

# FCC 47 CFR PART 15 SUBPART C

for

802.11ac VDSL2 IAD, 802.11ac VDSL2 GATEWAY

Model: SR616ac, SR516ac

**Brand: SmartRG** 

Test Report Number: C170704Z01-RP1-1 Issued Date: September 11, 2017

Issued for

SmartRG Inc.

501 SE Columbia Shores Boulevard, Suite 500 Vancouver, Washington 98661

Issued by:

### Compliance Certification Services (Shenzhen) Inc.

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# **Revision History**

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	September 11, 2017	Initial Issue	ALL	Sabrina Wang



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# **1 TEST CERTIFICATION**

Product	802.11ac VDSL2 IAD, 802.11ac VDSL2 GATEWAY
Model	SR616ac, SR516ac
Brand	SmartRG
Tested	July 4~ September 11, 2017
Applicant	SmartRG Inc. 501 SE Columbia Shores Boulevard, Suite 500 Vancouver, Washington 98661
Manufacturer	SmartRG Inc. 501 SE Columbia Shores Boulevard, Suite 500 Vancouver, Washington 98661

APPLICABLE STANDARDS					
Standard Test Type		Standard	Test Type		
15.207(a)	Power Line Conducted Emissions	15.247(d) 15.209(a)	<ul> <li>Spurious Emissions</li> <li>Conducted Measurement</li> <li>Radiated Emissions</li> </ul>		
15.247(a)(2)	6dB Bandwidth Measurement	15.247(b)(3) 15.247(b)(4)	Peak Power Measurement		
15.247(d)	Band Edges Measurement	15.247(e)	Peak Power Spectral Density		

### We hereby certify that:

The above equipment was tested by Compliance Certification Services (Shenzhen) Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in **ANSI C63.10: 2013** and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247. The test results of this report relate only to the tested sample EUT identified in this report.

#### Approved by:

hant

Sunday Hu Supervisor of EMC Dept. Compliance Certification Services (Shenzhen) Inc. Reviewed by:

Ruby Zhang Supervisor of Report Dept. Compliance Certification Services (Shenzhen) Inc.



# 2 TEST RESULT SUMMARY

	APPLICABLE STANDARDS					
Standard	Test Type	Result	Remark			
15.247(a)(2)	6dB Bandwidth Measurement	Pass	Meet the requirement of limit.			
15.247(b)(3) 15.247(b)(4)	Peak Power Measurement	Pass	Meet the requirement of limit.			
15.247(d)	Band Edges Measurement	Pass	Meet the requirement of limit.			
15.247(e)	Peak Power Spectral Density	Pass	Meet the requirement of limit.			
15.247(d) 15.209(a)	<ul> <li>Spurious Emissions</li> <li>Conducted Measurement</li> <li>Radiated Emissions</li> </ul>	Pass	Meet the requirement of limit.			
15.207(a)	Power line Conducted Emissions	Pass	Meet the requirement of limit.			

Note: 1. The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.

2. The information of measurement uncertainty is available upon the customer's request.



# **3 EUT DESCRIPTION**

Product	802.11ac VDSL2 IAD, 802.11ac VDSL2 GATEWAY		
Model Number	SR616ac, SR516ac		
Brand	SmartRG		
<b>Model Discrepancy</b> Compare with the two models, the model SR516ac is less than two SR516ac.			
Identify Number C170704Z01-RP1-1			
Received Date	July 4, 2017		
EUT Power Rating	DC12V supply by the adapter		
Adapter Manufacturer & Model	Shenzhen Gongjin Electronics Co., Ltd. / S24B72-120A200-C4 Input: AC100-240V~50/60Hz max 0.8A Output: DC12V 2A DC Output Cable: Unsheilded1.00m		
Transmit Power	IEEE 802.11b mode: 19.45dBm (Antenna 0) IEEE 802.11b mode: 19.53dBm (Antenna 1) IEEE 802.11g mode: 22.37dBm (Antenna 0) IEEE 802.11g mode: 21.26dBm (Antenna 1) IEEE 802.11n HT20 MHz mode: 26.61dBm(Combine with Antenna 0 and Antenna 1) IEEE 802.11n HT40 MHz mode: 26.43dBm(Combine with Antenna 0 and Antenna 1)		
Modulation Technique	IEEE 802.11b mode: DSSS(CCK,QPSK, BPSK) IEEE 802.11g mode: OFDM (BPSK/QPSK/16QAM/64QAM) IEEE 802.11n HT20 MHz mode: OFDM (BPSK/QPSK/16QAM/64QAM) IEEE 802.11n HT40 MHz mode: OFDM (BPSK/QPSK/16QAM/64QAM)		
Transmit Data Rate	IEEE 802.11b: 11Mbps(CCK) with fall back rates of 5.5/2/1Mbps IEEE 802.11g: 54Mbps with fall back rates of 48/36/24/18/12/9 /6Mbps IEEE 802.11n HT20: 130Mbps with fall back rates of 130/117/104/ 78/52/39/26/13Mbps IEEE 802.11n HT40: 270Mbps with fall back rates of 270/243/216/ 162/108/81/54/27Mbps		
Number of Channels	IEEE 802.11b mode: 11 Channels IEEE 802.11g mode: 11 Channels IEEE 802.11n HT20 MHz mode: 11 Channels IEEE 802.11n HT40 MHz mode: 7 Channels		
Antenna Specification	Embedded Antenna 0 with 2dBi gain (Max) Embedded Antenna 1 with 2dBi gain (Max)		
Channels Spacing	IEEE 802.11b/g ,802.11n HT20/HT40 : 5MHz		
Temperature Range	$0^{\circ}C \sim +40^{\circ}C$		
Hardware Version	A0		
Software Version	1.0.0.75		

Note: 1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: <u>VW7SR616A</u> filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



# 4 TEST METHODOLOGY

### **4.1. DESCRIPTION OF TEST MODES**

The EUT has been tested under operating condition.

Use Mtool to control the EUT for staying in continuous transmitting and receiving mode.

Test Item	Item Test mode	
Conducted Mode 1: 1000Mbps 20%(AC120V/60Hz)		$\square$
Emission	Mode 2: 1000Mbps 20%(AC240V/50Hz)	$\square$
Radiated Emission	Mode 1: Continuously Transmitting	$\square$

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in normal link mode only, and power line conducted emission below 30MHz, which worst case was in normal link mode.

IEEE802.11b mode: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE802.11g mode: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT20 MHz mode: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 13Mbps data rate were chosen for full testing.

IEEE 802.11n HT40 MHz mode: Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 27Mbps data rate were chosen for full testing.



# 5 SETUP OF EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Brand	Data Cable	Power Cord
1	Notebook 1	E335	N/A	DoC	Thinkpad	Unshielded 2.00m	Unshielded 1.20m (AC Cable) Shielded 1.50m (DC Cable)
2	Notebook 2	Probook 5310M	N/A	DoC	HP	Unshielded 2.00m	Unshielded 1.20m (AC Cable) Shielded 1.50m (DC Cable)
3	lpod	A1285	YM91546Y3 QY	DoC	Apple	Shielded 2.00m	N/A
4	OLT	9806	N/A	DoC	ZTE	Unshielded 8.00m	N/A
5	Telephone 1	HCD6238	N/A	DoC	CHINO-E	Unshielded 1.00m	N/A
6	Telephone 2	HCD868	N/A	DoC	TCL	Unshielded 1.00m	N/A

#### Note:

Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

### **5.2. CONFIGURATION OF SYSTEM UNDER TEST**

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.



# 6 FACILITIES AND ACCREDITATIONS

### 6.1. FACILITIES

All measurement facilities used to collect the measurement data are located at No.10-1 Mingkeda Logistics park, No.18, Huanguan South Rd., Guan Lan Town, Baoan District, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.10, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

# **6.2. ACCREDITATIONS**

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

USA	A2LA
China	CNAS

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

USA	FCC
Japan	VCCI (C-4815,R-4320,T-2317, G-10624)
Canada	INDUSTRY CANADA

Copies of granted accreditation certificates are available for downloading from our web site, <u>http://www.ccssz.com</u>

### 6.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Parameter	Uncertainty
Radiated Emission, 30 to 200 MHz Test Site : 966(2)	+/-3.6880dB
Radiated Emission, 200 to 1000 MHz Test Site : 966(2)	+/-3.6695dB
Radiated Emission, 1 to 8 GHz	+/-5.1782dB
Radiated Emission, 8 to 18 GHz	+/-5.2173dB
Conducted Emissions	+/-3.6836dB
Band Width	178kHz
Peak Output Power MU	+/-1.906dB
Band Edge MU	+/-0.182dB
Channel Separation MU	416.178Hz
Duty Cycle MU	0.054ms
Frequency Stability MU	226Hz

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

The measured result is above (below) the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance (non-compliance) is more probable than non-compliance) with the specification limit.



# 7 FCC PART 15.247 REQUIREMENTS

### 7.1. POWER LINE CONDUCTED EMISSIONS MEASUREMENT

### 7.1.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

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	

NOTE:

(1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

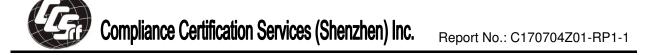
(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 7.1.2. TEST INSTRUMENTS

	Conducted Emission Test Site											
Name of Equipment	Manufacturer Model Number Serial Number		Last Calibration	Due Calibration								
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	02/21/2017	02/20/2018							
LISN(EUT)	ROHDE&SCHWARZ	ENV216	101543-WX	02/21/2017	02/20/2018							
LISN	EMCO	3825/2	8901-1459	02/21/2017	02/20/2018							
Temp. / Humidity Meter	VICTOR	HTC-1	N/A	02/21/2017	02/20/2018							
Test S/W	FARAD		EZ-EMC/ CCS-3A	1-CE								

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. N.C.R = No Calibration Request.

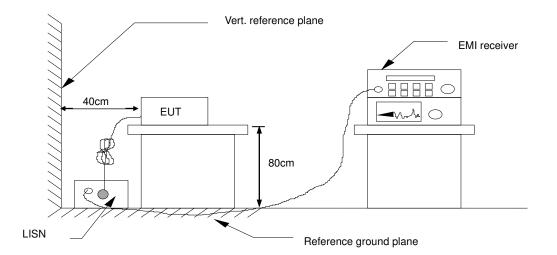


#### 7.1.3. TEST PROCEDURES (please refer to measurement standard)

- The EUT and Support equipment, if needed, was placed on a non-conducted table, which is 0.8m above the ground plane and 0.4m away from the conducted wall.
- The test equipment EUT installed received AC main power, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane. All support equipment power received from a second LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The frequency range from 150 kHz to 30 MHz was searched. The test data of the worst-case condition(s) was recorded. Emission levels under limit 20dB were not recorded.



### 7.1.4. TEST SETUP



For the actual test configuration, please refer to the related item - Photographs of the Test Configuration.

### 7.1.5. DATA SAMPLE

Frequency (MHz)		Average Reading (dBuV)		QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Margin	Remark (Pass/Fail)
XXX.XXXX	32.69	25.65	11.52	44.21	37.17	65.78	55.79	-21.57	-18.62	Pass

Factor = Insertion loss of LISN + Cable Loss

Result = Quasi-peak Reading/ Average Reading + Factor

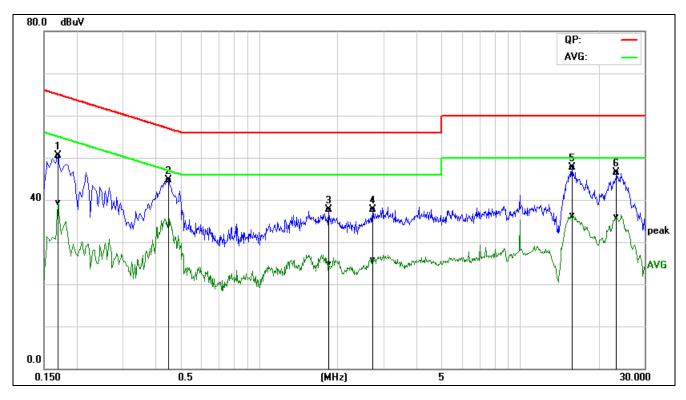
Limit = Limit stated in standard

Margin = Result (dBuV) – Limit (dBuV)



### 7.1.6. TEST RESULTS

		RBW,VBW	9 kHz
Environmental Conditions	22°C, 45% RH	Test Mode	Mode 1
Tested by	Luja Huang	Line	L1
Test Date	July 19, 2017	Test Voltage	AC120V/60Hz

