	17.5832	19.2029
High	5240	17.5832	19.2029
Test mode: IEEE 802.11n HT40 mode			
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**26dB BW (MHz)**
Low	5190	36.7004	44.870
High	5230	36.4688	41.971

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UNII-2a 5250-5350 MHz			
Test mode: IEEE 802.11a mode			
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**26dB BW (MHz)**
Low	5260	16.7149	19.2029
Mid	5280	16.6425	19.2754
High	5320	16.6425	19.2029
Test mode: IEEE 802.11n HT20 mode			
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**26dB BW (MHz)**
Low	5260	17.5832	19.3478
Mid	5280	17.5832	19.2029
High	5320	17.5832	19.2754
Test mode: IEEE 802.11n HT40 mode			
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**26dB BW (MHz)**
Low	5270	36.5846	51.014
High	5310	36.5846	43.594

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UNII-2c 5475-5725 MHz			
Test mode: IEEE 802.11a mode			
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**26dB BW (MHz)**
Low	5500	16.6425	19.2754
Mid	5580	16.6425	19.2029
High	5700	16.7872	20.4346
Test mode: IEEE 802.11n HT20 mode			
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**26dB BW (MHz)**
Low	5500	17.5832	19.2754
Mid	5580	17.5832	19.2754
High	5700	17.5832	19.2029
Test mode: IEEE 802.11n HT40 mode			
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**26dB BW (MHz)**
Low	5510	36.7004	43.942
Mid	5550	36.7004	44.638
High	5670	36.7004	53.449

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UNII-3 5725-5825MHz			
Test mode: IEEE 802.11a mode			
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**6dB BW (MHz)**
Low	5745	16.3531	15.3623
Mid	5785	16.3531	15.2174
High	5825	16.3531	15.2174
Test mode: IEEE 802.11n HT20 mode			
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**6dB BW (MHz)**
Low	5745	17.5108	15.1449
Mid	5785	17.5108	15.2174
High	5825	17.5108	16.0870
Test mode: IEEE 802.11n HT40 mode			
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**6dB BW (MHz)**
Low	5755	35.8900	35.246
High	5795	35.8900	35.246

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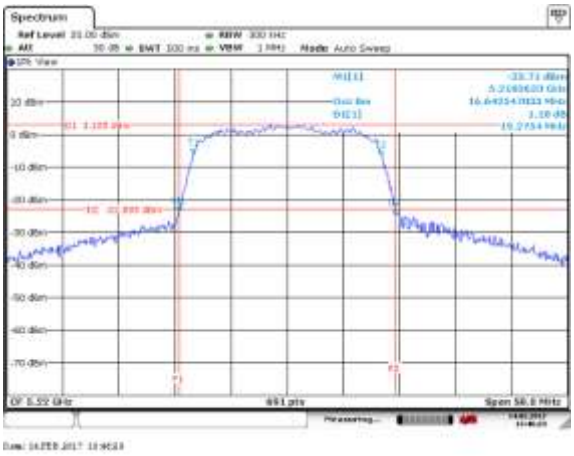
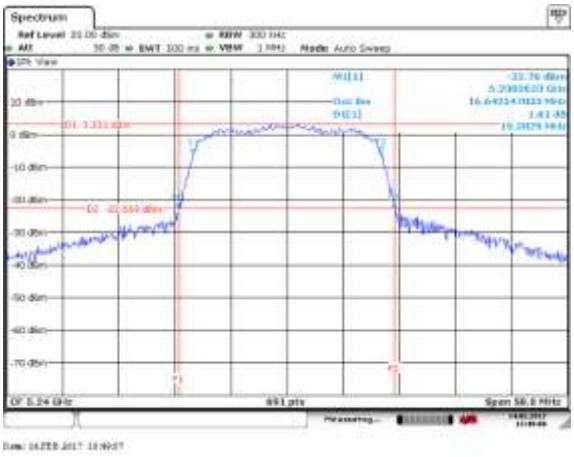
Test Data

UNII-1 IEEE 802.11a mode	
Low CH	**Mid CH**
	
High CH	
	

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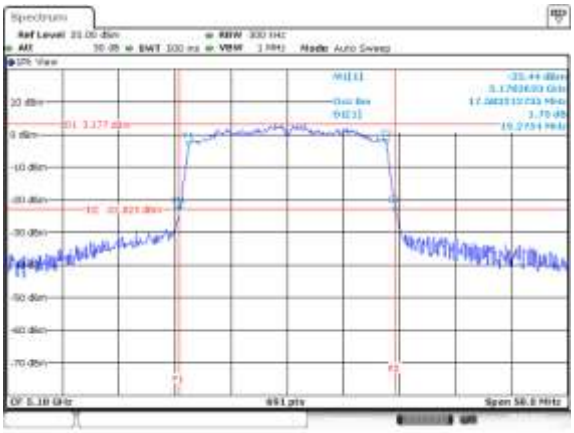
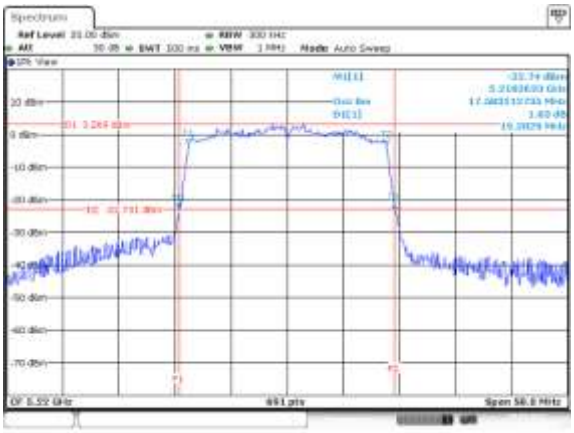
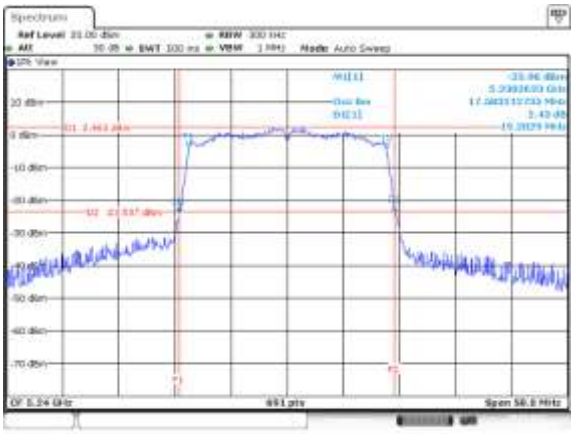
UNII-1 IEEE 802.11n HT20 mode	
Low CH	**Mid CH**
	
High CH	
	

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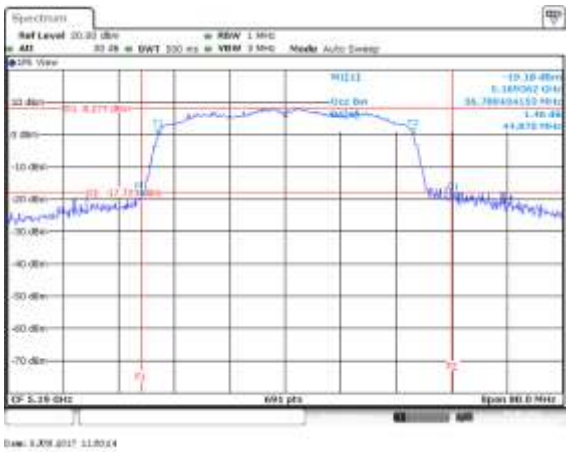
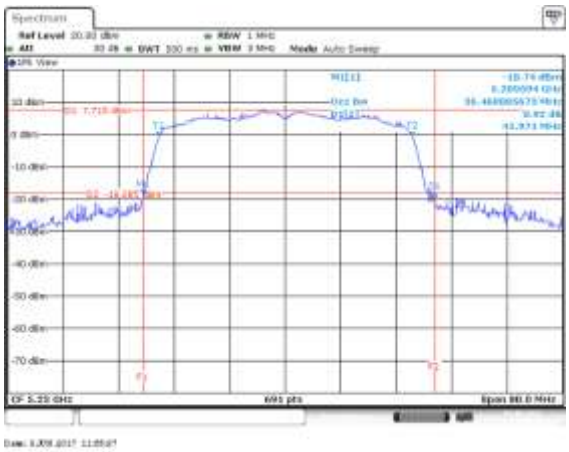
UNII-1 IEEE 802.11n HT40 mode	
Low CH	**High CH**
	

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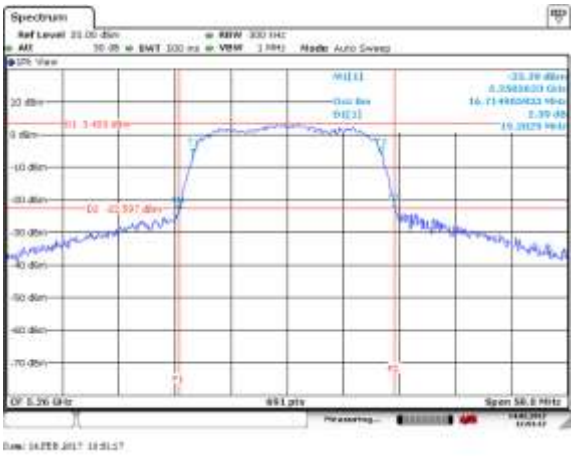
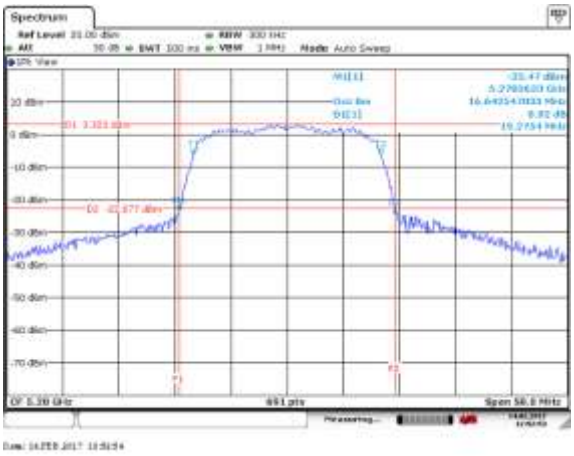
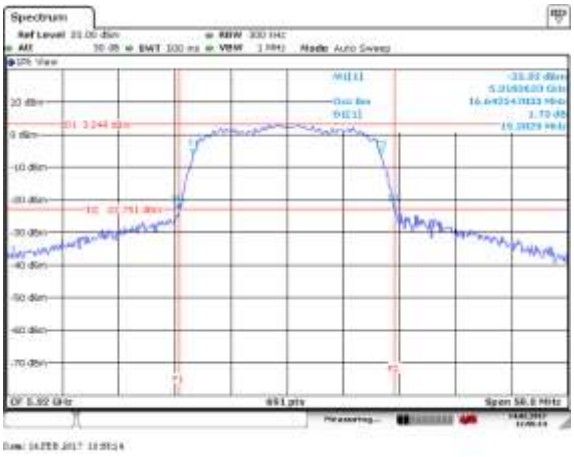
Test Data

UNII-2a IEEE 802.11a mode	
Low CH	**Mid CH**
	
High CH	
	

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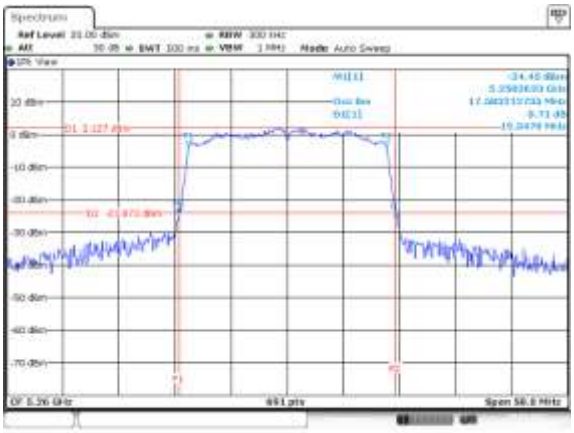
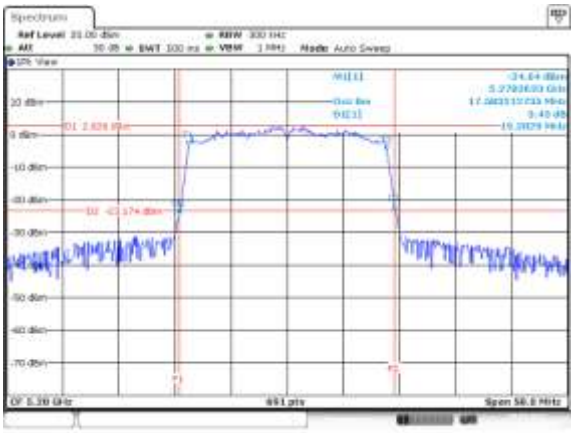
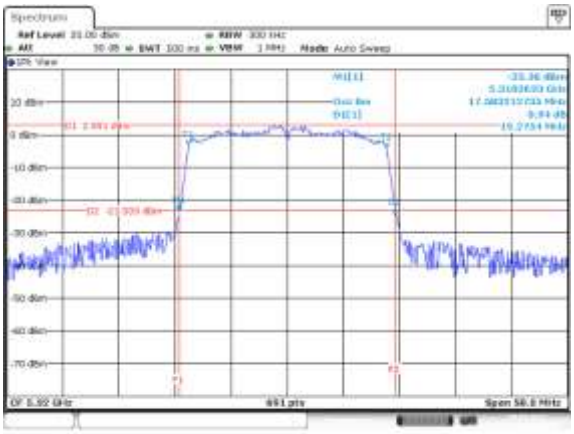
UNII-2a IEEE 802.11n HT20 mode	
Low CH	**Mid CH**
	
High CH	
	

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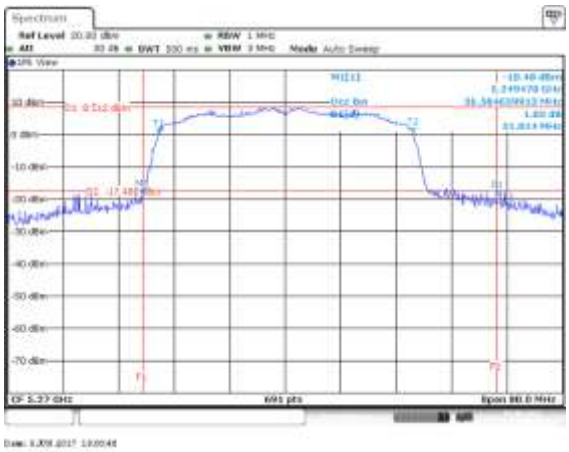
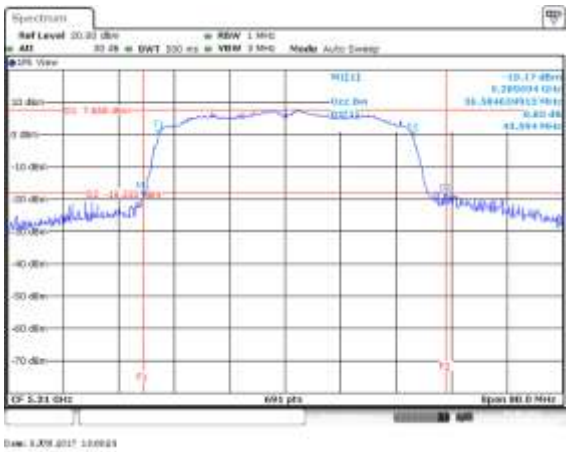
UNII-2a IEEE 802.11n HT40 mode	
Low CH	**High CH**
	

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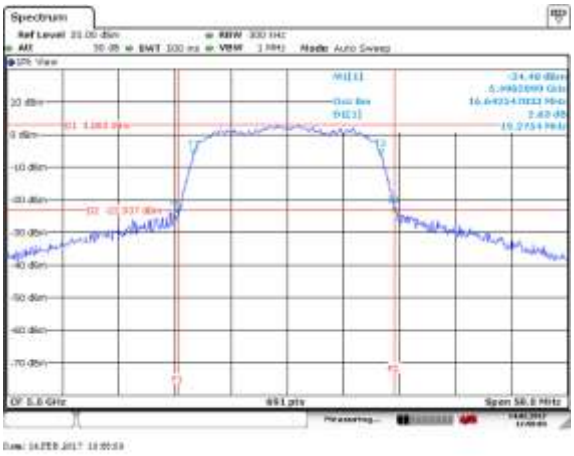
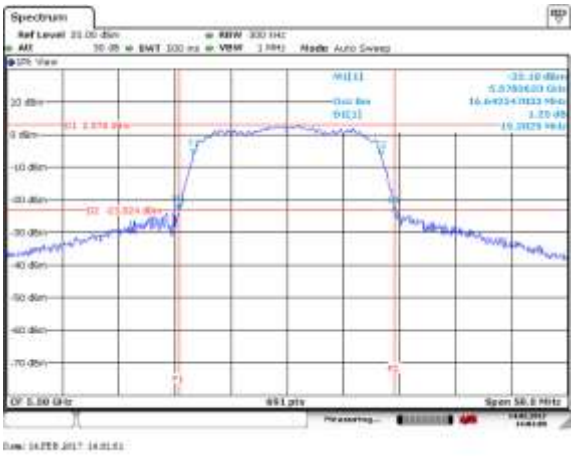
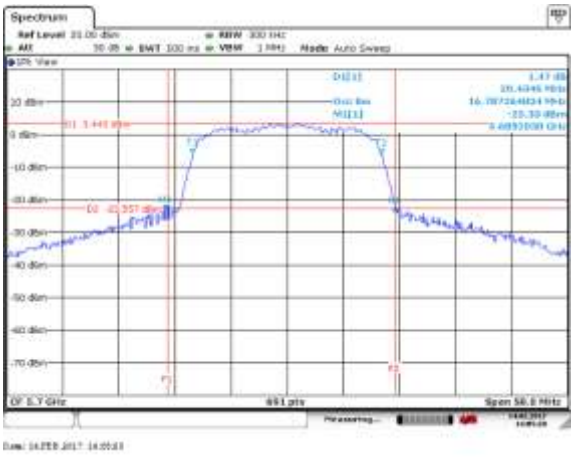
Test Data

UNII-2c IEEE 802.11a mode	
Low CH	**Mid CH**
	
High CH	
	

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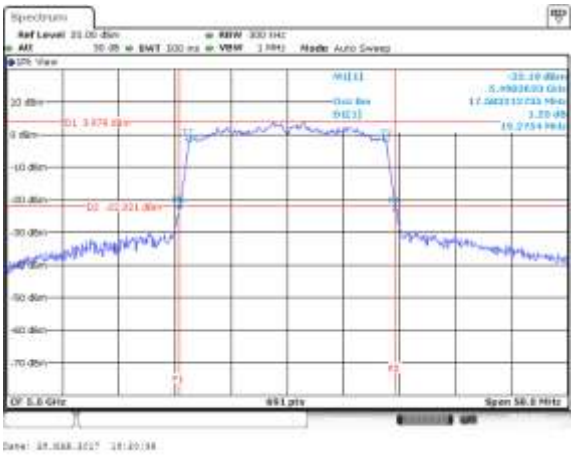
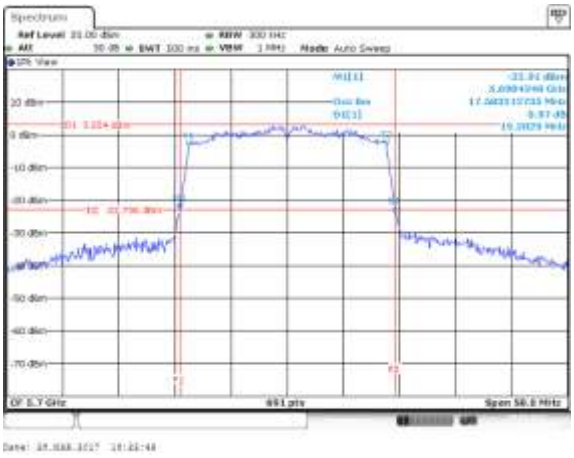
UNII-2c IEEE 802.11n HT20 mode	
Low CH	**Mid CH**
	
High CH	
	

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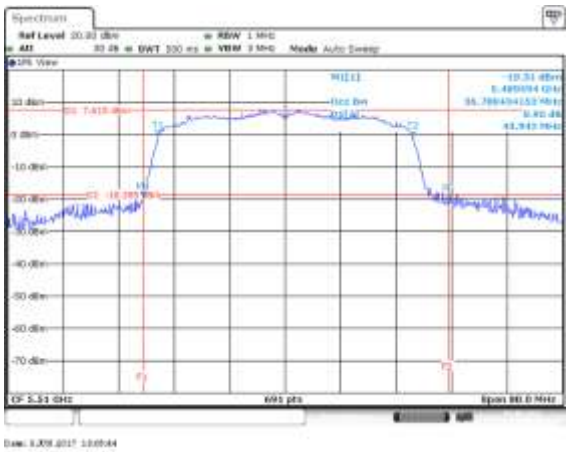
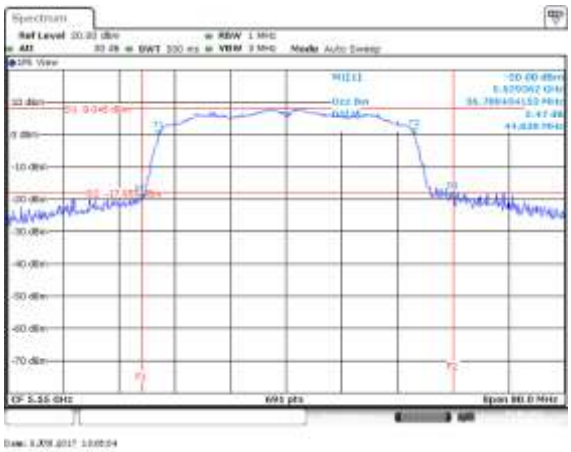
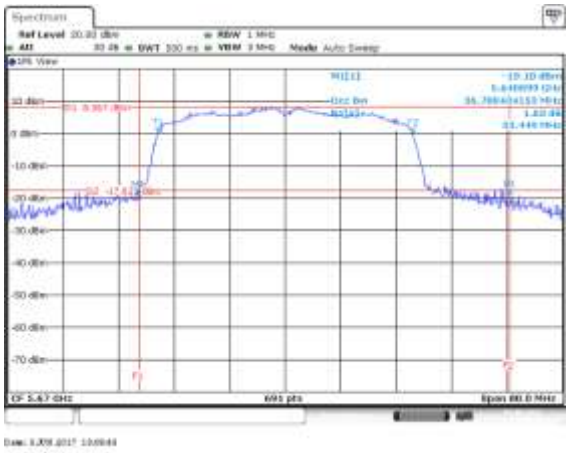
UNII-2c IEEE 802.11n HT40 mode	
Low CH	**Mid CH**
	
High CH	
	

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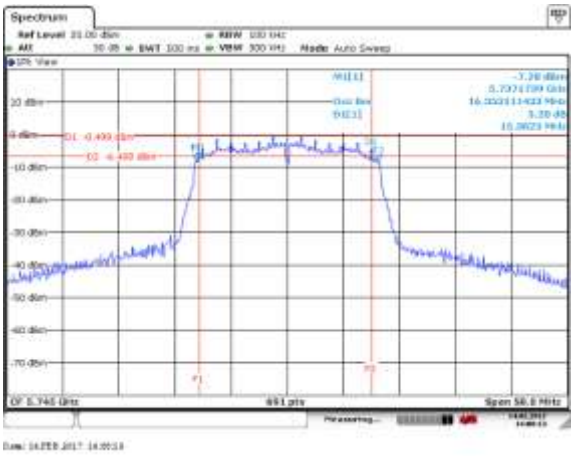
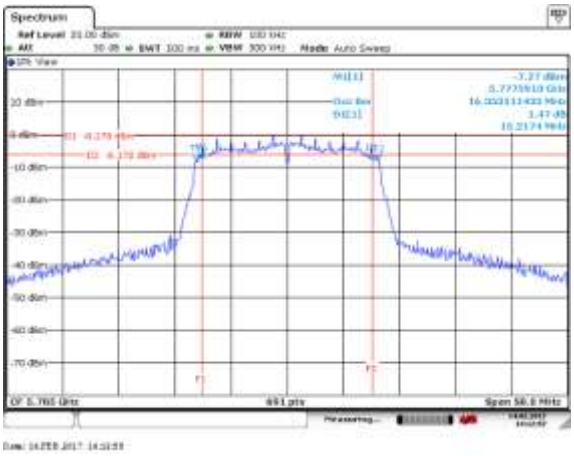
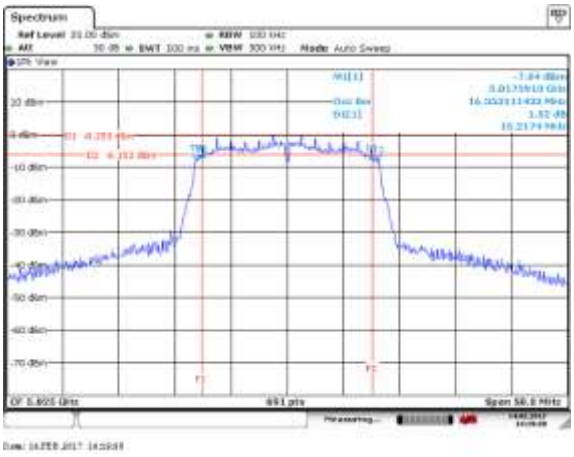
Test Data

UNII-3 IEEE 802.11a mode	
Low CH	**Mid CH**
	
High CH	
	

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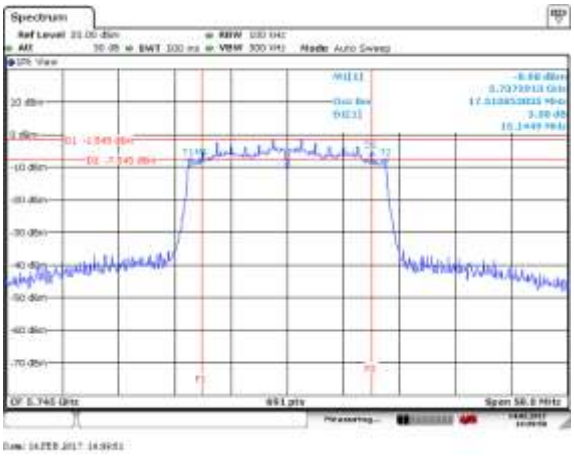
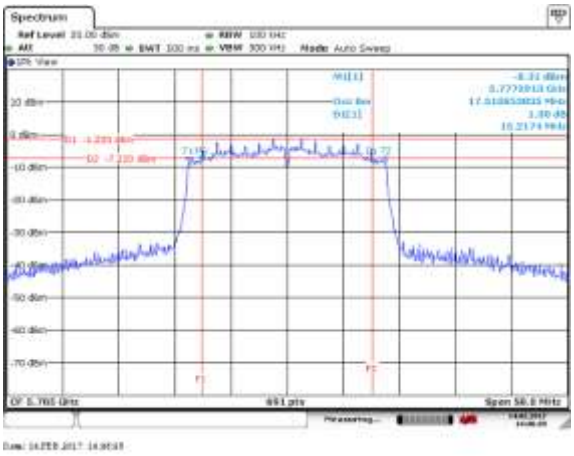
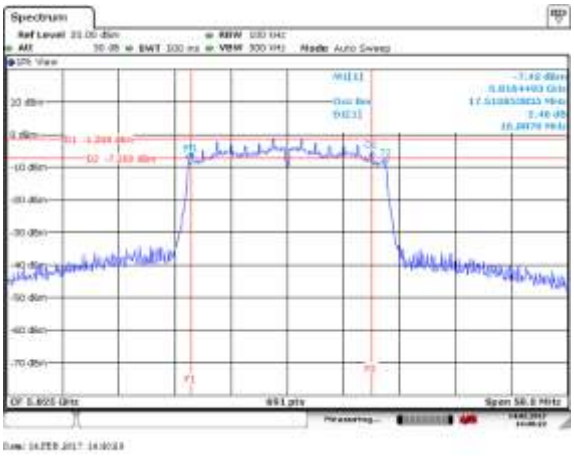
UNII-3 IEEE 802.11n HT20 mode	
Low CH	**Mid CH**
	
High CH	
	

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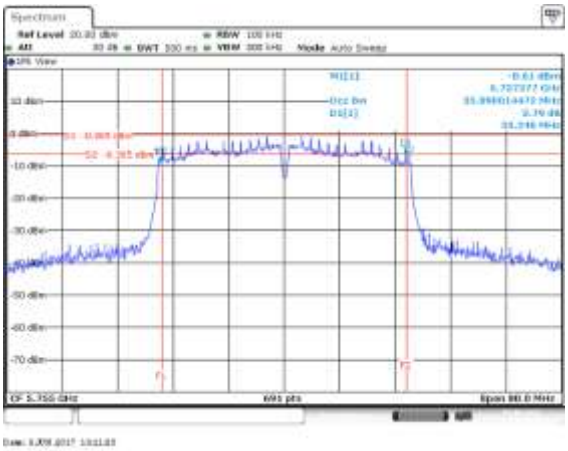
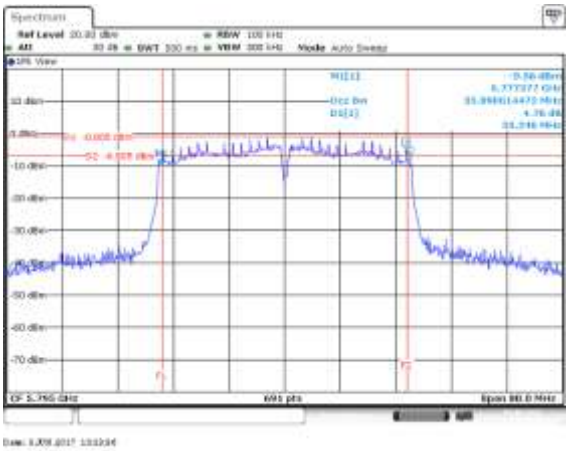
UNII-3 IEEE 802.11n HT40 mode	
Low CH	**High CH**
	

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4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.407 (a)(1), 15.407(a)(2) and 15.407(a)(3)

UNII-1 :

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW(24 dBm) and The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz ,provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

UNII-2a and 2c:

the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. and The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 Log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

UNII-3:

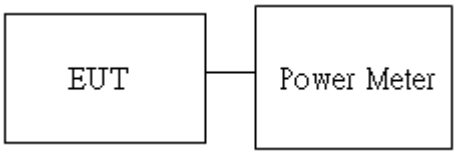
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.3.2 Test Procedure

Test method Refer as KDB 789033 D02 v01r03, Section E.3.b.

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 Average output power. in the test report.

4.3.3 Test Setup



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4.3.4 Test Result

Conducted output power：

UNII-1

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Low	5180	***10.95**	0.0124	24.00
Mid	5220	10.67	0.0117	24.00
High	5240	10.50	0.0112	24.00

Test mode: IEEE 802.11n HT 20 MHz mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Low	5180	10.61	0.0115	24.00
Mid	5220	***10.74**	0.0119	24.00
High	5240	10.47	0.0111	24.00

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Low	5190	***10.48**	0.0112	24.00
High	5230	10.43	0.0110	24.00

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UNII-2a

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Low	5260	10.71	0.0118	24.00
Mid	5280	***10.75**	0.0119	24.00
High	5320	10.50	0.0112	24.00

Test mode: IEEE 802.11n HT 20 MHz mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Low	5260	10.43	0.0110	24.00
Mid	5280	***10.45**	0.0111	24.00
High	5320	10.33	0.0108	24.00

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Low	5270	***10.49**	0.0112	24.00
High	5310	10.43	0.0110	24.00

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UNII-2c

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Low	5500	10.54	0.0113	24.00
Mid	5580	***10.81**	0.0121	24.00
High	5700	10.69	0.0117	24.00

Test mode: IEEE 802.11n HT 20 MHz mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Low	5500	10.12	0.0103	24.00
Mid	5580	***10.37**	0.0109	24.00
High	5700	10.37	0.0109	24.00

Test mode: IEEE 802.11n HT 20 MHz mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Low	5510	***10.47**	0.0111	24.00
Mid	5550	10.46	0.0111	24.00
High	5670	10.45	0.0111	24.00

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UNII-3

Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Low	5745	***10.77**	0.0119	30.00
Mid	5785	10.63	0.0116	30.00
High	5825	10.61	0.0115	30.00

Test mode: IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Low	5745	***10.64**	0.0116	30.00
Mid	5785	10.49	0.0112	30.00
High	5825	10.38	0.0109	30.00

Test mode: IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Low	5755	***10.48**	0.0112	30.00
High	5795	10.46	0.0111	30.00

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4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.407 (a)(1), 15.407(a)(2) and 15.407(a)(3)

UNII-1 :

The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

UNII-2a and 2c:

The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

UNII-3:

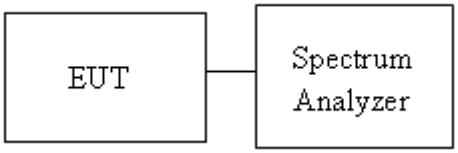
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.i.

4.4.2 Test Procedure

Test method Refer as KDB 789033 D02 v01r03, Section F

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. UNII-1, UNII-2a and UNII-2c, SA set RBW = 1MHz, VBW = 3MHz and Detector = RMS, to measurement Power Density.
4. UNII-3, SA set RBW = 500kHz, VBW = 2MHz and Detector = RMS, to measurement Power Density
5. The path loss and Duty Factor were compensated to the results for each measurement by SA.
6. Mark the maximum level.
7. Measure and record the result of power spectral density. in the test report.

4.4.3 Test Setup



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4.4.4 Test Result

UNII-1 5150-5250 MHz			
Test mode: IEEE 802.11a mode			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	5180	1.74	11
Mid	5220	1.43	
High	5240	1.52	
Test mode: IEEE 802.11n HT20 mode			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	5180	0.30	11
Mid	5220	0.17	
High	5240	0.32	
Test mode: IEEE 802.11n HT40 mode			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	5190	0.28	11
High	5230	-0.58	

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UNII-2a 5250-5350 MHz			
Test mode: IEEE 802.11a mode			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	5260	1.61	30
Mid	5280	1.52	
High	5320	1.55	
Test mode: IEEE 802.11n HT20 mode			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	5260	0.24	30
Mid	5280	-0.01	
High	5320	0.03	
Test mode: IEEE 802.11n HT40 mode			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	5270	0.43	30
High	5310	-0.30	

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UNII-2c 5470-5725 MHz			
Test mode: IEEE 802.11a mode			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	5500	1.39	11
Mid	5580	1.24	
High	5700	1.93	
Test mode: IEEE 802.11n HT20 mode			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	5500	-0.42	11
Mid	5580	-0.49	
High	5700	-0.08	
Test mode: IEEE 802.11n HT40 mode			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	5510	-0.50	11
Mid	5550	0.10	
High	5670	0.17	

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UNII-3 5725-5825 MHz			
Test mode: IEEE 802.11a mode			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	5745	8.09	30
Mid	5785	8.17	
High	5825	8.38	
Test mode: IEEE 802.11n HT20 mode			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	5745	6.02	30
Mid	5785	6.04	
High	5825	6.14	
Test mode: IEEE 802.11n HT40 mode			
Channel	**Frequency (MHz)**	**PPSD (dBm)**	**Limit (dBm)**
Low	5755	-2.70	30
High	5795	-3.05	

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Test Data

UNII-1 IEEE 802.11a mode	
Low CH	**Mid CH**
High CH	

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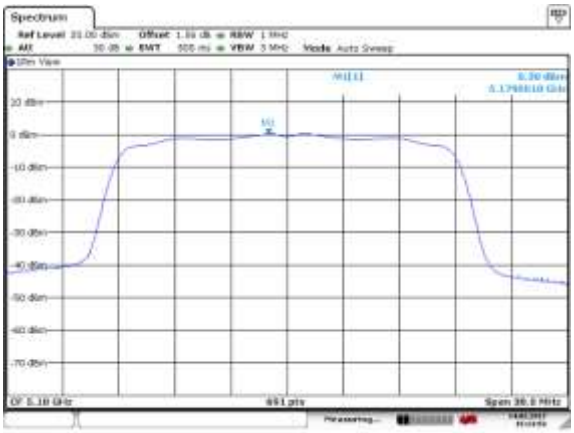
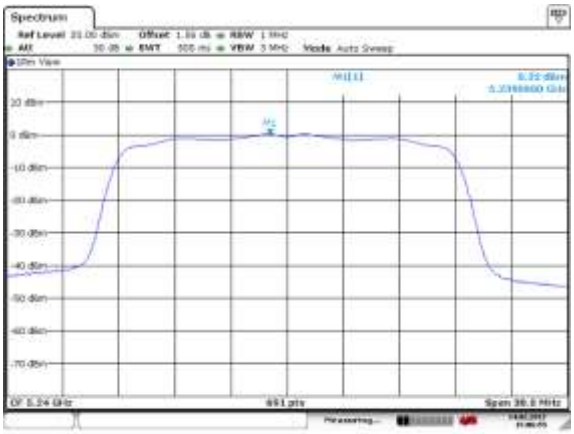
UNII-1 IEEE 802.11n HT20 mode	
Low CH	**Mid CH**
	
High CH	
	

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UNII-1 IEEE 802.11n HT40 mode	
Low CH	**High CH**

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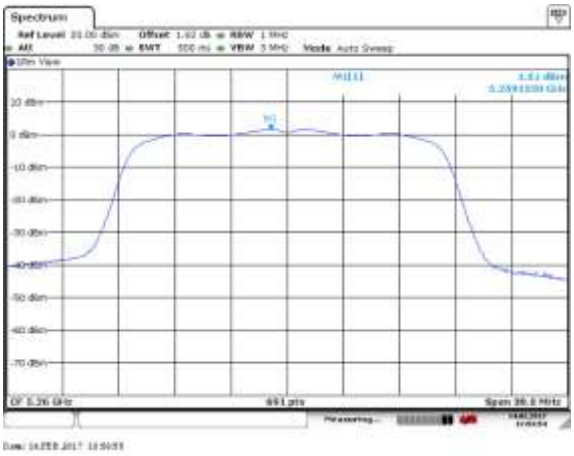
Test Data

UNII-2a IEEE 802.11a mode	
Low CH	**Mid CH**
	
High CH	

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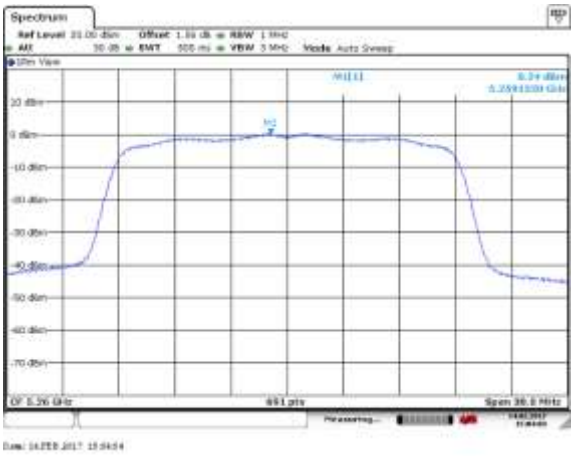
UNII-2a IEEE 802.11n HT20 mode	
Low CH	**Mid CH**
	
High CH	

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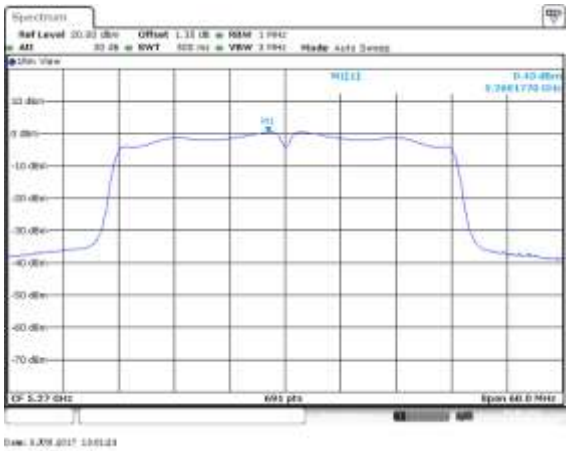
UNII-2a IEEE 802.11n HT40 mode	
Low CH	**High CH**
	

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Test Data

UNII-2c IEEE 802.11a mode	
Low CH	**Mid CH**
High CH	

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UNII-2c IEEE 802.11n HT20 mode	
Low CH	**Mid CH**
High CH	

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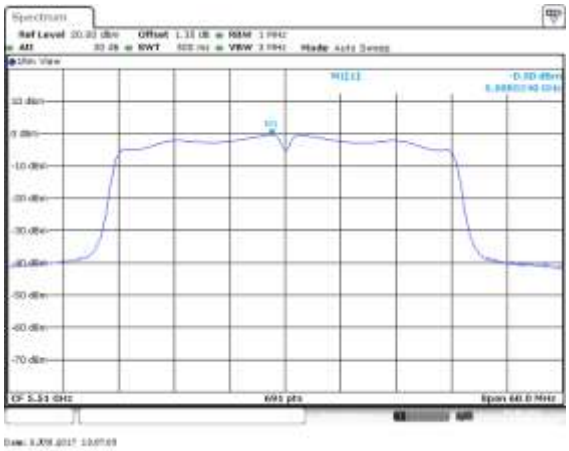
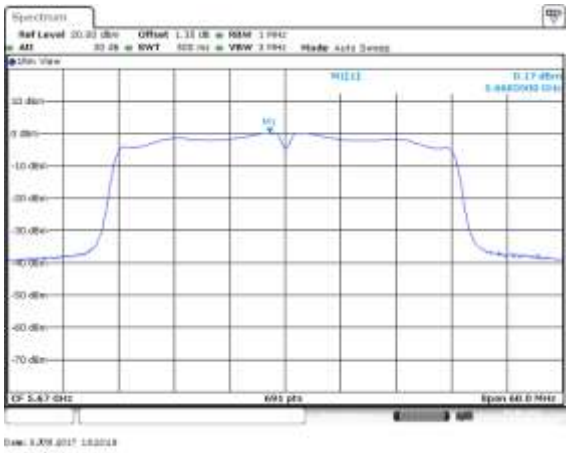
UNII-2c IEEE 802.11n HT40 mode	
Low CH	**Mid CH**
	
High CH	
	

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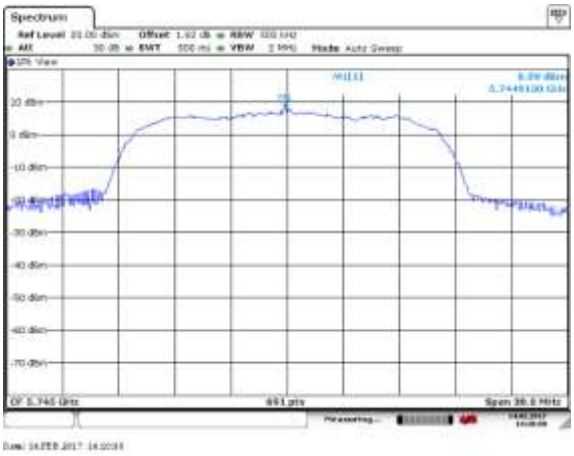
Test Data

UNII-3 IEEE 802.11a mode	
Low CH	**Mid CH**
	
High CH	

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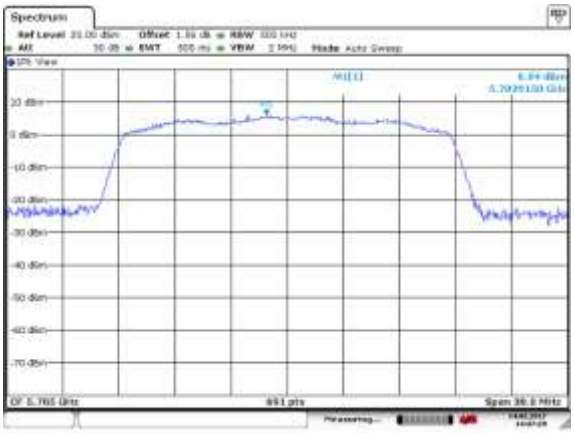
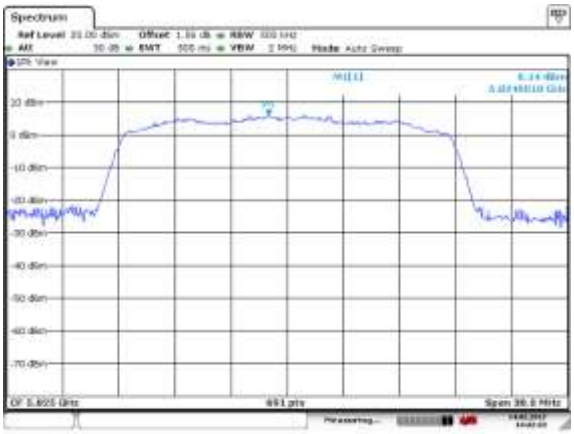
UNII-3 IEEE 802.11n HT20 mode	
Low CH	**Mid CH**
	
High CH	
	

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UNII-3 IEEE 802.11n HT40 mode	
Low CH	**High CH**

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4.5 RADIATION BANDEDGE AND SPURIOUS EMISSION

4.5.1 Test Limit

FCC according to §15.407, §15.209 and §15.205,

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 (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

UNII-1 :

For transmitters operating in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. However, any unwanted emissions that fall into the band 5250-5350 MHz must be 26 dBc, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth, above 5.25 GHz. Otherwise, the transmission is considered as intentional and the devices shall implement dynamic frequency selection (DFS) and transmitter power control (TPC) as per the requirements for the band 5250-5350 MHz

UNII-2a and 2c :

For devices with operating frequencies in the band 5250-5350 MHz but having a channel bandwidth that overlaps the band 5150-5250 MHz, the devices' unwanted emission shall not exceed -27 dBm/MHz e.i.r.p. outside the band 5150-5350 MHz and its power shall comply with the spectral power density for operation within the band 5150-5250 MHz. The device shall be labelled "for indoor use only." Emissions outside the band 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p.

UNII-3:

For the band 5725-5850 MHz, emissions at frequencies from the band edges to 10 MHz above or below the band edges shall not exceed -17 dBm/MHz e.i.r.p.

For emissions at frequencies more than 10 MHz above or below the band edges, the emissions power shall not exceed -27 dBm/MHz

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 937606.

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4.5.2 Test Procedure

Test method Refer as KDB 789033 D02 v01r03, Section G.3, G.4, G.5, and G.6,.

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 ≥ 3*RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2) Above 1G：

(2.1) For Peak measurement：RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2.2) For Average measurement：RBW = 1MHz, VBW

˙If Duty Cycle ≥ 98%, VBW=10Hz.

˙If Duty Cycle < 98%, VBW≥1/T.

