# FCC RADIO TEST REPORT FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247 and RSS-247 Issue 2
FCC ID	PPQ-WCBN4501A
ISED No.	4491A-WCBN4501A
Brand name	LITE-ON
Applicant	Lite-On Technology Corp.
Product name	Wi-Fi (11a/b/g/n/ac 2Tx2R)+BT (V4.1LE) USB Combo Module
Model No.	WCBN4501A
Test Result	Pass

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

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

The test Report of full or partial shall not copy. Without written approval of CCS. Inc.

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





Approved by:

Tested by:

Hem Cleang

Sam Chuang Manager

ED. Chiang

Ed Chiang Engineer



# **Revision History**

Rev.	Issue Date	Revisions	Revised By
00	May 4, 2017	Initial Issue	Vicki Huang
01	July 18, 2017	<ol> <li>Modify test lab address in P.7</li> <li>Modify PSD Limit in P.28</li> <li>Add notice for "below 1G test data" in P.72~73.</li> </ol>	Vicki Huang

# **Table of contents**

1.	C	GENERAL INFORMATION	. 4
	1.1	EUT INFORMATION	. 4
	1.2	EUT CHANNEL INFORMATION	. 5
	1.3	ANTENNA INFORMATION	. 5
	1.4	MEASUREMENT UNCERTAINTY	. 6
	1.5	FACILITIES AND TEST LOCATION	. 7
	1.6	INSTRUMENT CALIBRATION	. 7
	1.7	SUPPORT AND EUT ACCESSORIES EQUIPMENT	. 8
	1.8	TEST METHODOLOGY AND APPLIED STANDARDS	. 8
	1.9	TABLE OF ACCREDITATIONS AND LISTINGS	. 8
2.	٦	TEST SUMMERY	. 9
3.	[	DESCRIPTION OF TEST MODES	10
	3.1	THE WORST MODE OF OPERATING CONDITION	10
	3.2	THE WORST MODE OF MEASUREMENT	11
	3.3	EUT DUTY CYCLE	12
4.	٦	TEST RESULT	13
	4.1	AC POWER LINE CONDUCTED EMISSION	13
	4.2	6DB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)	16
	4.3	OUTPUT POWER MEASUREMENT	24
	4.4	POWER SPECTRAL DENSITY	27
	4.5	CONDUCTED BANDEDGE AND SPURIOUS EMISSION	35
	4.6	RADIATION BANDEDGE AND SPURIOUS EMISSION	52
AF	PE	NDIX 1 - PHOTOGRAPHS OF EUT	

### 1. GENERAL INFORMATION

### **1.1 EUT INFORMATION**

Applicant	Lite-On Technology Corp. Bldg. C, 90, Chien 1 Road, Chung Ho, New Taipei City 23585, Taiwan, R.O.C
Manufacturer	LITE-ON TECHNOLOGY (Changzhou) CO., LTD A9 Building,No.88 Yanghu Road, Wujin Hi-Tech Industrial Development Zone ,Changzhou City,Jiangsu Province 213100 China
Equipment	Wi-Fi (11a/b/g/n/ac 2Tx2R)+BT (V4.1LE) USB Combo Module
Model Name	WCBN4501A
Model Discrepancy	Two kinds of module design: One uses on board antenna + external antenna; the other use two external antennas.
Received Date	March 14, 2017
Date of Test	March 15 ~ May 4, 2017
Output Power(W)	IEEE 802.11b mode: 0.2898 (EIRP : 0.5141) IEEE 802.11g mode: 0.4220 (EIRP : 0.7487) IEEE 802.11n HT 20 MHz mode: 0.7447 (EIRP : 1.3213) IEEE 802.11n HT 40 MHz mode: 0.6607 (EIRP : 1.1722)
Power Operation	VDC from host device.
FW Version	V62/V01
Product SW/HW version	1030.12/V02
Radio SW/HW version	1030.12/V02
Test SW Version	1030.12

### **1.2 EUT CHANNEL INFORMATION**

Frequency Range	2412MHz-2462MHz
Modulation Type	<ol> <li>IEEE 802.11b mode: CCK</li> <li>IEEE 802.11g mode: OFDM</li> <li>IEEE 802.11n HT 20 MHz mode: OFDM</li> <li>IEEE 802.11n HT 40 MHz mode: OFDM</li> </ol>
Bandwidth	<ol> <li>IEEE 802.11b mode: 11 Channels</li> <li>IEEE 802.11g mode: 11 Channels</li> <li>IEEE 802.11n HT 20 MHz mode: 11 Channels</li> <li>IEEE 802.11n HT 40 MHz mode: 7 Channels</li> </ol>

#### 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 inNumber ofLocation in frequencywhich device operatesfrequenciesrange 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 □ Coils								
		Antenna Gain (dBi)							
	Frequency		Ant 1	Ant 2	Power Directional		Power Density Directional		
	2412	- 2462MHz	2.49	2.49	2.4	19	5.50		
	Item	Brand	P/N		Gain (dBi)	Cable length	Re	Remark	
Antenna Gain	1	HongBo	290-10284		2.49	300mm		ternal tenna	
	2 Hong	HongBo	29	0-10310		2.05	500mm		ternal tenna
	3	HongBo	290-10479		1.81	700mm		ternal tenna	
	4	Walsin	RFMTA401035IMLB701		1.89	350mm		ternal tenna	
	5	Walsin	RFMTA4	01056IMI	B701	1.62	560mm	External Antenna	
	6	Walsin	RFMTA20	00700NN	LB002	1.63	N/A		Board tenna

Notes:

1. Power Directional Gain: 10LOG(((10^(Ant1/10)+10^(Ant2/10))/2))

2. Power Density Directional Gain: 10LOG(((10^(Ant1/10)+10^(Ant2/10))/2))+10log(NTX/NSS)

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### **1.4 MEASUREMENT UNCERTAINTY**

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

#### Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of *k*=2

2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

## 1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

No.139, Wugong Rd., Wugu Dist., New Taipei City 24886, Taiwan (R.O.C.)-Compliance Certification Services Inc.

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								
Equipment Manufacturer Model S/N Cal Date Cal Determined Cal Deter								
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							
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due		
Bilog Antenna	Sunol Sciences	JB3	A030105	07/03/2016	07/02/2017		
Horn Antenna	EMCO	3117	00055165	02/20/2017	02/19/2018		
Horn Antenna	ETS LINDGREN	3116	00026370	01/12/2017	01/11/2018		
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		

Conducted Emission Room # B								
Name of Equipment         Name of Equipment         Name of Equipment         Name of Equipment         Name of Equipment         Name of Equipment								
LISN	R&S	ENV216	101054	05/11/2016	05/10/2017			
LISN	Schwarzbeck	NSLK8128	5012	04/25/2017	04/24/2018			
Receiver	R&S	ESCI	101073	08/20/2016	08/19/2017			

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

## 1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

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

	Support Equipment							
No.	No. Equipment Brand Model Series No. BSMI ID							
1	Notebook	Lenovo	Z51-70	N/A	R33275			

### **1.8 TEST METHODOLOGY AND APPLIED STANDARDS**

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247, KDB 558074 D01 v03r05, RSS-247 Issue 1 and RSS-GEN Issue 4.

## **1.9 TABLE OF ACCREDITATIONS AND LISTINGS**

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

### 2. TEST SUMMERY

FCC Standard Section	IC Standard Section	Report Section	Test Item	Result
15.203	-	1.2	Antenna Requirement	Pass
15.207(a)	RSS-GEN 8.8	4.1	AC Conducted Emission	Pass
15.247(a)(2)	RSS-247(5.2)(1)	4.2	6 dB Bandwidth	Pass
-	RSS-GEN 6.6	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)	RSS-247(5.4)(4)	4.3	Output Power Measurement	Pass
15.247(e)	RSS-247(5.2)(2)	4.4	Power Spectral Density	Pass
15.247(d)	RSS-247(5.5)	4.5	Conducted Band Edge	Pass
15.247(d)	RSS-247(5.5)	4.5	Conducted Emission	Pass
15.247(d)	RSS-GEN 8.9, 8.10	4.6	Radiation Band Edge	Pass
15.247(d)	RSS-GEN 8.9, 8.10	4.6	Radiation Spurious Emission	Pass

### 3. DESCRIPTION OF TEST MODES

#### 3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	IEEE 802.11b mode :1Mbps IEEE 802.11g mode :6Mbps IEEE 802.11n HT20 mode :MCS8 IEEE 802.11n HT40 mode :MCS8
Test Channel Frequencies	IEEE 802.11b mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11g mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11n HT20 mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11n HT40 mode : 1. Lowest Channel : 2422MHz 2. Middle Channel : 2422MHz 3. Highest Channel : 2437MHz 3. Highest Channel : 2437MHz 3. Highest Channel : 2437MHz 3. Highest Channel : 2437MHz 3. Highest Channel : 2452MHz
Operation Transmitter	IEEE 802.11b mode :1T1R IEEE 802.11g mode :1T1R IEEE 802.11n HT20 mode :2T2R IEEE 802.11n HT40 mode :2T2R

#### 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	Test Condition         AC Power line conducted emission for line and neutral					
Voltage/Hz	120V/60Hz					
Test Mode	Test Mode Mode 1:EUT power by host system.					
Worst Mode	🖂 Mode 1 🗌 Mode 2 🗌 Mode 3 🗌 Mode 4					

Radiated Emission Measurement Below 1G						
Test Condition	Test Condition Radiated Emission Below 1G					
Voltage/Hz	Voltage/Hz 120V/60Hz					
Test Mode	Test Mode Mode 1:EUT power by host system.					
Worst Mode	🔀 Mode 1 🗌 Mode 2 🗌 Mode 3 🗌 Mode 4					

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

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case(Z-Plane and 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			100.00%	0.00				
802.11g	2.1100	2.1600	97.69%	0.10				
802.11n HT20	1.0000	1.0600	94.34%	0.25				
802.11n HT40	0.5300	0.6000	88.33%	0.54				



### 4. TEST RESULT

### 4.1 AC POWER LINE CONDUCTED EMISSION

#### 4.1.1 Test Limit

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

Frequency Range	Limits(dBµV)		
(MHz)	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	

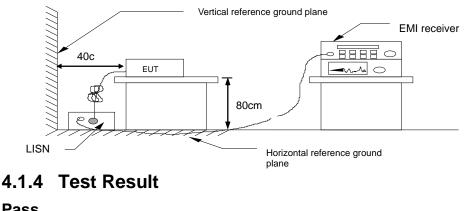
\* Decreases with the logarithm of the frequency.

#### 4.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

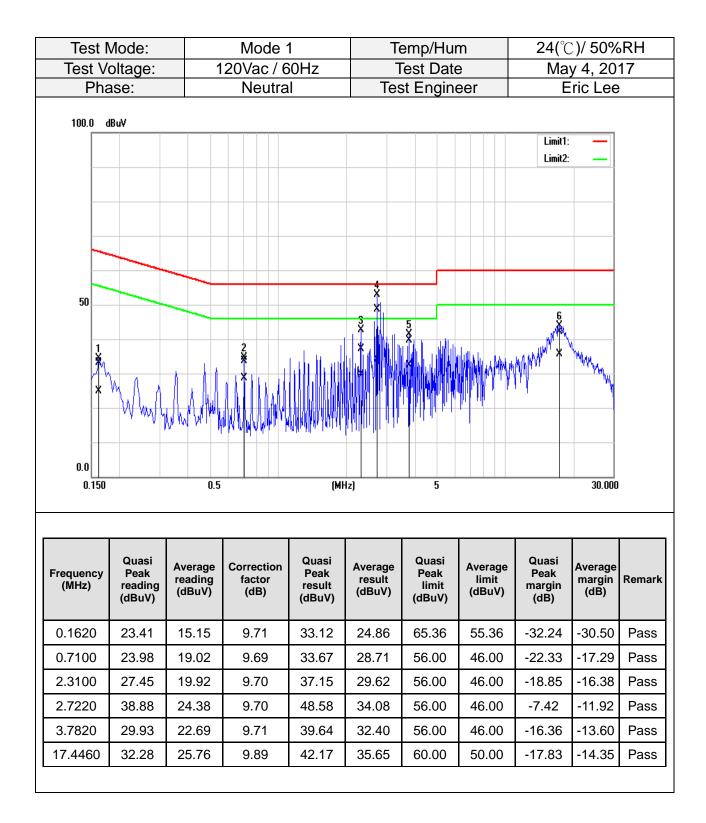
- 1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
- 2. EUT connected to the line impedance stabilization network (LISN)
- 3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
- 4. Maximum procedure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

### 4.1.3 Test Setup



### <u>Test Data</u>

Test N	Test Mode: Mode 1			Temp/Hum		24(°C)/ 50%RH				
	oltage:					Test Date		May 4, 2017		
Pha	ase:		Line			Test Engineer		Eric Lee		
100.0 d	100.0 dBuV							Limit1: Limit2:		
50		2			4×××					
0.0	hhh	0.5			1z)	5			30.000	
	Quasi Peak reading (dBuV)	0.5 Average reading (dBuV)	Correction factor (dB)	(Mi Quasi Peak result (dBuV)	łz) Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	30.000 Average margin (dB)	Remark
0.150	Peak reading	Average reading	factor	Quasi Peak result	Average result	Quasi Peak limit	limit	Peak margin	Average margin	Remark
0.150 Frequency (MHz)	Peak reading (dBuV)	Average reading (dBuV)	factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	limit (dBuV)	Peak margin (dB)	Average margin (dB)	Remark
0.150 Frequency (MHz) 0.1740	Peak reading (dBuV) 20.62	Average reading (dBuV) 14.81	factor (dB) 9.70	Quasi Peak result (dBuV) 30.32	Average result (dBuV) 24.51	Quasi Peak limit (dBuV) 64.77	limit (dBuV) 54.77	Peak margin (dB) -34.45	Average margin (dB) -30.26	Remarl Pass Pass
0.150 Frequency (MHz) 0.1740 0.4740	Peak reading (dBuV) 20.62 21.95	Average reading (dBuV) 14.81 20.36	factor (dB) 9.70 9.68	Quasi Peak result (dBuV) 30.32 31.63	Average result (dBuV) 24.51 30.04	Quasi Peak limit (dBuV) 64.77 56.44	limit (dBuV) 54.77 46.44	Peak margin (dB) -34.45 -24.81	Average margin (dB) -30.26 -16.40	Remarl Pass Pass Pass
0.150 Frequency (MHz) 0.1740 0.4740 0.9460	Peak reading (dBuV) 20.62 21.95 23.35	Average reading (dBuV) 14.81 20.36 18.19	factor (dB) 9.70 9.68 9.69	Quasi Peak result (dBuV) 30.32 31.63 33.04	Average result (dBuV) 24.51 30.04 27.88	Quasi Peak limit (dBuV) 64.77 56.44 56.00	limit (dBuV) 54.77 46.44 46.00	Peak margin (dB) -34.45 -24.81 -22.96	Average margin (dB) -30.26 -16.40 -18.12	Remark



### 4.2 6DB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)

### 4.2.1 Test Limit

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

#### 6 dB Bandwidth :

Limit	Shall be at least 500kHz
-------	--------------------------

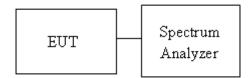
**Occupied Bandwidth(99%)** : For reporting purposes only.

