

# **FCC Test Report**

Report No.: AGC08834190701FE05

FCC ID	2AT77VX-1	
APPLICATION PURPOSE	Original Equipment	
PRODUCT DESIGNATION	WiFi Bluetooth Wall Amplifier	
BRAND NAME	N/A	
MODEL NAME	VX-1	
APPLICANT	Dongguan fantasy electronic technology c	co., LTD
DATE OF ISSUE	Aug. 17, 2019	
STANDARD(S) TEST PROCEDURE(S)	FCC Part 15.247	
REPORT VERSION	V1.0	

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### **REPORT REVISE RECORD**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	1	Aug. 17, 2019	Valid	Initial Release



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#### **1. VERIFICATION OF CONFORMITY**

Applicant	Dongguan fantasy electronic technology co., LTD			
Address	No.2, yinsong first street, yinsong road, yuan village, qingxi town, dongguan city, China			
manufacturer	Dongguan boling electronics co., LTD			
Address	No.3, floor 2, no.392, luhu east road, Dali village, qingxi town, dongguan city, China			
Factory	Dongguan boling electronics co., LTD			
Address	No.3, floor 2, no.392, luhu east road, Dali village, qingxi town, dongguan city, China			
Product Designation	WiFi Bluetooth Wall Amplifier			
Brand Name	N/A			
Test Model	VX-1			
Date of test	Aug. 01, 2019 to Aug. 17, 2019			
Deviation	None			
Condition of Test Sample	Normal			
Test Result	Pass			
Report Template	AGCRT-US-BGN/RF			

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. 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 radiated emission limits of FCC Rules Part 15.247.

Draven.li **Prepared By** Draven Li Aug. 17, 2019 (Project Engineer) Zhand Max **Reviewed By** Max Zhang Aug. 17, 2019 (Reviewer) -orroy Approved By Forrest Lei Aug. 17, 2019 (Authorized Officer)

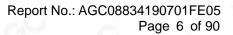


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# 2. GENERAL INFORMATION

#### 2.1. PRODUCT DESCRIPTION

The EUT is designed as "WiFi Bluetooth Wall Amplifier". It is designed by way of utilizing the DSSS and OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.412 GHz~2.462GHz		
Output Power(Average)	IEEE 802.11b:17.55dBm; IEEE 802.11g:15.28dBm; IEEE 802.11n(20):14.79dBm; IEEE 802.11n(40):12.91dBm		
Modulation	DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)		
Number of channels			
Hardware Version	RRD-8223S WIFI V1.1		
Software Version	V4.0		
Antenna Designation	FPC antenna		
Antenna Gain	3dBi		
Power Supply	DC 24V		

#### 2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
		2412 MHZ
	2	2417 MHZ
00,00	3	2422 MHZ
	4	2427 MHZ
	5	2432 MHZ
2400~2483.5MHZ	6	2437 MHZ
	7	2442 MHZ
30	8	2447 MHZ
Non You	9	2452 MHZ
	10	2457 MHZ
	11	2462 MHZ

Note: For 20MHZ bandwidth system use Channel 1 to Channel 11, For 40MHZ bandwidth system use Channel 3 to Channel 9



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#### 2.3. IEEE 802.11N MODULATION SCHEME

MCS Index	ss Modulation	Modulation R	ss Modulation R N	ss Modulation R	NBPSC	NCI	BPS	NDI	BPS	rate(I	ata Mbps) nsGl
mack					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5	
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0	
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5	
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0	
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0	
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0	
6	1	64-QAM	3/4	6	312	648	234	489	58.5	121.5	
7	<u> </u>	64-QAM	5/6	6	312	648	260	540	65.0	135.0	

Symbol	Explanation		
NSS	Number of spatial streams		
R	Code rate		
NBPSC	Number of coded bits per single carrier		
NCBPS	Number of coded bits per symbol		
NDBPS	Number of data bits per symbol		
GI	Guard interval		

#### 2.4. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AT77VX-1** filing to comply with the FCC Part 15 requirements.

