

# RADIO TEST REPORT

## FCC 47 CFR PART 15 SUBPART C

<b>Test Standard</b>	<b>FCC Part 15.247</b>
<b>FCC ID</b>	<b>2AMKV-AP6212A-ZA</b>
<b>Product name</b>	<b>Portable DVR</b>
<b>Brand Name</b>	<b>N/A</b>
<b>Model</b>	<b>PV-50HD2 Deluxe</b>
<b>Test Result</b>	<b>Pass</b>

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:

A handwritten signature in black ink that reads "Sam Chuang".

Sam Chuang  
Manager

Tested by:

A handwritten signature in black ink that reads "Ed Chiang".

Ed Chiang  
Engineer

## **Revision History**

Rev.	Issue Date	Revisions	Revised By
00	April 6, 2017	Initial Issue	Doris Chu
01	July 17, 2017	1. Revise Average output power in page 23. 2. Added notes in page 55~56. 3. Revise conduction setup photos in page 77.	Angel Cheng

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## 1. GENERAL INFORMATION

### 1.1 EUT INFORMATION

Applicant	Appro Photoelectron Inc. 6F, No.23, Syuan Rd, Shinjuang District, New Taipei City, Taiwan
Manufacturer	Appro Photoelectron Inc. 6F, No.23, Syuan Rd, Shinjuang District, New Taipei City, Taiwan
Equipment	Portable DVR
Model No.	PV-50HD2 Deluxe
Model Discrepancy	N/A
Trade Name	N/A
Received Date	November 24, 2016
Date of Test	March 9 ~ 28, 2017
Output Power(W)	IEEE 802.11b mode: 0.0135 IEEE 802.11g mode: 0.0873 IEEE 802.11n HT 20 MHz mode: 0.0877
Power Operation	1. Powered from Battery NEO-Power/ BA-1400 Rating: 3.7V 2. Powered from host device via USB Cable

## 1.2 EUT CHANNEL INFORMATION

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

**Remark:**

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

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

## 1.3 ANTENNA INFORMATION

Antenna Category	<input checked="" type="checkbox"/> Integral: antenna permanently attached <input type="checkbox"/> External dedicated antennas <input type="checkbox"/> External Unique antenna connector
Antenna Type	<input type="checkbox"/> PIFA <input checked="" type="checkbox"/> PCB <input type="checkbox"/> Dipole <input type="checkbox"/> Coils
Antenna Gain	4.2 (dBi)

## 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.

## 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
Pre-Amplifier	EMCI	EMC 012635	980151	06/23/2016	06/22/2017
Pre-Amplifier	EMEC	EM330	060609	06/08/2016	06/07/2017
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	05/11/2016	05/10/2017
LISN	SCHWARZBECK	NSLK 8128	5012	04/15/2016	04/14/2017
Receiver	R&S	ESCI	101073	08/20/2016	08/19/2017

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

## 1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT


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

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

## 1.8 TEST METHODOLOGY AND APPLIED STANDARDS

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

## 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

## 2. TEST SUMMERY

FCC Standard Section	Chapter	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207	4.1	AC Conducted Emission	Pass
15.247(a)(2)	4.2	6 dB Bandwidth	Pass
-	4.2	Occupied Bandwidth (99%)	-
15.247(b)	4.3	Output Power Measurement	Pass
15.247(e)	4.4	Power Spectral Density	Pass
15.247(d)	4.5	Conducted Band Edge	Pass
15.247(d)	4.5	Conducted Emission	Pass
15.247(d)	4.6	Radiation Band Edge	Pass
15.247(d)	4.6	Radiation Spurious Emission	Pass

### 3. DESCRIPTION OF TEST MODES

#### 3.1 THE WORST MODE OF OPERATING CONDITION

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

**Remark:**

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

### 3.2 THE WORST MODE OF MEASUREMENT

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

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

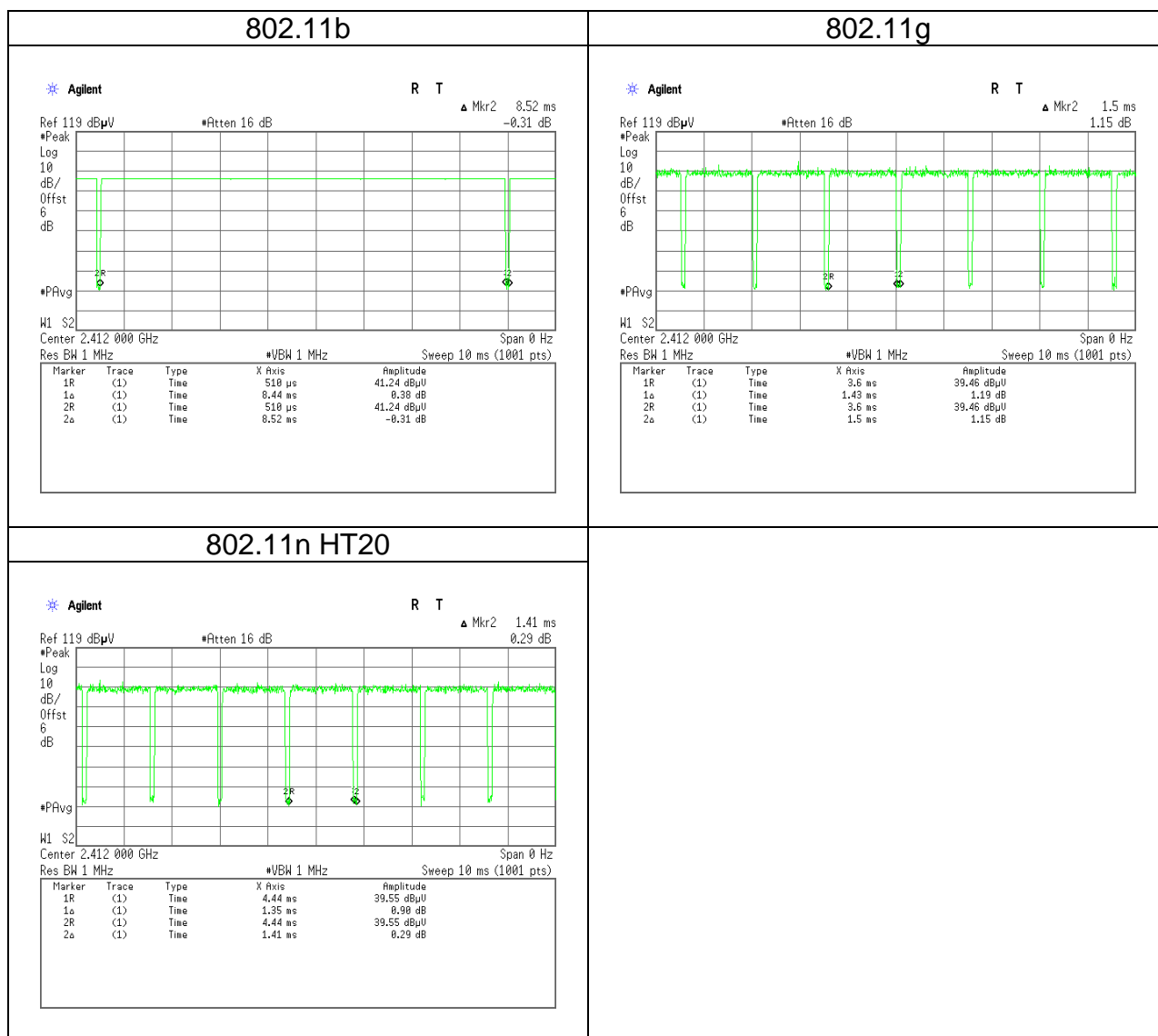
Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Voltage/Hz	120V/60Hz
Test Mode	Mode 1:EUT power by host system via USB cable.
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/>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

**Remark:**

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

### 3.3 EUT DUTY CYCLE

Duty Cycle				
Configuration	TX ON (ms)	TX ALL (ms)	Duty Cycle (%)	Duty Factor(dB)
802.11b	8.4400	8.5200	99.06%	0.04
802.11g	1.4300	1.5000	95.33%	0.21
802.11n HT20	1.3500	1.4100	95.74%	0.19



## 4. TEST RESULT

### 4.1 AC POWER LINE CONDUCTED EMISSION

#### 4.1.1 Test Limit

According to §15.207(a)(2)

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

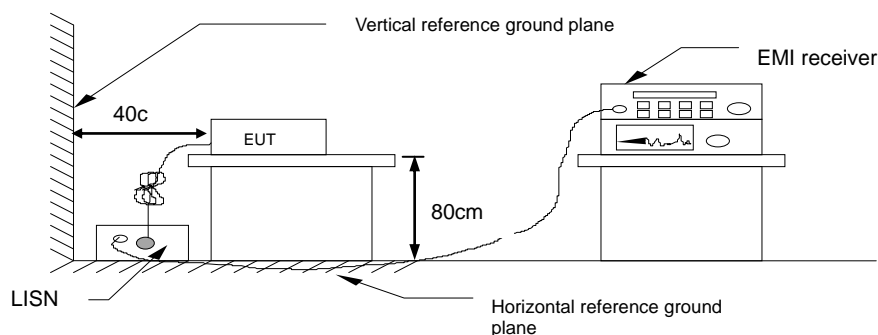
\* Decreases with the logarithm of the frequency.

#### 4.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

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

#### 4.1.3 Test Setup

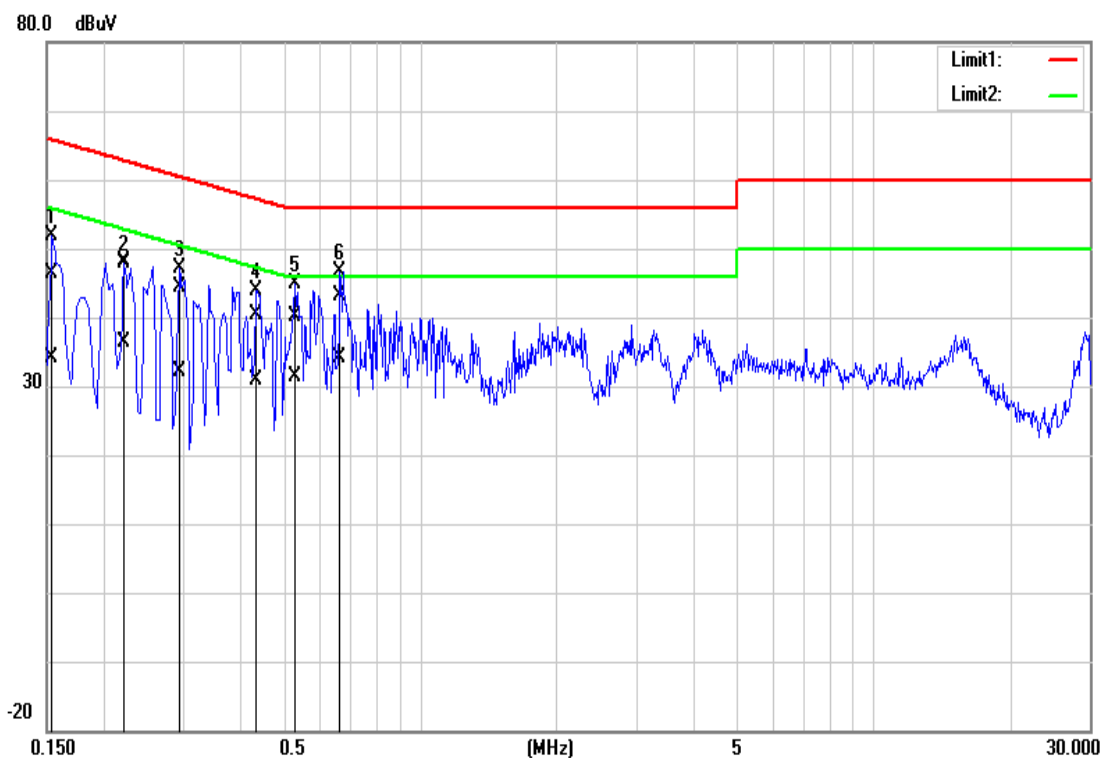


#### 4.1.4 Test Result

**Pass.**

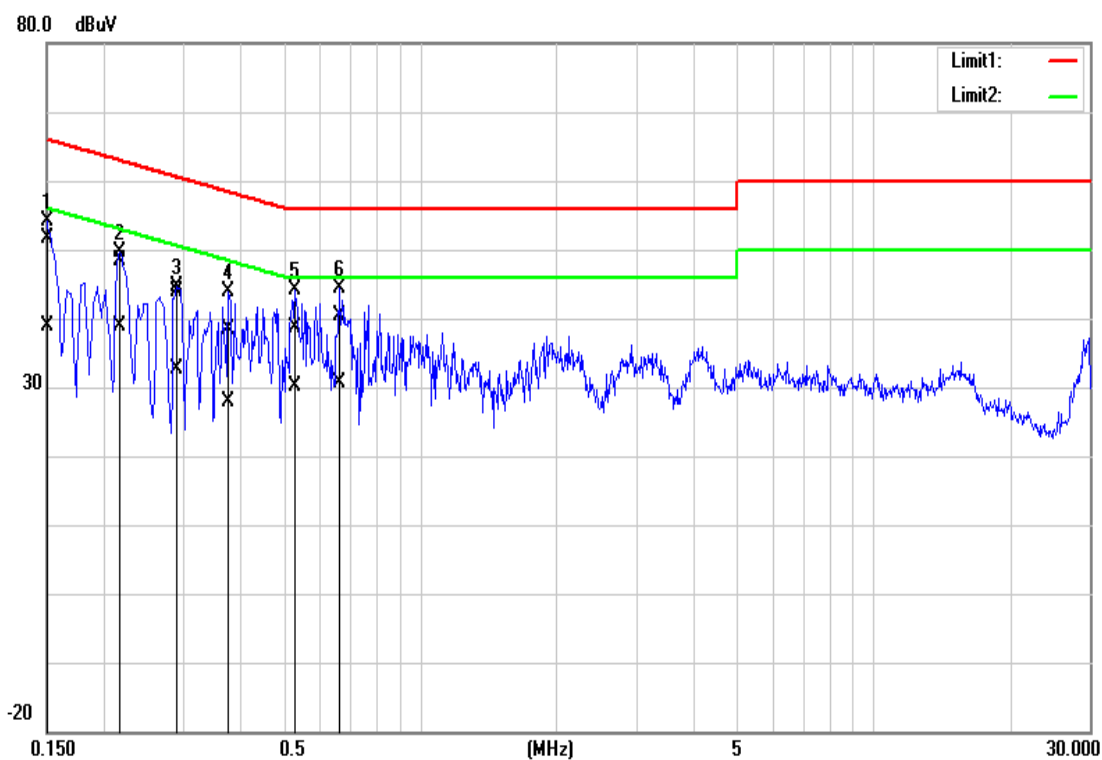
**Test Data**

Test Mode:	Mode 1	Temp/Hum	24(°C)/ 50%RH
Test Voltage:	120Vac / 60Hz	Test Date	March 21, 2017
Phase:	Line	Test Engineer	Eric Lee



Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)
0.1539	36.60	24.53	9.70	46.30	34.23	65.78	55.79	-19.48	-21.56
0.2220	38.48	26.77	9.69	48.17	36.46	62.74	52.74	-14.57	-16.28
0.2940	34.57	22.52	9.69	44.26	32.21	60.41	50.41	-16.15	-18.20
0.4340	30.66	21.22	9.68	40.34	30.90	57.18	47.18	-16.84	-16.28
0.5299	30.41	21.63	9.68	40.09	31.31	56.00	46.00	-15.91	-14.69
0.6660	33.51	24.52	9.68	43.19	34.20	56.00	46.00	-12.81	-11.80

Test Mode:	Mode 1	Temp/Hum	27(°C)/ 53%RH
Test Voltage:	120Vac / 60Hz	Test Date	March 21, 2017
Phase:	Neutral	Test Engineer	Eric Lee



Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)
0.1500	41.86	29.06	9.71	51.57	38.77	65.99	56.00	-14.42	-17.23
0.2180	38.80	29.09	9.70	48.50	38.79	62.89	52.89	-14.39	-14.10
0.2900	34.24	22.97	9.70	43.94	32.67	60.52	50.52	-16.58	-17.85
0.3780	28.64	18.21	9.69	38.33	27.90	58.32	48.32	-19.99	-20.42
0.5299	28.89	20.45	9.69	38.58	30.14	56.00	46.00	-17.42	-15.86
0.6620	30.62	20.96	9.69	40.31	30.65	56.00	46.00	-15.69	-15.35

## 4.26DB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)

### 4.2.1 Test Limit

According to §15.247(a)(2)

**6 dB Bandwidth** :

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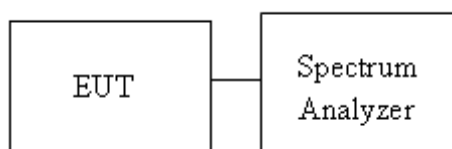
**Occupied Bandwidth(99%)** : For reporting purposes only.

### 4.2.2 Test Procedure

Test method Refer as KDB 558074 D01 v03r05, Section 8.1 and ANSI 63.10:2013 clause 11.8.1,

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

### 4.2.3 Test Setup



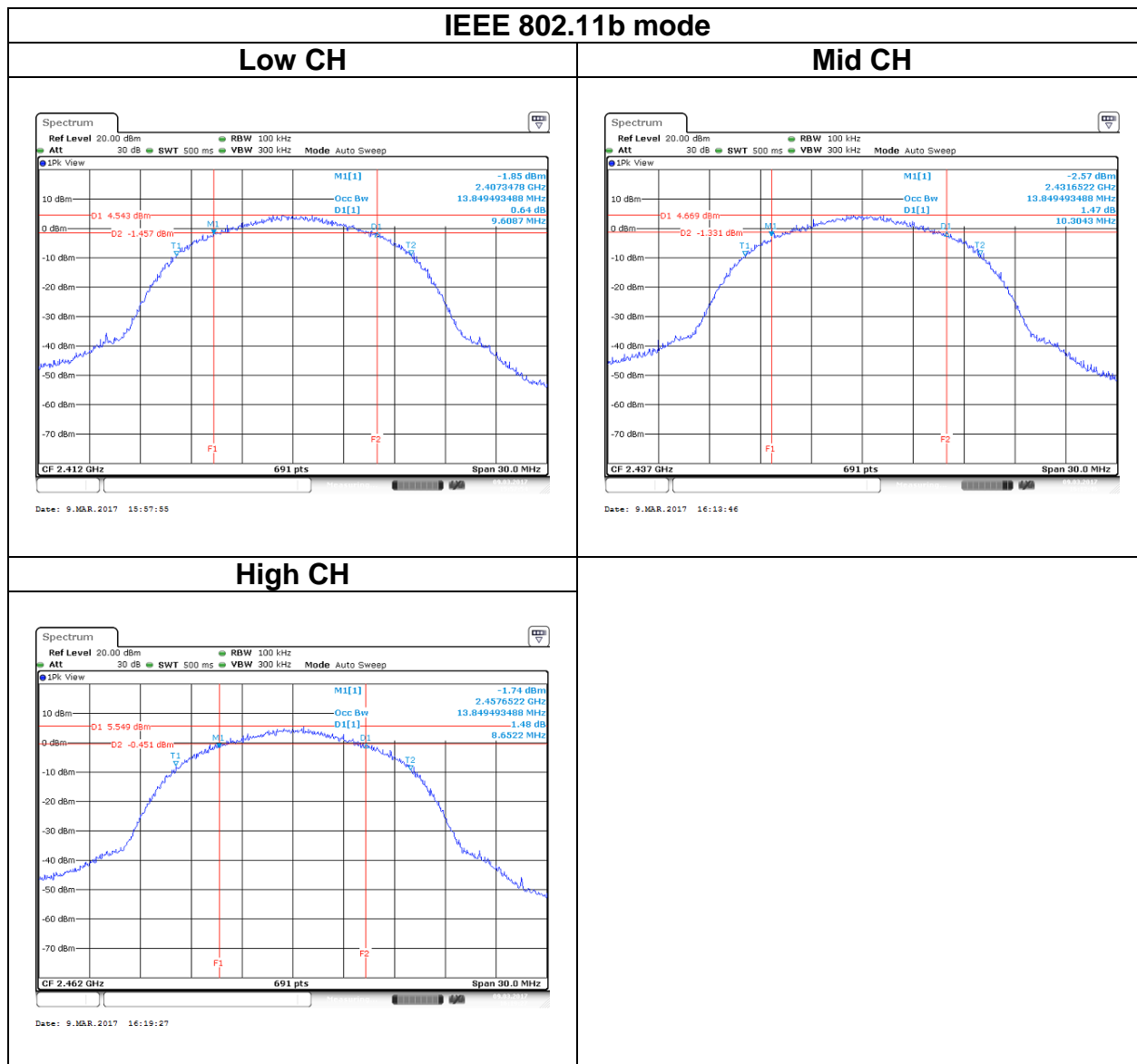
#### 4.2.4 Test Result

Test mode: IEEE 802.11b mode / 2412-2462 MHz				
Channel	Frequency (MHz)	OBW(99%) (MHz)	6dB BW (MHz)	6dB limit (kHz)
Low	2412	13.8494	9.6087	≥500
Mid	2437	13.8494	10.3043	
High	2462	13.8494	8.6522	