Configuration	Duty Cycle (%)	TX ON (ms)	1/T(kHz)	VBW
802.11a	86%	0.3000	3.333	3.6KHz
802.11n HT20	81%	0.2600	3.846	3.9KHz
802.11n HT40	91%	0.6700	1.493	1.5KHz

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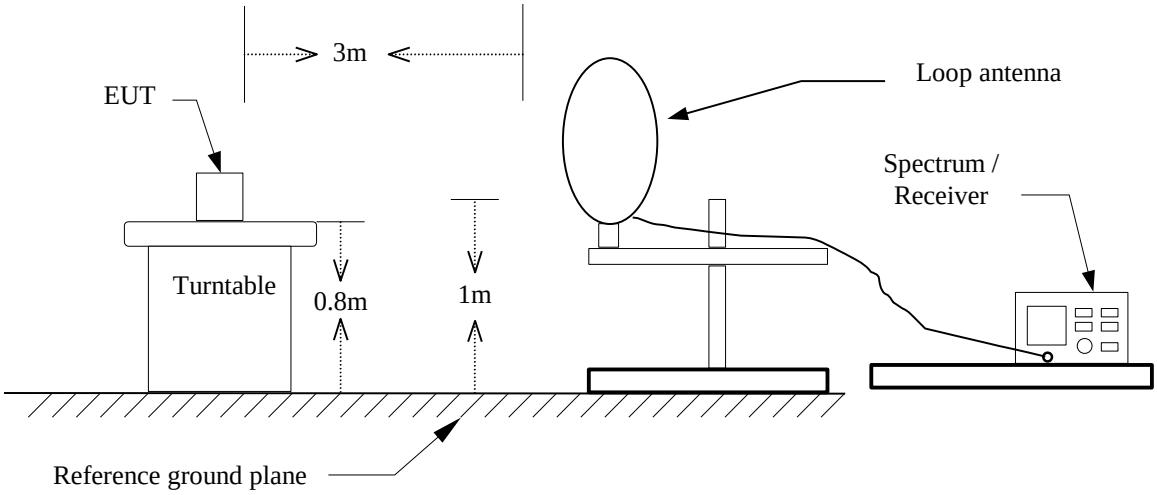
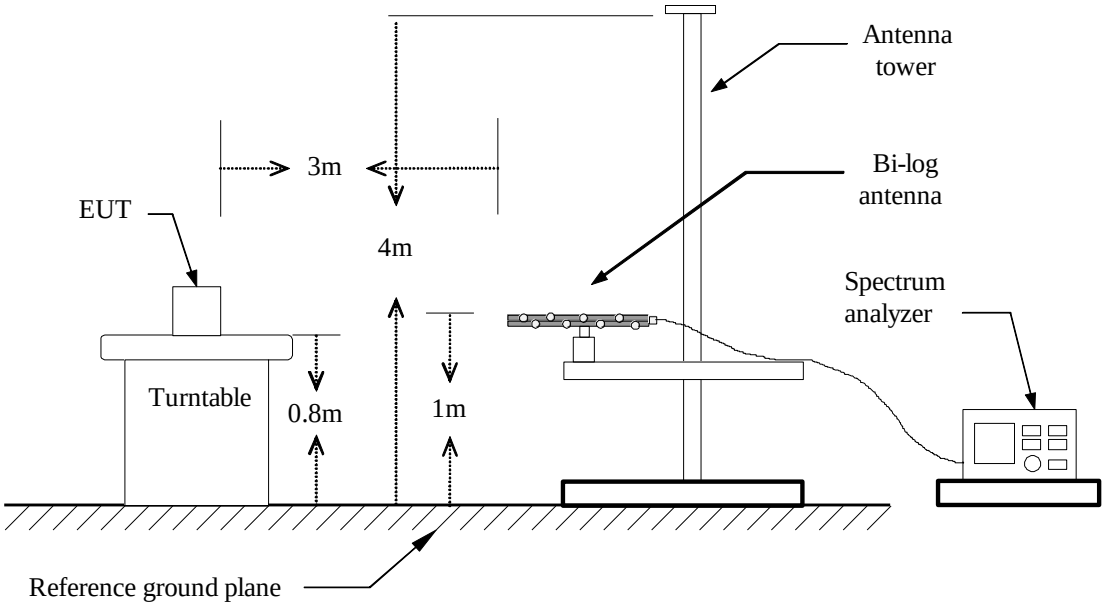
4.5.3 Test Setup

9kHz ~ 30MHz



30MHz ~ 1GHz



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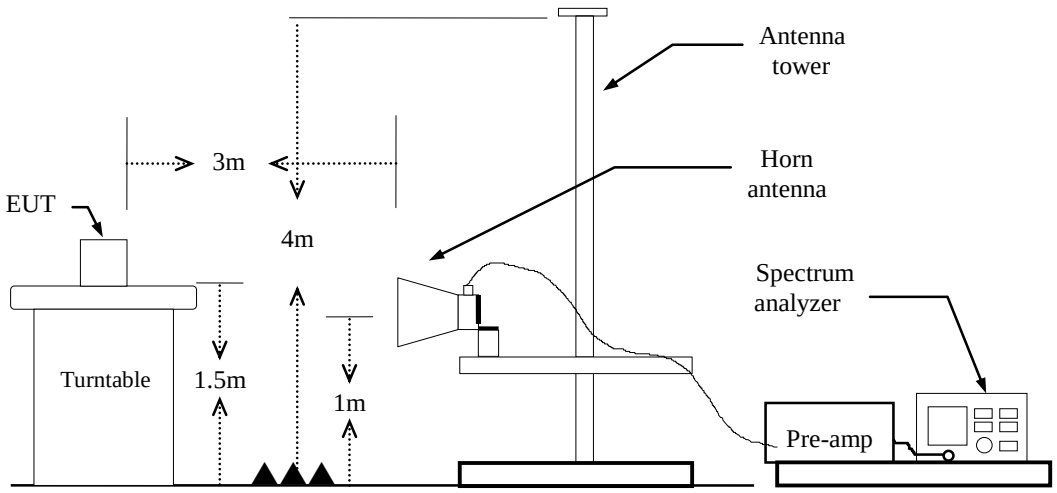
Above 1 GHz



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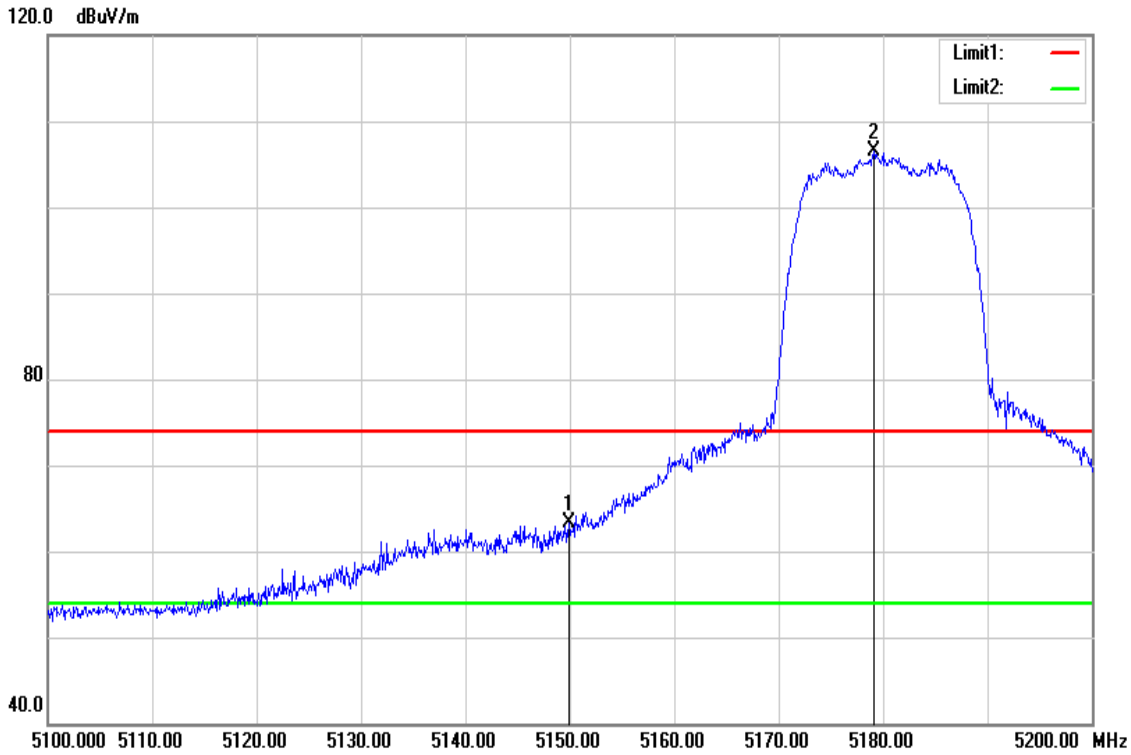
4.5.4 Test Result

Test Data

Band Edge Test Data for UNII-1

Test Mode	IEEE 802.11a Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.900	60.17	3.04	63.21	74.00	-10.79	peak
5179.100	102.69	3.88	106.57	-	-	peak

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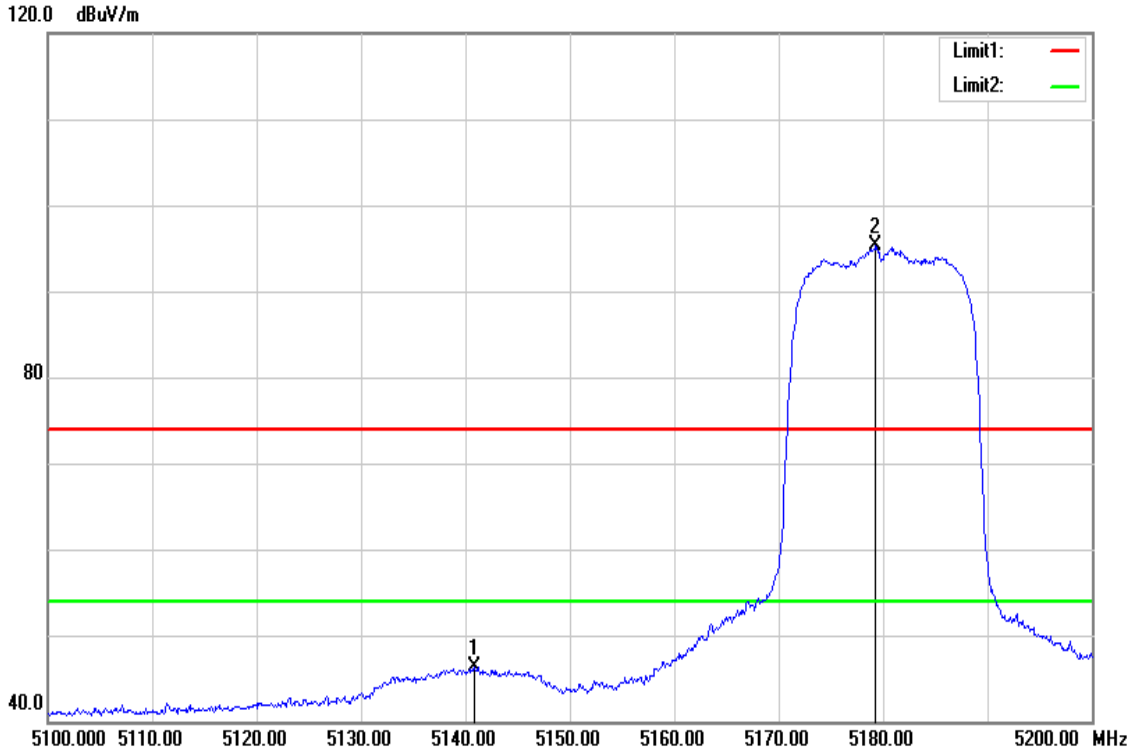
Test Mode	IEEE 802.11a Low CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5140.800	43.40	2.98	46 38	54.00	-7.62	AVG
5179.300	91.34	3.89	95.23	-	-	AVG

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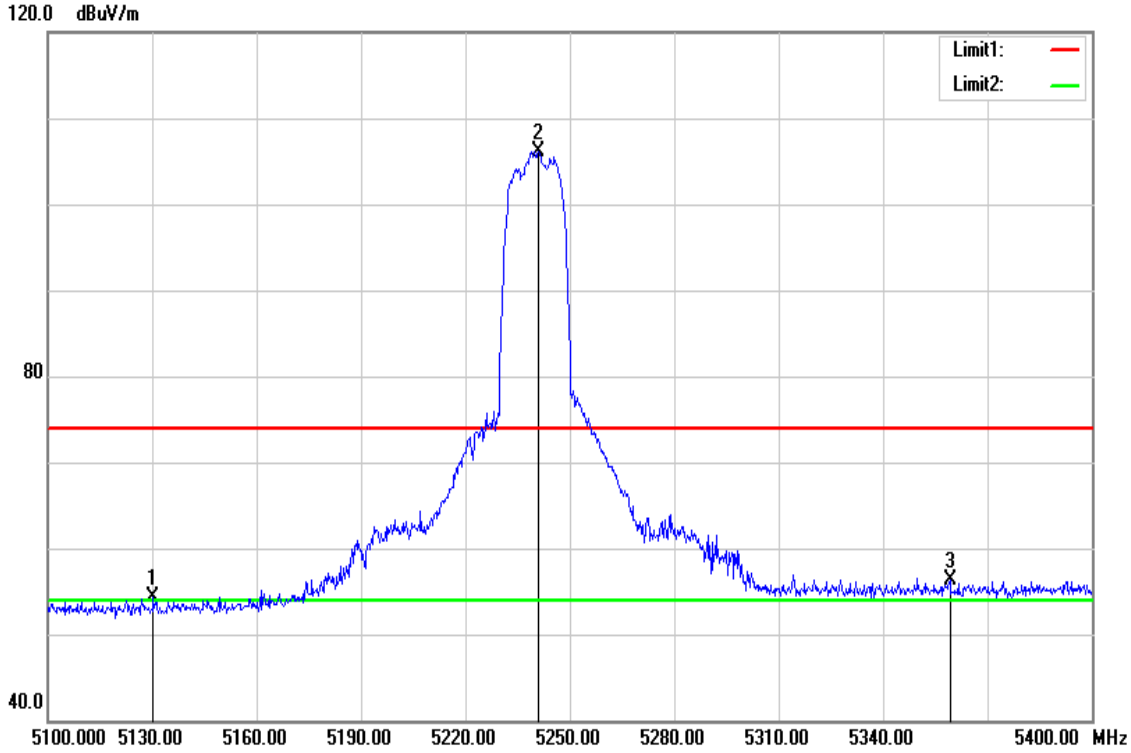
Test Mode	IEEE 802.11a High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (d uV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5130.300	51.49	2.91	54.40	74.00	-19.60	peak
5241.000	101.52	4.63	106.15	-	-	peak
5359.200	50.82	5.39	56.21	74.00	-17.79	peak

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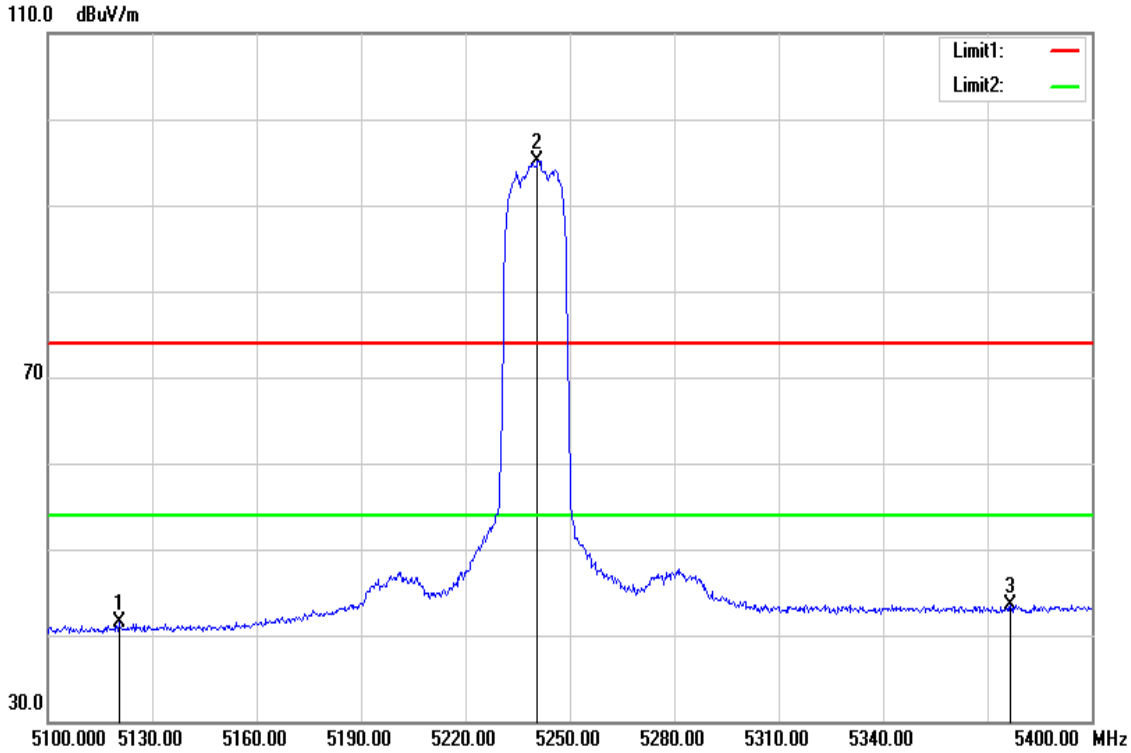
Test Mode	IEEE 802.11a High CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5120.400	38.57	2.84	41.41	54.00	-12.59	AVG
5240.700	90.53	4.63	95.16	-	-	AVG
5376.600	37.99	5.53	43.52	54.00	-10.48	AVG

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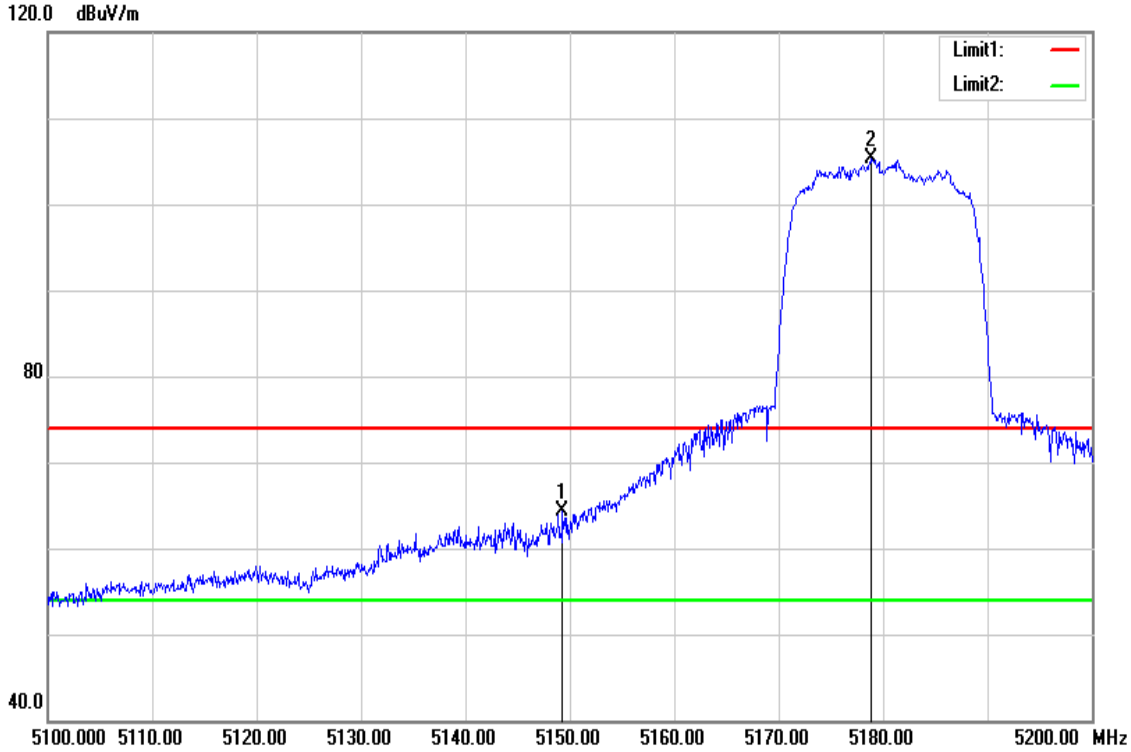
Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.300	61.23	3.04	64.27	74.00	-9.73	peak
5178.900	101.35	3.88	105.23	-	-	peak

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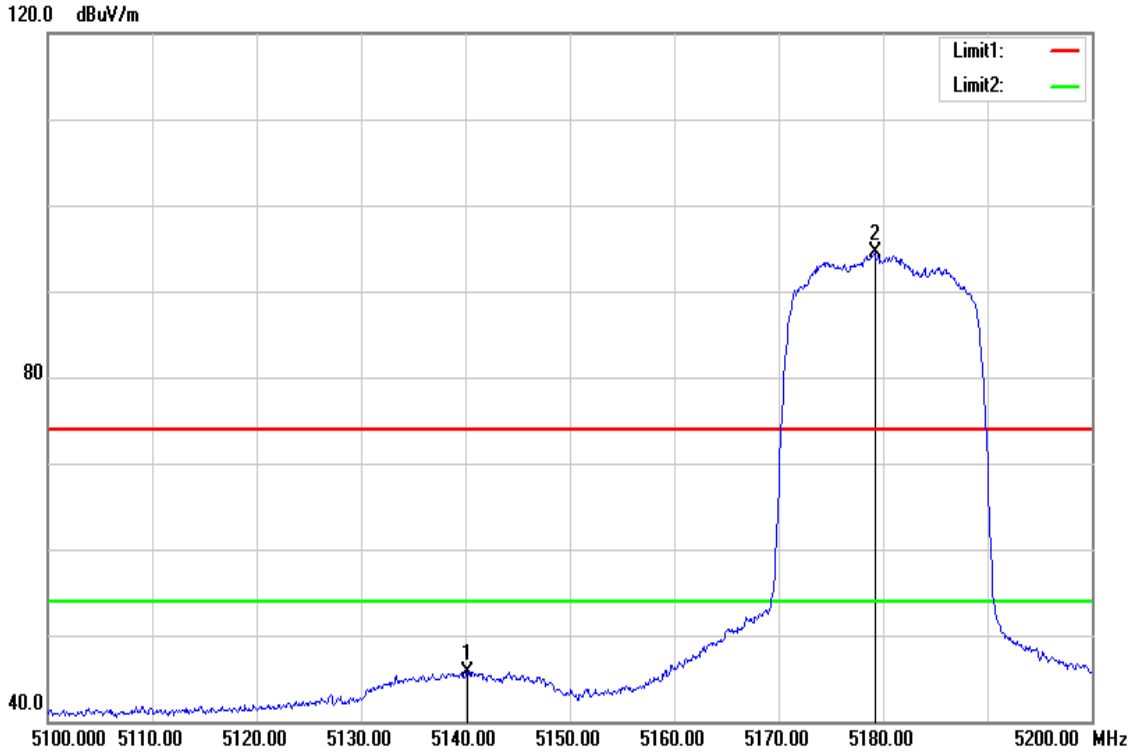
Test Mode	IEEE 802.11n HT20 Low CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5140.200	42.82	2.97	45.79	54.00	-8.21	AVG
5179.200	90.65	3.89	94.54	-	-	AVG

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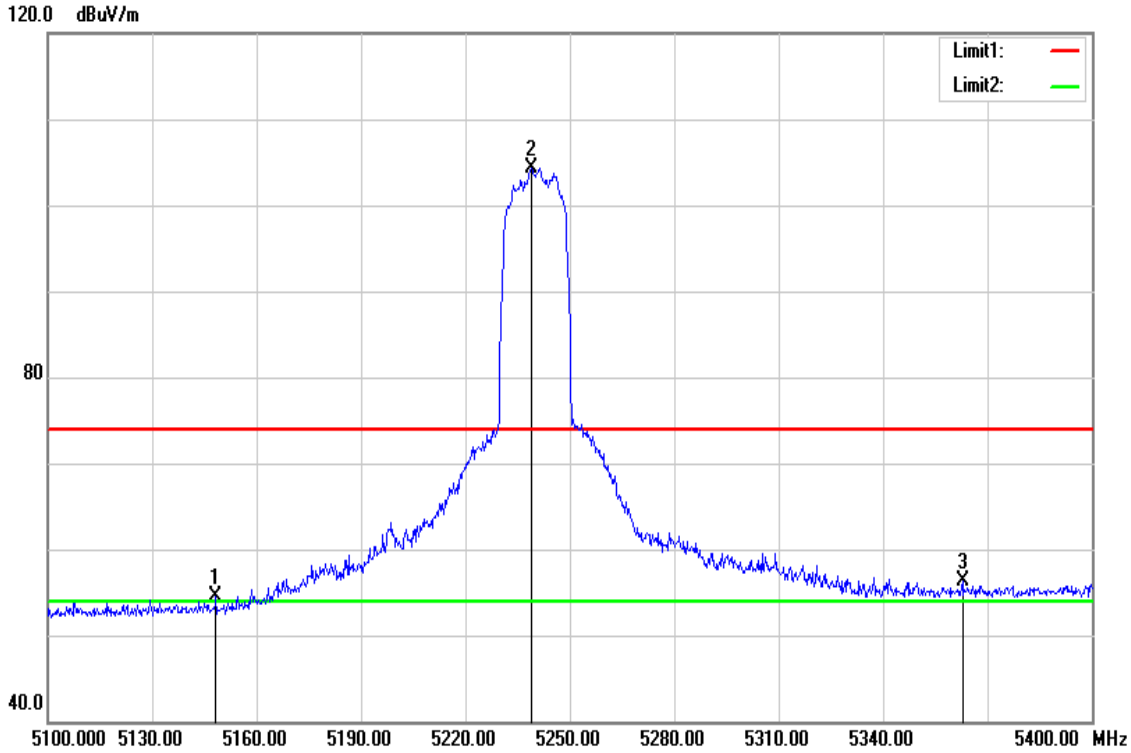
Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5148.300	51.45	3.03	54.48	74.00	-19.52	peak
5238.900	99.67	4.62	104.29	-	-	peak
5362.800	50.82	5.41	56.23	74.00	-17.77	peak

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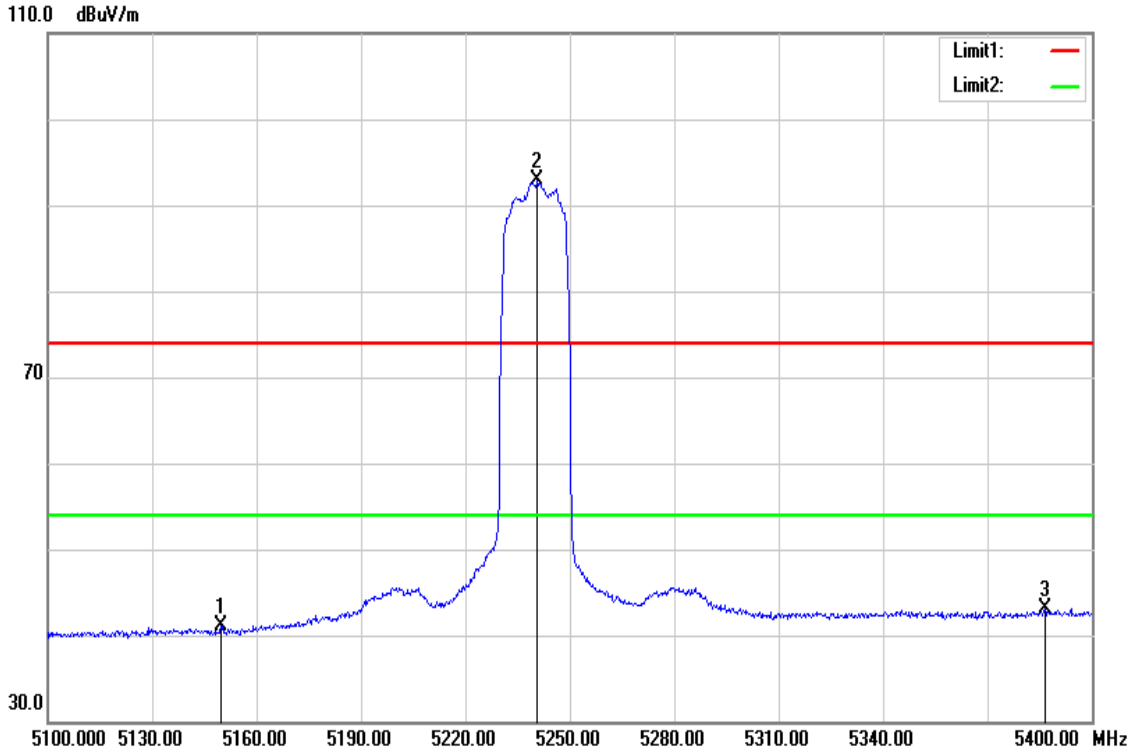
Test Mode	IEEE 802.11n HT20 High CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.800	38.04	3.04	41.08	54.00	-12.92	AVG
5240.700	88.21	4.63	92.84	-	-	AVG
5386.500	37.49	5.61	43.10	54.00	-10.90	AVG

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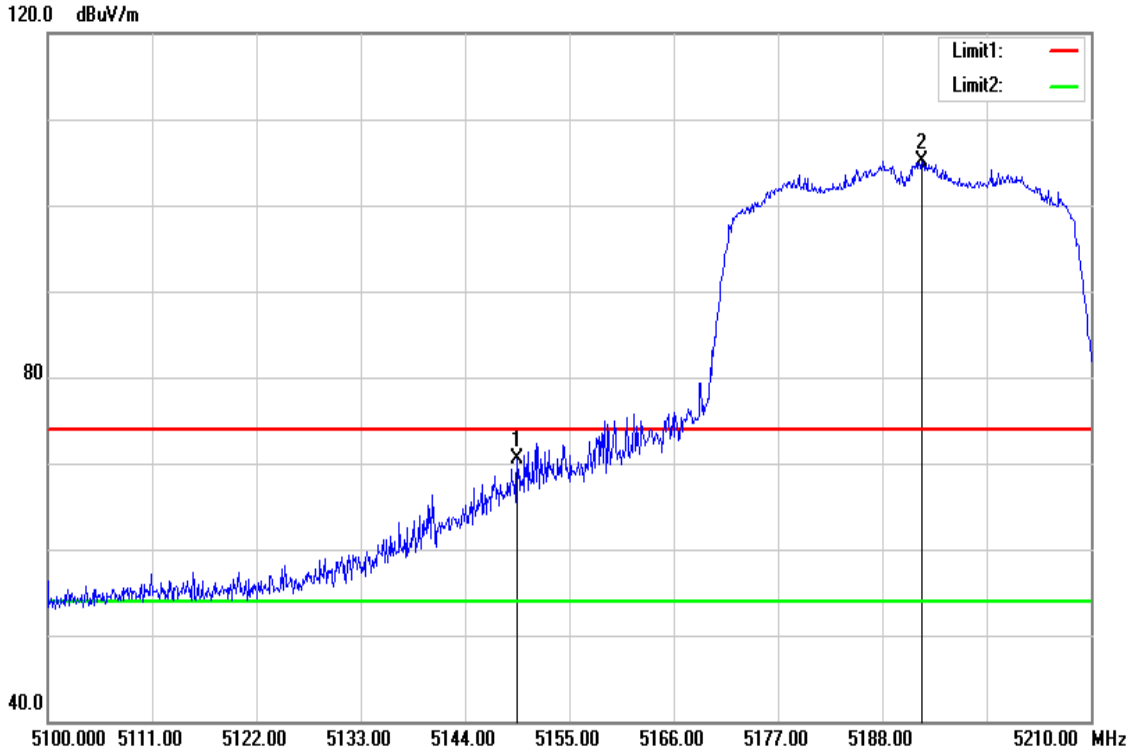
Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.500	67.38	3.04	70.42	74.00	-3.58	peak
5192.180	100.84	4.26	105.10	-	-	peak

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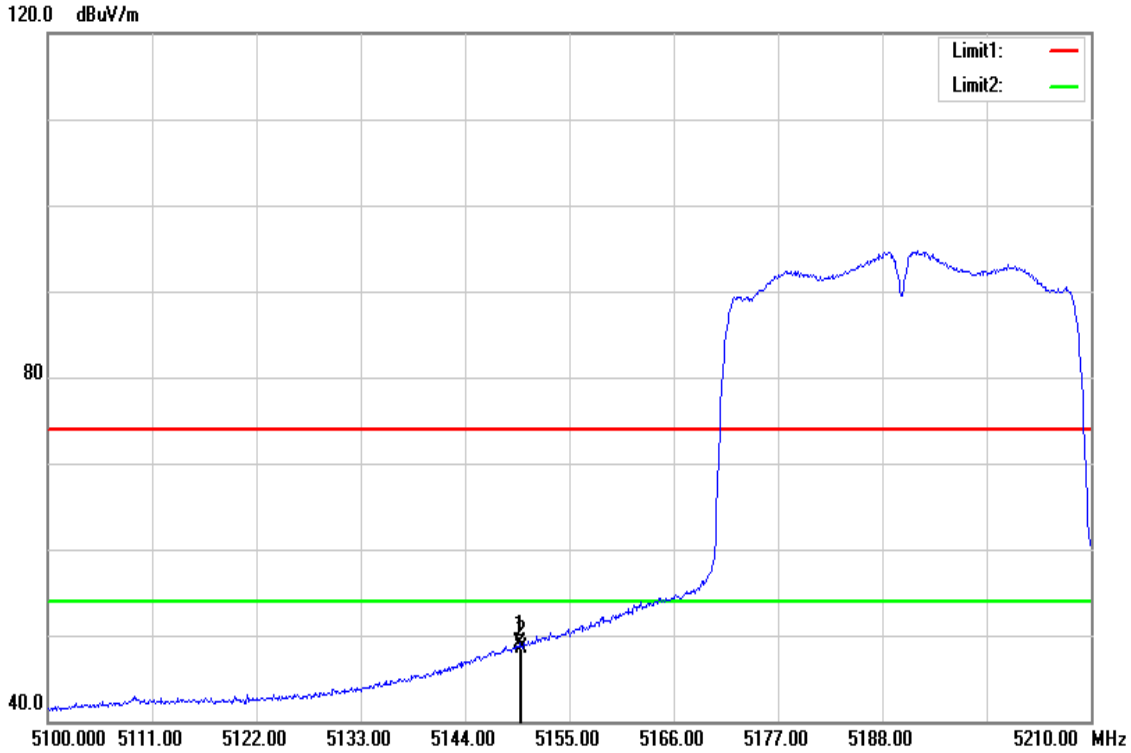
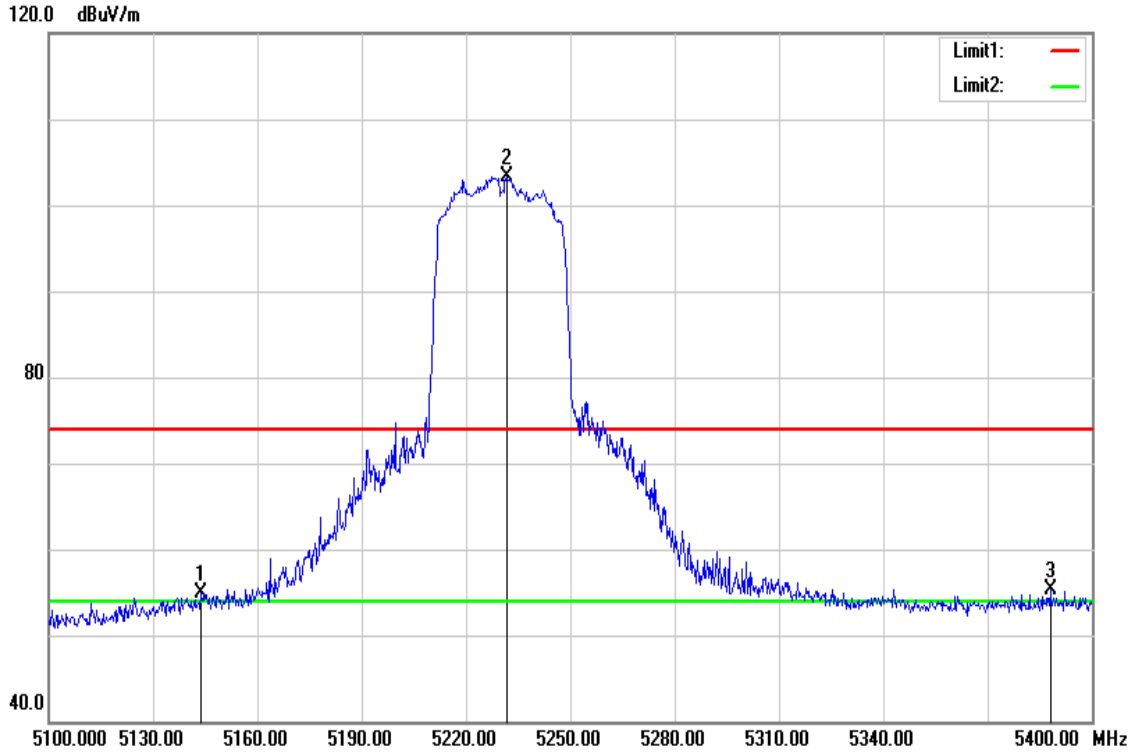
Test Mode	IEEE 802.11n HT40 Low CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.830	45.97	3.04	49.01	54.00	-4.99	AVG
5150.000	45.52	3.04	48.56	54.00	-5.44	AVG

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5143.800	51.95	3.00	54.95	74.00	-19.05	peak
5231.700	98.78	4.60	103.38	-	-	peak
5388.000	49.65	5.62	55.27	74.00	-18.73	peak

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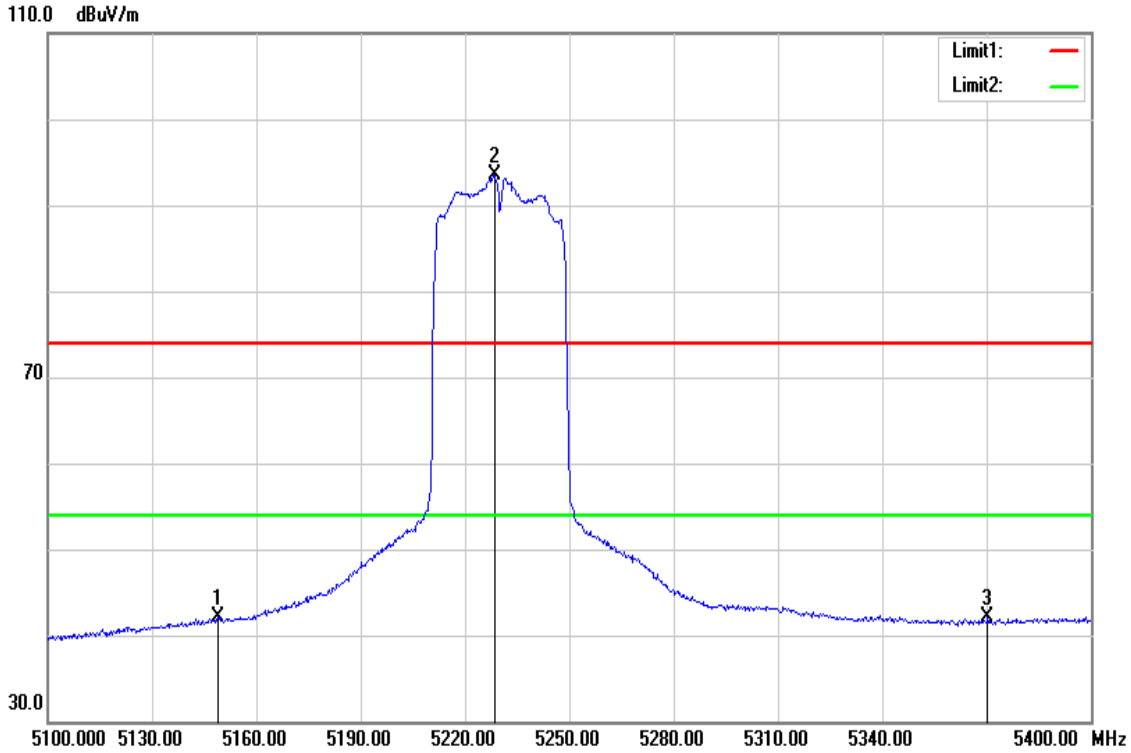
Test Mode	IEEE 802.11n HT40 High CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5148.900	39.01	3.03	42.04	54.00	-11.96	AVG
5228.400	88.85	4.59	93.44	-	-	AVG
5370.300	36.59	5.48	42.07	54.00	-11.93	AVG

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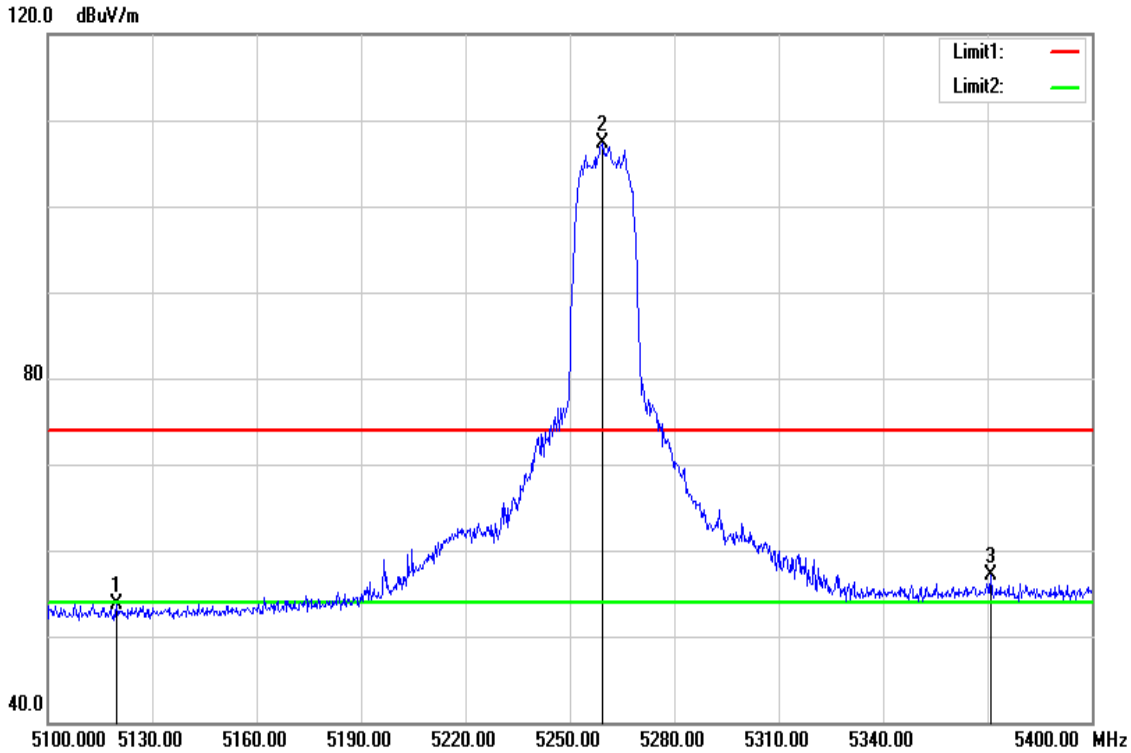
Test Data

Band Edge Test Data for UNII-2a

Test Mode	IEEE 802.11a Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5119.800	50.83	2.83	53.66	74.00	-20.34	peak
5259.300	102.67	4.69	107.36	-	-	peak
5370.900	51.60	5.48	57.08	74.00	-16.92	peak

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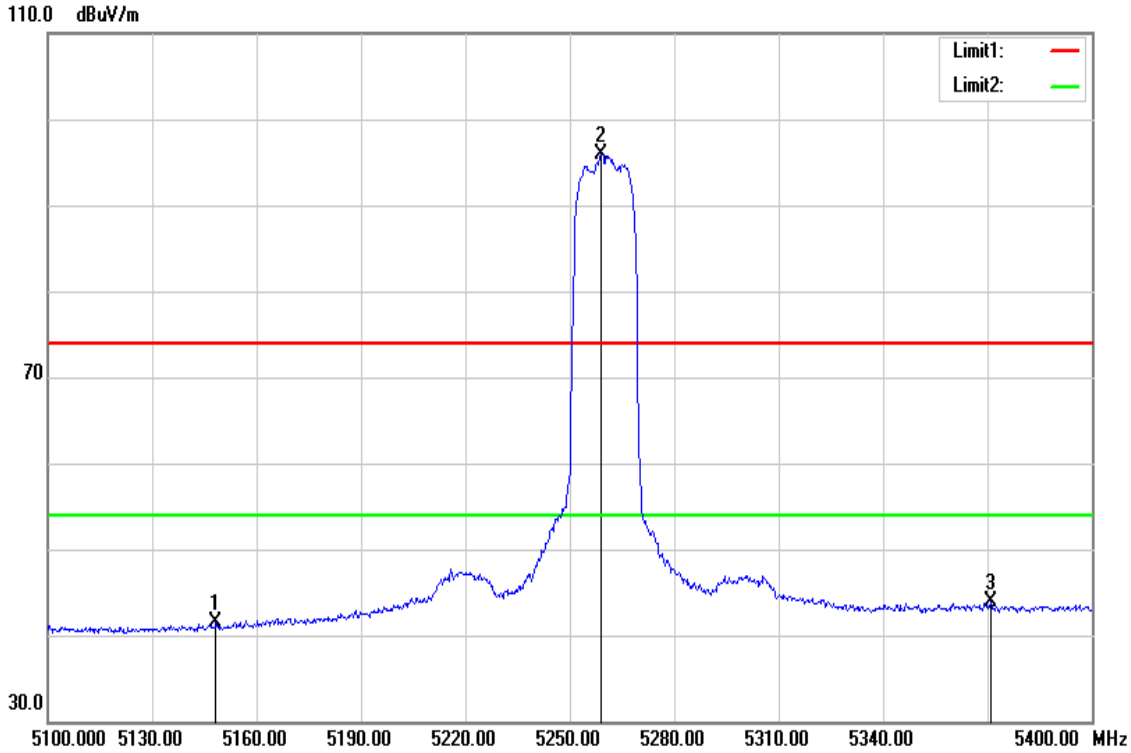
Test Mode	IEEE 802.11a Low CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5148.300	38.56	3.03	41.59	54.00	-12.41	AVG
5259.000	91.21	4.69	95.90	-	-	AVG
5370.900	38.43	5.48	43.91	54.00	-10.09	AVG

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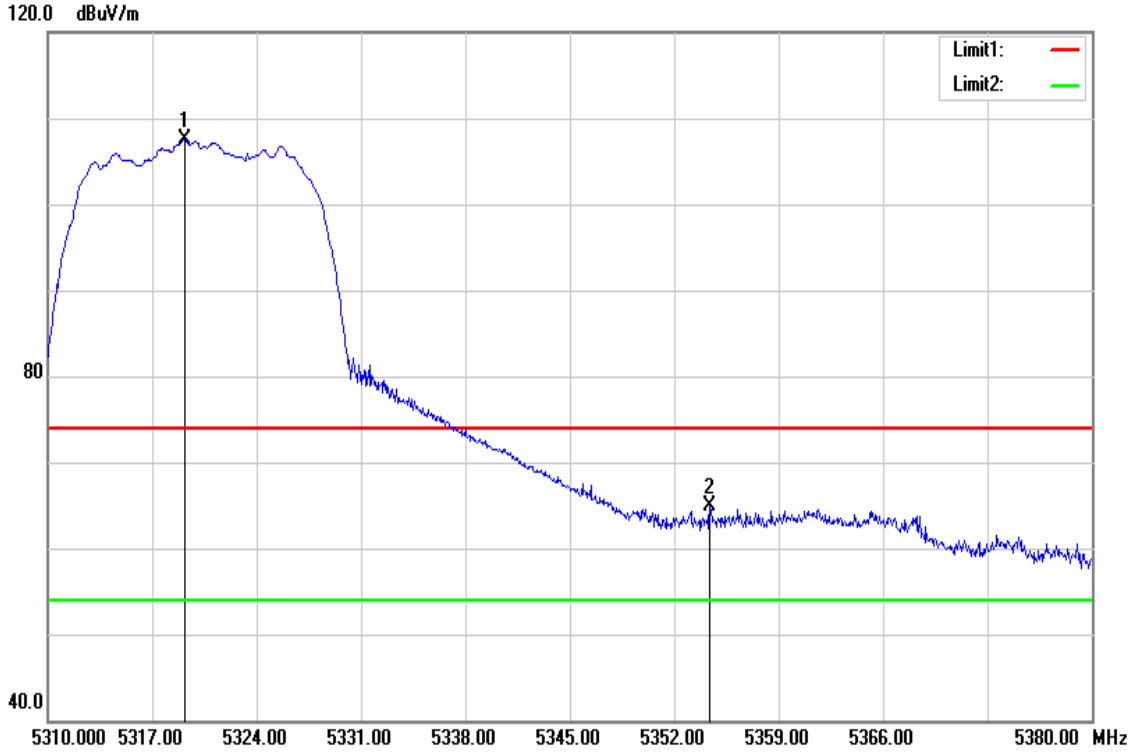
Test Mode	IEEE 802.11a High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5319.170	102.45	5.01	107.46	-	-	peak
5354.380	59.47	5.35	64.82	74.00	-9.18	peak

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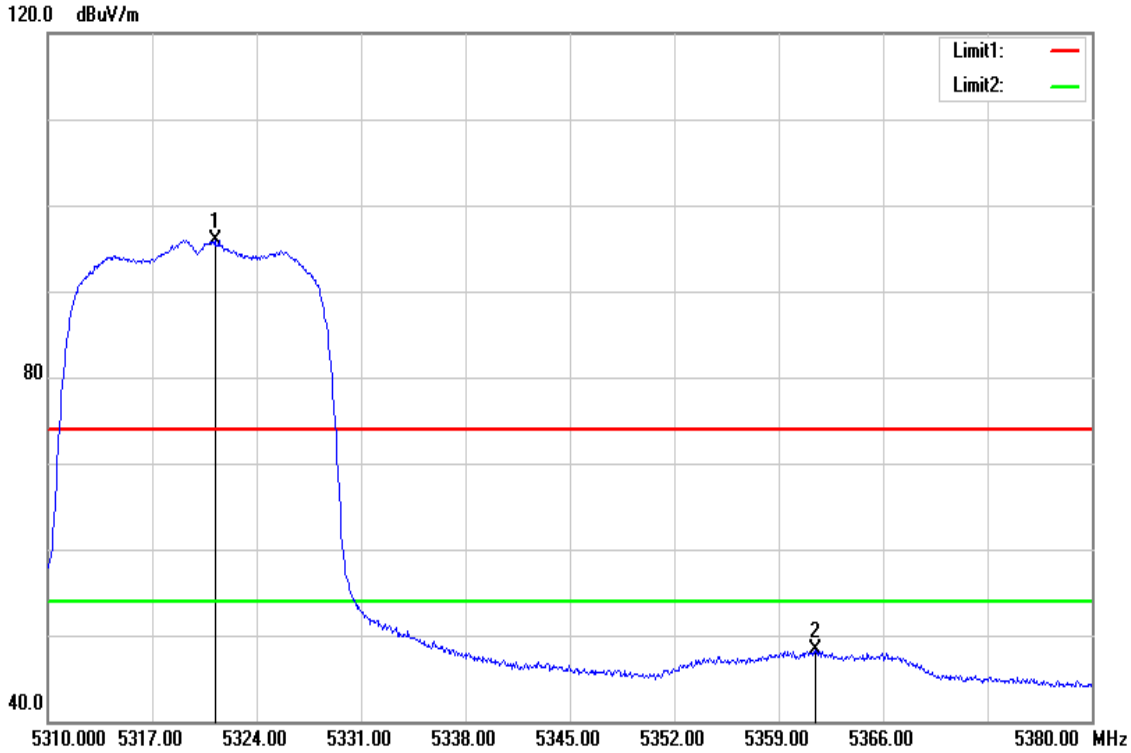
Test Mode	IEEE 802.11a High CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5321.200	90.92	5.03	95.95	-	-	AVG
5361.450	42.99	5.40	48.39	54.00	-5.61	AVG

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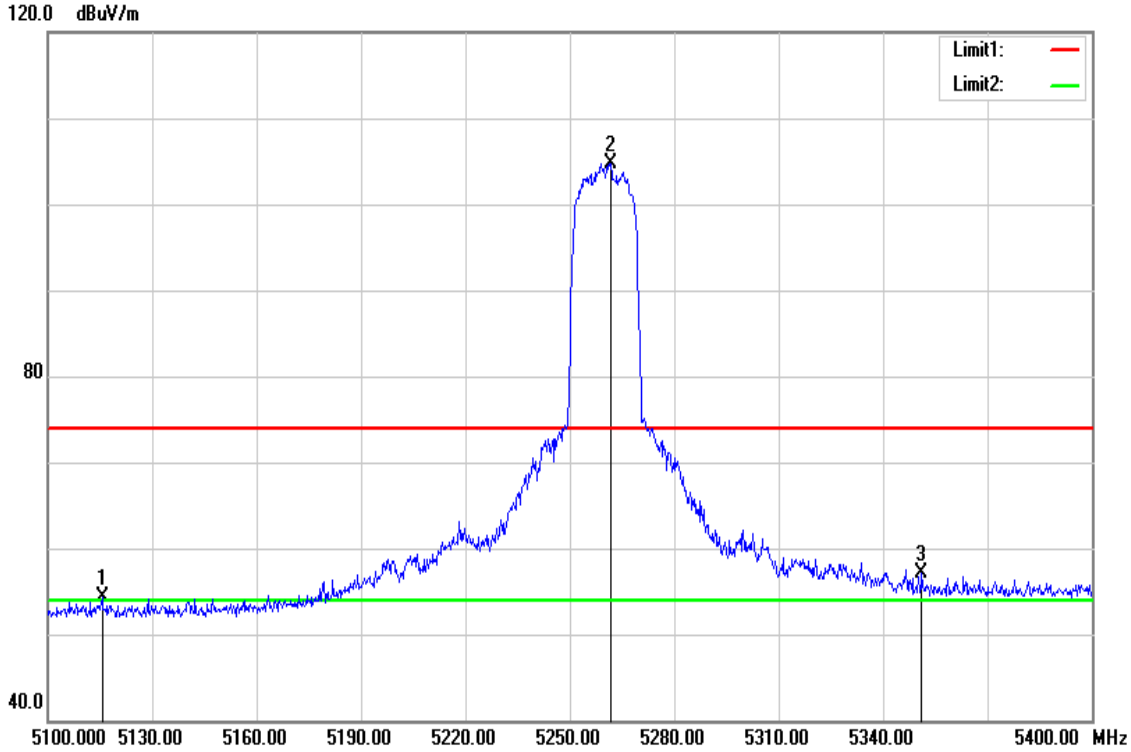
Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5115.600	51.54	2.81	54.35	74.00	-19.65	peak
5261.700	100.06	4.70	104.76	-	-	peak
5351.100	51.75	5.32	57.07	74.00	-16.93	peak

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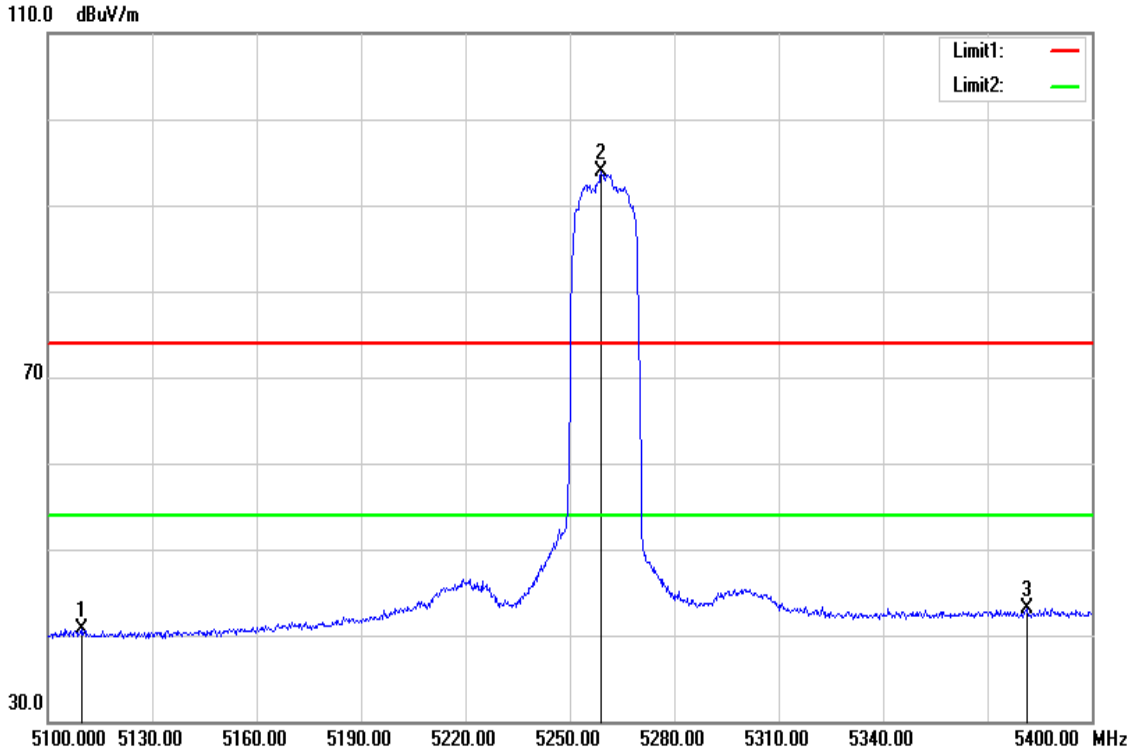
Test Mode	IEEE 802.11n HT20 Low CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5109.600	37.91	2.77	40.68	54.00	-13.32	AVG
5259.000	89.14	4.69	93.83	-	-	AVG
5381.400	37.58	5.57	43.15	54.00	-10.85	AVG

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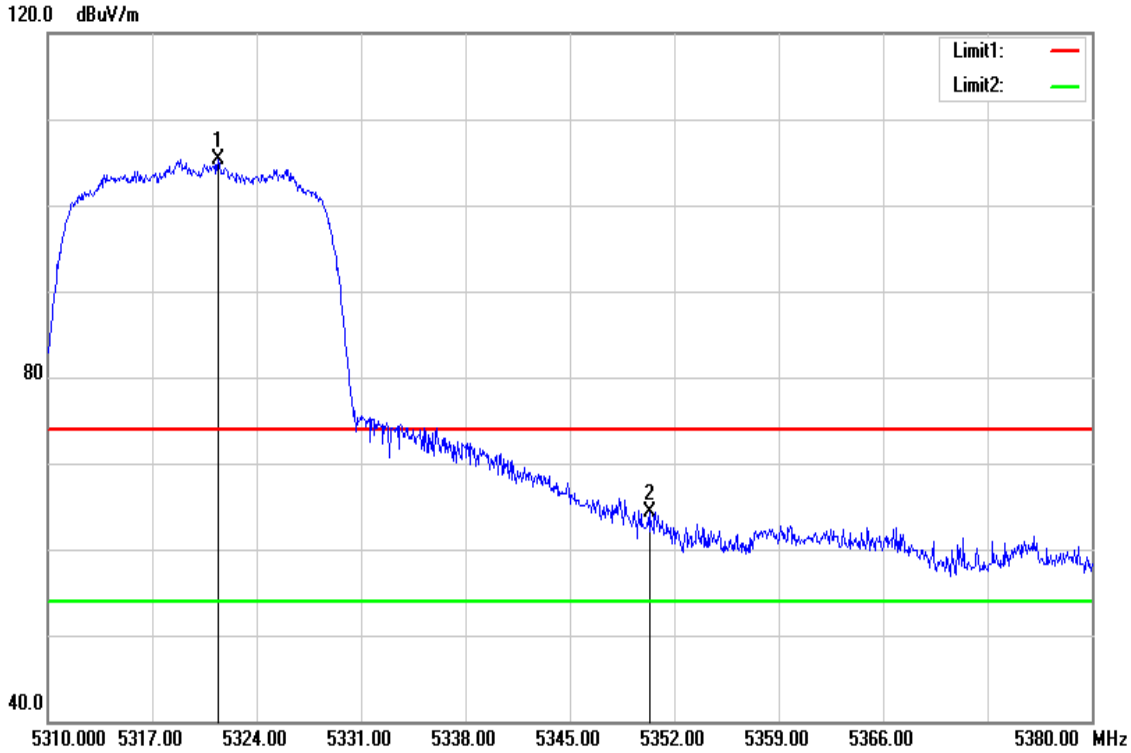
Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5321.410	100.28	5.04	105.32	-	-	peak
5350.390	58.96	5.31	64.27	74.00	-9.73	peak