#### 2.5. TEST METHODOLOGY

KDB 558074 D01 15.247 Meas Guidance v05: Guidance for compliance measurements on Digital transmissio n system, frequency hopping spread spectrum system, and hybrid system devices operating under section 15.247 of the FCC rules ANSI C63.10:2013 : American National Standard for Testing Unlicensed Wireless Devices

# 2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

#### 2.7. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.



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# **3. MEASUREMENT UNCERTAINTY**

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in

- measurement" (GUM) published by CISPR and ANSI.
- Uncertainty of Conducted Emission,  $Uc = \pm 3.2 dB$
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB



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# 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel TX
2	Middle channel TX
3	High channel TX
4	Normal operating
Transmit Transmit	by 802.11b with Date rate (1/2/5.5/11) by 802.11g with Date rate (6/9/12/18/24/36/48/54) by 802.11n (20MHz) with Date rate (6.5/13/19.5/26/39/52/58.5/65) by 802.11n (40MHz) with Date rate (13.5/27/40.5/54/81/108/121.5/135)

#### Note:

1. The EUT has been set to operate continuously on the lowest, middle and highest operation frequency Individually, and the eut is operating at its maximum duty cycle>or equal 98%

2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.

3. The test software is the QA\_tools\_V2.25 which can set the EUT into the individual test modes.



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# **5. SYSTEM TEST CONFIGURATION**

**5.1. CONFIGURATION OF EUT SYSTEM** 

Configure :

EUT	0	AE

#### **5.2. EQUIPMENT USED IN EUT SYSTEM**

Item	Equipment	Model No.	ID or Specification	Remark
1	WiFi Bluetooth Wall Amplifier	VX-1	2AT77VX-1	EUT
2	Loudspeaker			AE
3	DC POWER SUPPLY	PS-305DM		PS-305DM

#### **5.3. SUMMARY OF TEST RESULTS**

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.247	Output Power	Compliant
§15.247	6 dB Bandwidth	Compliant
§15.247	Conducted Spurious Emission	Compliant
§15.247	Maximum Conducted Output Power SPECTRAL Density	Compliant
§15.209	Radiated Emission	Compliant
§15.247	Band Edges	Compliant
§15.207	Line Conduction Emission	Compliant



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# 6. TEST FACILITY

Test SiteAttestation of Global Compliance (Shenzhen) Co., LtdLocation1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Com Fuhai Street, Bao'an District, Shenzhen, Guangdong, China		
FCC Test Firm Registration Number	975832	
A2LA Cert. No.	5054.02	
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA	

#### **TEST EQUIPMENT OF CONDUCTED EMISSION TEST**

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	Jun. 10, 2019	Jun. 09, 2020
LISN	R&S	ESH2-Z5	100086	Aug. 28, 2018	Aug. 27, 2019

#### **TEST EQUIPMENT OF RADIATED EMISSION TEST**

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Jun. 10, 2019	Jun. 09, 2020
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 20, 2018	Dec. 19, 2019
Power sensor	Aglient	U2021XA	MY54110007	Sep. 20, 2018	Sep. 19, 2019
2.4GHz Fliter	Micro-tronics	087	N/A	Jun. 10, 2019	Jun. 09, 2020
Attenuator	Weinachel Corp	58-30-33	N/A	Jun. 10, 2019	Jun. 09, 2020
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep. 21, 2017	Sep. 20, 2020
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Jun. 14, 2018	Jun. 13, 2020
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May. 26, 2018	May. 25, 2020
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Oct. 25, 2018	Oct. 24, 2019
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep. 28, 2017	Sep. 27, 2019



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# 7. OUTPUT POWER

#### 7.1. MEASUREMENT PROCEDURE

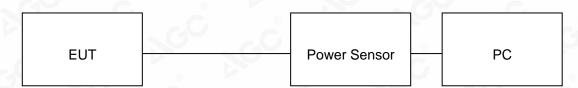
For average power test:

- 1. Connect EUT RF output port to power sensor through an RF attenuator.
- 2. Connect the power sensor to the PC.
- 3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 4. Record the maximum power from the software.