### 4.2.2 Test Procedure

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

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

### 4.2.3 Test Setup



#### 4.2.4 Test Result

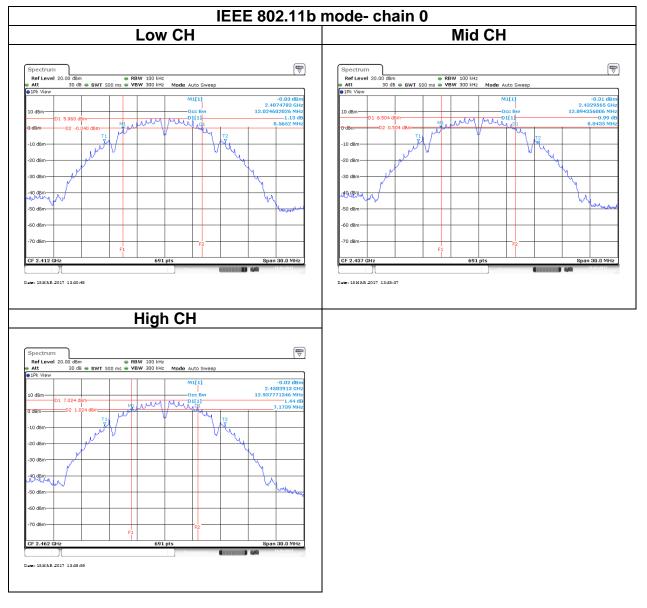
	Test mode: IEEE 802.11b mode / 2412-2462 MHz										
Channel	el Frequency (MHz) Chain 0 Chain 1 Chain 0 Chain 1 (MHz) (MHz) (MHz) (MHz) (MHz) (MHz) (MHz) (MHz) (MHz)										
Low	2412	13.0246	-	8.5652	-						
Mid	2437	12.8943	-	8.0435	-	≥500					
High	2462	12.9377	-	7.1739	-						

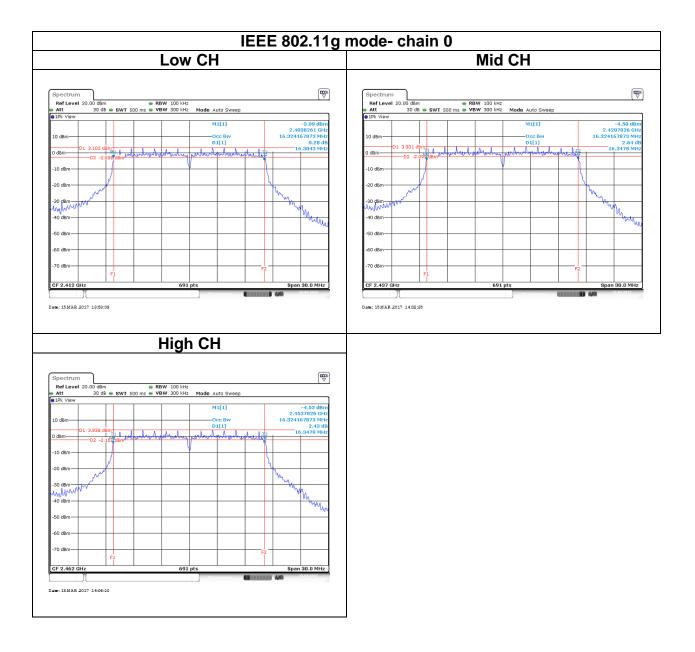
	Test mode: IEEE 802.11g mode / 2412-2462 MHz										
Channel	Frequency (MHz)Chain 0 OBW(99%)Chain 1 OBW(99%)Chain 0 OBW(99%)Chain 1 6dB BW (MHz)6dB II 6dB BW (MHz)6dB II (kHz)										
Low	2412	16.3241	-	16.3043	-						
Mid	2437	16.3241	-	16.3478	-	≥500					
High	2462	16.3241	-	16.3478	-						

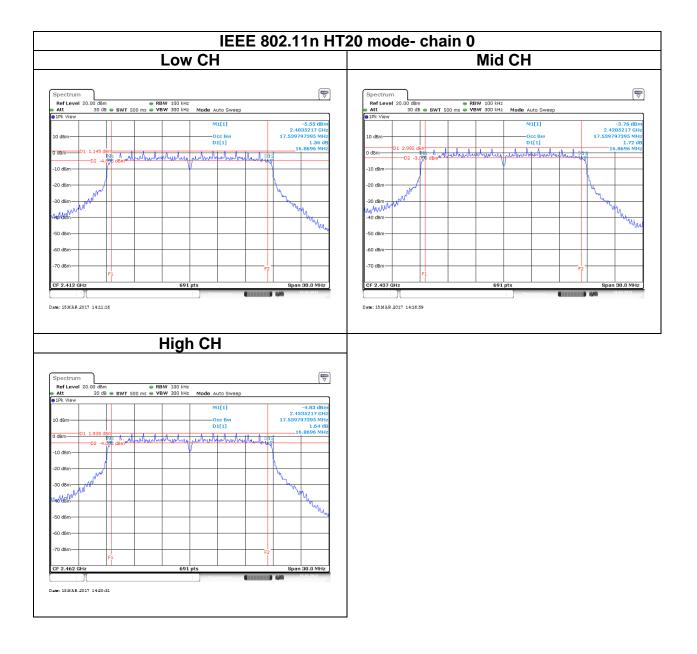
	Test mode: IEEE 802.11n HT 20 MHz mode / 2412-2462 MHz										
Channel	Frequency (MHz)Chain 0 OBW(99%)Chain 1 OBW(99%)Chain 0 GBW(99%)Chain 1 6dB BW6d(MHz)(MHz)(MHz)(MHz)6d										
Low	2412	17.5397	17.5397	16.8696	16.8261						
Mid	2437	17.5397	17.5397	16.8696	16.8261	≥500					
High	2462	17.5397	17.5397	16.8696	16.8261						

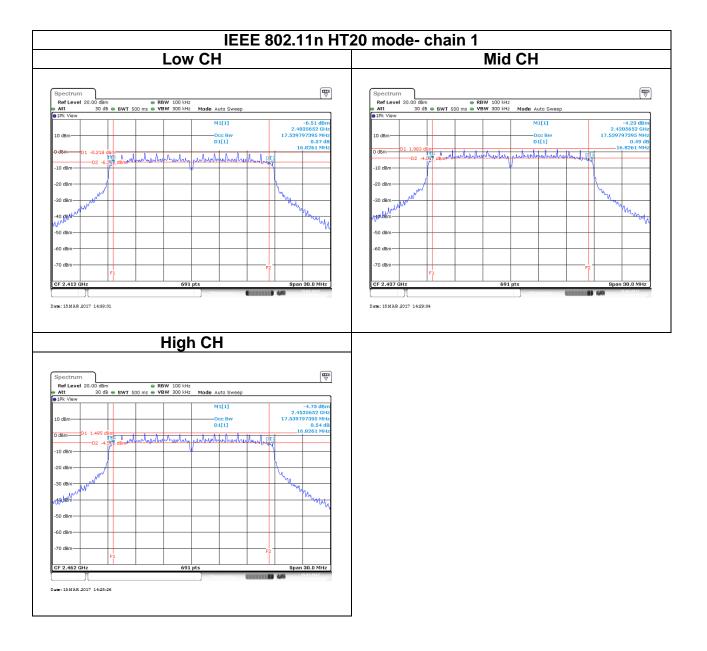
	Test mode: IEEE 802.11n HT 40 MHz mode / 2422-2452 MHz										
Channel	Frequency (MHz)Chain 0 OBW(99%) (MHz)Chain 1 OBW(99%) (MHz)Chain 0 6dB BW (MHz)Chain 1 6dB BW (MHz)6dB Im 6dB BW (MHz)										
Low	2422	36.1215	36.1215	35.5940	36.5220						
Mid	2437	36.1215	36.1215	35.7100	35.9420	>500					
High	2452	36.1215	36.1215	35.7100	35.9420						

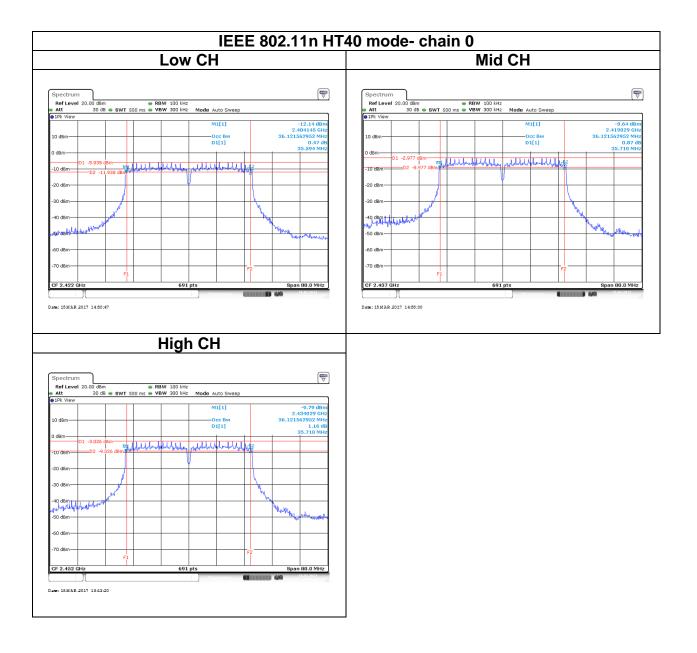
## Test Data

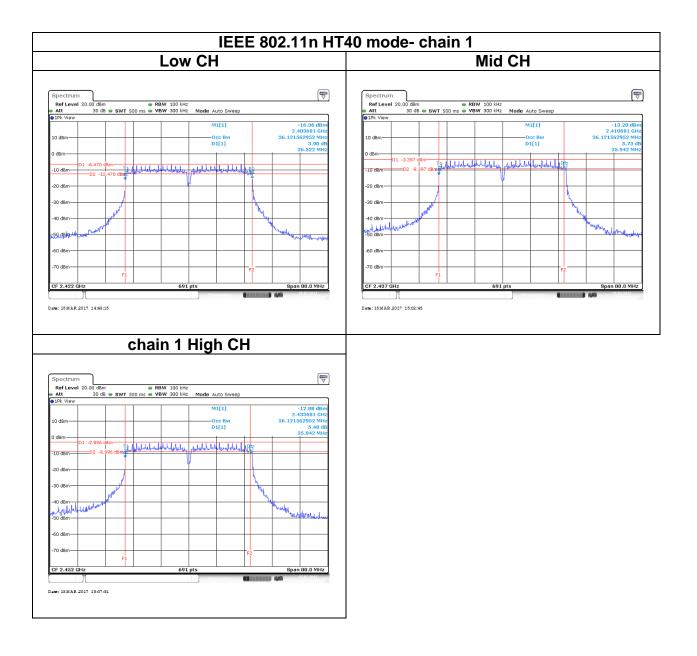












## 4.3 OUTPUT POWER MEASUREMENT

### 4.3.1 Test Limit

According to §15.247(b) and RSS-247 section 5.4(4),

#### Peak output power :

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

	Antenna not exceed 6 dBi : 30dBm
Limit	Antenna with DG greater than 6 dBi :
	[Limit = 30 - (DG - 6)]
	Point-to-point operation :

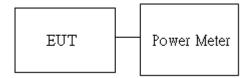
Average output power : For reporting purposes only.

#### 4.3.2 Test Procedure

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

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

### 4.3.3 Test Setup



### 4.3.4 Test Result

#### Peak output power :

		•	•	•	V	Vifi 2.	4G	•			•	*	
Config CH	СН	Freq.	powe	er set	PK Pow	er(dBm)	PK Total Power	PK Total Power	EIRP PK Total	ERP PK Total	DG	Limit	EIRP Limit
comg	GI	(MHz)	chain0	chain1	chain0	chain1	(dBm)	(W)	Power (dBm)	Power (W)	(dBi)	(dBm)	(dBm)
IEEE	Low	2412	19	-	22.87	-	22.87	0.1937	25.36	0.3436			
802.11b Data rate:	Mid	2437	21	-	24.57	-	24.57	0.2864	27.06	0.5082			
1Mbps	High	2462	21	-	24.62	-	24.62	0.2898	27.11	0.5141			
IEEE	Low	2412	15	-	22.71	-	22.71	0.1868	25.20	0.3314			
802.11g Data rate:	Mid	2437	20	-	26.25	-	26.25	0.4220	28.74	0.7487			
6Mbps	High	2462	18	-	25.17	-	25.17	0.3291	27.66	0.5839	2.49	30	36
IEEE 802.11n	Low	2412	13	13	17.97	17.08	20.55	0.1135	23.04	0.2014	2.49	30	30
HT20	Mid	2437	20	20	25.95	25.47	28.72	0.7447	31.21	1.3213			
Data rate: MCS8	High	2462	12	12	16.91	17.08	20.00	0.1000	22.49	0.1774			
IEEE 802.11n	Low	2422	13	13	18.45	18.16	21.32	0.1355	23.81	0.2404			
HT40	Mid	2437	19	19	25.66	24.67	28.20	0.6607	30.69	1.1722			
Data rate: MCS8	High	2452	13	13	18.14	18.25	21.20	0.1318	23.69	0.2339			

#### Average output power :

		W	ifi 2.4G			
Config	СН	Freq.	AV Pow	er(dBm)	AV Total Power	
coning	СП	(MHz)	chain0	chain1	(dBm)	
IEEE	Low	2412	19.82	-	19.83	
802.11b Data rate:	Mid	2437	21.63	-	21.64	
1 Mbps	High	2462	21.72	-	21.73	
IEEE	Low	2412	15.17	-	15.31	
802.11g Data rate:	Mid	2437	20.35	-	20.49	
6Mbps	High	2462	18.47	-	18.61	
IEEE 802.11n	Low	2412	11.72	11.21	14.61	
HT20	Mid	2437	19.49	18.76	22.28	
Data rate: MCS8	High	2462	12.13	11.48	14.95	
IEEE 802.11n	Low	2422	11.70	11.37	14.86	
HT40	Mid	2437	18.31	17.76	21.36	
Data rate: MCS8	High	2452	11.62	11.62	14.94	

## 4.4 POWER SPECTRAL DENSITY

### 4.4.1 Test Limit

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

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

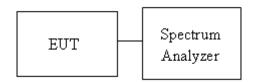
	Antenna not exceed 6 dBi : 8dBm
Limit	Antenna with DG greater than 6 dBi :
	[Limit = 8 - (DG - 6)]
	Point-to-point operation :