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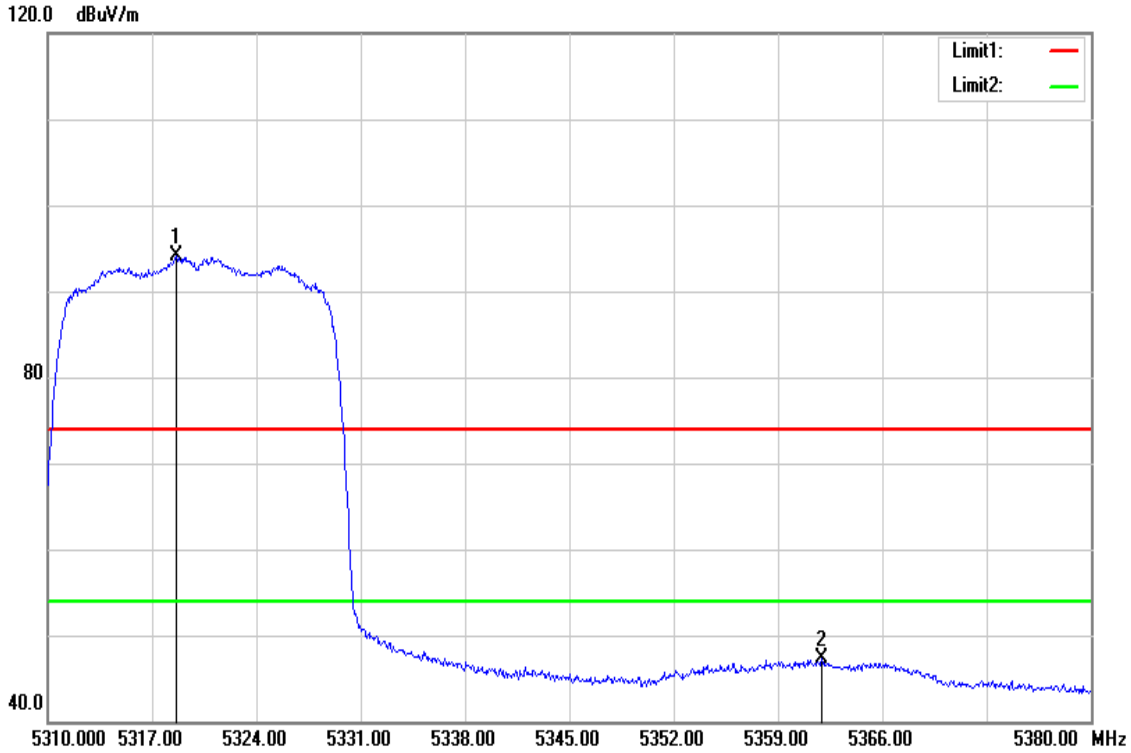
Test Mode	IEEE 802.11n HT20 High CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5318.610	89.01	5.01	94.02	-	-	AVG
5361.940	41.82	5.41	47.23	54.00	-6.77	AVG

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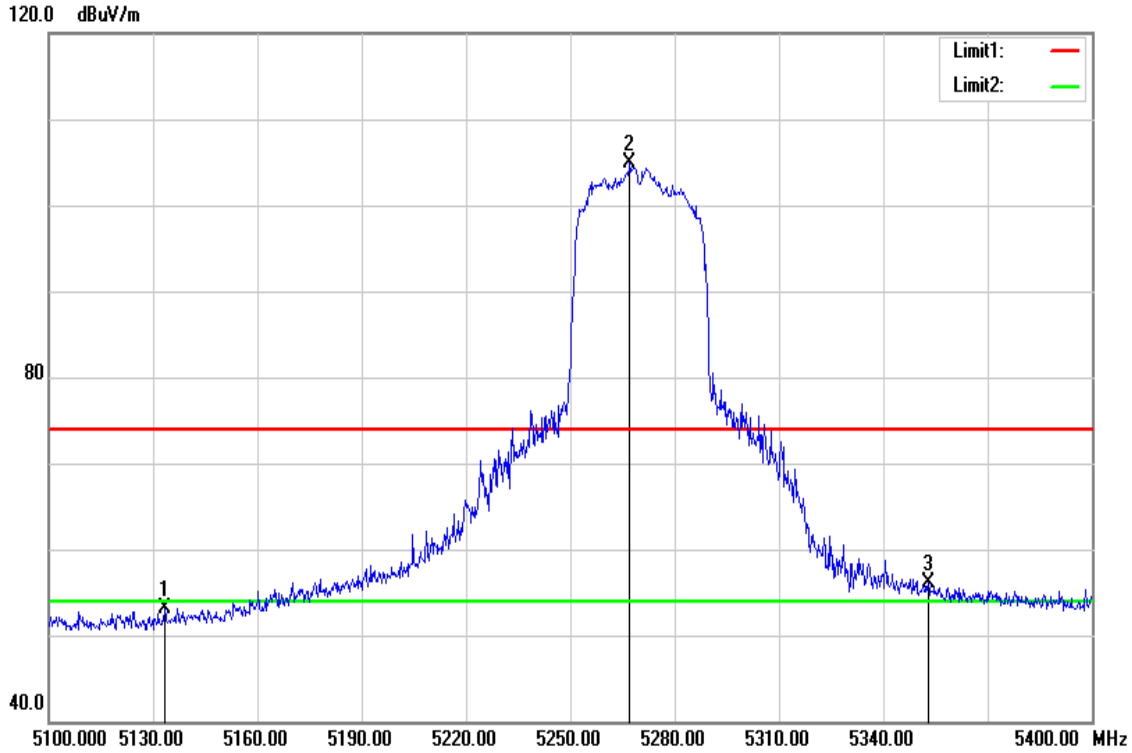
Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (uV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5133.300	50.26	2.93	53.19	74.00	-20.81	peak
5267.100	100.16	4.72	104.88	-	-	peak
5352.900	50.80	5.33	56.13	74.00	-17.87	peak

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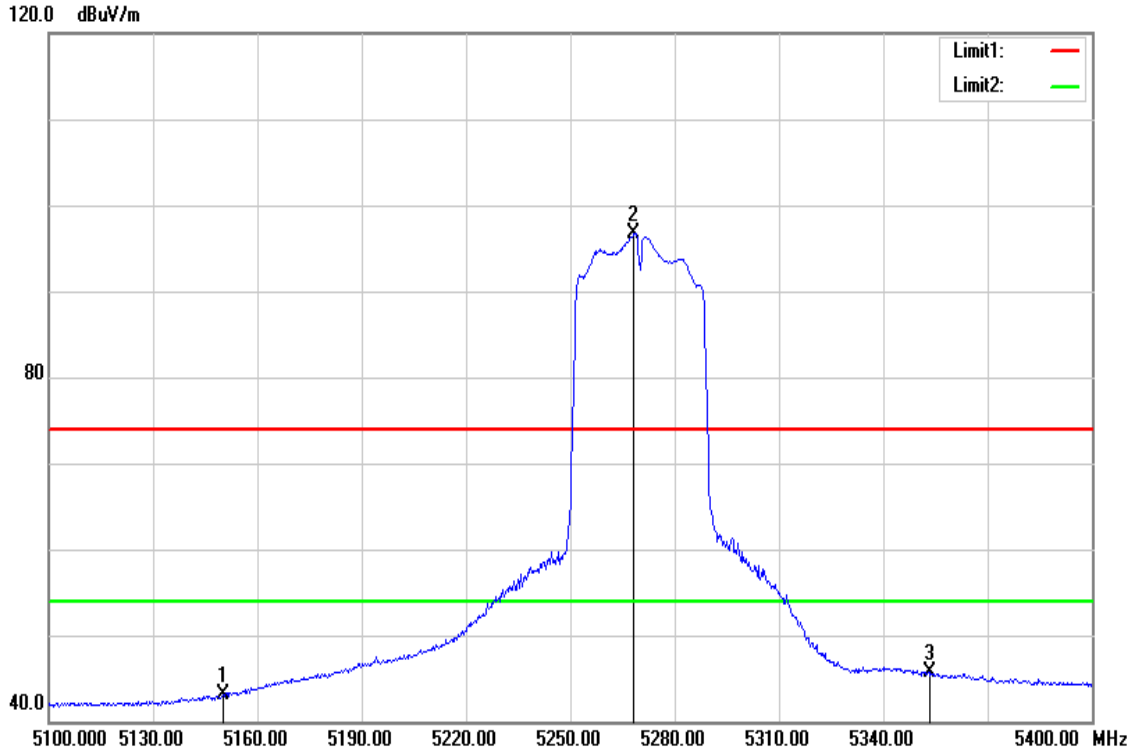
Test Mode	IEEE 802.11n HT40 Low CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5150.000	39.99	3.04	43.0	54.00	-10.97	AVG
5268.300	92.02	4.72	96.74	-	-	AVG
5353.200	40.38	5.34	45.72	54.00	-8.28	AVG

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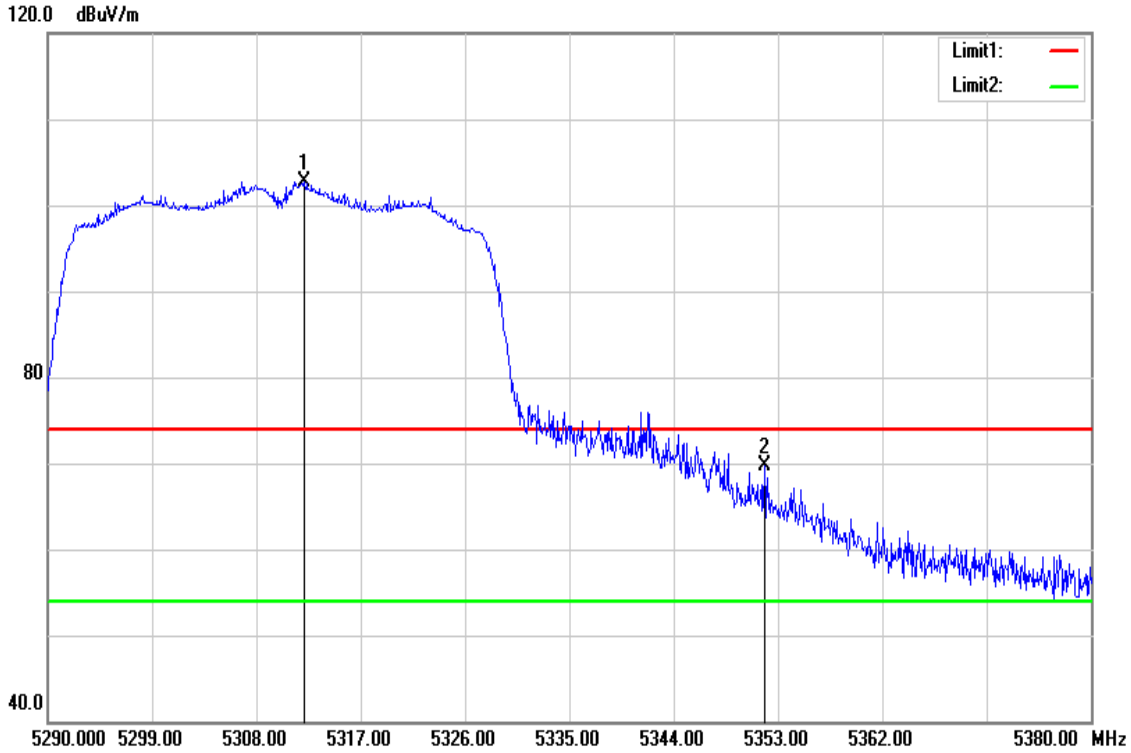
Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5312.140	97.84	4.95	102.79	-	-	peak
5351.830	64.28	5.33	69.61	74.00	-4.39	peak

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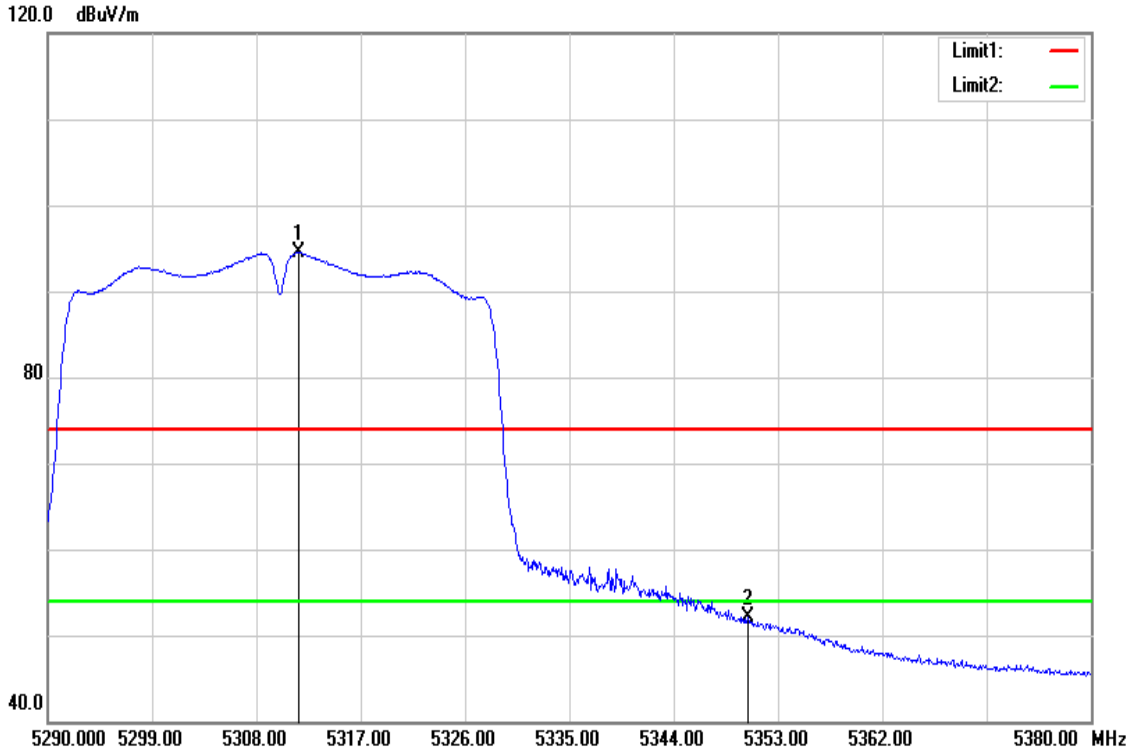
Test Mode	IEEE 802.11n HT40 High CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5311.690	89.60	4.94	94.5	-	-	AVG
5350.390	46.81	5.31	52.12	54.00	-1.88	AVG

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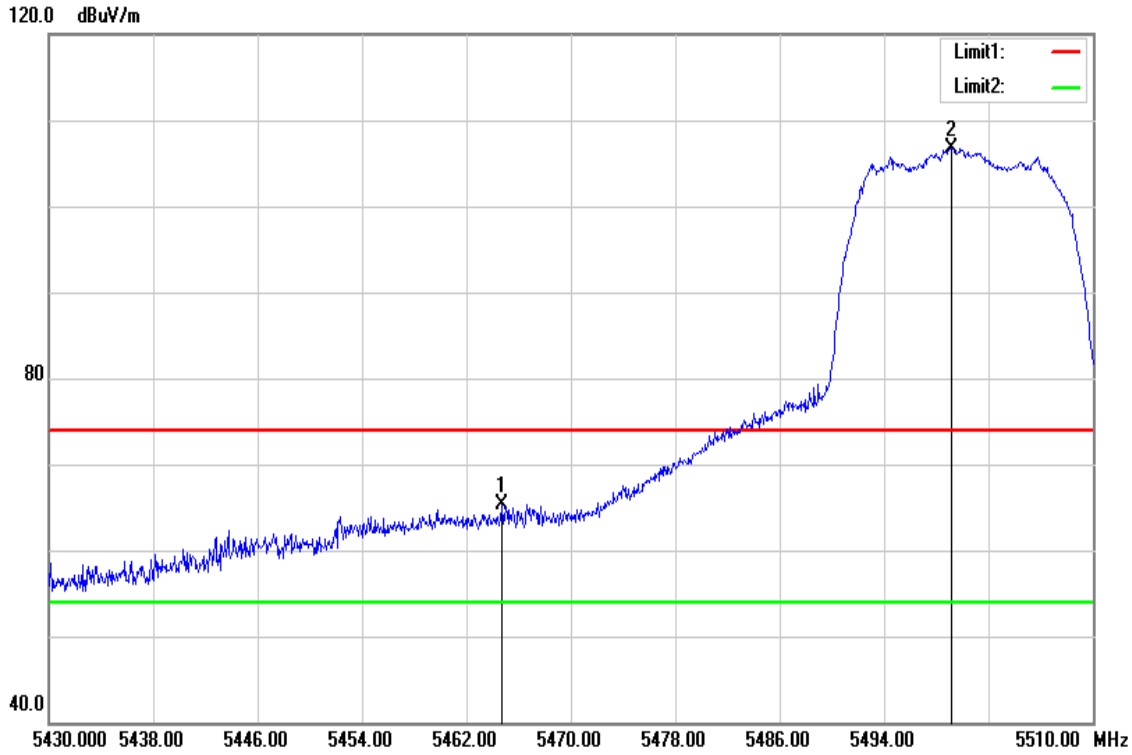
Test Data

Band Edge Test Data for UNII-2c

Test Mode	IEEE 802.11a Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5464.720	59.85	5.42	65.27	74.00	-8.73	peak
5499.200	101.45	5.25	106.70	-	-	peak

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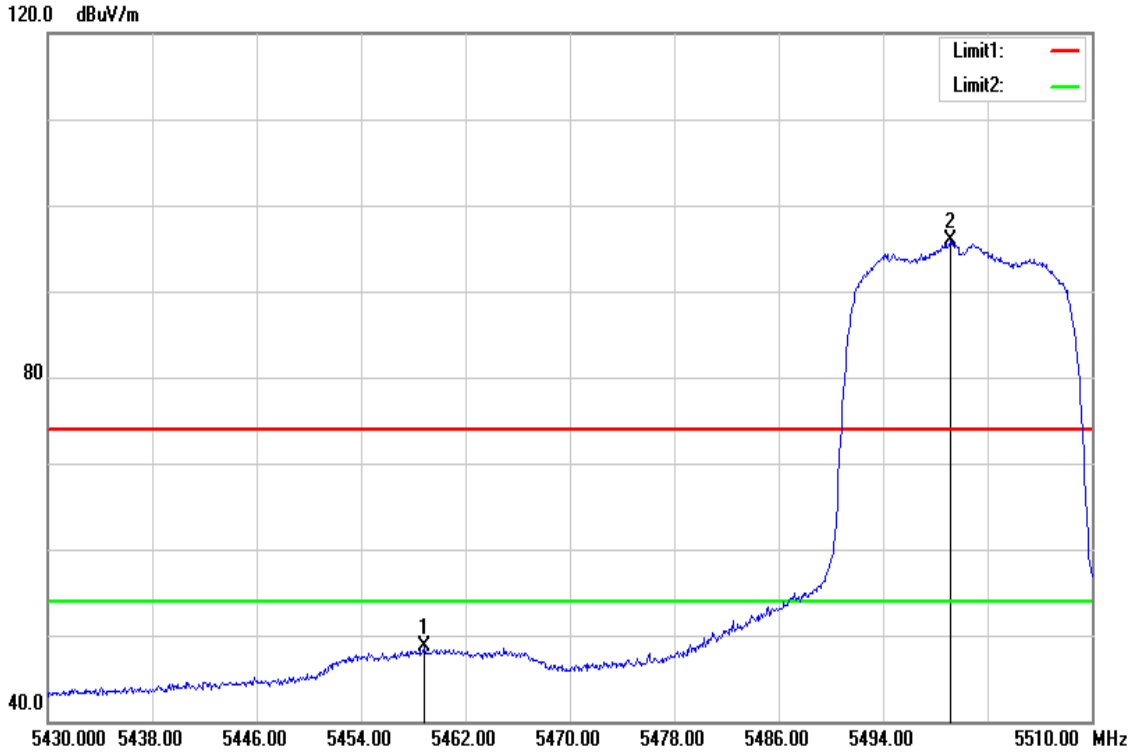
Test Mode	IEEE 802.11a Low CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5458.880	43.27	5.44	48 71	54.00	-5.29	AVG
5499.120	90.57	5.25	95.82	-	-	AVG

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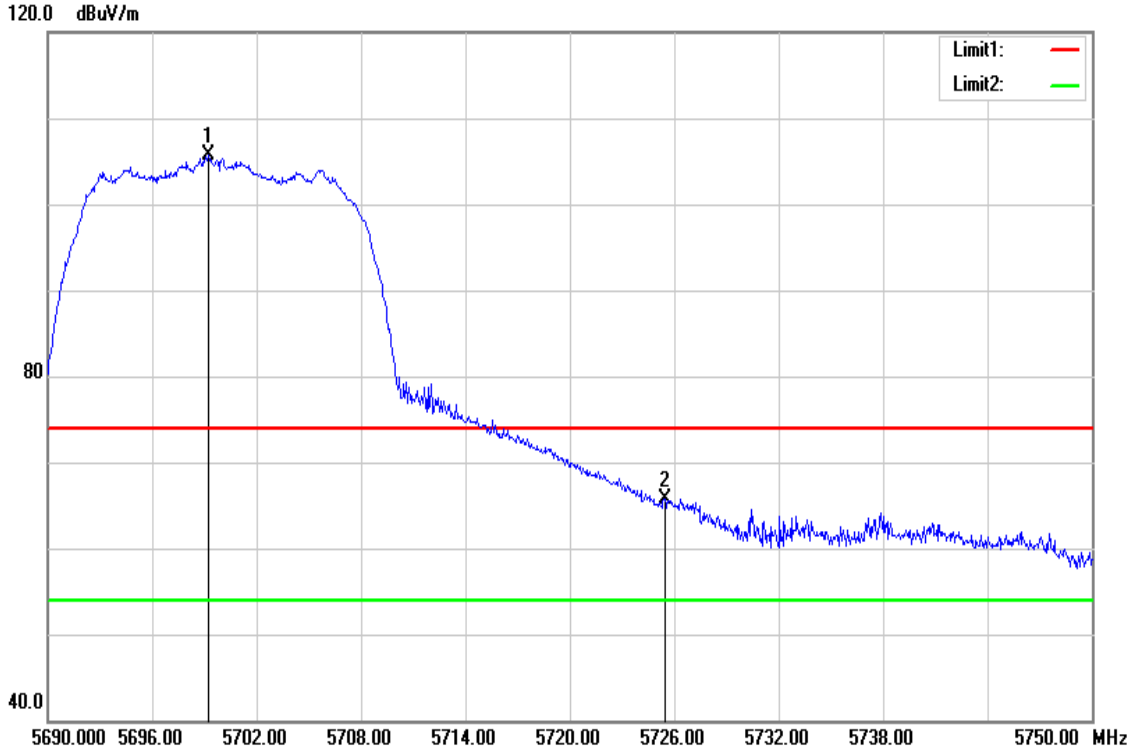
Test Mode	IEEE 802.11a High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (d uV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5699.240	99.55	6.10	105.6	-	-	peak
5725.460	59.51	6.21	65.72	74.00	-8.28	peak

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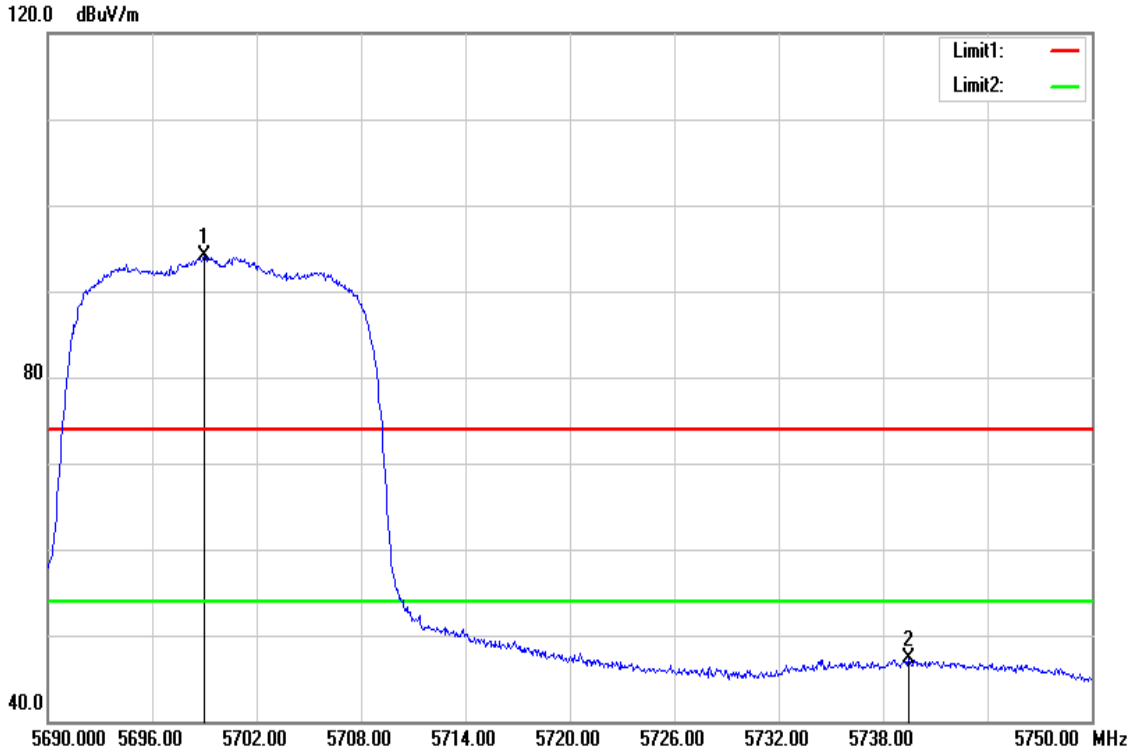
Test Mode	IEEE 802.11a High CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5699.000	88.08	6.10	94 18	-	-	AVG
5739.440	41.03	6.27	47.30	54.00	-6.70	AVG

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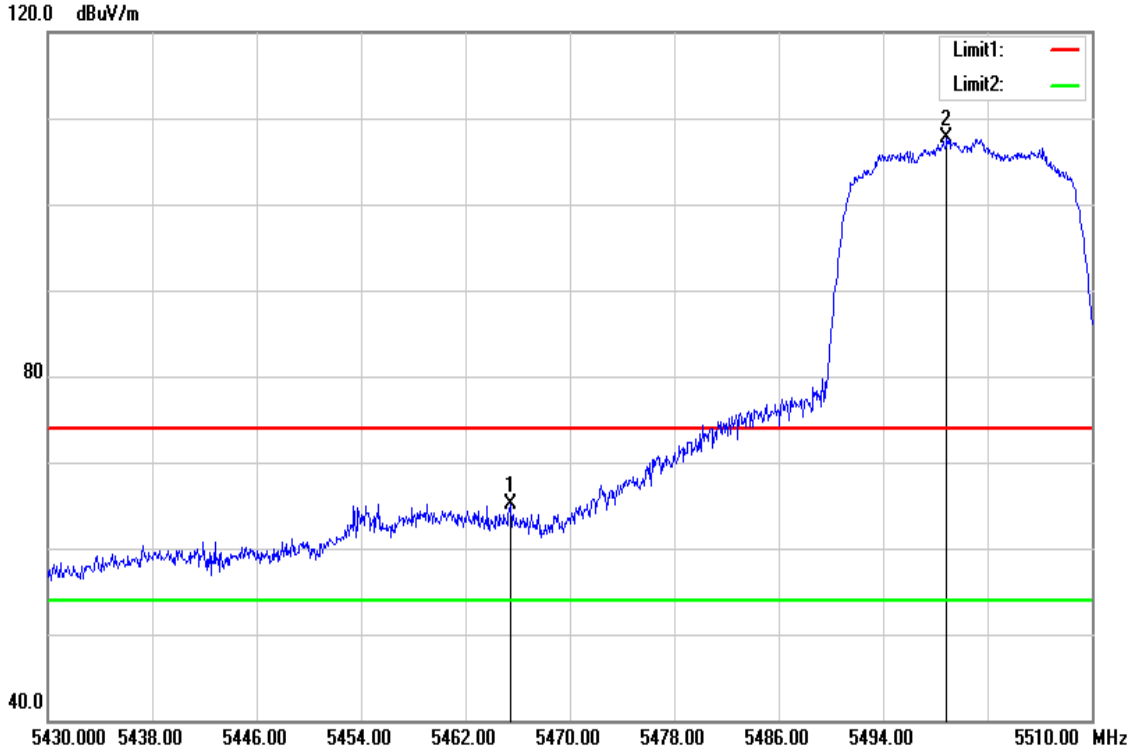
Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5465.440	59.70	5.41	65.11	74.00	-8.89	peak
5498.880	102.36	5.26	107.62	-	-	peak

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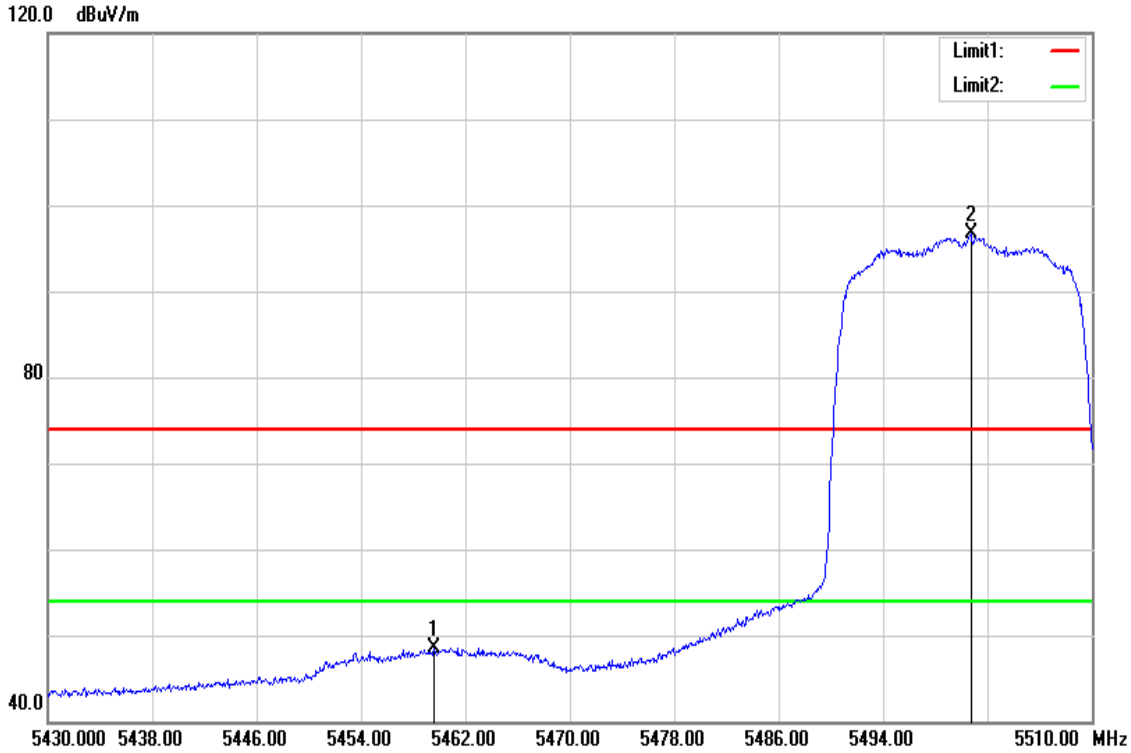
Test Mode	IEEE 802.11n HT20 Low CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5459.600	43.15	5.44	48 59	54.00	-5.41	AVG
5500.720	91.43	5.25	96.68	-	-	AVG

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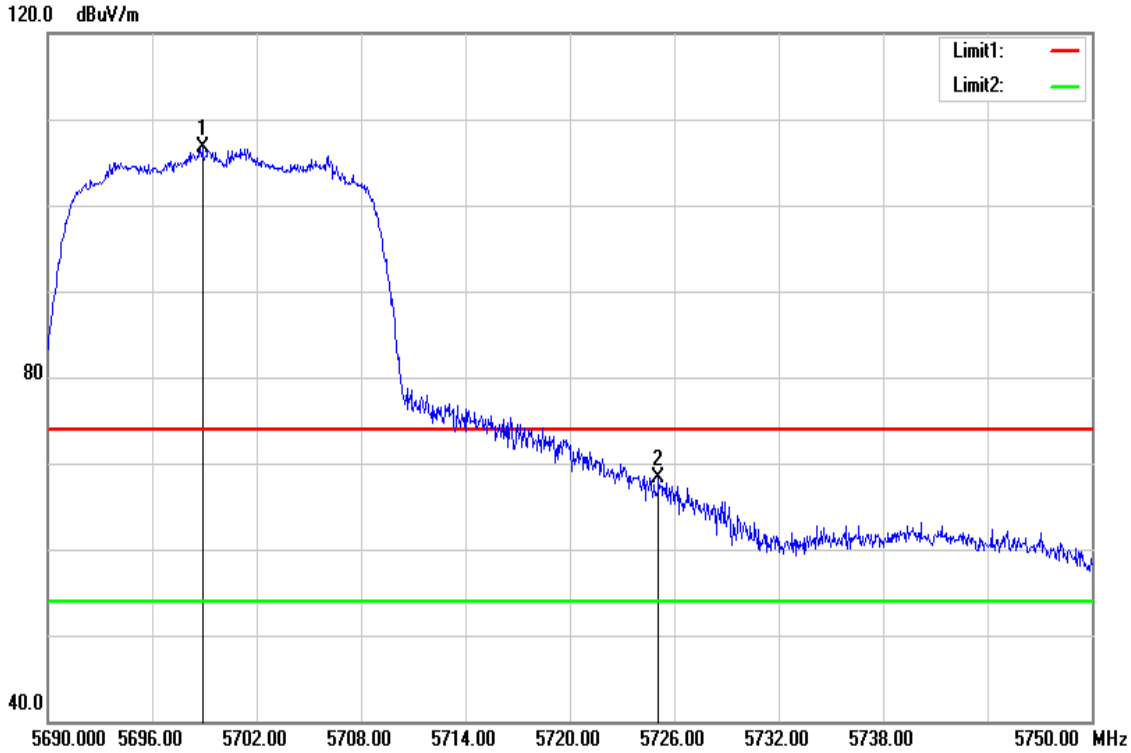
Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5698.880	100.54	6.10	106. 4	-	-	peak
5725.100	62.04	6.21	68.25	74.00	-5.75	peak

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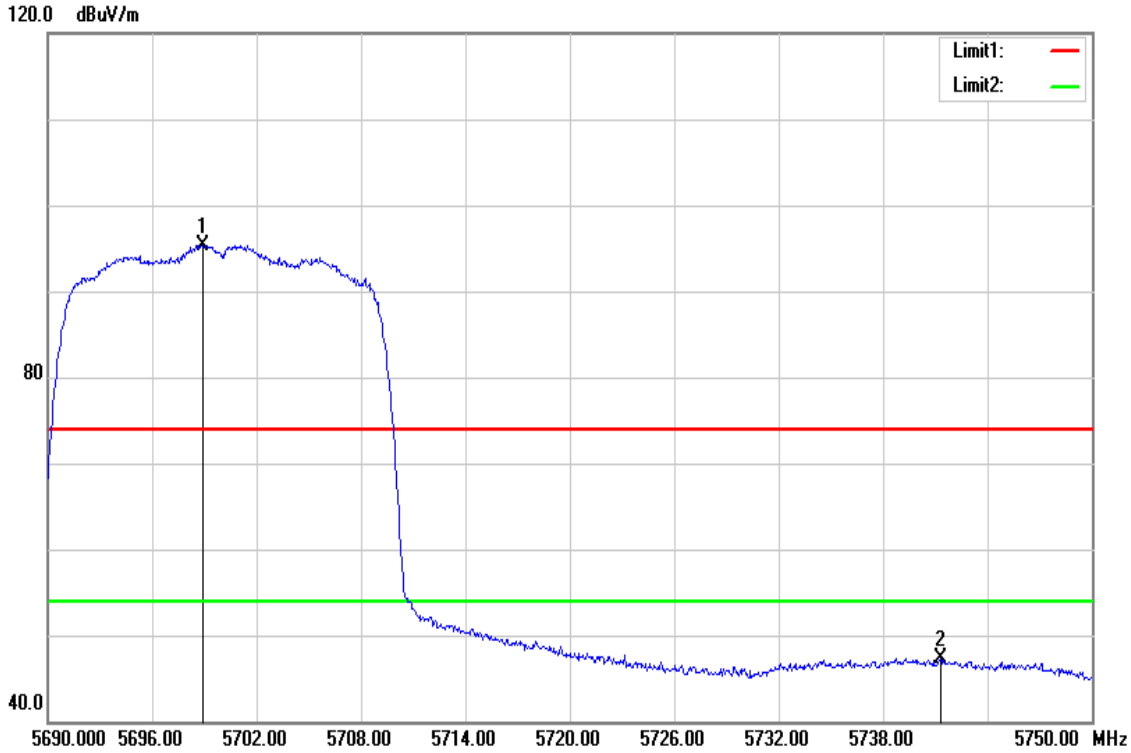
Test Mode	IEEE 802.11n HT20 High CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5698.940	89.29	6.10	95 39	-	-	AVG
5741.300	41.01	6.28	47.29	54.00	-6.71	AVG

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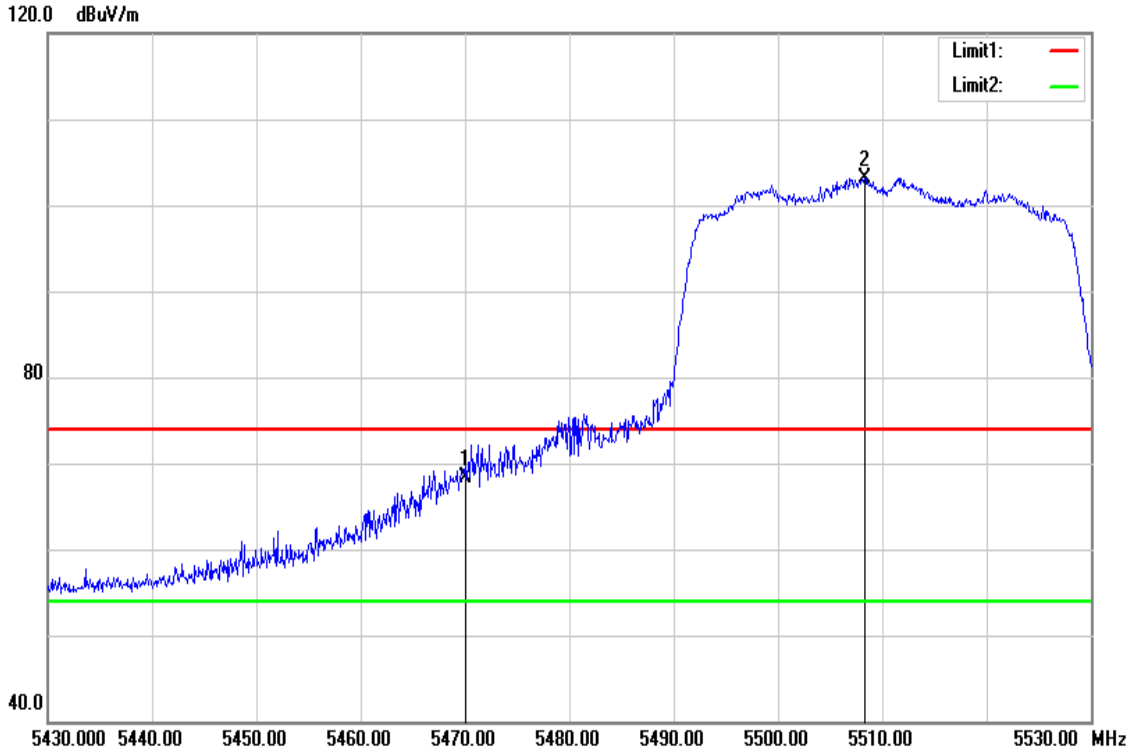
Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5470.000	62.82	5.39	68.21	7 .00	-5.79	peak
5508.300	97.90	5.29	103.19	-	-	peak

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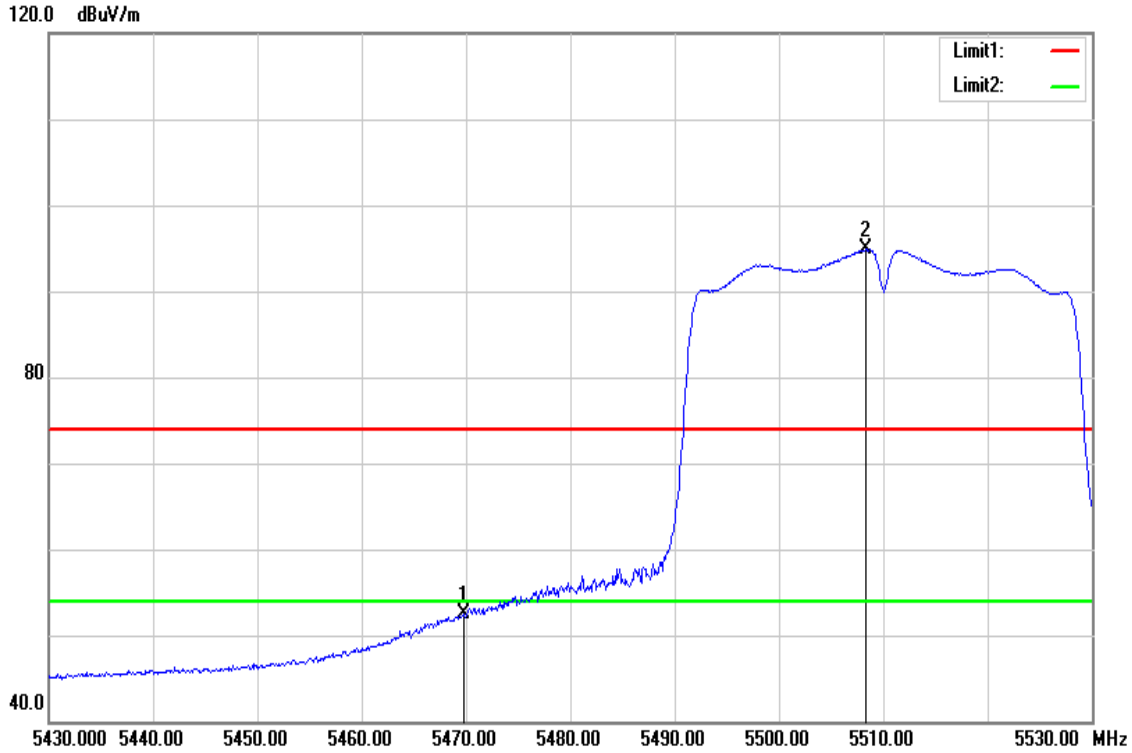
Test Mode	IEEE 802.11n HT40 Low CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5469.800	47.06	5.39	52.45	54.00	-1.55	AVG
5508.300	89.53	5.29	94.82	-	-	AVG

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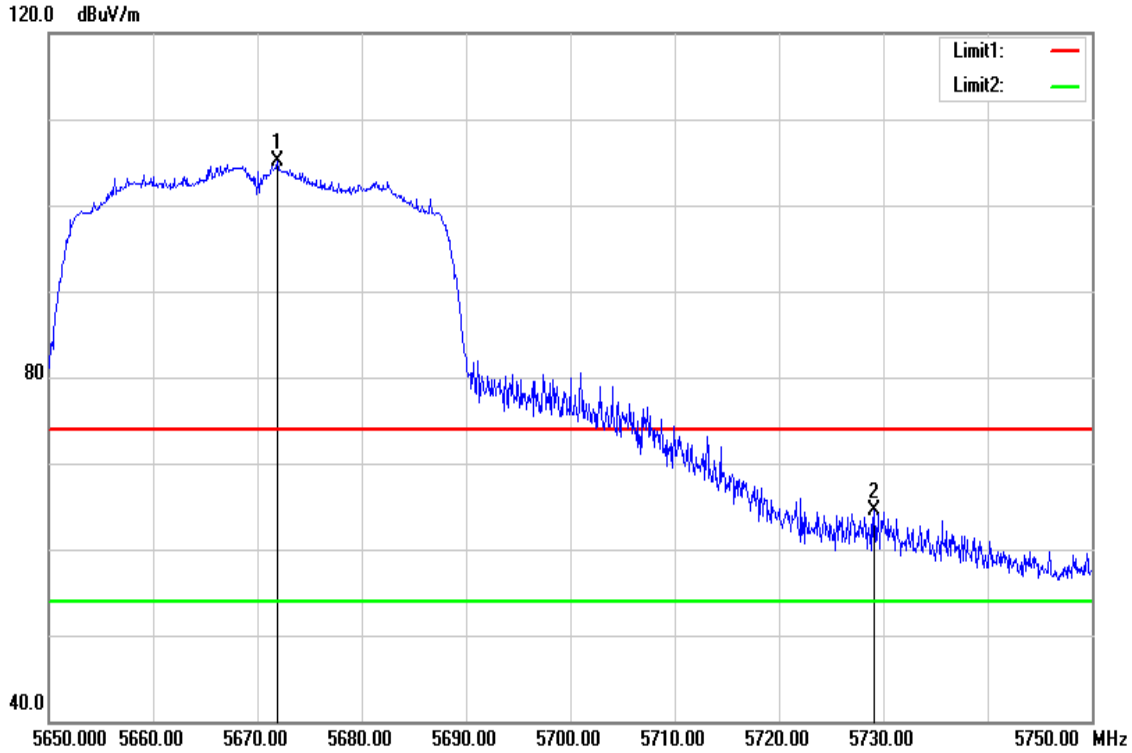
Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5671.900	99.18	5.98	105.16	-	-	peak
5729.100	58.24	6.23	64.47	74.00	-9.53	peak

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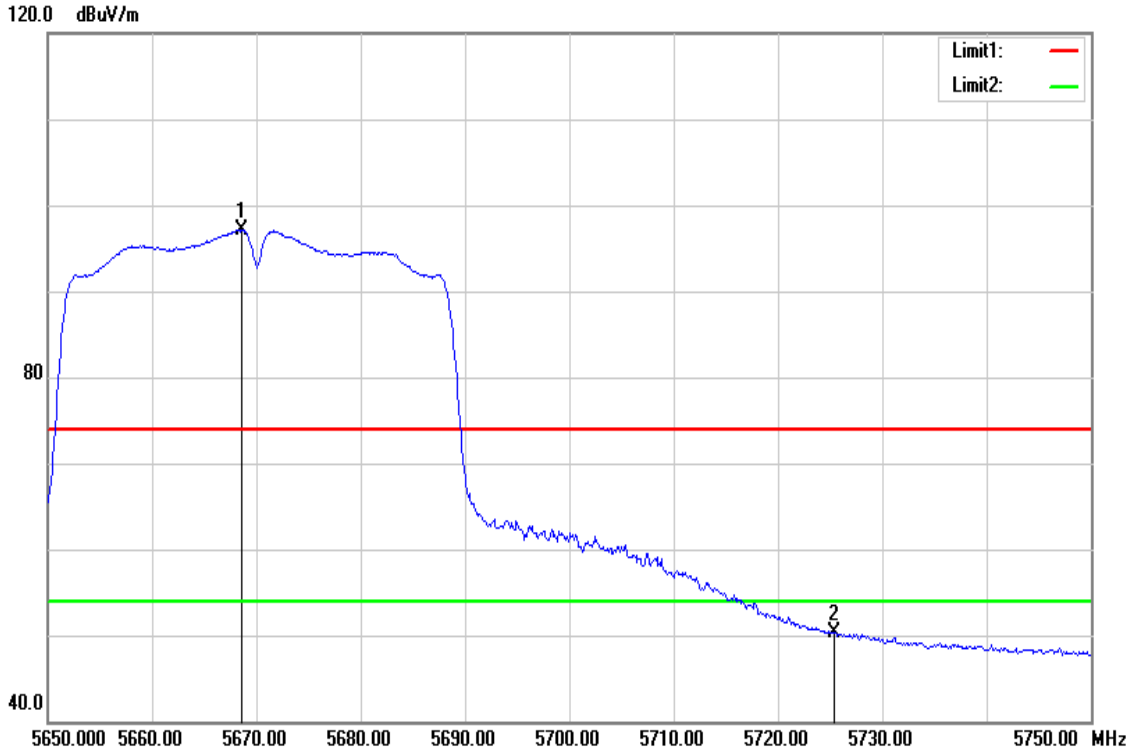
Test Mode	IEEE 802.11n HT40 High CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5668.600	91.20	5.97	97.1	-	-	AVG
5725.400	44.14	6.21	50.35	54.00	-3.65	AVG

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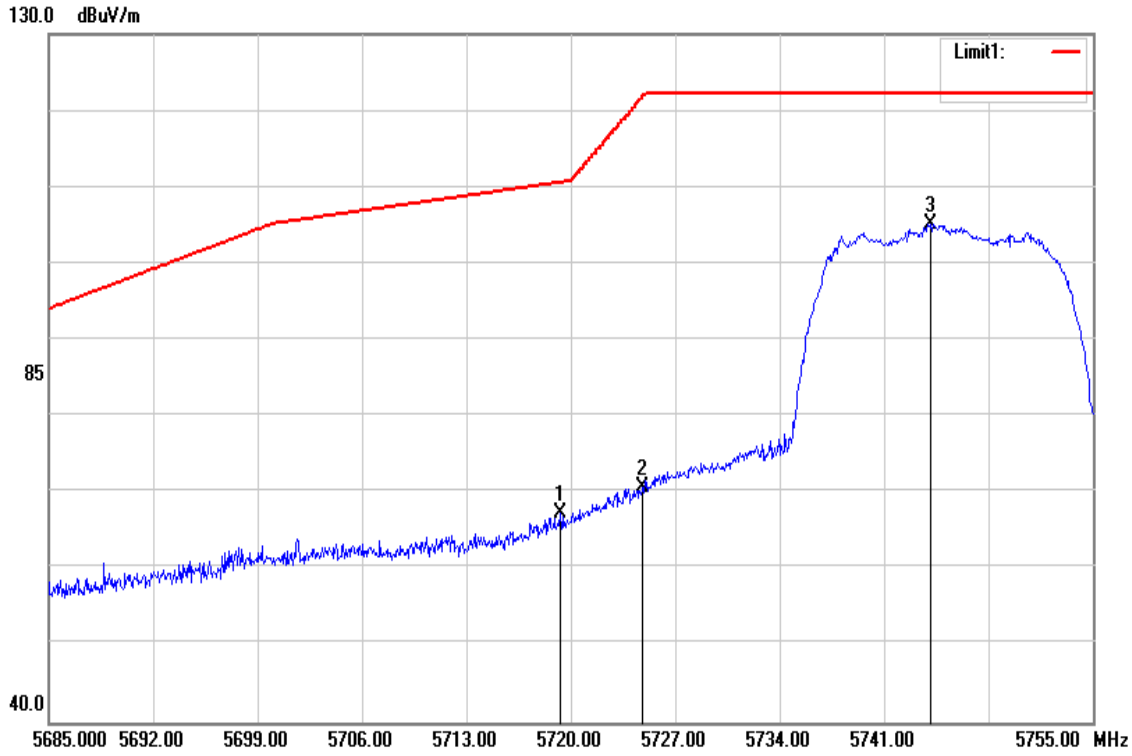
Band Edge Test Data for UNII-3

Test Mode	IEEE 802.11a Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5719.300	61.13	6.18	67.31	110.60	-43.29	peak
5724.830	64.56	6.21	70.77	121.81	-51.04	peak
5744.150	98.91	6.29	105.20	-	-	peak

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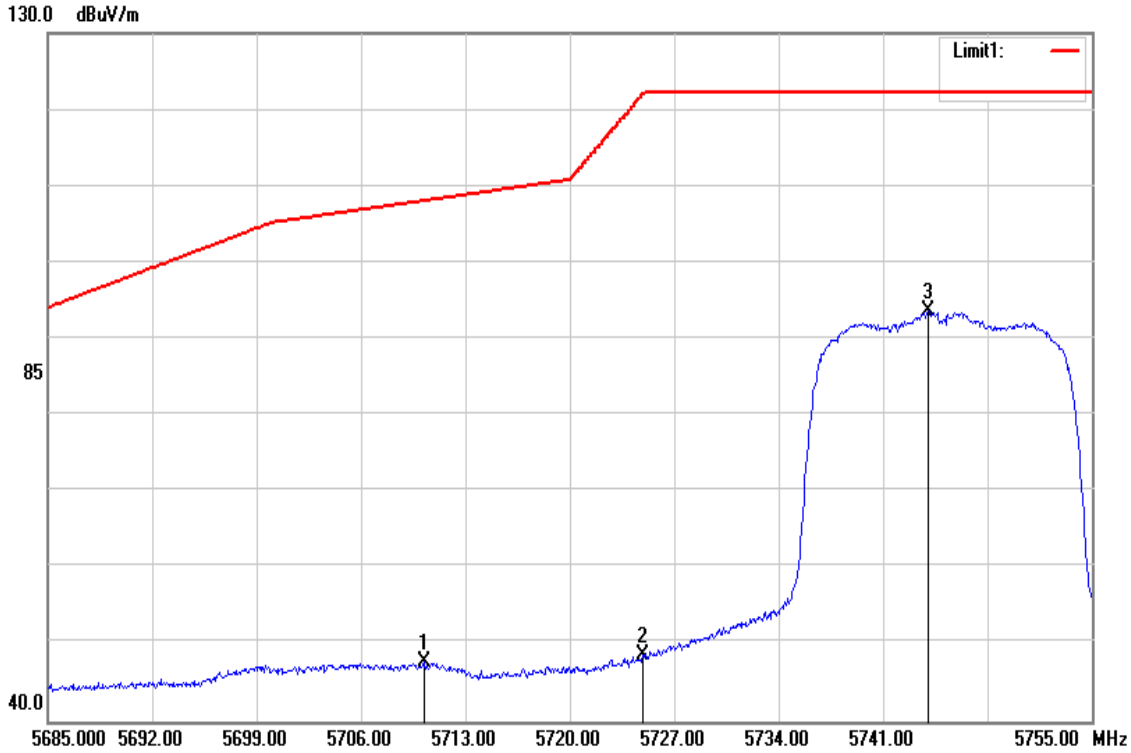
Test Mode	IEEE 802.11a Low CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5710.200	41.59	6.15	47 74	108.06	-60.32	AVG
5724.900	42.42	6.21	48.63	121.97	-73.34	AVG
5744.010	87.31	6.29	93.60	-	-	AVG