**Note :** The EUT was tested according to ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements.

# 7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

### AVERAGE POWER SETUP





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### 7.3. LIMITS AND MEASUREMENT RESULT

TEST ITEM	OUTPUT POWER
TEST MODE	802.11b with data rate 1

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	17.55	30	Pass
2.437	17.38	30	Pass
2.462	17.49	30	Pass

TEST ITEM	OUTPUT POWER	©		No.
TEST MODE	802.11g with data rate 6	SCO	- Ĝ	3

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	15.28	30	Pass
2.437	15.01	30	Pass
2.462	15.15	30	Pass

TEST ITEM	OUTPUT POWER	0		S
TEST MODE	802.11n 20 with data rate 6.5	- GC	8	0

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	14.61	30	Pass
2.437	14.58	30	Pass
2.462	14.79	30	Pass



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Frequency	Average Power	Applicable Limits	
0		0	20- 20-
TEST MODE	802.11n 40 with data rate 13.	5	-0
TEST ITEM	OUTPUT POWER		

	(GHz)	(dBm)	(dBm)	Pass or Fail
	2.422	12.56	30	Pass
C	2.437	12.75	30	Pass
	2.452	12.91	30	Pass



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#### 8.6 DB BANDWIDTH

#### **8.1. MEASUREMENT PROCEDURE**

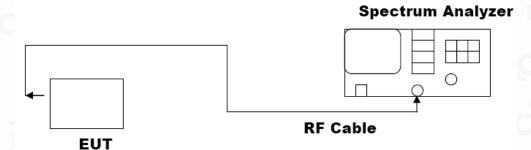
1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator

2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.

- 3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW $\ge$ 3×RBW.
- 4. Set SPA Trace 1 Max hold, then View.

**Note:** The EUT was tested according to ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements.

#### 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)





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#### **8.3. LIMITS AND MEASUREMENT RESULTS**

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11b with data rate 11

#### LIMITS AND MEASUREMENT RESULT

Appliachte Limite		Applicable Limits	
Applicable Limits	Test Dat	a (MHz)	Criteria
	Low Channel	9.782	PASS
>500KHZ	Middle Channel	10.05	PASS
	High Channel	10.04	PASS

TEST ITEM	6DB BANDWIDTH	C	
TEST MODE	802.11g with data rate 54		0

	LIMITS AND MEASUR	REMENT RESULT	
Applicable Limite		Applicable Limits	
Applicable Limits	Test Data	(MHz)	Criteria
	Low Channel	15.11	PASS
>500KHZ	Middle Channel	15.11	PASS
	High Channel	15.11	PASS

TEST ITEM	6DB BANDWIDTH		Sol.	- 60
TEST MODE	802.11n 20 with data rate 65	0	©	

	LIMITS AND MEAS	UREMENT RESULT	
Applicable Limite		Applicable Limits	
Applicable Limits	Test Da	ta (MHz)	Criteria
	Low Channel	15.10	PASS
>500KHZ	Middle Channel	15.10	PASS
	High Channel	15.09	PASS



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TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11n 40 with data rate 135
8	

Annliaghla Limita	Applicable Limits					
Applicable Limits	Test Da	ta (MHz)	Criteria			
	Low Channel	35.06	PASS			
>500KHZ	Middle Channel	35.04	PASS			
	High Channel	35.08	PASS			



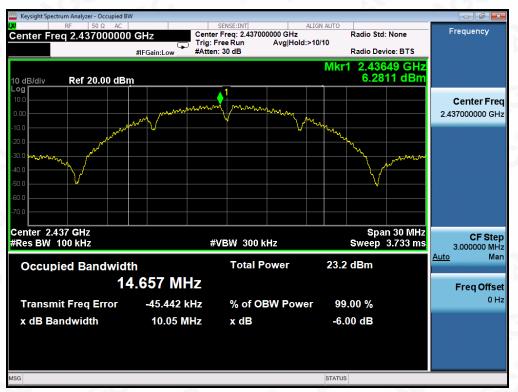
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# 802.11b TEST RESULT TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL





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#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