Test mode: IEEE 802.11g mode / 2412-2462 MHz				
Channel	Frequency (MHz)	OBW(99%) (MHz)	6dB BW (MHz)	6dB limit (kHz)
Low	2412	16.4544	16.4783	≥500
Mid	2437	16.4544	16.4783	
High	2462	16.4109	16.3913	

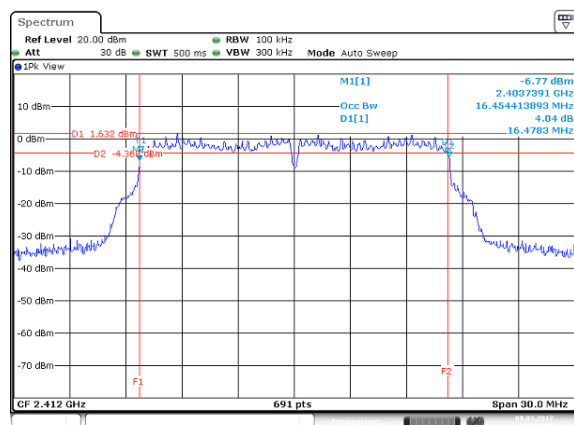
Test mode: IEEE 802.11n HT 20 MHz mode / 2412-2462 MHz				
Channel	Frequency (MHz)	OBW(99%) (MHz)	6dB BW (MHz)	6dB limit (kHz)
Low	2412	17.6700	17.7391	≥500
Mid	2437	17.6700	17.7826	
High	2462	17.6700	17.7391	

## Test Data

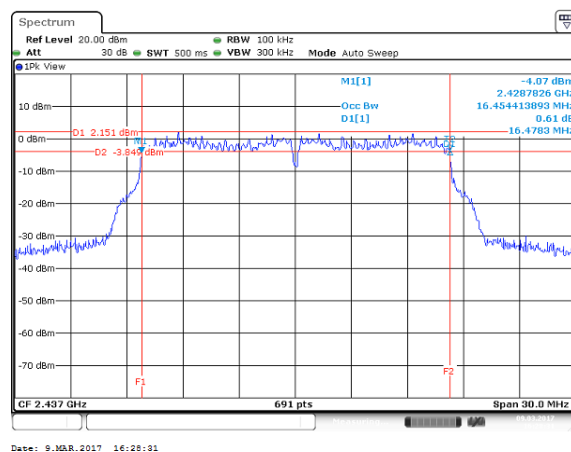


## IEEE 802.11g mode

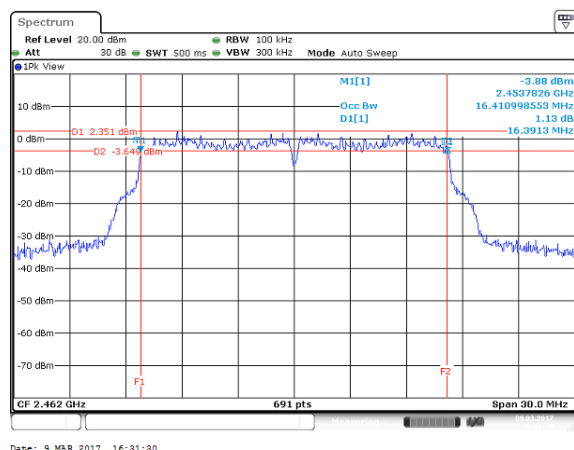
### Low CH



### Mid CH

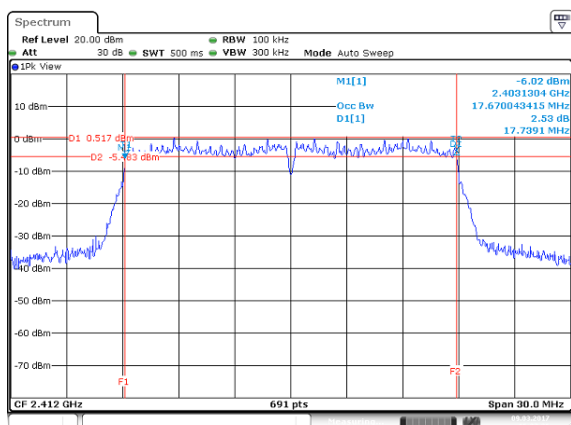


### High CH



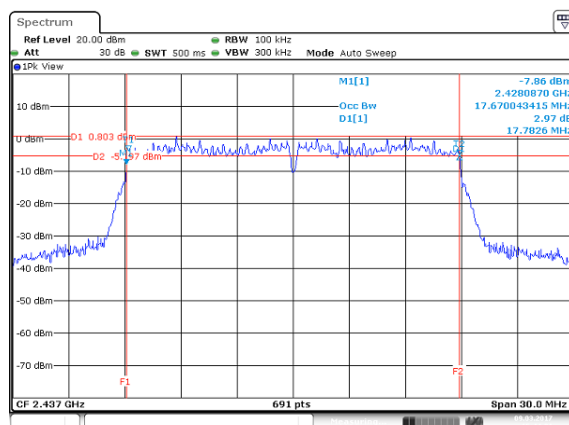
# IEEE 802.11n HT20 mode

## Low CH



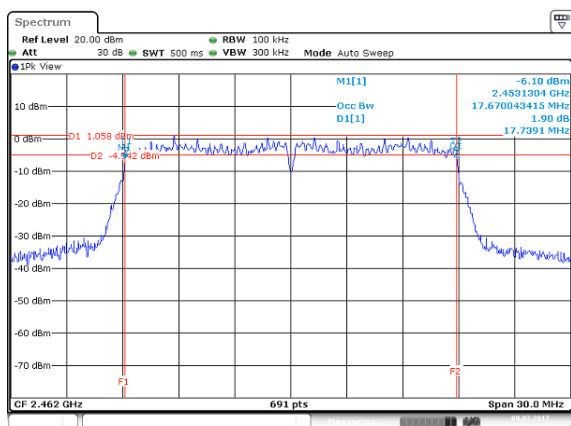
Date: 9.MAR.2017 16:37:26

## Mid CH



Date: 9.MAR.2017 16:44:02

## High CH



Date: 9.MAR.2017 16:49:33

## 4.3 OUTPUT POWER MEASUREMENT

### 4.3.1 Test Limit

According to §15.247(b)

#### Peak output power :

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

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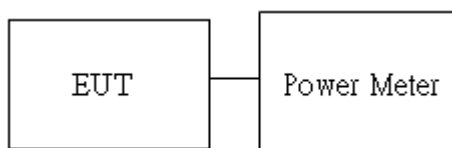
Average output power : For reporting purposes only.

### 4.3.2 Test Procedure

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

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

### 4.3.3 Test Setup



### 4.3.4 Test Result

#### Peak output power :

##### IEEE 802.11b mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)	Result
Low	2412	11.04	0.0127	30	PASS
Mid	2437	11.19	0.0132		PASS
High	2462	<b>*11.29</b>	0.0135		PASS

##### IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)	Result
Low	2412	19.26	0.0843	30	PASS
Mid	2437	19.35	0.0861		PASS
High	2462	<b>*19.41</b>	0.0873		PASS

##### IEEE 802.11n HT 20 MHz mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)	Result
Low	2412	19.21	0.0834	30	PASS
Mid	2437	19.10	0.0813		PASS
High	2462	<b>*19.43</b>	0.0877		PASS

**Average output power :****Test mode: IEEE 802.11b mode**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	8.93	0.0078
Mid	2437	8.72	0.0074
High	2462	8.82	0.0076

**Test mode: IEEE 802.11g mode**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	8.7	0.0074
Mid	2437	8.73	0.0075
High	2462	8.77	0.0075

**Test mode: IEEE 802.11n HT 20 MHz mode**

Channel	Frequency (MHz)	Total Output Power (dBm)	Output Power (W)
Low	2412	8.68	0.0074
Mid	2437	8.64	0.0073
High	2462	8.75	0.0075

## 4.4 POWER SPECTRAL DENSITY

### 4.4.1 Test Limit

According to §15.247(e)

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

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

Test method Refer as KDB 558074 D01 v03r05, Section 10.2

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

### 4.4.3 Test Setup



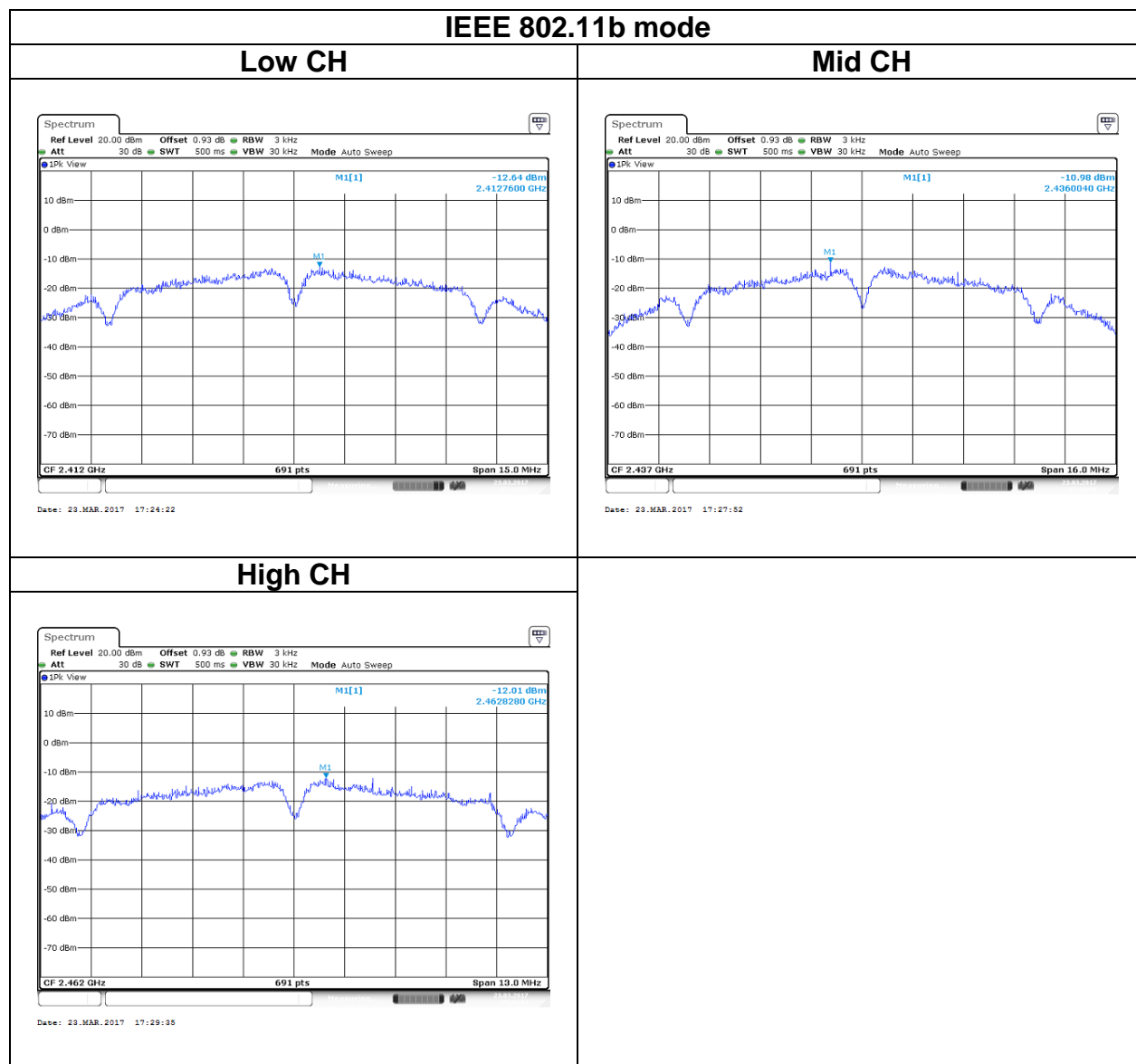
## 4.4.4 Test Result

Test mode: IEEE 802.11b mode / 2412-2462 MHz			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	2412	-12.64	8
Mid	2437	-10.98	
High	2462	-12.01	

Test mode: IEEE 802.11g mode / 2412-2462 MHz			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	2412	-13.59	8
Mid	2437	-14.67	
High	2462	-13.76	

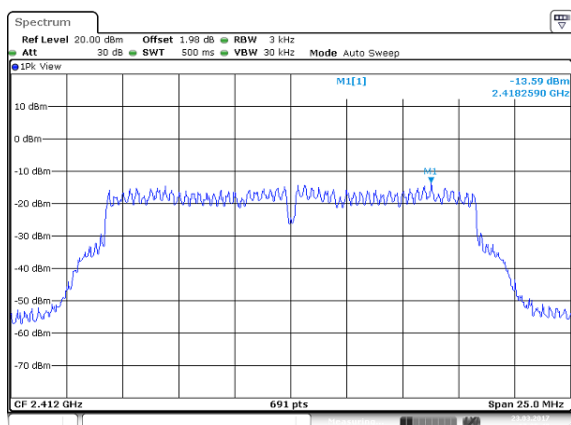
Test mode: IEEE 802.11n HT 20 MHz mode / 2412-2462 MHz			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	2412	-13.94	8
Mid	2437	-14.78	
High	2462	-13.64	

## Test Data

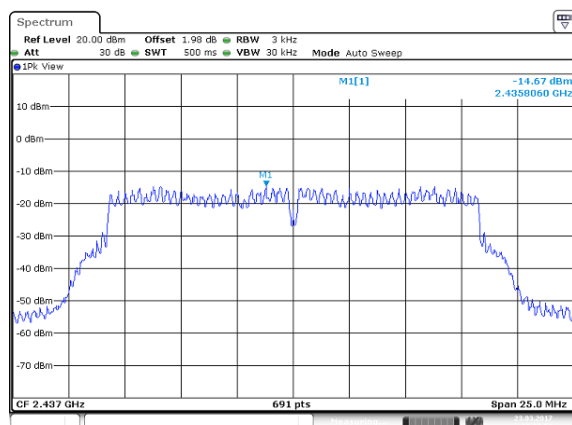


## IEEE 802.11g mode

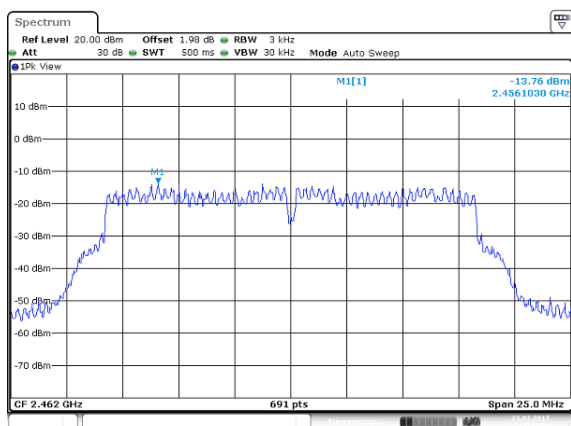
### Low CH



### Mid CH

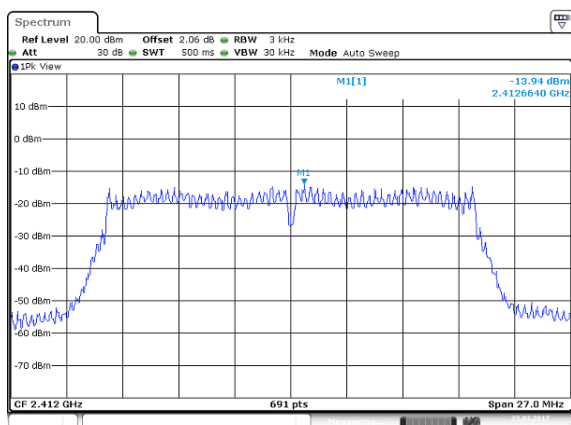


### High CH



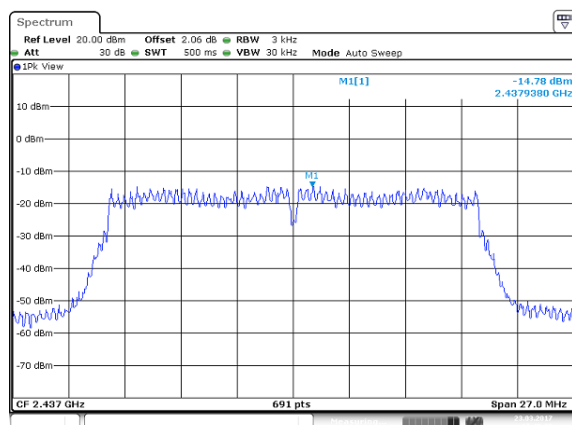
# IEEE 802.11n HT20 mode

## Low CH



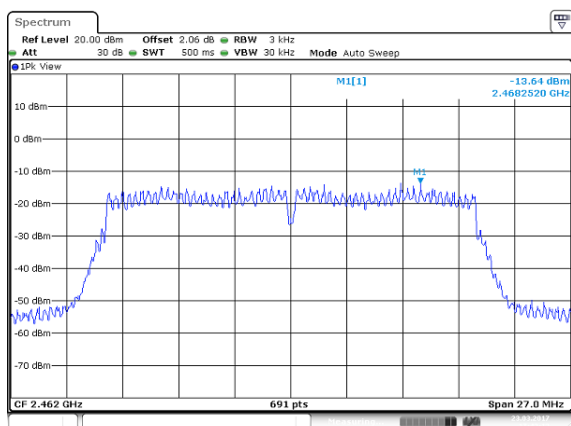
Date: 23.MAR.2017 17:38:30

## Mid CH



Date: 23.MAR.2017 17:40:29

## High CH



Date: 23.MAR.2017 17:42:12

## 4.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

### 4.5.1 Test Limit

According to §15.247(d)

In any 100 kHz bandwidth outside the authorized frequency band,

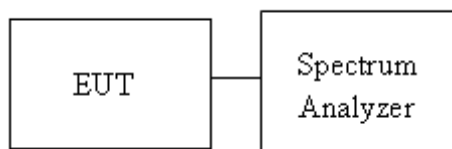
Non-restricted bands shall be attenuated at least 20 dB/30 dB relative to the maximum PSD level in 100 kHz by RF conducted or a radiated measurement which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

### 4.5.2 Test Procedure

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

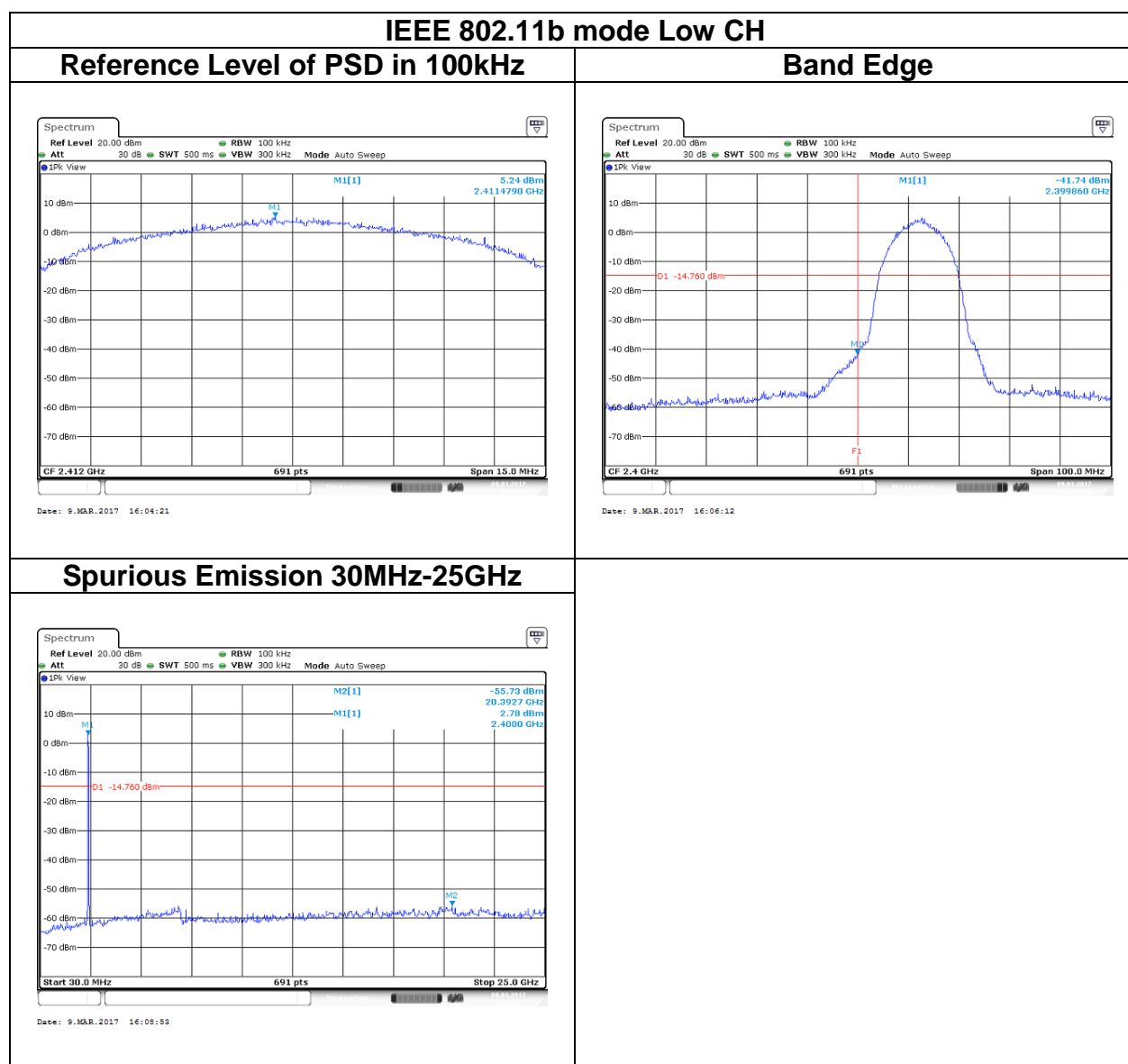
1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.
2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.
3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to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