#### 4.4.2 Test Procedure

Test method Refer as KDB 558074 D01 v03r05, Section 10.2

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

### 4.4.3 Test Setup



#### 4.4.4 Test Result

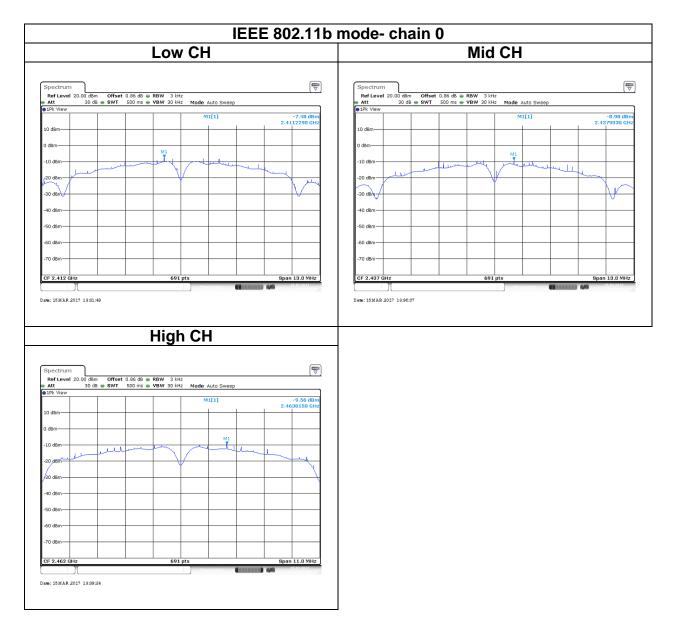
	Test mode: IEEE 802.11b mode / 2412-2462 MHz								
ChannelFrequency (MHz)Chain 0 PPSDChain 1 PPSDTotal PPSDLimit (dBm)Channel(MHz)(dBm)(dBm)(dBm)Limit (dBm)									
Low	2412	-7.48	-	-7.48					
Mid	2437	-8.98	-	-8.98	8				
High	2462	-9.56	-	-9.56					

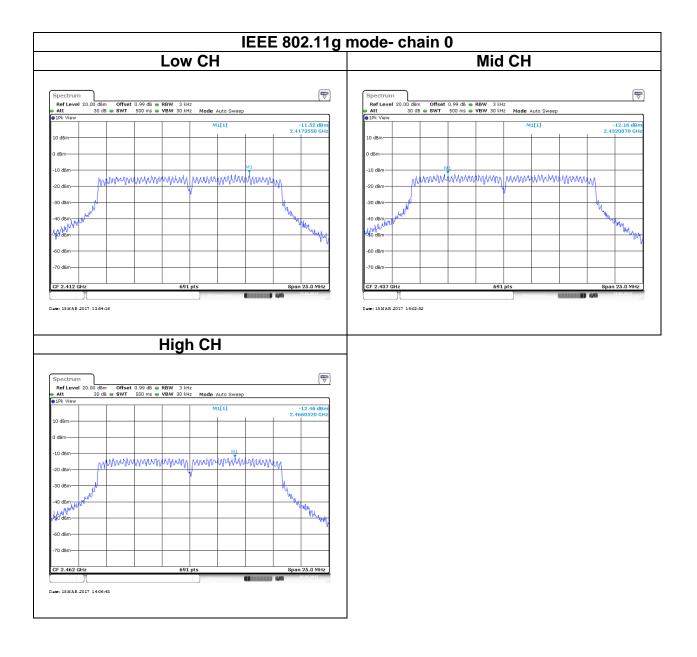
	Test mode: IEEE 802.11g mode / 2412-2462 MHz									
Channel	ChannelFrequency (MHz)Chain 0 PPSDChain 1 PPSDTotal PSSDLimit (dBm)ChannelMHzChain 0 (dBm)Chain 1 PPSDTotal PSSDLimit (dBm)									
Low	2412	-11.52	-	-11.52						
Mid	2437	-12.16	-	-12.16	8					
High	2462	-12.46	-	-12.46						

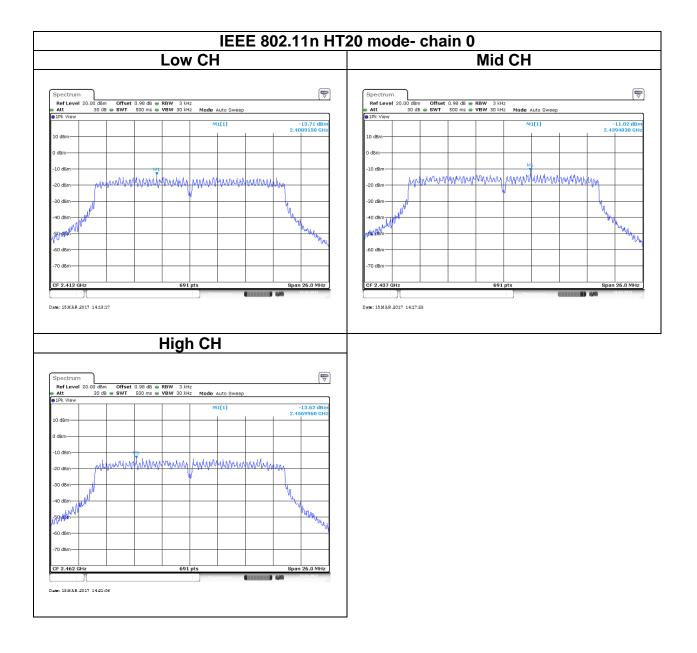
	Test mode: IEEE 802.11n HT 20 MHz mode / 2412-2462 MHz								
Channel	annel Frequency (MHz) Chain 0 Chain 1 Total Limit (dBm) (dBm) (dBm) (dBm)								
Low	2412	-13.71	-16.64	-11.92					
Mid	2437	-11.02	-13.70	-9.15	8				
High	2462	-13.62	-14.15	-10.87					

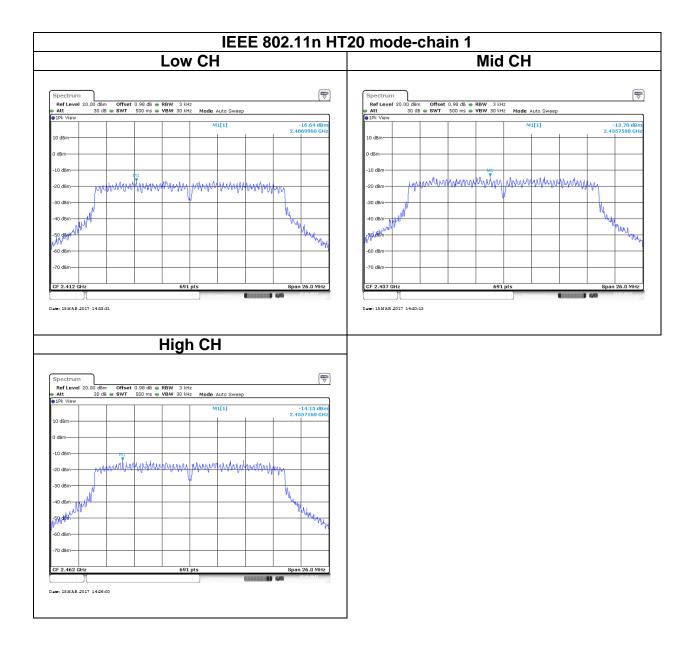
	Test mode: IEEE 802.11n HT 40 MHz mode / 2422-2452 MHz								
Channel	inel Frequency (MHz) Chain 0 Chain 1 Total Limit (dBm) (dBm) (dBm) (dBm)								
Low	2422	-19.36	-18.53	-15.91					
Mid	2437	-15.91	-16.46	-13.17	8				
High	2452	-15.94	-15.87	-12.89					

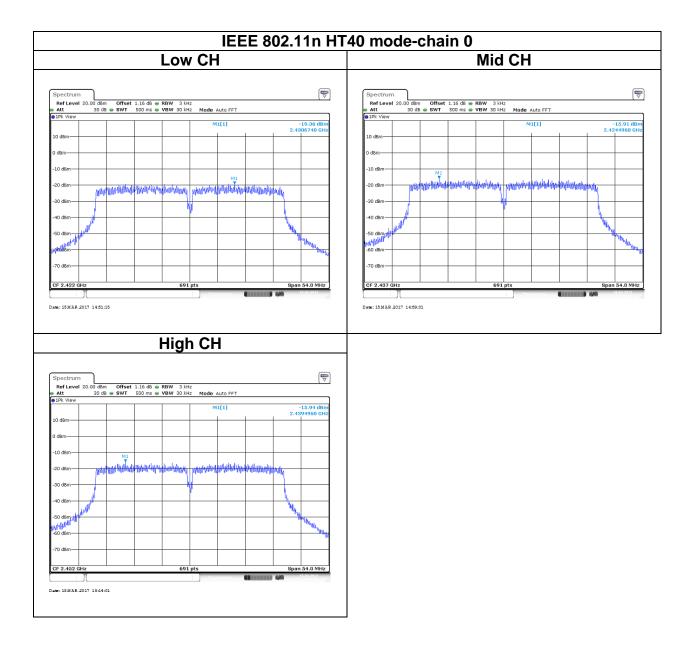
### Test Data

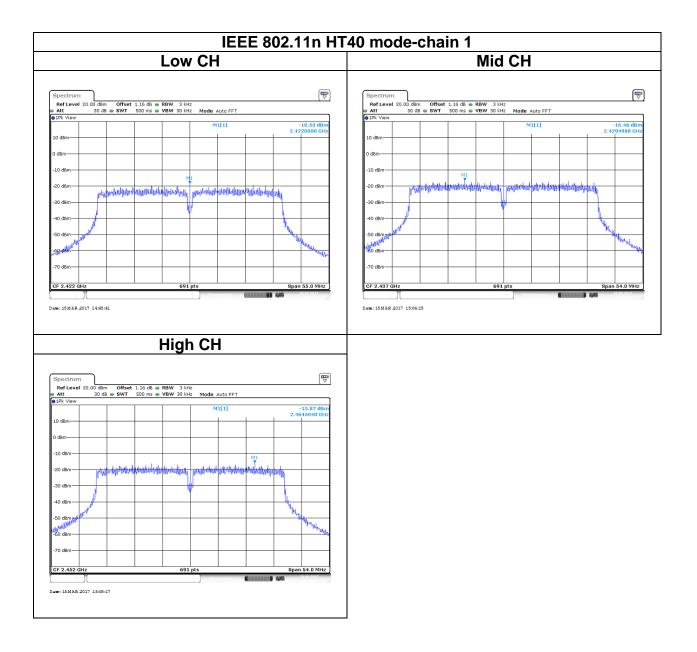












## 4.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

### 4.5.1 Test Limit

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

In any 100 kHz bandwidth outside the authorized frequency band,

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

### 4.5.2 Test Procedure

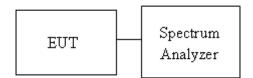
Test method Refer as KDB 558074 D01 v03r05, Section 11.

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

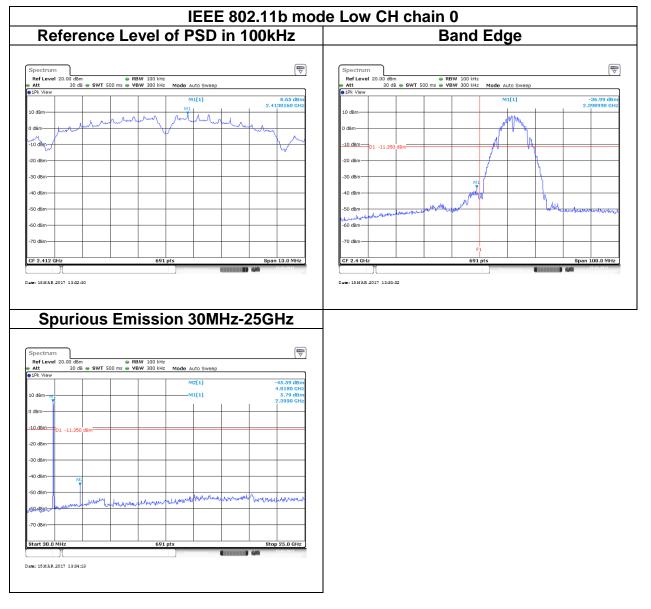
3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