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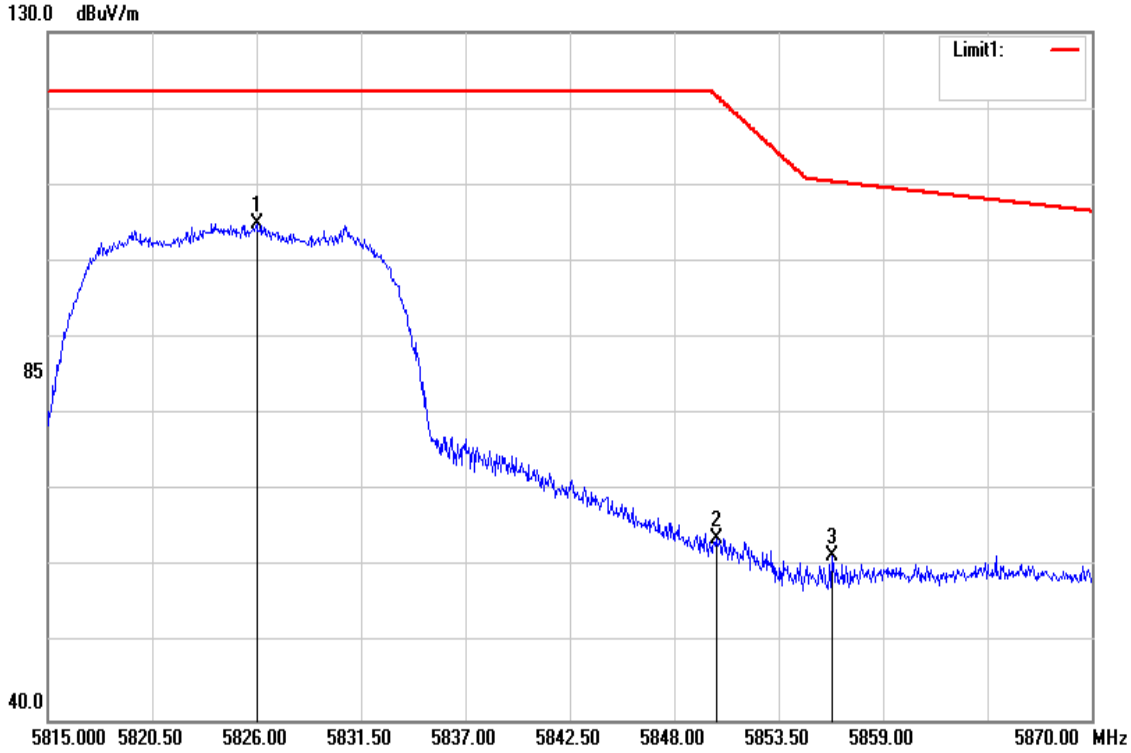
Test Mode	IEEE 802.11a High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5826.000	98.37	6.64	105.0	-	-	peak
5850.200	57.03	6.74	63.77	121.74	-57.97	peak
5856.305	54.77	6.77	61.54	110.43	-48.89	peak

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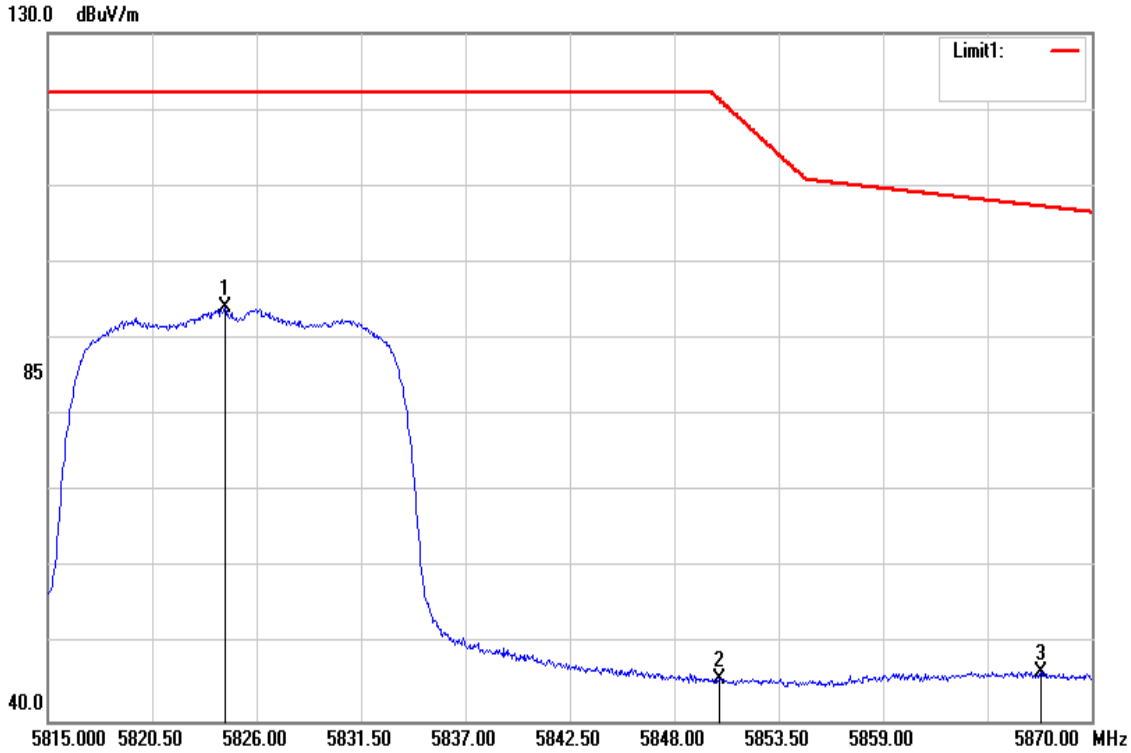
Test Mode	IEEE 802.11a High CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5824.350	87.38	6.63	94 01	-	-	AVG
5850.365	38.82	6.74	45.56	121.37	-75.81	AVG
5867.305	39.64	6.81	46.45	107.35	-60.90	AVG

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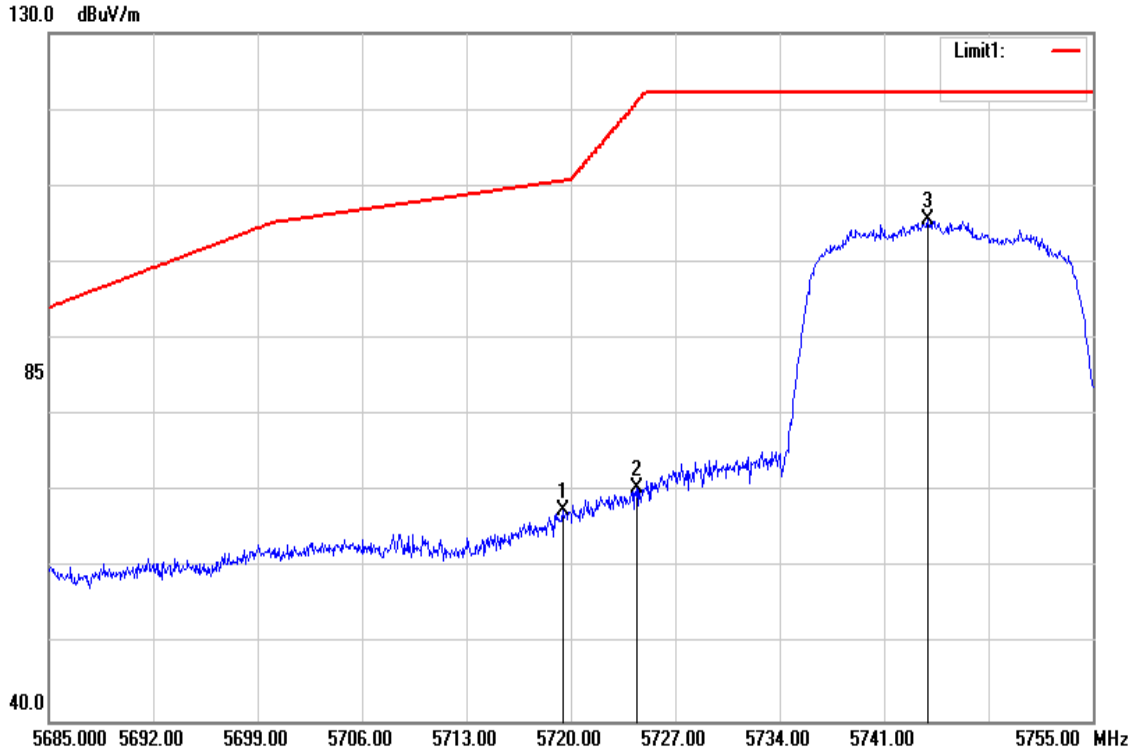
Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5719.440	61.29	6.18	67.47	110.64	-43.17	peak
5724.410	64.35	6.21	70.56	120.85	-50.29	peak
5743.940	99.33	6.29	105.62	-	-	peak

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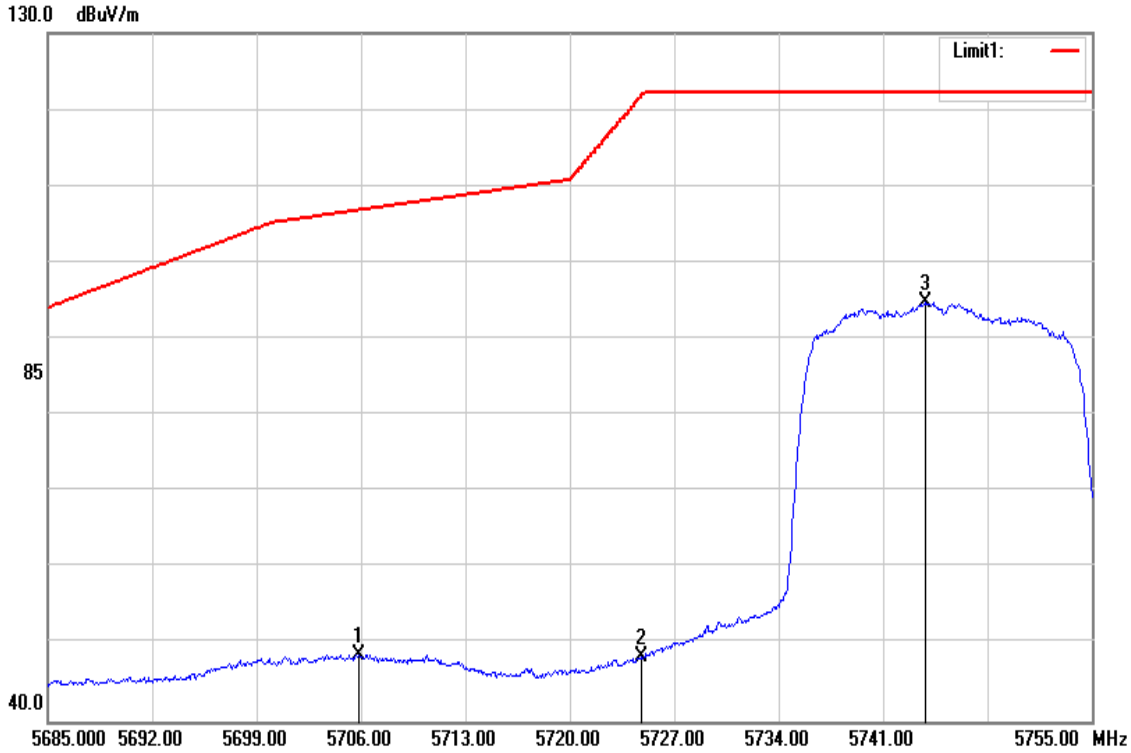
Test Mode	IEEE 802.11n HT20 Low CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5705.860	42.58	6.13	48 71	106.84	-58.13	AVG
5724.830	42.15	6.21	48.36	121.81	-73.45	AVG
5743.870	88.39	6.29	94.68	-	-	AVG

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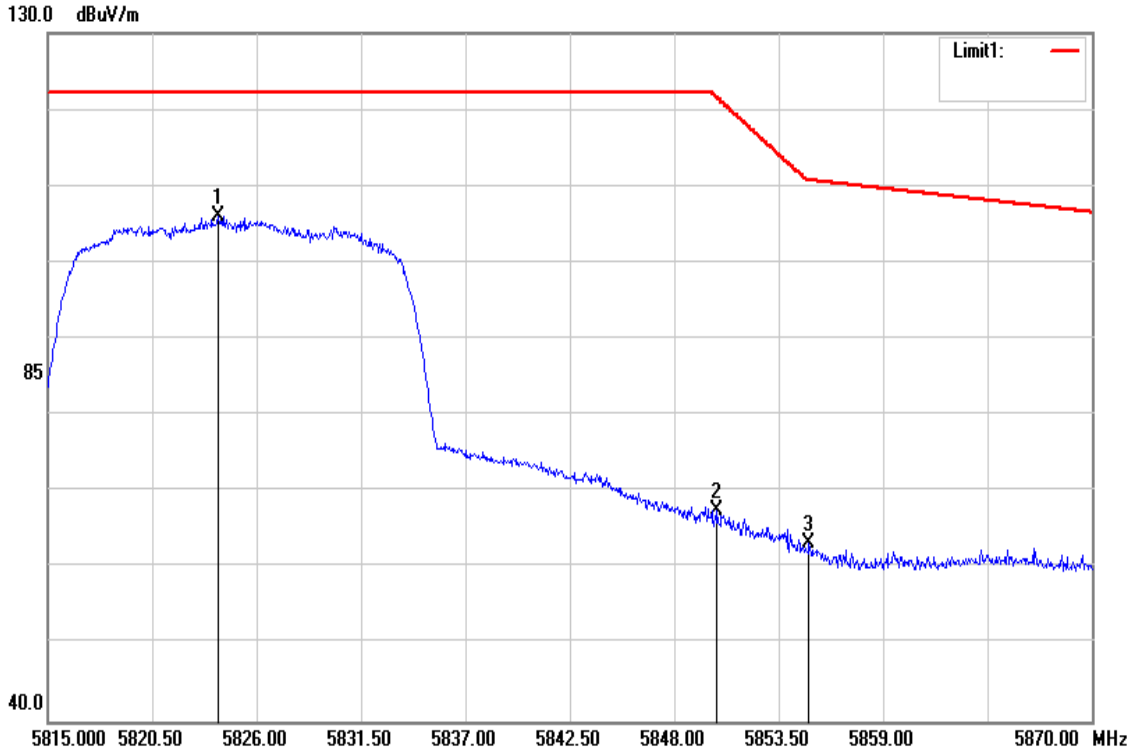
Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5823.965	99.42	6.63	106.0	-	-	peak
5850.255	60.87	6.74	67.61	121.62	-54.01	peak
5855.095	56.59	6.76	63.35	110.77	-47.42	peak

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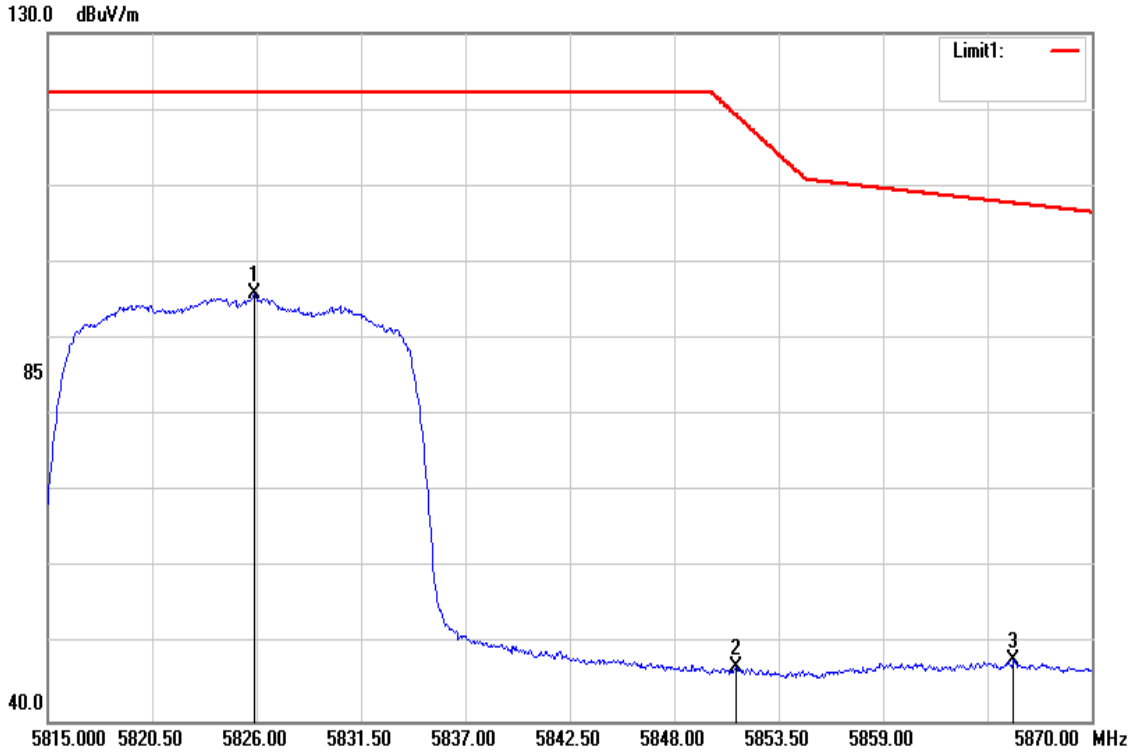
Test Mode	IEEE 802.11n HT20 High CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	March 13, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5825.890	89.23	6.64	95 87	-	-	AVG
5851.245	40.27	6.75	47.02	119.36	-72.34	AVG
5865.875	41.19	6.81	48.00	107.75	-59.75	AVG

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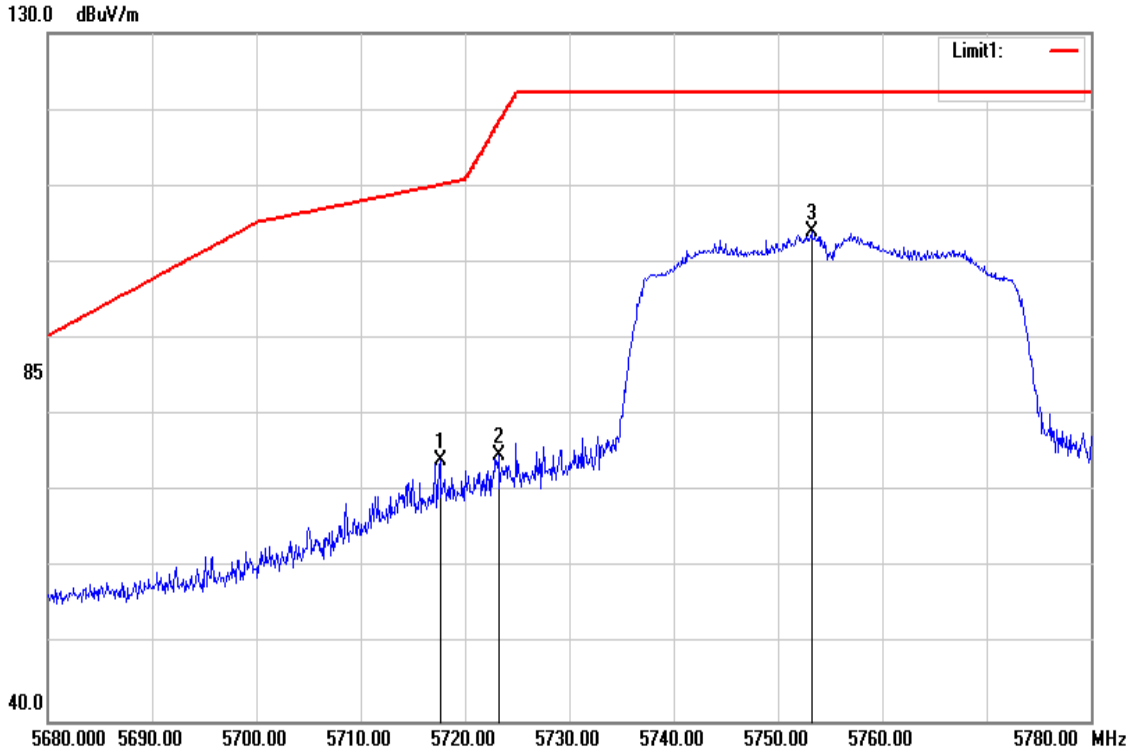
Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5717.600	67.87	6.18	74.05	110.13	-36.08	peak
5723.200	68.59	6.20	74.79	118.10	-43.31	peak
5753.200	97.58	6.33	103.91	122.20	-18.29	peak

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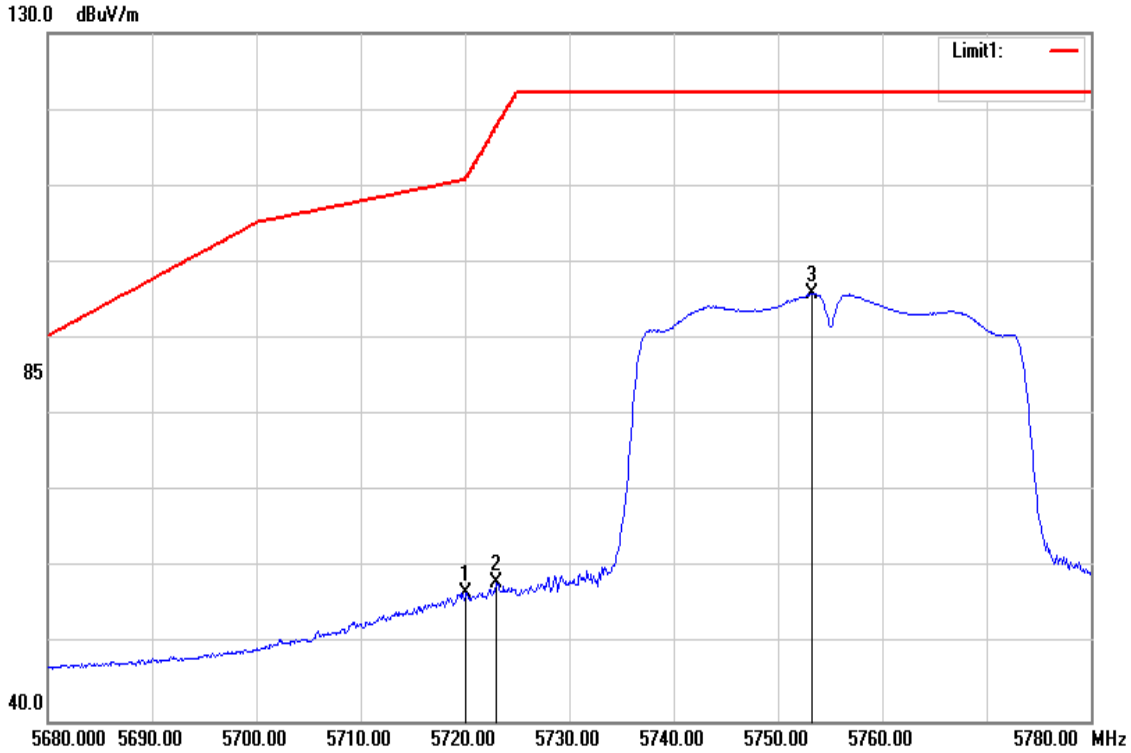
Test Mode	IEEE 802.11n HT40 Low CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5720.100	50.54	6.19	56.7	111.03	-54.30	AVG
5723.000	51.81	6.20	58.01	117.64	-59.63	AVG
5753.300	89.62	6.33	95.95	122.20	-26.25	

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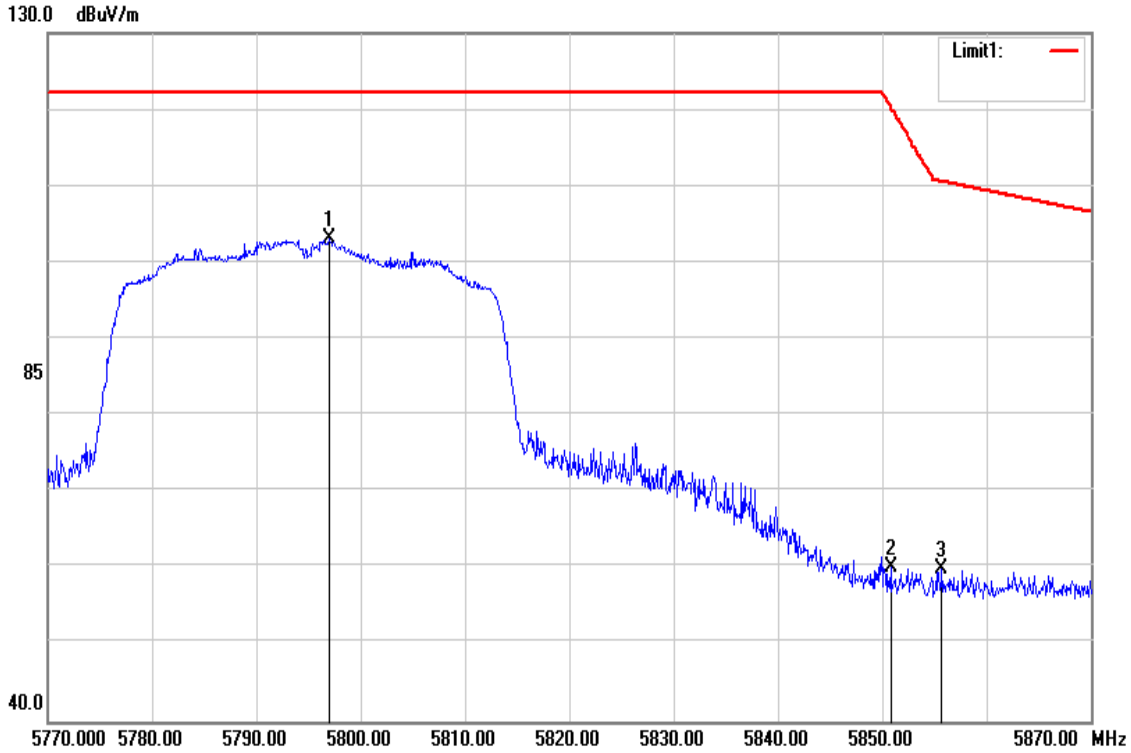
Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5797.000	96.70	6.52	103.22	122.20	-18.98	peak
5850.800	53.39	6.74	60.13	120.38	-60.25	peak
5855.700	53.05	6.77	59.82	110.60	-50.78	peak

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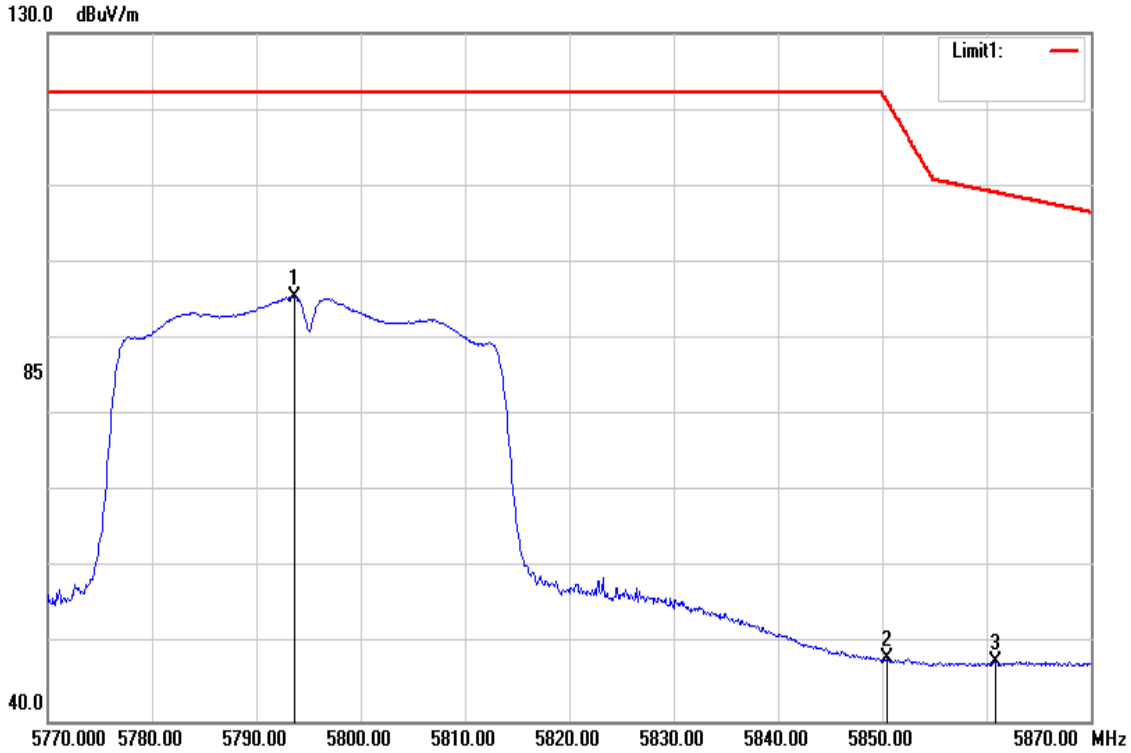
Test Mode	IEEE 802.11n HT40 High CH	Temperature	27(℃)/ 53%RH
Test Item	Band Edge	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5793.700	89.04	6.50	95.5	122.20	-26.66	AVG
5850.400	41.38	6.74	48.12	121.29	-73.17	AVG
5860.900	40.99	6.79	47.78	109.15	-61.37	AVG

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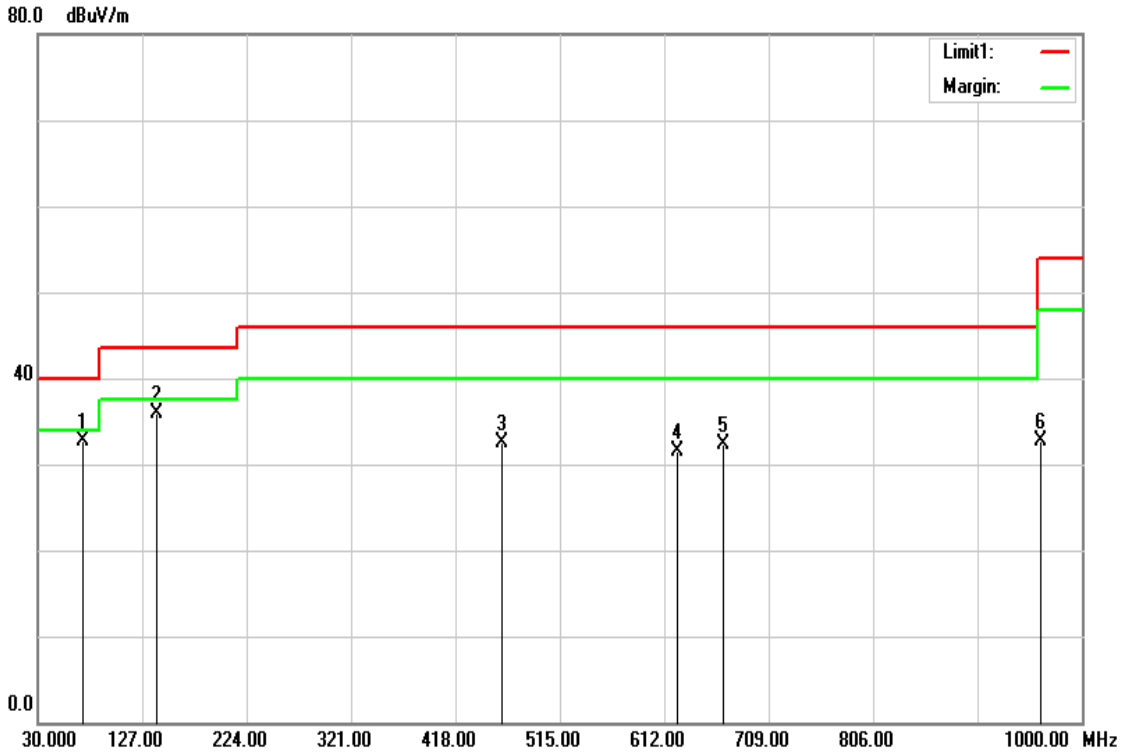
Below 1G Test Data

Test Mode	Mode 1	Temp/Hum	27(℃)/ 53%RH
Test Item	30MHz-1GHz	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Qusi-peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
71.7100	53. 9	-20.81	32.68	40.00	-7.32	peak
140.5800	51.72	-15.80	35.92	43.50	-7.58	peak
460.6800	42.47	-9.99	32.48	46.00	-13.52	peak
623.6400	38.69	-7.20	31.49	46.00	-14.51	peak
666.3200	38.64	-6.41	32.23	46.00	-13.77	peak
962.1700	34.87	-2.20	32.67	54.00	-21.33	peak

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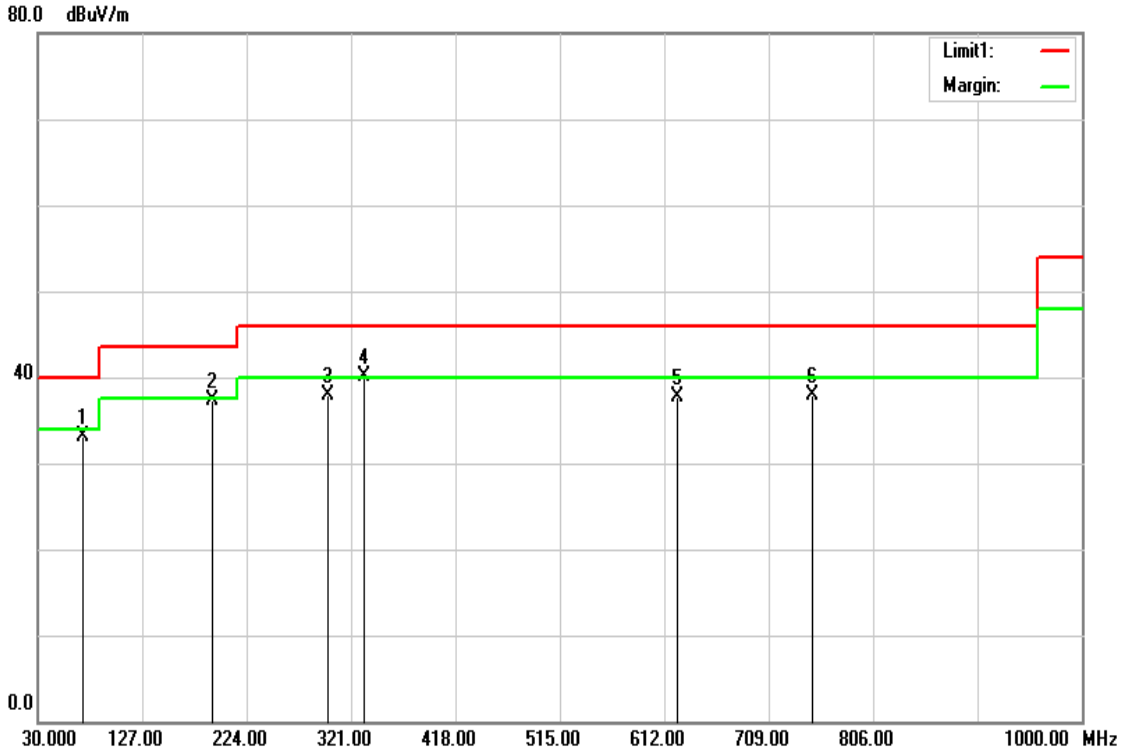
Test Mode	Mode 1	Temp/Hum	27(℃)/ 53%RH
Test Item	30MHz-1GHz	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Qusi-peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB	Remark
71.7100	53.87	-20.81	33.06	40.00	-6.94	peak
191.9900	53.57	-16.27	37.30	43.50	-6.20	QP
299.6600	52.25	-14.25	38.00	46.00	-8.00	QP
333.6100	53.36	-13.33	40.03	46.00	-5.97	QP
624.6100	44.82	-7.17	37.65	46.00	-8.35	peak
749.7400	42.82	-4.93	37.89	46.00	-8.11	peak

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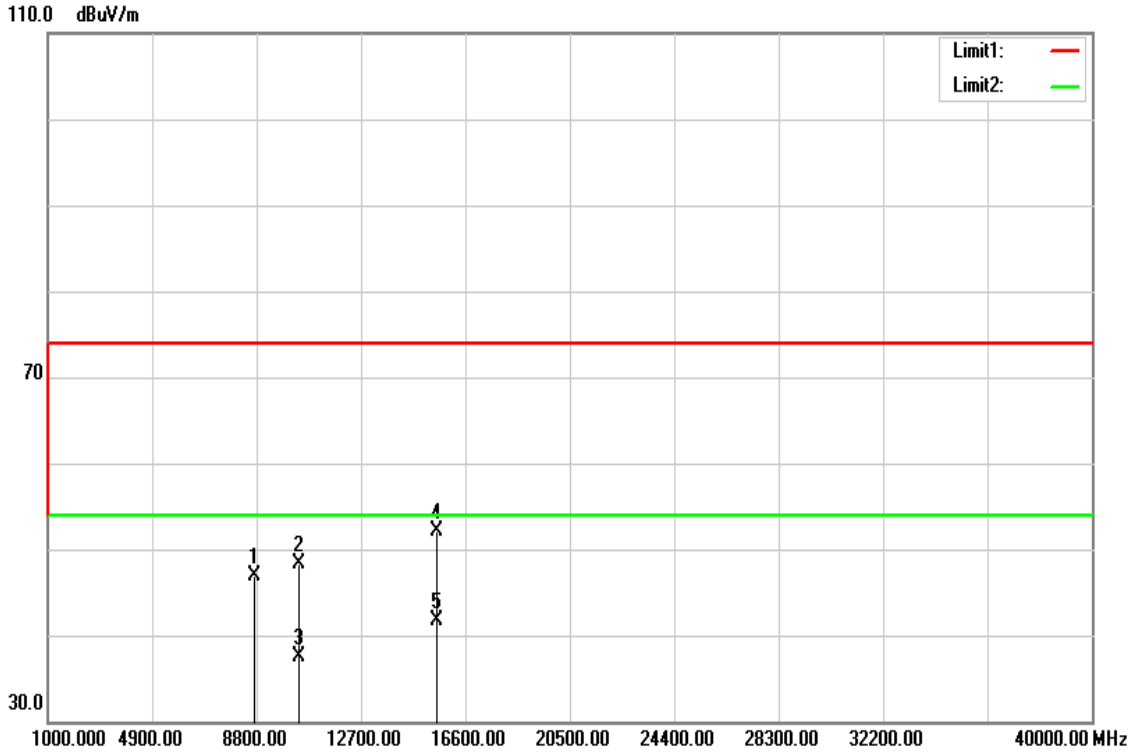
Above 1G Test Data for UNII-1

Test Mode	IEEE 802.11a Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8740.000	33.14	13.75	46.89	74.00	-27.11	peak
10360.000	31.83	16.52	48.35	74.00	-25.65	peak
10360.000	20.89	16.52	37.41	54.00	-16.59	AVG
15540.000	33.12	19.04	52.16	74.00	-21.84	peak
15540.000	22.64	19.04	41.68	54.00	-12.32	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*

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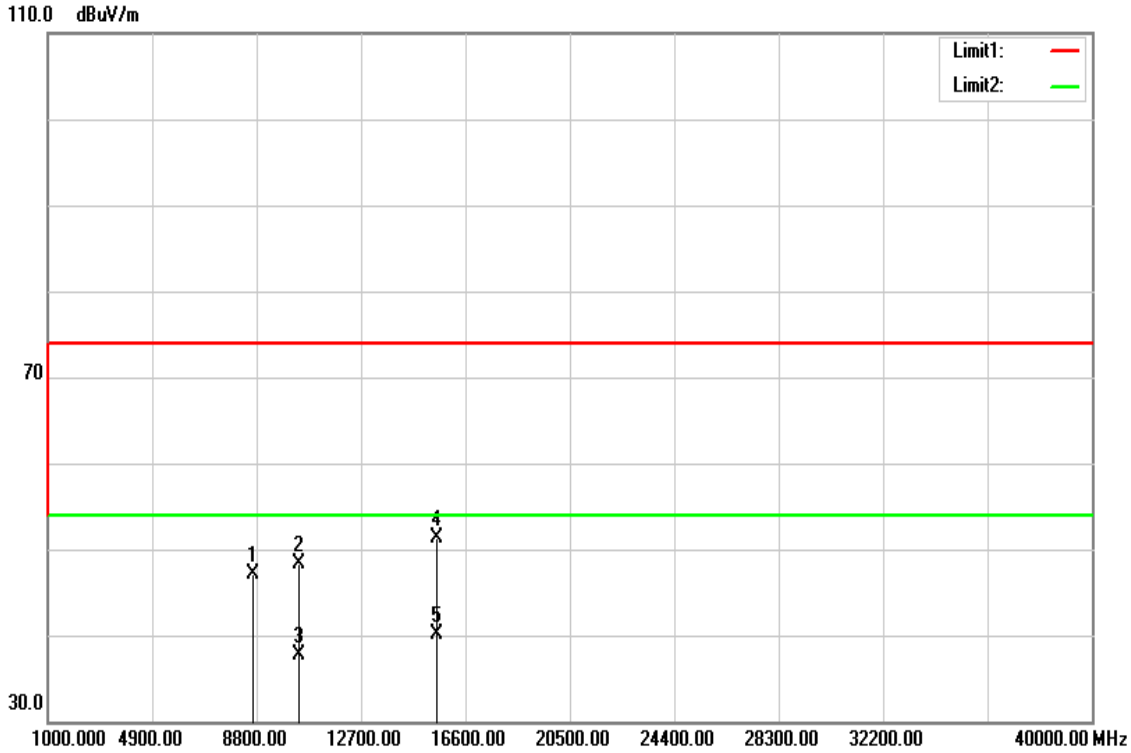
Test Mode	IEEE 802.11a Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8670.000	33.43	13.72	47.15	74.00	-26.85	peak
10360.000	31.87	16.52	48.39	74.00	-25.61	peak
10360.000	21.10	16.52	37.62	54.00	-16.38	AVG
15540.000	32.28	19.04	51.32	74.00	-22.68	peak
15540.000	21.11	19.04	40.15	54.00	-13.85	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*

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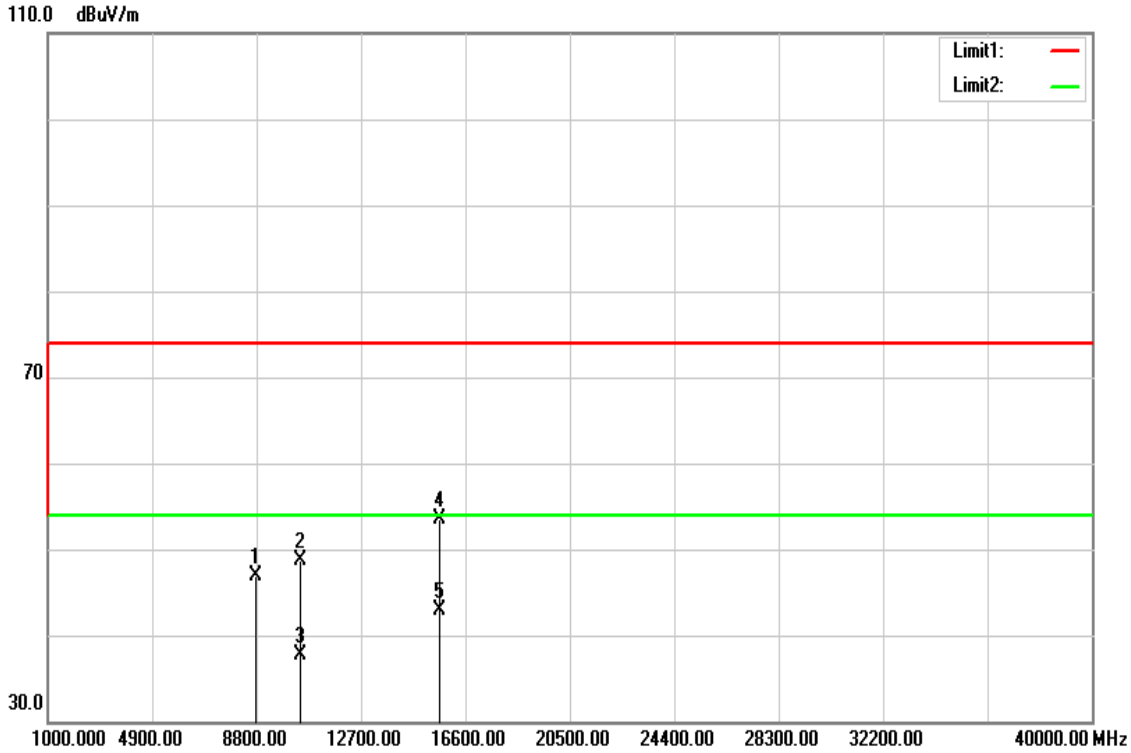
Test Mode	IEEE 802.11a Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8750.000	33.08	13.75	46.83	74.00	-27.17	peak
10440.000	31.91	16.89	48.80	74.00	-25.20	peak
10440.000	20.73	16.89	37.62	54.00	-16.38	AVG
15660.000	34.27	19.14	53.41	74.00	-20.59	peak
15660.000	23.69	19.14	42.83	54.00	-11.17	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*

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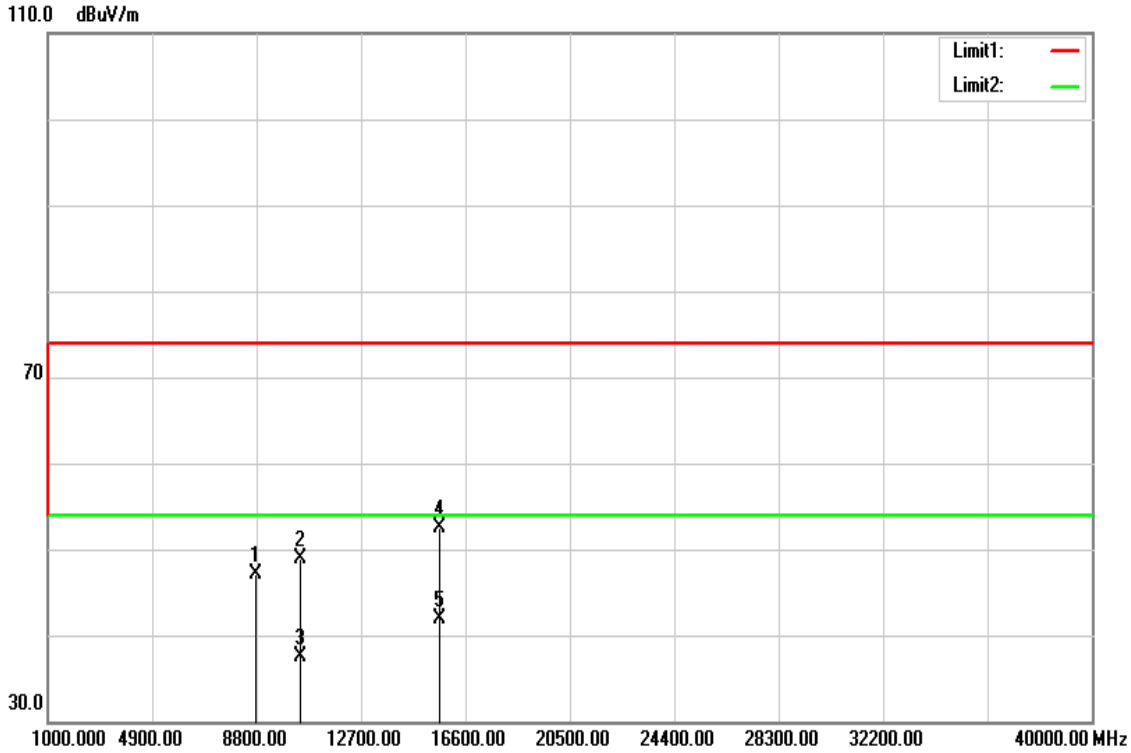
Test Mode	IEEE 802.11a Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8760.000	33.41	13.76	47.17	74.00	-26.83	peak
10440.000	32.09	16.89	48.98	74.00	-25.02	peak
10440.000	20.52	16.89	37.41	54.00	-16.59	AVG
15660.000	33.31	19.14	52.45	74.00	-21.55	peak
15660.000	22.70	19.14	41.84	54.00	-12.16	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*

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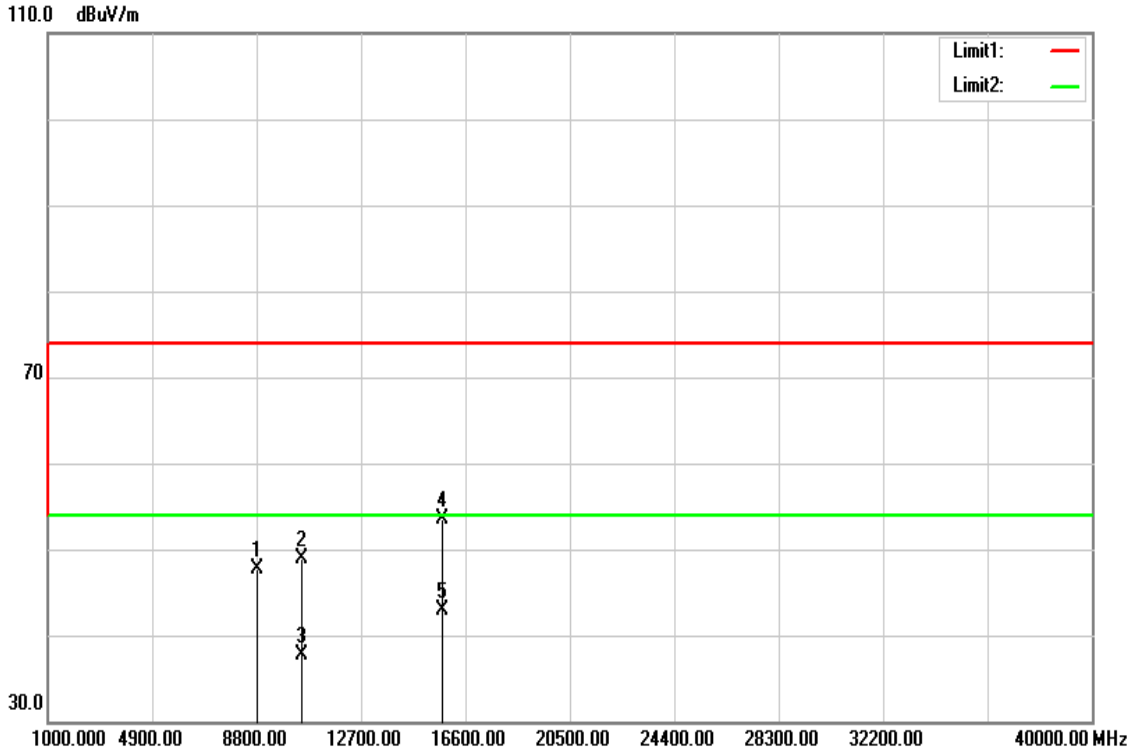
Test Mode	IEEE 802.11a High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



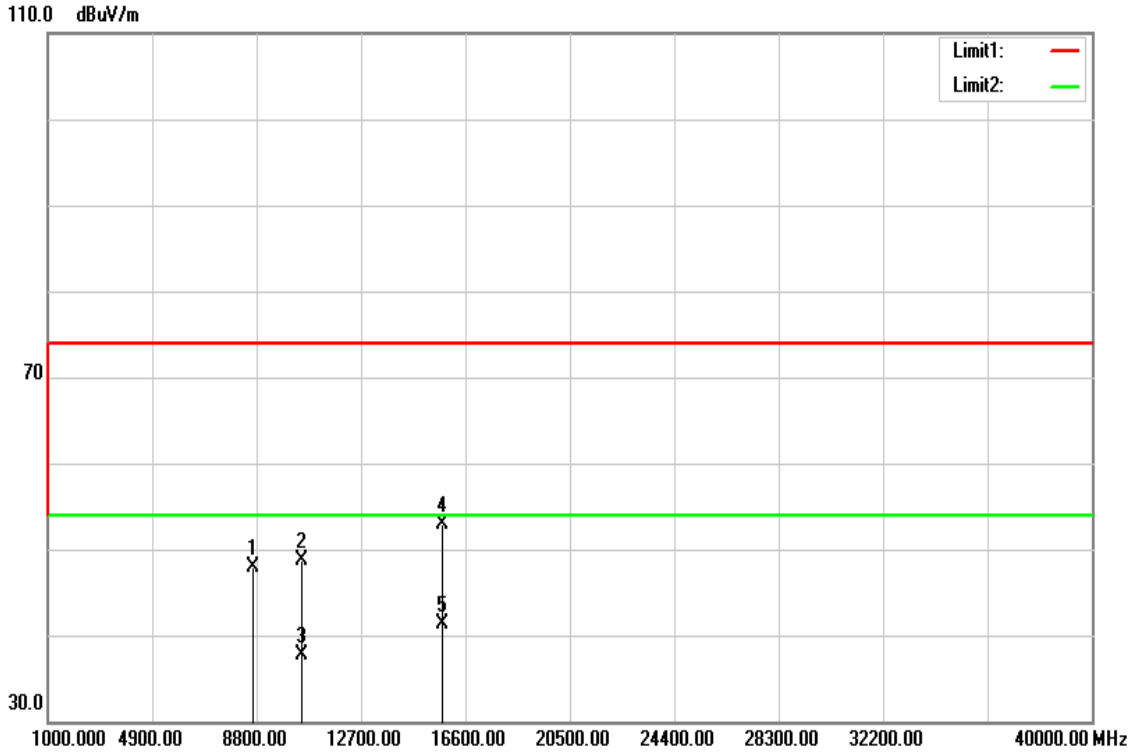
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8840.000	33.98	13.80	47.78	74.00	-26.22	peak
10480.000	31.85	17.07	48.92	74.00	-25.08	peak
10480.000	20.55	17.07	37.62	54.00	-16.38	AVG
15720.000	34.24	19.19	53.43	74.00	-20.57	peak
15720.000	23.62	19.19	42.81	54.00	-11.19	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