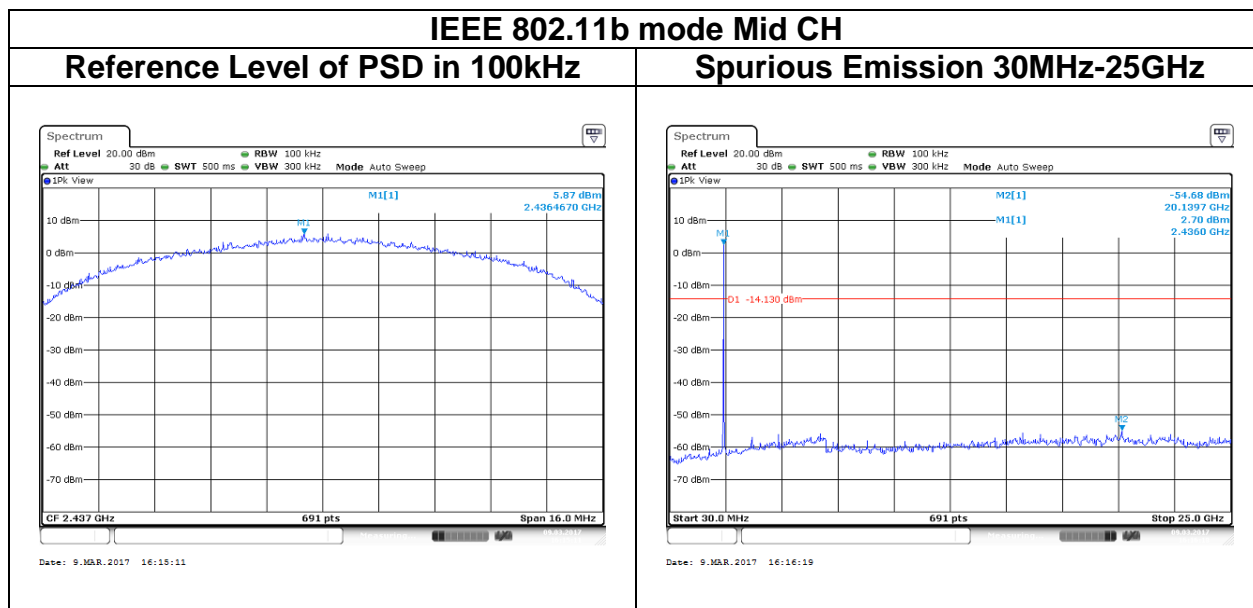
### 4.5.3 Test Setup



## 4.5.4 Test Result

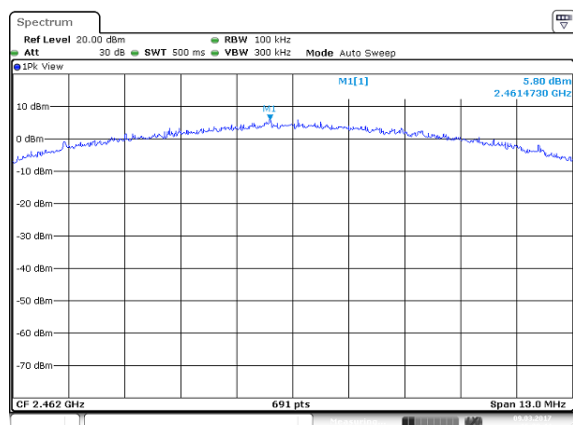
### Test Data



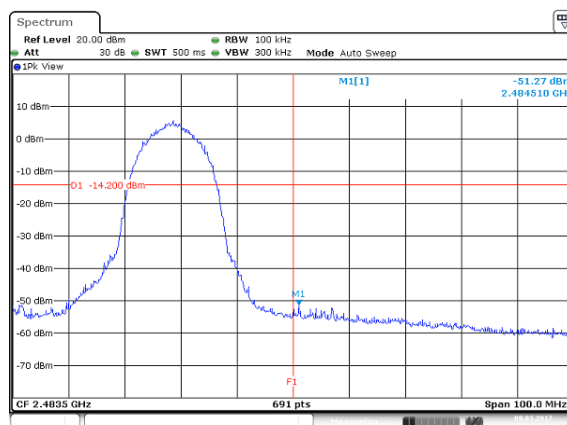


# IEEE 802.11b mode High CH

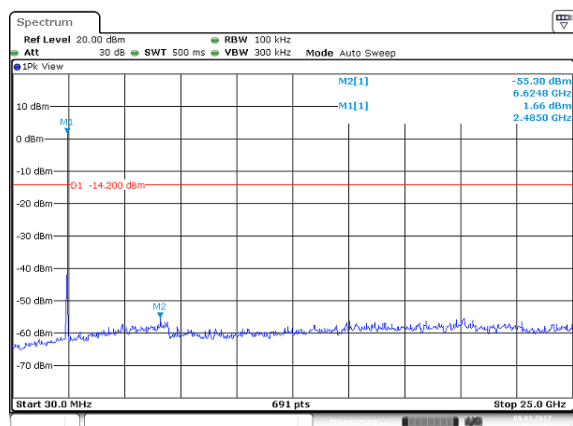
## Reference Level of PSD in 100kHz



## Band Edge

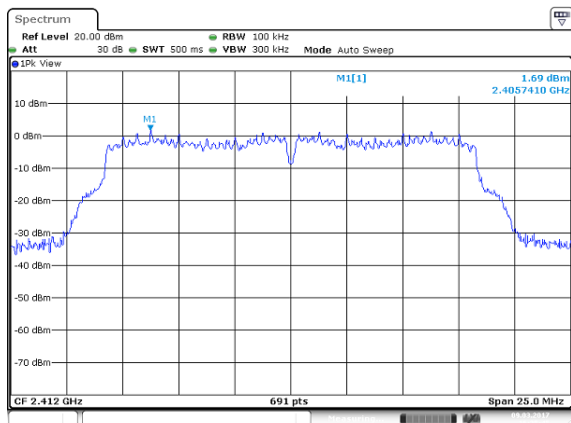


## Spurious Emission 30MHz-25GHz

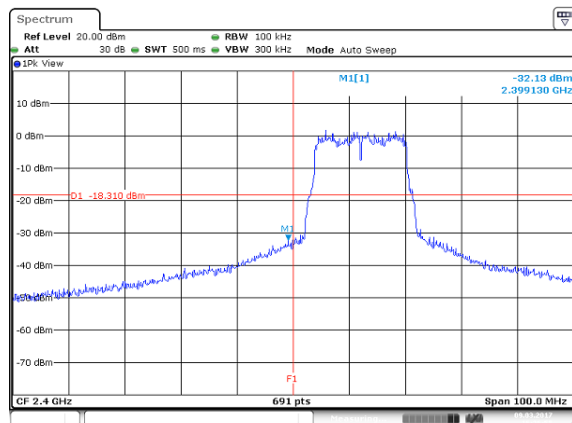


## IEEE 802.11g mode Low CH

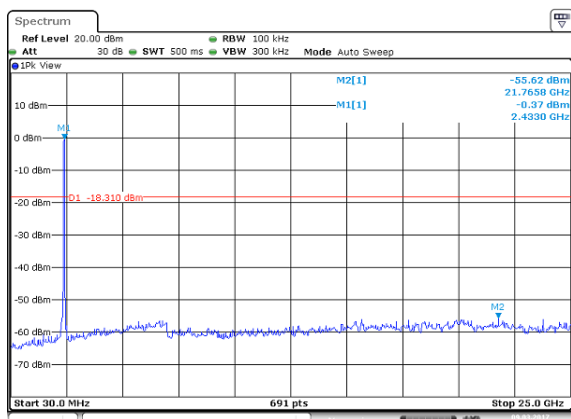
### Reference Level of PSD in 100kHz

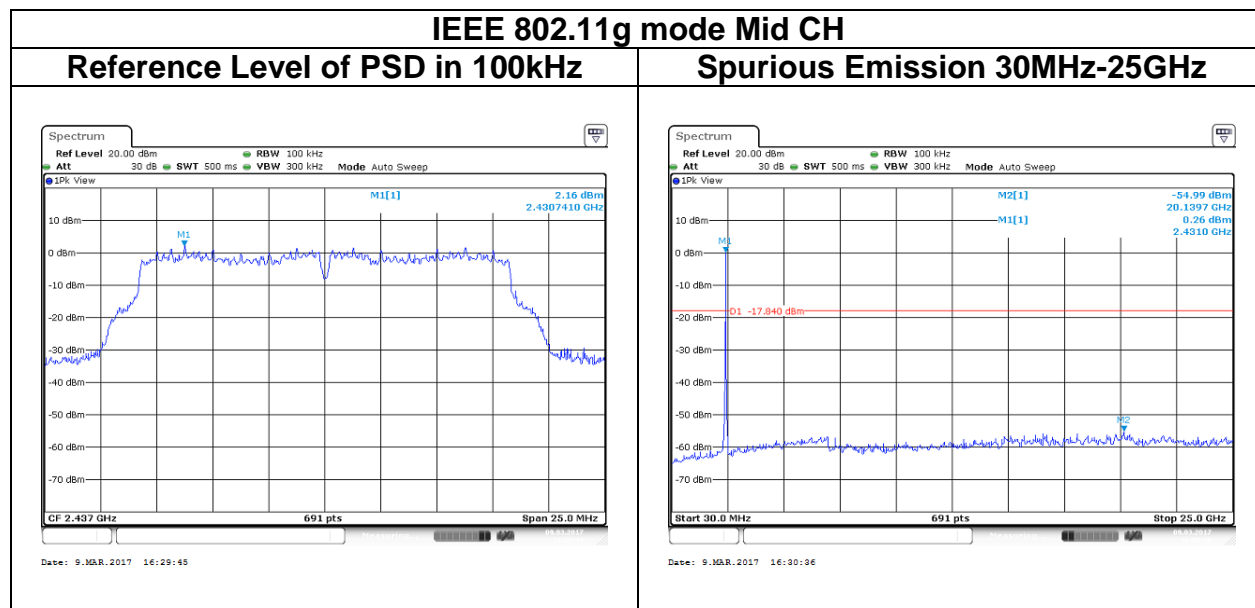


### Band Edge



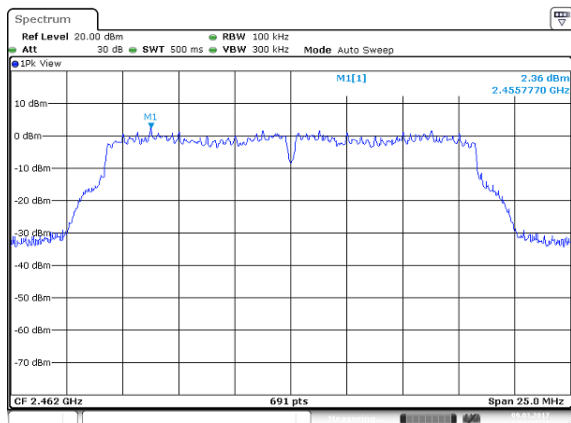
### Spurious Emission 30MHz-25GHz





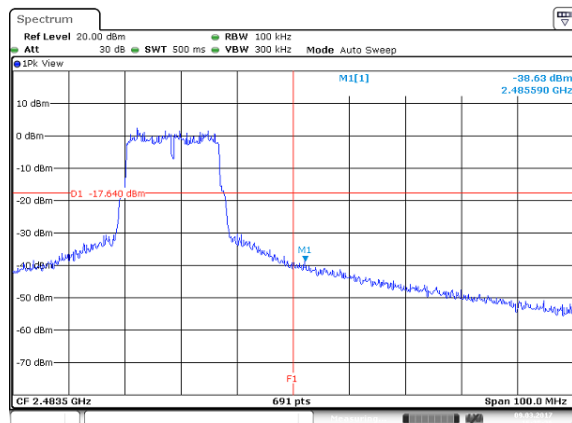
## IEEE 802.11g mode High CH

### Reference Level of PSD in 100kHz



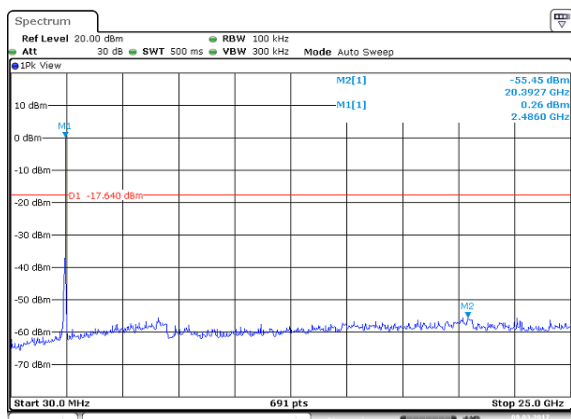
Date: 9.MAR.2017 16:34:21

### Band Edge



Date: 9.MAR.2017 16:35:37

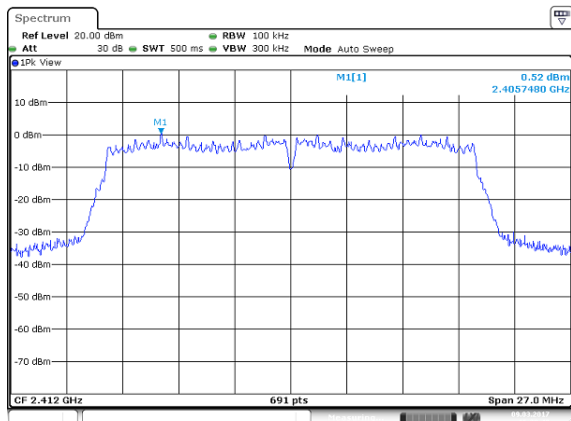
### Spurious Emission 30MHz-25GHz



Date: 9.MAR.2017 16:36:15

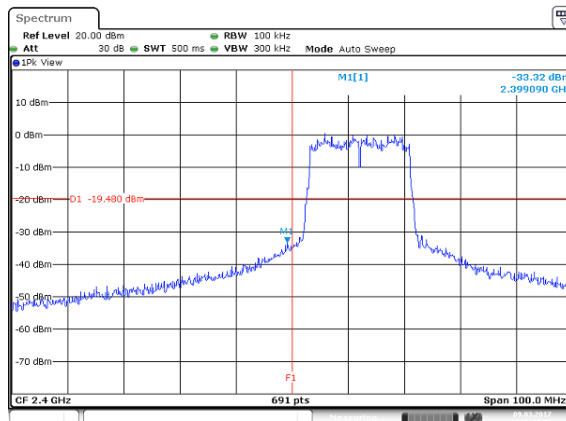
# IEEE 802.11 n HT20 mode Low CH

## Reference Level of PSD in 100kHz



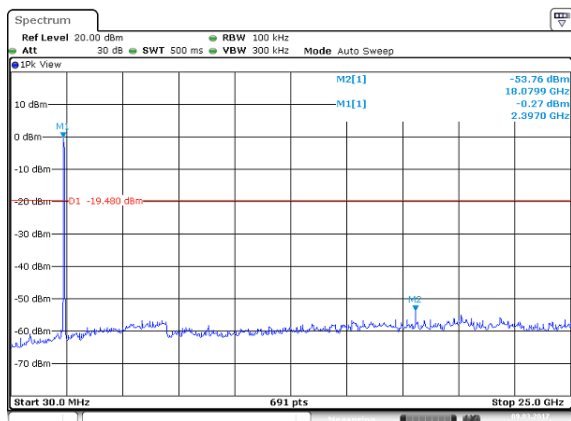
Date: 9.MAR.2017 16:39:41

## Band Edge



Date: 9.MAR.2017 16:40:48

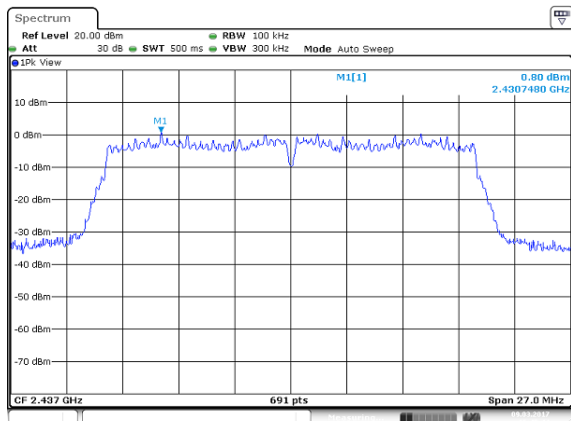
## Spurious Emission 30MHz-25GHz



Date: 9.MAR.2017 16:41:30

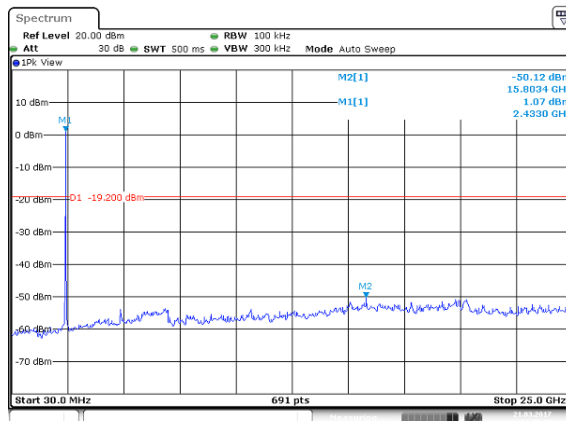
## IEEE 802.11 n HT20 mode Mid CH

## Reference Level of PSD in 100kHz



Date: 9.MAR.2017 16:45:44

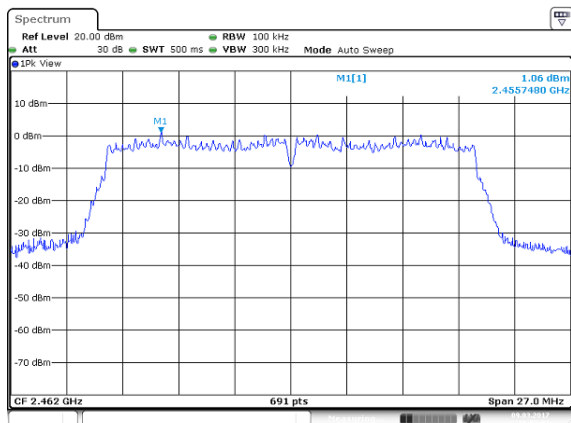
## Spurious Emission 30MHz-25GHz



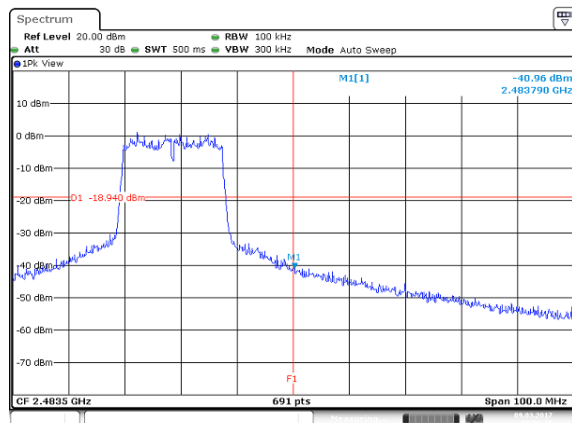
Date: 21.MAR.2017 14:49:19

## IEEE 802.11n HT20 mode High CH

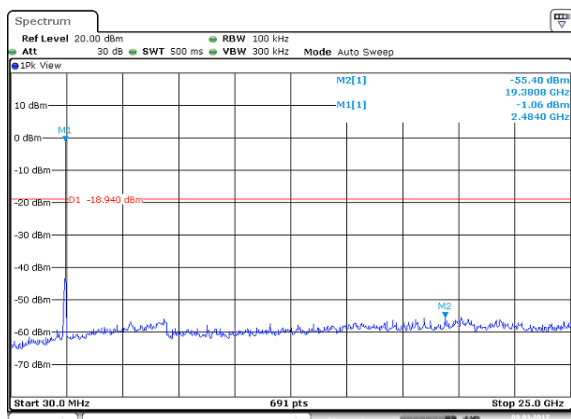
### Reference Level of PSD in 100kHz



### Band Edge



### Spurious Emission 30MHz-25GHz



## 4.6 RADIATION BANDEGE AND SPURIOUS EMISSION

### 4.6.1 Test Limit

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

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

#### Below 30 MHz

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

#### Above 30 MHz

Frequency (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)

#### Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open area 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.