# 802.11g TEST RESULT

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL





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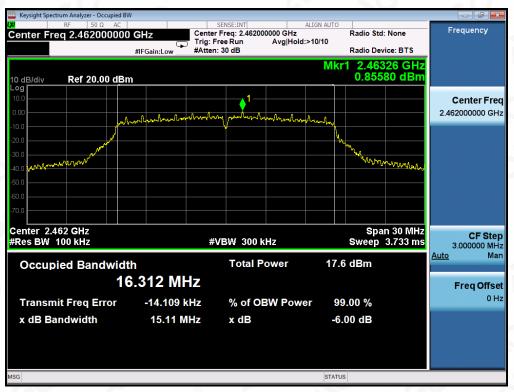
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#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL





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#### Center Freq: 2.412000000 GHz Trig: Free Run Avg|Hol #Atten: 30 dB Frequency Radio Std: None Center Freq 2.412000000 GHz Avg|Hold:>10/10 #IFGain:Low Radio Device: BTS 2.41326 GHz 0.49579 dBm Mkr1 Ref 20.00 dBm l0 dB **Center Frea** 2.412000000 GHz March . MMA MAN WAA Span 30 MHz Sweep 3.733 ms Center 2.412 GHz #Res BW 100 kHz CF Step 3.000000 MHz #VBW 300 kHz Ma <u>Auto</u> **Total Power** 16.8 dBm **Occupied Bandwidth** 17.503 MHz **Freq Offset** 0 Hz -7.670 kHz % of OBW Power 99.00 % Transmit Freq Error x dB Bandwidth 15.10 MHz x dB -6.00 dB

#### 802.11n (20) TEST RESULT

#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL





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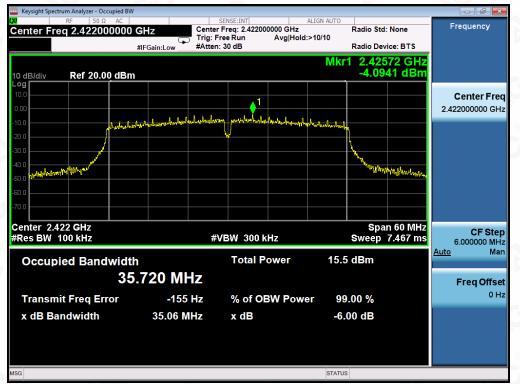
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#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

# 802.11n (40) TEST RESULT

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL





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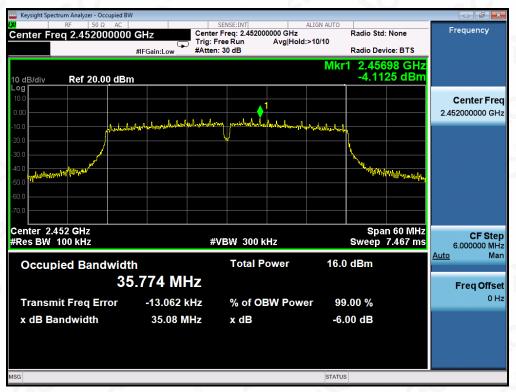
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#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

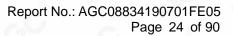
#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL





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#### 9. CONDUCTED SPURIOUS EMISSION

#### 9.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Trace 1 Max hold, then View.
- **Note:** The EUT was tested according to ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements. Owing to satisfy the requirements of the number of measurement points, we set the RBW=1MHz, VBW>RBW, scan up through 10th harmonic, and consider the tested results as the worst case, if the tested results conform to the requirement, we can deem that the real tested results(set the RBW=100KHz, VBW>RBW) are conform to the requirement.

#### 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 8.2.

#### 9.3. MEASUREMENT EQUIPMENT USEDJN

The same as described in section 6.