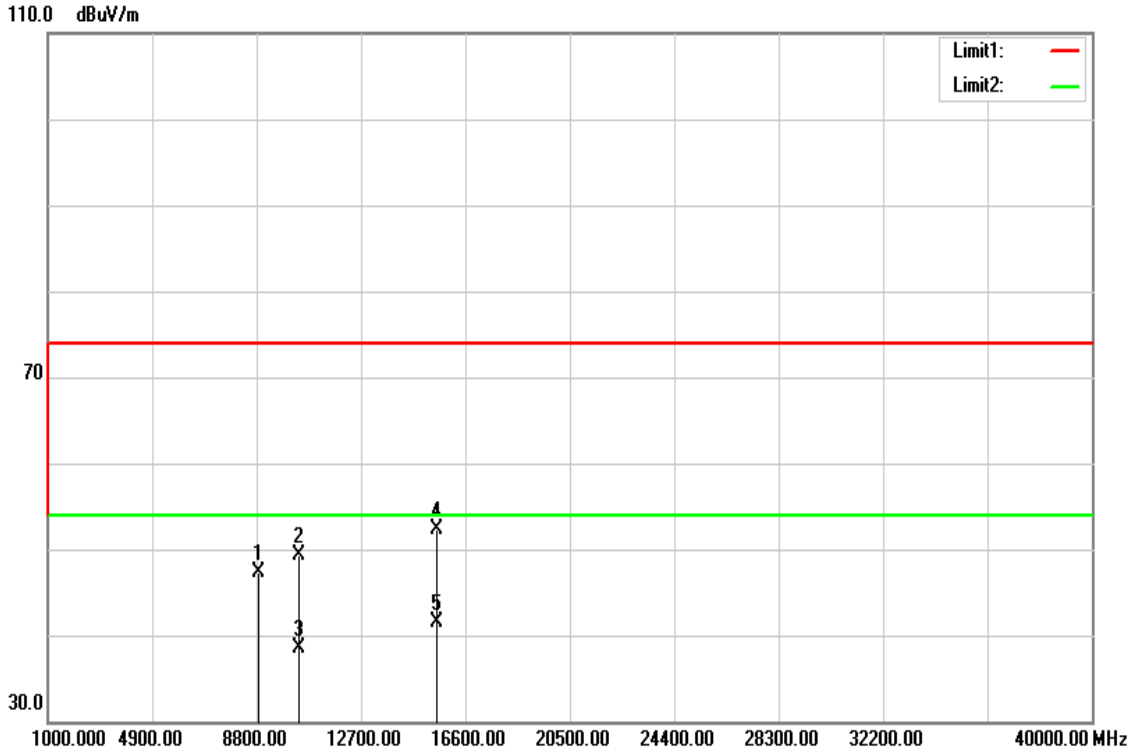
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8670.000	34.10	13.72	47.82	74.00	-26.18	peak
10480.000	31.70	17.07	48.77	74.00	-25.23	peak
10480.000	20.55	17.07	37.62	54.00	-16.38	AVG
15720.000	33.62	19.19	52.81	74.00	-21.19	peak
15720.000	22.09	19.19	41.28	54.00	-12.72	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



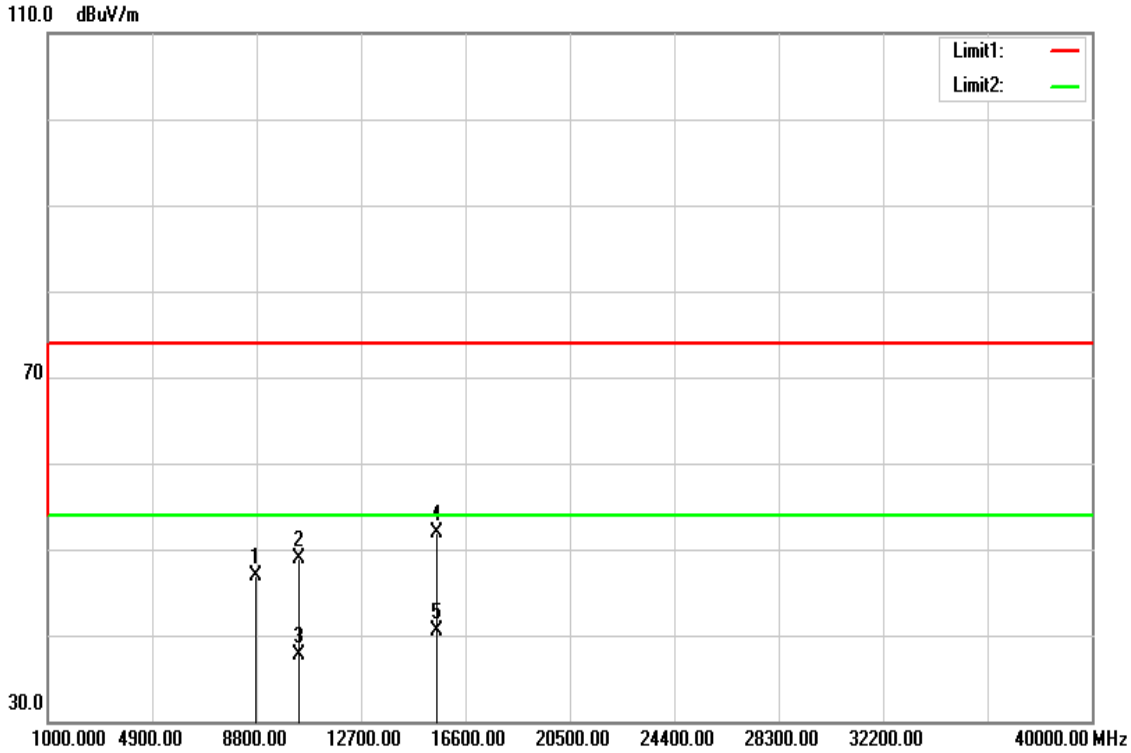
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8860.000	33.49	13.81	47.30	74.00	-26.70	peak
10360.000	32.78	16.52	49.30	74.00	-24.70	peak
10360.000	21.94	16.52	38.46	54.00	-15.54	AVG
15540.000	33.25	19.04	52.29	74.00	-21.71	peak
15540.000	22.53	19.04	41.57	54.00	-12.43	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



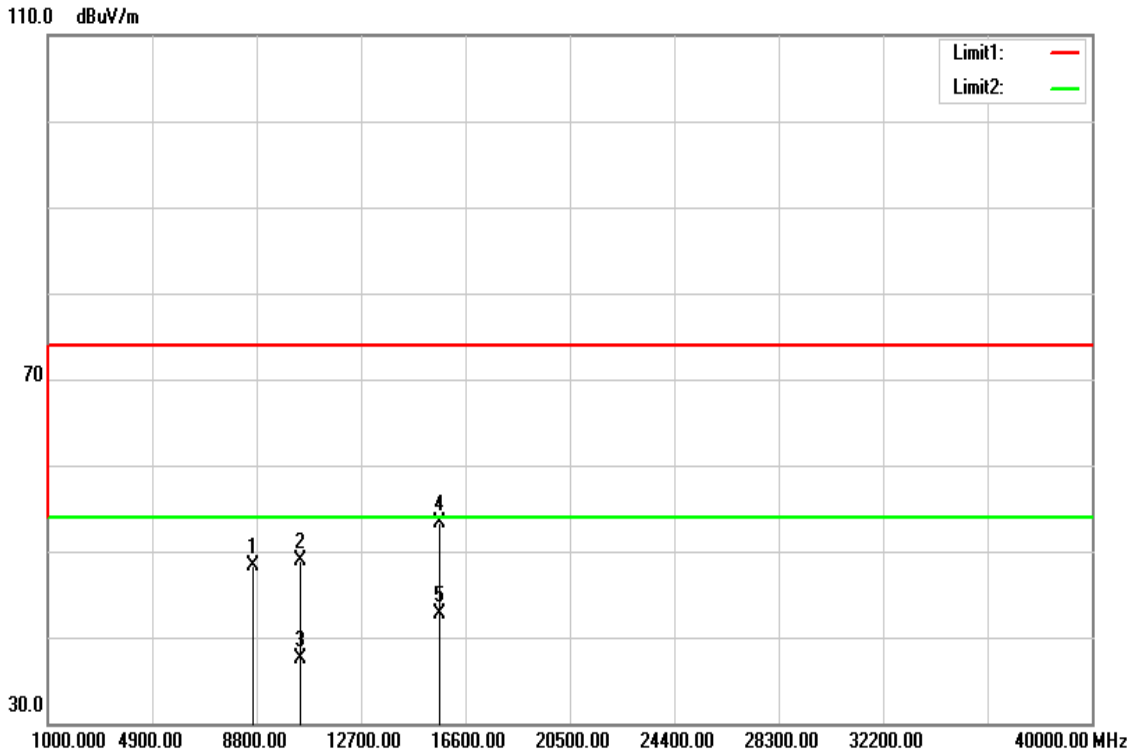
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8750.000	33.14	13.75	46.89	74.00	-27.11	peak
10360.000	32.32	16.52	48.84	74.00	-25.16	peak
10360.000	21.13	16.52	37.65	54.00	-16.35	AVG
15540.000	32.80	19.04	51.84	74.00	-22.16	peak
15540.000	21.43	19.04	40.47	54.00	-13.53	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



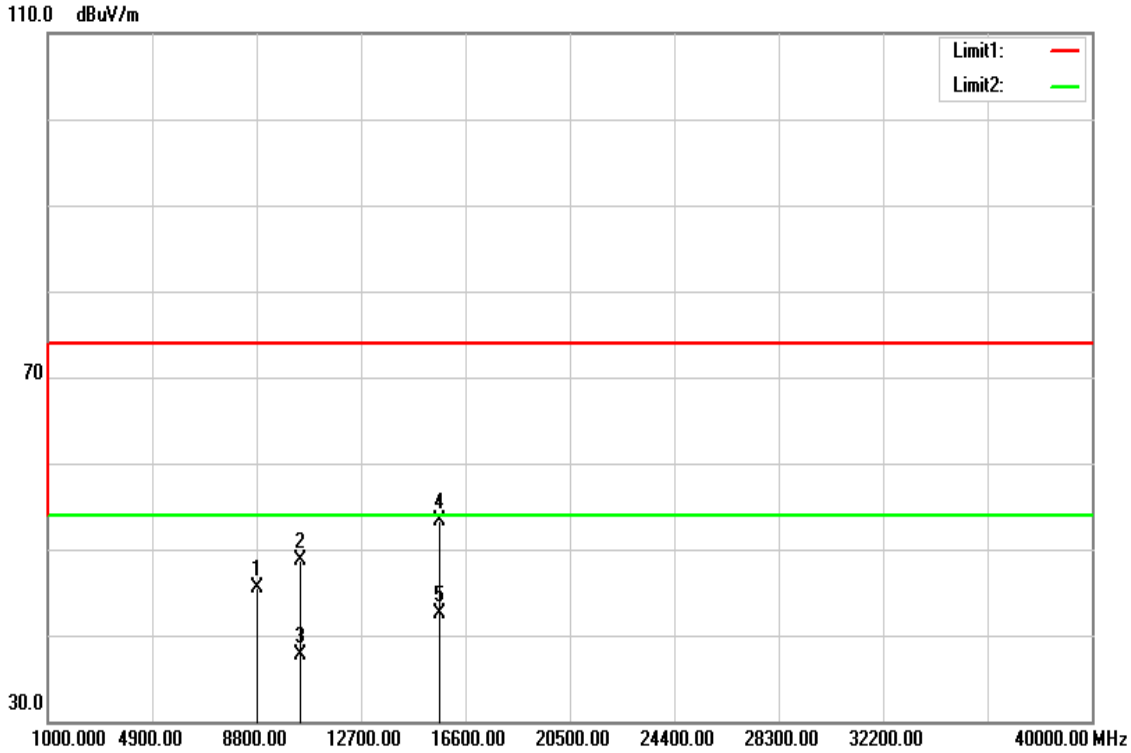
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8690.000	34.53	13.73	48.26	74.00	-25.74	peak
10440.000	32.04	16.89	48.93	74.00	-25.07	peak
10440.000	20.66	16.89	37.55	54.00	-16.45	AVG
15660.000	34.13	19.14	53.27	74.00	-20.73	peak
15660.000	23.57	19.14	42.71	54.00	-11.29	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



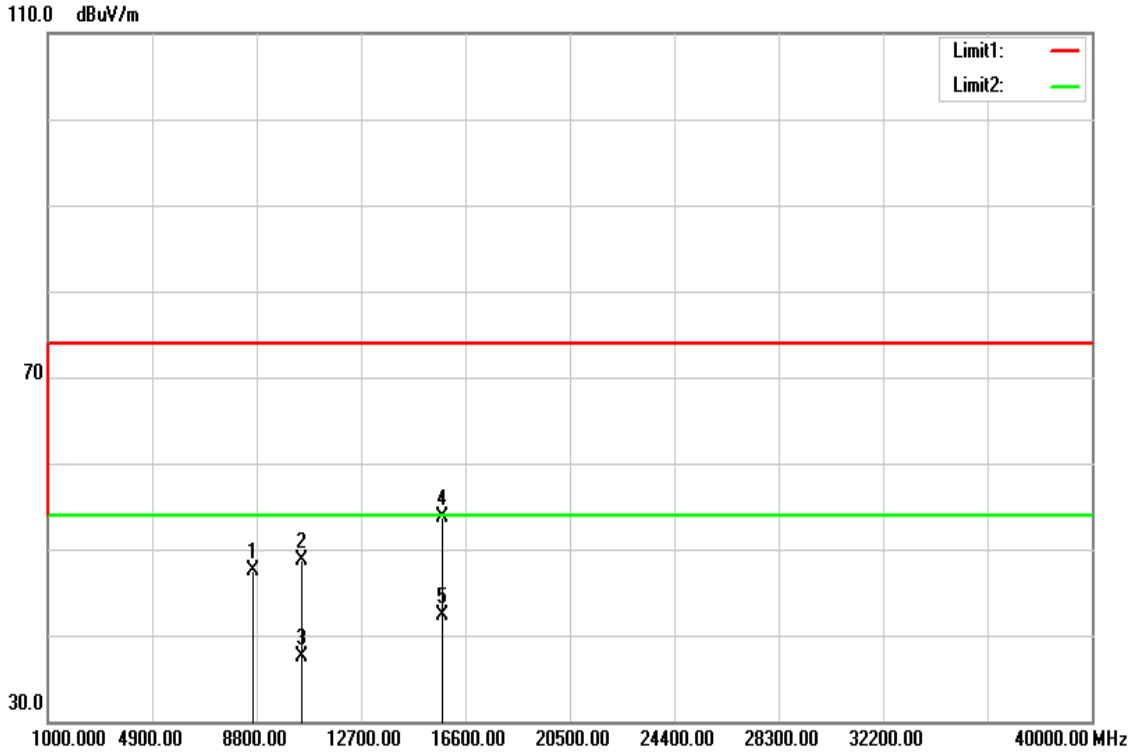
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8820.000	31.78	13.79	45.57	74.00	-28.43	peak
10440.000	31.73	16.89	48.62	74.00	-25.38	peak
10440.000	20.82	16.89	37.71	54.00	-16.29	AVG
15660.000	34.10	19.14	53.24	74.00	-20.76	peak
15660.000	23.30	19.14	42.44	54.00	-11.56	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



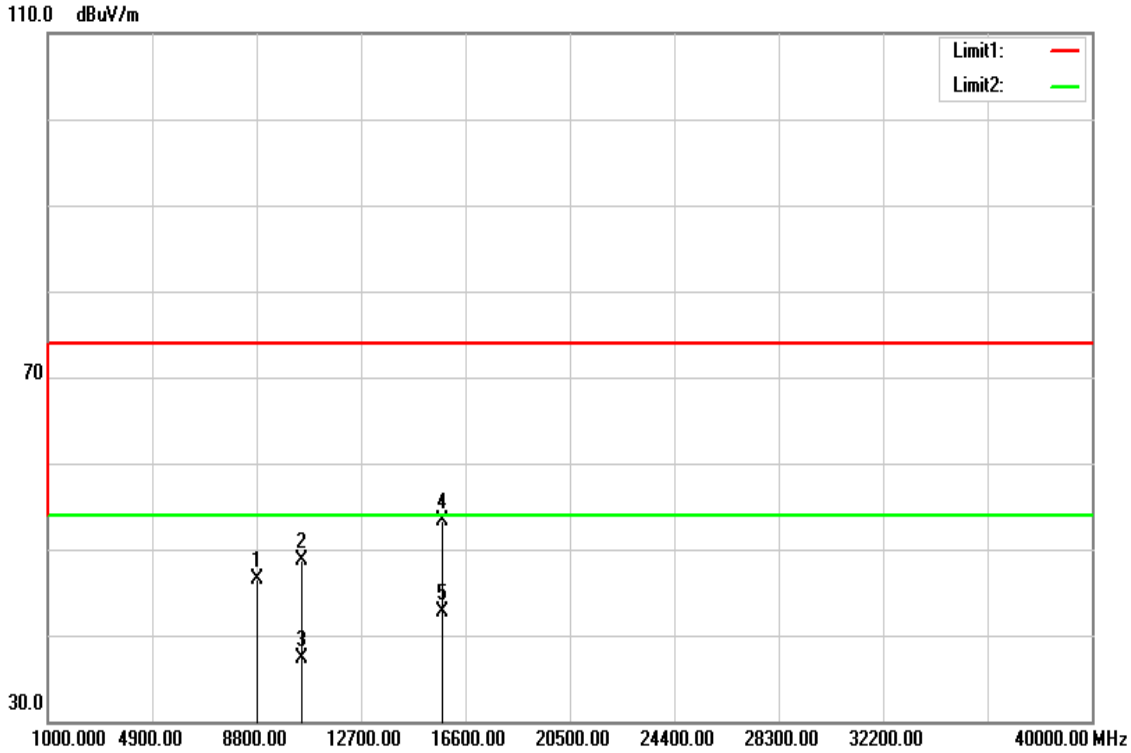
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8690.000	33.77	13.73	47.50	74.00	-26.50	peak
10480.000	31.57	17.07	48.64	74.00	-25.36	peak
10480.000	20.35	17.07	37.42	54.00	-16.58	AVG
15720.000	34.48	19.19	53.67	74.00	-20.33	peak
15720.000	23.16	19.19	42.35	54.00	-11.65	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



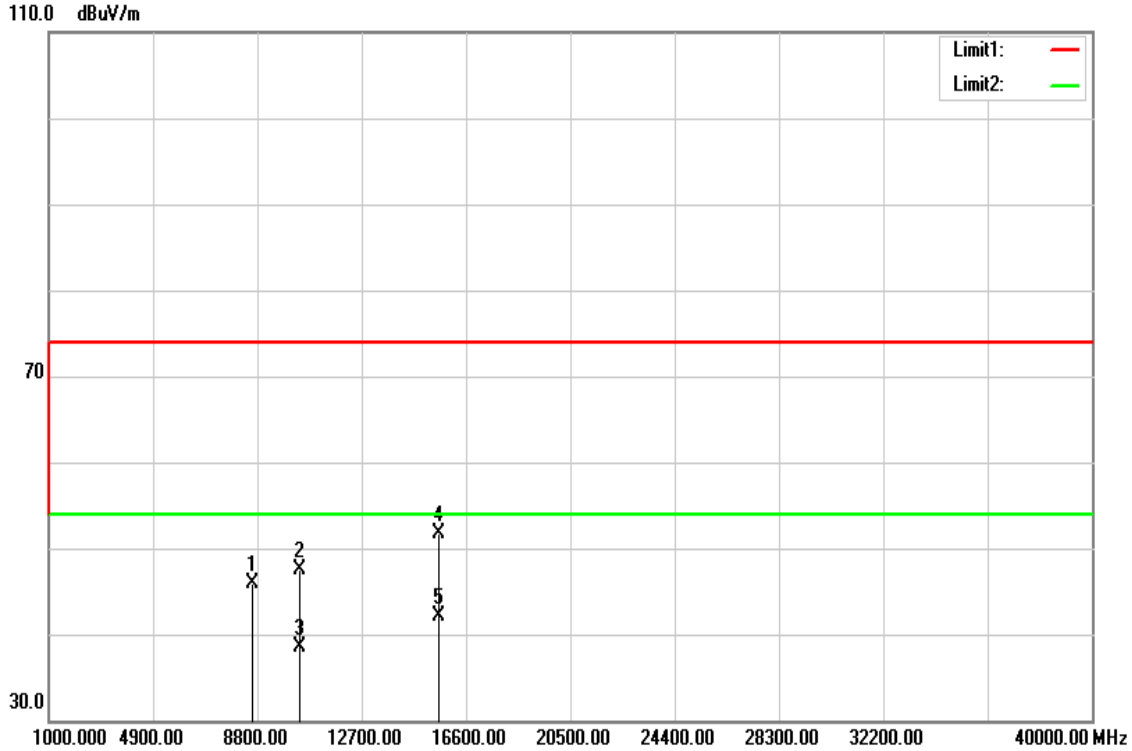
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8840.000	32.78	13.80	46.58	74.00	-27.42	peak
10480.000	31.55	17.07	48.62	74.00	-25.38	peak
10480.000	20.17	17.07	37.24	54.00	-16.76	AVG
15720.000	34.02	19.19	53.21	74.00	-20.79	peak
15720.000	23.61	19.19	42.80	54.00	-11.20	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



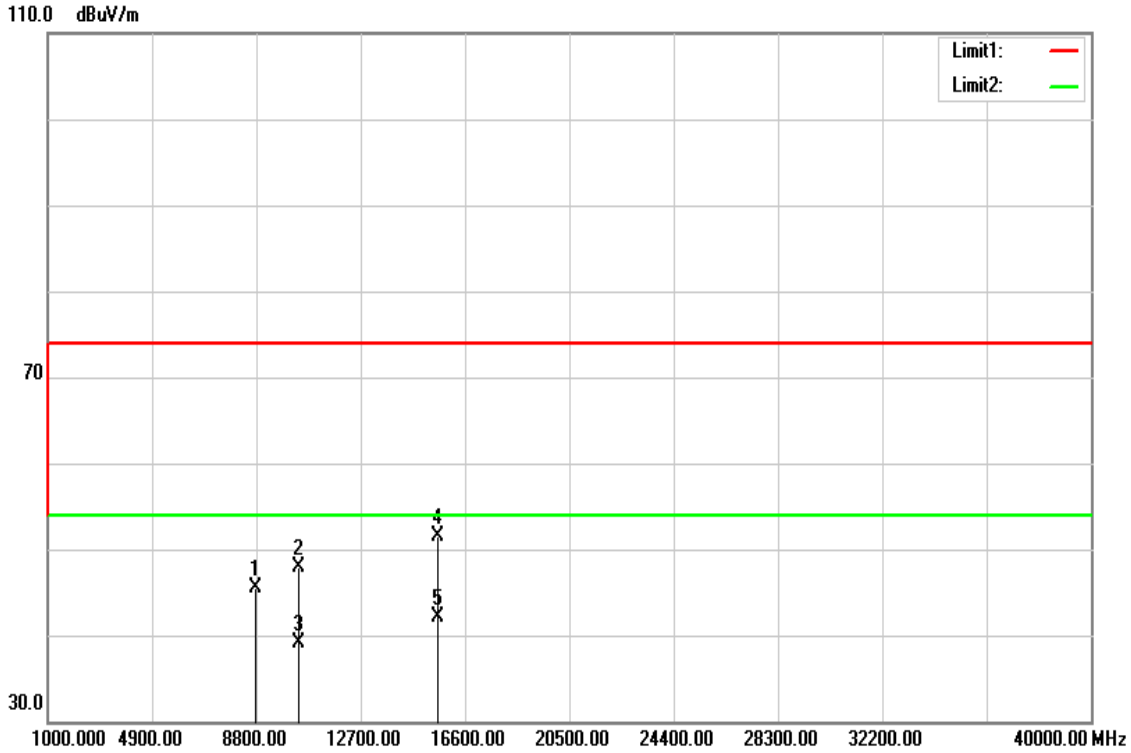
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8610.000	32.18	13. 9	45.87	74.00	-28.13	peak
10380.000	30.81	16.62	47.43	74.00	-26.57	peak
10380.000	21.96	16.62	38.58	54.00	-15.42	AVG
15570.000	32.56	19.07	51.63	74.00	-22.37	peak
15570.000	23.02	19.07	42.09	54.00	-11.91	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



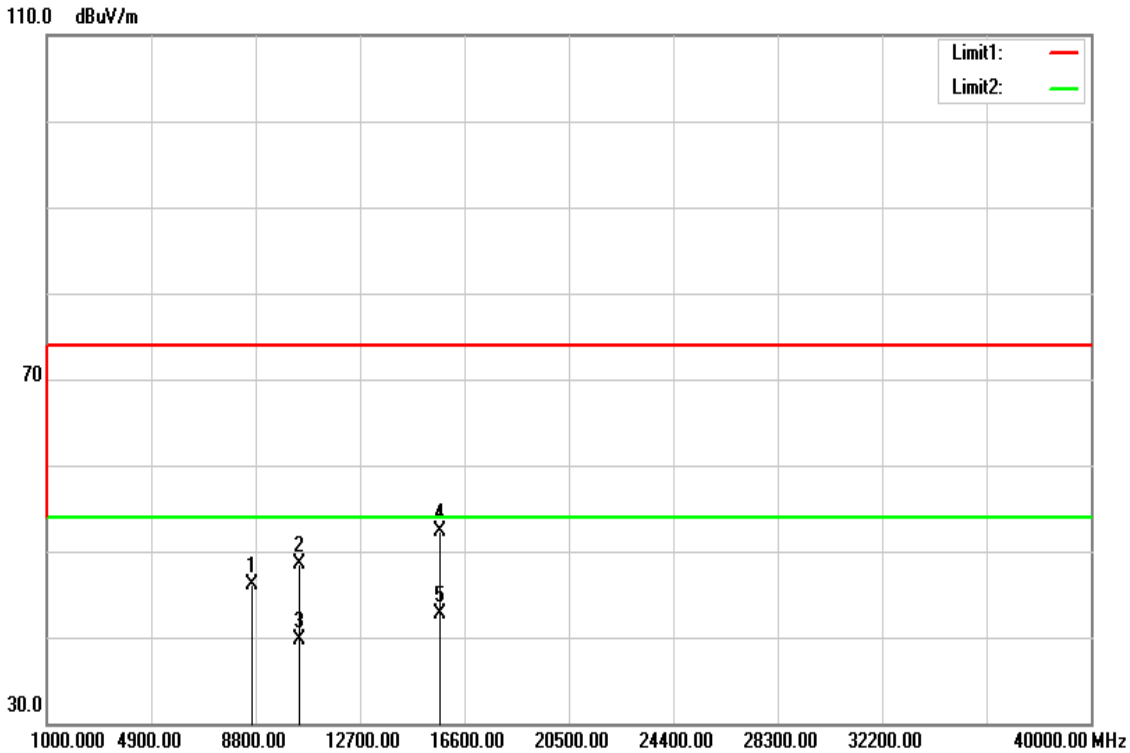
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8770.000	31.80	1 .76	45.56	74.00	-28.44	peak
10380.000	31.30	16.62	47.92	74.00	-26.08	peak
10380.000	22.40	16.62	39.02	54.00	-14.98	AVG
15570.000	32.43	19.07	51.50	74.00	-22.50	peak
15570.000	22.94	19.07	42.01	54.00	-11.99	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



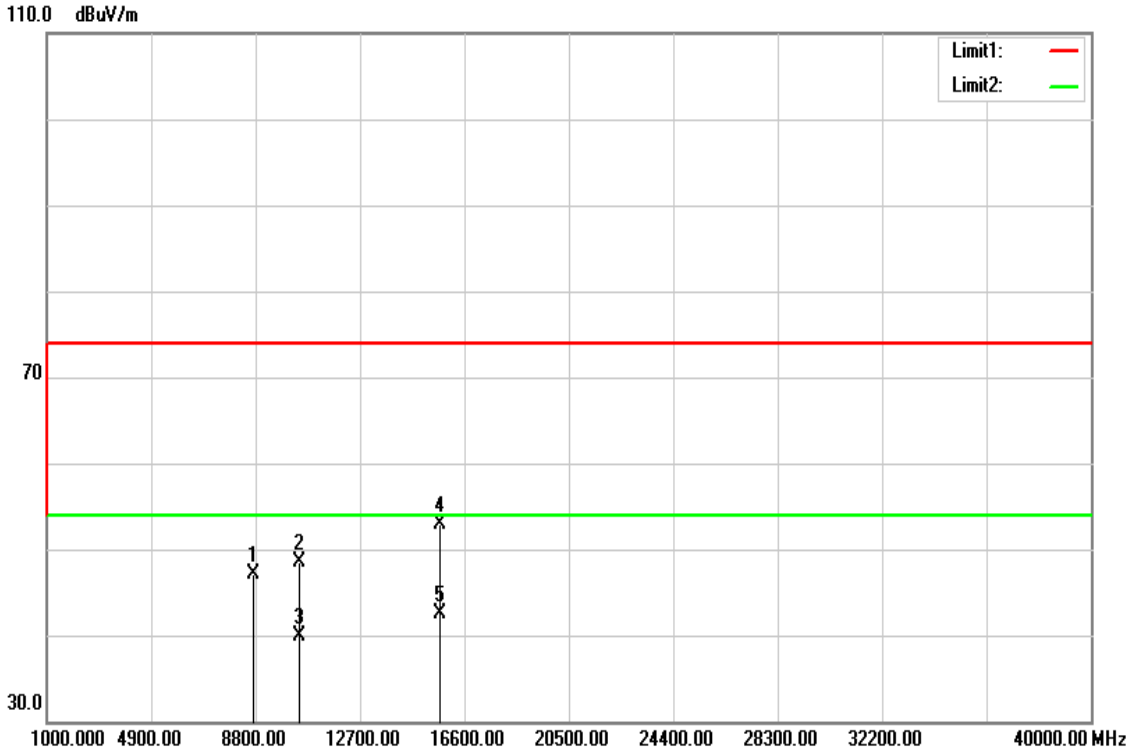
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8680.000	32.29	13. 2	46.01	74.00	-27.99	peak
10460.000	31.44	16.98	48.42	74.00	-25.58	peak
10460.000	22.74	16.98	39.72	54.00	-14.28	AVG
15690.000	33.18	19.17	52.35	74.00	-21.65	peak
15690.000	23.49	19.17	42.66	54.00	-11.34	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8700.000	33.37	1 .73	47.10	74.00	-26.90	peak
10460.000	31.52	16.98	48.50	74.00	-25.50	peak
10460.000	22.84	16.98	39.82	54.00	-14.18	AVG
15690.000	33.82	19.17	52.99	74.00	-21.01	peak
15690.000	23.25	19.17	42.42	54.00	-11.58	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*

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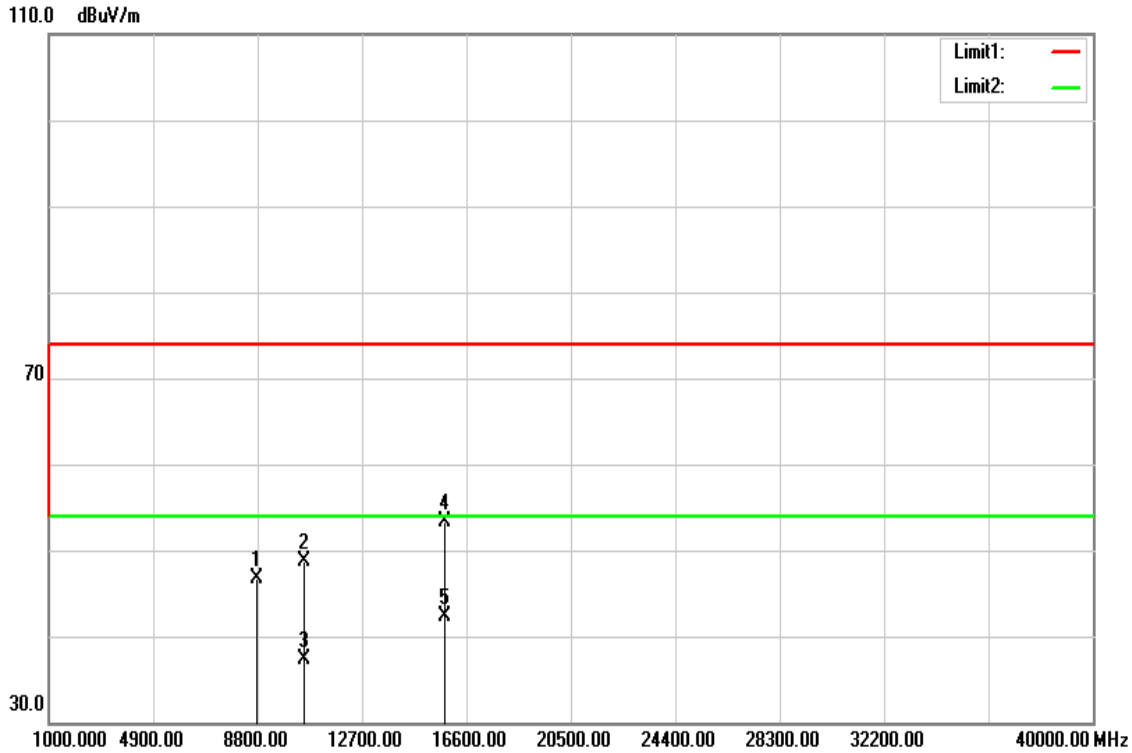
Above 1G Test Data for UNII-2a

Test Mode	IEEE 802.11a Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



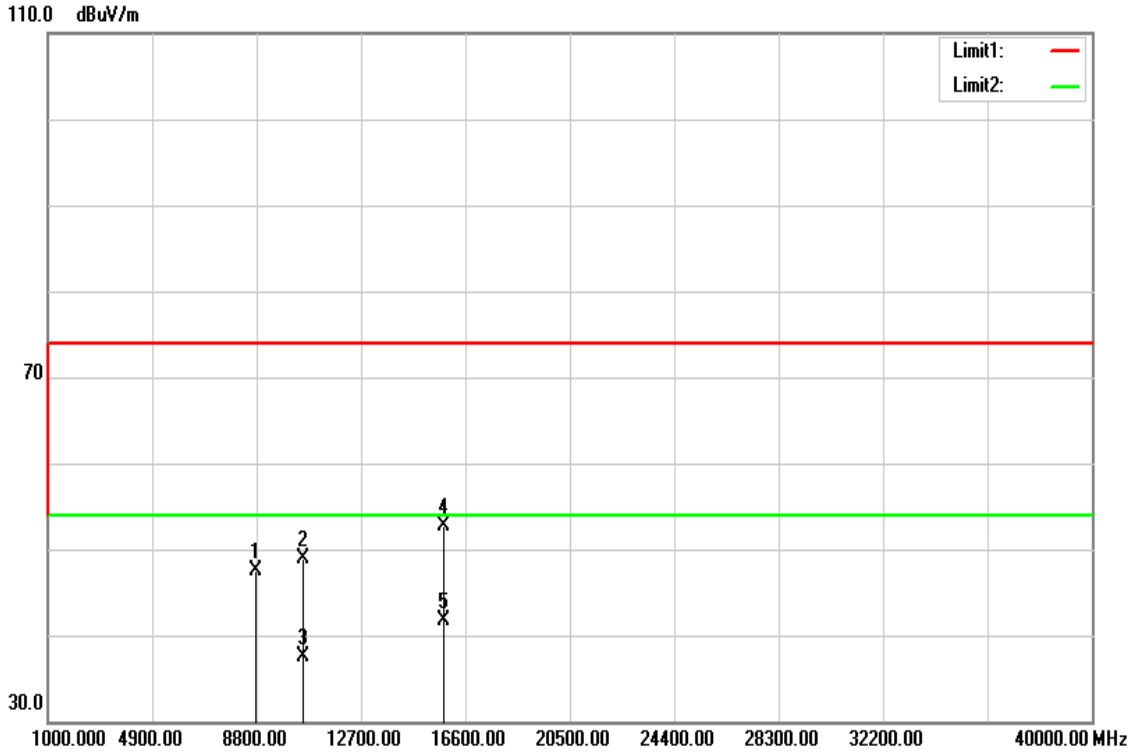
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8750.000	32.99	1 .75	46.74	74.00	-27.26	peak
10520.000	31.56	17.14	48.70	74.00	-25.30	peak
10520.000	20.10	17.14	37.24	54.00	-16.76	AVG
15780.000	33.95	19.25	53.20	74.00	-20.80	peak
15780.000	23.11	19.25	42.36	54.00	-11.64	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



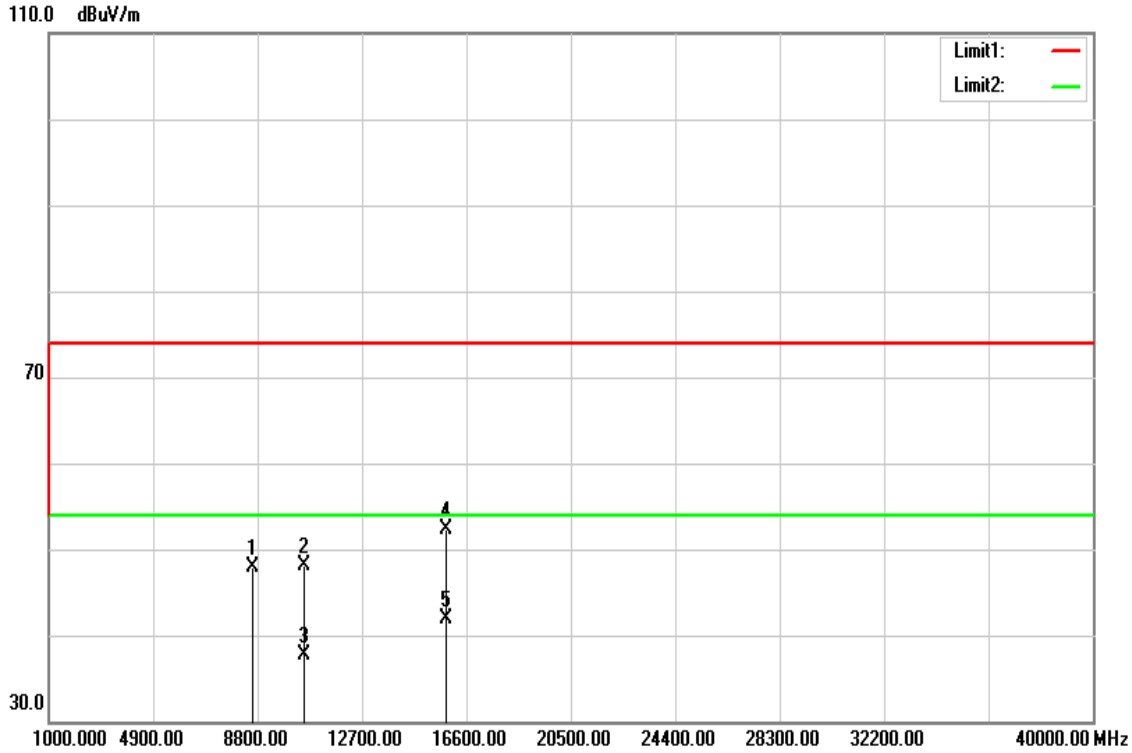
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8760.000	33.68	13.76	47.44	74.00	-26.56	peak
10520.000	31.76	17.14	48.90	74.00	-25.10	peak
10520.000	20.28	17.14	37.42	54.00	-16.58	AVG
15780.000	33.50	19.25	52.75	74.00	-21.25	peak
15780.000	22.44	19.25	41.69	54.00	-12.31	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



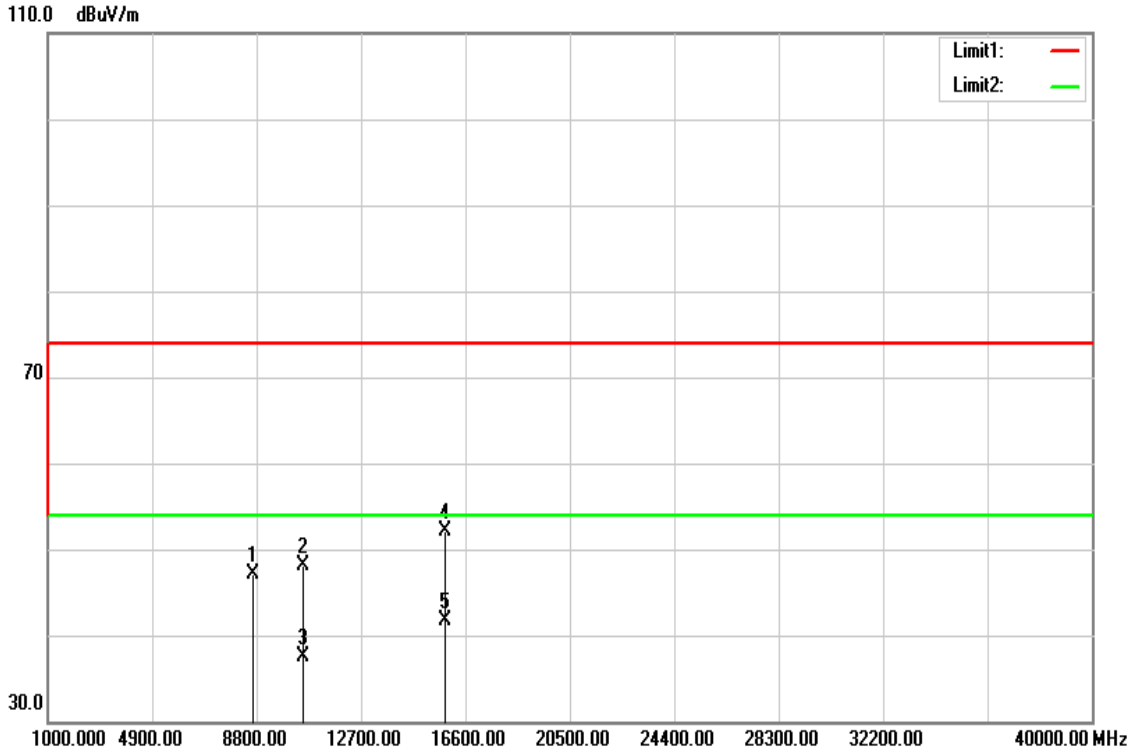
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8620.000	34.23	13.70	47.93	74.00	-26.07	peak
10560.000	30.99	17.11	48.10	74.00	-25.90	peak
10560.000	20.57	17.11	37.68	54.00	-16.32	AVG
15840.000	32.99	19.30	52.29	74.00	-21.71	peak
15840.000	22.62	19.30	41.92	54.00	-12.08	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



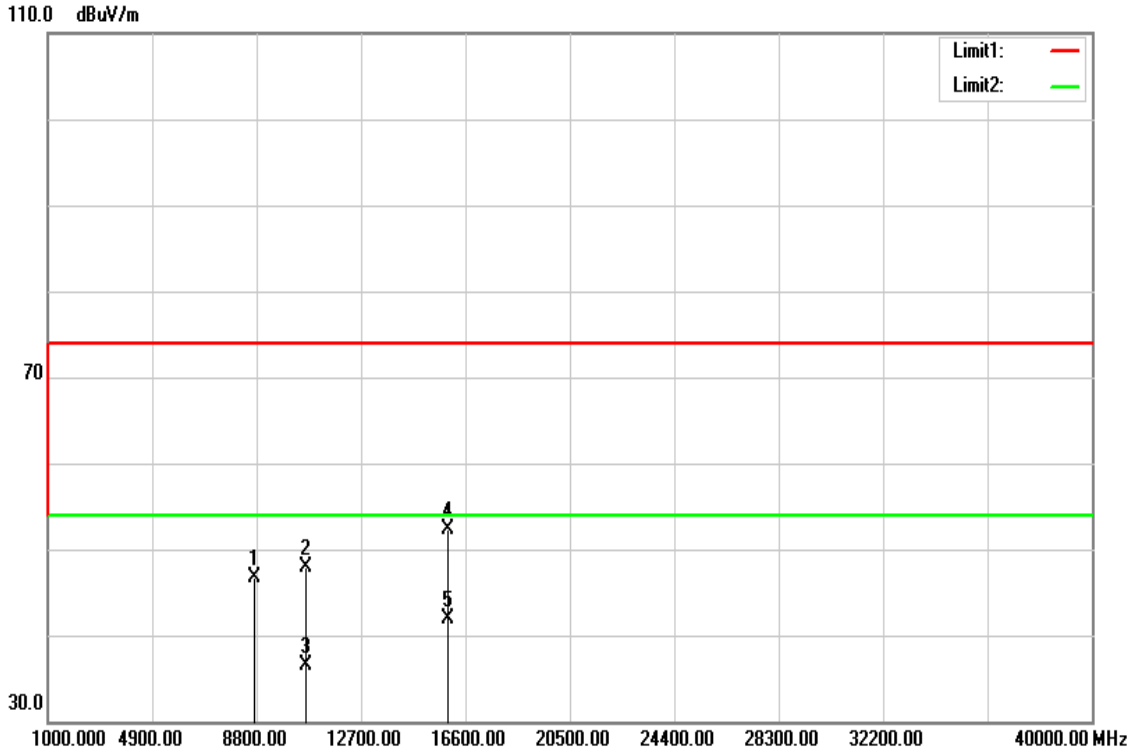
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8690.000	33.43	13.73	47.16	74.00	-26.84	peak
10560.000	30.99	17.11	48.10	74.00	-25.90	peak
10560.000	20.41	17.11	37.52	54.00	-16.48	AVG
15840.000	32.85	19.30	52.15	74.00	-21.85	peak
15840.000	22.33	19.30	41.63	54.00	-12.37	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



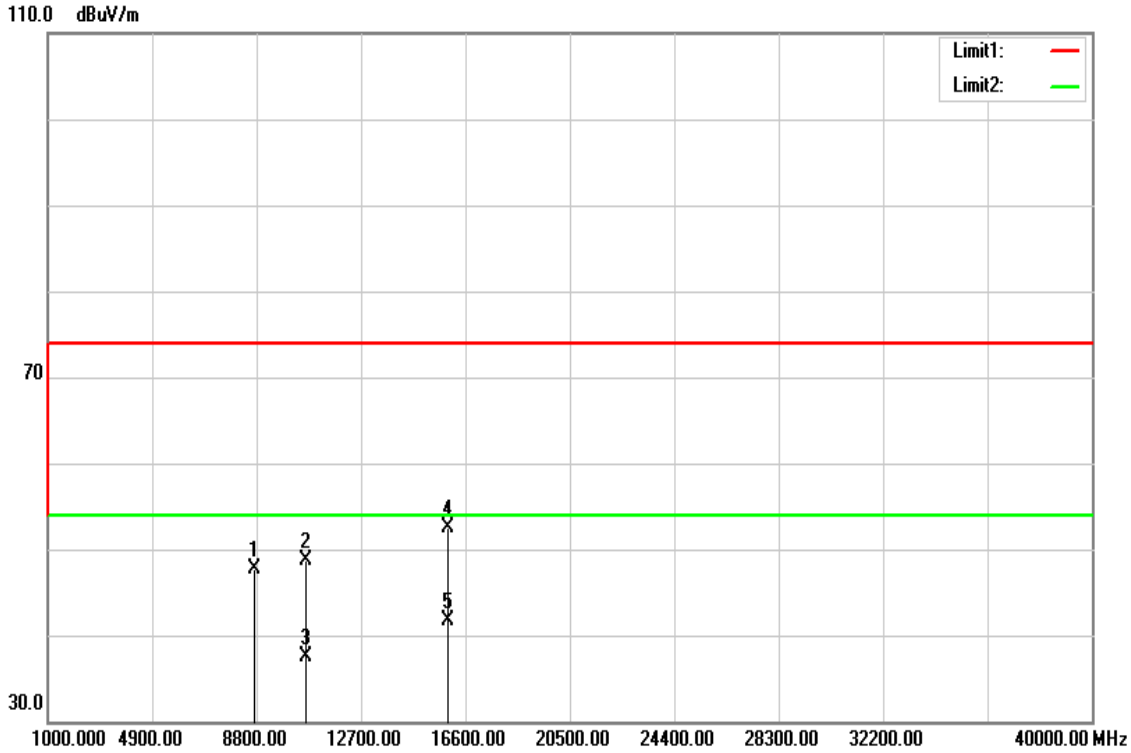
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8740.000	32.94	13.75	46.69	74.00	-27.31	peak
10640.000	30.91	17.04	47.95	74.00	-26.05	peak
10640.000	19.54	17.04	36.58	54.00	-17.42	AVG
15960.000	32.95	19.40	52.35	74.00	-21.65	peak
15960.000	22.52	19.40	41.92	54.00	-12.08	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



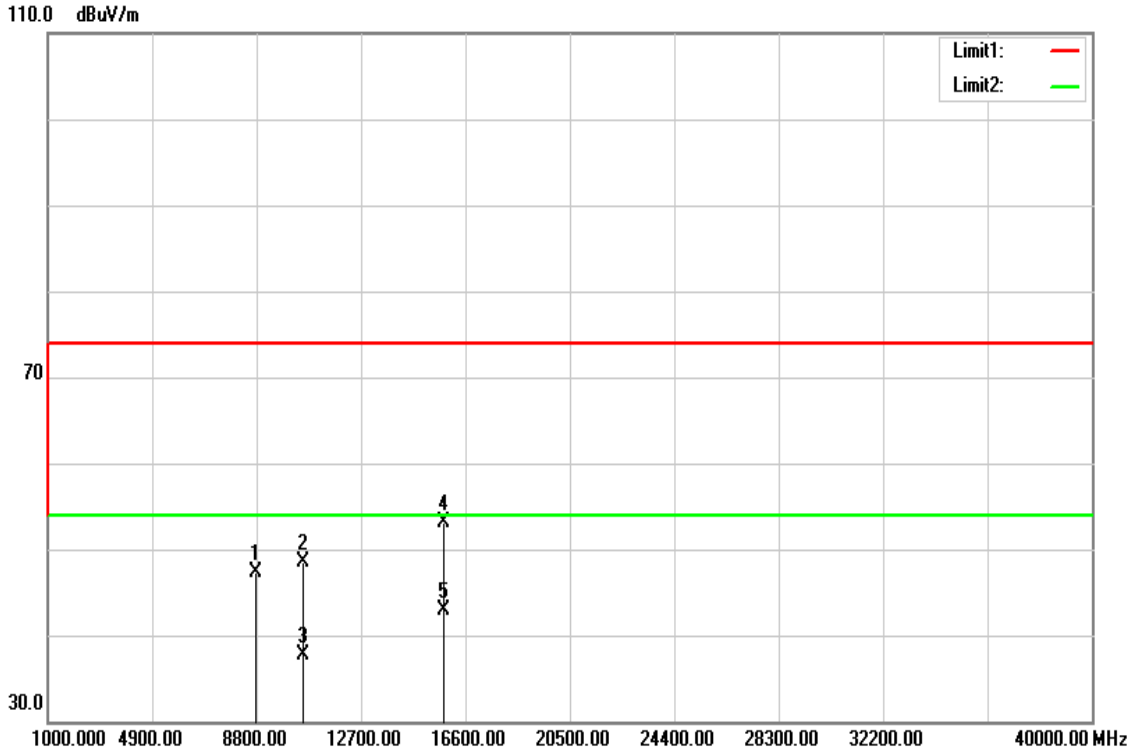
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8720.000	34.05	13.74	47.79	74.00	-26.21	peak
10640.000	31.57	17.04	48.61	74.00	-25.39	peak
10640.000	20.47	17.04	37.51	54.00	-16.49	AVG
15960.000	33.16	19.40	52.56	74.00	-21.44	peak
15960.000	22.29	19.40	41.69	54.00	-12.31	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