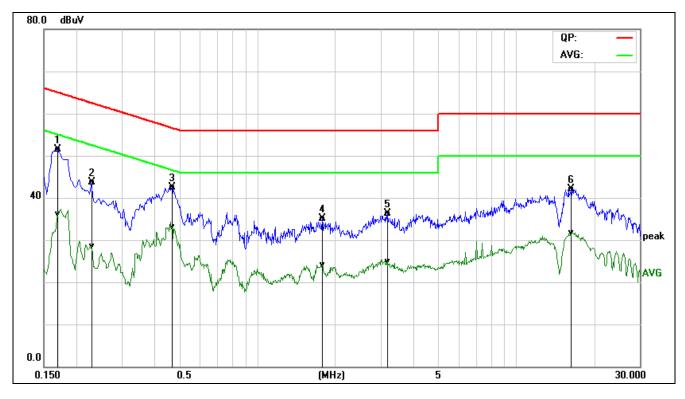


Frequency (MHz)		Average Reading (dBuV)		QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)	Line (L1/L2)
0.1700	30.77	19.76	19.63	50.40	39.39	64.96	54.96	-14.56	-15.57	Pass	L1
0.4500	25.19	14.33	19.55	44.74	33.88	56.87	46.88	-12.13	-13.00	Pass	L1
1.8580	17.95	5.05	19.70	37.65	24.75	56.00	46.00	-18.35	-21.25	Pass	L1
2.7220	18.04	6.05	19.72	37.76	25.77	56.00	46.00	-18.24	-20.23	Pass	L1
15.8700	27.72	16.19	20.06	47.78	36.25	60.00	50.00	-12.22	-13.75	Pass	L1
23.4260	26.01	15.56	20.40	46.41	35.96	60.00	50.00	-13.59	-14.04	Pass	L1

**REMARKS:** L1 = Line One (Live Line)



Model No.		RBW,VBW	9 kHz
Environmental Conditions	22°C, 45% RH	Test Mode	Mode 1
Tested by	Luja Huang	Line	L2
Test Date	July 19, 2017	Test Voltage	AC120V/60Hz

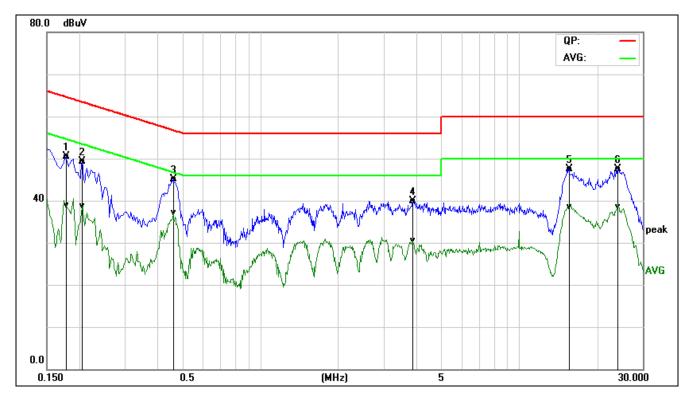


Frequency (MHz)		Average Reading (dBuV)		QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Margin	Remark (Pass/Fail)	Line (L1/L2)
0.1700	31.92	16.50	19.53	51.45	36.03	64.96	54.96	-13.51	-18.93	Pass	L2
0.2300	24.20	9.03	19.54	43.74	28.57	62.45	52.45	-18.71	-23.88	Pass	L2
0.4700	22.95	13.52	19.53	42.48	33.05	56.51	46.51	-14.03	-13.46	Pass	L2
1.7860	15.51	4.48	19.68	35.19	24.16	56.00	46.00	-20.81	-21.84	Pass	L2
3.2020	16.64	5.14	19.76	36.40	24.90	56.00	46.00	-19.60	-21.10	Pass	L2
16.3860	22.08	11.60	20.07	42.15	31.67	60.00	50.00	-17.85	-18.33	Pass	L2

**REMARKS:** L2 = Line Two (Neutral Line)



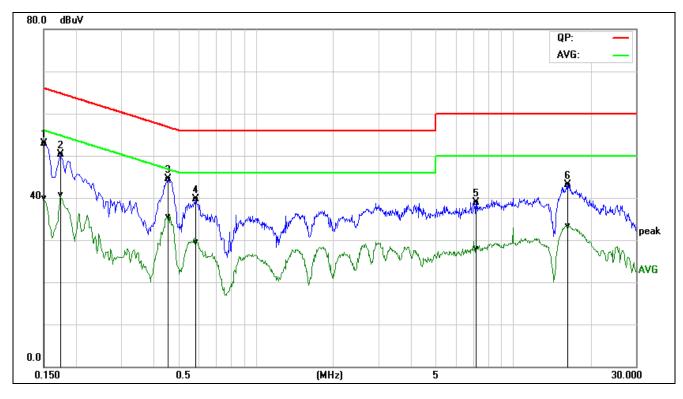
		RBW,VBW	9 kHz
Environmental Conditions	22°C, 45% RH	Test Mode	Mode 2
Tested by	Luja Huang	Line	L1
Test Date	July 19, 2017	Test Voltage	AC240V/50Hz



Frequency (MHz)		Average Reading (dBuV)		QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)	Line (L1/L2)
0.1780	30.93	19.24	19.63	50.56	38.87	64.57	54.58	-14.01	-15.71	Pass	L1
0.2060	29.72	19.02	19.64	49.36	38.66	63.36	53.37	-14.00	-14.71	Pass	L1
0.4620	25.55	17.58	19.54	45.09	37.12	56.66	46.66	-11.57	-9.54	Pass	L1
3.8940	20.13	10.75	19.73	39.86	30.48	56.00	46.00	-16.14	-15.52	Pass	L1
15.5620	27.49	18.41	20.04	47.53	38.45	60.00	50.00	-12.47	-11.55	Pass	L1
24.1259	27.07	18.08	20.42	47.49	38.50	60.00	50.00	-12.51	-11.50	Pass	L1



		RBW,VBW	9 kHz
Environmental Conditions	22°C, 45% RH	Test Mode	Mode 2
Tested by	Luja Huang	Line	L2
Test Date	July 19, 2017	Test Voltage	AC240V/50Hz



Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)		QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)	Line (L1/L2)
0.1500	33.44	20.47	19.52	52.96	39.99	65.99	56.00	-13.03	-16.01	Pass	L2
0.1740	30.69	21.09	19.53	50.22	40.62	64.76	54.77	-14.54	-14.15	Pass	L2
0.4580	25.04	16.02	19.53	44.57	35.55	56.73	46.73	-12.16	-11.18	Pass	L2
0.5860	20.21	9.90	19.56	39.77	29.46	56.00	46.00	-16.23	-16.54	Pass	L2
7.1980	19.05	8.08	19.85	38.90	27.93	60.00	50.00	-21.10	-22.07	Pass	L2
16.2820	23.12	13.18	20.07	43.19	33.25	60.00	50.00	-16.81	-16.75	Pass	L2

REMARKS: L2 = Line	Two	(Neutral	Line)
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## 7.2. SPURIOUS EMISSIONS MEASUREMENT

### 7.2.1. CONDUCTED EMISSIONS MEASUREMENT

### 7.2.1.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

§15.247(d) specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to 15.247(b)(3)requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to 15.247(b) (3) requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

In addition, radiated emissions 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) (see Section 15.205(c)).

### 7.2.1.2. TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Due Calibration
Spectrum Analyzer	Agilent	N9010A	MY55370330	02/21/2017	02/20/2018

#### 7.2.1.3. TEST PROCEDURE (please refer to measurement standard)

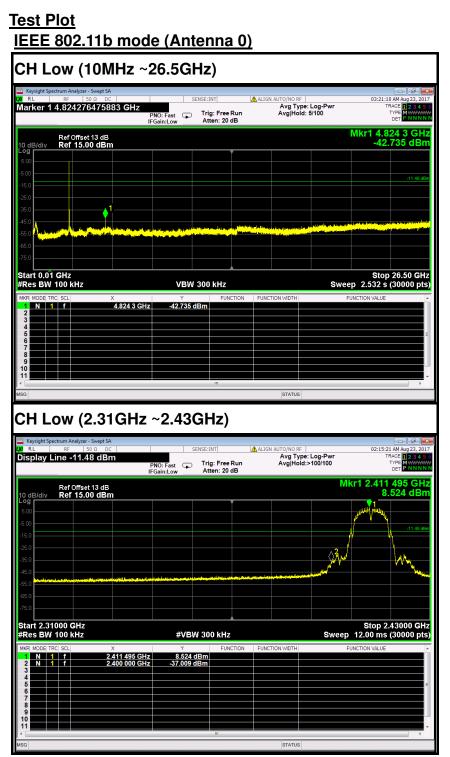
Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

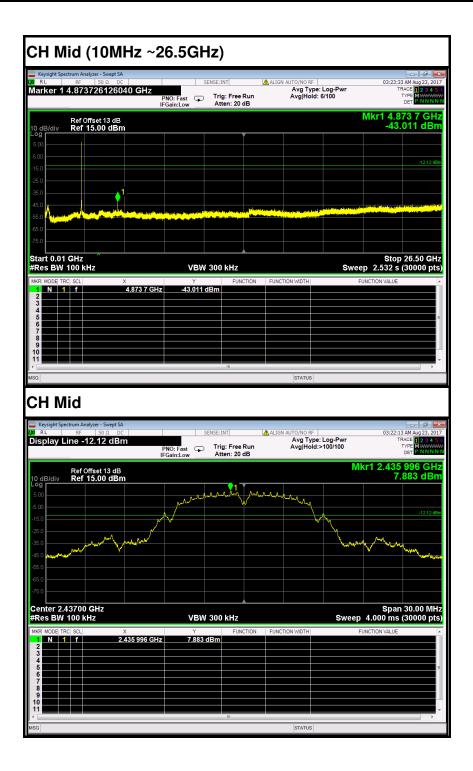
Measurements are made over the 9 kHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels. No emission found between lowest internal used/generated frequency to 10MHz, it is only recorded 10MHz to 26GHz.