## 4.6.2 Test Procedure

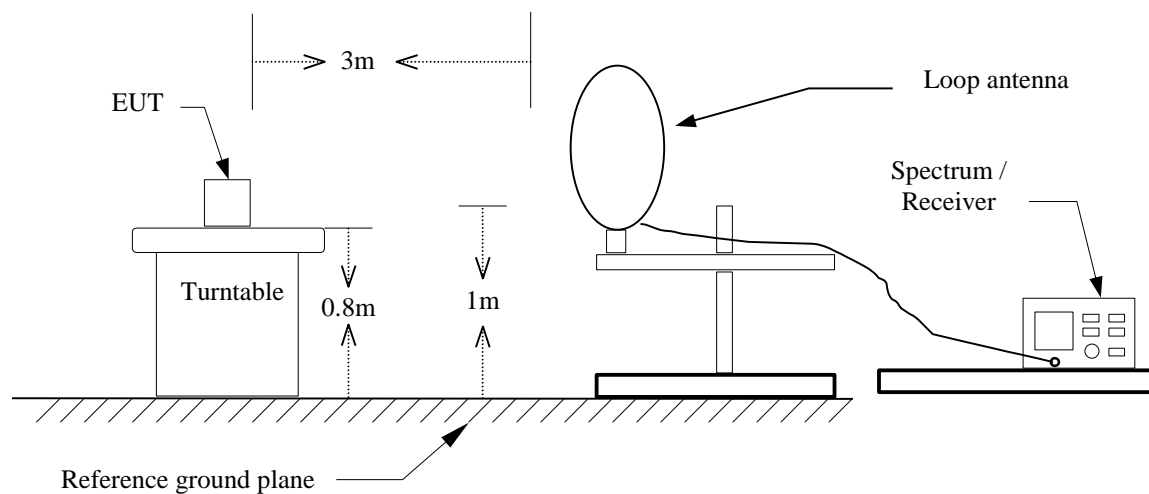
Test method Refer as KDB 558074 D01 v03r05, Section 12.1.

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

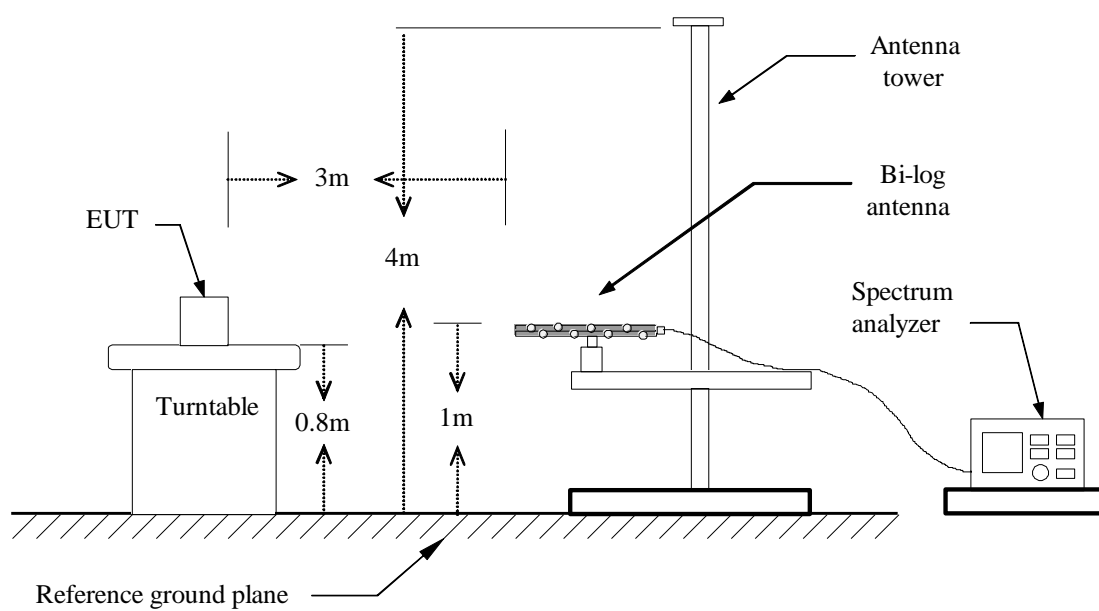
Configuration	Duty Cycle (%)	T(ms)	1/T (kHz)	VBW setting
802.11b	99.06%	8.4400	-	300Hz
802.11g	95.33%	1.4300	0.699	750Hz
802.11n HT20	95.74%	1.3500	0.741	750Hz

### 4.6.3 Test Setup

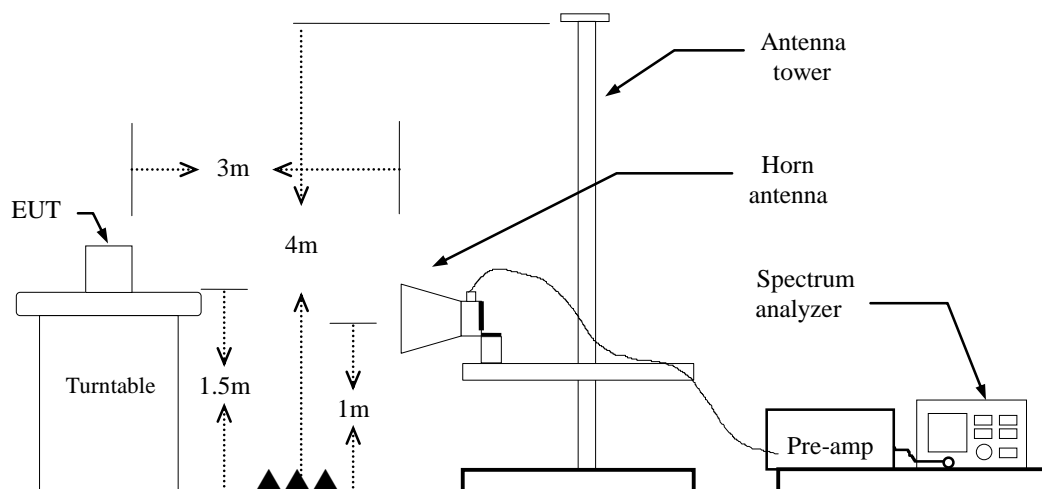
#### 9kHz ~ 30MHz



#### 30MHz ~ 1GHz



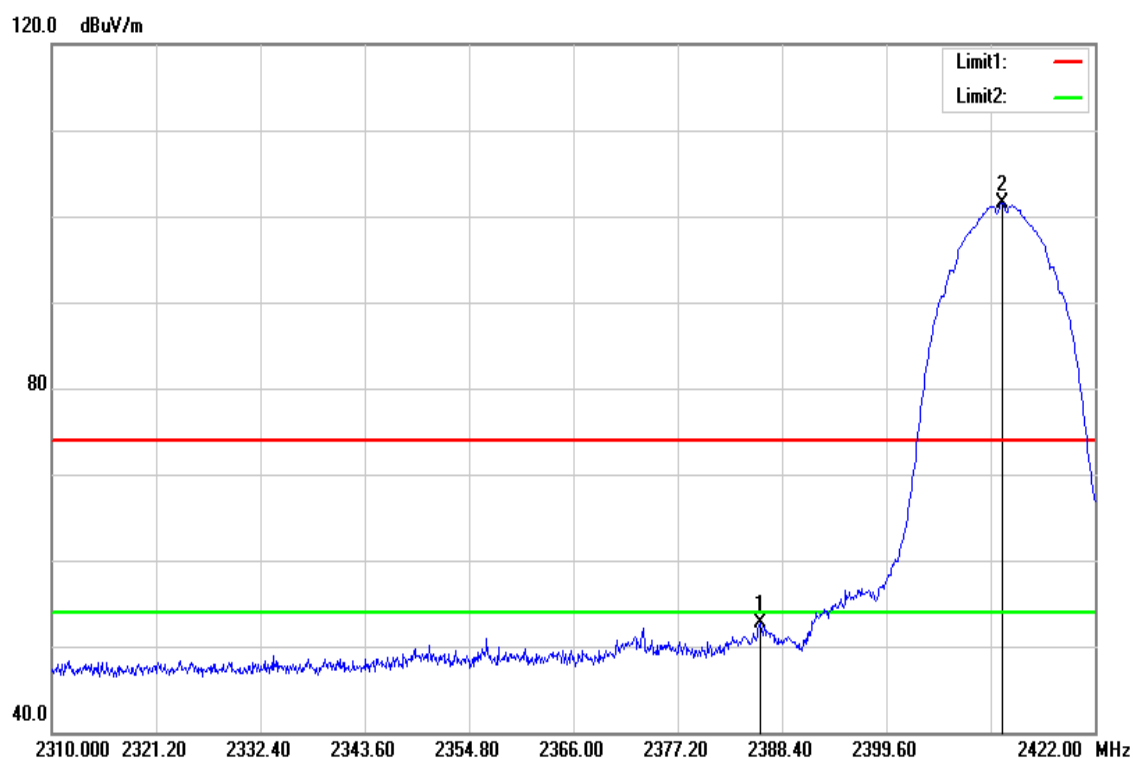
**Above 1 GHz**



## 4.6.4 Test Result

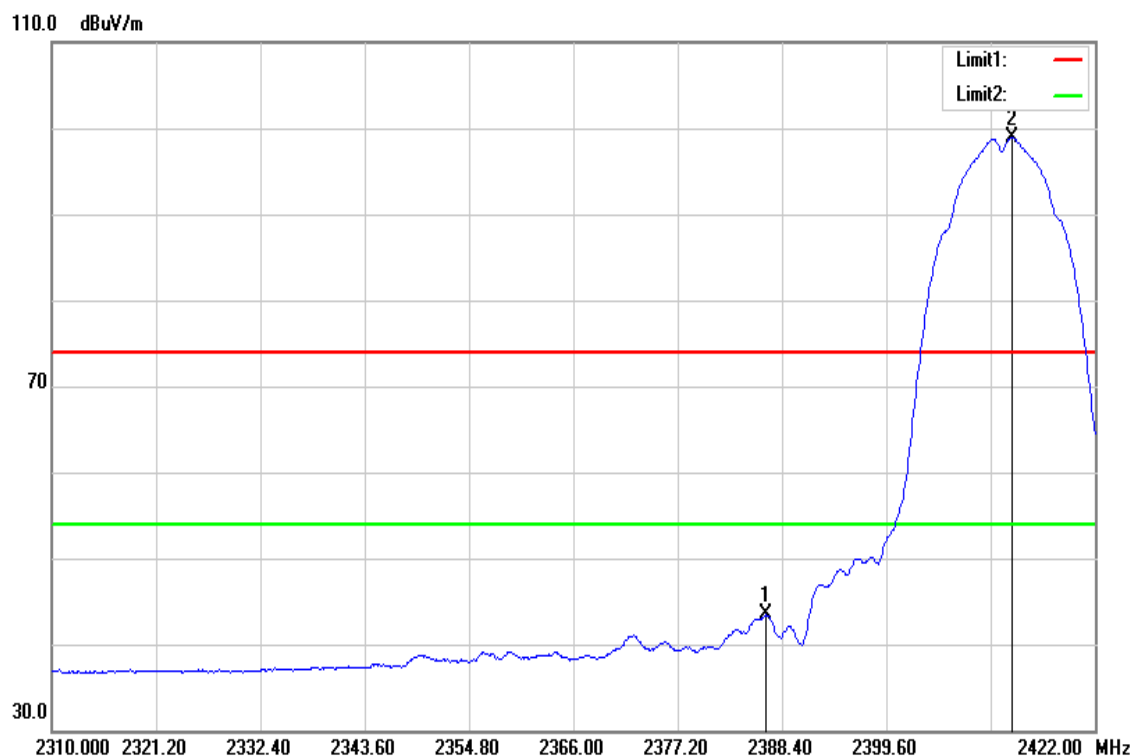
Band Edge Test Data

Test Mode	IEEE 802.11b Low CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Band Edge	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



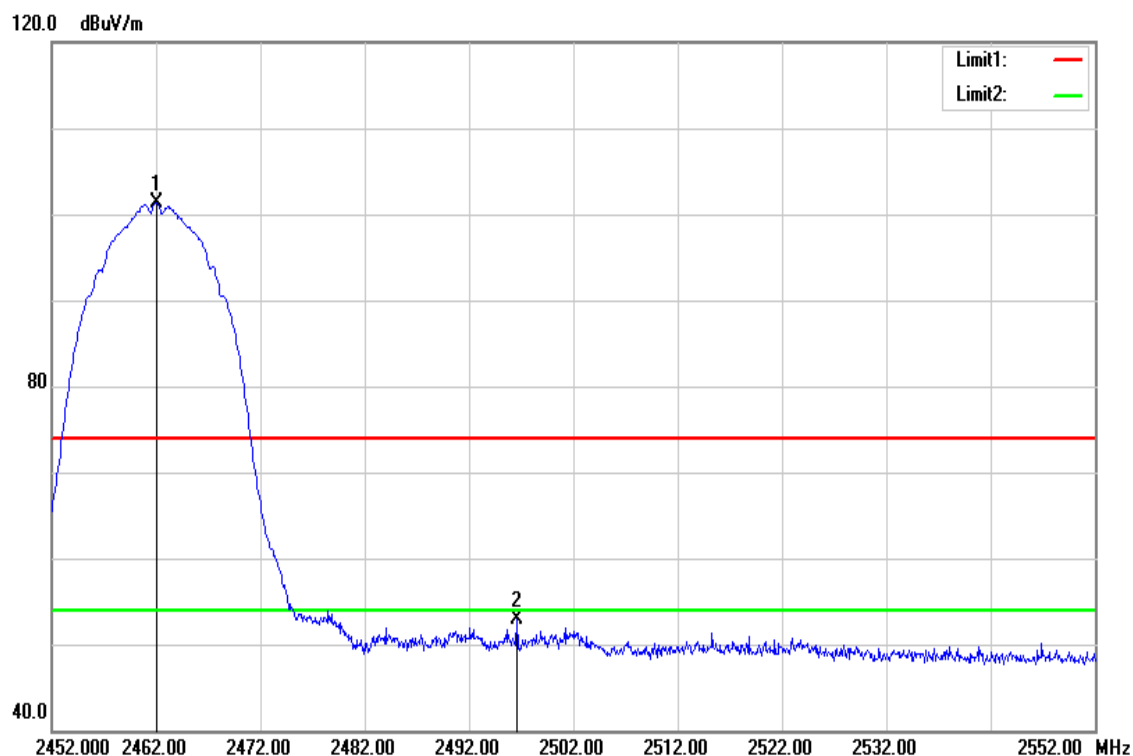
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2386.048	55.18	-2.53	52.65	74.00	-21.35	peak
2412.032	103.92	-2.42	101.50	-	-	peak

Test Mode	IEEE 802.11b Low CH	Temperature:	27(°C)/ 53%RH
Test Item	Band Edge	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



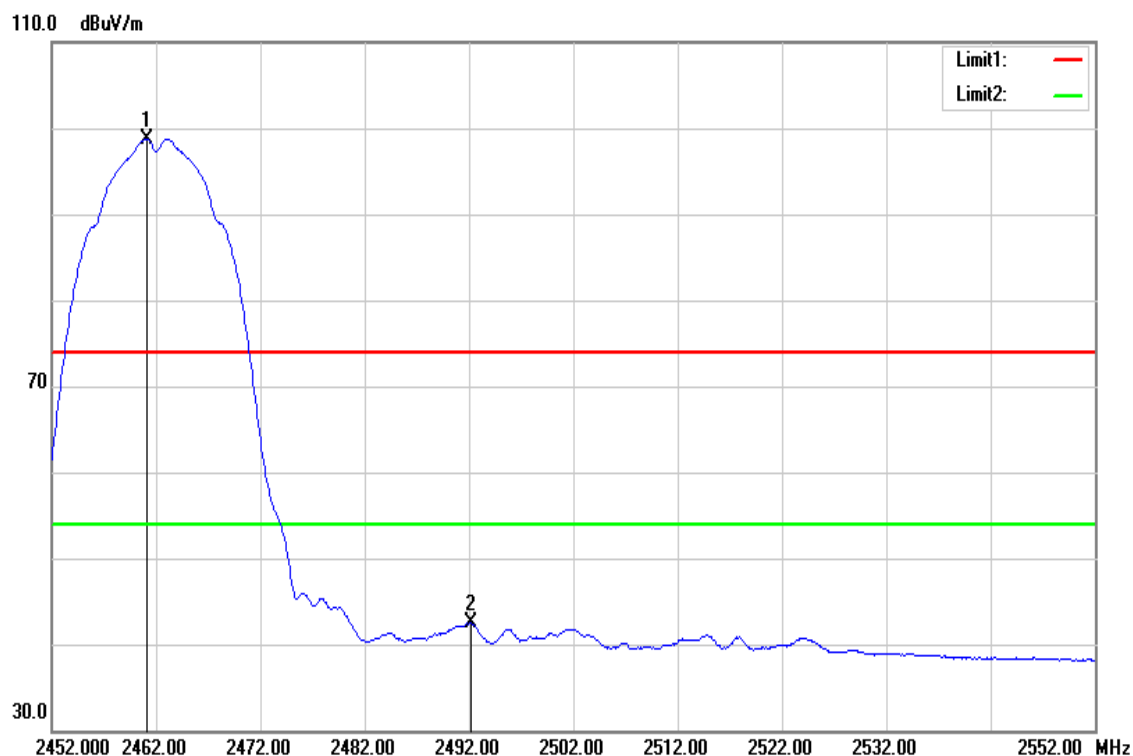
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2386.720	45.94	-2.52	43.42	54.00	-10.58	AVG
2413.040	101.29	-2.41	98.88	-	-	AVG

Test Mode	IEEE 802.11b High CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Band Edge	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



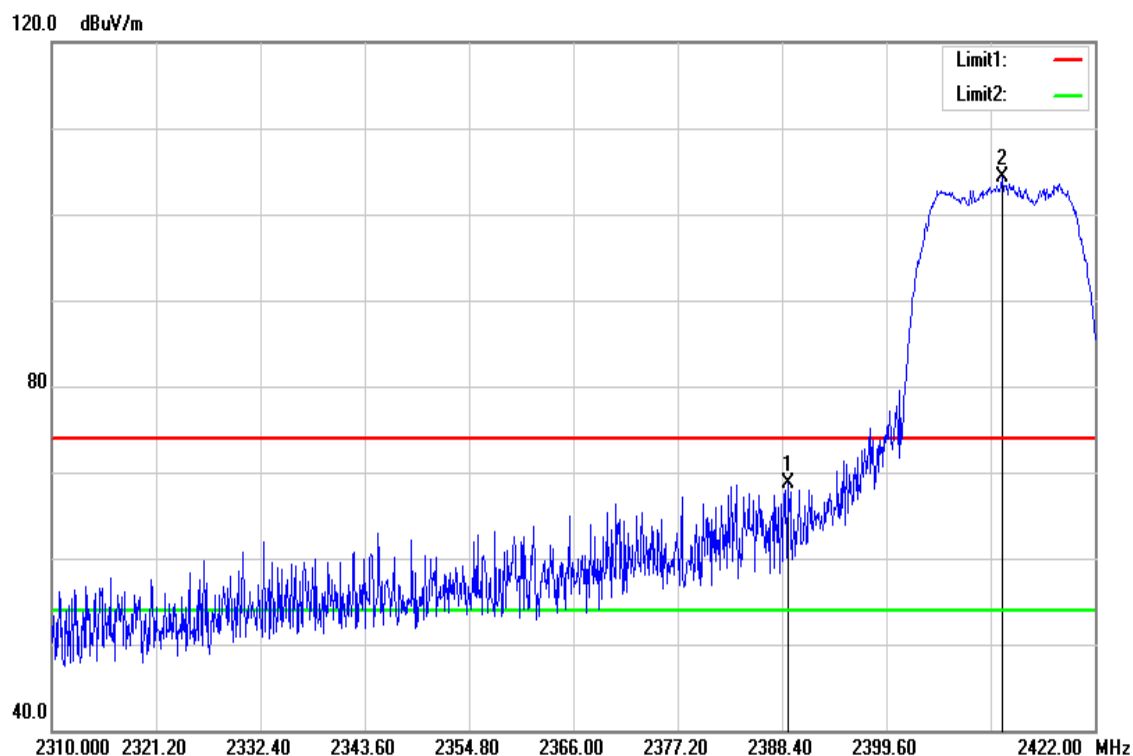
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2462.000	103.43	-2.10	101.3	-	-	peak
2496.600	54.86	-1.88	52.98	74.00	-21.02	peak

Test Mode	IEEE 802.11b High CH	Temperature:	27(°C)/ 53%RH
Test Item	Band Edge	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