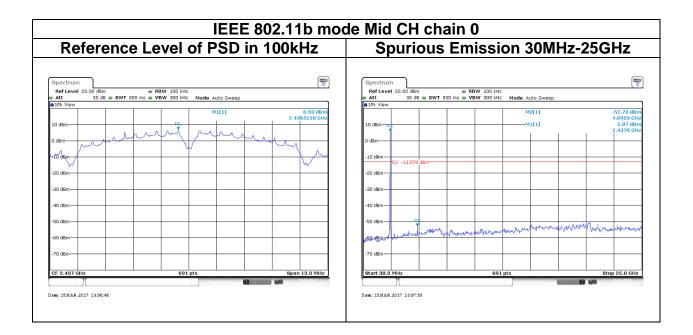
### 4.5.3 Test Setup

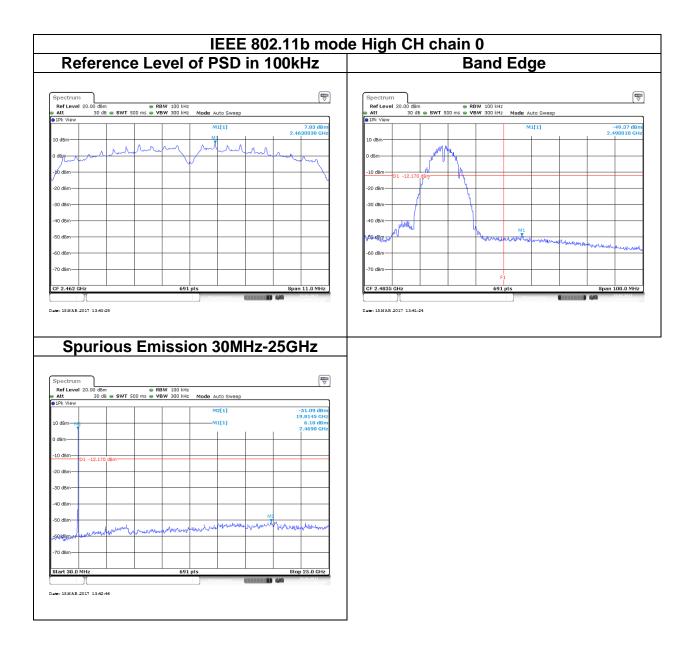


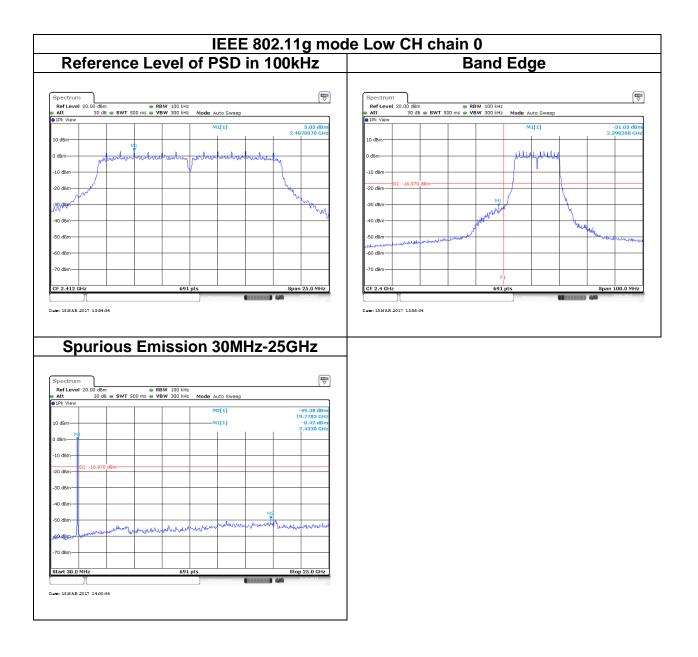
### 4.5.4 Test Result

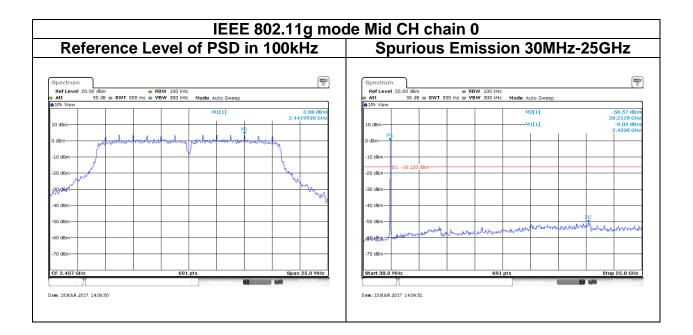
#### Test Data

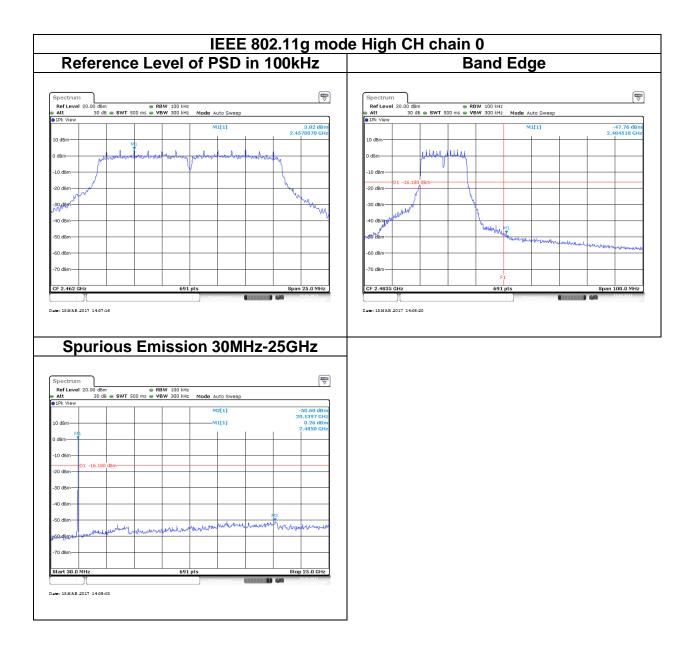


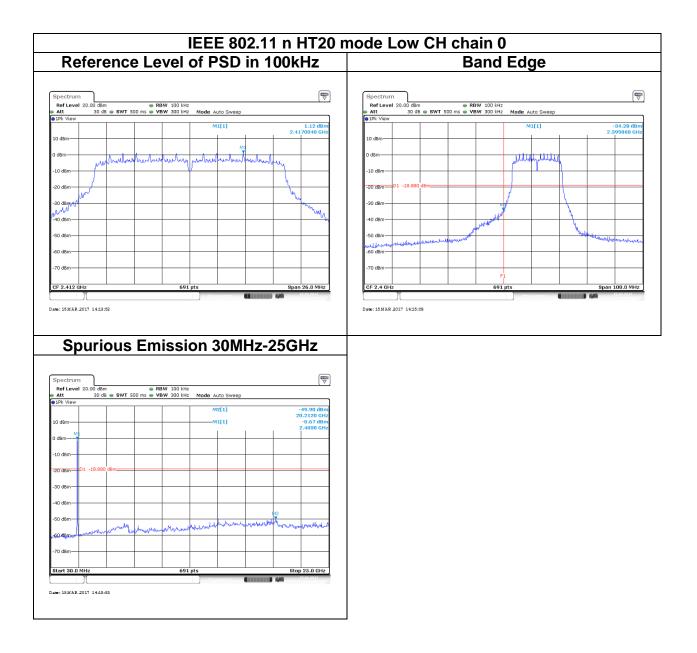


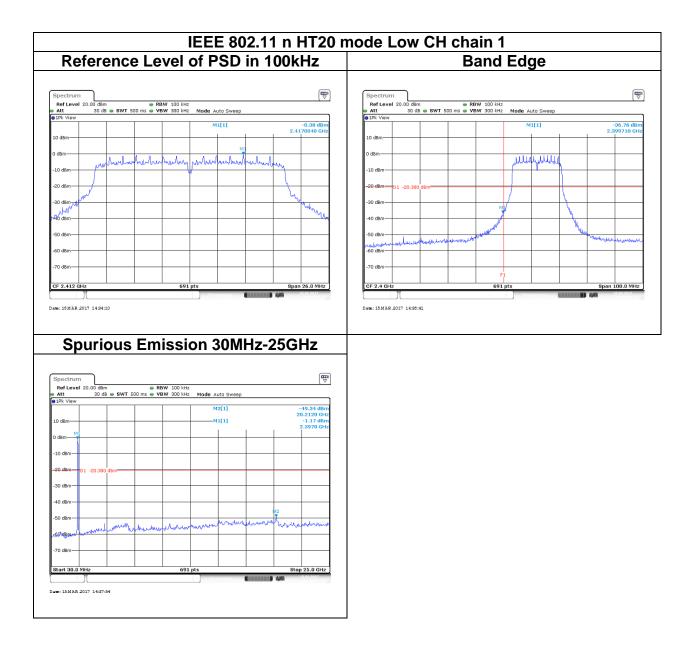


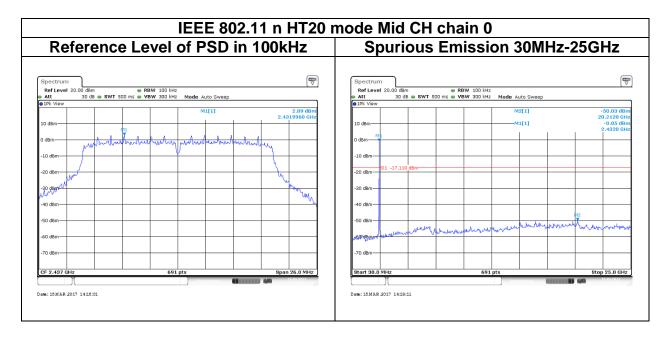


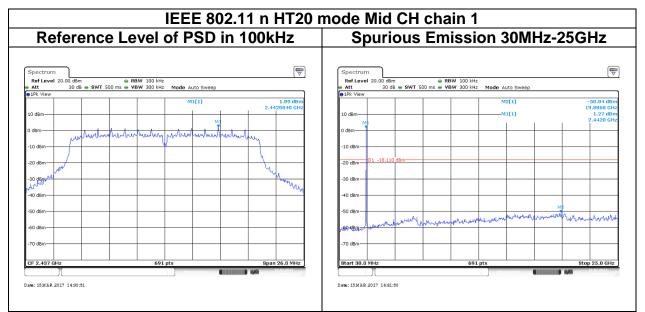


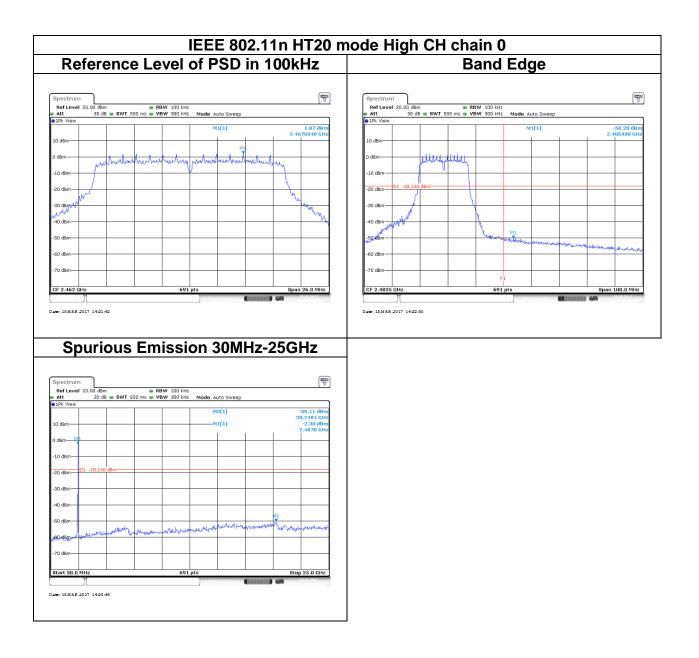


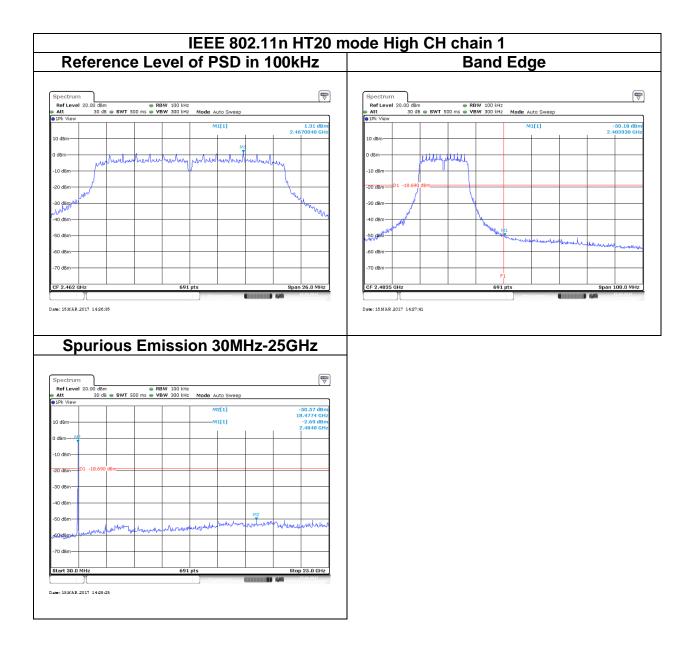


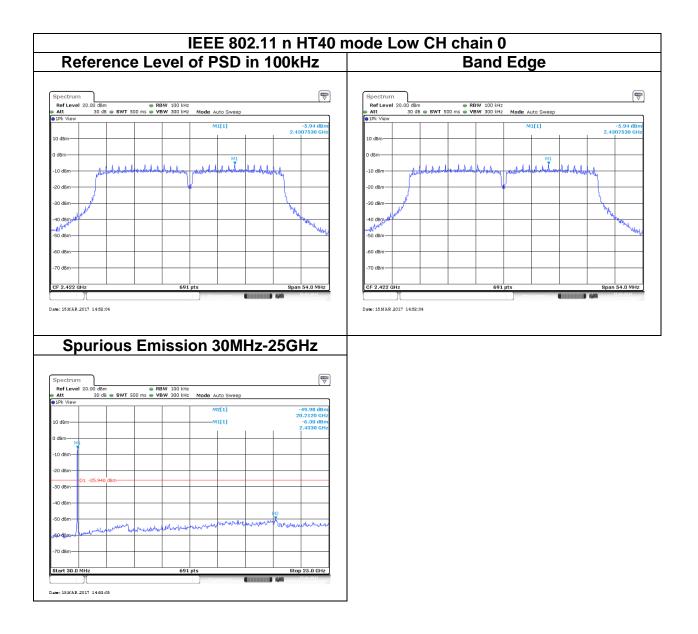


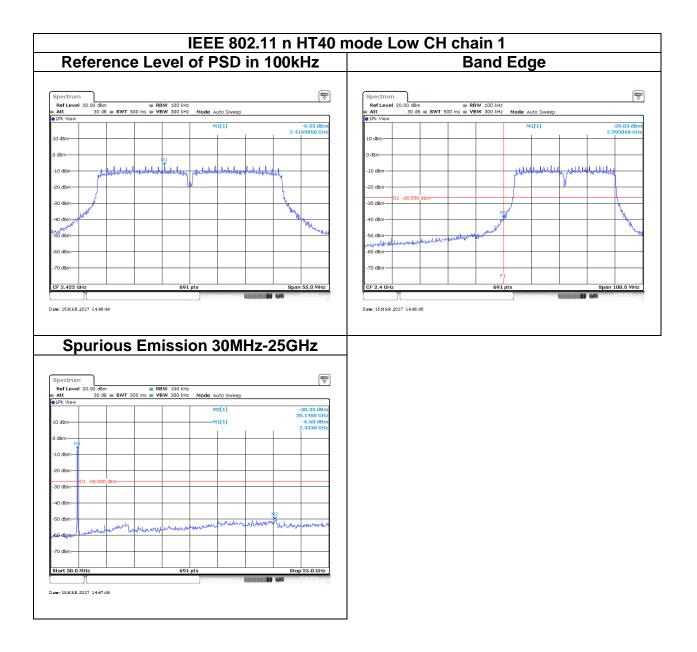


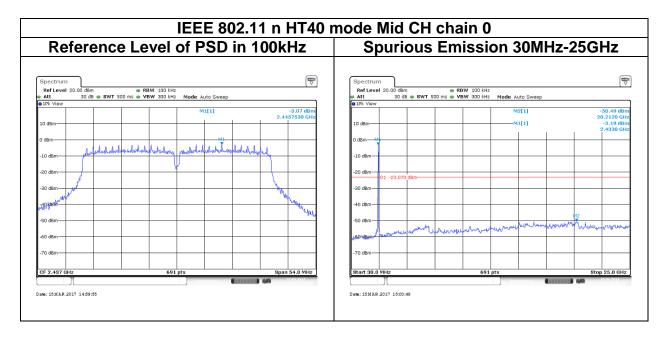


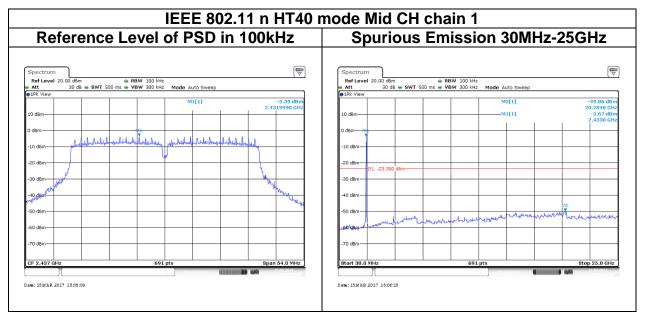


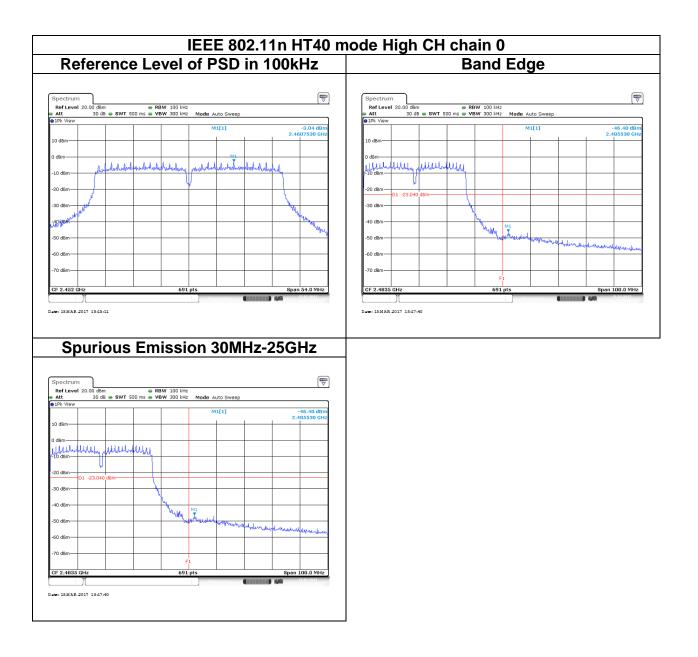


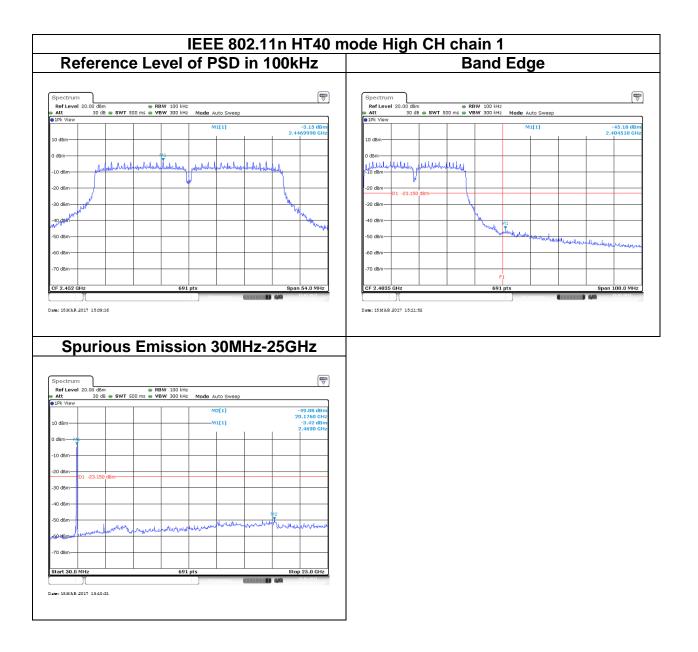












# 4.6 RADIATION BANDEDGE AND SPURIOUS EMISSION

## 4.6.1 Test Limit

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

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

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

#### Below 30 MHz

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

#### Above 30 MHz

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

### 4.6.2 Test Procedure

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

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 30MHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

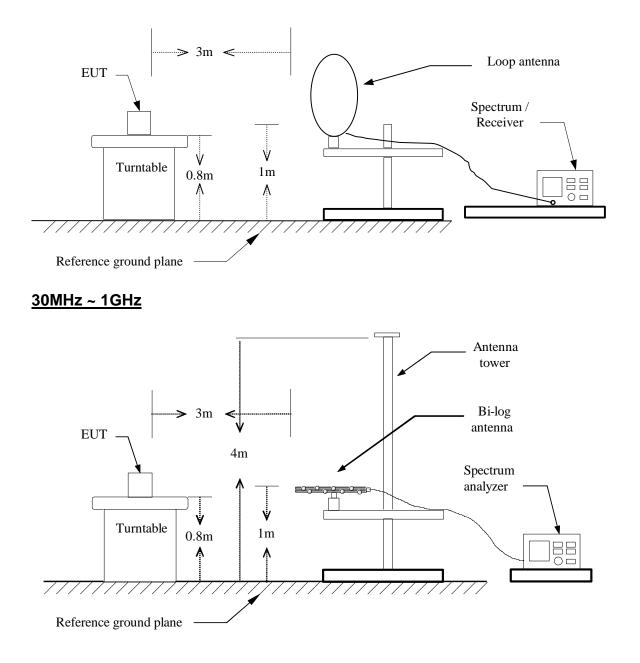
- 5. The SA setting following :
  - (1) Below 1G : RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
  - (2) Above 1G:
    - (2.1) For Peak measurement : RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
    - (2.2) For Average measurement : RBW = 1MHz, VBW

If Duty Cycle  $\geq$  98%, VBW=10Hz.

<sup>·</sup>If Duty Cycle < 98%, VBW=1/T.

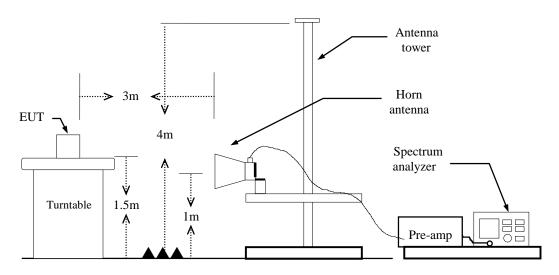
Configuration	Duty Cycle (%)	T(ms)	1/T (kHz)	VBW Setting
802.11b	100%		-	10Hz
802.11g	98%	2.1100	0.474	10Hz
802.11n HT20	94%	1.0000	1.000	1KHz
802.11n HT40	88%	0.5300	1.887	2KHz

## 4.6.3 Test Setup <u>9kHz ~ 30MHz</u>



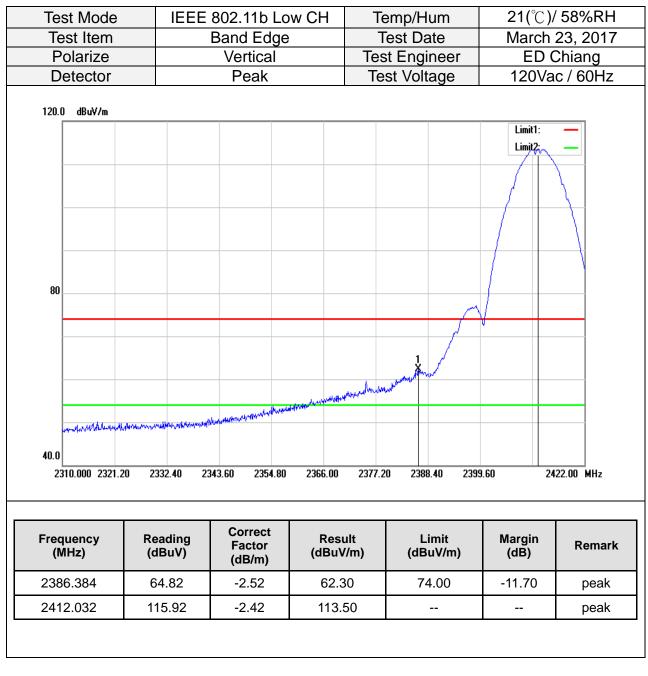
# **CESRF** Compliance Certification Services Inc.

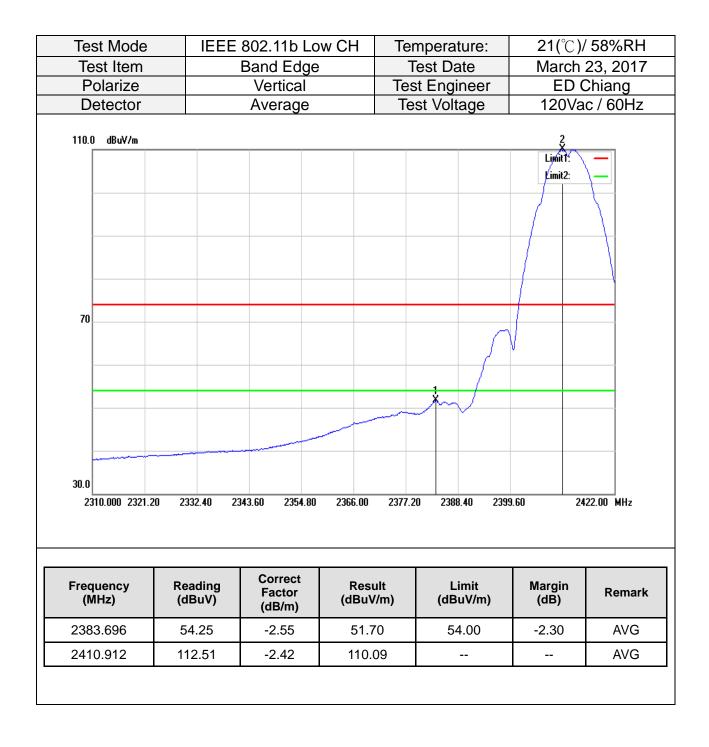
### Above 1 GHz

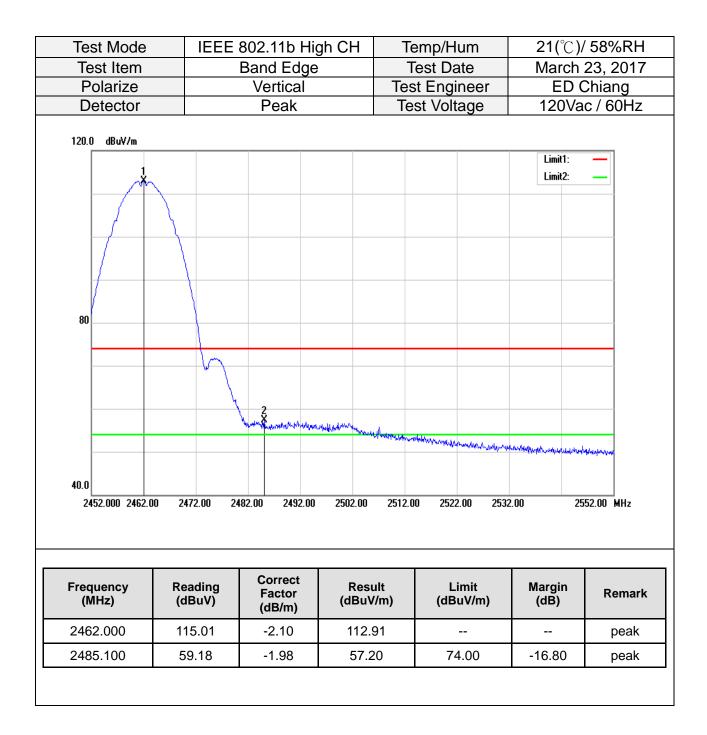


## 4.6.4 Test Result

### Band Edge Test Data







Test Item		002.110.11	gh CH	Temperature	e:   21(	21(°C)/ 58%RH		
		Band Edge	,	Test Date	Ma	rch 23, 2017		
Polarize		Vertical		Test Engine	er E	ED Chiang		
Detector		Average		Test Voltage	e 12	0Vac / 60Hz		
120.0 dBuV/m						it1: —		
40.0 2452.000 2462.00 Frequency (MHz) 2463.100	2472.00 24 Reading (dBuV) 112.51	2 492.00 2492.00 Correct Factor (dB/m) -2.09 -1.99	Result (dBuV/m 110.42	<b>) (dBuV/</b> 54.00	m) (dB) ) 56.4	2 AVG		
2700.100			46.53	54.00	) -7.4	7 AVG		

Test Mode	IEEE	802.11g Lo	w CH	Temp	/Hum	21(℃)/ 58%RH		