#### 7.2.1.4. TEST RESULTS



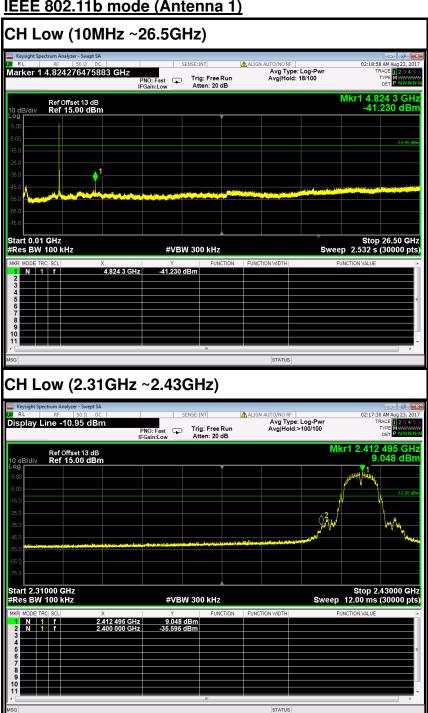




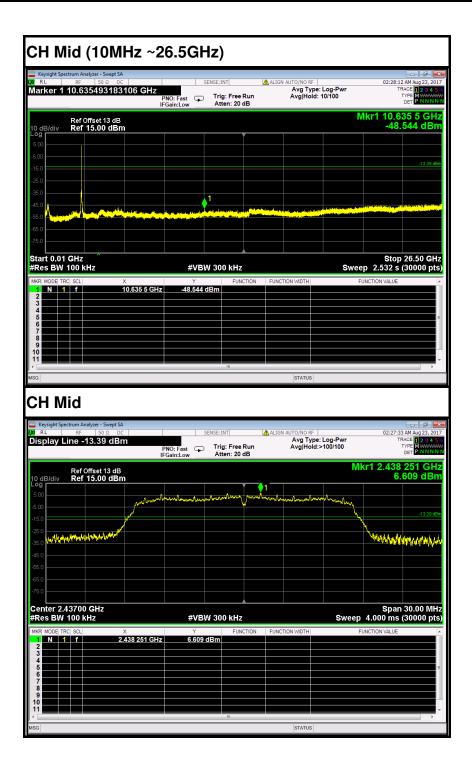


H High         (10MH           Keysight Spectrum Analyzer - Swept SA           RL         RF         50 Ω         DC	SENSE:INT	ALIGN AUTO/NO RF	口 @ 03:25:56 AM Aug 23, 20
arker 1 4.924058801960 GH	PNO: Fast 🖵 Trig: Free Run IFGain:Low Atten: 20 dB	Avg Type: Log-Pwr Avg Hold: 9/100	TRACE 2 3 4 TYPE MWWW DET PNNN
Ref Offset 13 dB dB/div Ref 15.00 dBm g		N	kr1 4.924 1 GF -44.906 dB
o o			-11.17 c
011			
0			
art 0.01 GHz es BW 100 kHz	VBW 300 kHz	Sweep	Stop 26.50 GF 2.532 s (30000 pt
MODE TRC SCL X N 1 f 4.924	Y FUNCTION	FUNCTION WIDTH FUN	CTION VALUE
H High (2.45G	" Hz ~2.5GHz)	STATUS	
H High (2.45G	SENSE:INT PNO: Fast C Trig: Free Run	ALIGN AUTO/NO RF Avg Type: Log-Pwr Avg[Hold:>100/100	03:25:19 AM Aug 23, 20
H High (2.45G RL SPECTUM Analyzer - Swept SA RL SF SO Q. OC splay Line -11.17 dBm Ref Offset 13 dB dB/div Ref 15.00 dBm	PNO: Fast Trig: Free Run IFGain:Low Atten: 20 dB	Align Auto/No RF Avg Type: Log-Pwr Avg Hoid:>100/100	03:25:19 AM Aug 23, 20 TRACE 1 2 3 4 TYPE MWWW DET P NNN 2.462 500 4 GH
H High (2.45G Keysight Spectrum Analyzer - Swept SA RL RF 50 20 DC splay Line -11.17 dBm	SENSE:INT PNO: Fast C Trig: Free Run	Align Auto/No RF Avg Type: Log-Pwr Avg Hoid:>100/100	03:25:19 AM Aug 23, 20 TRACE 1 2 3 4 TYPE MWWW DET P NNN 2.462 500 4 GH
H High (2.45G Keysight Spectrum Analyzer - Swept SA RL RF 50.0 DC splay Line -11.17 dBm	PNO: Fast Trig: Free Run IFGain:Low Atten: 20 dB	Align Auto/No RF Avg Type: Log-Pwr Avg Hoid:>100/100	03:25:19 AM Aug 23, 21 TRACE 12 23 4 TYPE M DET MININ 2.462 500 4 GH 8.829 dB
H High (2.45G	PNO: Fast Trig: Free Run IFGain:Low Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	03:25:19 AM Aug 23, 2 TRACE 0 2 3 4 TYPE 0 DET 0 NNN 2.462 500 4 GF 8.829 dB
H High (2.45G RL BF 50 Q OC splay Line -11.17 dBm add/div Ref Offset 13 dB ref 15.00 dBm	PNO: Fast Trig: Free Run IFGain:Low Atten: 20 dB	Align Auto/No RF Avg Type: Log-Pwr Avg Hoid:>100/100	03:25:19 AM Aug 23, 21 TRACE 12 23 4 TYPE M DET MININ 2.462 500 4 GH 8.829 dB
H High (2.45G Resignt Spectrum Analyzer - Swept SA RL RF 50 Q DC splay Line -11.17 dBm dB/div Ref Offset 13 dB dB/div Ref 0ffset 13 dB dB/div Q db	PNO: Fast Trig: Free Run IFGain:Low Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	03:25:19 AM Aug 23, 21 TRACE 12 23 4 TYPE M DET MININ 2.462 500 4 GH 8.829 dB
H High (2.45G Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω DC splay Line -11.17 dBm	PNO: Fast Trig: Free Run IFGain:Low Atten: 20 dB	Auton Auto/No RF Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	0325310 AM A02 01 22 A THAC 01 23 A TYPE M WIND 2.462 500 4 GH 8.829 dB 
H High (2.45G Kapight Spectrum Analyzer - Swept SA RL BF   50 Q DC   splay Line -11.17 dBm dB/div Ref Offset 13 dB dB/div Ref 15.00 dBm and the second data and	PNO: Fast IFGain:Low Trig: Free Run Atten: 20 dB	Autor Auto/No RF Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	0325310 AM A02 01 22 A THAC 01 23 A TYPE M WIND 2.462 500 4 GH 8.829 dB 
H High (2.45G Keysight Spectrum Analyzer - Swept SA RL RF 50.0 DC splay Line -11.17 dBm	PNO: Fast IFGain:Low Trig: Free Run Atten: 20 dB	Autor Auto/No RF Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	0325310 AM Acg 12, 24 TAACig 12, 24 TYPE H WAN 2.462 500 4 GH 8.829 dB 
H High (2.45G Keyight Spectrum Analyzer - Swept SA RL BF SO Q. DC Splay Line -11.17 dBm dB/div Ref Offset 13 dB Ref Offset 13 dB ref 15.00 dBm aut 12.45000 GHz Res BW 100 KHz R MODE TRC SCLI X	PNO: Fast IFGain:Low Trig: Free Run Atten: 20 dB	Autor Auto/No RF Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	2:462 500 4 GH 8:829 dB 





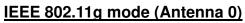


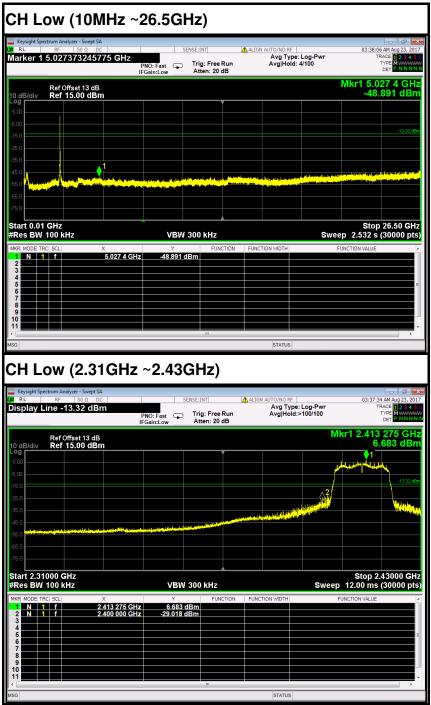




Keysight Spectrum Analyzer - Swe RL RF 50 Ω arker 1 4.67592753	DC 60918 GHz PN		ISE:INT Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: L Avg Hold: 8	/100	02:29:53 AM Aug 23, 20: TRACE 1 2 3 4 5 TYPE MWWW DET P N N N
Ref Offset 13 D dB/div Ref 15.00 d	dB I <b>Bm</b>				Mk	r1 4.675 9 GH -48.896 dBr
99 .00						
5.0						-13.32 di
5.0						
5.0	1 National Action of the state		in second a second a second de la second			
5.0						
art 0.01 GHz					<u></u>	Stop 26.50 GH
Res BW 100 kHz	v		300 kHz	FUNCTION WIDTH		.532 s (30000 pt
R MODE TRC SCL	× 4.675 9 GHz	ץ -48.896 d⊟	FUNCTION	TONCTION WIDTH	FUNCTIO	DN VALUE
3 4 5						
6 7 8 <b></b>						
9						
9 0 1 3	45GHz ·	~2.5G	Hz)	STATUS		4
H High (2. Keysight Spectrum Analyzer - Swe RL RF   50 Ω	pt SA DC IBM PN	IO: Fast	Hz)	STATUS ALIGN AUTO/NO RF Avg Type: Avg Hold>	Log-Pwr 100/100	02:29:19 AM Aug 23, 20 TRACE 1 2 3 4
H High (2. Keysight Spectrum Analyzer - Swe RL RF 50 Q splay Line -13.32 C Ref Offset 13	pt SA DC IBM PN IFG dB	SEN	Hz)	ALIGN AUTO/NO RF	100/100	02:29:19 AM Aug 23, 20 TRACE 1 2 3 4 TYPE MWWW DET P NNN 460 738 7 GH
H High (2. Keysight Spectrum Analyzer - Swe RL R <sup>g</sup> 50 Ω splay Line -13.32 c Ref Offiset 13 Ref 0ffiset 13 ref 15.00 c	pt SA DC IBm PN IFG dB IBm	IO: Fast ain:Low	Hz)	ALIGN AUTO/NO RF	100/100	02:29:19 AM Aug 23, 20 TRACE 1 2 3 4 TYPE MWWW DET P NNN 460 738 7 GH
SH High (2. Keysight Spectrum Analyzer - Swa RL RF 50 Ω Splay Line -13.32 cf dB/div Ref 0ffset 13 dB/div Ref 15.00 cf 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	pt SA DC IBm PN IFG dB IBm	IO: Fast	Hz)	ALIGN AUTO/NO RF	100/100	02:29:19 AM Aug 23, 20 TRACE 12 3 4 TYPE 1
H High (2. Reysight Spectrum Analyzer - Swe RL RF 55 Ω splay Line -13.32 c dB/div Ref 15.00 c 9 0 0 0 0 0 0 0 0 0 0 0 0 0	pt SA DC IBm PN IFG dB IBm	IO: Fast ain:Low	Hz) vse:ivri Trig: Free Run Atten: 20 dB	ALIGN ALTO/NO RF Avg Type: Avg Hold:>	100/100	02:29:19 AM Aug 23, 20 TRACE 12 3 4 TYPE 1
Residu Spectrum Analyzer - Swe RL Ref Offset 13 splay Line -13.32 c	pt SA DC IBm PN IFG dB IBm	IO: Fast ain:Low	Hz) vse:ivri Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF	100/100 Mkr1 2.	02:29:19 AM Aug 23, 20 TRACE 12 3 4 TYPE 1
SH High (2. Keysight Spectrum Analyzer - Swe RL RF   50 Ω Splay Line -13.32 c d g /d v Ref Offset 13 Ref 15.00 c g / d v Ref 15.00 c g / d v Ref 15.00 c	pt SA DC IBm PN IFG dB IBm	IO: Fast ain:Low	Hz) vse:ivri Trig: Free Run Atten: 20 dB	ALIGN ALTO/NO RF Avg Type: Avg Hold:>	100/100 Mkr1 2.	02:29:19 AM Aug 23, 22 TRRACE [2:3:4 TYPE MANNED DET PINNIN 460 738 7 GH 6,682 dBr
SH High (2. Reysight Spectrum Analyzer - Swe RL RF 50 Ω Splay Line -13.32 c dB/div Ref 13.00 c automatic comparison of the second secon	pt SA DC IBm PN IFG dB IBm	IO: Fast ain:Low	Hz) vse:ivri Trig: Free Run Atten: 20 dB	ALIGN ALTO/NO RF Avg Type: Avg Hold:>	100/100 Mkr1 2.	02:29:19 AM Aug 23, 20 TRACE [] 2 3 4 TYPE MWWW DET P NNN 460 738 7 GH 6.682 dBl
SH High (2. Resignt Spectrum Analyzer - Store RL RF 50 Ω Splay Line -13.32 C Ref Offset 13 Ref 15.00 C C C C C C C C C C C C C C	pt SA DC IBm PN IFG dB IBm	IO: Fast ain:Low	Hz) vse:ivri Trig: Free Run Atten: 20 dB	ALIGN ALTO/NO RF Avg Type: Avg Hold:>	100/100 Mkr1 2.	460 738 7 GH 6.682 dB1 (1) 32 d (1) 32
SH High (2. Reysight Spectrum Analyzer - Swe RL RE So Ω Splay Line -13.32 c del/div Ref 0ffset 13 Ref 0ffset 13 Ref 15.00 c g g g g g g g g g g g g g	pt SA DC IBM PN IFG BM IFG	VO: Fast ain:Low Journand Journand WW BW 4 VBW 6 6.882 dE	Hz)	ALIGN ALTO/NO RF Avg Type: Avg Hold:>	100/100 Mkr1 2.	02:29:19 AM Aug 23, 20 TRACE [] 2 3 4 TYPE MWWW DET P NNN 460 738 7 GH 6.682 dBI 
B       Image: Constraint of the section analyzer - Sweet Swee	pt SA DC IBm IFG dB IBm IBm	IO: Fast	Hz)	ALIGN AUTO/NO RF Avg Type: Avg Hold>	100/100 Mkr1 2.	02:29:19 AM Aug 23, 2 TRACE [2 3 4 TYPE AV DET VINN 460 738 7 GH 6.682 dB 
SH High (2. Reysight Spectrum Analyzer - Swe RL RE So Ω Splay Line -13.32 c del/div Ref 0ffset 13 Ref 0ffset 13 Ref 15.00 c g g g g g g g g g g g g g	pt SA DC IBM PN IFG BM IFG	VO: Fast ain:Low Journand Journand WW BW 4 VBW 6 6.882 dE	Hz)	ALIGN AUTO/NO RF Avg Type: Avg Hold>	100/100 Mkr1 2.	02:29:19 AM Aug 23, 2 TRACE [2 3 4 TYPE AV DET VINN 460 738 7 GH 6.682 dB 