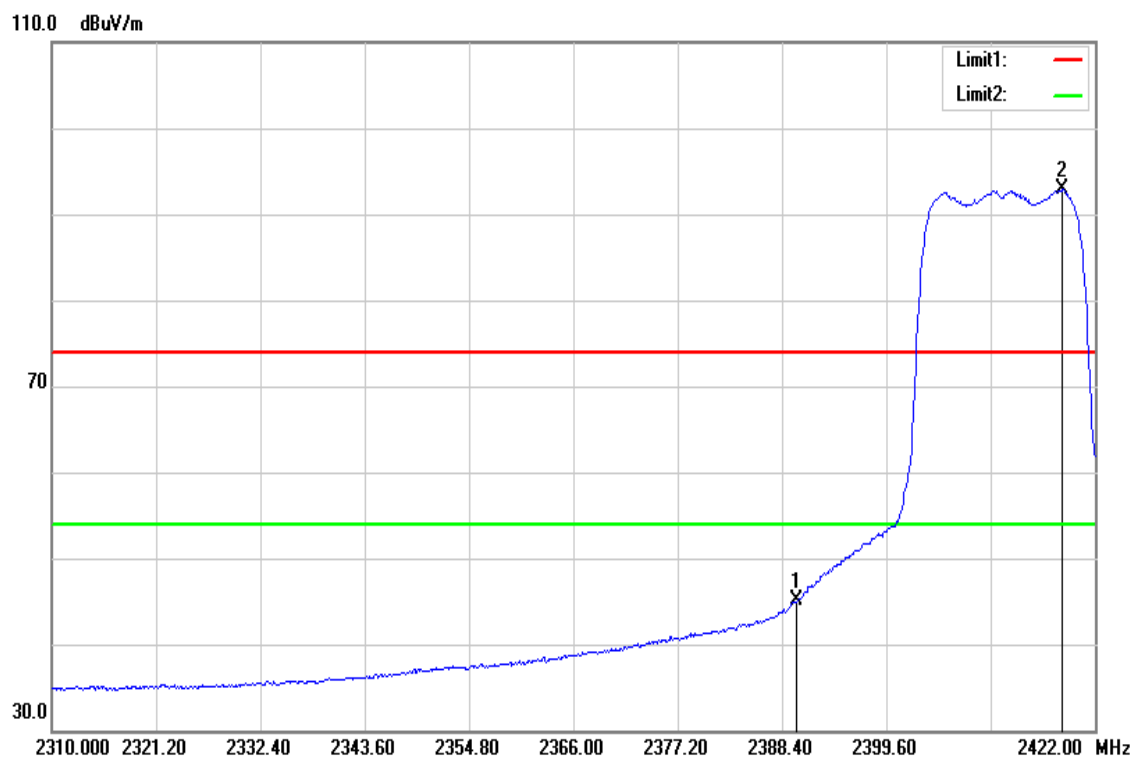
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2461.100	100.85	-2.10	98.75	-	-	AVG
2492.200	44.35	-1.91	42.44	54.00	-11.56	AVG

Test Mode	IEEE 802.11g Low CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Band Edge	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



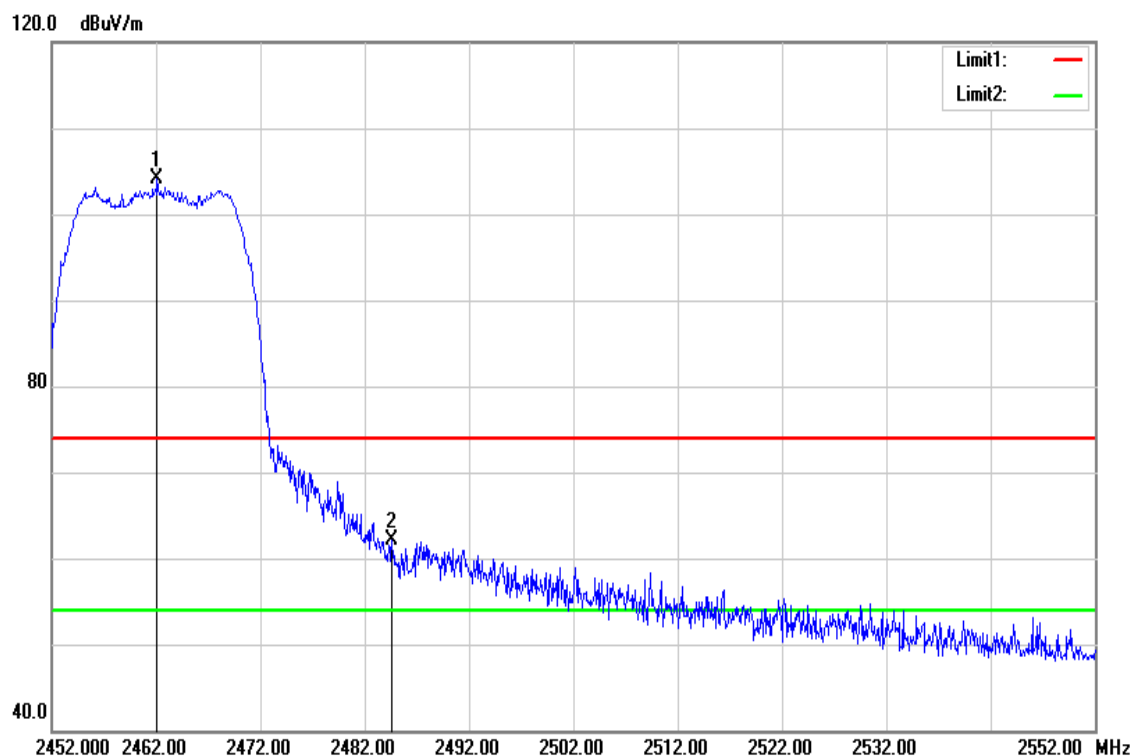
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2389.072	71.18	-2.50	68.68	74.00	-5.32	peak
2412.032	106.82	-2.42	104.40	-	-	peak

Test Mode	IEEE 802.11g Low CH	Temperature:	27(°C)/ 53%RH
Test Item	Band Edge	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



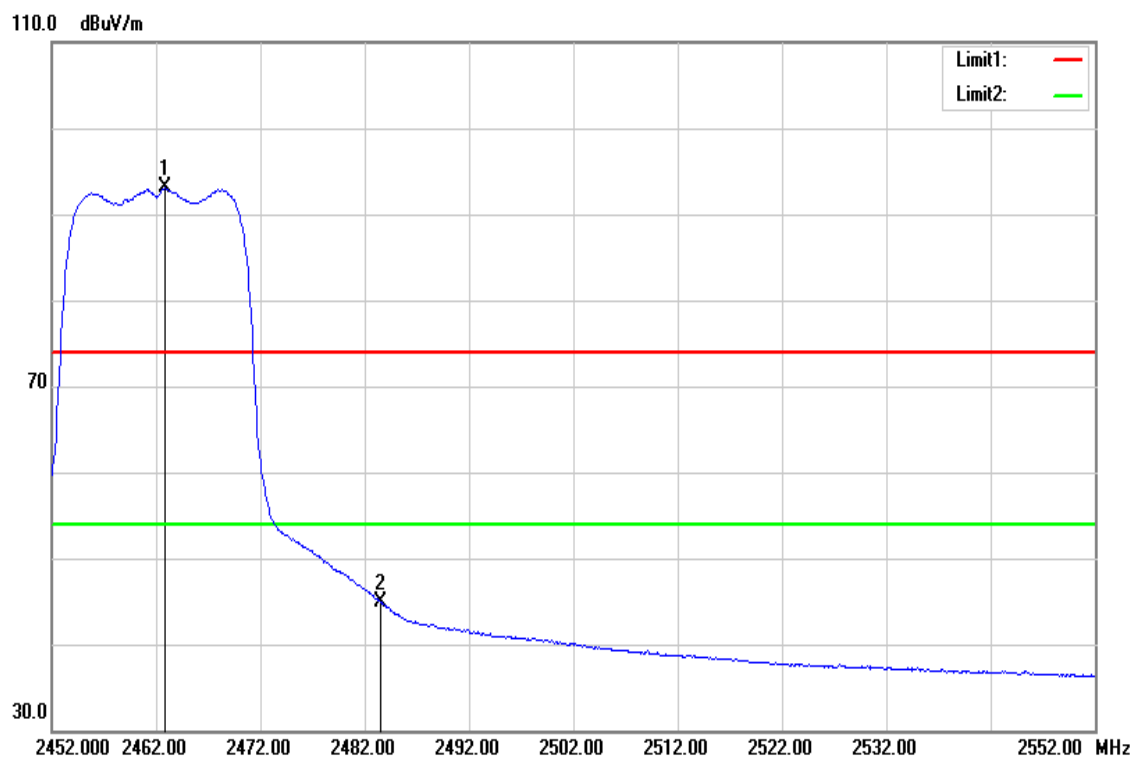
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2390.000	47.57	-2.49	45. 8	54.00	-8.92	AVG
2418.528	95.26	-2.37	92.89	-	-	AVG

Test Mode	IEEE 802.11g High CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Band Edge	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



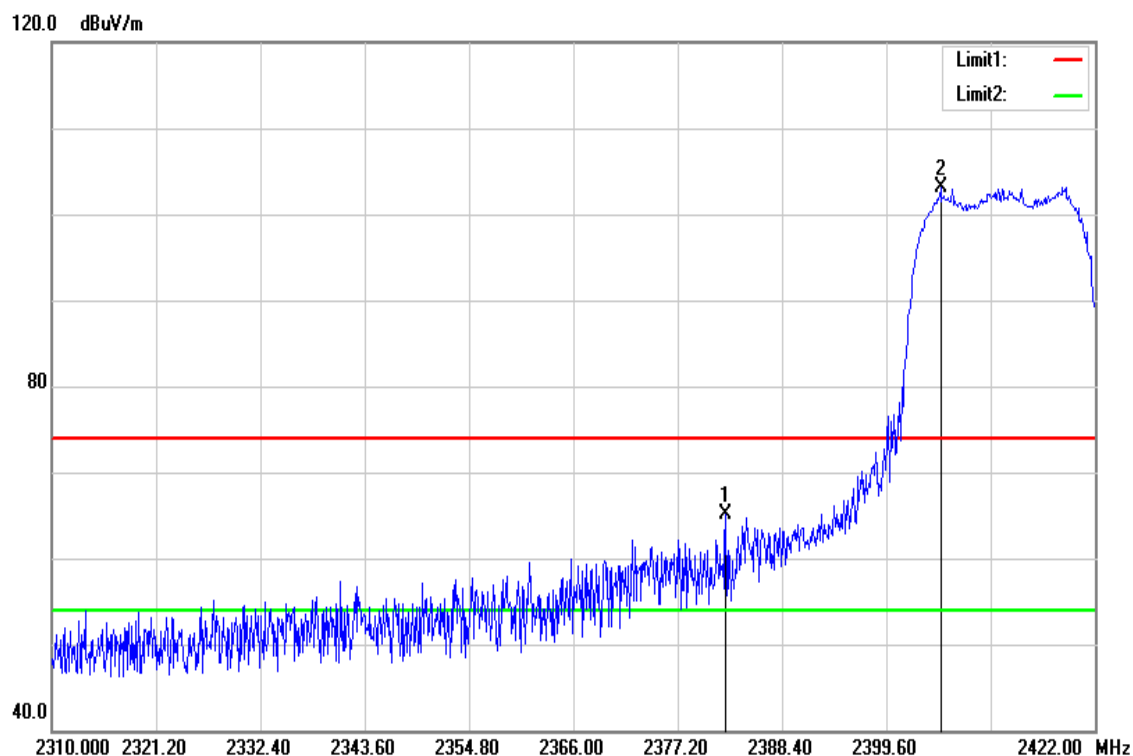
Frequency (MHz)	Reading (d uV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2462.100	106.23	-2.10	104.13	-	-	peak
2484.600	64.15	-1.98	62.17	74.00	-11.83	peak

Test Mode	IEEE 802.11g High CH	Temperature:	27(°C)/ 53%RH
Test Item	Band Edge	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



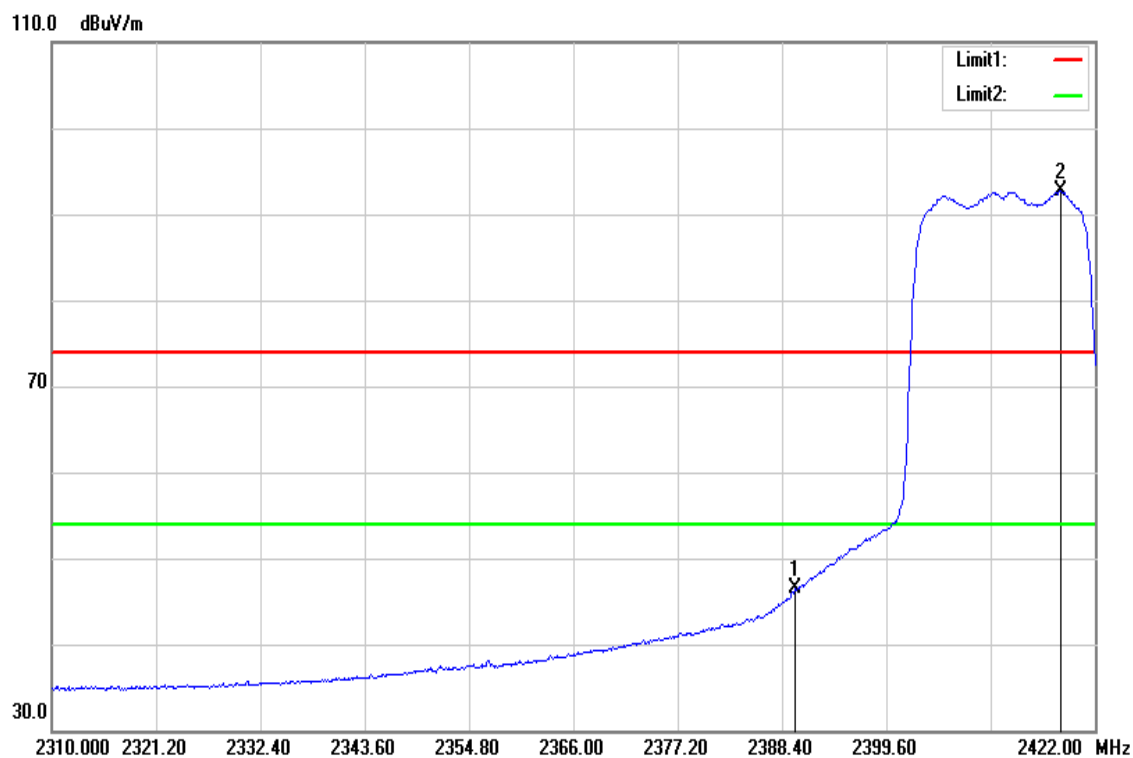
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2462.800	95.17	-2.09	93.08	-	-	AVG
2483.500	46.90	-1.99	44.91	54.00	-9.09	AVG

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Band Edge	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak		



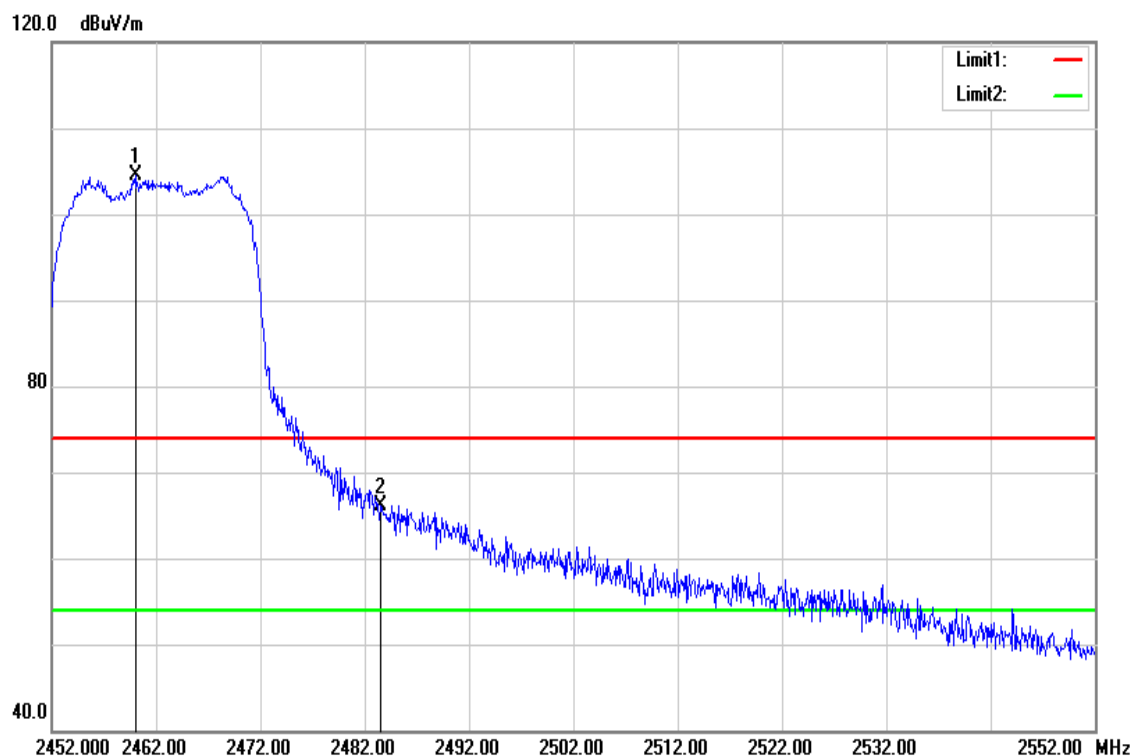
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2382.352	67.59	-2.56	65.03	4.00	-8.97	peak
2405.424	105.58	-2.42	103.16	-	-	peak

Test Mode	IEEE 802.11n HT20 Low CH	Temperature:	27(°C)/ 53%RH
Test Item	Band Edge	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



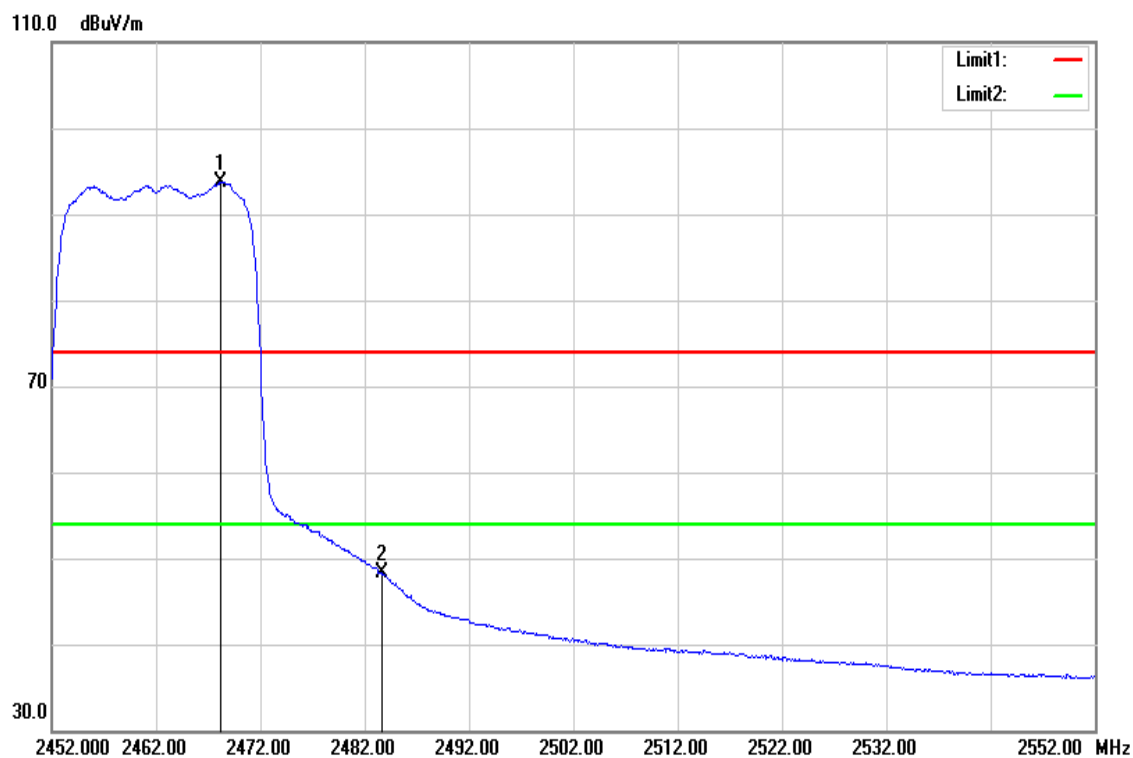
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2389.856	48.94	-2.49	46.45	54.00	-7.55	AVG
2418.304	95.05	-2.37	92.68	-	-	AVG

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Band Edge	Test Date	March 28, 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
2460.000	106.62	-2.10	104.52	-	-	peak
2483.500	68.17	-1.99	66.18	74.00	-7.82	peak