Test Item		Band Edge	)	Test Date		March 23, 20 <sup>-</sup>		
Polarize		Vertical		Test Er	ngineer	ED (	Chiang	
Detector		Peak		Test V	oltage	120Va	c / 60Hz	
120.0 dBu∀/m						Limit1: Limit2:	-	
80					I. Martin			
			upperproved the order of the state of the	and the main and the second second				
numeroutermeter	www.whenhall.	ward water and an a straight						
40.0								
2310.000 2321.2	20 2332.40 2	2343.60 2354.80 Correct	2366.00 Resul		2388.40 239 Limit		122.00 MHz	
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/	m) (	dBuV/m)	Margin (dB)	Remark	
2389.408	75.79	-2.50	73.29	)	74.00	-0.71	peak	
2414.384	114.73	-2.40	112.3	3			peak	

Test Mode	IEEE	802.11g Lo	w CH Te	emperature:	21(°C)/ 58%RH		
Test Item		Band Edge		Test Date	March 23, 2		
Polarize		Vertical		st Engineer		Chiang	
Detector		Average	Т	est Voltage	120Va	c / 60Hz	
110.0 dBu¥/m					Limit1: Limit2:		
30.0							
2310.000 2321.2	20 2332.40 2	343.60 2354.80	2366.00 2377	.20 2388.40 239	9.60 24	22.00 MHz	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	
2390.000	54.77	-2.49	52.28	54.00	-1.72	AVG	
	404 50	-2.43	99.13			AVG	
2409.232	101.56	-2.43	00.10			7,0	

Test Mode	IEEE	802.11g Hi	gh CH 🛛 T	emp/Hum	21(°C)/ 58%RH		
Test Item		Band Edge		Test Date	March	23, 2017	
Polarize		Vertical		st Engineer	ED Chiang		
Detector		Peak	Te	est Voltage	120Va	c / 60Hz	
120.0 dBu¥/m	nter la				Limit1: Limit2:		
		Miles March	And the state of t	Managertan	When merely a second		
40.0	0 2472.00	2482.00 2492.00				52.00 MHz	
	0 2412.00	2432.00	2302.00 2312.	00 2322.00 233A	2.00 23	52.00 MHZ	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	
	115.23	-2.08	113.15			peak	
2465.400			1	1			

Test Mode	IEEE	802.11g Hi	gh CH	Temperature:	<b>21(°</b> ℃).	/ 58%RH
Test Item		Band Edge		Test Date		23, 2017
Polarize		Vertical		Test Engineer		Chiang
Detector		Average		Test Voltage	120Va	ic / 60Hz
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
	$\sim$					
		2 X				
30.0						
2452.000 2462.0	0 2472.00 2	482.00 2492.00	2502.00 2	512.00 2522.00 2	532.00 29	52.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)		(dB)	Remark
2458.600	103.93	-2.11	101.82			AVG
2400.000			52.09	54.00	-1.91	AVG

Test Mode	IEEE 802.1	11n HT20 L	ow CH	Temp/Hum			21(℃)/ 58%RH		
Test Item	Ba	and Edge		Test Date			March 23, 2017		
Polarize		Vertical		Test Engineer			E	ED Ch	niang
Detector		Peak		Test Voltage		12	0Vac	/ 60Hz	
120.0 dBuV/m									
80						Street and			
40.0	เก.dysbolity/ระประกอบการประกอบการปร	bligener treventetigener		reading and the second	ant with				
2310.000 2321.2	20 2332.40 23	43.60 2354.80	2366.00	2377.20	2388	.40 2399	9.60	2422	.00 MHz
Frequency	Reading	Correct	Resu	.14		mit	Marg	in	
(MHz)	(dBuV)	Factor (dB/m)	(dBuV			uV/m)	(dB)		Remark
2389.744	73.58	-2.49	71.0	9	74	.00	-2.9	1	peak
2406.880	113.11	-2.42	110.6	69					peak