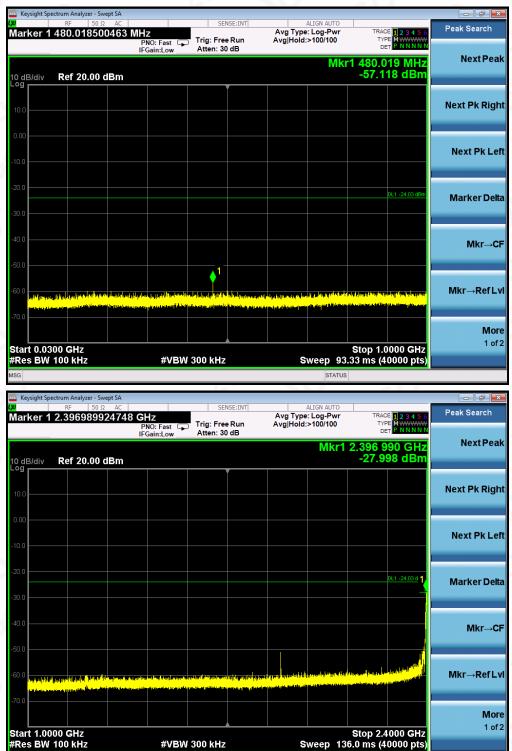
#### 9.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEAS	SUREMENT RESULT		
	Measurement Result		
Applicable Limits	Test Data	Criteria	
In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency	At least -30dBc than the limit Specified on the BOTTOM Channel	PASS	
power that is produce by the intentional radiator shall be at least 30 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiation 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))	At least -30dBc than the limit Specified on the TOP Channel	PASS	



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#### TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11b FOR MODULATION IN LOW CHANNEL

Global Comp G Attestation of Global Compliance

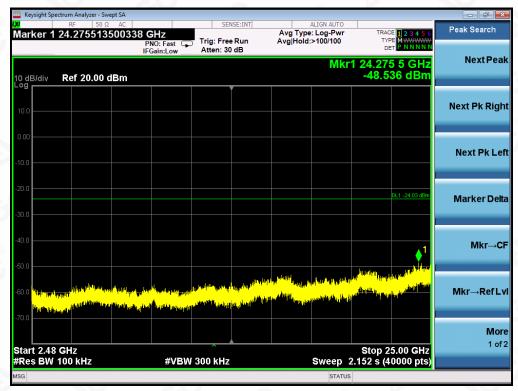
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#VBW 300 kHz

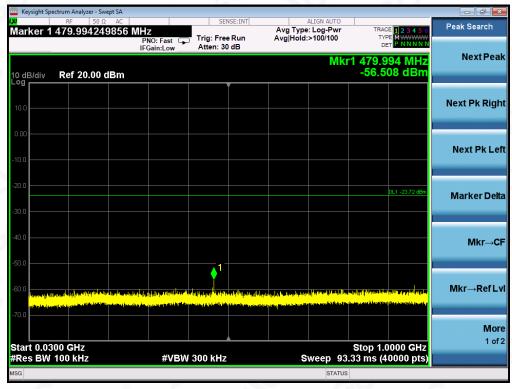
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Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China Tel: +86-755 2523 4088 E-mail:agc@agc-cert.com Service Hotline:400 089 2118





#### TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11b FOR MODULATION IN MIDDLE CHANNEL





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Add: 2/F., Building 2, Sanwei Chaxi Industrial Park, Sanwei Community,