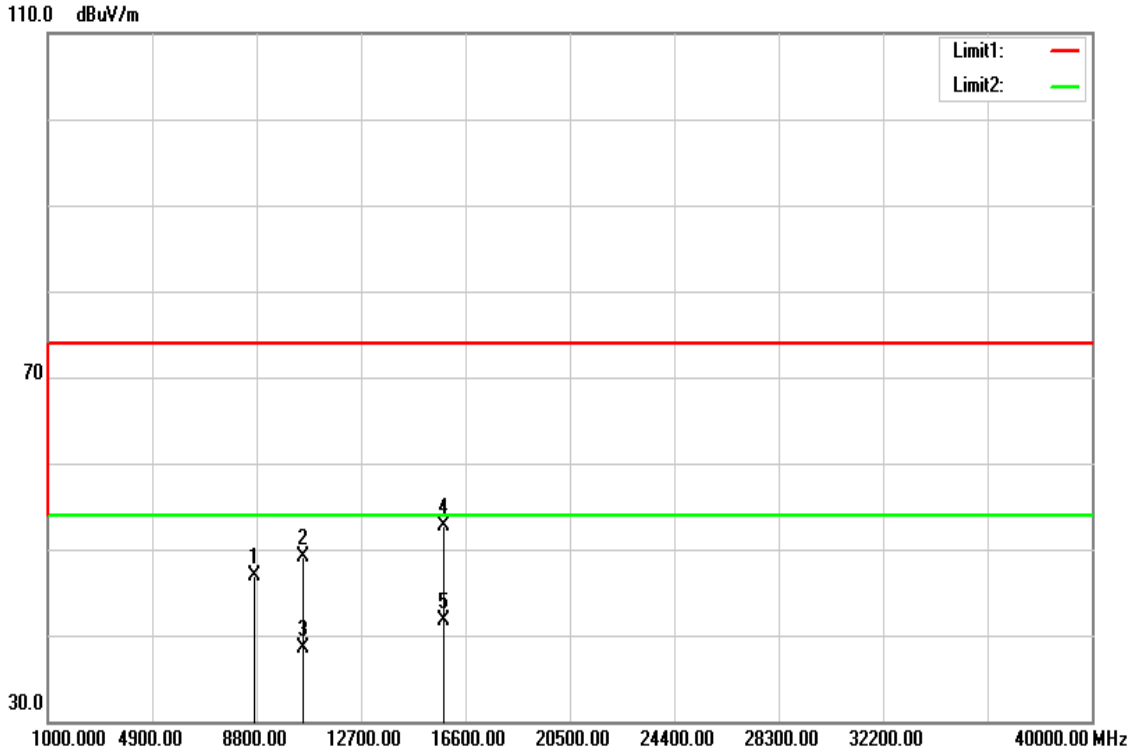
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8760.000	33.58	13.76	47.34	74.00	-26.66	peak
10520.000	31.43	17.14	48.57	74.00	-25.43	peak
10520.000	20.48	17.14	37.62	54.00	-16.38	AVG
15780.000	33.92	19.25	53.17	74.00	-20.83	peak
15780.000	23.62	19.25	42.87	54.00	-11.13	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



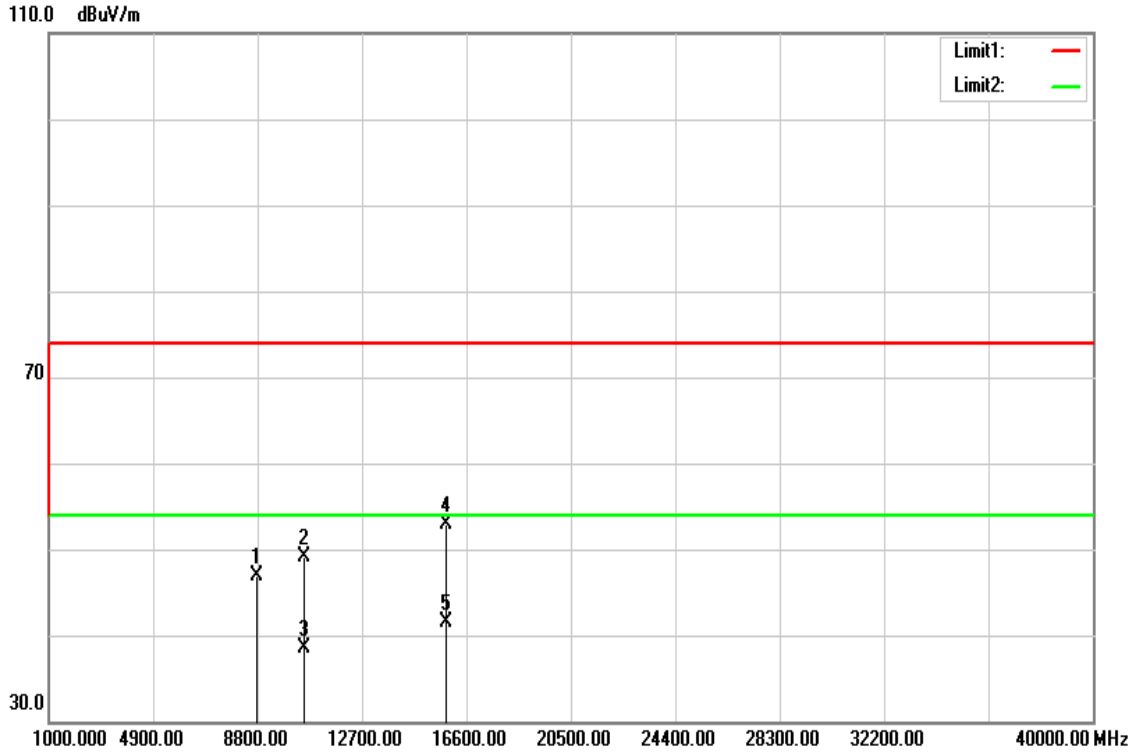
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8740.000	33.23	13.75	46.98	74.00	-27.02	peak
10520.000	31.91	17.14	49.05	74.00	-24.95	peak
10520.000	21.27	17.14	38.41	54.00	-15.59	AVG
15780.000	33.54	19.25	52.79	74.00	-21.21	peak
15780.000	22.53	19.25	41.78	54.00	-12.22	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



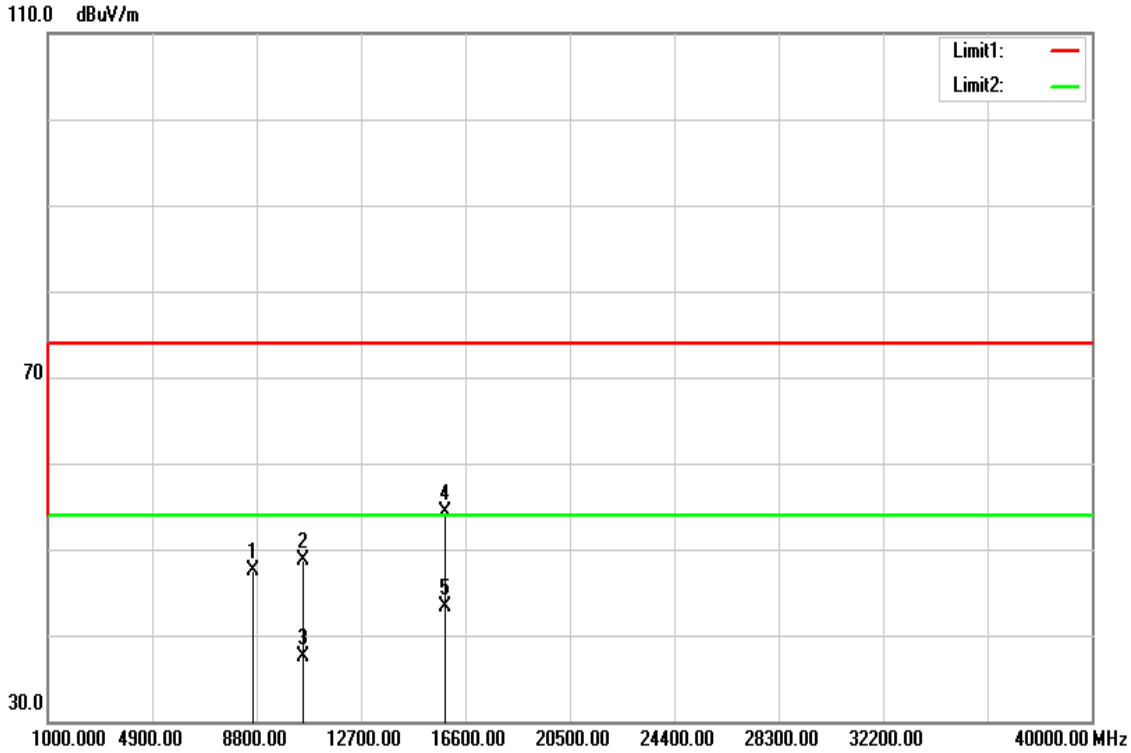
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8750.000	33.12	13.75	46.87	74.00	-27.13	peak
10560.000	32.00	17.11	49.11	74.00	-24.89	peak
10560.000	21.31	17.11	38.42	54.00	-15.58	AVG
15840.000	33.67	19.30	52.97	74.00	-21.03	peak
15840.000	22.16	19.30	41.46	54.00	-12.54	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



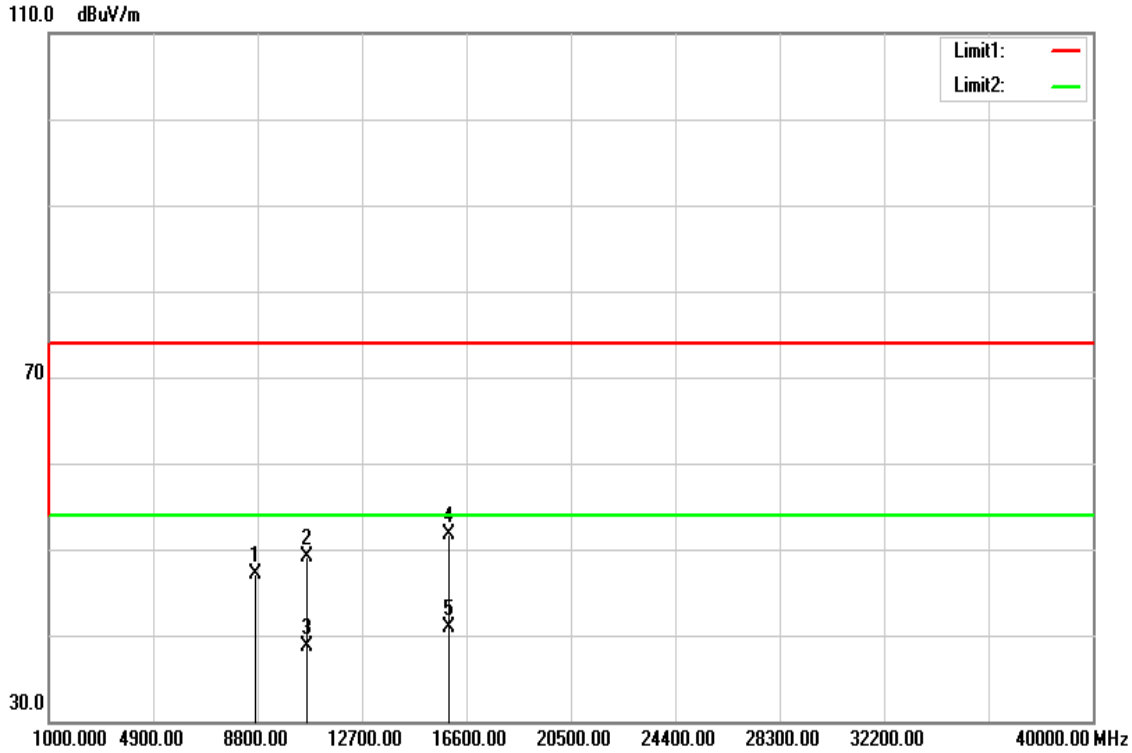
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8690.000	33.78	13.73	47.51	74.00	-26.49	peak
10560.000	31.66	17.11	48.77	74.00	-25.23	peak
10560.000	20.47	17.11	37.58	54.00	-16.42	AVG
15840.000	35.02	19.30	54.32	74.00	-19.68	peak
15840.000	23.92	19.30	43.22	54.00	-10.78	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



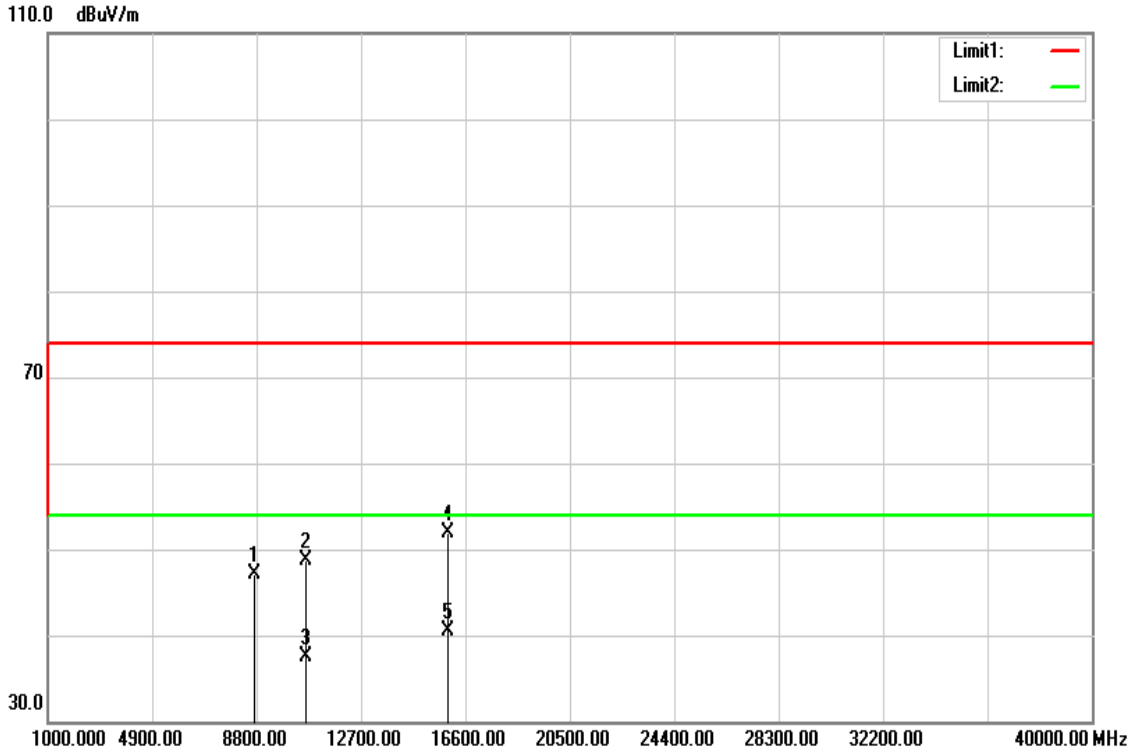
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8704.000	33.40	13.73	47.13	74.00	-26.87	peak
10640.000	32.09	17.04	49.13	74.00	-24.87	peak
10640.000	21.73	17.04	38.77	54.00	-15.23	AVG
15960.000	32.35	19.40	51.75	74.00	-22.25	peak
15960.000	21.54	19.40	40.94	54.00	-13.06	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



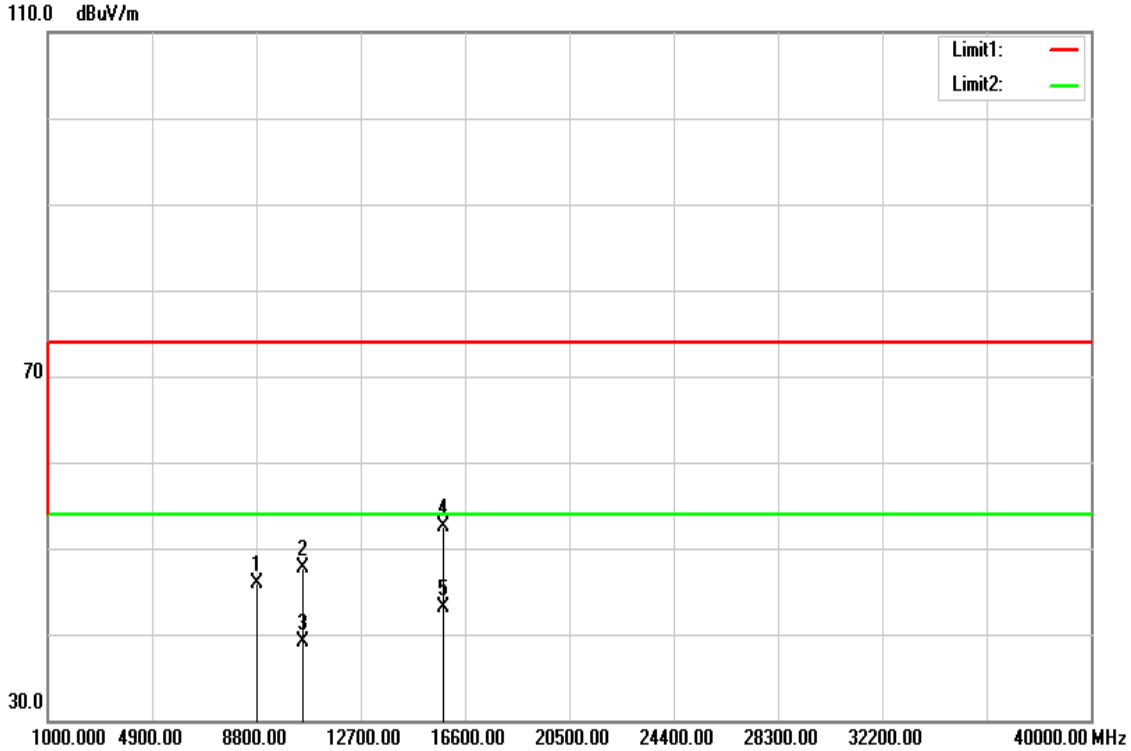
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8730.000	33.41	13.75	47.16	74.00	-26.84	peak
10640.000	31.59	17.04	48.63	74.00	-25.37	peak
10640.000	20.40	17.04	37.44	54.00	-16.56	AVG
15960.000	32.44	19.40	51.84	74.00	-22.16	peak
15960.000	21.13	19.40	40.53	54.00	-13.47	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



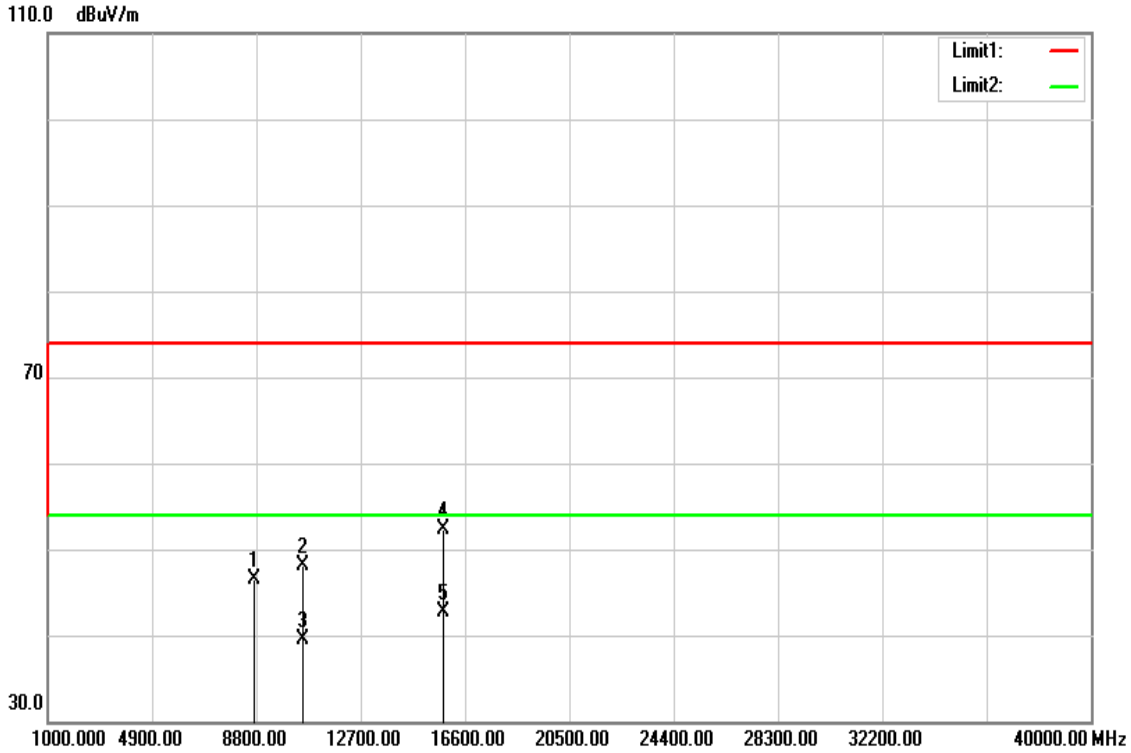
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8840.000	32.08	13. 0	45.88	74.00	-28.12	peak
10540.000	30.62	17.13	47.75	74.00	-26.25	peak
10540.000	22.01	17.13	39.14	54.00	-14.86	AVG
15810.000	33.24	19.27	52.51	74.00	-21.49	peak
15810.000	23.89	19.27	43.16	54.00	-10.84	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



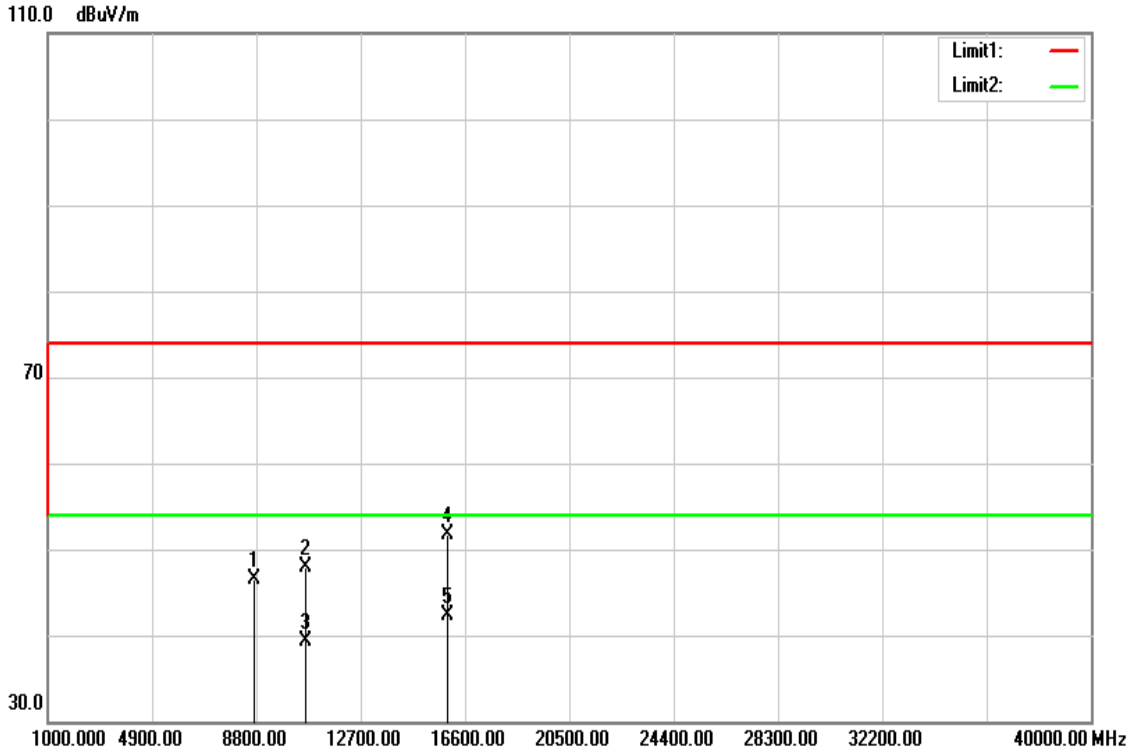
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8730.000	32.81	1 .75	46.56	74.00	-27.44	peak
10540.000	31.00	17.13	48.13	74.00	-25.87	peak
10540.000	22.30	17.13	39.43	54.00	-14.57	AVG
15810.000	33.02	19.27	52.29	74.00	-21.71	peak
15810.000	23.44	19.27	42.71	54.00	-11.29	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



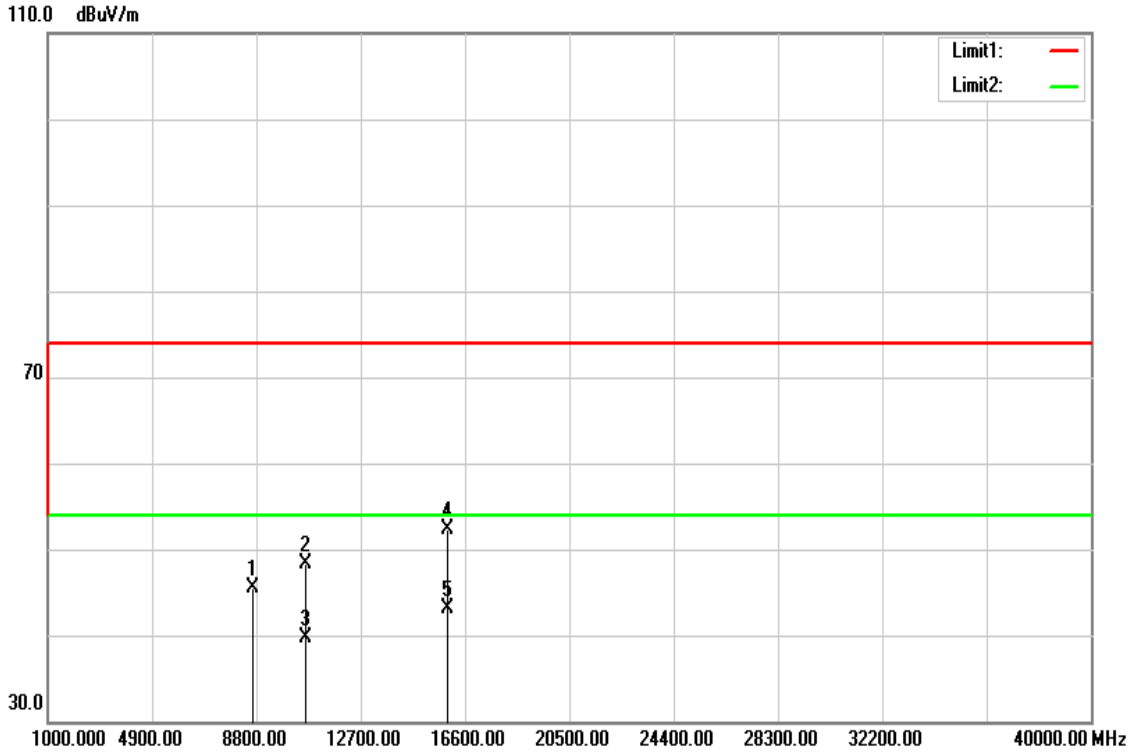
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8720.000	32.71	13. 4	46.45	74.00	-27.55	peak
10620.000	30.85	17.06	47.91	74.00	-26.09	peak
10620.000	22.22	17.06	39.28	54.00	-14.72	AVG
15930.000	32.43	19.37	51.80	74.00	-22.20	peak
15930.000	22.97	19.37	42.34	54.00	-11.66	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8680.000	31.76	1 .72	45.48	74.00	-28.52	peak
10620.000	31.21	17.06	48.27	74.00	-25.73	peak
10620.000	22.62	17.06	39.68	54.00	-14.32	AVG
15930.000	33.01	19.37	52.38	74.00	-21.62	peak
15930.000	23.68	19.37	43.05	54.00	-10.95	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*

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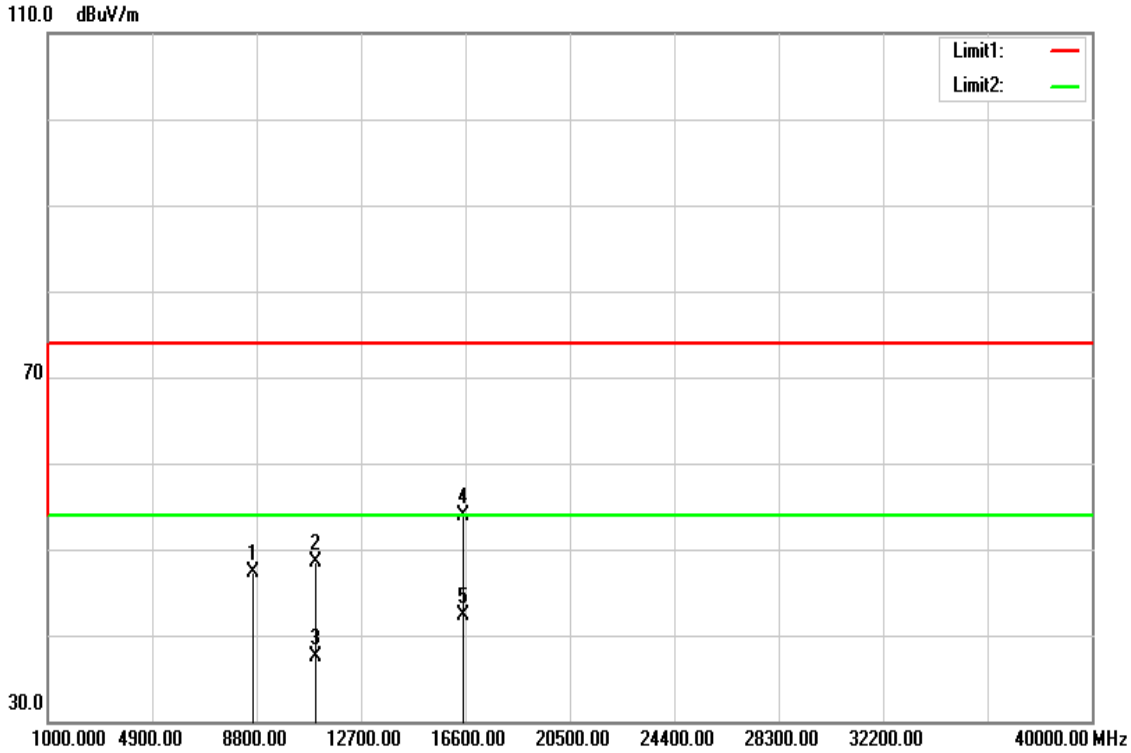
Above 1G Test Data for UNII-2c

Test Mode	IEEE 802.11a Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



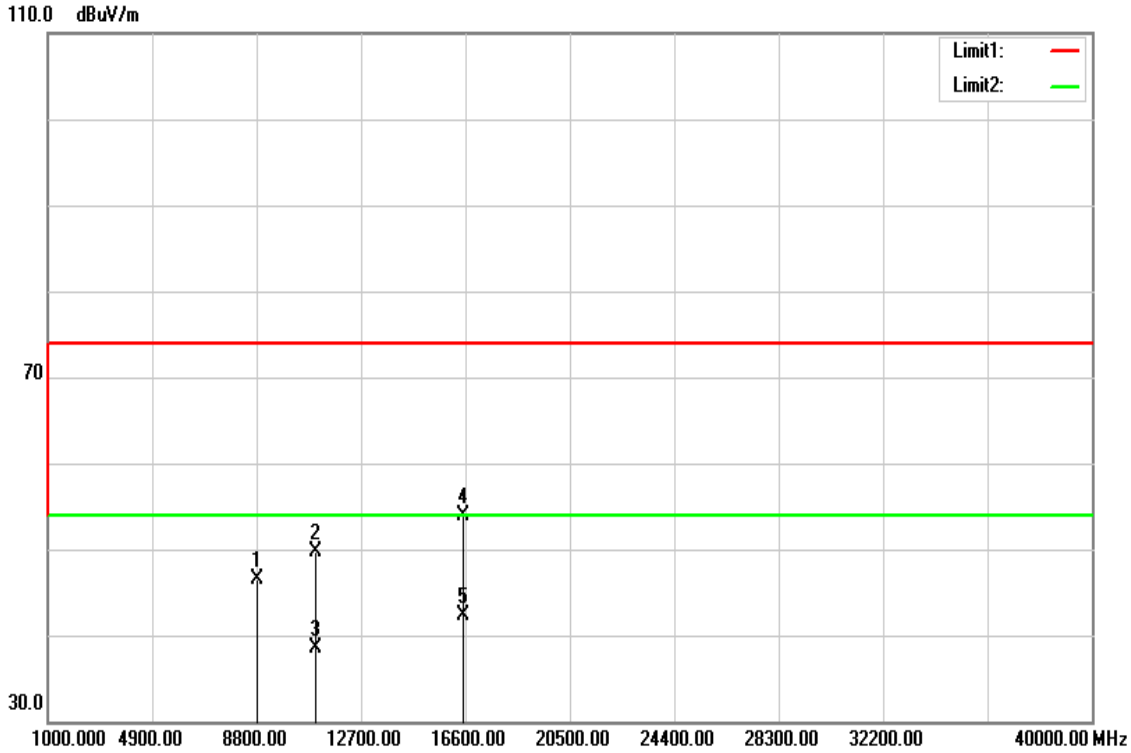
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8690.000	33.54	1 .73	47.27	74.00	-26.73	peak
11000.000	31.68	16.73	48.41	74.00	-25.59	peak
11000.000	20.79	16.73	37.52	54.00	-16.48	AVG
16500.000	32.52	21.39	53.91	74.00	-20.09	peak
16500.000	20.97	21.39	42.36	54.00	-11.64	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



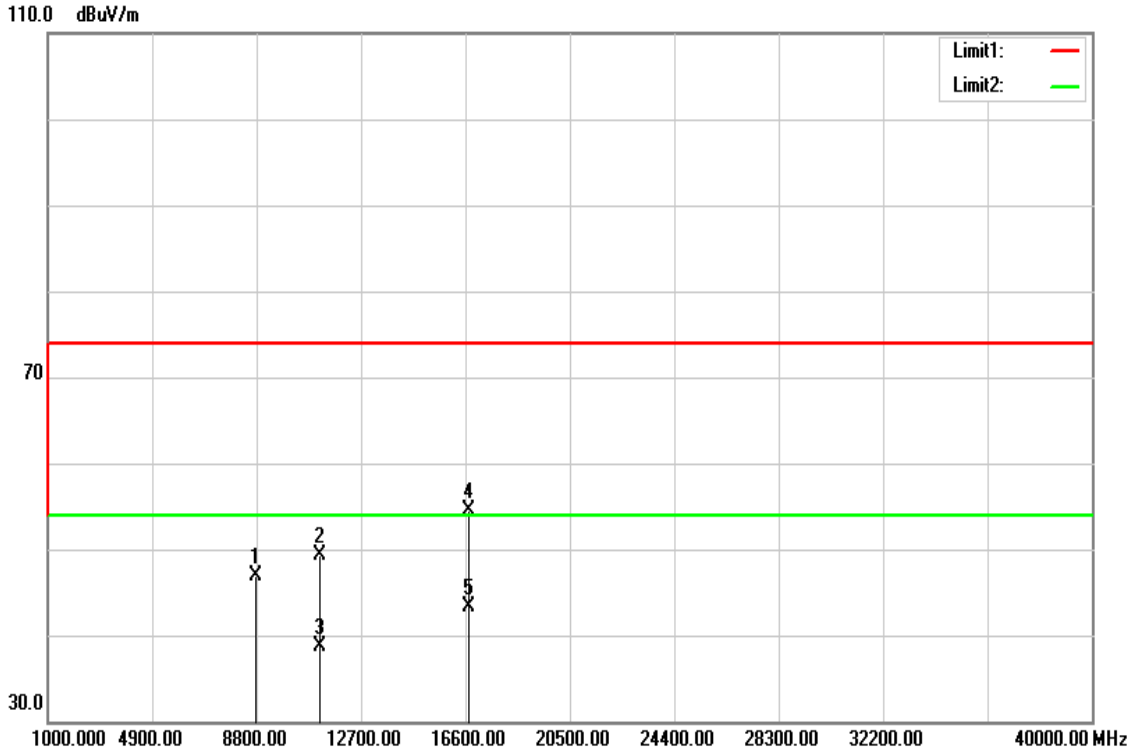
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8840.000	32.64	13.80	46.44	74.00	-27.56	peak
11000.000	32.94	16.73	49.67	74.00	-24.33	peak
11000.000	21.71	16.73	38.44	54.00	-15.56	AVG
16500.000	32.56	21.39	53.95	74.00	-20.05	peak
16500.000	20.87	21.39	42.26	54.00	-11.74	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



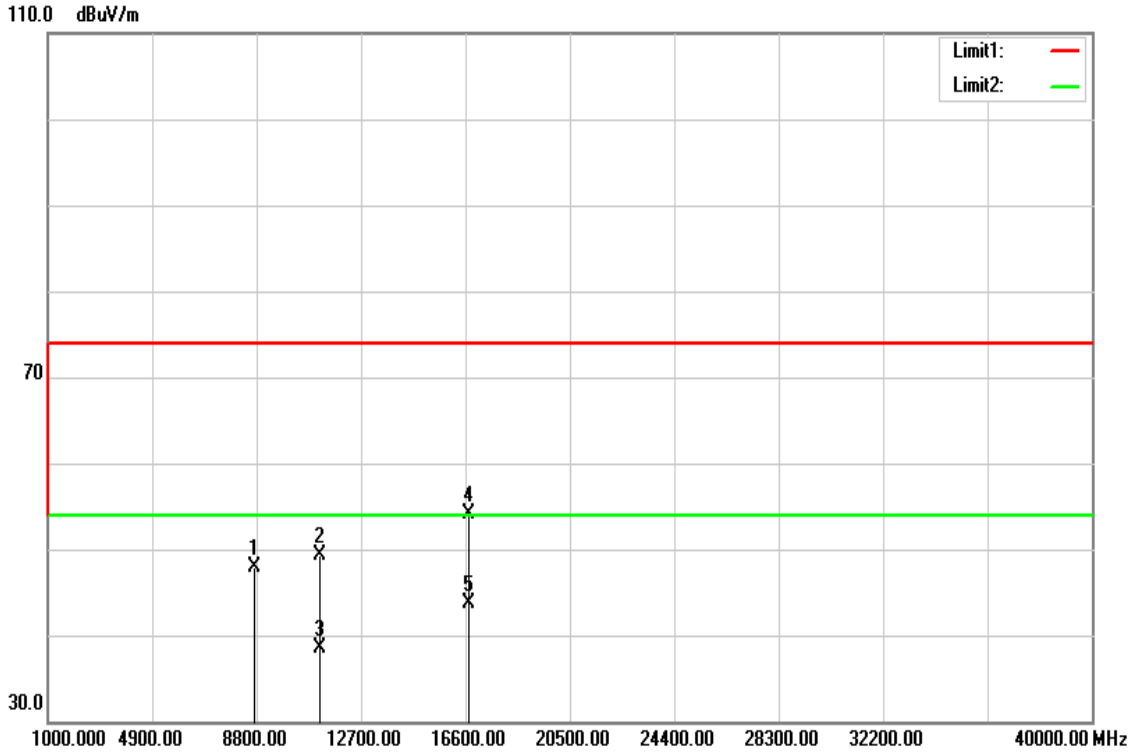
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8750.000	33.10	13.75	46.85	74.00	-27.15	peak
11160.000	32.53	16.75	49.28	74.00	-24.72	peak
11160.000	21.87	16.75	38.62	54.00	-15.38	AVG
16740.000	31.77	22.82	54.59	74.00	-19.41	peak
16740.000	20.46	22.82	43.28	54.00	-10.72	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



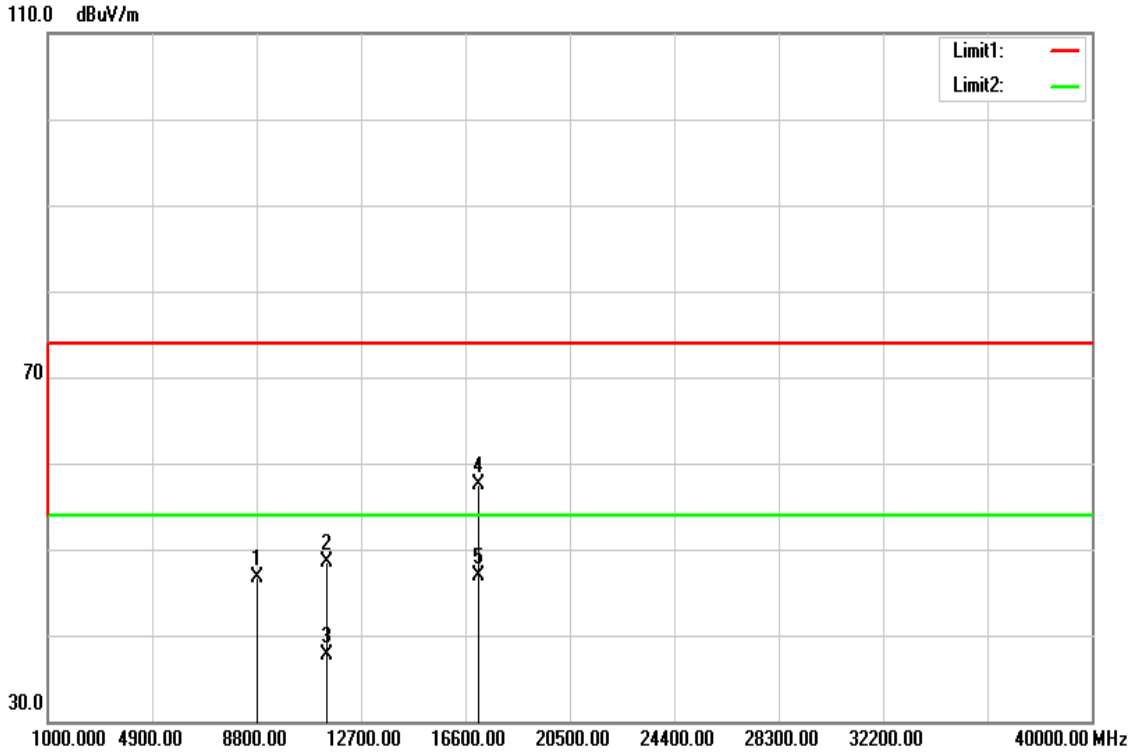
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8730.000	34.19	13.75	47.94	74.00	-26.06	peak
11160.000	32.45	16.75	49.20	74.00	-24.80	peak
11160.000	21.67	16.75	38.42	54.00	-15.58	AVG
16740.000	31.33	22.82	54.15	74.00	-19.85	peak
16740.000	20.83	22.82	43.65	54.00	-10.35	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



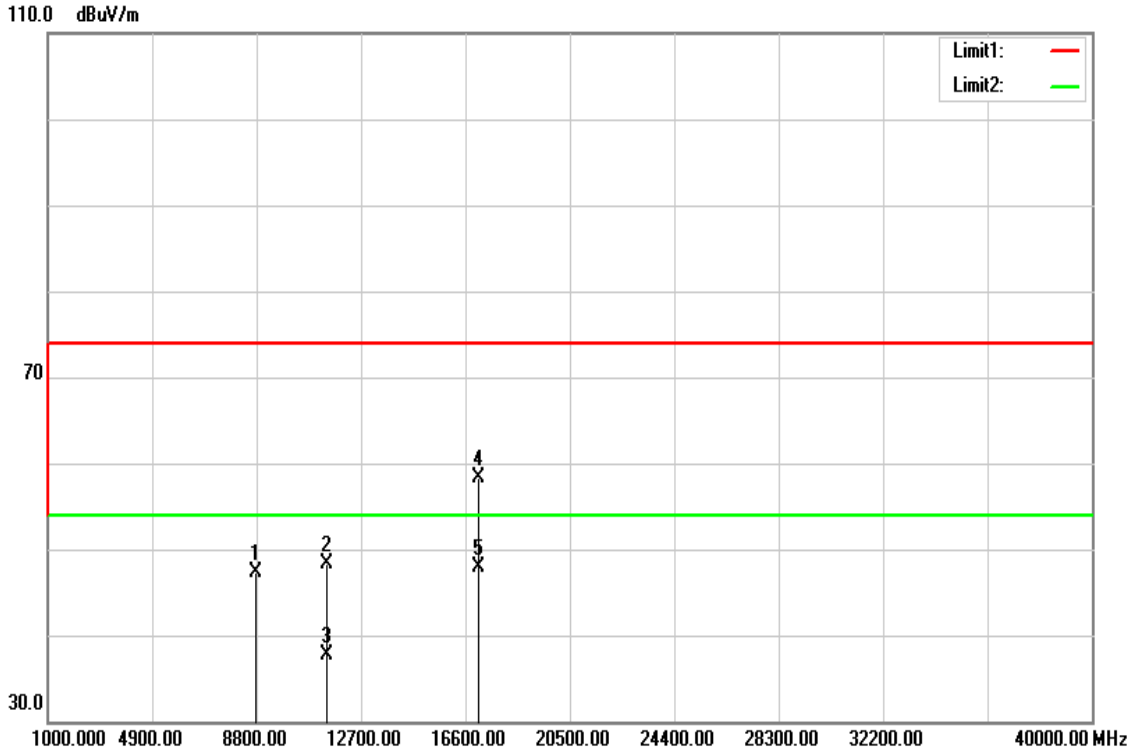
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8850.000	32.98	13.80	46.78	74.00	-27.22	peak
11400.000	31.71	16.77	48.48	74.00	-25.52	peak
11400.000	20.85	16.77	37.62	54.00	-16.38	AVG
17100.000	32.80	24.75	57.55	74.00	-16.45	peak
17100.000	22.09	24.75	46.84	54.00	-7.16	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



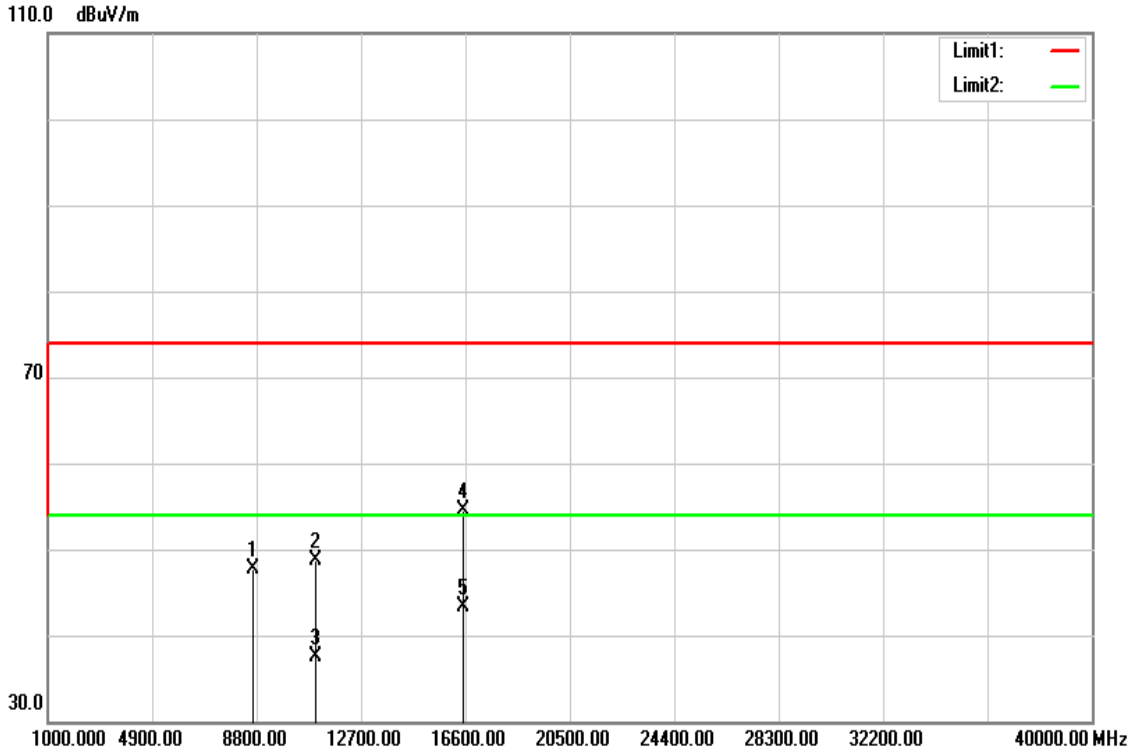
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8760.000	33.59	13.76	47.35	74.00	-26.65	peak
11400.000	31.54	16.77	48.31	74.00	-25.69	peak
11400.000	20.91	16.77	37.68	54.00	-16.32	AVG
17100.000	33.53	24.75	58.28	74.00	-15.72	peak
17100.000	23.20	24.75	47.95	54.00	-6.05	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



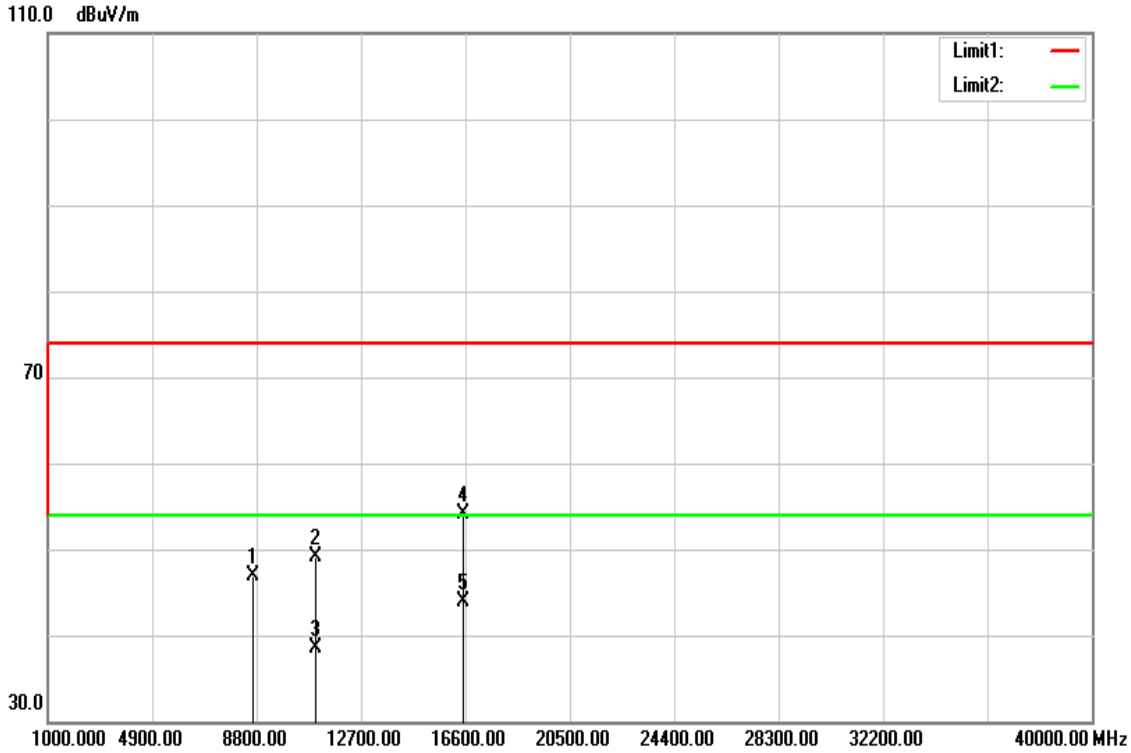
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8680.000	34.08	13.72	47.80	74.00	-26.20	peak
11000.000	32.01	16.73	48.74	74.00	-25.26	peak
11000.000	20.69	16.73	37.42	54.00	-16.58	AVG
16500.000	33.17	21.39	54.56	74.00	-19.44	peak
16500.000	21.93	21.39	43.32	54.00	-10.68	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



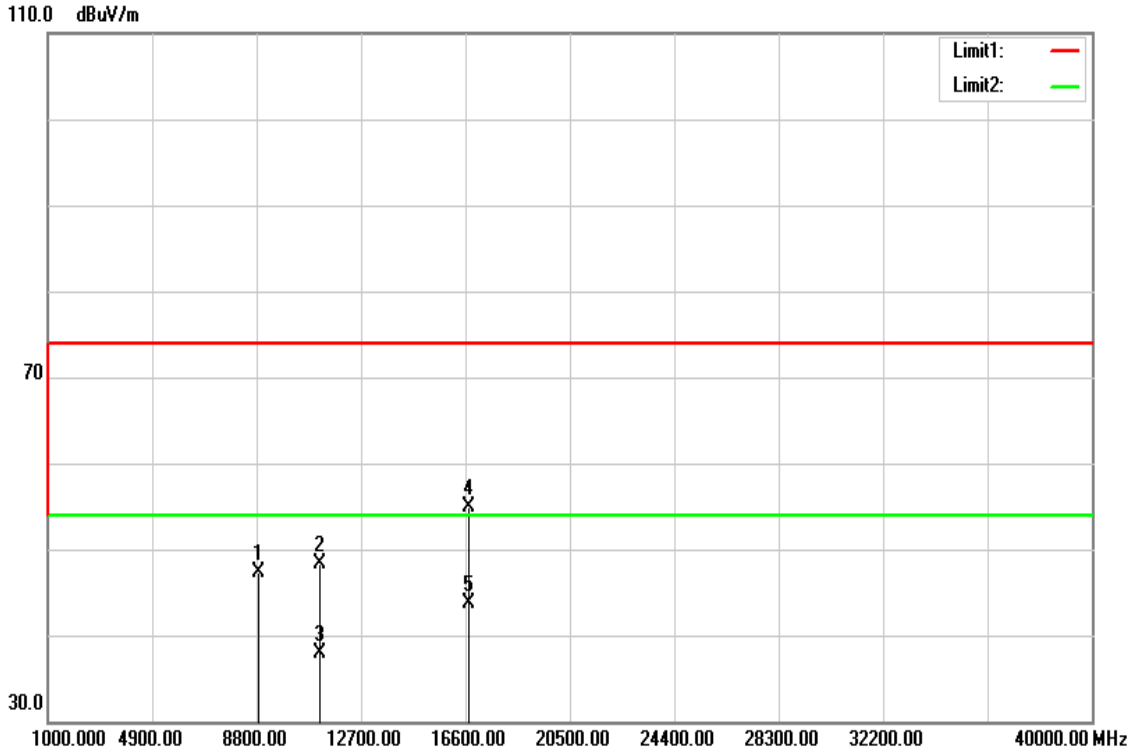
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8690.000	33.25	13.73	46.98	74.00	-27.02	peak
11000.000	32.32	16.73	49.05	74.00	-24.95	peak
11000.000	21.75	16.73	38.48	54.00	-15.52	AVG
16500.000	32.75	21.39	54.14	74.00	-19.86	peak
16500.000	22.53	21.39	43.92	54.00	-10.08	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