Test Mode	IEEE 802.	11n HT20 L	ow CH	Tem	perature:	21(°C)/ 58%RH		
Test Item	Ba	and Edge		Test Date		March 23, 201		
Polarize		Vertical		Test Engineer		ED (	Chiang	
Detector		Average		Test Voltage		120Va	c / 60Hz	
110.0 dBuV/m					i			
70						Limit1: Limit2: X		
30.0 2310.000 2321.2	20 2332.40 23	43.60 2354.80	2366.00	2377.20	2388.40 239	9.60 24	122.00 MHz	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Resı (dBuV		Limit (dBuV/m)	Margin (dB)	Remark	
2390.000	55.54	-2.49	53.0	5	54.00	-0.95	AVG	
2409.008	102.50	-2.43	100.0	07			AVG	

Test Mode	IEEE 802.1	In HT20 Hi	gh CH	Те	mp/Hum	<b>21(</b> °C)	/ 58%RH
Test Item	Ba	nd Edge		Te	est Date	March	23, 2017
Polarize	\ \	/ertical		Tes	t Engineer		Chiang
Detector		Peak		Test Voltage		120Va	ac / 60Hz
120.0 dBu¥/m						Limit1: Limit2:	
80			hannermaaningaparahin	runad	in Marthurshampergeling and was	Young and a start	
40.0 2452.000 2462	2.00 2472.00 24	82.00 2492.00		2512.00			2552.00 MHz
						_	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Resu (dBuV)		Limit (dBuV/m)	Margin (dB)	Remark
2467.200	112.03	-2.08	109.9	95			peak
2483.600	68.18	-1.99	66.1	9	74.00	-7.81	peak
			1			I	

Test Mode	IEEE 802.1		igh CH		perature:	21(℃)/ 58%RH		
Test Item		nd Edge			est Date	March 23, 2017		
Polarize		/ertical			Engineer		Chiang	
Detector	A	verage		Tes	t Voltage	120Va	c / 60Hz	
120.0 dBu∀/m	+					Limit1: Limit2:	_	
80								
40.0 2452.000 2462	2.00 2472.00 24	182.00 2492.00	2502.00	2512.00	2522.00 253	2.00 25	52.00 MHz	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Resu (dBuV/		Limit (dBuV/m)	Margin (dB)	Remark	
2466.500	103.32	-2.08	101.2	24			AVG	
2483.500	54.72	-1.99	52.73	3	54.00	-1.27	AVG	
	1	1	1			1	1	

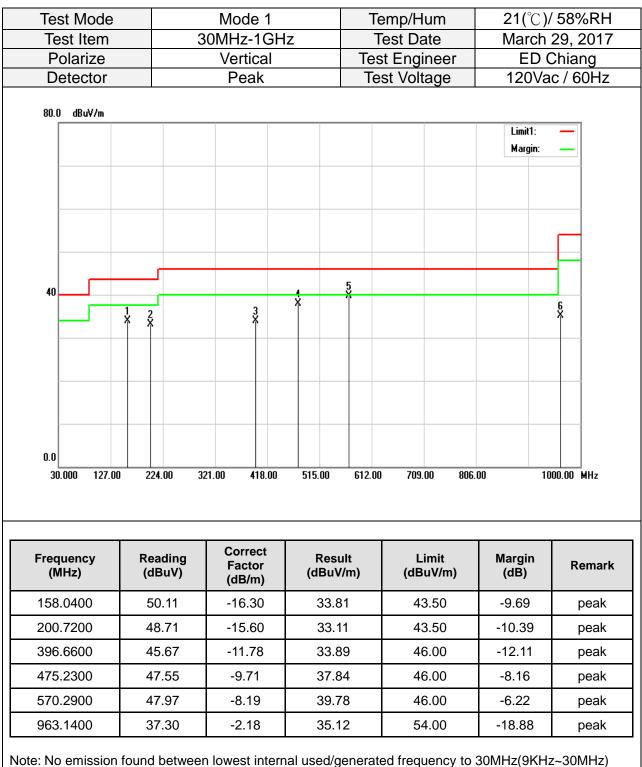
Test Mode	IEEE 802.1	Temp/Hum		21(℃)/ 58%RH			
Test Item	Ba	Test Date		March 23, 2017			
Polarize	١	/ertical		Test	Engineer	ED (	Chiang
Detector		Peak		Test	t Voltage	120Va	c / 60Hz
120.0 dBu∀/m							
						Limit1: Limit2:	_
80				1111/1111	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	**************************************	
(marineta)	alline dan	ender-wigg-tenerringer		T			
40.0 2310.000 2323	.20 2336.40 23	349.60 2362.80	2376.00	2389.20	2402.40 241	5.60 24	42.00 MHz
		Correct					
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Resu (dBuV/		Limit (dBuV/m)	Margin (dB)	Remark
2389.860	72.84	-2.49	70.3	5	74.00	-3.65	peak
2421.540	105.95	-2.35	103.6	60			peak

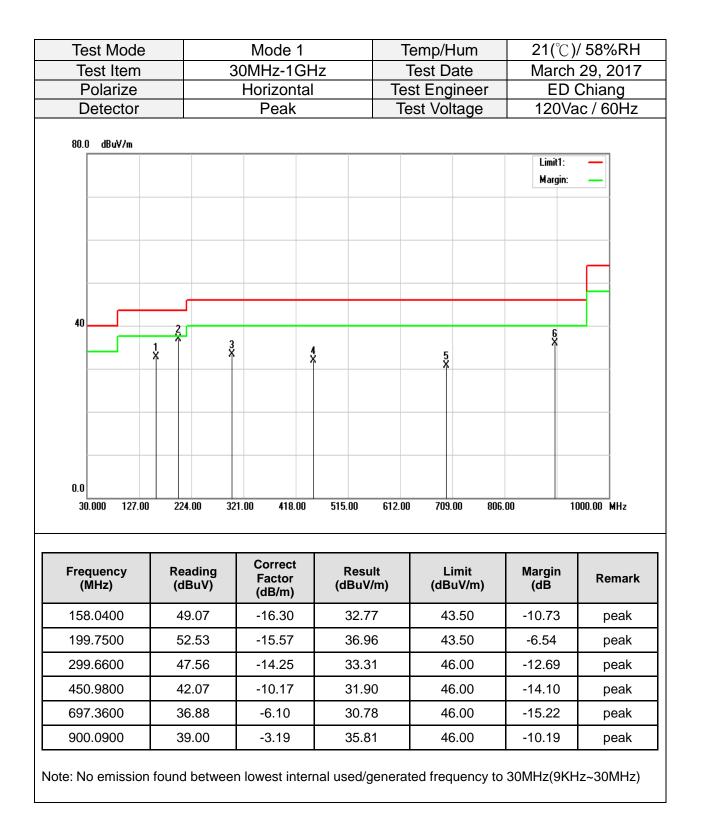
Test Mode	IEEE 802.11n HT40 Low CH			Temperature:		21(℃)/ 58%RH	
Test Item		and Edge		Test Date		March 23, 2017	
Polarize		Vertical		Test Engi			Chiang
Detector		Average		Test Volt	tage	120Va	ac / 60Hz
120.0 dBuV/m				1		1	
						Limit1: Limit2:	_
						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	$ \rightarrow $
80							
				/			
			and Myther refer	Am			
40.0 mm. willing 2000	Million Million March 20 2336.40 23	Wanter Mana Mana Mana	2270.00	2389.20 2402	2.40 2415		442.00 MHz
2310.000 2323.2	20 2336.40 23	J4J.DU 2302.0U	2376.00	2303.20 240	2.40 2413	J. 6U Z	442.UU MNZ
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m		imit uV/m)	Margin (dB)	Remark
0007 740	55.51	-2.51	53.00	54	4.00	-1.00	AVG
2387.748			95.17			1	AVG

Test Mode	IEEE 802.11n HT40 High CH			Ter	mp/Hum	21(℃)/ 58%RH	
Test Item	Ba		est Date		23, 2017		
Polarize		Vertical			Engineer		Chiang
Detector		Peak		Tes	t Voltage	120Va	c / 60Hz
120.0 dBuV/m							
						Limit1: Limit2:	_
, where the second seco		~					
80							
		- Mark	2 May March	May With Mary	1/http://www.university.com	nadarithternadio/hitelatio	
					1 · Weet repower	hore and a second s	hundry
40.0 2432.000 2444	.00 2456.00 2	468.00 2480.00	2492.00	2504.00	2516.00 25	28.00 25	52.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Resu (dBuV		Limit (dBuV/m)	Margin (dB)	Remark
2439.800	107.29	-2.21	105.0	08			peak
	72.45	-1.97	70.4	8	74.00	-3.52	peak
2485.880	72.43	-1.57	70.4	0	74.00	-0.02	реак

Test Mode	IEEE 802.11n HT40 High CH			Temperature:		e:	21(°C)/ 58%RH	
Test Item	Band Edge				Test Date		March 23, 2017	
Polarize	N N	/ertical		Tes	t Engine	er	ED (	Chiang
Detector	A	verage			st Voltage		120Va	ic / 60Hz
80							Limit1: Limit2:	
40.0 2432.000 2444 Frequency (MHz) 2441.840	Reading (dBuV) 99.69	68.00 2480.00 Correct Factor (dB/m) -2.20	2 2492.00 Resu (dBuV 97.4	/ <b>m)</b> .9	Limit (dBuV/r	m)	Margin (dB) 	Remark
2485.640	55.24	-1.97	53.2	7	54.00	)	-0.73	AVG
	1	-			_			I

#### Below 1G Test Data





# Above 1G Test Data

	st Mode		IEEE	802.11b Lo			emp/H			(°C)/ 4€	
	st Item			Harmonic			est Da			rch 27,	
	olarize			Vertical			t Engi			D Chia	
De	etector		Pea	ak and Aver	age	le	st Volt	age	120	)Vac/6	<u>50Hz</u>
110.0	dBm										_
									Limi Limi		
										lz. —	
-											
-											
-											-
70											{
											1
-		1 X		- ×							-
			3 X								1
		2 X	Î	6							
			4	Î							1
30.0			Ï								
10	00.000 3550.0	)0 610	0.00 86	50.00 11200.0	0 13750.00	16300.	00 188	50.00 214	00.00	26500.00	MHz
Frog	uency	Bee	ding	Correct	Resu			imit	Morgi	n	
	lHz)		BuV)	Factor (dB/m)	(dBuV			uV/m)	Margi (dB)		Remark
				(							
4827	7.000	46	.99	5.11	52.1	10	74	4.00	-21.9	0	peak
	7.000 7.000		.99 .73		52.1 41.8			4.00 4.00	-21.9 -12.1		peak AVG
4827		36		5.11		34	54			6	·
4827 7236	7.000	36 33	.73	5.11 5.11	41.8	34 10	54 74	4.00	-12.1	6 0	AVG
4827 7236 7236	7.000 6.000	36 33 23	.73 .39	5.11 5.11 12.71	41.8 46.1	34 10 94	54 74 54	4.00 4.00	-12.1 -27.9	6 0 6	AVG peak

- 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 Lo	w CH	Temp/Hum		)/ 46%RI
Test Item		Harmonic		Test Date		27, 2017
Polarize	<b>.</b>	Horizontal		Test Engineer		Chiang
Detector	Pea	ak and Aver	age	Test Voltage	120Va	c / 60Hz
110.0 dBm						
					Limit1:	—
					Limit2:	—
70						
		5 X				
	x 3	6				
	2x 4					
30.0 1000.000 3550.	00 6100.00 8	650.00 11200.00	) 13750.00	16300.00 18850.00 21	1400.00 26	500.00 MHz
		Correct	_			
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/n		Margin (dB)	Remarl
4827.000	46.24	5.11	51.35	74.00	-22.65	peak
4827.000	35.73	5.11	40.84	54.00	-13.16	AVG
7236.000	33.67	12.71	46.38	74.00	-27.62	peak
	23.19	12.71	35.90	54.00	-18.10	AVG
7236.000		17.60	59.45	74.00	-14.55	peak
7236.000 9648.000	41.85	17.60				
	41.85 31.32	17.60	48.92	54.00	-5.08	AVG

- 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

LOCT ITO	de	IEEE	802.11b M	Id CH		emp/H			°C)/ 46	
Test Iter Polarize			Harmonic Vertical			est Da			<u>h 27, 2</u>	
Detecto		Pea	k and Aver	ade		st Engi st Volt			D Chiaı Vac / 6	
110.0 dBm								Limit1 Limit2		
70	1 2 2 550.00 61	3 4 100.00 86	50.00 11200.00	) 13750.00	16300.	.00 188	50.00 214(		26500.00	MHz
Frequency (MHz)		eading IBuV)	Correct Factor (dB/m)	Resı (dBuV			imit uV/m)	Margin (dB)	R	emark
4876.000	4	8.21	5.24	53.4	5	74	4.00	-20.55	k	beak
4876.000	3	7.03	5.24	42.2	27	54	4.00	-11.73		٩VG
7311.000	3	3.60	12.94	46.5	54	74	4.00	-27.46	k	beak
7311.000	2	2.73	12.94	35.6	57	54	4.00	-18.33		٩VG
	3	3.18	17.60	50.7	'8	74	4.00	-23.22	F	beak
9748.000			17.60	39.8		t _	4.00	-14.18		AVG

- 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	IEE	EE 802.11b N		Temp/Hum		)/ 46%Rł
Test Item		Harmonic		Test Date		27, 2017
Polarize		Horizontal		Test Engineer		Chiang
Detector	P	eak and Ave	rage	Test Voltage	120Va	c / 60Hz
110.0 dBm						
					Limit1:	—
					Limit2:	_
70						
		5				
	1	5 X				
	Ŷ					
	Š	K K				
	¥					
	×	2				
30.0						
1000.000 3550	.00 6100.00	8650.00 11200.0	10 13750.00 16	300.00 18850.00 21	400.00 26	500.00 MHz
			•			
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4876.000	48.05	5.24	53.29	74.00	-20.71	peak
4876.000	37.42	5.24	42.66	54.00	-11.34	AVG
7311.000	34.32	12.94	47.26	74.00	-26.74	peak
7311.000	24.00	12.94	36.94	54.00	-17.06	AVG
9748.000	41.00	17.60	58.60	74.00	-15.40	peak
9740.000						