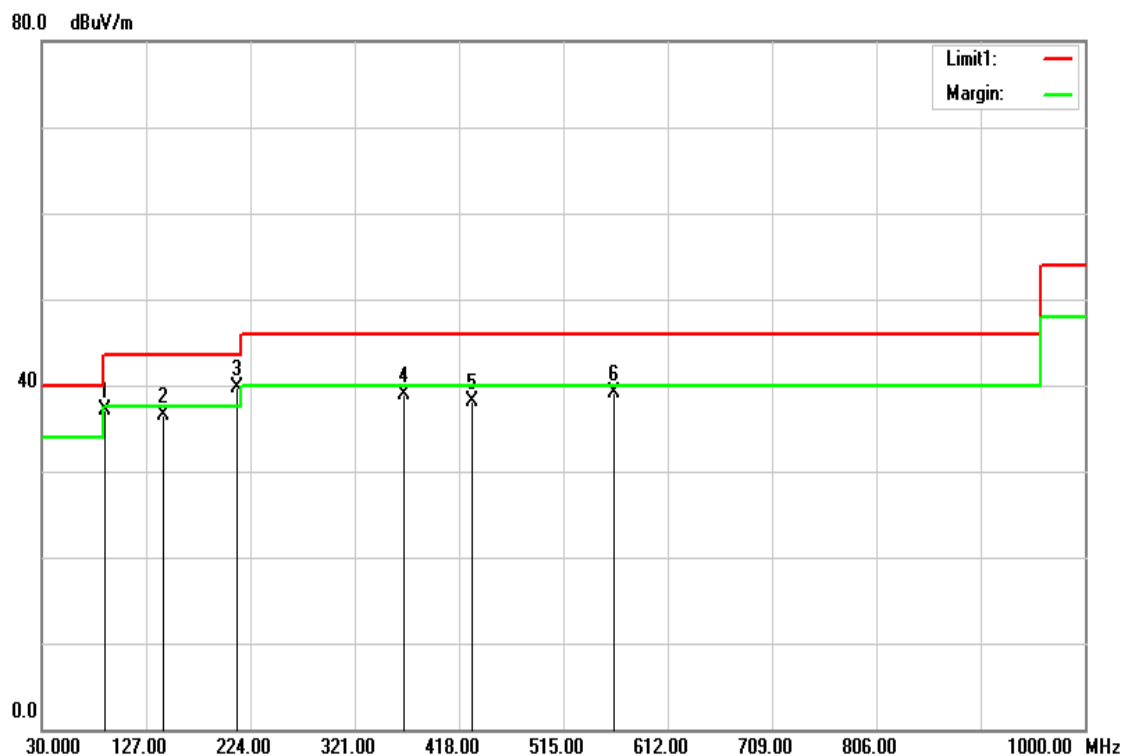
Test Mode	IEEE 802.11n HT20 High CH	Temperature:	27(°C)/ 53%RH
Test Item	Band Edge	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Average		



Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2468.200	95.79	-2.07	93. 2	-	-	AVG
2483.600	50.23	-1.99	48.24	54.00	-5.76	AVG

**Below 1G Test Data**

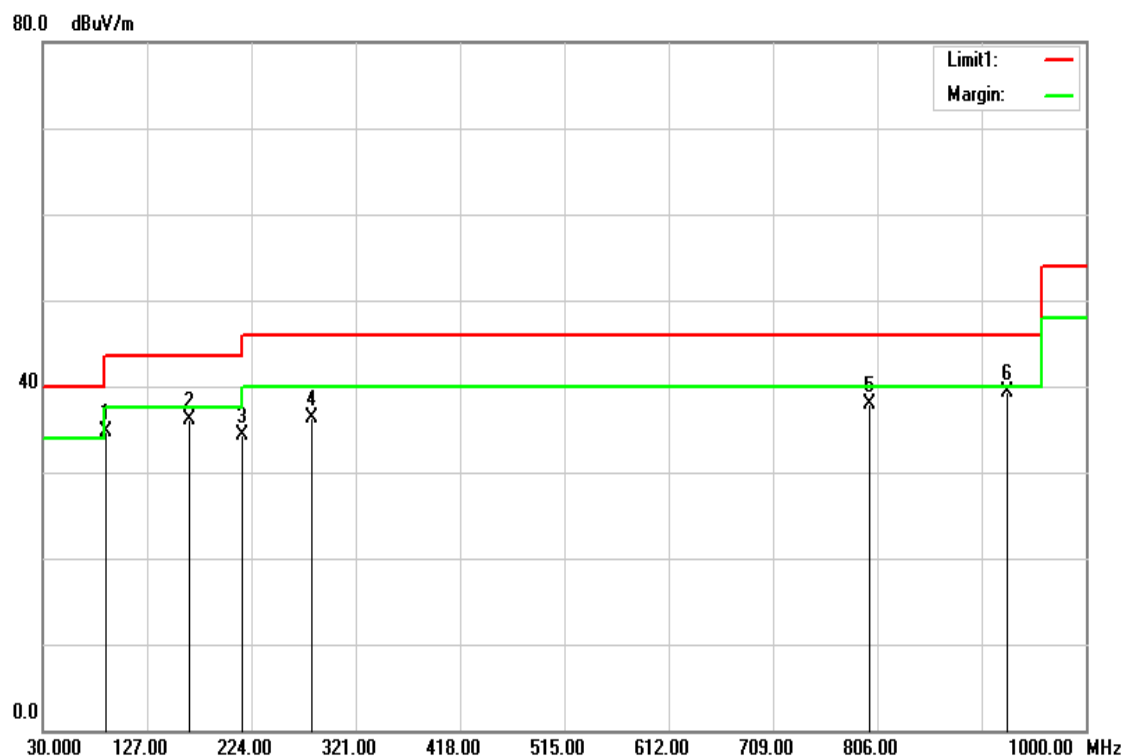
Test Mode	Mode 1	Temp/Hum	27(°C)/ 53%RH
Test Item	30MHz-1GHz	Test Date	March 28, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Qusi-peak		



Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
89.1700	58.64	-21.48	37.16	43.50	-6.34	QP
142.5200	52.33	-15.85	36.48	43.50	-7.02	QP
211.3900	56.09	-16.35	39.74	43.50	-3.76	QP
366.5900	51.42	-12.50	38.92	46.00	-7.08	peak
429.6400	48.95	-10.80	38.15	46.00	-7.85	QP
562.5300	47.40	-8.31	39.09	46.00	-6.91	peak

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

Test Mode	Mode 1	Temp/Hum	27(°C)/ 53%RH
Test Item	30MHz-1GHz	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Qusi-peak		

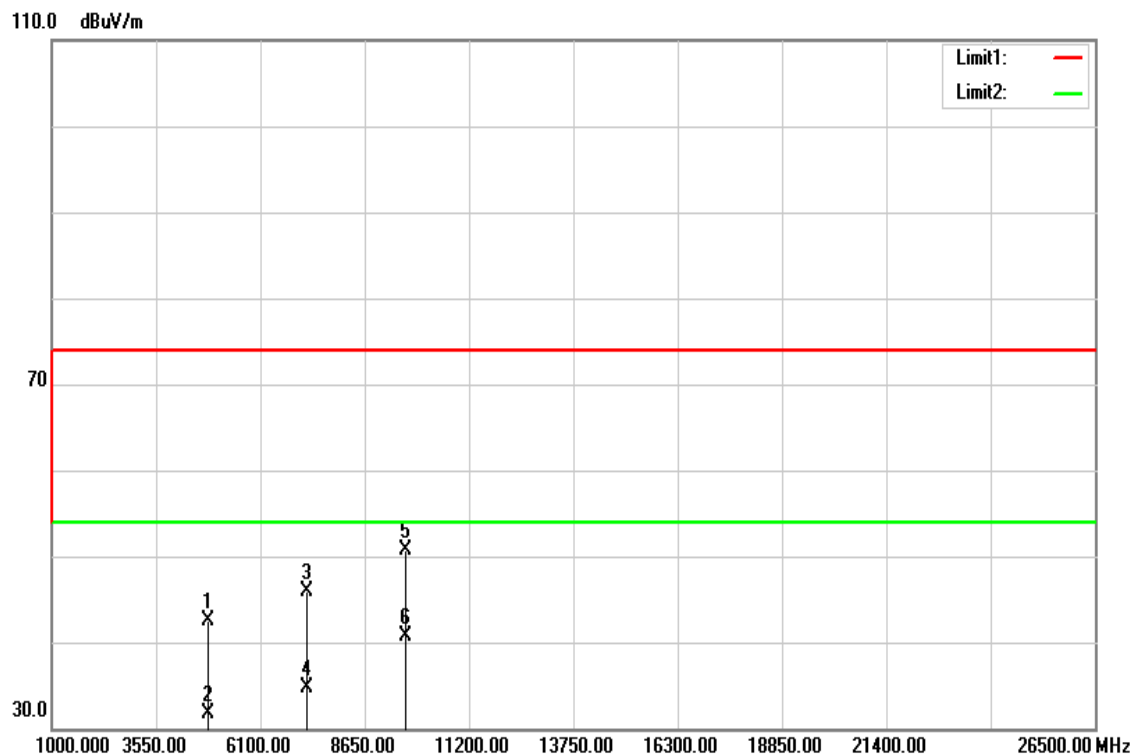


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
89.1700	56.25	-21.48	34.77	43.50	-8.73	peak
166.7700	52.73	-16.69	36.04	43.50	-7.46	QP
215.2700	50.86	-16.63	34.23	43.50	-9.27	QP
280.2600	50.99	-14.61	36.38	46.00	-9.62	QP
799.2100	42.34	-4.51	37.83	46.00	-8.17	peak
927.2500	42.04	-2.76	39.28	46.00	-6.72	QP

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

**Above 1G Test Data**

Test Mode	IEEE 802.11b Low CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		

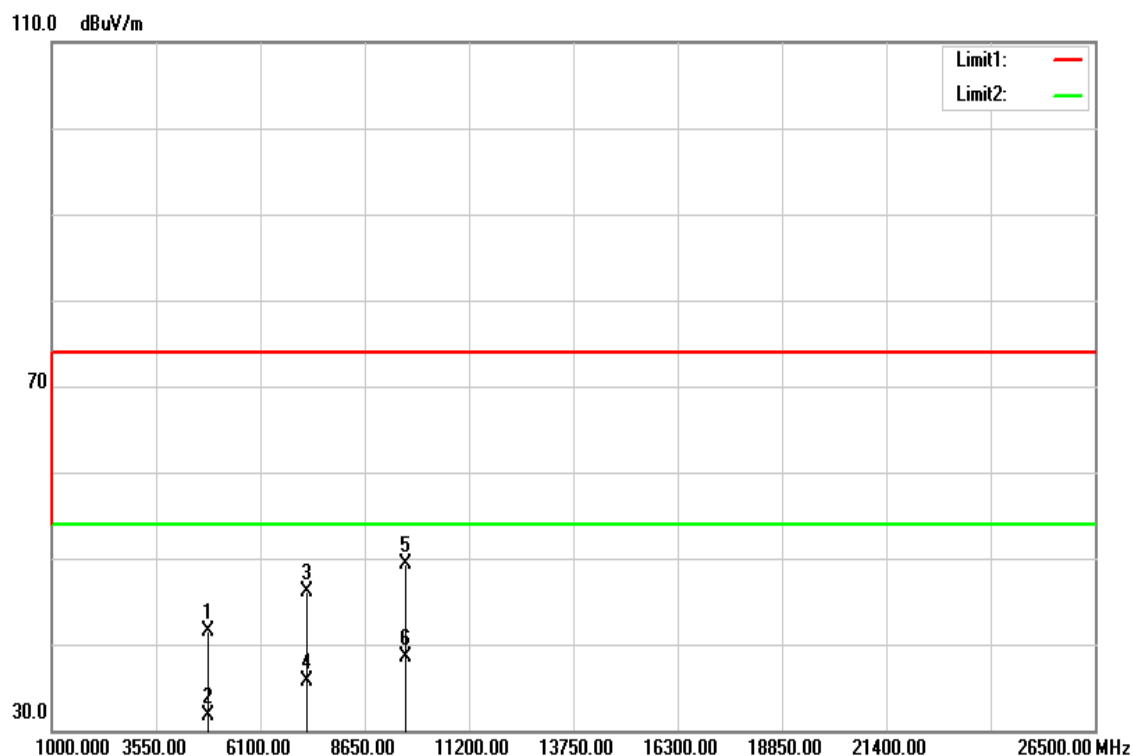


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	37.33	5.10	42.43	74.00	-31.57	peak
4824.000	26.56	5.10	31.66	54.00	-22.34	AVG
7236.000	33.13	12.71	45.84	74.00	-28.16	peak
7236.000	21.96	12.71	34.67	54.00	-19.33	AVG
9648.000	33.01	17.60	50.61	74.00	-23.39	peak
9648.000	23.13	17.60	40.73	54.00	-13.27	AVG

**Remark:**

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

Test Mode	IEEE 802.11b Low CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		

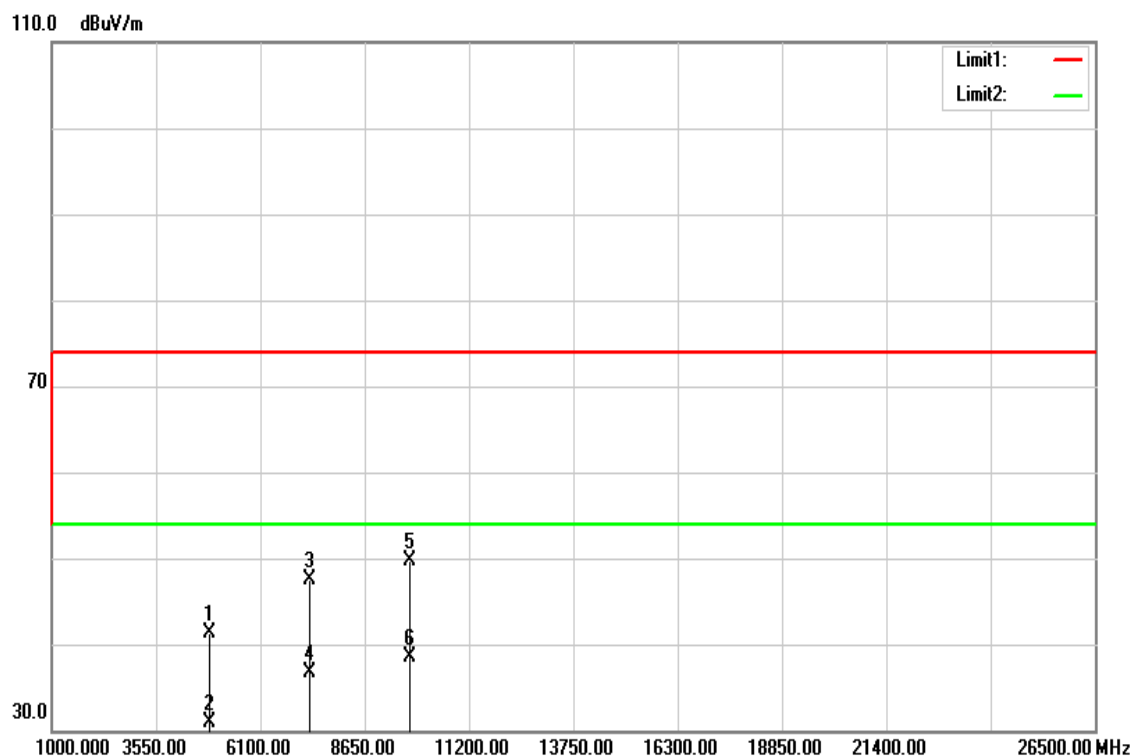


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	36.31	5.10	41.41	74.00	-32.59	peak
4824.000	26.53	5.10	31.63	54.00	-22.37	AVG
7236.000	33.44	12.71	46.15	74.00	-27.85	peak
7236.000	22.91	12.71	35.62	54.00	-18.38	AVG
9648.000	31.67	17.60	49.27	74.00	-24.73	peak
9648.000	20.84	17.60	38.44	54.00	-15.56	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

Test Mode	IEEE 802.11b Mid CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		

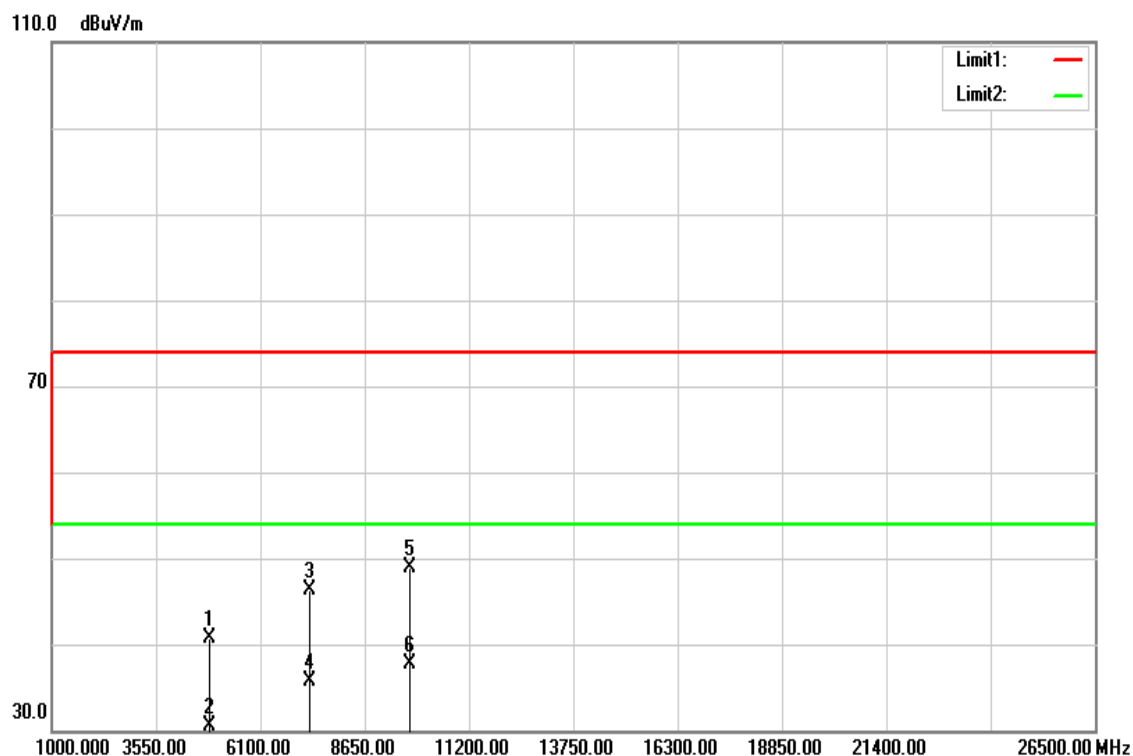


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	36.03	5.23	41.26	74.00	-32.74	peak
4874.000	25.69	5.23	30.92	54.00	-23.08	AVG
7311.000	34.59	12.94	47.53	74.00	-26.47	peak
7311.000	23.83	12.94	36.77	54.00	-17.23	AVG
9748.000	32.01	17.60	49.61	74.00	-24.39	peak
9748.000	20.86	17.60	38.46	54.00	-15.54	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

Test Mode	IEEE 802.11b Mid CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		

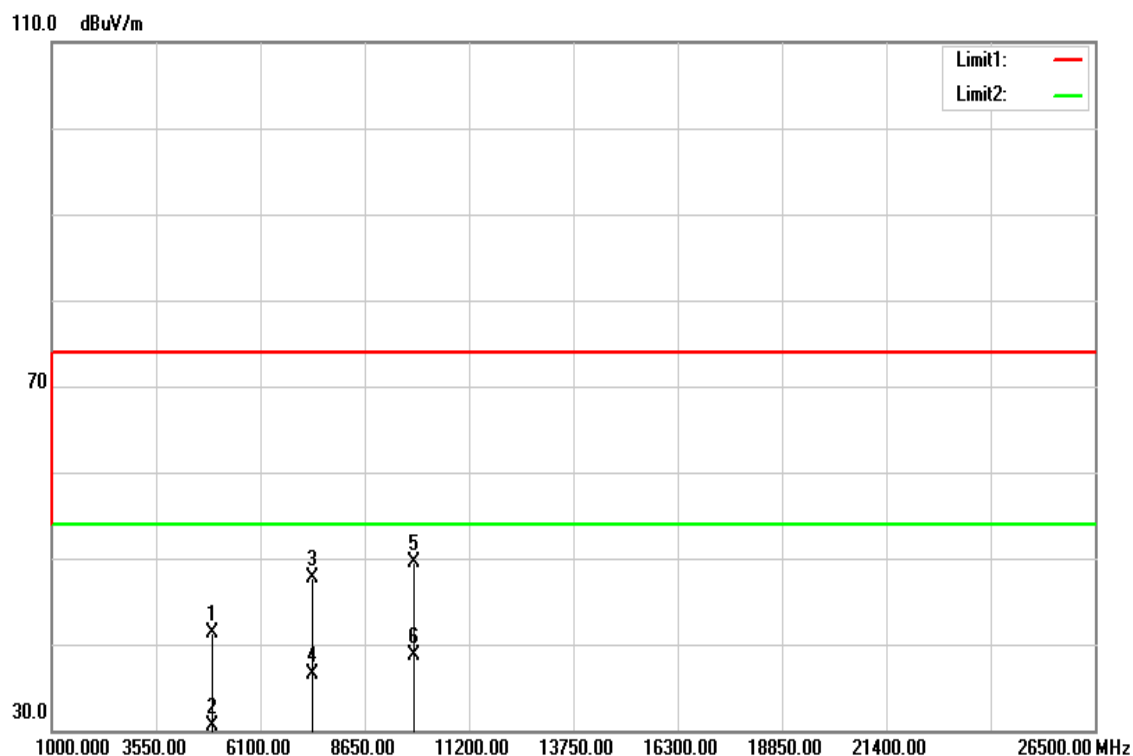


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	35.48	5.23	40.71	74.00	-33.29	peak
4874.000	25.25	5.23	30.48	54.00	-23.52	AVG
7311.000	33.28	12.94	46.22	74.00	-27.78	peak
7311.000	22.83	12.94	35.77	54.00	-18.23	AVG
9748.000	31.21	17.60	48.81	74.00	-25.19	peak
9748.000	20.02	17.60	37.62	54.00	-16.38	AVG