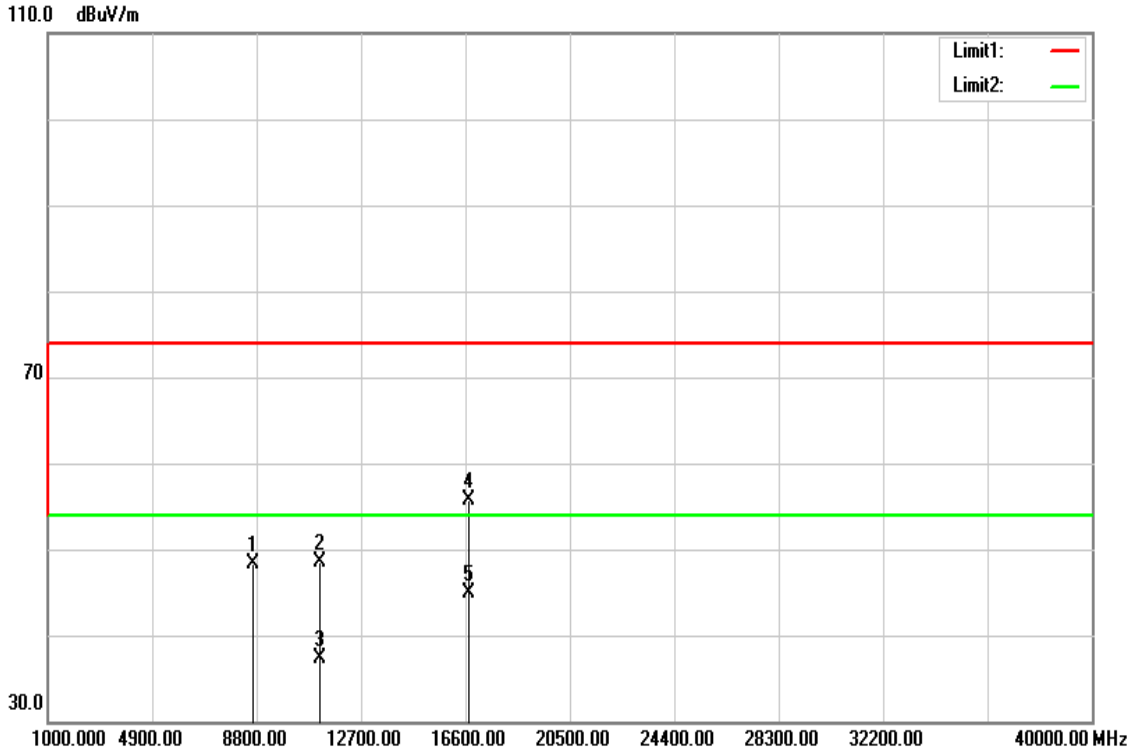
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8860.000	33.40	13.81	47.21	74.00	-26.79	peak
11160.000	31.57	16.75	48.32	74.00	-25.68	peak
11160.000	21.09	16.75	37.84	54.00	-16.16	AVG
16740.000	32.02	22.82	54.84	74.00	-19.16	peak
16740.000	20.80	22.82	43.62	54.00	-10.38	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



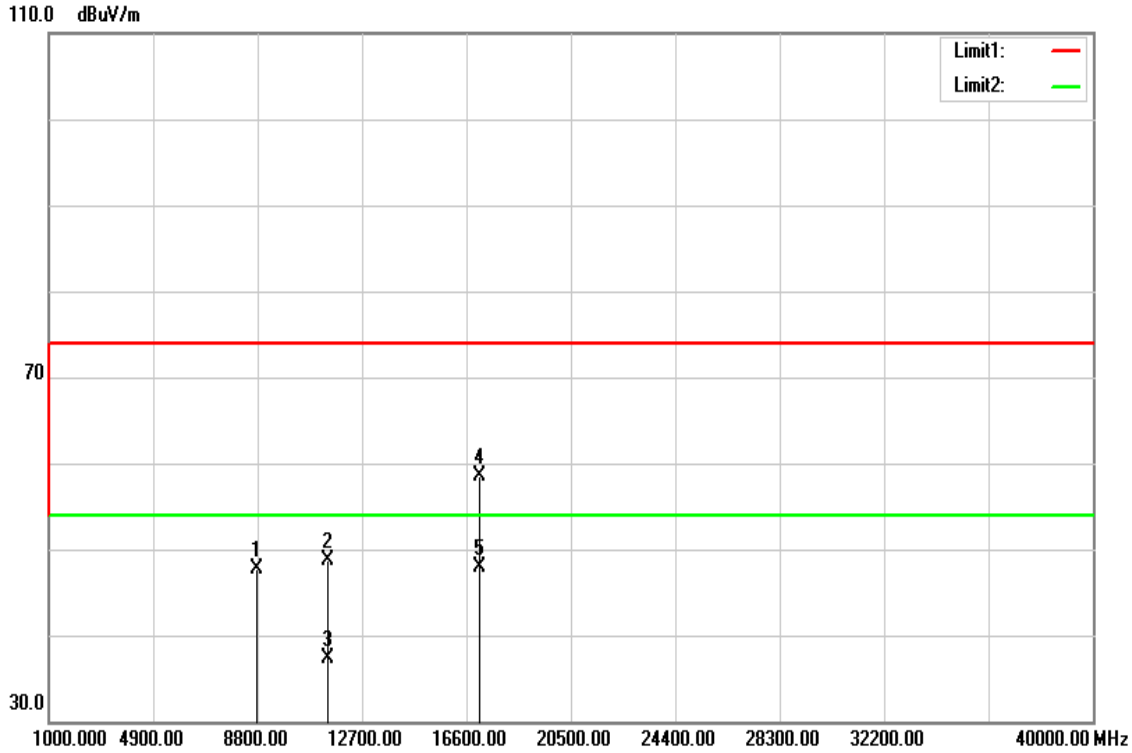
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8650.000	34.49	13.71	48.20	74.00	-25.80	peak
11160.000	31.79	16.75	48.54	74.00	-25.46	peak
11160.000	20.53	16.75	37.28	54.00	-16.72	AVG
16740.000	32.93	22.82	55.75	74.00	-18.25	peak
16740.000	22.09	22.82	44.91	54.00	-9.09	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



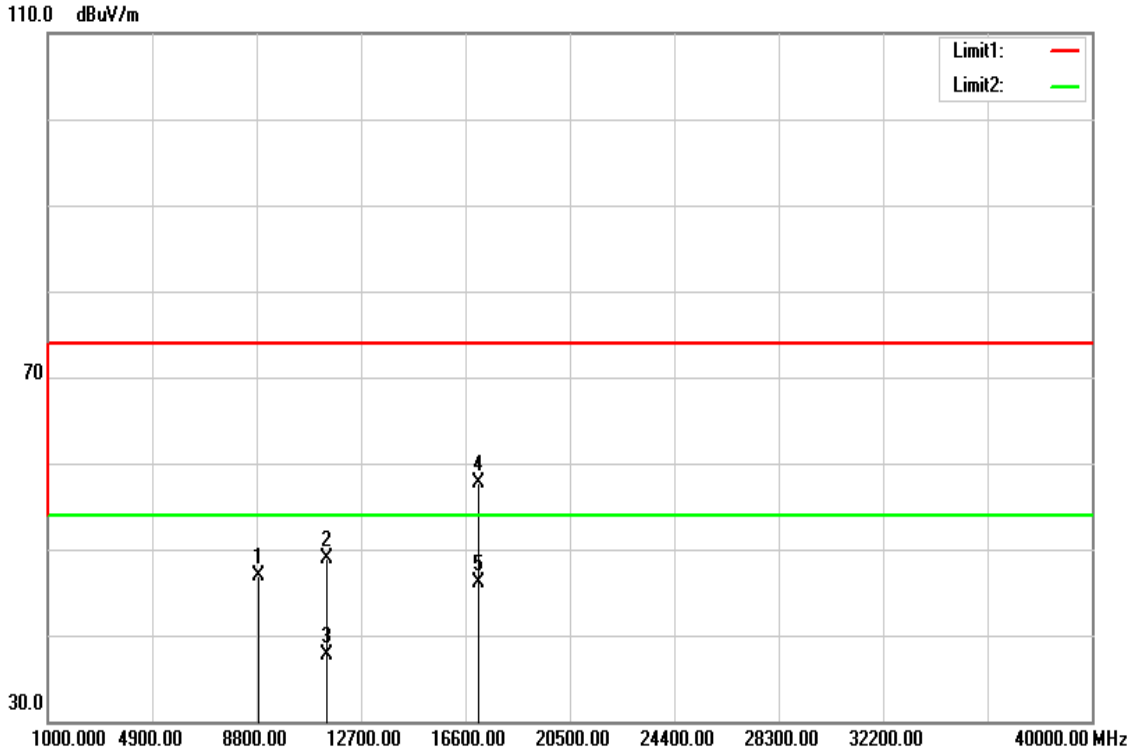
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8760.000	33.85	13.76	47.61	74.00	-26.39	peak
11400.000	31.89	16.77	48.66	74.00	-25.34	peak
11400.000	20.47	16.77	37.24	54.00	-16.76	AVG
17100.000	33.83	24.75	58.58	74.00	-15.42	peak
17100.000	23.19	24.75	47.94	54.00	-6.06	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



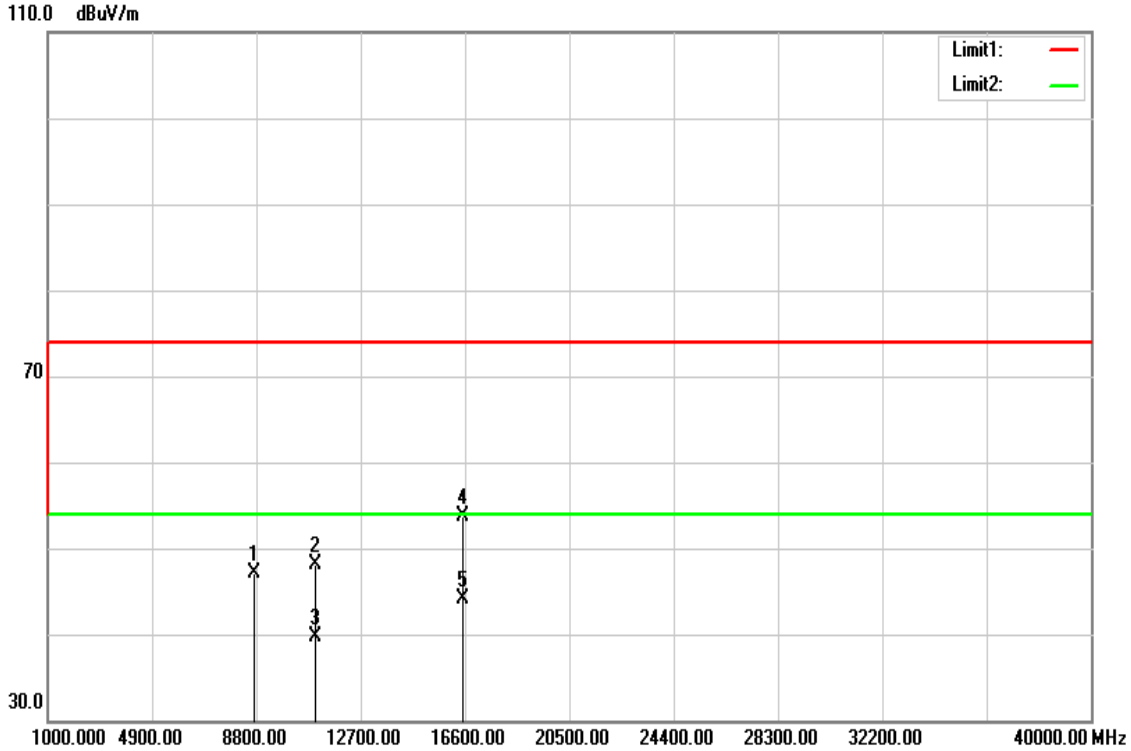
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8870.000	33.07	13.81	46.88	74.00	-27.12	peak
11400.000	32.11	16.77	48.88	74.00	-25.12	peak
11400.000	20.85	16.77	37.62	54.00	-16.38	AVG
17100.000	32.88	24.75	57.63	74.00	-16.37	peak
17100.000	21.40	24.75	46.15	54.00	-7.85	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



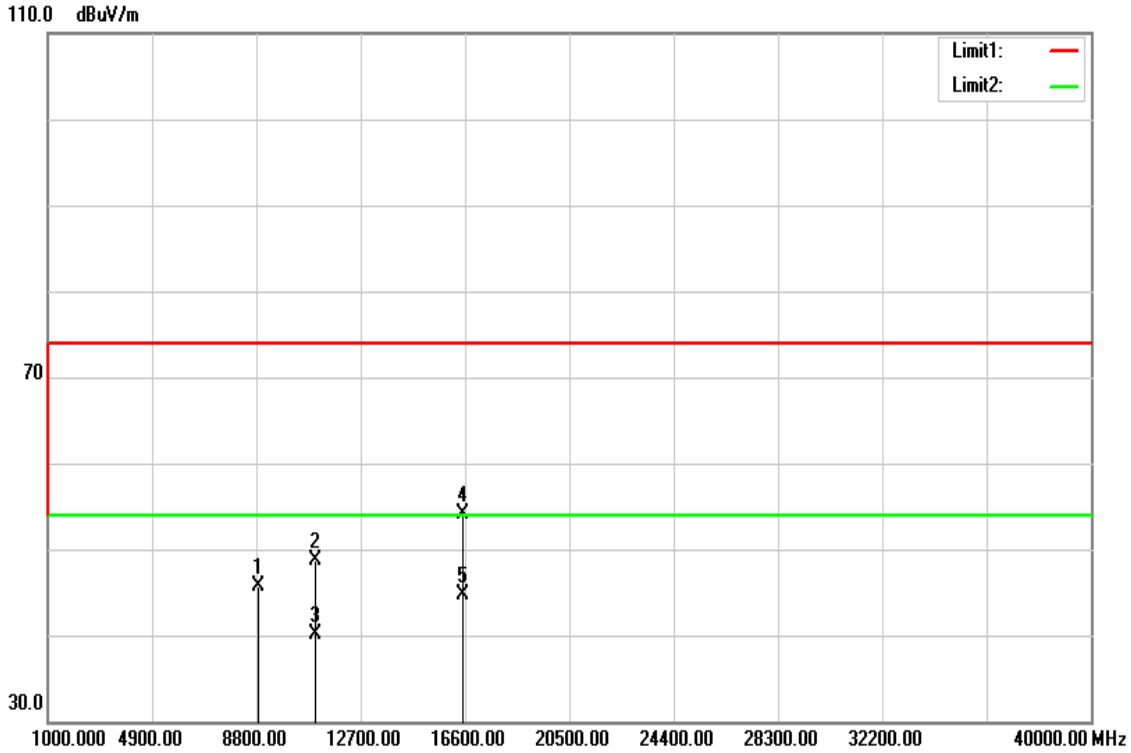
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8730.000	33.40	13. 5	47.15	74.00	-26.85	peak
11020.000	31.42	16.73	48.15	74.00	-25.85	peak
11020.000	22.95	16.73	39.68	54.00	-14.32	AVG
16530.000	32.09	21.57	53.66	74.00	-20.34	peak
16530.000	22.48	21.57	44.05	54.00	-9.95	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



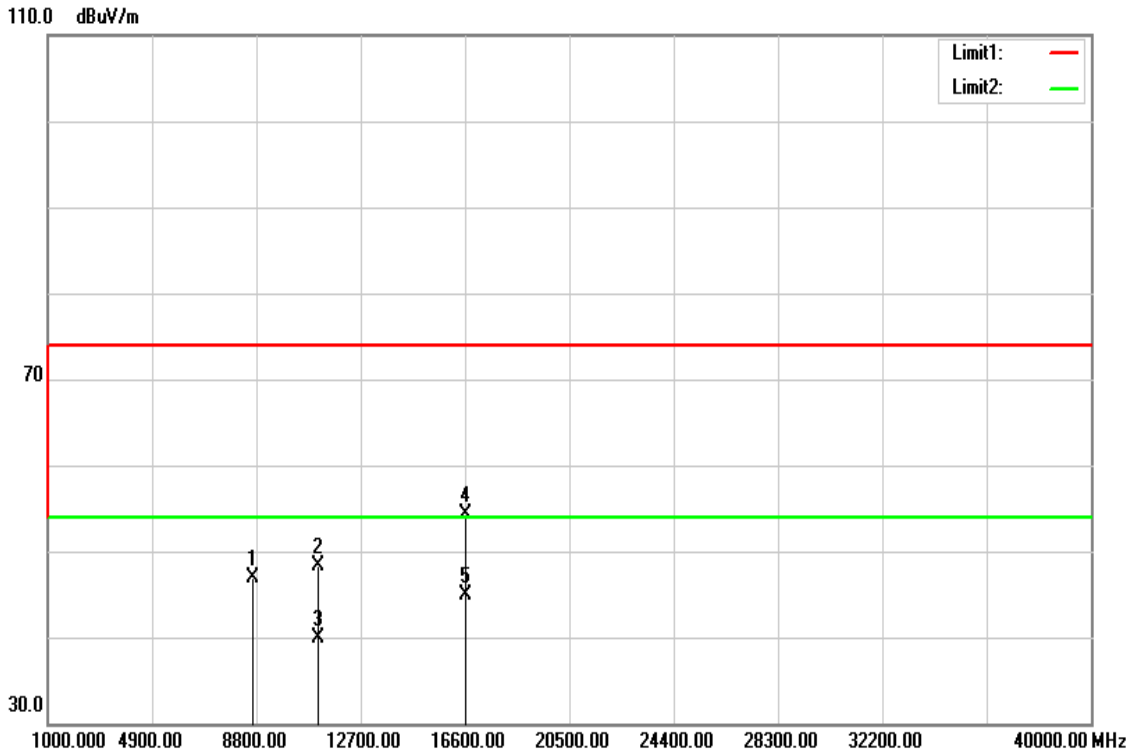
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8890.000	31.90	1 .82	45.72	74.00	-28.28	peak
11020.000	31.96	16.73	48.69	74.00	-25.31	peak
11020.000	23.33	16.73	40.06	54.00	-13.94	AVG
16530.000	32.55	21.57	54.12	74.00	-19.88	peak
16530.000	23.06	21.57	44.63	54.00	-9.37	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



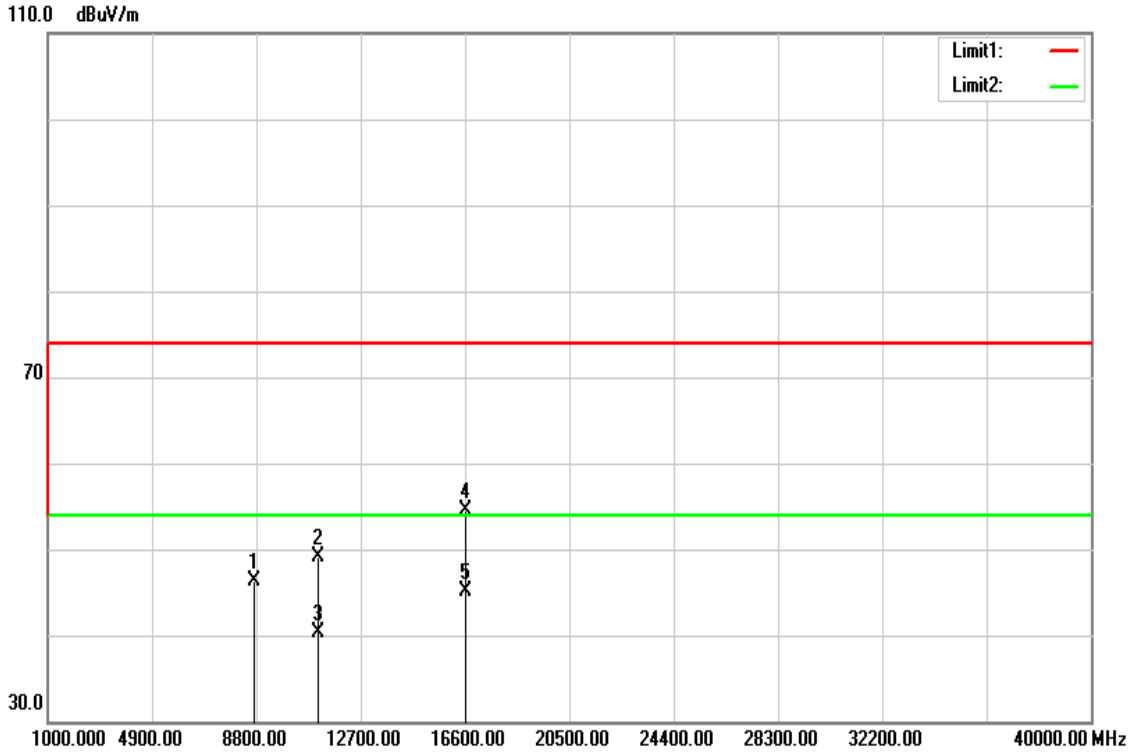
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8680.000	33.28	13. 2	47.00	74.00	-27.00	peak
11100.000	31.52	16.74	48.26	74.00	-25.74	peak
11100.000	23.12	16.74	39.86	54.00	-14.14	AVG
16650.000	32.05	22.28	54.33	74.00	-19.67	peak
16650.000	22.70	22.28	44.98	54.00	-9.02	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



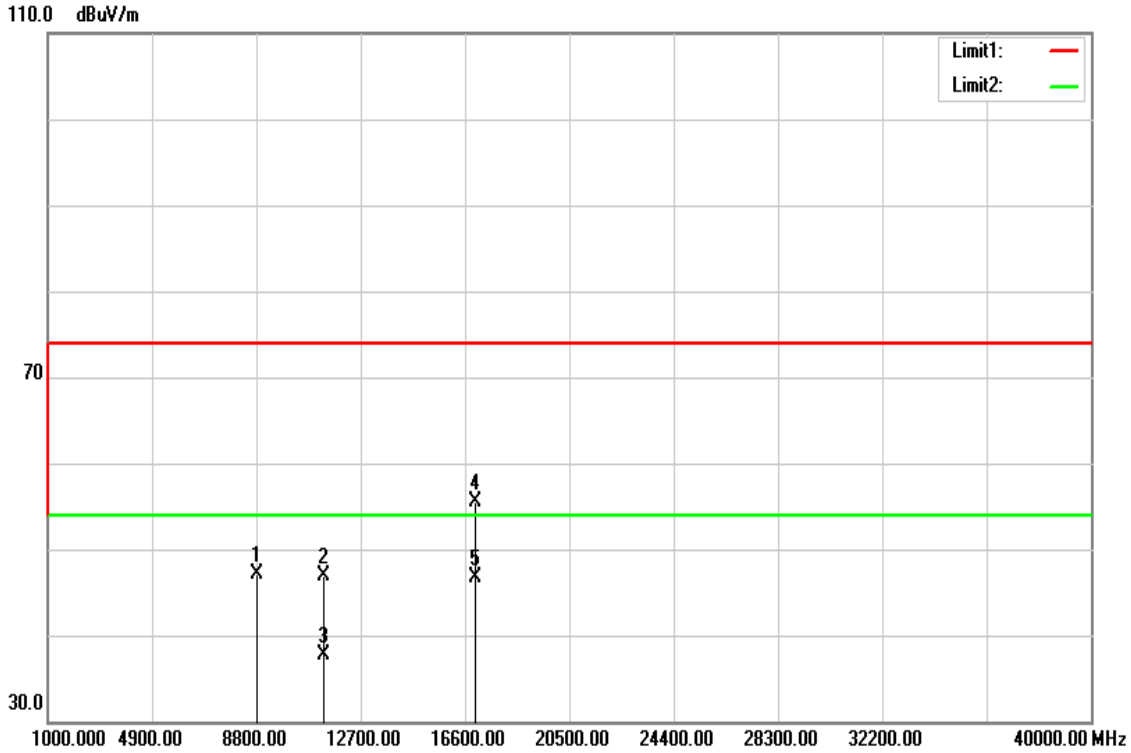
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8710.000	32.46	1 .74	46.20	74.00	-27.80	peak
11100.000	32.30	16.74	49.04	74.00	-24.96	peak
11100.000	23.61	16.74	40.35	54.00	-13.65	AVG
16650.000	32.13	22.28	54.41	74.00	-19.59	peak
16650.000	22.78	22.28	45.06	54.00	-8.94	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



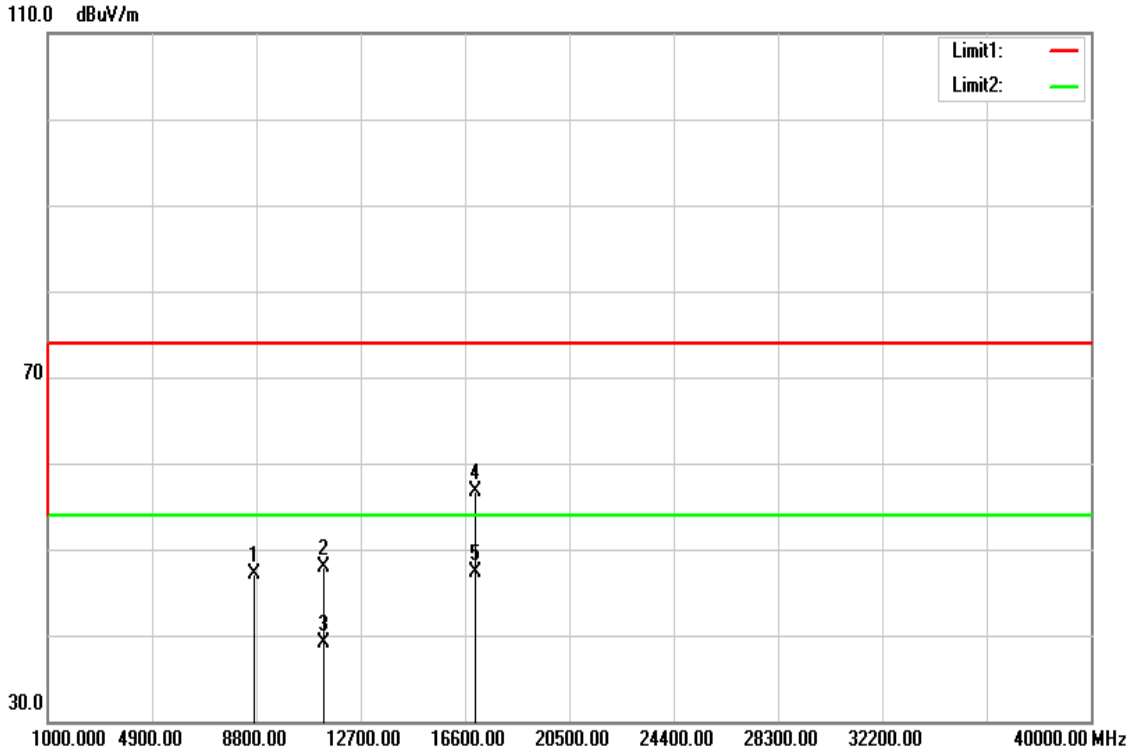
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8850.000	33.23	13. 0	47.03	74.00	-26.97	peak
11340.000	30.23	16.76	46.99	74.00	-27.01	peak
11340.000	20.92	16.76	37.68	54.00	-16.32	AVG
17010.000	31.19	24.40	55.59	74.00	-18.41	peak
17010.000	22.27	24.40	46.67	54.00	-7.33	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8710.000	33.44	1 .74	47.18	74.00	-26.82	peak
11340.000	31.15	16.76	47.91	74.00	-26.09	peak
11340.000	22.35	16.76	39.11	54.00	-14.89	AVG
17010.000	32.21	24.40	56.61	74.00	-17.39	peak
17010.000	22.91	24.40	47.31	54.00	-6.69	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*

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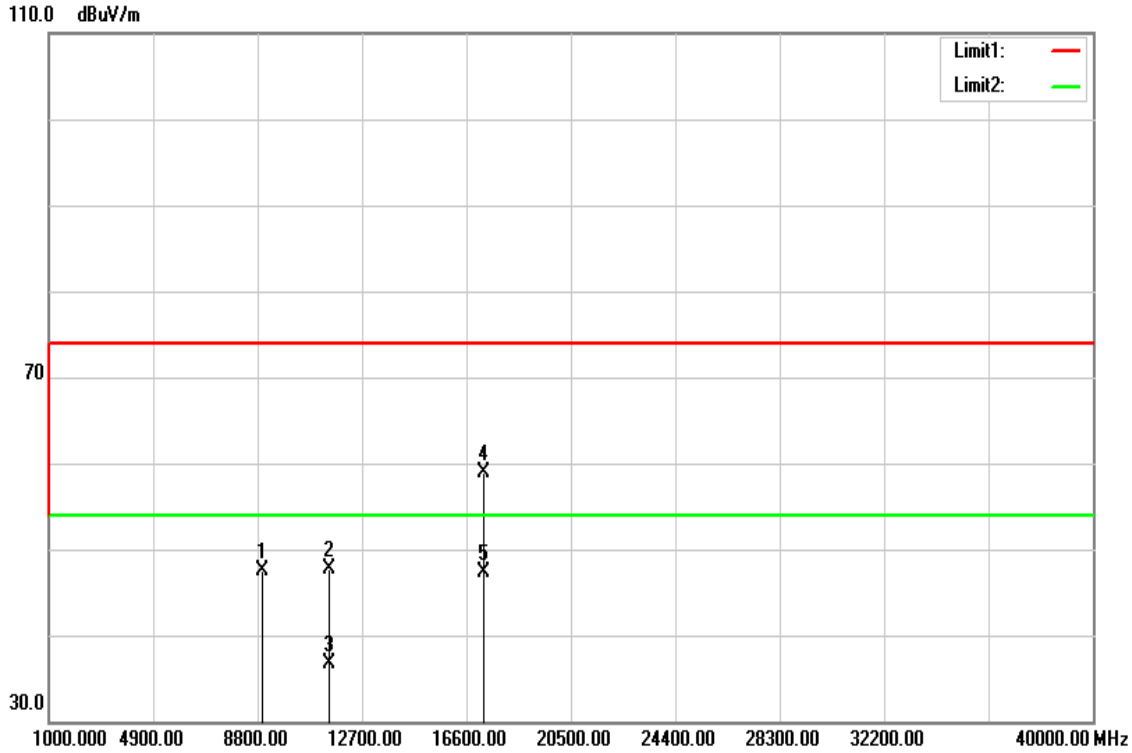
Above 1G Test Data for UNII-3

Test Mode	IEEE 802.11a Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



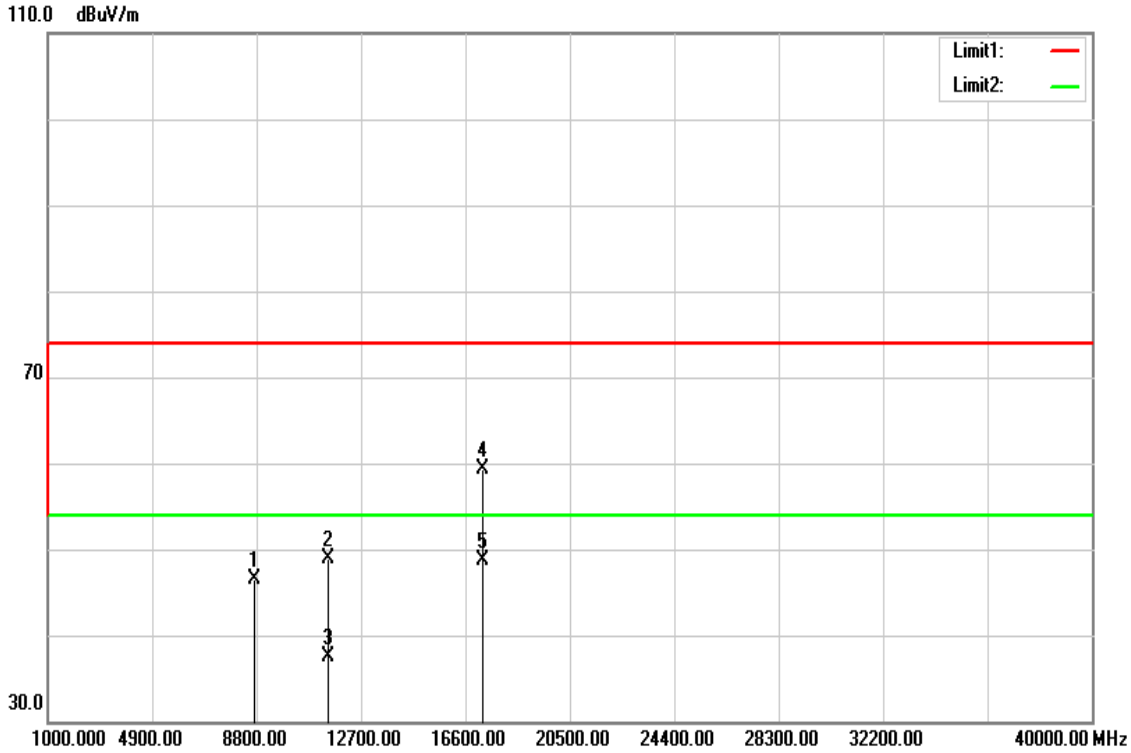
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8960.000	33.73	13.85	47.58	74.00	-26.42	peak
11490.000	31.02	16.78	47.80	74.00	-26.20	peak
11490.000	19.84	16.78	36.62	54.00	-17.38	AVG
17235.000	33.60	25.28	58.88	74.00	-15.12	peak
17235.000	22.06	25.28	47.34	54.00	-6.66	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



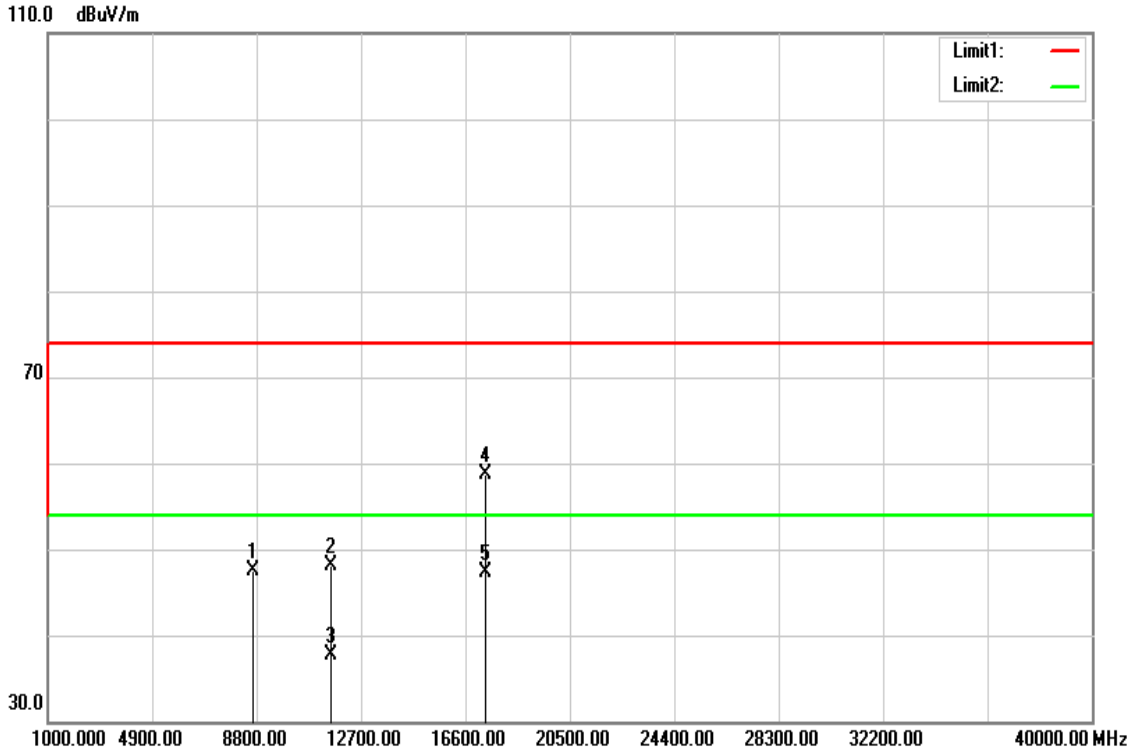
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8740.000	32.74	13.75	46.49	74.00	-27.51	peak
11490.000	32.16	16.78	48.94	74.00	-25.06	peak
11490.000	20.66	16.78	37.44	54.00	-16.56	AVG
17235.000	34.03	25.28	59.31	74.00	-14.69	peak
17235.000	23.34	25.28	48.62	54.00	-5.38	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



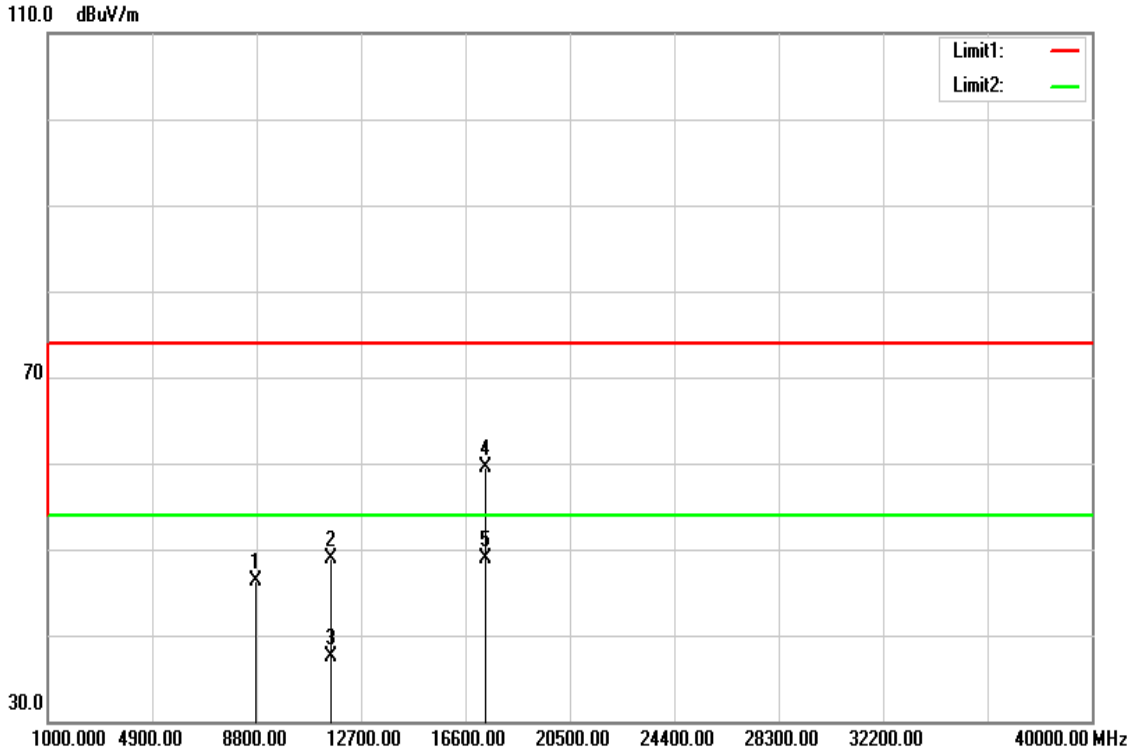
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8690.000	33.73	1 .73	47.46	74.00	-26.54	peak
11570.000	31.25	16.84	48.09	74.00	-25.91	peak
11570.000	20.78	16.84	37.62	54.00	-16.38	AVG
17355.000	32.98	25.75	58.73	74.00	-15.27	peak
17355.000	21.56	25.75	47.31	54.00	-6.69	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



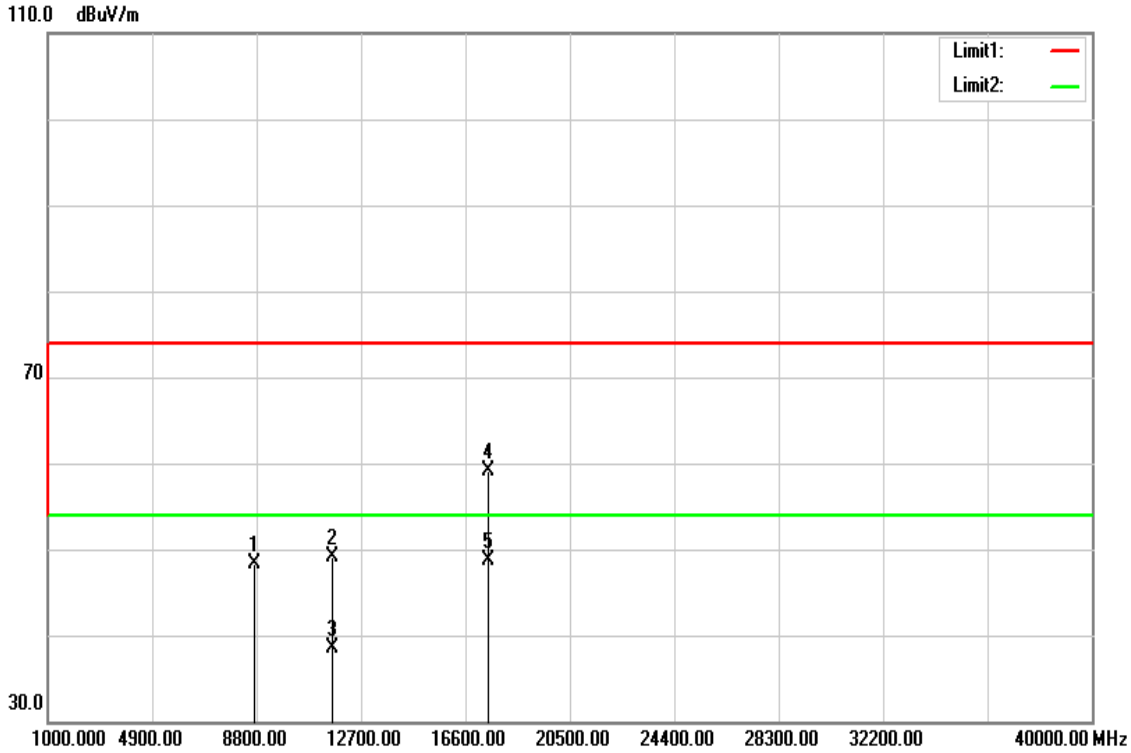
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8760.000	32.51	13.76	46.27	74.00	-27.73	peak
11570.000	32.10	16.84	48.94	74.00	-25.06	peak
11570.000	20.74	16.84	37.58	54.00	-16.42	AVG
17355.000	33.77	25.75	59.52	74.00	-14.48	peak
17355.000	23.17	25.75	48.92	54.00	-5.08	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



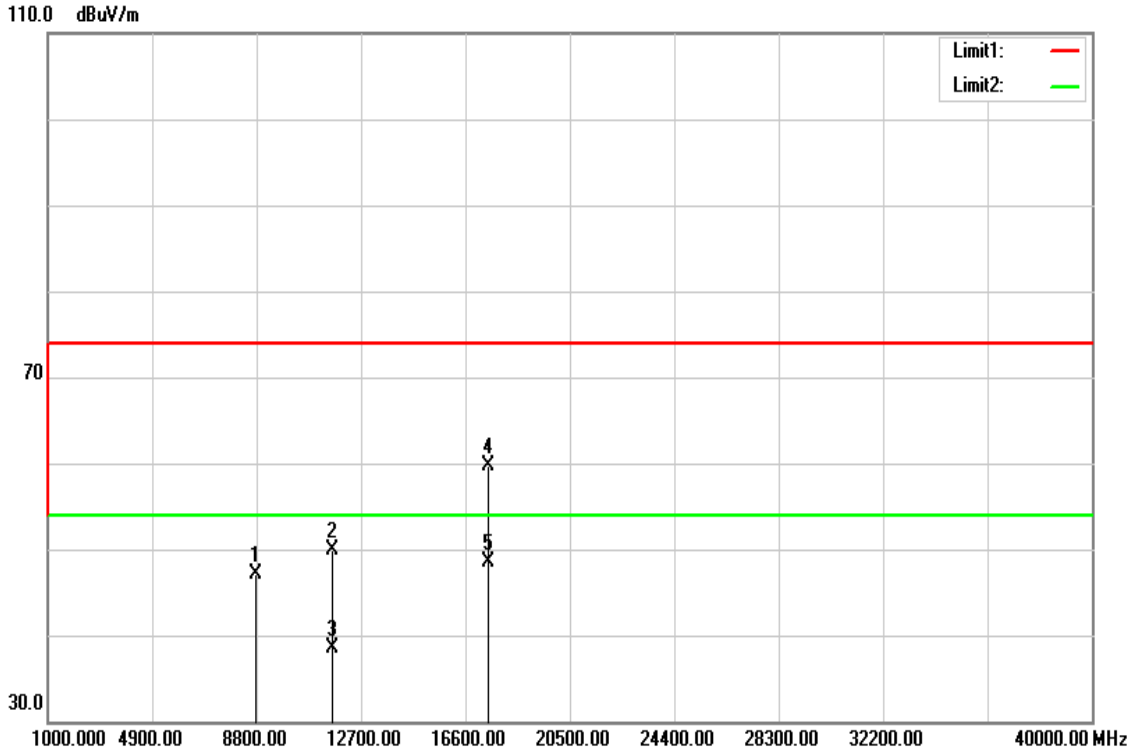
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8720.000	34.48	1 .74	48.22	74.00	-25.78	peak
11650.000	32.27	16.91	49.18	74.00	-24.82	peak
11650.000	21.61	16.91	38.52	54.00	-15.48	AVG
17475.000	32.94	26.22	59.16	74.00	-14.84	peak
17475.000	22.52	26.22	48.74	54.00	-5.26	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11a High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



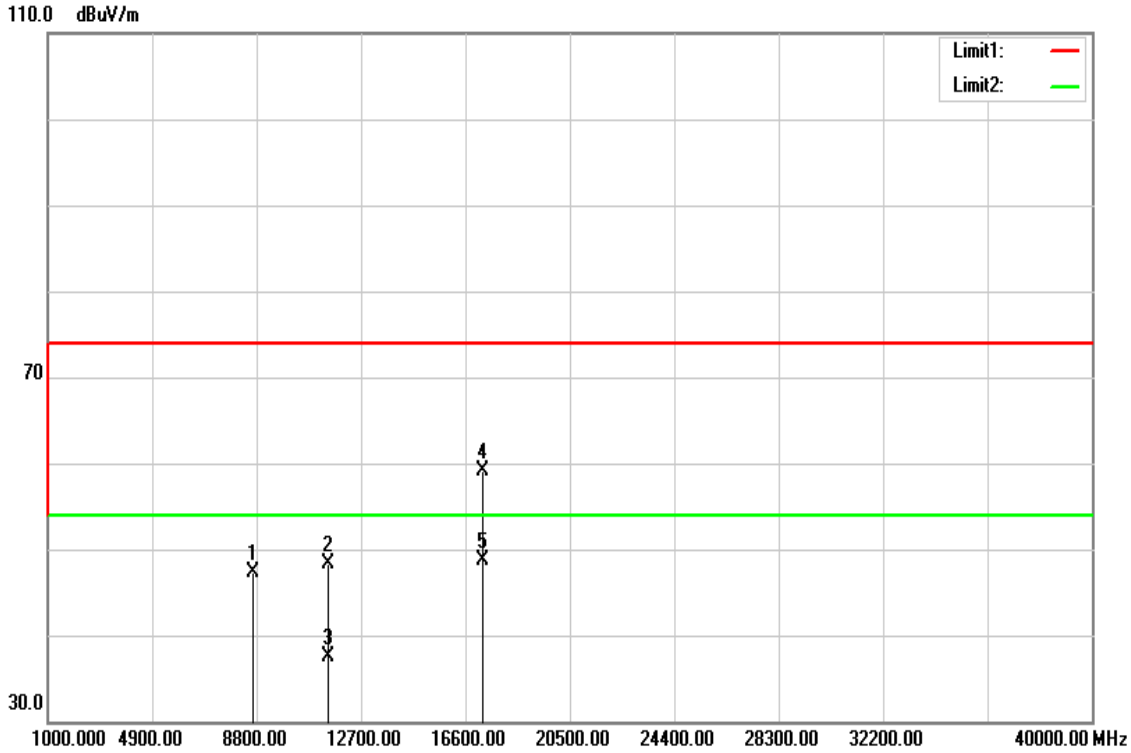
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8760.000	33.25	13.76	47.01	74.00	-26.99	peak
11650.000	32.96	16.91	49.87	74.00	-24.13	peak
11650.000	21.50	16.91	38.41	54.00	-15.59	AVG
17475.000	33.48	26.22	59.70	74.00	-14.30	peak
17475.000	22.38	26.22	48.60	54.00	-5.40	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



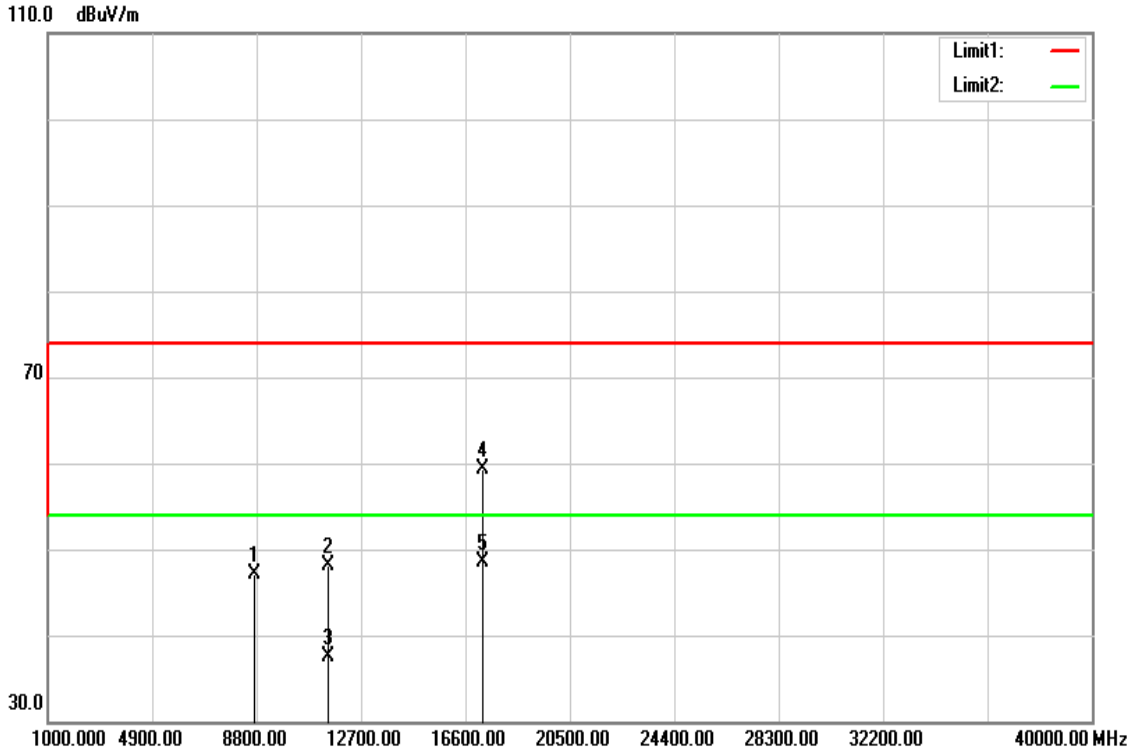
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8690.000	33.66	1 .73	47.39	74.00	-26.61	peak
11490.000	31.50	16.78	48.28	74.00	-25.72	peak
11490.000	20.63	16.78	37.41	54.00	-16.59	AVG
17235.000	33.75	25.28	59.03	74.00	-14.97	peak
17235.000	23.39	25.28	48.67	54.00	-5.33	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8730.000	33.32	13.75	47.07	74.00	-26.93	peak
11490.000	31.40	16.78	48.18	74.00	-25.82	peak
11490.000	20.77	16.78	37.55	54.00	-16.45	AVG
17235.000	33.93	25.28	59.21	74.00	-14.79	peak
17235.000	23.24	25.28	48.52	54.00	-5.48	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*