- 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 Mod			802.11b Hi	gii Oli		emp/Hu		23.6(		
Test Iter			Harmonic			est Dat			ch 27, 2	
Polarize			Vertical			t Engin			D Chiar	
Detecto	r	Pea	ak and Ave	rage	Te	st Volta	ige	120	Vac / 60	OHz
110.0 dBm										
								Limit1		
								Limit2	<u> </u>	
70										
	1		5							
		3 X	×							
	2 X		6							
	2 X		6 X							
30.0	÷.	*	6 X							
30.0	\$ 550.00 6	4 X 100.00 86	<b>6</b> 550.00 11200.0	0 13750.00	16300.	00 18850.	.00 214(	0.00	26500.00	<b>4</b> Hz
	550.00 6	4 × 100.00 86	<b>§</b> 550.00 11200.0	0 13750.00	16300.	00 18850.	.00 2140	00.00	26500.00	<b>4</b> Hz
1000.000 3										<b>4</b> Hz
	Re	100.00 84 eading IBuV)	550.00 11200.0 Correct Factor (dB/m)	0 13750.00 Rest (dBuV	ult	00 18850. Lin (dBu'	nit	00.00 Margin (dB)		4Hz emar
1000.000 3	Re (c	ading	Correct Factor	Resi	ılt //m)	Lin	nit V/m)	Margin	<sup>n</sup> Re	
1000.000 3 Frequency (MHz)	Re (c	eading IBuV)	Correct Factor (dB/m)	Rest (dBuV	ult 1/m) 1/4	Lin (dBu'	nit V/m) 00	Margin (dB)	Re	emar
1000.000 3 Frequency (MHz) 4925.000	Re (c	eading IBuV) 8.37	Correct Factor (dB/m) 5.37	Resi (dBuV 53.7	ult //m) /4 58	Lin (dBu' 74.	nit V/m) 00 00	Margin (dB) -20.26	Re p	e <b>mar</b> beak
1000.000 3 Frequency (MHz) 4925.000 4925.000	Re (c 4 3 3	eading IBuV) 8.37 37.21	Correct Factor (dB/m) 5.37 5.37	Resi (dBuV 53.7 42.5	ult //m) /4 9	Lin (dBu) 74. 54.	nit V/m) 00 00 00	Margin (dB) -20.26 -11.42	Р <b>Re</b> 6 рр 2 А	emar beak
1000.000 3 Frequency (MHz) 4925.000 4925.000 7386.000	Re (c 4 3 3 2	eading IBuV) 8.37 97.21 95.02	Correct Factor (dB/m) 5.37 5.37 13.17	Resu (dBuV 53.7 42.5 48.1	ult //m) /4 88 9 34	Lin (dBu 74. 54. 74.	nit V/m) 00 00 00 00	Margin (dB) -20.26 -11.42 -25.81	Re p A p	emar beak AVG beak

- 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		E 802.11b Hi	gireir	Temp/H			)/ 46%RI
Test Item		Harmonic		Test Da			27, 2017
Polarize Detector	C	Horizontal Peak and Aver	anc	Test Eng Test Vol		ED Chiang 120Vac / 60H	
110.0 dBm						Limit1: Limit2:	
70		5 X 3 X X X					
30.0 1000.000 3550.0	00 6100.00	4 X 8650.00 11200.00	0 13750.00	16300.00 188	50.00 214	00.00 2	6500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m		imit uV/m)	Margin (dB	Remark
		Factor		) (dB			Remark
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m	i) (dB	uV/m)	(dB	
(MHz) 4925.000	( <b>dBuV</b> ) 49.55	Factor (dB/m) 5.37	(dBuV/m 54.92	) (dB 7 5	<b>uV/m)</b> 4.00	(dB -19.08	peak
(MHz) 4925.000 4925.000	(dBuV) 49.55 37.82	Factor (dB/m)           5.37           5.37	(dBuV/m 54.92 43.19	) (dB 7 5 7	<b>uV/m)</b> 4.00 4.00	(dB -19.08 -10.81	peak AVG
(MHz) 4925.000 4925.000 7386.000	(dBuV) 49.55 37.82 34.28	Factor (dB/m)           5.37           5.37           13.17	(dBuV/m 54.92 43.19 47.45	) (dB 7 5 7 7 5	<b>uV/m)</b> 4.00 4.00 4.00	(dB -19.08 -10.81 -26.55	peak AVG peak

- 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

	st Mode		IEEE	802.11g Lo	w CH		emp/H			°C)/ 46%ŀ
	st Item			Harmonic			est Da			ch 27, 201
	olarize			Vertical			st Eng			Chiang
De	etector		Pea	ak and Aver	age	le	st Volt	age	120	Vac / 60H
110.0	dBm									
Γ									Limit1	
									Limit2	-
_										
70										
-										
Ļ										
-		1	3 X	X						
		1 X 	X							
-			4							
30.0		¥	X							
	00.000 3550.0	0 610	00.00 86	650.00 11200.00	0 13750.00	16300.	00 188	50.00 214	00.00	26500.00 MHz
	uency Hz)		ading BuV)	Correct Factor (dB/m)	Resເ (dBuV			imit uV/m)	Margin (dB)	Rema
				(ab/m)		,				
4820	0.000	4(	0.70	5.09	45.7		-	4.00	-28.21	pea
	0.000 0.000		).70 9.29		45.7 34.3	<b>7</b> 9	7	4.00 4.00	-28.21 -19.62	
4820		29		5.09		79 88	7			AVC
4820 7236	0.000	29 33	9.29	5.09 5.09	34.3	79 38 58	7- 5- 7-	4.00	-19.62	AVC
4820 7236 7236	0.000 6.000	29 33 23	9.29 3.87	5.09 5.09 12.71	34.3 46.5	79 38 58 34	7- 5- 7- 5-	4.00 4.00	-19.62 -27.42	AVC pea AVC

- 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

			802.11g			mp/H			(°C)/ 46%	
Test Item			Harmon			est Da			ch 27, 2	
Polarize			Horizont			t Engi			D Chian	
Detector		Pea	k and Av	erage	les	st Volt	age	120	Vac / 60	)Hz
110.0 dBm								Limit1 Limit2		
	1X	лх 4Х	5 X 6 X				50.00 214			
30.0 1000.000 3550	.00 6100	0.00 86	50.00 1120	0.00 13750.00	16300.0	0 188	50.00 214	JU. UU	26500.00 M	IHz
1000.000 3550	.00 6100 Read	ding	50.00 1120 Correct Factor (dB/m)		ult	L	imit uV/m)	Margin (dB)		
1000.000 3550 Frequency	Read	ding uV)	Correct Factor	Resu	ult //m)	L (dB	imit	Margin	n Rei	marl
1000.000 3550 Frequency (MHz)	Read (dB	ding uV)	Correct Factor (dB/m)	Rest (dBuV	ult //m) 74	L (dB 74	imit uV/m)	Margin (dB)	Rei	marl
1000.000 3550 Frequency (MHz) 4827.000	Read (dB 41. 30.	ding uV) .63	Correct Factor (dB/m) 5.11	Resu (dBuV 46.7	ult //m) 74 17	L (dB 74	imit uV/m) 4.00	Margin (dB) -27.26	Rei	<b>mar</b> eak
1000.000 3550 Frequency (MHz) 4827.000 4827.000	Read (dB 41. 30. 33.	ding uV) .63 .36	Correct Factor (dB/m) 5.11 5.11	Resu (dBuV 46.7 35.4	ult //m) 74 17 95	L (dB 74 54	imit uV/m) 4.00 4.00	Margin (dB) -27.26 -18.53	Rei B Pe B A	mar eak VG
1000.000 3550 Frequency (MHz) 4827.000 4827.000 7236.000	Read (dB 41. 30. 33. 21.	ding uV) .63 .36 .24	Correct Factor (dB/m) 5.11 5.11 12.71	Resu (dBuV 46.7 35.4 45.9	ult //m) 74 47 95 56	L (dB 74 54 74	imit uV/m) 4.00 4.00 4.00	Margin (dB) -27.26 -18.53 -28.05	Rei Rei A A A	mar eak VG eak

- 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		802.11g Mi		Temp/Hu		<b>23.6(</b> °(	-
Test Item		Harmonic		Test Dat			<u>127, 2017</u>
Polarize	D-	Vertical		Test Engir			Chiang
Detector	Pe	ak and Aver	age	Test Volta	ige	1200	ac / 60Hz
110.0 dBm							
						Limit1:	—
						Limit2:	_
70							
		5					
		×					
	* 4	×					
30.0							
1000.000 3550.0	00 6100.00 8	650.00 11200.00	13750.00 1	6300.00 18850	.00 2140	0.00	26500.00 MHz
Frequency	Reading	Correct	Result		nit	Margin	Bomarl
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)			Margin (dB)	Remark
		Factor		(dBu			Remark
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBu	V/m)	(dB)	Remark peak AVG
(MHz) 4876.000	(dBuV) 45.17	Factor (dB/m) 5.24	<b>(dBuV/m)</b> 50.41	(dBu 74 54	<b>V/m)</b> 00	(dB) -23.59	peak
(MHz) 4876.000 4876.000	(dBuV) 45.17 34.32	Factor (dB/m)           5.24           5.24	(dBuV/m) 50.41 39.56	(dBu 74 54 74	<b>V/m)</b> 00 00	(dB) -23.59 -14.44	peak AVG
(MHz) 4876.000 4876.000 7311.000	(dBuV) 45.17 34.32 33.83	Factor (dB/m)           5.24           5.24           12.94	(dBuV/m) 50.41 39.56 46.77	(dBu 74 54 74 54	V/m) 00 00 00	(dB) -23.59 -14.44 -27.23	peak AVG peak

- 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	IEE	E 802.11g M	id CH	-	o/Hum		)/ 46%RF
Test Item		Harmonic			Date		27, 2017
Polarize Detector	D	Horizontal eak and Aver			ngineer /oltage	ED Chiang 120Vac / 60Hi	
110.0 dBm						Limit1: Limit2:	
70	1 X X	5 X					
30.0 1000.000 3550.0	2 * 4 00 6100.00	8650.00 11200.00	0 13750.00	16300.00	18850.00 214	00.00 26	6500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Resul (dBuV/r		Limit (dBuV/m)	Margin (B)	Remark
4876.000	45.21	5.24	50.45	5	74.00	-23.55	peak
	34.40	5.24	39.64	ł	54.00	-14.36	AVG
4876.000	01.10				74.00	-27.42	i .
4876.000 7311.000	33.64	12.94	46.58	3	74.00	-21.42	peak
		12.94 12.94	46.58 35.27		54.00	-18.73	peak AVG
7311.000	33.64			,		_	

- 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		EE 802				emp/H			°C)/46	
Test Item Polarize			armonic ertical			est Da t Engi			ch 27, 2 D Chiai	
Detector			ind Ave	rage		st Volt			Vac / 6	
		r ourra		lago	10		ago	120	14070	0112
110.0 dBm								Limit1	: -	
								Limit2	<u> </u>	
70										
	1 X	3 X	5 X							
	Î									
	2 X	4 *	×							
30.0	0 6100.00	) 8650.00	11200.0	0 13750.00	16300.	00 100	50.00 2140	0.00	26500.00	
1000.000 5550.1	DU 6100.00	0050.00	11200.0	10 13730.00	10300.	.00 100;	JU. UU 2140	0.00	20300.00	MNZ
Frequency (MHz)	Readir (dBuV	ng i	Correct Factor (dB/m)	Res (dBu\			imit uV/m)	Margin (dB)	R	emar
4925.000	41.93	3	5.37	47.3	30	74	4.00	-26.70	) k	beak
4925.000	31.07	7	5.37	36.4	14	54	4.00	-17.56		AVG
7386.000	34.63	3	13.17	47.8	30	74	4.00	-26.20	p k	beak
7386.000	23.09	)	13.17	36.2	26	54	4.00	-17.74	. /	٩VG
9848.000	31.65	5	17.60	49.2	25	74	4.00	-24.75	i p	beak
	20.94	1	17.60	38.5	54	54	4.00	-15.46		٩VG
9848.000	20.0-	•		00.0						
9848.000	20.3-	<u> </u>			·					

- 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	E 802.11g Hi	gh CH	Temp			)/ 46%RF
Test Item		Harmonic		Test			27, 2017
Polarize		Horizontal		Test Er			Chiang
Detector	Pe	eak and Aver	age	Test V	oltage	120Va	ac / 60Hz
110.0 dBm						Limit1: Limit2:	_
70		5 5 8650.00 11200.00	0 13750.00	16300.00	18850.00 214	00.00 2	6500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/n		Limit dBuV/m)	Margin (dB	Remark
4925.000	43.09	5.37	48.46		74.00	-25.54	peak
	32.22	5.37	37.59		54.00	-16.41	AVG
4925.000		13.17	48.29		74.00	-25.71	peak
4925.000 7386.000	35.12					1	1
	35.12 24.48	13.17	37.65		54.00	-16.35	AVG
7386.000			37.65 57.68		54.00 74.00	-16.35 -16.32	AVG peak

- 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

		IEEE 802.11n HT20 Low CH Harmonic				um	23.6(°C)/ 46%R	
Test Item					est Da			27, 2017
Polarize Detector		Vertical and Averag	۵		t Engi st Volt			Chiang ac / 60Hz
Delector	Teak	and Averag	C	10.		aye	12008	
110.0 dBm							Limit1:	
							Limit2:	_
70								
		E						
	1 X 2	S X						
	4	Б Х						
	*	Ť.						
30.0	* 4							
30.0 1000.000 355	0.00 6100.00 8	650.00 11200.00	0 13750.00	16300.0	DO 1889	50.00 214	00.00 20	6500.00 MHz
	0.00 6100.00 8		0 13750.00	16300.0	DO 188!	50.00 214	00.00 21	6500.00 MHz
	0.00 6100.00 8		0 13750.00	16300.1	00 1885	50.00 214	00.00 21	6500.00 MHz
	0.00 6100.00 8 Reading (dBuV)		0 13750.00 Rest (dBuV	ılt	L	50.00 214 imit uV/m)	00.00 21 Margin (dB)	
1000.000 355	Reading	650.00 11200.00 Correct Factor	Resi	ult //m)	L (dB	imit	Margin	
Frequency (MHz)	Reading (dBuV)	650.00 11200.00 Correct Factor (dB/m)	Resi (dBuV	<b>.iit</b> <b>'/m)</b> 05	L (dB 74	imit uV/m)	Margin (dB)	R mark
1000.000 355 Frequency (MHz) 4827.000	Reading (dBuV) 43.94	650.00 11200.00 Correct Factor (dB/m) 5.11	Resu (dBuV 49.0	ult 7/m) 05 63	L (dB 74	<b>imit</b> uV/m) 4.00	Margin (dB) -24.95	R mark
1000.000 355 Frequency (MHz) 4827.000 4827.000	Reading (dBuV)           43.94           33.52	650.00 11200.00 Correct Factor (dB/m) 5.11 5.11	Resi (dBuV 49.0 38.6	ult //m) 05 03 11	L (dB 74 54	<b>imit</b> uV/m) 4.00 4.00	Margin (dB) -24.95 -15.37	R mark peak AVG
1000.000 355 Frequency (MHz) 4827.000 4827.000 7236.000	Reading (dBuV)           43.94           33.52           33.40	Correct Factor (dB/m) 5.11 5.11 12.71	Rest (dBuV 49.0 38.6 46.1	ult //m) 05 03 11	L (dB 74 54 74 54	<b>imit</b> <b>uV/m)</b> 4.00 4.00 4.00	Margin (dB) -24.95 -15.37 -27.89	R mark peak AVG peak
1000.000       355         Frequency (MHz)       4827.000         4827.000       7236.000         7236.000       7236.000	Reading (dBuV)           43.94           33.52           33.40           22.76	Correct Factor (dB/m) 5.11 5.11 12.71 12.71	Rest (dBuV 49.0 38.6 46.1 35.4	ult //m) 05 03 11 17 01	L (dB 74 54 74 54 74	imit uV/m) 4.00 4.00 4.00 4.00	Margin (dB) -24.95 -15.37 -27.89 -18.53	R mark peak AVG peak AVG
1000.000       355         Frequency (MHz)       4827.000         4827.000       7236.000         7236.000       9648.000	Reading (dBuV)           43.94           33.52           33.40           22.76           34.31	Correct Factor (dB/m) 5.11 5.11 12.71 12.71 12.71 17.60	Resu (dBuV 49.0 38.6 46.1 35.4 51.9	ult //m) 05 03 11 17 01	L (dB 74 54 74 54 74	imit uV/m) 4.00 4.00 4.00 4.00 4.00	Margin (dB) -24.95 -15.37 -27.89 -18.53 -22.09	R mark peak AVG peak AVG peak