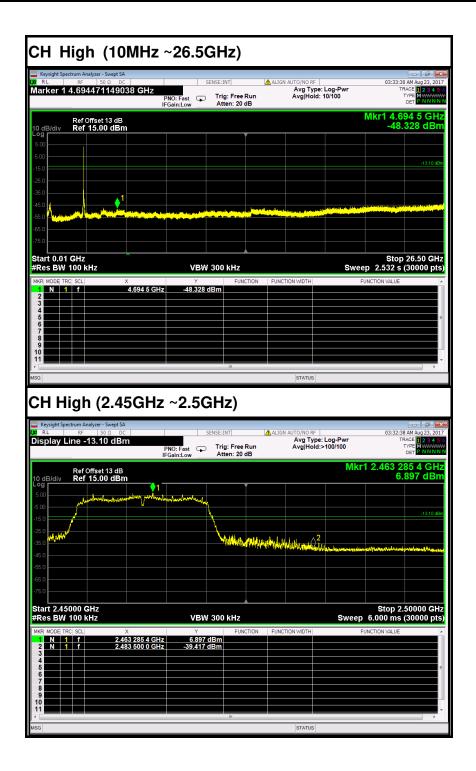




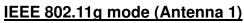


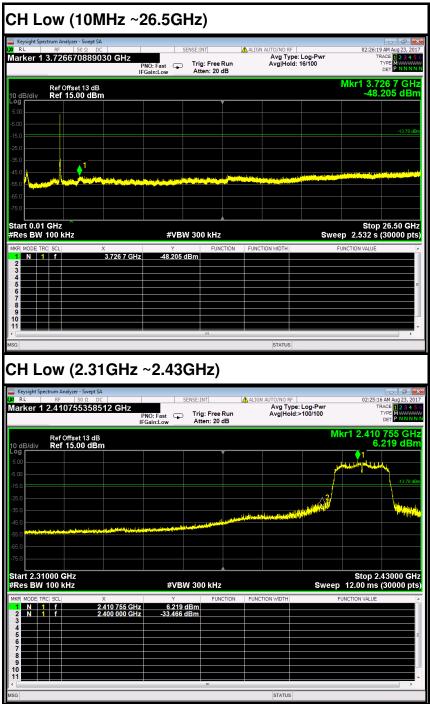
sight Spectrum Analyzer - Swept RF 50 Ω	DC	SEN	SE:INT	ALIGN AUTO/NO RF		03:36:12 AM Aug
cer 1 3.340787020	Ρ	NO: Fast 😱 Gain:Low	Trig: Free Run Atten: 20 dB	Avg Type: Avg Hold:	Log-Pwr 1/100	TRACE 1 TYPE M DET P
Ref Offset 13 d 3/div Ref 15.00 dB	iB Bm					Mkr1 3.340 8 -49.912
			Ĭ			
1						
t 0.01 GHz						Stop 26.5
BW 100 KHz	X	VBW 3	FUNCTION	FUNCTION WIDTH		p 2.532 s (3000
N 1 f	3.340 8 GHz	-49.912 dE		- Site Hold Wild Hi		
				STATUS		
l Mid				STATUS		
I Mid sight Spectrum Analyzer - Swep 	DC Bm		NSE:INT	ALIGN AUTO/NO RF	Log-Pwr 100/100	03:35:37 AM Aug TRACE TYPE M
sight Spectrum Analyzer - Swep RF 50 Ω Jay Line -13.90 d	DC Bm P IFi	NO: Fast Gain:Low		ALIGN AUTO/NO RF	100/100	03:35:37 AM Aug TRACE TYPE M DET P
sight Spectrum Analyzer - Swep RF 50 Ω	DC Bm P IFi	NO: Fast 😱	VSE:INT Trig: Free Run	ALIGN AUTO/NO RF	100/100	03:35:37 AM Aug TRACE
sight Spectrum Analyzer - Swep RF 50 Ω Jay Line -13.90 d	Bm P IFI BB Bm	NO: Fast 😱	KSE:INT  Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF	100/100	03:35:37 AM Aug TRACE 1 TYPE M DET P Kr1 2.438 296
sight Spectrum Analyzer - Swep RF 50 Ω Jay Line -13.90 d	Bm P IF BB Bm	NO: Fast 🖵 Gain:Low	KSE:INT  Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	100/100 MI	03:35:37 AM Aug TRACE 1 TYPE M DET P Kr1 2.438 296
sight Spectrum Analyzer - Swep RF 50 Ω Jay Line -13.90 d	Bm P P B B B B M	NO: Fast 🖵 Gain:Low	KSE:INT  Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	100/100 MI	03:35:37 AM Aug Trace Type kr1 2.438 296 6.101
sight Spectrum Analyzer - Swep RF 50 Ω Jay Line -13.90 dl Ref Offset 13 c Ref 15.00 dl	Bm P P B B B B M	NO: Fast 🖵 Gain:Low	KSE:INT  Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	100/100 MI	03:35:37.4M Aug TRACE 1 TYPE MDET Kr1 2.438 296 6.101
sight Spectrum Analyzer - Swep RF 50 Ω Jay Line -13.90 dl Ref Offset 13 c Ref 15.00 dl	Bm P P B B B B M	NO: Fast 🖵 Gain:Low	KSE:INT  Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	100/100 MI	03:35:37 AM Aug Trace Type kr1 2.438 296 6.101
sight Spectrum Analyzer - Swep RF 50 Ω Jay Line -13.90 dl Ref Offset 13 c Ref 15.00 dl	Bm P P B B B B M	NO: Fast 🖵 Gain:Low	KSE:INT  Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	100/100 MI	03:35:37 AM Aug Trace Type kr1 2.438 296 6.101
sight Spectrum Analyzer - Swep RF 50 Ω Jay Line -13.90 dl Ref Offset 13 c Ref 15.00 dl	Bm P P B B B B M	NO: Fast Gain:Low	KSE:INT  Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	100/100 MI	03:35:37 AM Aug Trace Type kr1 2.438 296 6.101
sight Spectrum Analyzer - Swep RF 50 Ω Jay Line -13.90 dl Ref Offset 13 c Ref 15.00 dl MH/M/M/M/M/M/M/M/M/M/M/M/M/M/M/M/M/M/M/	PC P	NO: Fest Gain:Low	VSE:INT Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	۱۵۵/۱۵۵ Mi	03:35:37 AM Aug Trace Type M kr1 2.438 296 6.101
sight Spectrum Analyzer - Swep RF 50 Q Jay Line -13.90 dl Ref Offset 13 c Ref 15.00 dl Mully (Jaw (Marcon ) ter 2.43700 GHz s BW 100 kHz	PC P Bm P IFI BB Bm	NO: Fast Gain:Low	VSE:INT Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	۱۵۵/۱۵۵ Mi	03:35:37 AM Aug Trace Type <b>kr1 2.438 296</b> 6.101 <b>kr1 2.438 496</b> 6.101 <b>kr1 2.438 296</b> 6.101 <b>kr1 2.438 296</b> 6.101 <b>kr1 2.438 296</b> 6.101 <b>kr1 2.438 296</b> 6.101 <b>kr1 2.438 296</b> 6.101
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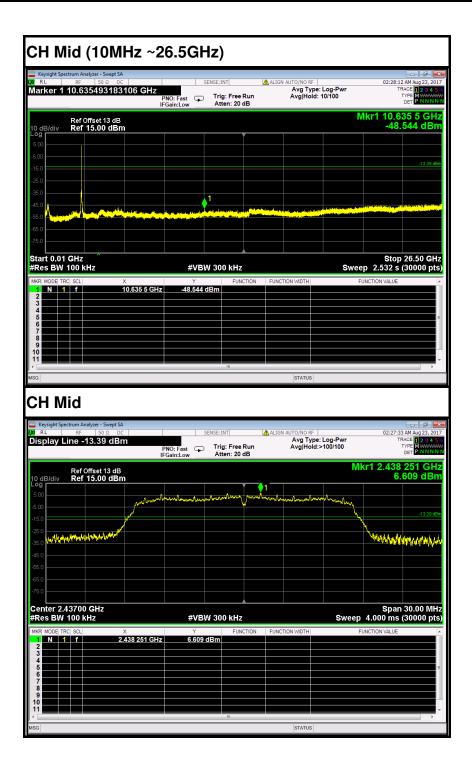