**Remark:**

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

Test Mode	IEEE 802.11b High CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		

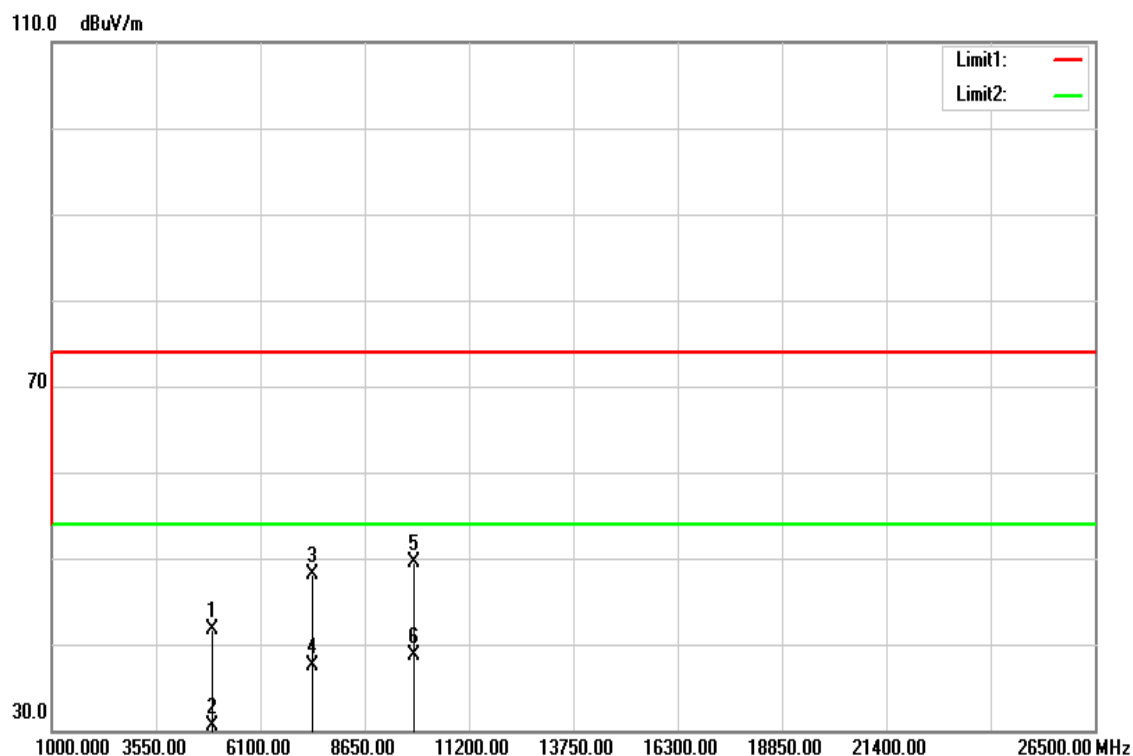


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	35.99	5.37	41.36	74.00	-32.64	peak
4924.000	25.10	5.37	30.47	54.00	-23.53	AVG
7386.000	34.47	13.17	47.64	74.00	-26.36	peak
7386.000	23.41	13.17	36.58	54.00	-17.42	AVG
9848.000	31.89	17.60	49.49	74.00	-24.51	peak
9848.000	21.13	17.60	38.73	54.00	-15.27	AVG

**Remark:**

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

Test Mode	IEEE 802.11b High CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		

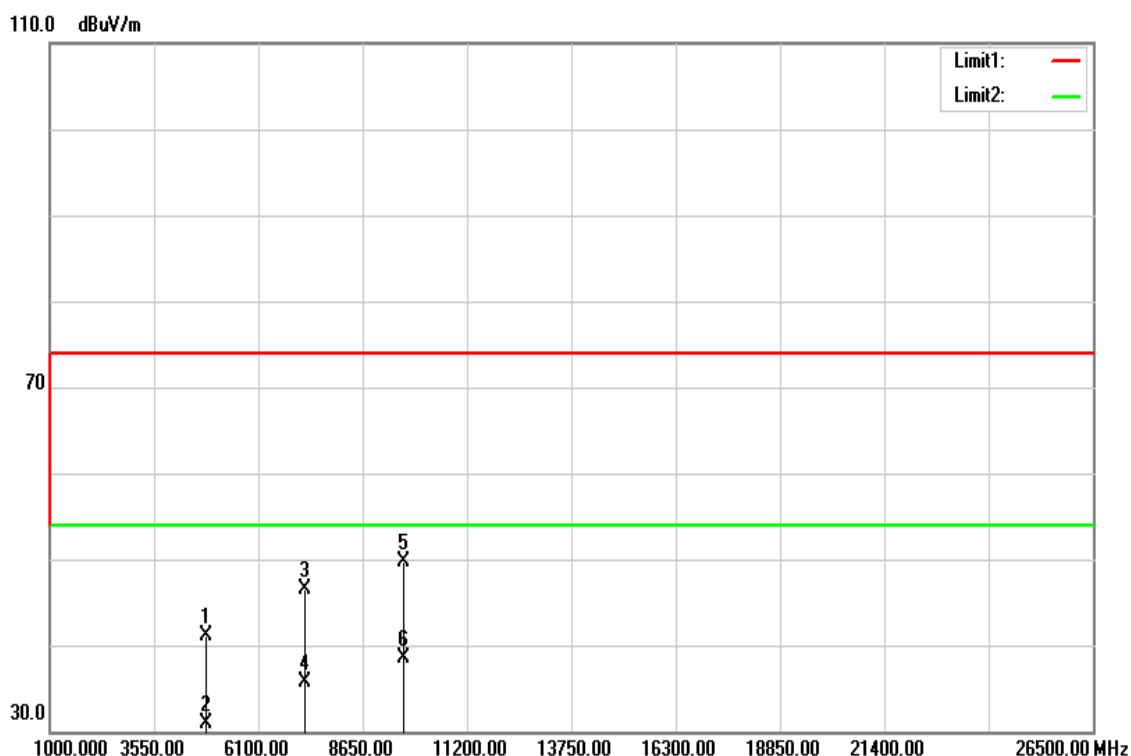


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	36.37	5.37	41.74	74.00	-32.26	peak
4924.000	25.21	5.37	30.58	54.00	-23.42	AVG
7386.000	34.99	13.17	48.16	74.00	-25.84	peak
7386.000	24.27	13.17	37.44	54.00	-16.56	AVG
9848.000	31.99	17.60	49.59	74.00	-24.41	peak
9848.000	21.02	17.60	38.62	54.00	-15.38	AVG

**Remark:**

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

Test Mode	IEEE 802.11g Low CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		

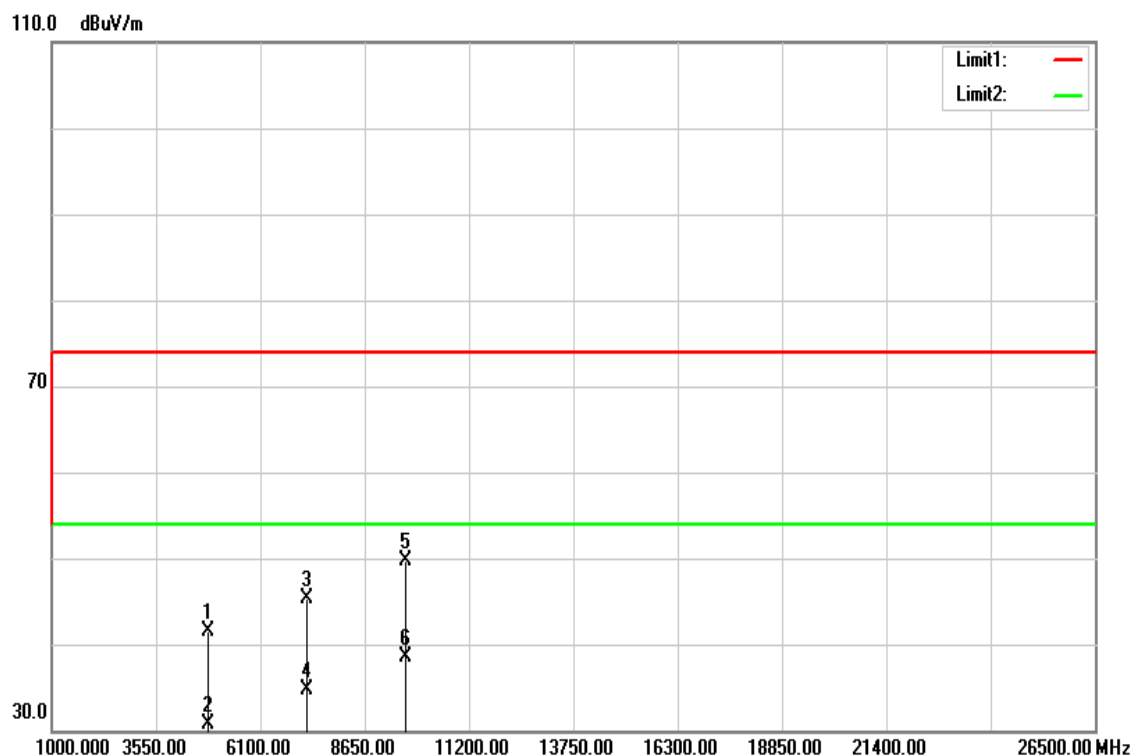


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	36.07	5.10	41.17	74.00	-32.83	peak
4824.000	25.74	5.10	30.84	54.00	-23.16	AVG
7236.000	33.74	12.71	46.45	74.00	-27.55	peak
7236.000	22.91	12.71	35.62	54.00	-18.38	AVG
9648.000	32.07	17.60	49.67	74.00	-24.33	peak
9648.000	20.87	17.60	38.47	54.00	-15.53	AVG

**Remark:**

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

Test Mode	IEEE 802.11g Low CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		

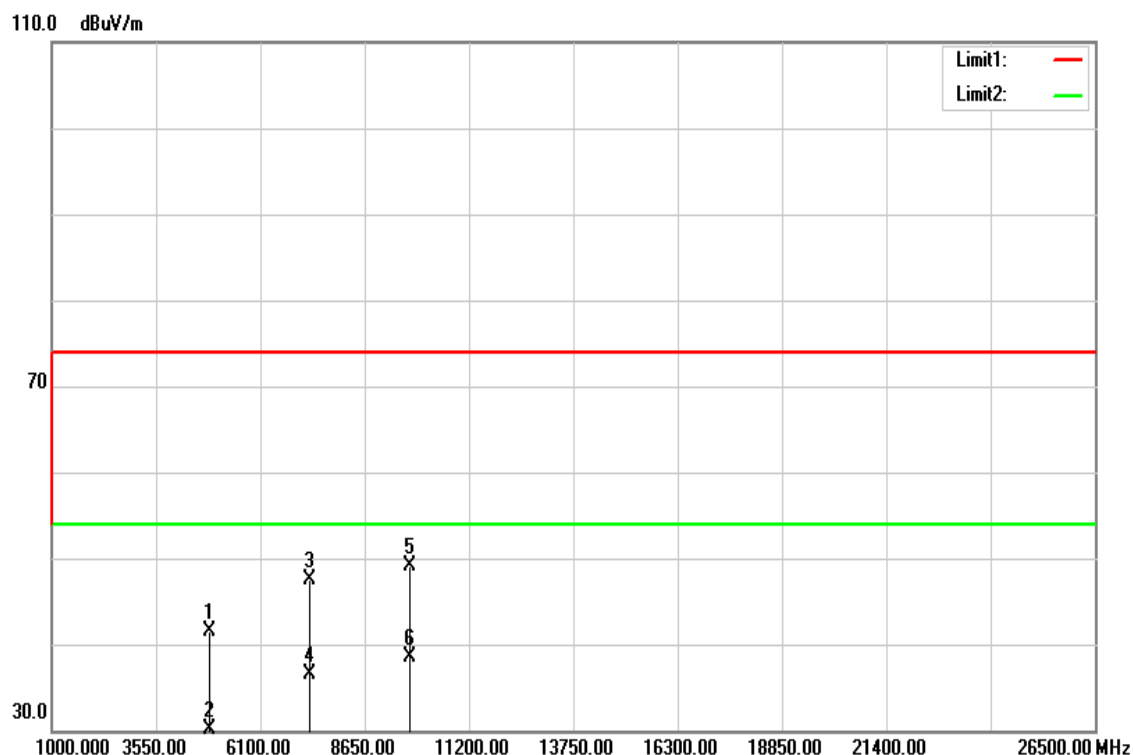


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	36.48	5.10	41.58	74.00	-32.42	peak
4824.000	25.69	5.10	30.79	54.00	-23.21	AVG
7236.000	32.67	12.71	45.38	74.00	-28.62	peak
7236.000	21.91	12.71	34.62	54.00	-19.38	AVG
9648.000	32.05	17.60	49.65	74.00	-24.35	peak
9648.000	20.84	17.60	38.44	54.00	-15.56	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

Test Mode	IEEE 802.11g Mid CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		

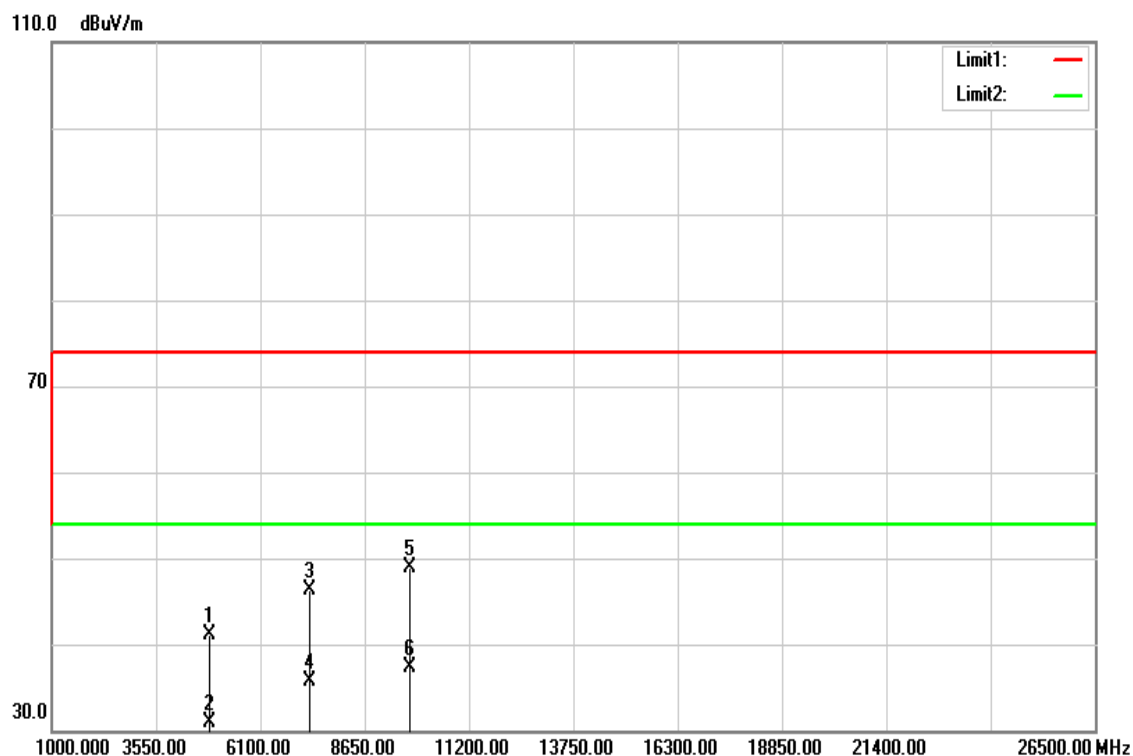


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	36.30	5.23	41.53	74.00	-32.47	peak
4874.000	24.95	5.23	30.18	54.00	-23.82	AVG
7311.000	34.54	12.94	47.48	74.00	-26.52	peak
7311.000	23.64	12.94	36.58	54.00	-17.42	AVG
9748.000	31.56	17.60	49.16	74.00	-24.84	peak
9748.000	20.82	17.60	38.42	54.00	-15.58	AVG

**Remark:**

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

Test Mode	IEEE 802.11g Mid CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		

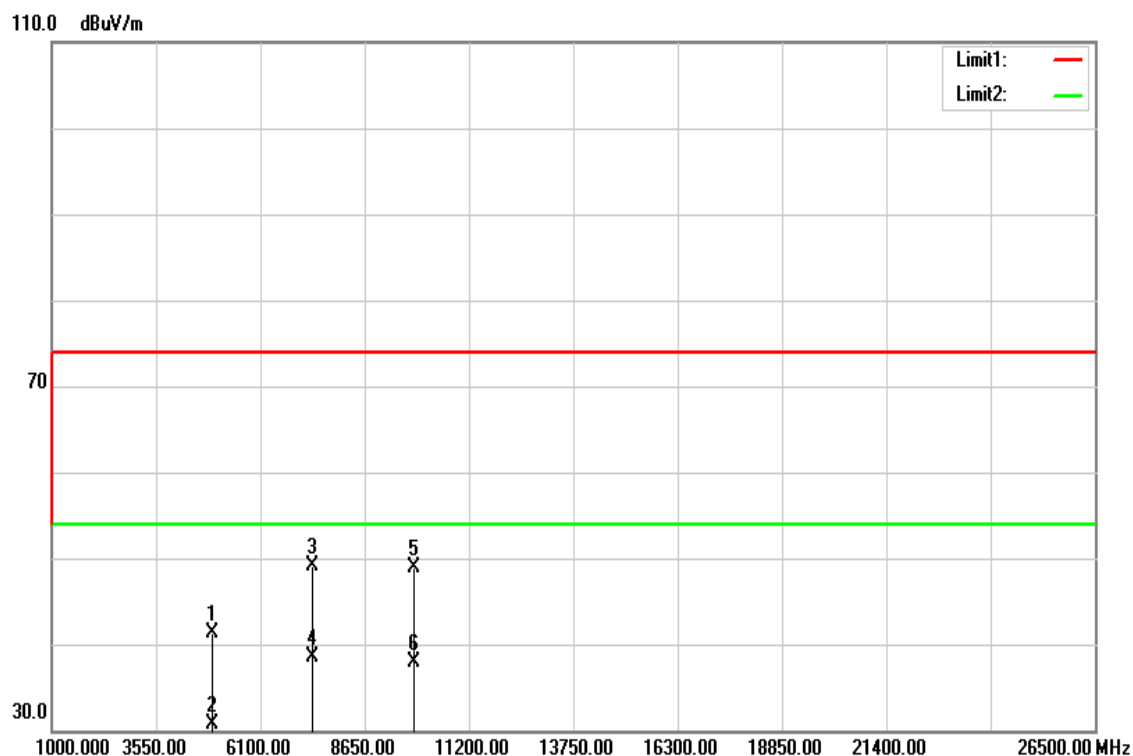


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	35.89	5.23	41.12	74.00	-32.88	peak
4874.000	25.60	5.23	30.83	54.00	-23.17	AVG
7311.000	33.30	12.94	46.24	74.00	-27.76	peak
7311.000	22.73	12.94	35.67	54.00	-18.33	AVG
9748.000	31.38	17.60	48.98	74.00	-25.02	peak
9748.000	19.75	17.60	37.35	54.00	-16.65	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

Test Mode	IEEE 802.11g High CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		

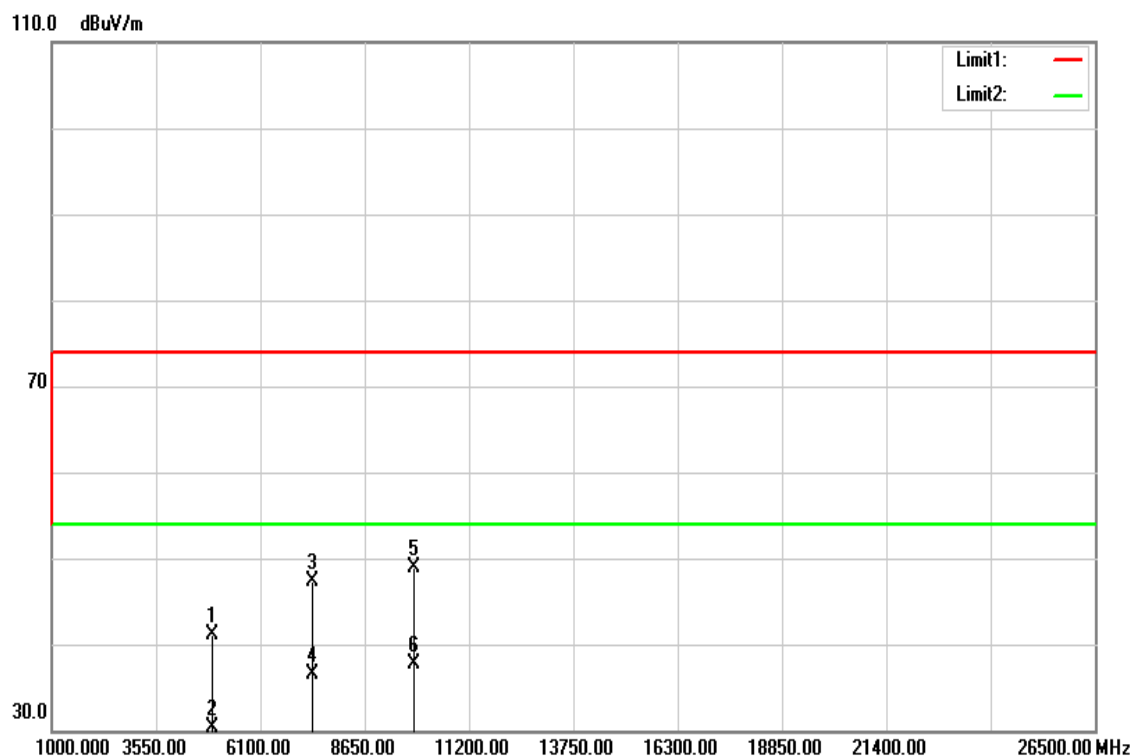


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	35.86	5.37	41.23	74.00	-32.77	peak
4924.000	25.27	5.37	30.64	54.00	-23.36	AVG
7386.000	35.88	13.17	49.05	74.00	-24.95	peak
7386.000	25.30	13.17	38.47	54.00	-15.53	AVG
9848.000	31.26	17.60	48.86	74.00	-25.14	peak
9848.000	20.31	17.60	37.91	54.00	-16.09	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