- fundamental frequency.
   For above 10Hz the EUT peak value was under average limit, theref
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	IEEE 802.2		JWOIT		mp/Hum			)/ 46%RF
Test Item	F	larmonic		Τe	est Date	Ν	/larch	27, 2017
Polarize		orizontal			Enginee			Chiang
Detector	Peak	and Averag	е	Tes	st Voltage	;	120Va	c / 60Hz
110.0 dBm							Limit1: Limit2:	_
70		5 × 6 ×	13750.00	16300.0	0 18850.00	21400.00	21	5500.00 MHz
1000.000 0000.0	0 0100.00 00	11200.00	10100.00	10000.0		21100.00	2.	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Resu (dBuV/		Limit (dBuV/n		argin dB)	Remark
		Factor		/m)		n) (*		<b>Remark</b> peak
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/	<b>/m)</b> 4	(dBuV/n	n) (1 -2	dĒ)	
(MHz) 4827.000	(dBuV) 43.23	Factor (dB/m) 5.11	<b>(dBuV/</b> 48.34	/ <b>m)</b> 4 1	(dBuV/n 74.00	n) (1 -2 -1	d <b>Ē)</b> 5.66	
(MHz) 4827.000 4827.000	(dBuV) 43.23 32.80	Factor (dB/m) 5.11 5.11	(dBuV/ 48.34 37.97	/ <b>m)</b> 4 1 7	(dBuV/n 74.00 54.00	n) (r -2 -1 -2	d <b>B)</b> 5.66 6.09	peak AVG
(MHz) 4827.000 4827.000 7236.000	(dBuV) 43.23 32.80 34.66	Factor (dB/m)           5.11           5.11           12.71	(dBuV/ 48.34 37.91 47.37	/ <b>m)</b> 4 1 7 1	(dBuV/n 74.00 54.00 74.00	n) (* -2 -1 -2 -1 -2 -1	d <b>B)</b> 5.66 6.09 6.63	peak AVG peak

- 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 M	1id CH		emp/H			6(°C)/ 4€	
Test Item		larmonic			est Da			rch 27,	
Polarize		Vertical			t Engi			D Chia	
Detector	Peak	and Averag	е	Tes	st Volt	age	12	0Vac/6	50Hz
110.0 dBm							Limi		
70	1 X X X X X X X X X	5×							
30.0	0 6100.00 86		13750.00	16300.0	00 1885	in nn 21 <b>4</b>	00.00	26500.00	
Frequency	Reading (dBuV)	Correct Factor	Resu (dBuV/	lt	L	imit uV/m)	Margi (dB)	in E	mark
(MHz)	(UBUV)	(dB/m)	(abat)	,	•				
	(dBuv) 52.81	(dB/m) 5.24	58.0		-	4.00	-15.9	5	peak
(MHz)				5	74	4.00 4.00	-15.9 -4.06		peak AVG
(MHz) 4876.000	52.81	5.24	58.0	5	74 54			6	•
(MHz) 4876.000 4876.000	52.81 44.70	5.24 5.24	58.05 49.94	5 4 4	74 54 74	4.00	-4.06	6	AVG
(MHz) 4876.000 4876.000 7311.000	52.81 44.70 34.60	5.24 5.24 12.94	58.08 49.94 47.54	5 4 4 4	74 54 74 54	4.00 4.00	-4.06 -26.4	6 6	AVG peak

- 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 802.1	IEEE 802.11n HT20 Mid CH			np/Hum	<b>23.6(</b> ℃	)/ 46%R <mark>⊢</mark>
Test Item		Harmonic			st Date		27, 2017
Polarize		orizontal			Engineer		Chiang
Detector	Peak	and Average	e	Tes	t Voltage	120Va	c / 60Hz
110.0 dBm							
						Limit1: Limit2:	_
70							
	1 X	5 X					
	2 X	6 *					
30.0	4 X						
1000.000 3550	).00 6100.00 8	650.00 11200.00	) 13750.00	16300.00	) 18850.00 214	00.00 26	500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Resul (dBuV/i		Limit (dBuV/m)	Margin (dB)	Remark
4876.000	49.81	5.24	55.05	;	74.00	-18.95	peak
4876.000	40.68	5.24	45.92	2	54.00	-8.08	AVG
7311.000	34.69	12.94	47.63	3	74.00	-26.37	peak
7311.000	23.90	12.94	36.84		54.00	-17.16	AVG
9748.000	38.61	17.60	56.21		74.00	-17.79	peak

- 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

est Mode	IEEE 802.12	In HT20 Hig	gh CH	Temp/Hum		)/ 46%RH
Test Item		armonic		Test Date	March 27, 201	
Polarize		ertical		Test Engineer		Chiang
Detector	Peak a	and Average		Test Voltage	120Va	c / 60Hz
110.0 dBm						
					Limit1:	—
					Limit2:	_
70						
	1 3 X X	5 X				
	ÎÎ					
	2 4	6				
30.0	Ŷ Ž					
1000.000 35	50.00 6100.00 8	650.00 11200.00	) 13750.00 16	6300.00 18850.00 214	00.00 26	500.00 MHz
	_					
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4925.000	42.23	5.37	47.60	74.00	-26.40	peak
4925.000	31.11	5.37	36.48	54.00	-17.52	AVG
7386.000	34.04	13.17	47.21	74.00	-26.79	peak
7386.000	23.41	13.17	36.58	54.00	-17.42	AVG
9848.000	32.03	17.60	49.63	74.00	-24.37	peak
9848.000	20.84	17.60	38.44	54.00	-15.56	AVG

- 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 802.1	1n HT20 Hi	gh CH	Temp/Hum	<b>23.6(</b> °C	)/ 46%RF
Test Item		Harmonic				27, 2017
Polarize		orizontal		Test Engineer		Chiang
Detector	Peak a	and Average	e	Test Voltage	120Va	c / 60Hz
110.0 dBm						
					Limit1: Limit2:	_
70						
		5 X				
		6X				
30.0						
1000.000 355	0.00 6100.00 86	650.00 11200.00	) 13750.00 16	6300.00 18850.00 21	400.00 26	500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4925.000	41.69	5.37	47.06	74.00	-26.94	peak
4925.000	31.18	5.37	36.55	54.00	-17.45	AVG
7386.000	34.21	13.17	47.38	74.00	-26.62	peak
7386.000	23.64	13.17	36.81	54.00	-17.19	AVG
9848.000	37.90	17.60	55.50	74.00	-18.50	peak
			44.92		-9.08	

- 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

Fest Mode		11n HT40 Lo	ow CH	Temp/Hum		)/ 46%RF
Test Item		larmonic		Test Date		27, 2017
Polarize		Vertical		Test Engineer		Chiang
Detector	Реак	and Averag	e	Test Voltage	120Va	c / 60Hz
110.0 dBm						
					Limit1:	-
					Limit2:	
70						
	1 3	5 X				
	XXX					
	2	6				
	¥ ¥					
30.0 1000.000 3550	).00 6100.00 80	650.00 11200.00	) 13750.00 1	6300.00 18850.00 21	400.00 26	500.00 MHz
1000.000 3330		55.55 11255.55	13130.00	00000 10000.00 21	100.00 20	500.00 MTZ
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4841.000	41.98	5.14	47.12	74.00	-26.88	peak
4841.000	31.79	5.14	36.93	54.00	-17.07	AVG
7266.000	33.95	12.80	46.75	74.00	-27.25	peak
7266.000	22.80	12.80	35.60	54.00	-18.40	AVG
9688.000	32.03	17.60	49.63	74.00	-24.37	peak
9688.000	20.88	17.60	38.48	54.00	-15.52	AVG
3000.000						

- 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

Fest Mode		1n HT40 Lo		Femp/Hum		)/ 46%RF
Test Item		armonic		Test Date	March 27, 201	
Polarize		orizontal		st Engineer		Chiang
Detector	Peak	and Average	<u>э</u> То	est Voltage	120Va	c / 60Hz
110.0 dBm						
					Limit1: Limit2:	_
70						
		5				
		5 X6 X				
30.0	2 X					
1000.000 3550	1.00 6100.00 81	650.00 11200.00	) 13750.00 1630	0.00 18850.00 214	00.00 26	500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4844.000	38.84	5.15	43.99	74.00	-30.01	peak
4844.000	27.00	5.15	32.15	54.00	-21.85	AVG
	34.93	12.80	47.73	74.00	-26.27	peak
7266.000	00.00	12.80	36.48	54.00	-17.52	AVG
7266.000 7266.000	23.68	12.00			_	
	23.68 39.14	17.60	56.74	74.00	-17.26	peak

- 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		1n HT40 M	id CH	Temp/Hum		/ 46%RF
Test Item	Harmonic			Test Date	March 27, 201	
Polarize		/ertical		est Engineer		Chiang
Detector	Peak	and Average	e T	est Voltage	120Va	c / 60Hz
110.0 dBm						
					Limit1: Limit2:	_
70						
	1 X	5 X				
	2 X	6 *				
30.0 1000.000 3550.	00 6100.00 8	650.00 11200.00	13750.00 163	00.00 18850.00 214	400.00 26	500.00 MHz
1000.000 0000.		1200.00	10100.00 100	00.00 10000.00 214	100.00 20	555.55 Mile
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4869.000	46.91	5.22	52.13	74.00	-21.87	peak
	36.02	5.22	41.24	54.00	-12.76	AVG
4869.000	-					
4869.000 7311.000	33.12	12.94	46.06	74.00	-27.94	peak
			46.06 35.69	74.00 54.00	-27.94 -18.31	peak AVG
7311.000	33.12	12.94				-

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

Test Mode	IEEE 802.	11n HT40 N	/lid CH	Temp/Hum	<b>23.6(</b> °C)	)/ 46%RH
Test Item		Harmonic		Test Date		27, 2017
Polarize		lorizontal		est Engineer		Chiang
Detector	Peak	and Averag	je 7	est Voltage	120Va	c / 60Hz
110.0 dBm						
					Limit1: Limit2:	_
70						
		5 X				
		6X				
30.0						
1000.000 3550	.00 6100.00 8	650.00 11200.00	) 13750.00 163	00.00 18850.00 214	00.00 26	500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4869.000	44.29	5.22	49.51	74.00	-24.49	peak
4869.000	33.27	5.22	38.49	54.00	-15.51	AVG
7311.000	34.21	12.94	47.15	74.00	-26.85	peak
7311.000	23.61	12.94	36.55	54.00	-17.45	AVG
	38.53	17.60	56.13	74.00	-17.87	peak
9748.000	00.00	17.00	00110			

- 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

est Mode		11n HT40 Hi	g e		mp/Hum		)/ 46%RF
Test Item		larmonic			est Date	March	27, 2017
Polarize		Vertical			Engineer		Chiang
Detector	Peak	and Average	е	Tes	t Voltage	120Va	c / 60Hz
110.0 dBm							
						Limit1: Limit2:	_
70							
10							
		5					
		5X 66					
30.0	2 4 * *						
1000.000 3550	0.00 6100.00 8	3650.00 11200.00	D 13750.00	16300.0	0 18850.00 21	400.00 20	6500.00 MHz
	0.00 6100.00 8 Reading (dBuV)	Correct Factor (dB/m)	0 13750.00 Resu (dBuV/	lt	0 18850.00 21 Limit (dBuV/m)	400.00 20 Margin (dB)	
1000.000 3550 Frequency	Reading	Correct Factor	Resu	lt ′m)	Limit	Margin	
1000.000 3550 Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Resu (dBuV/	<b>It</b> / <b>m)</b>	Limit (dBuV/m)	Margin (dB)	Remark
1000.000 3550 Frequency (MHz) 4904.000	Reading (dBuV) 41.29	Correct Factor (dB/m) 5.31	<b>Resu</b> (dBuV/ 46.60	<b>It</b> ( <b>m</b> ) D	Limit (dBuV/m) 74.00	Margin (dB) -27.40	<b>Remark</b> peak
1000.000 3550 Frequency (MHz) 4904.000 4904.000	Reading (dBuV)           41.29           30.53	Correct Factor (dB/m) 5.31 5.31	<b>Resu</b> (dBuV/ 46.60 35.84	lt /m) 0 4 3	Limit (dBuV/m) 74.00 54.00	Margin (dB) -27.40 -18.16	Remark peak AVG
1000.000 3550 Frequency (MHz) 4904.000 4904.000 7356.000	Reading (dBuV)           41.29           30.53           33.55	Correct Factor (dB/m) 5.31 5.31 13.08	Resu (dBuV/ 46.60 35.84 46.60	lt /m) 0 4 3 1	Limit (dBuV/m) 74.00 54.00 74.00	Margin (dB) -27.40 -18.16 -27.37	Remark peak AVG peak

- 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 802.1	IEEE 802.11n HT40 High CH			np/Hum	23.6(°∁)/ 46%R	
Test Item		armonic			st Date	March 27, 2017	
Polarize		orizontal			Engineer		Chiang
Detector	Peak	and Average	e	Test	t Voltage	120Va	c / 60Hz
110.0 dBm							
						Limit1: Limit2:	_
70							
		E					
		5 X					
		Š.					
30.0	2 4 * *						
1000.000 355	D.00 6100.00 8	650.00 11200.00	) 13750.00	16300.00	18850.00 214	00.00 26	500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/r		Limit (dBuV/m)	Margin (dB)	Remark
4904.000	39.80	5.31	45.11		74.00	-28.89	peak
4904.000	30.15	5.31	35.46		54.00	-18.54	AVG
7356.000	33.19	13.08	46.27		74.00	-27.73	peak
7356.000	22.76	13.08	35.84		54.00	-18.16	AVG
9811.000	40.50	17.60	58.10		74.00	-15.90	peak
9811.000	29.75	17.60	47.35		54.00	-6.65	AVG

- 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