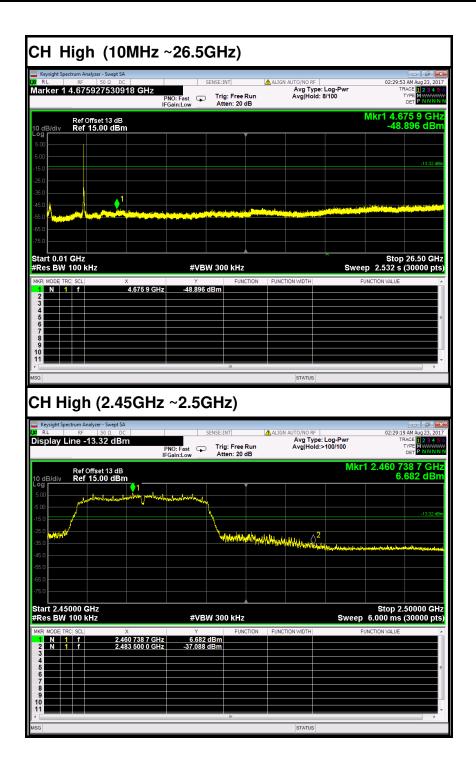




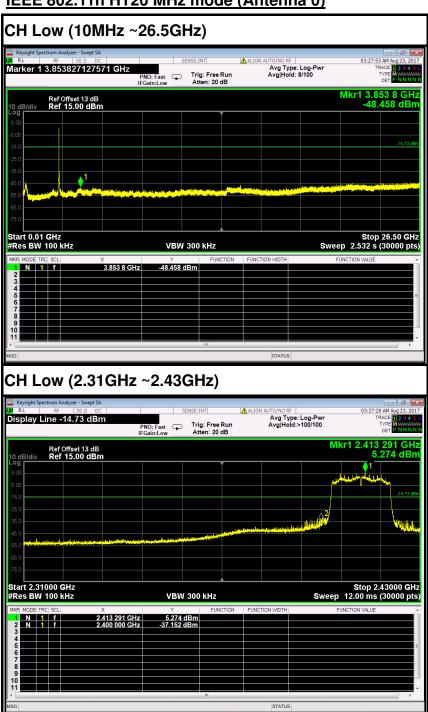












### IEEE 802.11n HT20 MHz mode (Antenna 0)

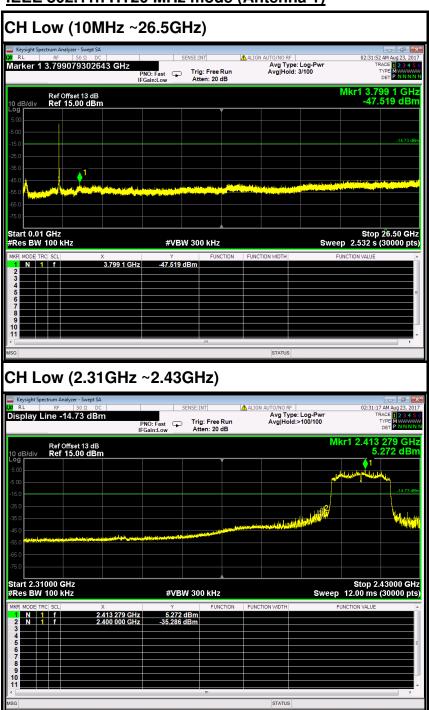


ht Spectrum Analyzer - Swept SA RF 50 Ω DC RF 2004 AC 749.00	SENSE:INT	ALIGN AUTO/NO RF	03:29:26 AM Aug g-Pwr TRACE
er 1 3.683402446748 G	PNO: Fast Trig: Fr IFGain:Low Atten:	ree Run Avg Hold: 3/1	
Ref Offset 13 dB div Ref 15.00 dBm			Mkr1 3.683 4 -49.153 (
			-1
1			energy states a lange of the second secon
- Charles Martin Charles Martin Charles And			and a second
0.01 GHz BW 100 kHz	VBW 300 kH	7	Stop 26.50 Sweep 2.532 s (3000
DE TRC SCL X	Y F	FUNCTION FUNCTION WIDTH	FUNCTION VALUE
1 f 3.683	3 4 GHz -49.153 dBm		
Mid ht Spectrum Analyzer - Swept SA	m SENSE:INT	STATUS	03:28:53 AM Aug.
ht Spectrum Analyzer - Swept SA	SENSE:INT	ALIGN AUTO/NO RF Avg Type:Lo Avg Type:Lo AvgItodi>10	03:28:53 AM Aug c-Pwr TRACE
iht Spectrum Analyzer - Swept SA RF 50 Q DC ay Line -14.75 dBm	SENSE:INT	ALIGN AUTO/NO RF Avg Type:Lo Avg Type:Lo AvgItodi>10	03:28:53 AM Aug g-Pwr TRACE
ht Spectrum Analyzer - Swept SA RF 50 Ω DC	SENSE:INT PNO: Fast IFGain:Low Trig: Fr Atten:	In Align Auto/No RF   Avg Type: Lo 20 dB	03:28:53 AM Aug g-Pwr TRACE 0 0/100 TRACE 0 0/10
iht Spectrum Analyzer - Swept SA RF 50 Q DC ay Line -14.75 dBm	SENSE:INT	In Align Auto/No RF   Avg Type: Lo 20 dB	03:28:53 AM Aug vg-Pwr TRACE 1 0/100 TYPE M DET P N Mkr1 2.438 276
ht Spectrum Analyzer - Swept SA RF 50 Ω DC ay Line -14.75 dBm Ref Offset 13 dB Ref 15.00 dBm	SENSE:INT PNO: Fast IFGain:Low Trig: Fr Atten:	In Align Auto/No RF   Avg Type: Lo 20 dB	032853 AM Aug g-Pwr 0/100 Tree M Mkr1 2.438 276 5.245 ( ************************************
iht Spectrum Analyzer - Swept SA RF 50 Q DC ay Line -14.75 dBm	SENSE:INT PNO: Fast IFGain:Low Trig: Fr Atten:	In Align Auto/No RF   Avg Type: Lo 20 dB	032853 AH من 2 0/100 تبعد المدون Official and a second se
ht Spectrum Analyzer - Swept SA RF 50 Ω DC ay Line -14.75 dBm Ref Offset 13 dB Ref 15.00 dBm	SENSE:INT PNO: Fast IFGain:Low Trig: Fr Atten:	In Align Auto/No RF   Avg Type: Lo 20 dB	032853 AM Aug g-Pwr 0/100 Tree M Mkr1 2.438 276 5.245 ( ************************************
ht Spectrum Analyzer - Swept SA RF 50 Ω DC ay Line -14.75 dBm Ref Offset 13 dB Ref 15.00 dBm	SENSE:INT PNO: Fast IFGain:Low Trig: Fr Atten:	In Align Auto/No RF   Avg Type: Lo 20 dB	032853 AM Aug g-Pwr 0/100 Tree M Mkr1 2.438 276 5.245 ( ************************************
ht Spectrum Analyzer - Swept SA RF S0 Ω DC ay Line -14.75 dBm Ref Offset 13 dB Siv Ref 15.00 dBm	PNO: Fast IFGain:Low Trig: Fr Atten:	AvgType:Lo AvgType:Lo 20 dB	032833 AM Aug g-Pwr 0/100 Type M Mkr1 2.438 276 5.245 
AT Spectrum Analyzer - Swept SA RF 50 Ω DC ay Line -14.75 dBm Ref Offset 13 dB Ref 15.00 dBm r 2.43700 GHz BW 100 KHz DE TRC SCL X	SENSE:INT PNO: Fast IFGain:Low Trig: Fr Atten: Atten: VBW 300 kH	AvgType:Lo AvgType:Lo 20 dB	0228334Mog g-Pwr 0/100 TrACE 0/100 Tree Mkr1 2.438 276 5.245 0 Mkr1 4.438 476 5.245 0 1.448 476
AT Spectrum Analyzer - Swept SA RF 50 Ω DC ay Line -14.75 dBm Ref Offset 13 dB Ref 15.00 dBm r 2.43700 GHz BW 100 KHz DE TRC SCL X	PNO: Fast IFGain:Low Trig: Fr Atten:	Avg Type: Lo Avg Type: Lo Avg Hold:>10 20 dB	032833 AM Aug g-Pwr 0/100 Tryee Mkr1 2.438 276 5.245 
AT Spectrum Analyzer - Swept SA RF 50 Ω DC ay Line -14.75 dBm Ref Offset 13 dB Ref 15.00 dBm r 2.43700 GHz BW 100 KHz DE TRC SCL X	SENSE:INT PNO: Fast IFGain:Low Trig: Fr Atten: Atten: VBW 300 kH	Avg Type: Lo Avg Type: Lo Avg Hold:>10 20 dB	032833 AM Aug g-Pwr 0/100 Tryee Mkr1 2.438 276 5.245 
AT Spectrum Analyzer - Swept SA RF 50 Ω DC ay Line -14.75 dBm Ref Offset 13 dB Ref 15.00 dBm r 2.43700 GHz BW 100 KHz DE TRC SCL X	SENSE:INT PNO: Fast IFGain:Low Trig: Fr Atten: Atten: VBW 300 kH	Avg Type: Lo Avg Type: Lo Avg Hold:>10 20 dB	032833 AM Aug g-Pwr 0/100 Tryee Mkr1 2.438 276 5.245 
AT Spectrum Analyzer - Swept SA RF 50 Ω DC ay Line -14.75 dBm Ref Offset 13 dB Ref 15.00 dBm r 2.43700 GHz BW 100 KHz DE TRC SCL X	SENSE:INT PNO: Fast IFGain:Low Trig: Fr Atten: Atten: VBW 300 kH	Avg Type: Lo Avg Type: Lo Avg Hold:>10 20 dB	032833 AM Aug g-Pwr 0/100 Tryee Mkr1 2.438 276 5.245 



U Uiah (10M			
CH High (10M	nz ~20.5Gnz)		- a -
RL RF 50Ω DC Arker 1 4.765113503783 G	HZ PNO: Fast Trig: Free Run	ALIGN AUTO/NO RF Avg Type: Log-Pwr Avg Hold: 4/100	03:31:10 AM Aug 23, 20 TRACE 1 2 3 4 5 TYPE M
Ref Offset 13 dB	IFGain:Low Atten: 20 dB	N	Akr1 4.765 1 GH
0 dB/div Ref 15.00 dBm			-47.995 dBr
5.00			-14.25 dt
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			0 ton 36 50 CL
tart 0.01 GHz Res BW 100 kHz	VBW 300 kHz		Stop 26.50 GH 2.532 s (30000 pt
2	Y FUNCTION 5 1 GHz -47.995 dBm	V FUNCTION WIDTH FUI	ICTION VALUE
3 4 5			
6 7 7			
8 9 0			
1		STATUS	•
Keysight Spectrum Analyzer - Swept SA         RL       RF       50 $\Omega$ DC         isplay Line -14.25 dBm	PNO: Fast C Trig: Free Run	ALIGN AUTO/NO RF Avg Type: Log-Pwr Avg Hold:>100/100	03:30:31 AM Aug 23, 20 TRACE 2 3 4 TYPE MWWW DET P NNN
Ref Offset 13 dB	IFGain:Low Atten: 20 dB	Mkr1	2.463 278 8 GH
0 dB/div Ref 15.00 dBm			5.748 dBi
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5.0 <b>/////</b>		WHAMM Halder Dallan maana amaa	بالمرادية والمحاجة والمراجع والمحاجة والمحاجبة والمحاجبة والمحاجبة والمحاجبة والمحاجة والمحاجة والمحاجة والمحاجة
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tart 2.45000 GHz Res BW 100 kHz	VBW 300 kHz	Sweep	Stop 2.50000 GF 6.000 ms (30000 pt
KR         MODE         TRC         SCL         X           1         N         1         f         2.463         274           2         N         1         f         2.483         501	Y FUNCTION 8 8 GHz 5.748 dBm	N FUNCTION WIDTH FUI	ICTION VALUE
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8 9 0			
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sG		STATUS	





### IEEE 802.11n HT20 MHz mode (Antenna 1)

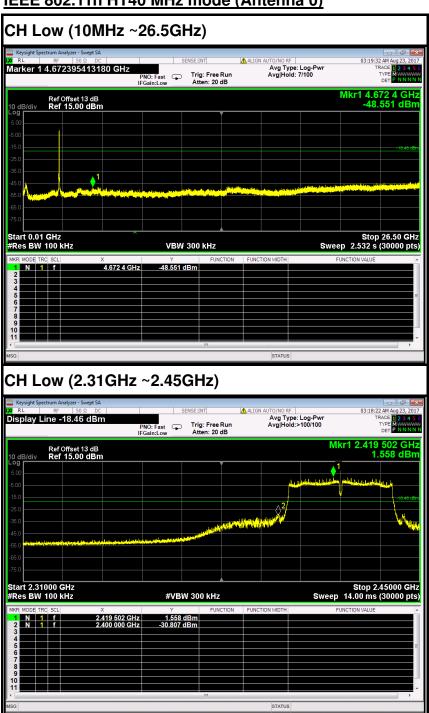


ht Spectrum Analyzer - Swept SA RF 50 Ω DC	SENSE:I			02:33:22 AM Aug 2
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			and a set of the set o	1991 - 1991 - 1991 - 1991 - 1991 - 1991 - 1991 - 1991 - 1991 - 1991 - 1991 - 1991 - 1991 - 1991 - 1991 - 1991 -
0.01 GHz				Stop 26.50
BW 100 kHz	#VBW 30	FUNCTION FUNCTION WIDTH	Sweep 2.3	532 s (30000
	.862 7 GHz -48.553 dBm			
Mid ht Spectrum Analyzer - Swept SA	cpncr-1	IT STATUS		
ht Spectrum Analyzer - Swept SA		STATUS		02:32:48 AM Aug 2 TRACE
ht Spectrum Analyzer - Swept SA RF 50 Ω DC	PNO: Fast 🕠 Tri	STATUS INT ALIGN AUTO/NO R Avg Ty g: Free Run Avg Ty	F pe: Log-Pwr Id:>100/100	02:32:48 AM Aug 2 TRACE 1 2 TYPE M W DET P N
ht Spectrum Analyzer - Swept SA RF   50 Q DC   ay Line -15.00 dBm Ref Offset 13 dB Ref 15.00 dBm	PNO: Fast Tri IFGain:Low At	STATUS	F pe: Log-Pwr Id:>100/100 Mkr1 2	02:32:48 AM Aug 2 TRACE 1 2 TYPE M W DET P N
ht Spectrum Analyzer - Swept SA RF   50 Q DC   ay Line -15.00 dBm Ref Offset 13 dB Ref 15.00 dBm	PNO: Fast 🕠 Tri	STATUS INT I ALIGN AUTO/NO R Avg Ty g: Free Run Avg Ho ten: 20 dB	F pe: Log-Pwr Id:>100/100 Mkr1 2	02:32:48 AM Aug 2 TRACE 2 TYPE DET PN
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MODE TRC SCL X	¥ BW 300 F 3 0 GHz -49.319 dBm	FUNCTION FUNCTION WIDTH	FUNCTION	·
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		STATUS		
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eysight Spectrum Analyzer - Swept SA .L RF 50 Ω DC		ALIGN AUTO/NO RI Avg Ty Free Run Avg Ho	F pe: Log-Pwr Id:>100/100	02:34:38 AM Aug 23
ysight Spectrum Analyzer - Swept SA L RF 50Ω DC Dlay Line -14.66 dBm Ref Offset 13 dB	SENSE:INT	ALIGN AUTO/NO RI Avg Ty	pe: Log-Pwr Id:>100/100	02:34:38 AM Aug 23 TRACE 1 2 3 TYPE MW DET P NN
ysight Spectrum Analyzer - Swept SA RF   50 Q DC   olay Line -14.66 dBm Ref Offset 13 dB B/div Ref 15.00 dBm	PNO: Fast IFGain:Low Atten	ALIGN AUTO/NO RI Avg Ty Free Run Avg Ho	pe: Log-Pwr Id:>100/100	02:34:38 AM Aug 23 TRACE 1 2 3 TYPE MW DET P NN
yright Spectrum Analyzer - Swept SA L RF 50 0 C play Line -14.66 dBm B/div Ref Offset 13 dB Ref 15.00 dBm	SENSE:INT	ALIGN AUTO/NO RI Avg Ty Free Run Avg Ho	pe: Log-Pwr Id:>100/100	02:34:38 AM Aug 23 TRACE 12 3 TYPE 1
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ysight Spectrum Analyzer - Swept SA L RF   50 Q OC Dlay Line -14.66 dBm B/div Ref 0ffset 13 dB E/div Ref 15.00 dBm	PNO: Fast IFGain:Low Atten	I ALIGN AUTO/NO R Avg Ty Free Run Avg Ho : 20 dB	pe: Log-Pwr Id:>100/100 Mkr1 2.4	02:34:38 AM Aug 23 TRACE 1 2 3 TYPE MWM DET P N1 160 760 4 C 5.338 d
ysight Spectrum Analyzer - Swept SA L RF   50 Q OC Dlay Line -14.66 dBm B/div Ref 0ffset 13 dB E/div Ref 15.00 dBm	PNO: Fast IFGain:Low Atten	I ALIGN AUTO/NO R Avg Ty Free Run Avg Ho : 20 dB	pe: Log-Pwr Id:>100/100 Mkr1 2.4	160 760 4 G 5.338 d
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ysight Spectrum Analyzer - Swept SA L RF   50 Q OC   Dlay Line -14.66 dBm B/div Ref 15.00 dBm (11) Ref 0ffset 13 dB (12) (12) (12) (13) (14) (14) (15) (14) (15)	PNO: Fast IFGain:Low Trig: F Atten	ALIGN AUTO/NO R Avg Ty Pree Run Avg Ho : 20 dB	pe:Log-Pwr (d>100/100 <b>MKr1 2.4</b>	02:34:38 AM Aug 23 TRACE DEF 160 760 4 G 5.338 dl 
ysight Spectrum Analyzer - Swept SA RF   50 Q DC   olay Line -14.66 dBm B/div Ref Offset 13 dB Ref 15.00 dBm (1) Ref 0ffset 13 dB (1) Ref 0ffset 13	PNO: Fast IFGain:Low Trig: F Atten	ALIGN AUTO/NO R Avg Ty Pree Run Avg Ho : 20 dB	pe: Log-Pwr (d>100/100 Mkr1 2.4 2 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	02:34:38 AH Aug 2 TRACE 1860 760 4 G 5.338 d 
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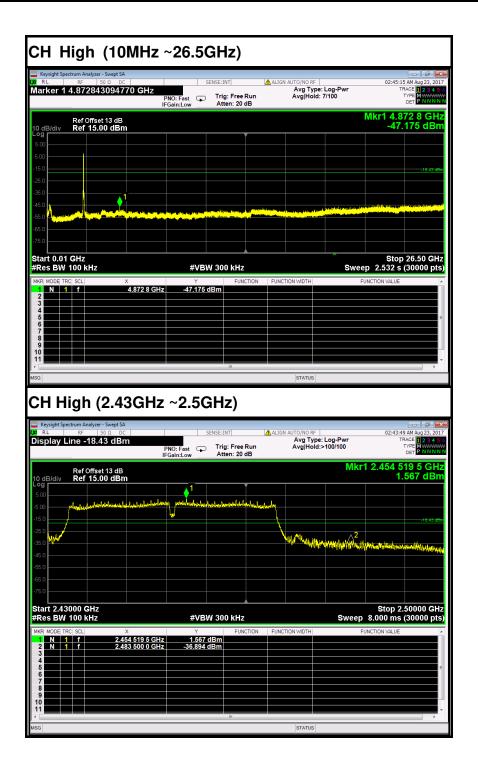