Test Mode	IEEE 802.11g High CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		

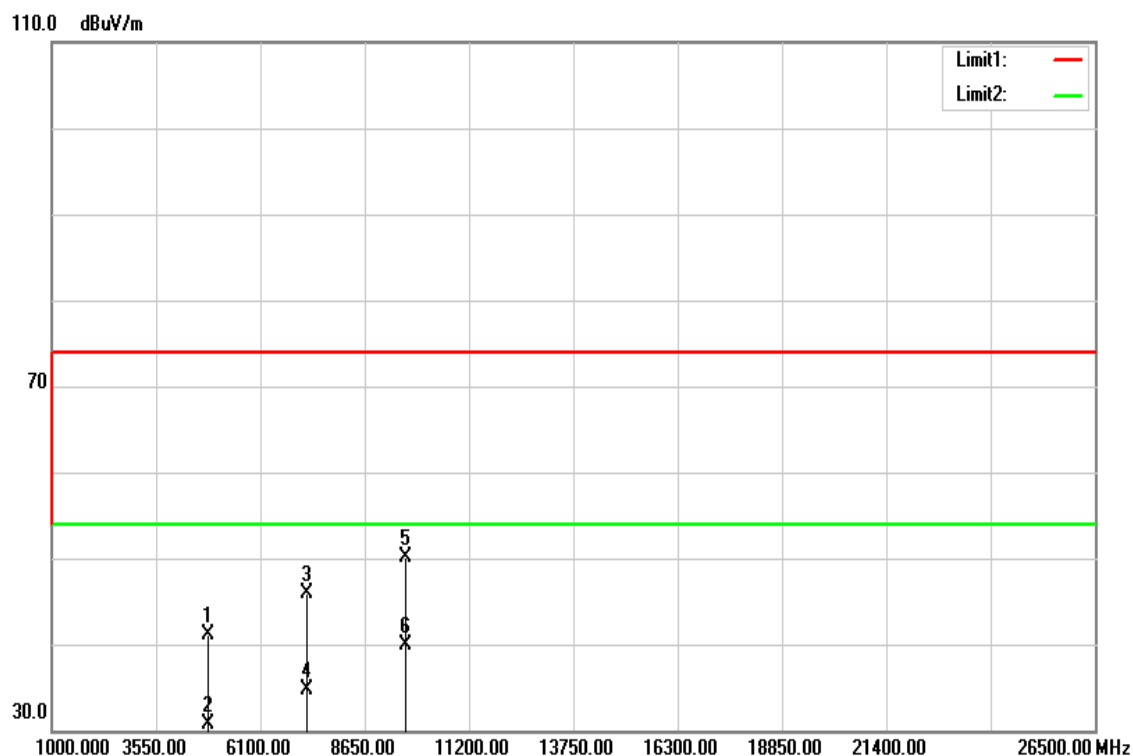


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	35.80	5.37	41.17	74.00	-32.83	peak
4924.000	24.97	5.37	30.34	54.00	-23.66	AVG
7386.000	34.17	13.17	47.34	74.00	-26.66	peak
7386.000	23.41	13.17	36.58	54.00	-17.42	AVG
9848.000	31.32	17.60	48.92	74.00	-25.08	peak
9848.000	20.04	17.60	37.64	54.00	-16.36	AVG

**Remark:**

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

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		

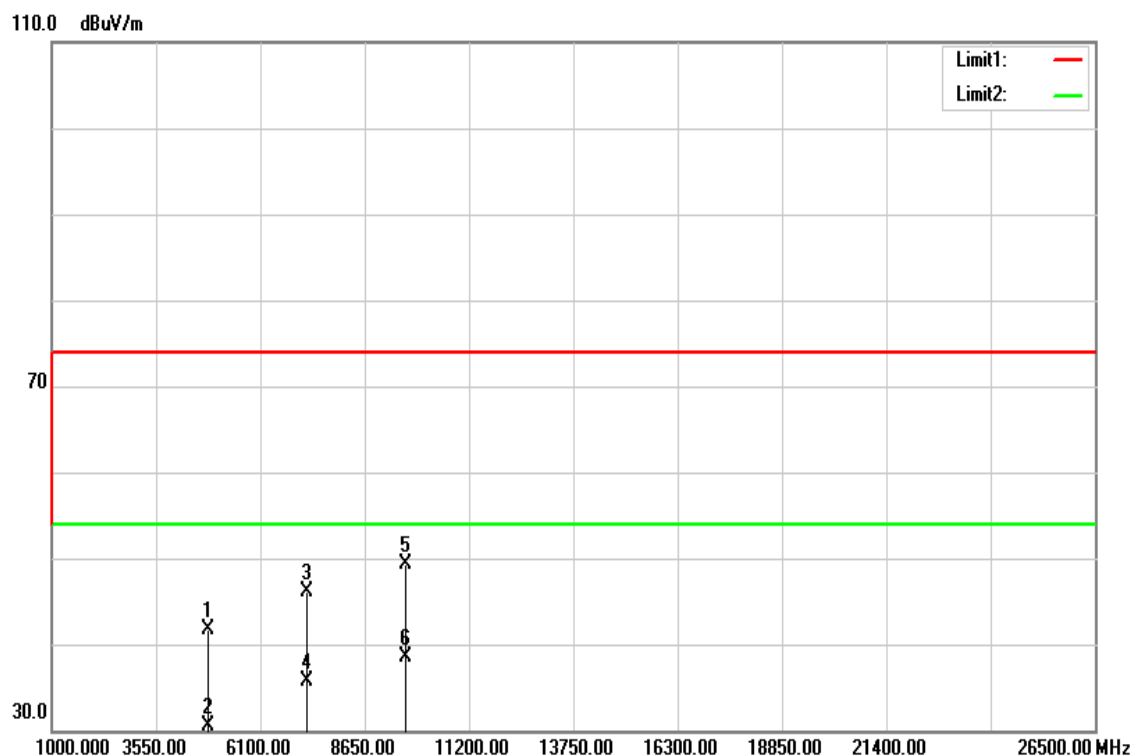


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	36.08	5.10	41.18	74.00	-32.82	peak
4824.000	25.65	5.10	30.75	54.00	-23.25	AVG
7236.000	33.16	12.71	45.87	74.00	-28.13	peak
7236.000	21.95	12.71	34.66	54.00	-19.34	AVG
9648.000	32.47	17.60	50.07	74.00	-23.93	peak
9648.000	22.24	17.60	39.84	54.00	-14.16	AVG

**Remark:**

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

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		

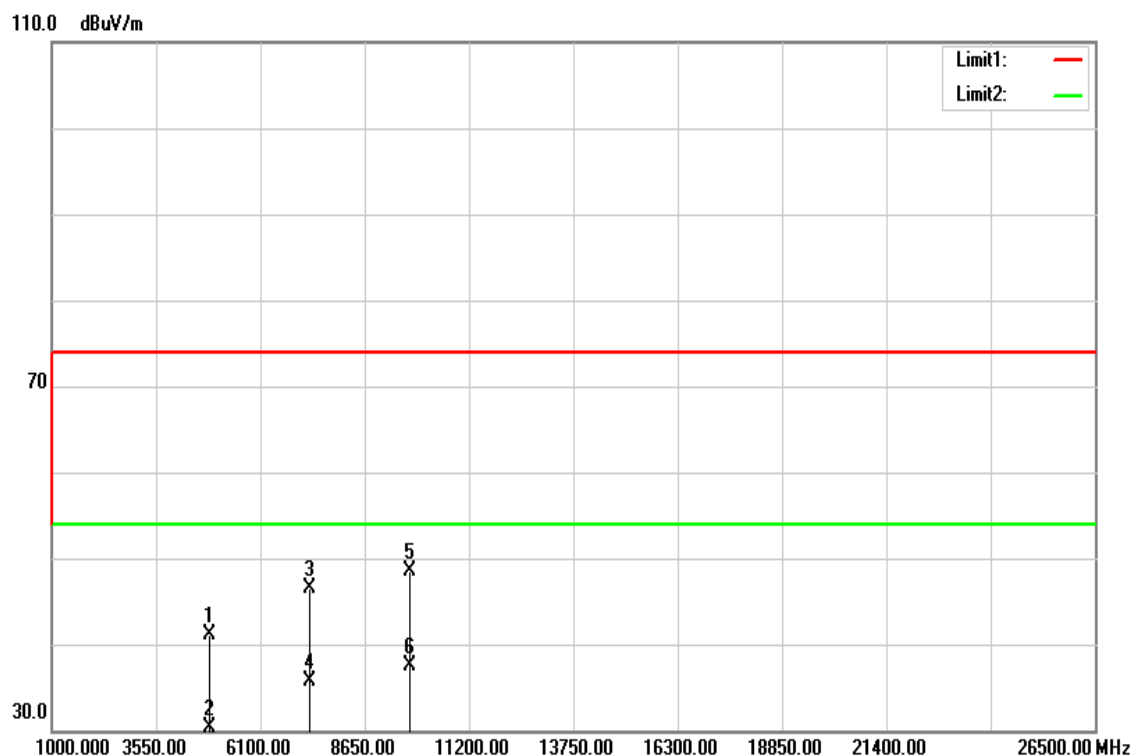


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824.000	36.68	5.10	41.78	74.00	-32.22	peak
4824.000	25.35	5.10	30.45	54.00	-23.55	AVG
7236.000	33.35	12.71	46.06	74.00	-27.94	peak
7236.000	22.91	12.71	35.62	54.00	-18.38	AVG
9648.000	31.77	17.60	49.37	74.00	-24.63	peak
9648.000	20.84	17.60	38.44	54.00	-15.56	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

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		

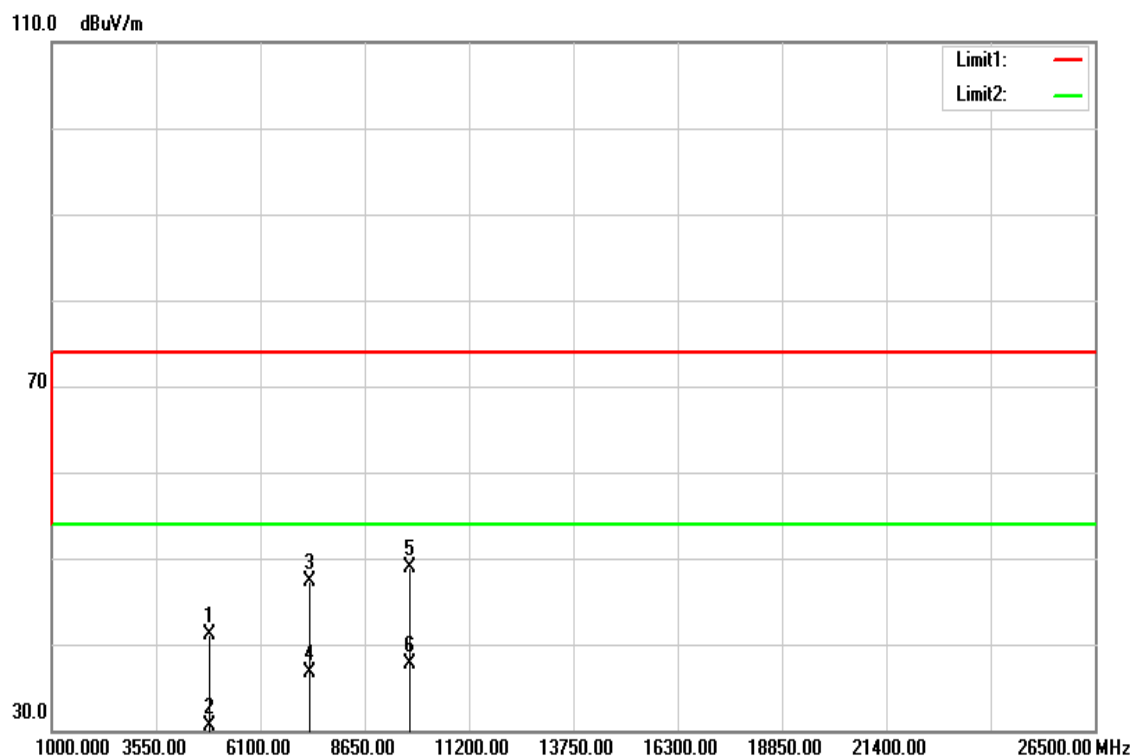


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	35.90	5.23	41.13	74.00	-32.87	peak
4874.000	25.03	5.23	30.26	54.00	-23.74	AVG
7311.000	33.53	12.94	46.47	74.00	-27.53	peak
7311.000	22.68	12.94	35.62	54.00	-18.38	AVG
9748.000	30.96	17.60	48.56	74.00	-25.44	peak
9748.000	19.88	17.60	37.48	54.00	-16.52	AVG

**Remark:**

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

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Vertical	Test Engineer	Ed Chiang
Detector	Peak and Average		

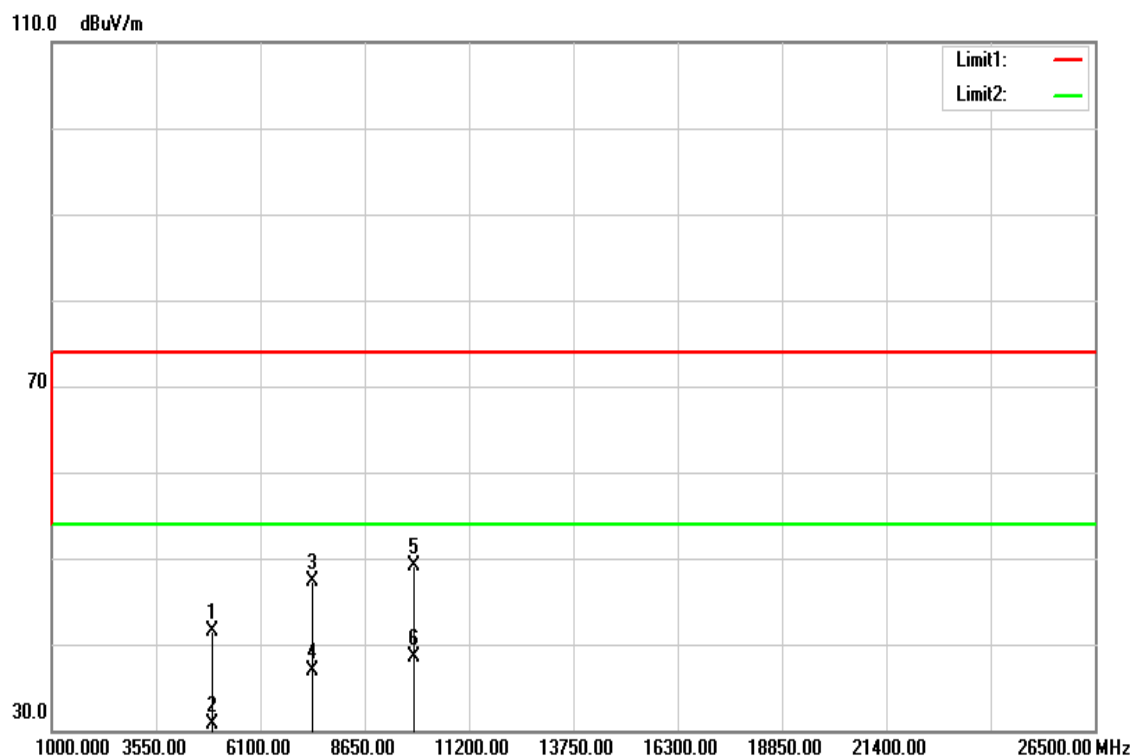


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4874.000	35.83	5.23	41.06	74.00	-32.94	peak
4874.000	25.35	5.23	30.58	54.00	-23.42	AVG
7311.000	34.27	12.94	47.21	74.00	-26.79	peak
7311.000	23.84	12.94	36.78	54.00	-17.22	AVG
9748.000	31.38	17.60	48.98	74.00	-25.02	peak
9748.000	20.02	17.60	37.62	54.00	-16.38	AVG

**Remark:**

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

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 2017
Polarize	Horizontal	Test Engineer	Ed Chiang
Detector	Peak and Average		

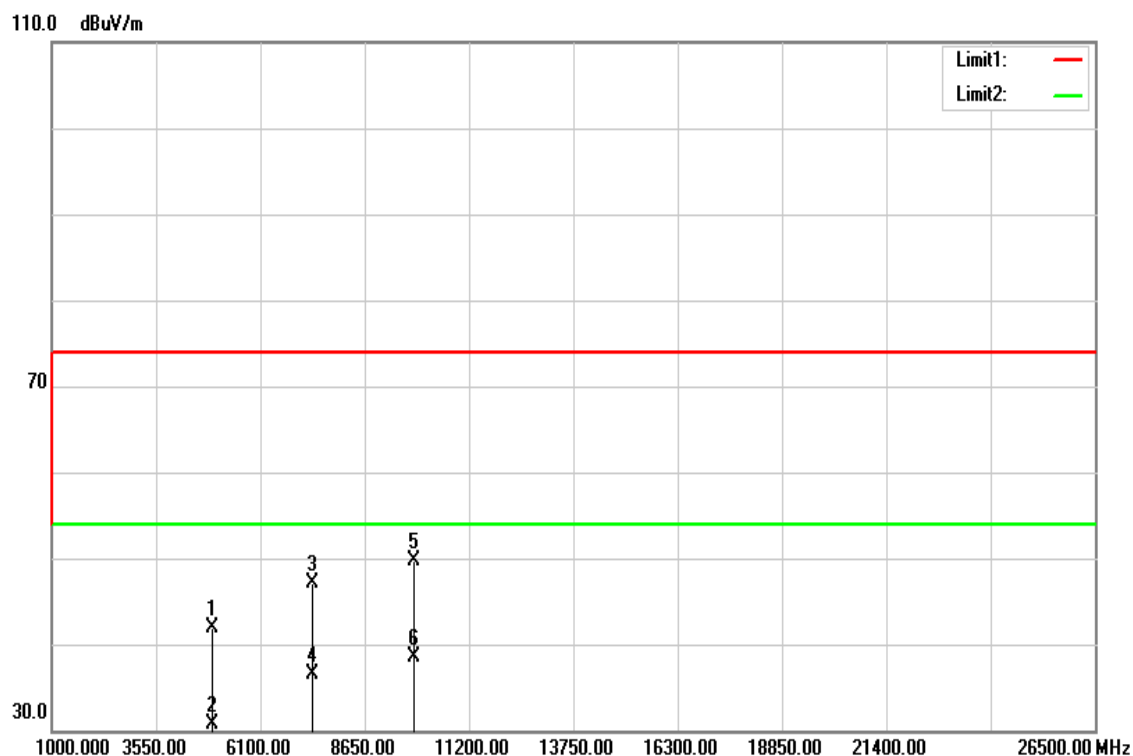


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4924.000	36.04	5.37	41.41	74.00	-32.59	peak
4924.000	25.25	5.37	30.62	54.00	-23.38	AVG
7386.000	34.13	13.17	47.30	74.00	-26.70	peak
7386.000	23.70	13.17	36.87	54.00	-17.13	AVG
9848.000	31.55	17.60	49.15	74.00	-24.85	peak
9848.000	20.84	17.60	38.44	54.00	-15.56	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

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	27(°C)/ 53%RH
Test Item	Harmonic	Test Date	March 28, 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
4924.000	36.54	5.37	41.91	74.00	-32.09	peak
4924.000	25.41	5.37	30.78	54.00	-23.22	AVG
7386.000	33.86	13.17	47.03	74.00	-26.97	peak
7386.000	23.41	13.17	36.58	54.00	-17.42	AVG
9848.000	32.14	17.60	49.74	74.00	-24.26	peak
9848.000	20.84	17.60	38.44	54.00	-15.56	AVG

**Remark:**

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