Keysight Spee	RF 50				NSE:INT		ALIGN AUTO			Peak Search
larker 1	2.3989849	974624	GHz PNO: Fast G IFGain:Low	Trig: Free Atten: 30		Avg Type Avg Hold:	: Log-Pwr >100/100		1 2 3 4 5 6 M P N N N N N	
							Mkr1	2.398 98	5 GHz	NextPe
) dB/div og	Ref 20.00	dBm						-52.62	2 dBm	
										Next Pk Ri
0.0										NEXL PK KI
.00										
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0.0										
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0.0										
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art 1.004								Ston 2 40		
			#VBV	V 300 kHz		S	weep 136	Stop 2.40 .0 ms (40	000 GHz 000 pts)	
Res BW			#VBV	V 300 kHz		S	weep 136	Stop 2.40 .0 ms (40	000 GHz 000 pts)	
Res BW '		wept SA	#VBV	V 300 kHz		S	weep 136	Stop 2.40 .0 ms (40	000 GHz 000 pts)	
Res BW <sup>4</sup> G Keysight Spec	trum Analyzer - S	Ω AC		SEM	NSE:INT	Avg Type	ALIGN AUTO	trace	000 pts)	
Res BW <sup>4</sup> G Keysight Spec	trum Analyzer - S RF 50	Ω AC		SEN	NSE:INT		ALIGN AUTO	TRACE	000 pts)	Peak Search
Res BW	100 kHz trum Analyzer - S RF 50 24.4443821	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	TRACE TYPE 24.443	000 pts)	Peak Search
Res BW	trum Analyzer - S RF 50	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	TRACE	000 pts)	Peak Search
Res BW	100 kHz trum Analyzer - S RF 50 24.4443821	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	TRACE TYPE 24.443	000 pts)	Peak Search Next Po
Res BW	100 kHz trum Analyzer - S RF 50 24.4443821	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	TRACE TYPE 24.443	000 pts)	Peak Search Next Po
G G G G G G G G G G G G G G G G G G G	100 kHz trum Analyzer - S RF 50 24.4443821	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	TRACE TYPE 24.443	000 pts)	Peak Search Next Pe
G Keysight Speed	100 kHz trum Analyzer - S RF 50 24.4443821	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	TRACE TYPE 24.443	000 pts)	Peak Search Next Po Next Pk Ri
Keysight Speed	100 kHz trum Analyzer - S RF 50 24.4443821	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	TRACE TYPE 24.443	000 pts)	Peak Search Next Po Next Pk Ri
G Keysight Spec arker 1 G G G G G G G G G G G G G G G G G G G	100 kHz trum Analyzer - S RF 50 24.4443821	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	.0 ms (40	000 pts)	Peak Search Next Po Next Pk Ri Next Pk L
G Keysight Speed	100 kHz trum Analyzer - S RF 50 24.4443821	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	.0 ms (40	000 pts)	Peak Search Next Po Next Pk Ri Next Pk L
G Keysight Speed	100 kHz trum Analyzer - S RF 50 24.4443821	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	.0 ms (40	000 pts)	Peak Search Next Po Next Pk Ri Next Pk L
Res BW ( keysight Spec arker 1 0 dB/div 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 kHz trum Analyzer - S RF 50 24.4443821	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	.0 ms (40	000 pts)	Peak Search Next Pe Next Pk Rig Next Pk L Marker D
Res BW 1 G Keysight Spec arker 1 0 dB/div 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 kHz trum Analyzer - S RF 50 24.4443821	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	.0 ms (40	000 pts)	Peak Search Next Pt Next Pk Ri Next Pk L Marker D
Res BW 1 Keysight Speed arker 1 0 dB/div 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 kHz trum Analyzer - S RF 50 24.4443821	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	.0 ms (40	000 pts)	Peak Search Next Pe Next Pk Rig Next Pk L Marker D
Res BW <sup>(</sup> (Keysight Speed arker 1 0 dB/div 0	100 kHz trum Analyzer - S RF 50 24.443382€	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	.0 ms (40	000 pts)	Peak Search Next Pe Next Pk Ri Next Pk L Marker D
Res BW <sup>(</sup> (keysight Speec arker 1 0 dB/div 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 kHz trum Analyzer - S RF 50 24.443382€	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	.0 ms (40	000 pts)	Peak Search Next Pc Next Pk Ri Next Pk L Marker D Mkr-
	100 kHz trum Analyzer - S RF 50 24.443382€	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	.0 ms (40	000 pts)	Peak Search Next Pc Next Pk Rig Next Pk L Marker D Mkr-
Res BW <sup>(</sup> (keysight Speec arker 1 0 dB/div 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 kHz	Ω AC 3545714	GHz PNO: Fast	SE™	NSE:INT	Avg Type	weep         136           STATUS         ALIGN AUTO           :: Log-Pwr         >100/100	.0 ms (40	000 pts)	Peak Search Next Pe Next Pk Ri Next Pk L Marker D Mkr→Ref