### IEEE 802.11n HT40 MHz mode (Antenna 0)

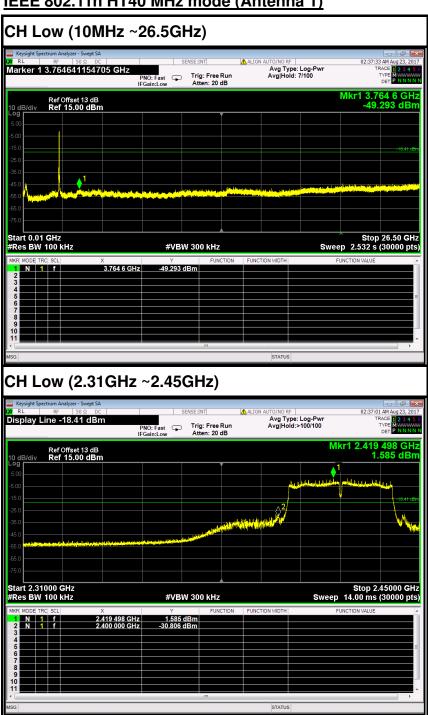


ght Spectrum Analyzer - Sw RF 50 Ω er 1 3.8467628	92096 GHz	NO: Fast T	E:INT	ALIGN AUTO/NO RF Avg Type Avg Hold:	: Log-Pwr 4/100	03:17:14 AM Aug TRACE 1 TYPE M DET P
Ref Offset 13 /div Ref 15.00 (	IF	Gain:Low	Atten: 20 dB		N	Akr1 3.846 8 -49.518
/div Ref 15.00 (	dBm					-49.010
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		the side second of the second s				
0.01 GHz						Stop 26.5
BW 100 kHz	X	#VBW 3	FUNCTION	FUNCTION WIDTH		2.532 s (3000
N 1 f	3.846 8 GHz	-49.518 dBn	n			
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ight Spectrum Analyzer - Sw RF 50 Ω	dBm dBm dB dBm	PNO: Fast 🖵 T Gain:Low	Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RE Avg Type Avg Hold:	>100/100	03:16:41 AM Aug TRACE 1 TYPE M DET P
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ight Spectrum Analyzer - Sw RF 50 Ω lay Line -18.16 Ref Offset 13 /div Ref 15.00 (	BC dBm	PNO: Fast 🖵 T Gain:Low	Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RE Avg Type Avg Hold:	>100/100	03:16:41 AM Aug TRACE [] TYPE M DET P 11 2.439 519 1.841
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ight Spectrum Analyzer - Sw RF 50 Ω ay Line -18.16 ( Ref Offset 13 /div Ref 15.00 (	BC dBm	PNO: Fast 🖵 T Gain:Low	Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RE Avg Type Avg Hold:	>100/100	03:16:41 AM Model Trace II Type M I 2.4399 519 1.841
ight Spectrum Analyzer - Sw RF 50 Ω ay Line -18.16 /div Ref 15.00 ( Ref 15.0	BC dBm	PND: Fast Gain:Low T Manual J. J. J. Market Ware and the second s	rig: Free Run Atten: 20 dB	ALIGN AUTO/NO RE Avg Type Avg Hold:	Sweep	03:1641 AM Mo Trace II True M r1 2.439 519 1.841
ight Spectrum Analyzer - Sw RF 50 Ω ay Line -18.16 Ref Offset 13 Ref 15.00 d Hyper Analyze - Sw Ref 15.00 d Hyper Analyze -	BC dBm	All result of a local sector o	rig: Free Run Atten: 20 dB	ALIGN AUTO/NO RE Avg Type Avg Hold:	Sweep	03:1641 AM Mo Trace II True M 12.4399 519 1.841
ight Spectrum Analyzer - Sw	DC dBm	PND: Fast GainLow July Index Managed and a fast Managed and a fast WVBW 3	rig: Free Run Atten: 20 dB	ALIGN AUTO/NO RE Avg Type Avg Hold:	Sweep	03:1641 AM Mo Trace II True M r1 2.439 519 1.841
ight Spectrum Analyzer - Sw	DC dBm	PND: Fast GainLow July Index Managed and a fast Managed and a fast WVBW 3	rig: Free Run Atten: 20 dB	ALIGN AUTO/NO RE Avg Type Avg Hold:	Sweep	03:1641 AM Mo Trace II True M r1 2.439 519 1.841







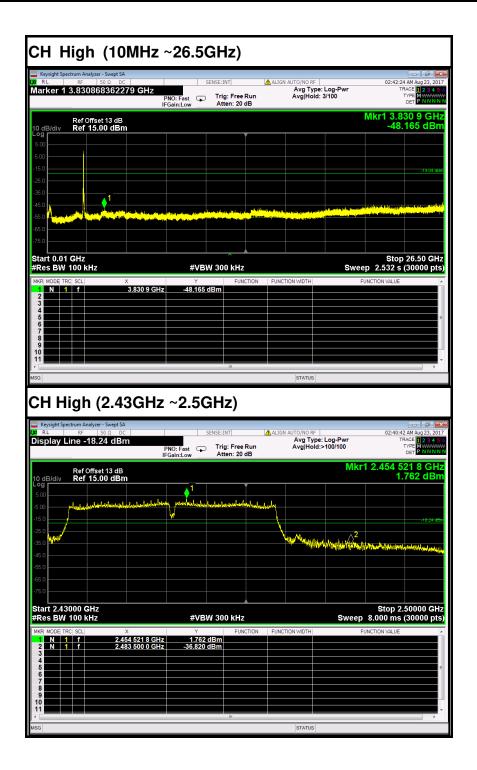


# IEEE 802.11n HT40 MHz mode (Antenna 1)



rsight Spectrum Analyzer - Swept S RF 50 Ω E ker 1 3.935948864	962 GHz	NO: Fast	NSE:INT	ALIGN AUTO/NO RF Avg Type: Avg Hold: 3	Log-Pwr 3/100	02:39:21 AM Aug 2 TRACE 1 2 TYPE MW DET P N
Ref Offset 13 dE	IFO	Gain:Low	Atten: 20 dB		N	/kr1 3.935 9 (
3/div Ref 15.00 dB	<u>m</u>					-49.324 d
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t 0.01 GHz						Stop 26.50
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N 1 f	3.935 9 GHz	-49.324 dE				
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I Mid vight Spectrum Analyzer - Swept S RF   50 Q Slay Line - 18:51 dE	e Sm P	NO: Fast 😱	NSE:INT	ALIGN AUTO/NO RF AVg Type: Avg[Hold:>	Log-Pwr 100/100	02:38:41 AM Aug 2 TRACE 12 TYPE SW DET P
ysight Spectrum Analyzer - Swept 1 L RF 50 Ω C Dlay Line -18.51 dB	DC SIM P IF(		NSE:INT	ALIGN AUTO/NO RF	·100/100	02:38:41 AM Aug 2: TRACE 1 2 TYPE MW DET P N 1 2.439 519 (
ysight Spectrum Analyzer - Swept S L RF 50 Ω (	im P IF B m	NO: Fast 😱 Gain:Low	NSE:INT Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	-100/100 Mk	02:38:41 AM Aug 2 TRACE 2 TYPE WW DET P N
ysight Spectrum Analyzer - Swept 1 L RF 50 Ω C Dlay Line -18.51 dB	im P IF B m	NO: Fast 😱	NSE:INT Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	·100/100	02:38:41 AM Aug 2: TRACE 1 2 TYPE MW DET P N 1 2.439 519 (
vsight Spectrum Analyzer - Swept	im P IF B m	NO: Fast 😱 Gain:Low	NSE:INT Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	-100/100 Mk	02:38:41 AM 40(2) TRACE [] 2 TYNE MW DET [] 1 12:439 519 ( 1.490 d
ysight Spectrum Analyzer - Swept 1 L RF 50 Ω C Dlay Line -18.51 dB	im P IF B m	NO: Fast 😱 Gain:Low	NSE:INT Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	-100/100 Mk	02:38:41 AM Aug 2: TRACE 1 2 TYPE MW DET P N 1 2.439 519 (
vsight Spectrum Analyzer - Swept	im P IF B m	NO: Fast 😱 Gain:Low	NSE:INT Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	-100/100 Mk	02:38:41 AM Aug 2: TRACE [] 2 TYPE [] 2 TYPE [] 2 T1 2:439 519 ( 1.490 d
vsight Spectrum Analyzer - Swept	im P IF B m	NO: Fast 😱 Gain:Low	NSE:INT Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	-100/100 Mk	02:38:41 AM Aug 2: TRACE [] 2 TYPE [] 2 TYPE [] 2 T1 2:439 519 ( 1.490 d
vsight Spectrum Analyzer - Swept	im P IF B m	NO: Fast Sain:Low	NSE:INT Trig: Free Run Atten: 20 dB	ALIGN AUTO/NO RF Avg Type: Avg Hold:>		02:38:41 AM Aug 2: TRACE [] 2 TYPE [] 2 TYPE [] 2 T1 2:439 519 ( 1.490 d
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right Spectrum Analyzer - Swept Ref Offset 13 dE Ref Offset 13 dE S/div Ref 15.00 dB International States of the second seco	S m P IFU S m m m m	NO: Fast Sain:Low	NSE:INT Trig: Free Run Atten: 20 dB Audustation point audustation	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	Head-Address of the second sec	0238:41 AM Aug 22 TRACE 0 2 TYPE M r1 2.439 519 ( 1.490 d -10 -10 -10 -10 -10 -10 -10 -10
right Spectrum Analyzer - Swept Ref Offset 13 dE Ref Offset 13 dE S/div Ref 15.00 dB International States of the second seco	x	ND: Fast Gain:Low	NSE:INT Trig: Free Run Atten: 20 dB Audustation point audustation	ALIGN AUTO/NO RF Avg Type: Avg Hold:>	Head-Address of the second sec	0238:41 AM Aug 22 TRACE 0 2 TYPE M r1 2.439 519 ( 1.490 d -10 -10 -10 -10 -10 -10 -10 -10







# 7.2.2. RADIATED EMISSIONS MEASUREMENT

# 7.2.2.1. LIMITS OF RADIATED EMISSIONS MEASUREMENT

According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

**Remark:** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

1. In the emission table above, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength (µV/m at 3-meter)	Field Strength (dBµV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

**NOTE**: (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).



# 7.2.2.2. TEST INSTRUMENTS

Radiated Emission Test Site 966 (2)										
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration					
PSA Series Spectrum Analyzer	Agilent	N9010A	MY52221469	02/21/2017	02/20/2018					
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	02/21/2017	02/20/2018					
Amplifier	EMEC	EM330	060661	03/18/2017	03/17/2018					
High Noise Amplifier	Agilent	8449B	3008A01838	02/21/2017	02/20/2018					
Loop Antenna	COM-POWER	AL-130	121044	09/25/2016	09/24/2017					
Bilog Antenna	SCHAFFNER	CBL6143	5082	02/21/2017	02/20/2018					
Horn Antenna	SCHWARZBECK	BBHA9120	D286	02/27/2018	02/27/2018					
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	02/27/2018	02/27/2018					
Turn Table	N/A	N/A	N/A	N.C.R	N.C.R					
Antenna Tower	SUNOL	TLT2	N/A	N.C.R	N.C.R					
Controller	Sunol Sciences	SC104V	022310-1	N.C.R	N.C.R					
Controller	СТ	N/A	N/A	N.C.R	N.C.R					
Temp. / Humidity Meter	Anymetre	JR913	N/A	02/21/2017	02/20/2018					
Test S/W	FARAD		LZ-RF / CCS	S-SZ-3A2						

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The FCC Site Registration number is 101879.

3. N.C.R = No Calibration Required.



# 7.2.2.3. Measuring Instruments and Setting

The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted	1MHz / 1MHz for Peak, 1 MHz / 10Hz for
band)	Average
RB / VB (Emission in non-restricted	1MHz / 1MHz for Peak, 1 MHz / 10Hz for
band)	Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB 100kHz for QP

7.2.2.4. TEST PROCEDURE (please refer to measurement standard)

# 1) Sequence of testing 9 kHz to 30 MHz

# Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions.

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

# Pre measurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna height is 0.8 meter.

--- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions



# Final measurement:

--- Identified emissions during the pre measurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement and the limit will be stored.

# 2) Sequence of testing 30 MHz to 1 GHz

# Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

# Pre measurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 3 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.



# Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position  $(\pm 45^{\circ})$  and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

# 3) Sequence of testing 1 GHz to 18 GHz

# Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

# Pre measurement:

- --- The turntable rotates from 0° to 315° using 45° steps.
- --- The antenna is polarized vertical and horizontal.
- --- The antenna height scan range is 1 meter to 2.5 meter.

--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.



# Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position  $(\pm 45^\circ)$  and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.

--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement with marked maximum final measurements and the limit will be stored.

# 4) Sequence of testing above 18 GHz Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 1 meter.

--- The EUT was set into operation.

# Pre measurement:

--- The antenna is moved spherical over the EUT in different polarisations of the antenna.

# Final measurement:

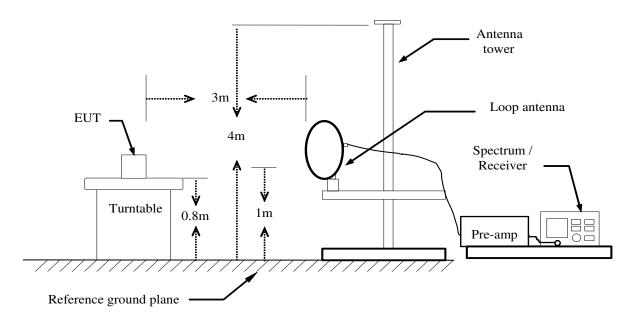
--- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

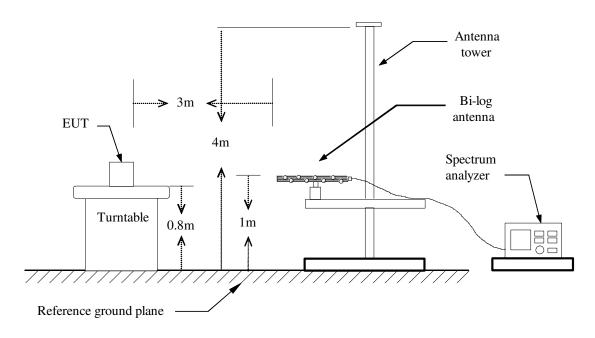


# 7.2.2.5. TEST SETUP

# Below 30MHz

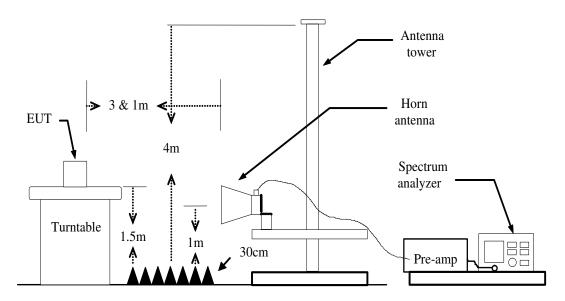


# Below 1 GHz



# Compliance Certification Services (Shenzhen) Inc.

# Above 1 GHz



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



# 7.2.2.6. DATA SAPLE

#### Below 1GHz

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
ХХХХ	36.37	-12.20	24.17	40.00	-15.83	V	QP

= Uncorrected Analyzer / Receiver reading

= Result (dBuV/m) – Limit (dBuV/m)

= Antenna factor + Cable loss – Amplifier gain = Reading (dBuV) + Corr. Factor (dB/m)

= Emission frequency in MHz

= Limit stated in standard

= Quasi-peak Reading

Frequency (MHz) Reading (dBuV) Correct Factor (dB/m) Result (dBuV/m) Limit (dBuV/m) Margin (dB) Q.P.

# Above 1GHz

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
XXXX	62.09	-11.42	50.67	74.00	-23.33	V	Peak
XXXX	49.78	-11.42	38.36	54.00	-15.64	V	AVG

Frequency (MHz) Reading (dBuV) Correction Factor (dB/m) Result (dBuV/m) Limit (dBuV/m) Margin (dB) Peak AVG

= Emission frequency in MHz

- = Uncorrected Analyzer / Receiver reading
- Correction Factor (dB/m) = Antenna factor + Cable loss Amplifier gain
  - = Reading (dBuV) + Corr. Factor (dB/m)

= Limit stated in standard

= Result (dBuV/m) – Limit (dBuV/m)

= Peak Reading

= Average Reading

# **Calculation Formula**

Margin (dB) = Result (dBuV/m) – Limits (dBuV/m) Result (dBuV/m) = Reading (dBuV) + Correction Factor



Tested by: Saber Huang

# 7.2.2.7. TEST RESULTS

# Below 1 GHz

# Below 1 GHz

# Test Mode: TX / IEEE 802.11b(CH Low)

Ambient temperature: <u>24°C</u>			: <u>24°C</u> <b>F</b>	Relative humidity: <u>52% RH</u>			Date: August 12, 2017		
	Frequency (MHz)	Reading (dBuV)	Correction Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole	Remark	

(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Pole (V/H)	Remark
137.6700	47.67	-12.22	35.45	43.50	-8.05	V	QP
250.1900	50.74	-9.09	41.65	46.00	-4.35	V	QP
375.3200	50.23	-7.28	42.95	46.00	-3.05	V	QP
624.6100	45.71	-3.71	42.00	46.00	-4.00	V	QP
749.7400	34.93	-3.11	31.82	46.00	-14.18	V	QP
874.8700	38.66	-2.31	36.35	46.00	-9.65	V	QP
137.6700	50.05	-12.22	37.83	43.50	-5.67	Н	QP
250.1900	52.77	-9.09	43.68	46.00	-2.32	Н	QP
375.3200	48.32	-7.28	41.04	46.00	-4.96	Н	QP
440.3100	38.85	-5.39	33.46	46.00	-12.54	Н	QP
624.6100	43.42	-3.71	39.71	46.00	-6.29	Н	QP
874.8700	38.03	-2.31	35.72	46.00	-10.28	Н	QP

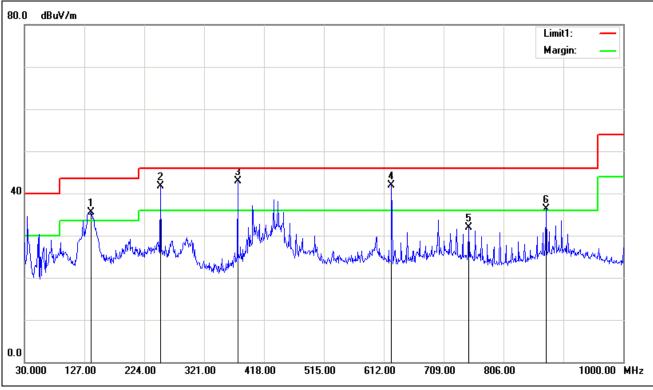
Pre-scan all mode and recorded the worst case results in this report (802.11b (Low Mid))

- 1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)
- 2. Radiated emissions measured in frequency range from 9kHz to 1GHz were made with an instrument using Quasi-peak detector mode.
- 3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4. The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.

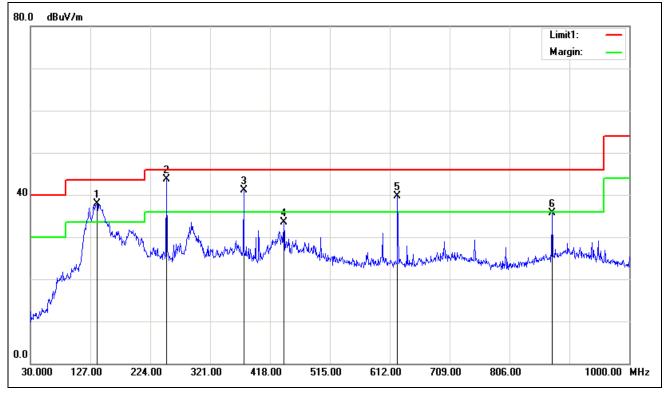
5.	Frequency (MHz)	= Emission frequency in MHz
	Reading (dBµV/m)	= Receiver reading
	Correction Factor (dB)	= Antenna factor + Cable loss – Amplifier gain
	Limit (dBµV/m)	= Limit stated in standard
	Margin (dB)	= Measured (dBµV/m) – Limits (dBµV/m)
	Antenna Pol e(H/V)	= Current carrying line of reading



# Vertical



### Horizontal





#### Above 1 GHz Antenna 0

# **Test Mode:** TX / IEEE 802.11b(CH Low)

Tested by: Saber Huang

Ambient temperature: 24°CRelative humidity: 52% RHDate: August 12, 2017										
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark			
1765.000	53.10	-6.35	46.75	74.00	-27.25	V	peak			
2647.000	46.16	-2.00	44.16	74.00	-29.84	V	peak			
3196.000	47.07	-1.03	46.04	74.00	-27.96	V	peak			
4339.000	42.62	2.78	45.40	74.00	-28.60	V	peak			
4825.000	47.64	4.41	52.05	74.00	-21.95	V	peak			
5644.000	41.54	5.93	47.47	74.00	-26.53	V	peak			
	·									
2629.000	46.64	-2.03	44.61	74.00	-29.39	Н	Peak			
3664.000	44.62	0.17	44.79	74.00	-29.21	Н	Peak			
4564.000	42.55	3.56	46.11	74.00	-27.89	Н	Peak			
4825.000	46.47	4.41	50.88	74.00	-23.12	Н	peak			
5563.000	41.48	5.90	47.38	74.00	-26.62	Н	peak			
6337.000	42.41	6.63	49.04	74.00	-24.96	Н	Peak			

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Radiated emissions measured in frequency above 1000MHz were made with an instrument using 2. peak/average detector mode.
- Average test would be performed if the peak result were greater than the average limit or as required 3. by the applicant.
- Data of measurement within this frequency range shown " --- " in the table above means the reading 4. of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " 5. remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Tested by:** Saber Huang

#### Ambient temperature: 24°C Relative humidity: 52% RH Date: August 12, 2017 Antenna Correction Frequency Reading Result Limit Margin Remark Factor Pole (dB) (MHz) (dBuV) (dBuV/m) (dBuV/m) (dB/m) (V/H) 1765.000 -6.35 74.00 -28.89 ٧ 51.46 45.11 Peak 45.76 -2.04 43.72 74.00 -30.28 V Peak 2620.000 ٧ 3205.000 47.28 -1.02 46.26 74.00 -27.74Peak ٧ 4240.000 42.46 2.43 44.89 74.00 -29.11 Peak 4.56 74.00 V 4870.000 46.64 51.20 -22.80 Peak 5689.000 42.10 5.95 48.05 74.00 -25.95 ٧ Peak 2044.000 45.63 -4.76 40.87 74.00 -33.13н Peak Н 2665.000 45.95 -1.96 43.99 74.00 -30.01 Peak 3601.000 44.57 -0.09 44.48 74.00 -29.52 Н Peak 4393.000 42.60 2.97 45.57 74.00 -28.43 н Peak Peak 4870.000 46.82 4.56 51.38 74.00 -22.62 Н 74.00 Н 6166.000 41.09 6.35 47.44 -26.56Peak

# Test Mode: TX / IEEE 802.11b (CH Mid)

1.

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
   Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).

Test Mode: T	Test Mode:TX / IEEE 802.11b (CH High)Tested by: Saber Huang											
Ambient tem	perature: 2	<u>24°C</u> <b>Re</b>	lative humic	<b>dity:</b> <u>52% R</u>	<u>H</u> Da	te: <u>August</u>	12, 2017					
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark					
2179.000	45.80	-4.02	41.78	74.00	-32.22	V	Peak					
2638.000	45.20	-2.01	43.19	74.00	-30.81	V	Peak					
3196.000	47.80	-1.03	46.77	74.00	-27.23	V	Peak					
3952.000	43.21	1.39	44.60	74.00	-29.40	V	Peak					
4924.000	44.92	4.73	49.65	74.00	-24.35	V	Peak					
5563.000	40.78	5.90	46.68	74.00	-27.32	V	Peak					
1765.000	47.30	-6.35	40.95	74.00	-33.05	Н	Peak					
2233.000	46.60	-3.72	42.88	74.00	-31.12	Н	Peak					
2827.000	44.92	-1.67	43.25	74.00	-30.75	Н	Peak					
3745.000	43.54	0.51	44.05	74.00	-29.95	Н	Peak					
4924.000	45.80	4.73	50.53	74.00	-23.47	Н	Peak					
5941.000	41.04	6.06	47.10	74.00	-26.90	Н	Peak					

# Test Mode. TX / IEEE 802 11h (CH High)

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- Average test would be performed if the peak result were greater than the average limit or as required 3. by the applicant.
- Data of measurement within this frequency range shown "---" in the table above means the reading 4. of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " 5. remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m). 6.