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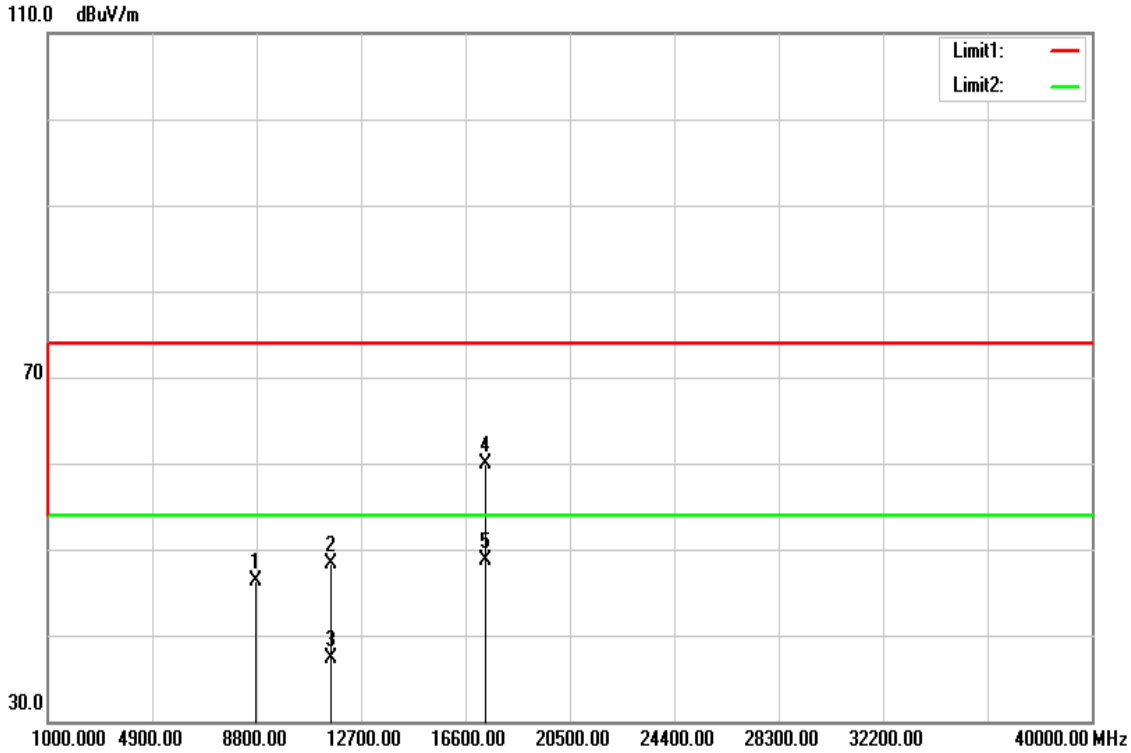
Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



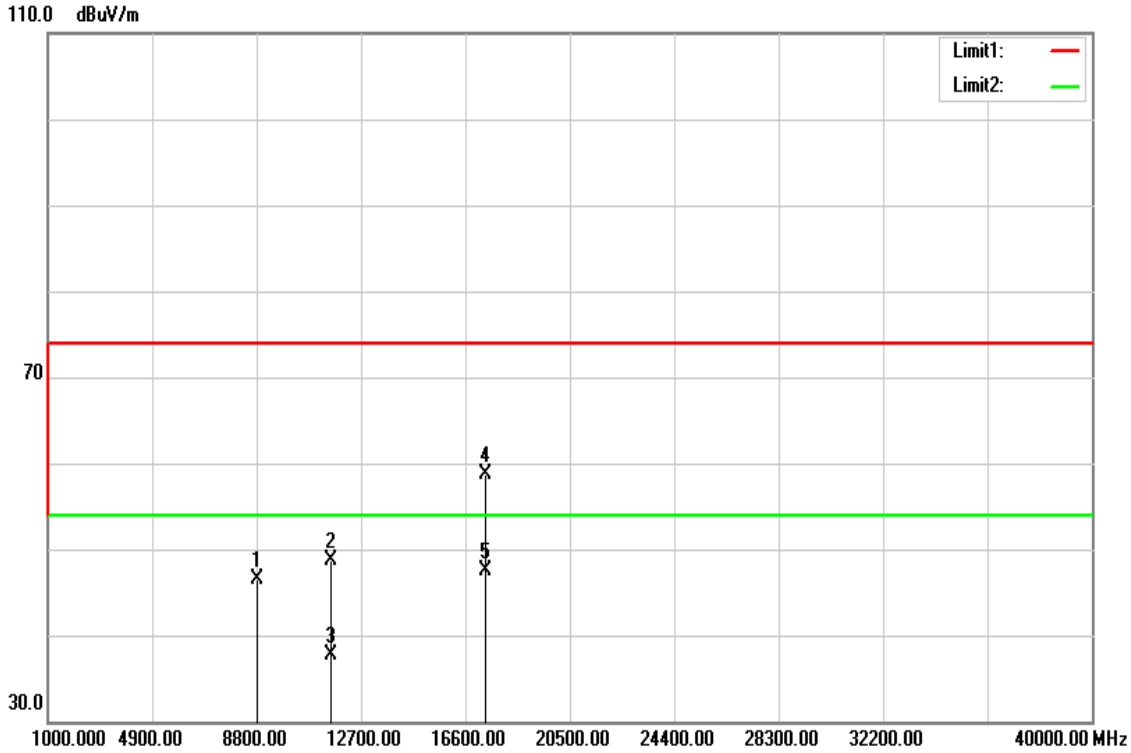
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8750.000	32.49	1 .75	46.24	74.00	-27.76	peak
11570.000	31.56	16.84	48.40	74.00	-25.60	peak
11570.000	20.44	16.84	37.28	54.00	-16.72	AVG
17355.000	34.07	25.75	59.82	74.00	-14.18	peak
17355.000	22.87	25.75	48.62	54.00	-5.38	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8840.000	32.79	13.80	46.59	74.00	-27.41	peak
11570.000	31.86	16.84	48.70	74.00	-25.30	peak
11570.000	20.78	16.84	37.62	54.00	-16.38	AVG
17355.000	33.00	25.75	58.75	74.00	-15.25	peak
17355.000	21.77	25.75	47.52	54.00	-6.48	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*

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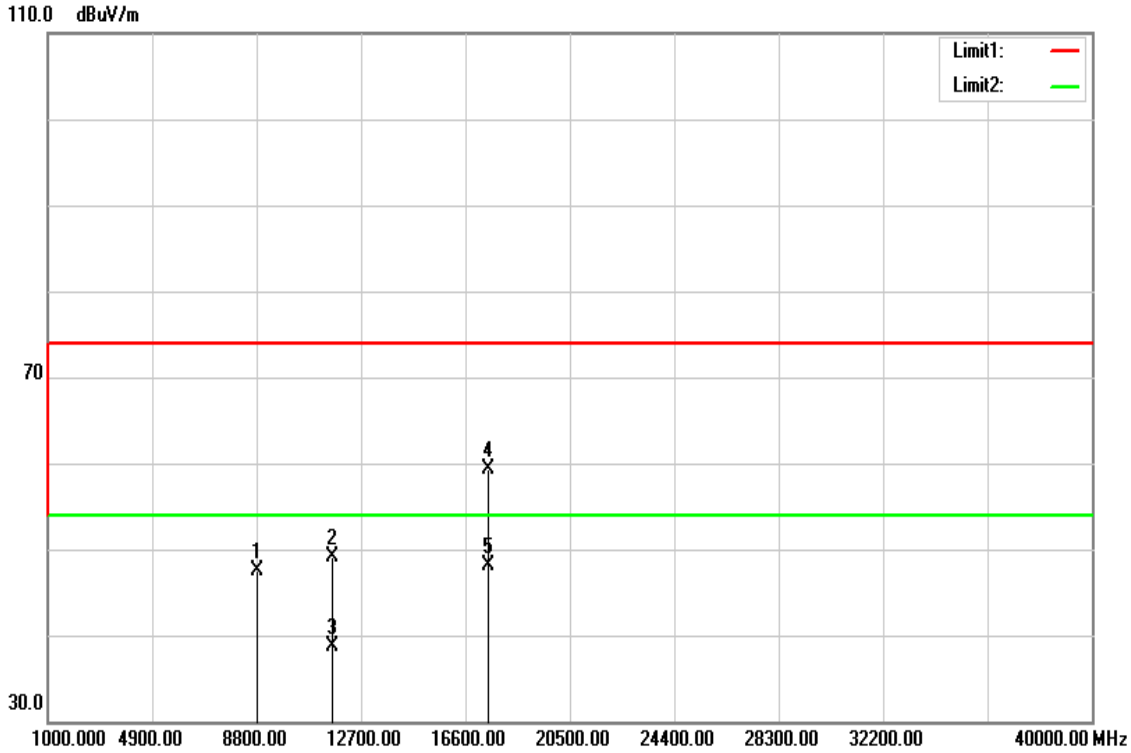
Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8820.000	33.68	1 .79	47.47	74.00	-26.53	peak
11650.000	32.16	16.91	49.07	74.00	-24.93	peak
11650.000	21.83	16.91	38.74	54.00	-15.26	AVG
17475.000	33.05	26.22	59.27	74.00	-14.73	peak
17475.000	21.89	26.22	48.11	54.00	-5.89	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*

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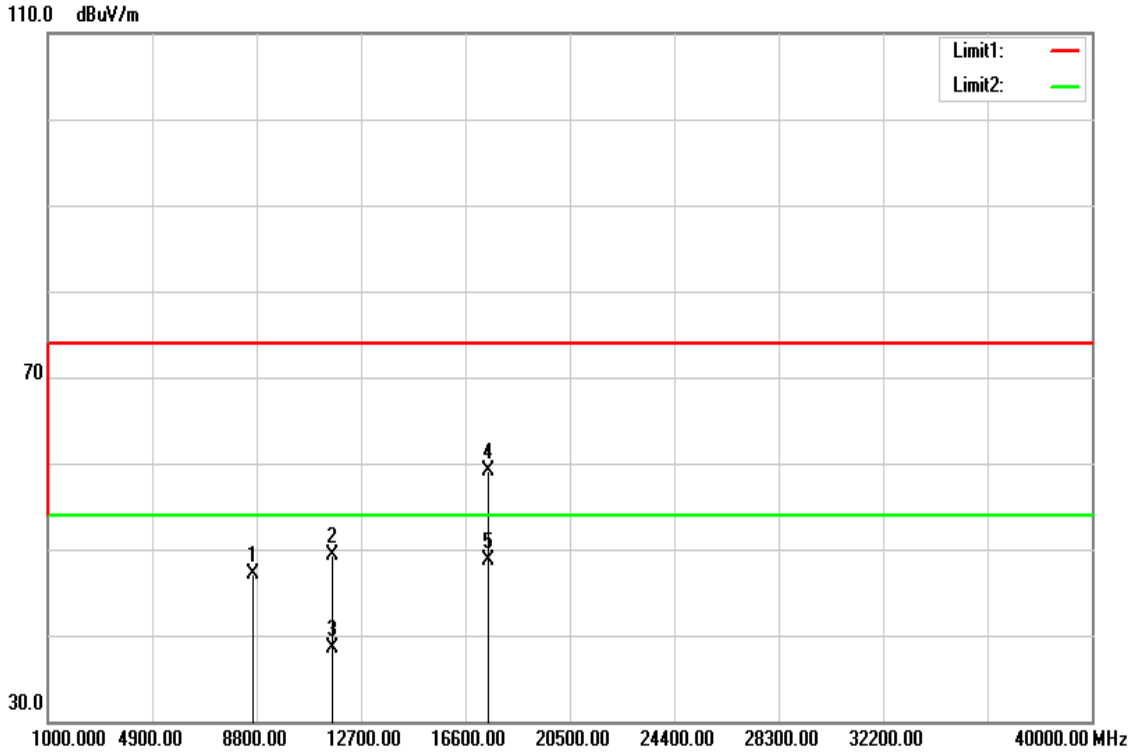
Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	March 16, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8690.000	33.40	13.73	47.13	74.00	-26.87	peak
11650.000	32.48	16.91	49.39	74.00	-24.61	peak
11650.000	21.61	16.91	38.52	54.00	-15.48	AVG
17475.000	32.86	26.22	59.08	74.00	-14.92	peak
17475.000	22.45	26.22	48.67	54.00	-5.33	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*

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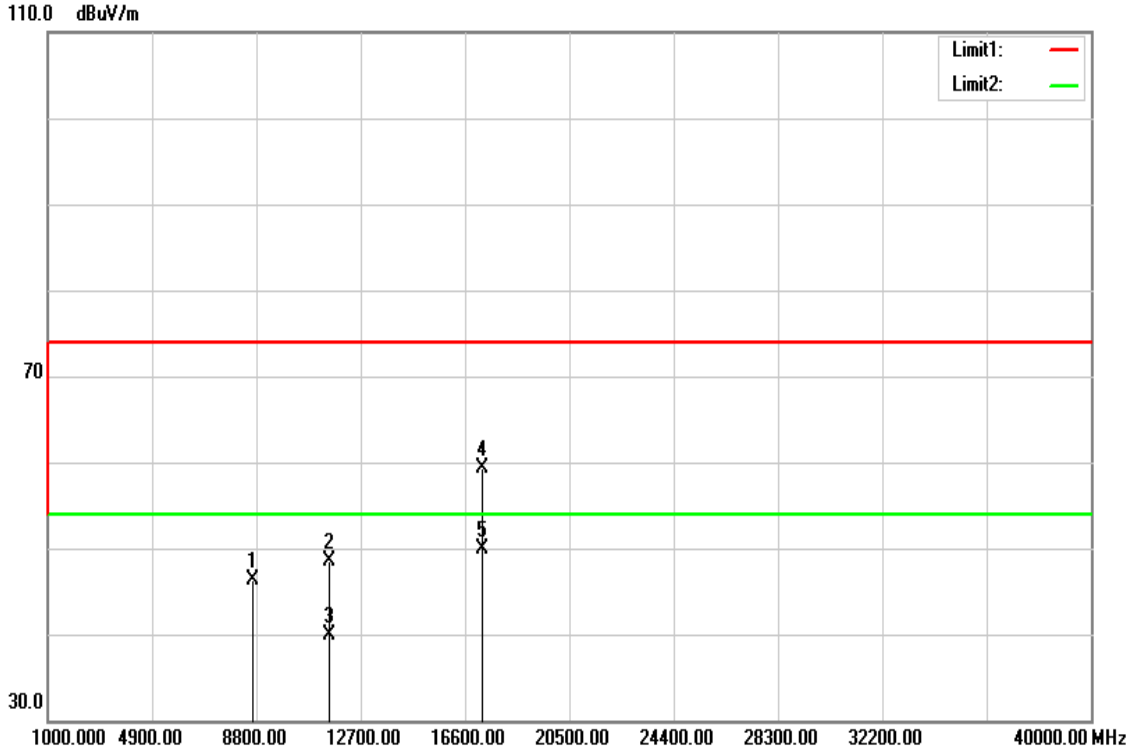
Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



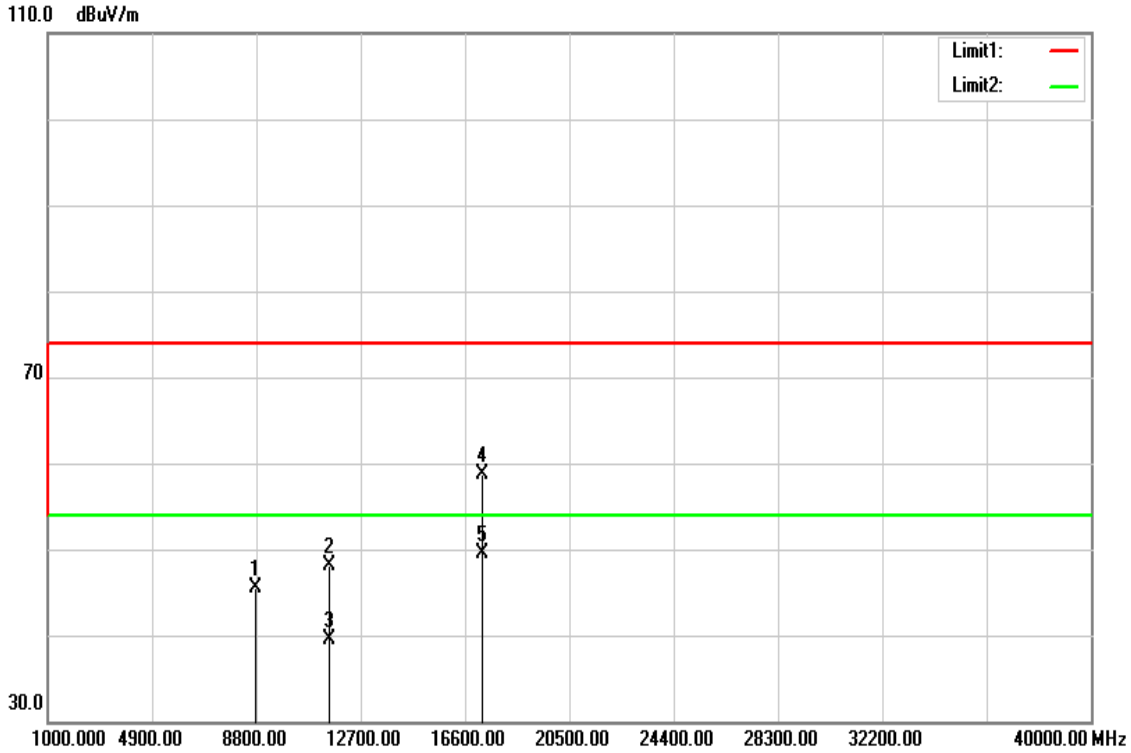
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8660.000	32.56	13.71	46.27	74.00	-27.73	peak
11510.000	31.68	16.79	48.47	74.00	-25.53	peak
11510.000	23.07	16.79	39.86	54.00	-14.14	AVG
17265.000	33.97	25.40	59.37	74.00	-14.63	peak
17265.000	24.52	25.40	49.92	54.00	-4.08	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



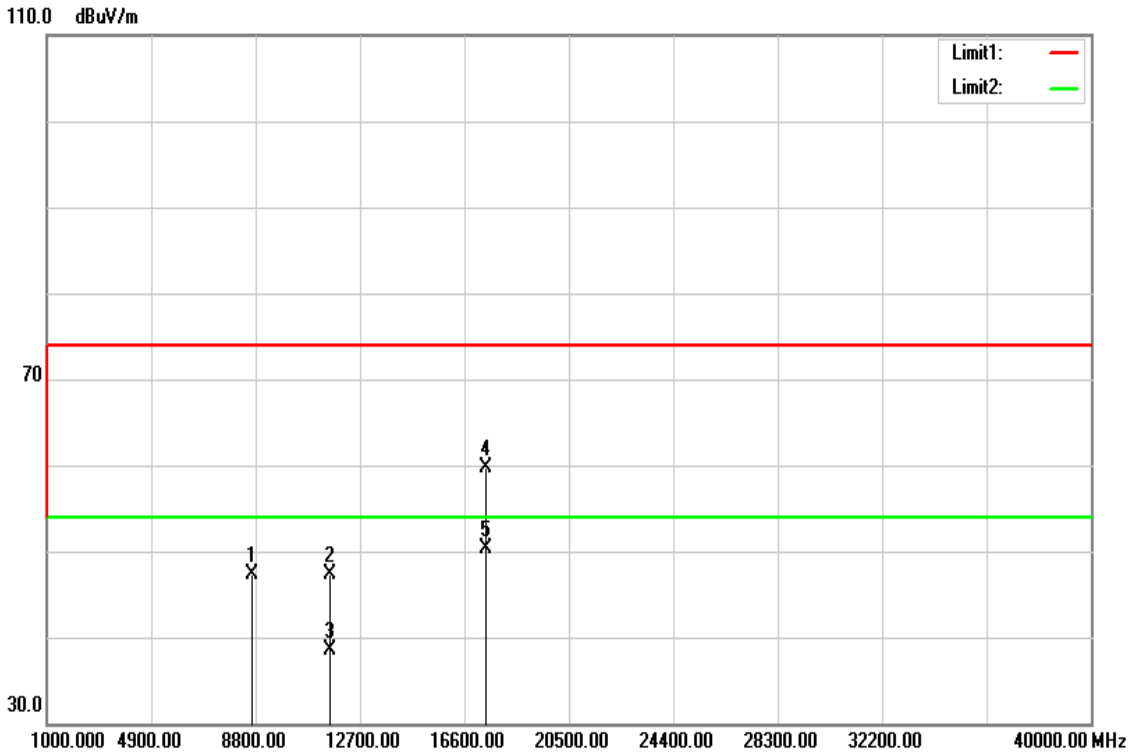
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8780.000	31.81	13.77	45.58	74.00	-28.42	peak
11510.000	31.32	16.79	48.11	74.00	-25.89	peak
11510.000	22.69	16.79	39.48	54.00	-14.52	AVG
17265.000	33.23	25.40	58.63	74.00	-15.37	peak
17265.000	24.17	25.40	49.57	54.00	-4.43	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		



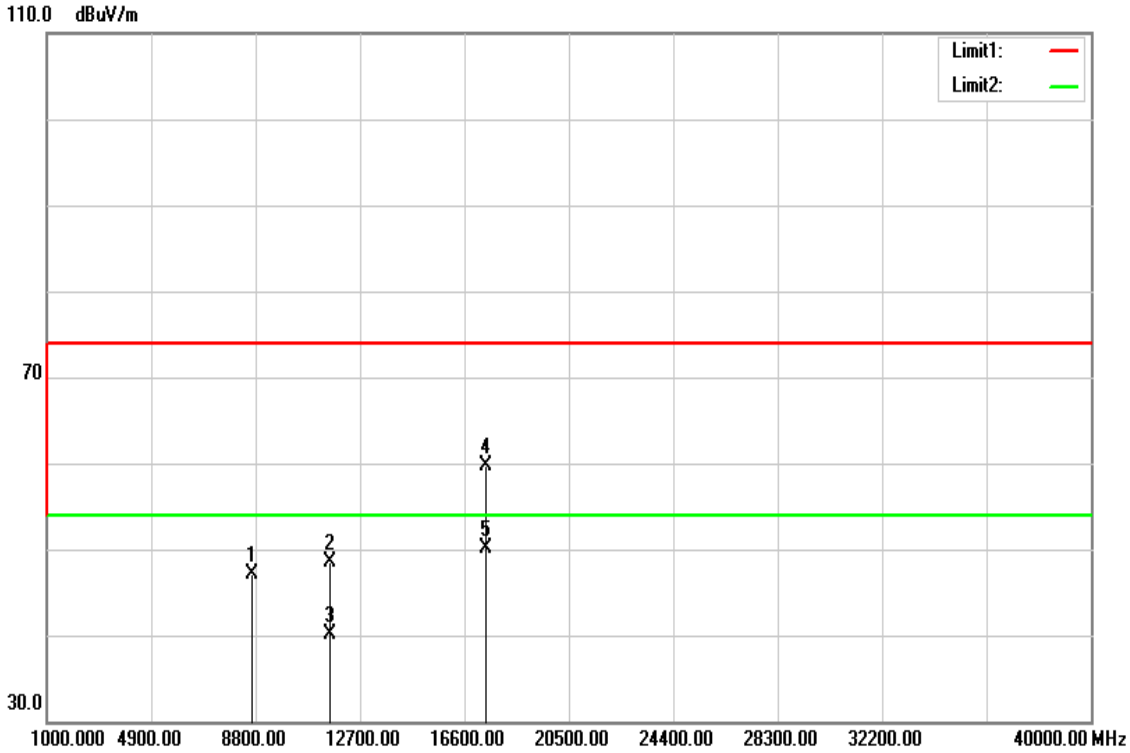
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8690.000	33.48	13.73	47.21	74.00	-26.79	peak
11590.000	30.48	16.86	47.34	74.00	-26.66	peak
11590.000	21.63	16.86	38.49	54.00	-15.51	AVG
17385.000	33.92	25.87	59.79	74.00	-14.21	peak
17385.000	24.49	25.87	50.36	54.00	-3.64	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*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Harmonic	Test Date	June 6. 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
8670.000	33.37	13.72	47.09	74.00	-26.91	peak
11590.000	31.74	16.86	48.60	74.00	-25.40	peak
11590.000	23.32	16.86	40.18	54.00	-13.82	AVG
17385.000	33.91	25.87	59.78	74.00	-14.22	peak
17385.000	24.30	25.87	50.17	54.00	-3.83	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*

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4.6 FREQUENCY STABILITY

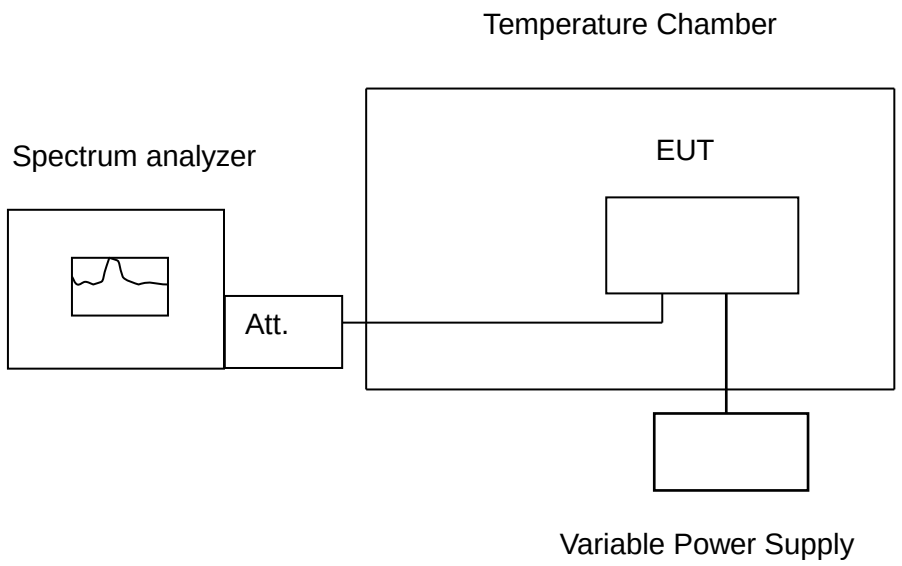
4.6.1 Test Limit

According to §15.407(g) manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the operational description.

4.6.2 Test Procedure

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to –20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

4.6.3 Test Setup



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4.6.4 Test Result

Temp. (°C)	Voltage (V)	Measured Frequency	5180		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
50	4.2	5180.05624	5180.05543	5180.05347	5180.05242	10.8571	10.7008	10.3224	10.1197	Pass
40	4.2	5180.04145	5180.04348	5180.04468	5180.04726	8.0019	8.3938	8.6255	9.1236	Pass
30	4.2	5180.01923	5180.02046	5180.02148	5180.02358	3.7124	3.9498	4.1467	4.5521	Pass
20	4.2	5180.01860	5180.01872	5180.01886	5180.01895	3.5907	3.6139	3.6409	3.6583	Pass
10	4.2	5180.00984	5180.01011	5180.01026	5180.01042	1.8996	1.9517	1.9807	2.0116	Pass
0	4.2	5180.00672	5180.00684	5180.00701	5180.00729	1.2973	1.3205	1.3533	1.4073	Pass
-10	4.2	5179.99945	5179.99862	5179.99745	5179.99628	-0.1062	-0.2664	-0.4923	-0.7181	Pass
-20	4.2	5179.98475	5179.98244	5179.98067	5179.97901	-2.9440	-3.3900	-3.7317	-4.0521	Pass
-30	4.2	5180.05624	5180.05543	5180.05347	5180.05242	10.8571	10.7008	10.3224	10.1197	Pass
Temp. (°C)	Voltage (V)	Measured Frequency	5180		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
20	3.78	5180.01090	5180.01098	5180.01105	5180.01124	2.1042	2.1197	2.1332	2.1699	Pass
20	4.2	5180.01860	5180.01872	5180.01886	5180.01895	3.5907	3.6139	3.6409	3.6583	Pass
20	4.62	5180.01945	5180.01955	5180.01971	5180.01982	3.7548	3.7741	3.8050	3.8263	Pass

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Temp. (°C)	Voltage (V)	Measured Frequency	5260		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
50	4.2	5260.03413	5260.03554	5260.03647	5260.03754	6.4886	6.7567	6.9335	7.1369	Pass
40	4.2	5260.02187	5260.02334	5260.02578	5260.02744	4.1578	4.4373	4.9011	5.2167	Pass
30	4.2	5260.01048	5260.01197	5260.01304	5260.01578	1.9924	2.2757	2.4791	3.0000	Pass
20	4.2	5260.00870	5260.00864	5260.00852	5260.00831	1.6540	1.6426	1.6198	1.5798	Pass
10	4.2	5260.00547	5260.00584	5260.00615	5260.00642	1.0399	1.1103	1.1692	1.2205	Pass
0	4.2	5259.99945	5260.00024	5260.00176	5260.00293	-0.1046	0.0456	0.3346	0.5570	Pass
-10	4.2	5259.98945	5259.99641	5259.99715	5259.99874	-2.0057	-0.6825	-0.5418	-0.2395	Pass
-20	4.2	5259.98125	5259.98349	5259.98447	5259.98641	-3.5646	-3.1388	-2.9525	-2.5837	Pass
-30	4.2	5260.03413	5260.03554	5260.03647	5260.03754	6.4886	6.7567	6.9335	7.1369	Pass
Temp. (°C)	Voltage (V)	Measured Frequency	5260		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
20	3.78	5260.00687	5260.00692	5260.00715	5260.00733	1.3061	1.3156	1.3593	1.3935	Pass
20	4.2	5260.00870	5260.00864	5260.00852	5260.00831	1.6540	1.6426	1.6198	1.5798	Pass
20	4.62	5260.01049	5260.01067	5260.01080	5260.01098	1.9943	2.0285	2.0532	2.0875	Pass

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Temp. (°C)	Voltage (V)	Measured Frequency	5500		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
50	4.2	5500.03489	5500.03347	5500.03189	5500.03094	6.3436	6.0855	5.7982	5.6255	Pass
40	4.2	5500.03045	5500.02975	5500.02883	5500.02698	5.5364	5.4091	5.2418	4.9055	Pass
30	4.2	5500.02564	5500.02534	5500.02378	5500.02187	4.6618	4.6073	4.3236	3.9764	Pass
20	4.2	5500.02070	5500.02115	5500.02137	5500.02159	3.7636	3.8455	3.8855	3.9255	Pass
10	4.2	5500.01547	5500.01324	5500.01198	5500.01062	2.8127	2.4073	2.1782	1.9309	Pass
0	4.2	5500.01046	5500.00978	5500.00772	5500.00547	1.9018	1.7782	1.4036	0.9945	Pass
-10	4.2	5499.99987	5499.99815	5499.99647	5499.99419	-0.0236	-0.3364	-0.6418	-1.0564	Pass
-20	4.2	5499.98997	5499.98981	5499.98745	5499.98754	-1.8236	-1.8527	-2.2818	-2.2655	Pass
-30	4.2	5500.03489	5500.03347	5500.03189	5500.03094	6.3436	6.0855	5.7982	5.6255	Pass
Temp. (°C)	Voltage (V)	Measured Frequency	5500		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
20	3.78	5500.01987	5500.01974	5500.01962	5500.01955	3.6127	3.5891	3.5673	3.5545	Pass
20	4.2	5500.02070	5500.02115	5500.02137	5500.02159	3.7636	3.8455	3.8855	3.9255	Pass
20	4.62	5500.02162	5500.02178	5500.02189	5500.02201	3.9309	3.9600	3.9800	4.0018	Pass

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Temp. (°C)	Voltage (V)	Measured Frequency	5745		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
50	4.2	5745.04429	5745.04315	5745.04217	5745.01982	7.7093	7.5109	7.3403	3.4500	Pass
40	4.2	5745.03264	5745.03156	5745.03089	5745.02954	5.6815	5.4935	5.3768	5.1419	Pass
30	4.2	5745.02158	5745.02057	5745.01929	5745.01875	3.7563	3.5805	3.3577	3.2637	Pass
20	4.2	5745.01258	5745.01168	5745.01015	5745.00935	2.1897	2.0331	1.7668	1.6275	Pass
10	4.2	5745.00631	5745.00579	5745.00418	5745.00395	1.0983	1.0078	0.7276	0.6876	Pass
0	4.2	5744.99875	5744.99758	5744.99645	5744.99518	-0.2176	-0.4212	-0.6179	-0.8390	Pass
-10	4.2	5744.98642	5744.98589	5744.95482	5744.95316	-2.3638	-2.4560	-7.8642	-8.1532	Pass
-20	4.2	5744.97143	5744.97087	5744.96914	5744.96815	-4.9730	-5.0705	-5.3716	-5.5440	Pass
-30	4.2	5745.04429	5745.04315	5745.04217	5745.01982	7.7093	7.5109	7.3403	3.4500	Pass
Temp. (°C)	Voltage (V)	Measured Frequency	5745		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
20	3.78	5745.01387	5745.01371	5745.01368	5745.01351	2.4143	2.3864	2.3812	2.3516	Pass
20	4.2	5745.01258	5745.01248	5745.01233	5745.01229	2.1897	2.1723	2.1462	2.1393	Pass
20	4.62	5745.01449	5745.01139	5745.01125	5745.00116	2.5222	1.9826	1.9582	0.2019	Pass

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4.7 DYNAMIC FREQUENCY SELECTION

4.7.1 Test Limit

FCC according to §15.407 (h), KDB 905462 D02 "compliance measurement procedures for unlicensed-national information infrastructure devices operating in the 5250-5350 MHz and 5470-5725 MHz bands incorporating dynamic frequency selection”. and KDB 905462 D03 " U-NII client devices without radar detection capability.

Table 1: Applicability of DFS requirements prior to use of a channel

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client(with radar detection)
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required

Additional requirements for devices with multiple bandwidth mods	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

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Table 3: Interference Threshold values, Master or Client incorporating In-Service

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.
Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

Table 4: DFS Response requirement values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.
Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.
Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

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Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\mu\text{sec}}}\right)\right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 µsec, with a minimum increment of 1 µsec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					

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Table 6 – Long Pulse Radar Test Signal

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 7 – Frequency Hopping Radar Test Signal

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

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4.7.2 Test Procedure

Overview Of EUT With Respect To §15.407 (H) Requirements

The firmware installed in the EUT during testing was:

Firmware Rev: v1.4700
The EUT operates over the 5250-5350 MHz range as a Client Device that does not have radar detection capability.

The EUT uses one transmitter connected to two 50-ohm coaxial antenna ports via a diversity switch. Only one antenna port is connected to the test system since the EUT has one antenna only.

The Slave device associated with the EUT during these tests does not have radar detection capability.

WLAN traffic is generated by streaming the video file TestFile.mp2 “6 ½ Magic Hours” from the Master to the Slave in full motion video mode using the media player with the V2.61 Codec package.

The EUT utilizes the 802.11a architecture, with a nominal channel bandwidth of 20 MHz.

The rated output power of the Master unit is < 23dBm (EIRP). Therefore the required interference threshold level is -62 dBm. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is –62 + 5 = -57dBm.

The calibrated conducted DFS Detection Threshold level is set to -57 dBm. The tested level is lower than the required level hence it provides margin to the limit.

Manufacturer’s Statement Regarding Uniform Channel Spreading

The end product implements an automatic channel selection feature at startup such that operation commences on channels distributed across the entire set of allowed 5GHz channels. This feature will ensure uniform spreading is achieved while avoiding non-allowed channels due to prior radar events.

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TEST AND MEASUREMENT SYSTEM

System Overview

The measurement system is based on a conducted test method.

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

The short pulse types 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of FCC 06-96 APPENDIX. The frequency of the signal generator is incremented in 1 MHz steps from FL to FH for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer set to display 8001 bins on the horizontal axis. The time-domain resolution is 2 msec / bin with a 16 second sweep time, meeting the 10 second short pulse reporting criteria. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold. The time-domain resolution is 3 msec / bin with a 24 second sweep time, meeting the 22 second long pulse reporting criteria and allowing a minimum of 10 seconds after the end of the long pulse waveform.

Should multiple RF ports be utilized for the Master and/or Slave devices (for example, for diversity or MIMO implementations), 50 ohm termination would be removed from the splitter so that connection can be established between splitter and the Master and/or Slave devices.

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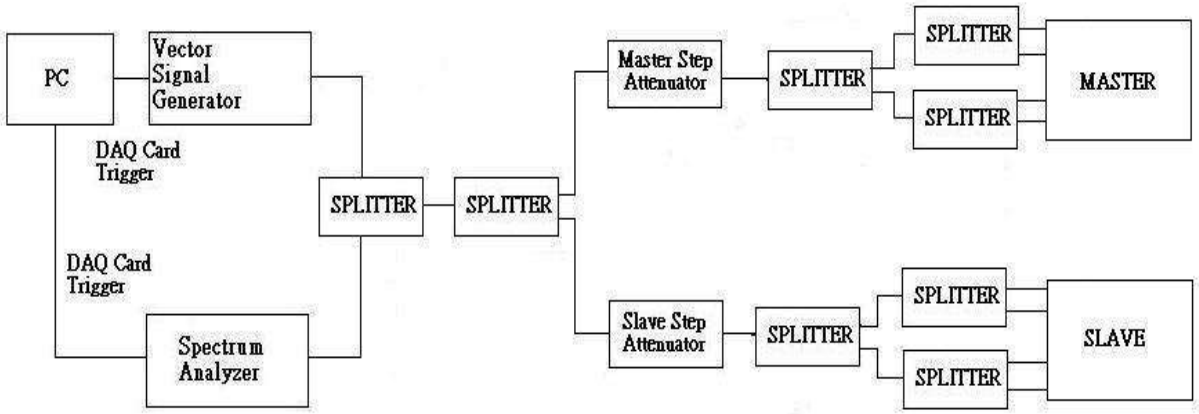
Conducted Method System Block Diagram



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System Calibration

Connect the spectrum analyzer to the test system in place of the master device. Set the signal generator to CW mode. Adjust the amplitude of the signal generator to yield a measured level of –62 dBm on the spectrum analyzer.

Without changing any of the instrument settings, reconnect the spectrum analyzer to the Common port of the Spectrum Analyzer Combiner/Divider and connect a 50 ohm load to the Master Device port of the test system.

Measure the amplitude and calculate the difference from –62 dBm. Adjust the Reference Level Offset of the spectrum analyzer to this difference. Confirm that the signal is displayed at –62 dBm. Readjust the RBW and VBW to 3 MHz, set the span to 10 MHz, and confirm that the signal is still displayed at –62 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –62 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

Set the signal generator to produce a radar waveform, trigger a burst manually and measure the level on the spectrum analyzer. Readjust the amplitude of the signal generator as required so that the peak level of the waveform is at a displayed level equal to the required or desired interference detection threshold. Separate signal generator amplitude settings are determined as required for each radar type.

Adjustment Of Displayed Traffic Level

Establish a link between the Master and Slave, adjusting the Link Step Attenuator as needed to provide a suitable received level at the Master and Slave devices. Stream the video test file to generate WLAN traffic. Confirm that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold. Confirm that the displayed traffic is from the Master Device. For Master Device testing confirm that the displayed traffic does not include Slave Device traffic. For Slave Device testing confirm that the displayed traffic does not include Master Device traffic.

If a different setting of the Master Step Attenuator is required to meet the above conditions, perform a new System Calibration for the new Master Step Attenuator setting.

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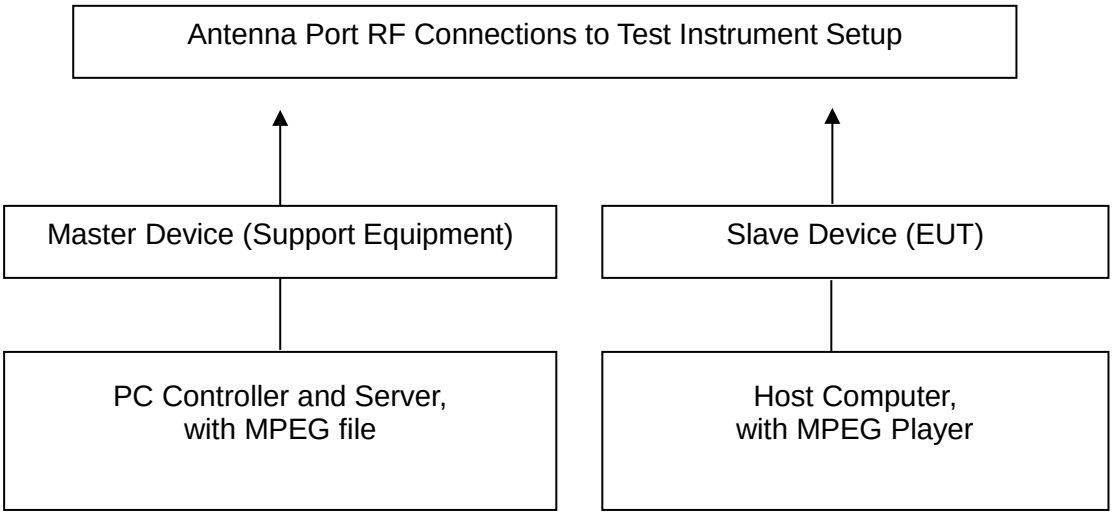
4.7.3 Test Setup



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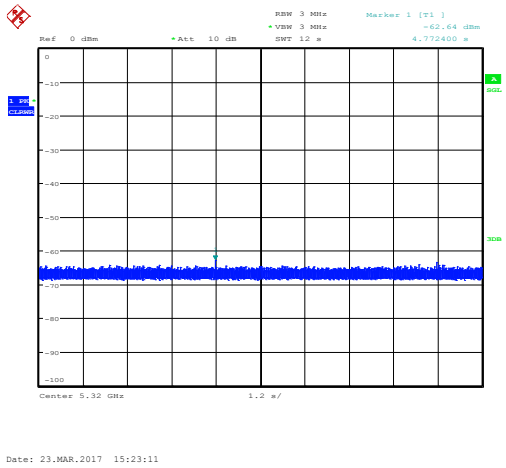
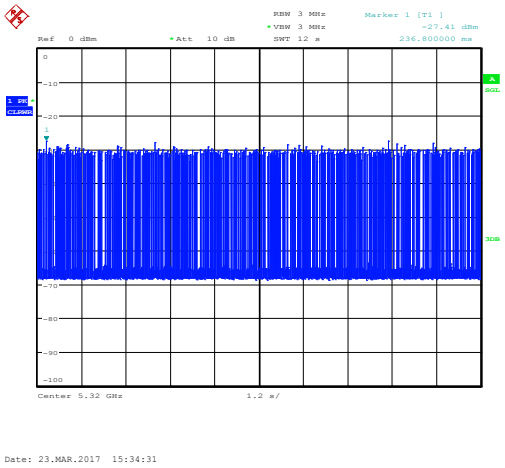
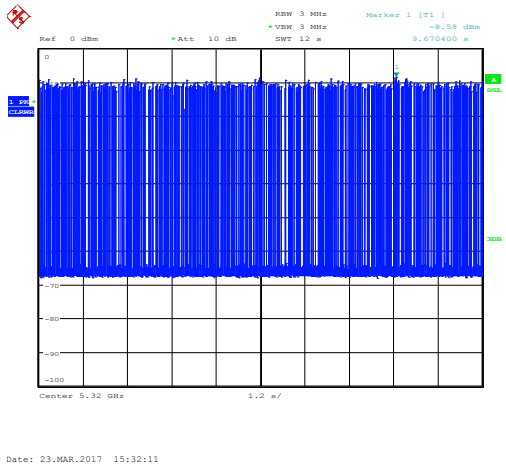
4.7.4 Test Result

IEEE 802.11n HT20 MHz at 5320MHz	
Noise Floor	**Master Level**
	
Slave Level	
	

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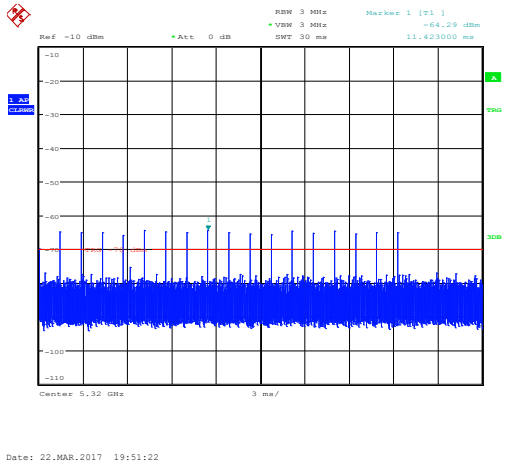
Radar Waveforms

Sample of short Pluse Radar Type 0



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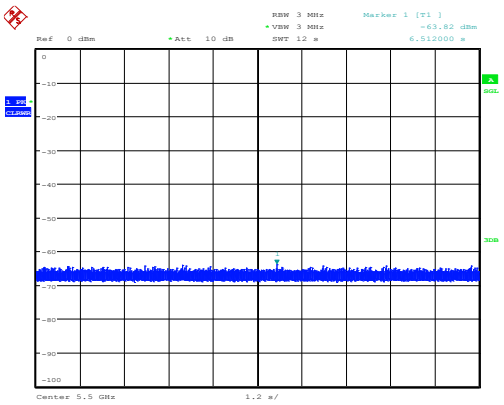
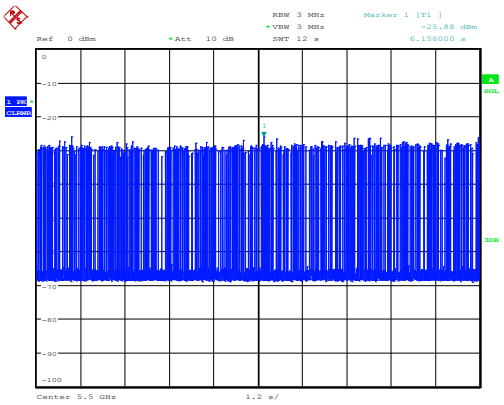
IEEE 802.11n HT20 MHz at 5500MHz

Noise Floor



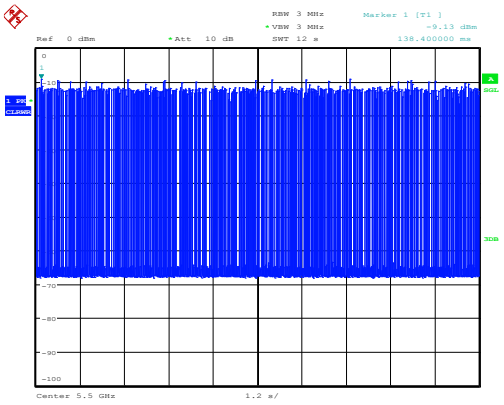
Date: 22.MAR.2017 20:45:10

Master Level



Date: 22.MAR.2017 20:44:21

Slave Level



Date: 22.MAR.2017 20:43:31

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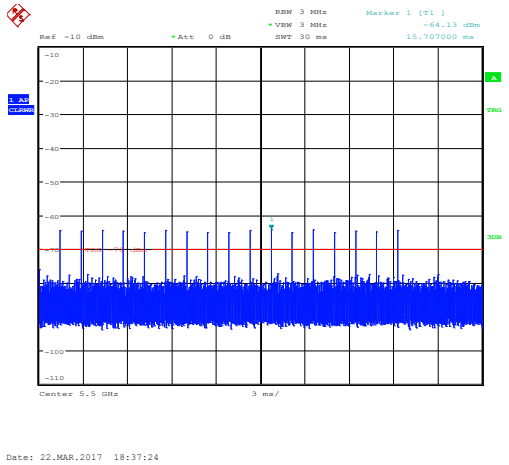
Radar Waveforms

Sample of short Pluse Radar Type 0



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TEST CHANNEL AND METHOD

All tests were performed at a channel center frequency of 5530 MHz utilizing a conducted test method.

CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME

GENERAL REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =

(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated

Begins at (Reference Marker + 200 msec) and

Ends no earlier than (Reference Marker + 10 sec).

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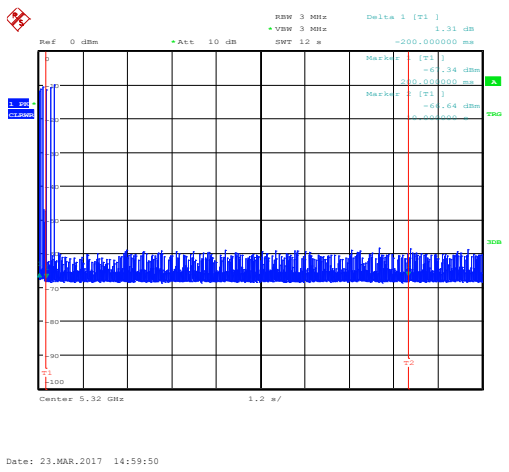
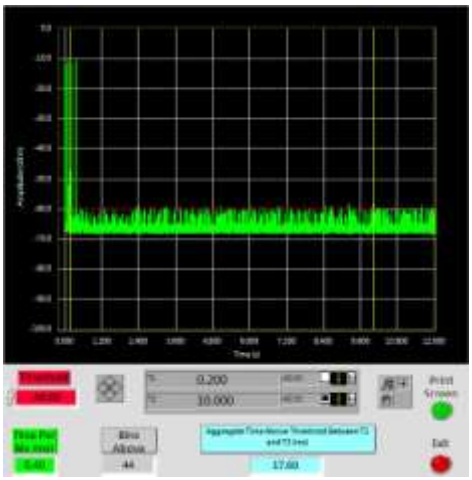
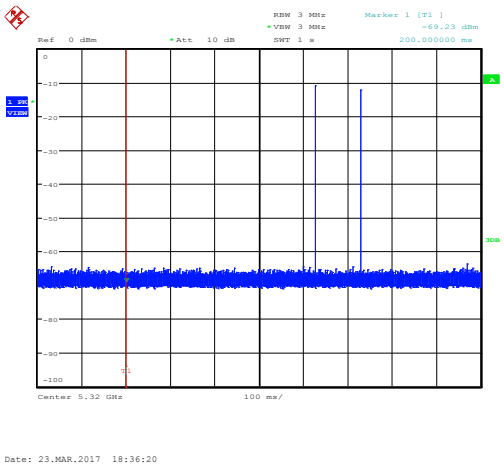
IEEE 802.11n HT 20 MHz at 5320	
Type 1_Channel Move Time	



Channel Move Time (s)	Limit (s)
-0.2	10

IEEE 802.11n HT 20 MHz at 5320	
Type 1_Channel closing transmisssion time	**Type 1_Channel closing transmisssion time-caculate**





Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
17.60	60	-42.40

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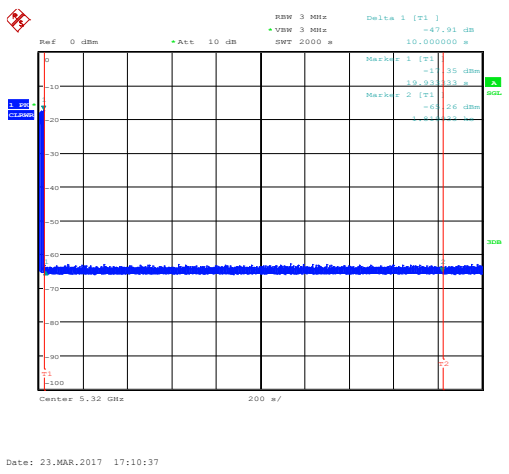
IEEE 802.11n HT 20 MHz at 5320
Non-Occupancy Period



Remark :

1. No EUT transmissions were observed on the test channel during the 30 minute observation time.

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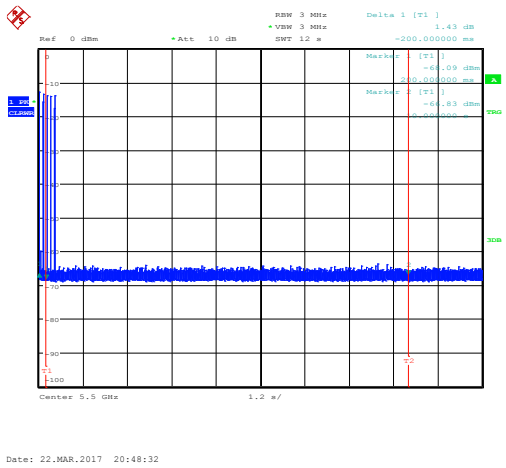
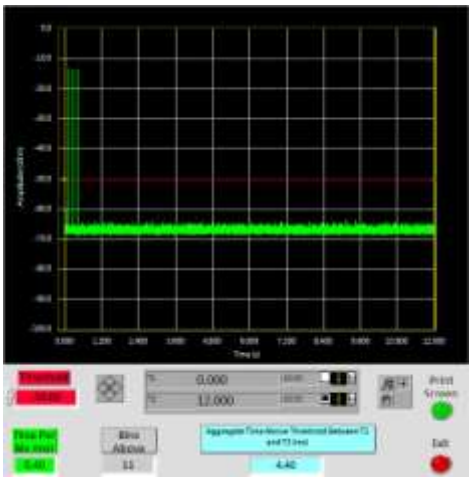
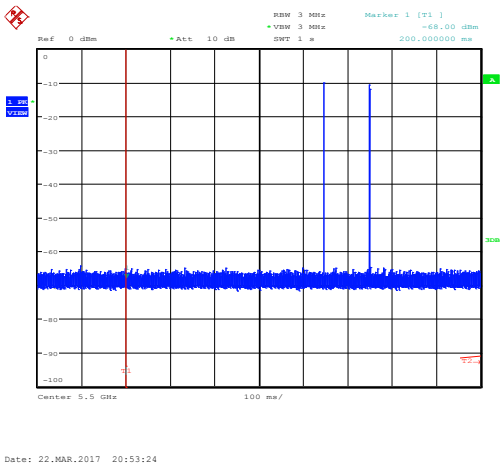
IEEE 802.11n HT 20 MHz at 5500	
Type 1_Channel Move Time	



Channel Move Time (s)	Limit (s)
-0.2	10

IEEE 802.11n HT 20 MHz at 5500	
Type 1_Channel closing transmisssion time	**Type 1_Channel closing transmisssion time-caculate**





Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
4.40	60	-55.60

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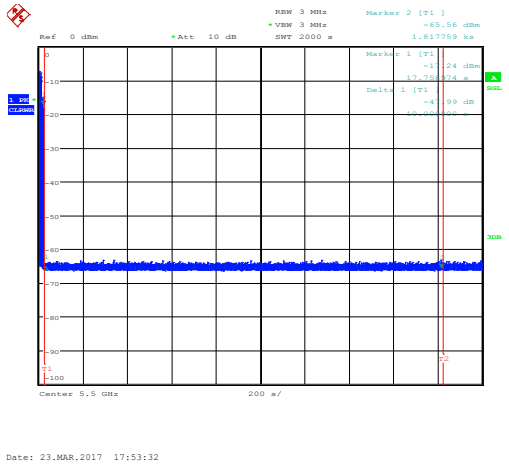
IEEE 802.11n HT 20 MHz at 5500
Non-Occupancy Period



Remark :

1. No EUT transmissions were observed on the test channel during the 30 minute observation time.

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