# Antenna 1

Test Mode: TX / IEEE 802.11b(CH Low)

Ambient temperature: <u>24°C</u> Relative humidity: <u>52% RH</u>

Tested by: <u>Saber Huang</u> Date: August 12, 2017

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark		
2647.000	45.84	-2.00	43.84	74.00	-30.16	V	peak		
3196.000	47.29	-1.03	46.26	74.00	-27.74	V	peak		
3601.000	42.73	-0.09	42.64	74.00	-31.36	V	peak		
3943.000	42.52	1.35	43.87	74.00	-30.13	V	peak		
4366.000	41.59	2.88	44.47	74.00	-29.53	V	peak		
4825.000	45.67	4.41	50.08	74.00	-23.92	V	peak		
2251.000	46.03	-3.62	42.41	74.00	-31.59	Н	Peak		
2656.000	45.77	-1.98	43.79	74.00	-30.21	Н	Peak		
2809.000	44.44	-1.70	42.74	74.00	-31.26	Н	Peak		
3196.000	44.30	-1.03	43.27	74.00	-30.73	Н	peak		
3601.000	44.24	-0.09	44.15	74.00	-29.85	Н	peak		
4825.000	44.96	4.41	49.37	74.00	-24.63	Н	peak		

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4. Data of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).

# Test Mode: TX / IEEE 802.11b (CH Mid)

Ambient temperature: 24°C

Tested by: <u>Saber Huang</u> Date: August 12, 2017

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark				
2647.000	45.48	-2.00	43.48	74.00	-30.52	V	Peak				
3196.000	47.50	-1.03	46.47	74.00	-27.53	V	Peak				
3601.000	43.49	-0.09	43.40	74.00	-30.60	V	Peak				
4402.000	41.77	3.01	44.78	74.00	-29.22	V	Peak				
4870.000	47.17	4.56	51.73	74.00	-22.27	V	Peak				
5590.000	41.09	5.91	47.00	74.00	-27.00	V	Peak				
2620.000	45.66	-2.04	43.62	74.00	-30.38	Н	Peak				
2827.000	44.55	-1.67	42.88	74.00	-31.12	Н	Peak				
3664.000	43.73	0.17	43.90	74.00	-30.10	Н	Peak				
4195.000	43.07	2.28	45.35	74.00	-28.65	Н	Peak				
4870.000	46.22	4.56	50.78	74.00	-23.22	Н	Peak				
5518.000	40.94	5.88	46.82	74.00	-27.18	н	Peak				

**Relative humidity: 52% RH** 

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).

# Test Mode: TX / IEEE 802.11b (CH High)

Ambient temperature: 24°C

Tested by: <u>Saber Huang</u> Date: August 12, 2017

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark			
2638.000	46.44	-2.01	44.43	74.00	-29.57	V	Peak			
3196.000	47.44	-1.03	46.41	74.00	-27.59	V	Peak			
4132.000	43.42	2.05	45.47	74.00	-28.53	V	Peak			
4573.000	42.09	3.59	45.68	74.00	-28.32	V	Peak			
4924.000	46.65	4.73	51.38	74.00	-22.62	V	Peak			
5410.000	41.09	5.71	46.80	74.00	-27.20	V	Peak			
2647.000	46.51	-2.00	44.51	74.00	-29.49	Н	Peak			
3196.000	44.47	-1.03	43.44	74.00	-30.56	Н	Peak			
3601.000	45.19	-0.09	45.10	74.00	-28.90	Н	Peak			
3997.000	42.67	1.58	44.25	74.00	-29.75	Н	Peak			
4438.000	42.76	3.13	45.89	74.00	-28.11	Н	Peak			
4924.000	45.03	4.73	49.76	74.00	-24.24	н	Peak			

**Belative humidity: 52% BH** 

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).



# Antenna 0

**Test Mode:** TX / IEEE 802.11g(CH Low)

Ambient temperature: <u>24°C</u> Relative humidity: <u>52% RH</u>

Tested by: <u>Saber Huang</u> Date: August 12, 2017

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark		
2638.000	45.75	-2.01	43.74	74.00	-30.26	V	Peak		
3196.000	47.67	-1.03	46.64	74.00	-27.36	V	Peak		
3997.000	42.84	1.58	44.42	74.00	-29.58	V	Peak		
4825.000	48.49	4.41	52.90	74.00	-21.10	V	Peak		
4825.000	41.86	4.41	46.27	54.00	-7.73	V	AVG		
5059.000	42.43	5.09	47.52	74.00	-26.48	V	Peak		
6391.000	41.44	6.71	48.15	74.00	-25.85	V	Peak		
		·							
1351.000	47.76	-7.24	40.52	74.00	-33.48	Н	Peak		
2647.000	46.03	-2.00	44.03	74.00	-29.97	Н	Peak		
3214.000	44.92	-1.00	43.92	74.00	-30.08	Н	Peak		
4267.000	42.92	2.53	45.45	74.00	-28.55	Н	Peak		
4825.000	48.38	4.41	52.79	74.00	-21.21	Н	Peak		
4825.000	37.75	4.41	42.16	54.00	-11.84	Н	AVG		
6409.000	42.21	6.74	48.95	74.00	-25.05	Н	Peak		

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4. Data of measurement within this frequency range shown "----" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).



Tested by: Saber Huang

Ambient tem	perature: 2	<u>24°C</u> <b>Re</b>	lative humi	<b>dity:</b> <u>52% R</u>	<u>RH</u> Da	te: <u>August</u>	12, 2017				
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark				
1765.000	53.00	-6.35	46.65	74.00	-27.35	V	Peak				
2647.000	46.23	-2.00	44.23	74.00	-29.77	V	Peak				
3196.000	48.20	-1.03	47.17	74.00	-26.83	V	Peak				
4150.000	43.15	2.12	45.27	74.00	-28.73	V	Peak				
4870.000	49.10	4.56	53.66	74.00	-20.34	V	Peak				
4870.000	40.67	4.56	45.23	54.00	-8.77	V	AVG				
5959.000	41.48	6.06	47.54	74.00	-26.46	V	Peak				
2656.000	47.02	-1.98	45.04	74.00	-28.96	Н	Peak				
3601.000	46.06	-0.09	45.97	74.00	-28.03	Н	Peak				
4330.000	42.44	2.75	45.19	74.00	-28.81	Н	Peak				
4879.000	46.37	4.59	50.96	74.00	-23.04	Н	Peak				
5608.000	40.91	5.92	46.83	74.00	-27.17	Н	Peak				
6535.000	41.72	6.95	48.67	74.00	-25.33	Н	Peak				

# Test Mode: TX / IEEE 802.11g (CH Mid)

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).



Ambient tem	perature: 2	<u>24°C</u> <b>Re</b>	ative humi	<b>dity:</b> <u>52%</u> R	<u>H</u> Da	te: <u>August</u>	12, 2017				
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark				
2656.000	45.92	-1.98	43.94	74.00	-30.06	V	Peak				
3196.000	47.24	-1.03	46.21	74.00	-27.79	V	Peak				
3844.000	42.57	0.93	43.50	74.00	-30.50	V	Peak				
4285.000	43.05	2.59	45.64	74.00	-28.36	V	Peak				
4924.000	45.62	4.73	50.35	74.00	-23.65	V	Peak				
5950.000	40.46	6.06	46.52	74.00	-27.48	V	Peak				
1765.000	49.36	-6.35	43.01	74.00	-30.99	Н	Peak				
2242.000	45.05	-3.67	41.38	74.00	-32.62	Н	Peak				
2647.000	45.43	-2.00	43.43	74.00	-30.57	Н	Peak				
3655.000	43.24	0.13	43.37	74.00	-30.63	Н	Peak				
3997.000	42.66	1.58	44.24	74.00	-29.76	Н	Peak				
4339.000	43.19	2.78	45.97	74.00	-28.03	Н	Peak				

# Test Mode: TX / IEEE 802 11a (CH High)

Tested by: Saber Huang

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Radiated emissions measured in frequency above 1000MHz were made with an instrument using 2. peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- Data of measurement within this frequency range shown "---" in the table above means the reading 4. of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " 5. remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



# Antenna 1

**Test Mode:** TX / IEEE 802.11g(CH Low)

Ambient temperature: <u>24°C</u> Relative humidity: <u>52% RH</u>

Tested by: <u>Saber Huang</u> Date: August 12, 2017

	•			,				
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark	
3196.000	47.88	-1.03	46.85	74.00	-27.15	V	Peak	
3682.000	43.28	0.25	43.53	74.00	-30.47	V	Peak	
3997.000	42.31	1.58	43.89	74.00	-30.11	V	Peak	
4357.000	41.78	2.85	44.63	74.00	-29.37	V	Peak	
4861.000	41.87	4.53	46.40	74.00	-27.60	V	Peak	
5158.000	41.53	5.26	46.79	74.00	-27.21	V	Peak	
1954.000	45.91	-5.29	40.62	74.00	-33.38	н	Peak	
3196.000	43.16	-1.03	42.13	74.00	-31.87	Н	Peak	
3601.000	44.30	-0.09	44.21	74.00	-29.79	Н	Peak	
4393.000	42.34	2.97	45.31	74.00	-28.69	Н	Peak	
4825.000	42.96	4.41	47.37	74.00	-26.63	н	Peak	
5482.000	42.37	5.84	48.21	74.00	-25.79	Н	Peak	

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4. Data of measurement within this frequency range shown "----" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).

Test Mode: TX / IEEE 802.11g (CH Mid)Tested by: Saber Huang											
Ambient tem	perature: 2	<u>24°C</u> <b>Re</b>	lative humi	<b>dity:</b> <u>52% R</u>	<u>H</u> Da	te: <u>August</u>	<u>12, 2017</u>				
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark				
1198.000	50.08	-7.80	42.28	74.00	-31.72	V	Peak				
2647.000	46.05	-2.00	44.05	74.00	-29.95	V	Peak				
3205.000	47.52	-1.02	46.50	74.00	-27.50	V	Peak				
4159.000	42.52	2.15	44.67	74.00	-29.33	V	Peak				
4771.000	41.80	4.23	46.03	74.00	-27.97	V	Peak				
5176.000	41.92	5.29	47.21	74.00	-26.79	V	Peak				
3196.000	43.36	-1.03	42.33	74.00	-31.67	Н	Peak				
3601.000	43.65	-0.09	43.56	74.00	-30.44	Н	Peak				
3997.000	44.20	1.58	45.78	74.00	-28.22	Н	Peak				
4519.000	42.10	3.41	45.51	74.00	-28.49	Н	Peak				
4879.000	43.70	4.59	48.29	74.00	-25.71	Н	Peak				
5482.000	40.89	5.84	46.73	74.00	-27.27	Н	Peak				

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4. Data of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).



Test mode: 1X / TEEE 802.11g (CH High) Tested by: Saber Huang												
Ambient tem	Ambient temperature: <u>24°C</u> Relative humidity: <u>52% RH</u> Date: <u>August 12, 2017</u>											
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark					
3196.000	47.84	-1.03	46.81	74.00	-27.19	V	Peak					
4213.000	42.32	2.34	44.66	74.00	-29.34	V	Peak					
4780.000	42.31	4.26	46.57	74.00	-27.43	V	Peak					
4924.000	42.98	4.73	47.71	74.00	-26.29	V	Peak					
5428.000	41.10	5.74	46.84	74.00	-27.16	V	Peak					
6058.000	40.39	6.17	46.56	74.00	-27.44	V	Peak					
2638.000	45.83	-2.01	43.82	74.00	-30.18	Н	Peak					
3223.000	44.80	-0.99	43.81	74.00	-30.19	Н	Peak					
3601.000	45.17	-0.09	45.08	74.00	-28.92	Н	Peak					
4150.000	42.86	2.12	44.98	74.00	-29.02	Н	Peak					
4798.000	42.34	4.32	46.66	74.00	-27.34	Н	Peak					
4924.000	43.10	4.73	47.83	74.00	-26.17	Н	Peak					

# Test Mode: TX / IEEE 802 11a (CH High)

Tested by: Saber Huang

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Radiated emissions measured in frequency above 1000MHz were made with an instrument using 2. peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- Data of measurement within this frequency range shown "---" in the table above means the reading 4. of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " 5. remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Test Mode: <u>TX / IEEE 802.11n HT20 MHz (CH Low)</u>					Tested by: Saber Huang		
Ambient temperature: 24°CRelative humidity: 52% RHDate: August 12, 2017							
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
2521.000	45.09	-2.22	42.87	74.00	-31.13	V	Peak
3196.000	47.43	-1.03	46.40	74.00	-27.60	V	Peak
3682.000	42.95	0.25	43.20	74.00	-30.80	V	Peak
3898.000	42.83	1.16	43.99	74.00	-30.01	V	Peak
4573.000	42.13	3.59	45.72	74.00	-28.28	V	Peak
4825.000	46.70	4.41	51.11	74.00	-22.89	V	Peak
		•				·	
2233.000	45.67	-3.72	41.95	74.00	-32.05	Н	Peak
2836.000	44.66	-1.66	43.00	74.00	-31.00	Н	Peak
3601.000	47.03	-0.09	46.94	74.00	-27.06	Н	Peak
3997.000	43.32	1.58	44.90	74.00	-29.10	Н	Peak
4825.000	49.41	4.41	53.82	74.00	-20.18	Н	Peak
4825.000	41.22	4.41	45.63	54.00	-8.37	Н	AVG
5536.000	42.03	5.89	47.92	74.00	-26.08	Н	Peak

# Combine with Antenna 0 and Antenna 1

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).