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Keysight Spectrum	ctrum Analyzer - Swe RF 50 Ω			SENSE	E:INT		ALIGN AUTO			
Marker 1	479.994249	856 MHz	:Fast 🖵 n:Low	Trig: Free F Atten: 30 d	Run	Avg Type	:: Log-Pwr :>100/100			Peak Search
0.101	Dof 20.00 -						Mkr	1 479.	994 MHz 910 dBm	NextPea
odB/div	Ref 20.00 d									
10.0										Next Pk Rig
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20.0										
20.0									DL1 -23.58 dBm	Marker De
30.0										
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70.0	nan al dinahatan dari biran.	and a state of the second s	in see ties of interference in the	hlandijikhdalari (ji	and the second secon	North Address of the		التخطائية فيتربط فعدر	in also francis (negative)	
										Мо
			#\/D\\/					Stop 1.	0000 GHz	10
Res BW			#VBW 3	300 kHz		S	weep 93.	Stop 1. .33 ms (4	0000 GHz 40000 pts	
Res BW '	100 kHz		#VBW 3	300 kHz		S		Stop 1. 33 ms (4	0000 GHz 10000 pts	
Res BW '	100 kHz ctrum Analyzer - Swe RF 50 Ω	AC		300 kHz	E:INT		STATUS	33 ms (4	40000 pts	
Res BW '	100 KHz	AC 6624 GHz PNO:	: Fast 😱		Run	AvgType	STATUS	33 ms (4	0000 GHz 40000 pts CE 1 2 3 4 5 0 PE MWWWW	– 2 – Peak Search
Res BW '	100 kHz ctrum Analyzer - Swe RF 50 Ω	AC 6624 GHz PNO:		SENSE Trig: Free F	Run	AvgType	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (- TRA T) 2.397	CE 12345 PE M M BET P NNN 865 GH2	Peak Search Next Pea
Res BW sg Keysight Spec Aarker 1	100 kHz ctrum Analyzer - Swe RF 50 Ω	AC 6624 GHz PNO: IFGai	: Fast 😱	SENSE Trig: Free F	Run	AvgType	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (- TRA T) 2.397	40000 pts	Peak Search Next Pea
Keysight Spec Keysight Spec Aarker 1 0 dB/div	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494	AC 6624 GHz PNO: IFGai	: Fast 😱	SENSE Trig: Free F	Run	AvgType	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (- TRA T) 2.397	CE 12345 PE M M BET P NNN 865 GH2	Peak Search Next Pea
Keysight Spec	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494	AC 6624 GHz PNO: IFGai	: Fast 😱	SENSE Trig: Free F	Run	AvgType	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (- TRA T) 2.397	CE 12345 PE M M BET P NNN 865 GH2	Peak Search Next Pea
Res BW <sup>2</sup> sg Marker 1 0 dB/div	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494	AC 6624 GHz PNO: IFGai	: Fast 😱	SENSE Trig: Free F	Run	AvgType	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (- TRA T) 2.397	CE 12345 PE M M BET P NNN 865 GH2	Peak Search Next Pea
Res BW sa	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494	AC 6624 GHz PNO: IFGai	: Fast 😱	SENSE Trig: Free F	Run	AvgType	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (- TRA T) 2.397	CE 12345 PE M M BET P NNN 865 GH2	Peak Search Next Pea
Res BW ' sa sa Arker 1 Arker 1	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494	AC 6624 GHz PNO: IFGai	: Fast 😱	SENSE Trig: Free F	Run	AvgType	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (- TRA T) 2.397	CE 12345 PE M M BET P NNN 865 GH2	Peak Search Next Pea Next Pk Rig
Res BW ' sa sa Arker 1 Arker 1	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494	AC 6624 GHz PNO: IFGai	: Fast 😱	SENSE Trig: Free F	Run	AvgType	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (- TRA T) 2.397	CE 12345 PE M M BET P NNN 865 GH2	Peak Search Next Pea Next Pk Rig
Res BW         SG           SG         Image: Second state	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494	AC 6624 GHz PNO: IFGai	: Fast 😱	SENSE Trig: Free F	Run	AvgType	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (- TRA T) 2.397	40000 pts 66 12345 Fe Monthain 865 GH2 96 dBm	Peak Search Next Peak Next Pk Rig Next Pk Lo
Res BW         SG           Keysight Spectrum         Marker 1           Arker 1         Marker 1           0 dB/div         9           0 dB/div         9           10 0          9      1	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494	AC 6624 GHz PNO: IFGai	: Fast 😱	SENSE Trig: Free F	Run	AvgType	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (- TRA T) 2.397	40000 pts 66 12345 Fe Monthain 865 GH2 96 dBm	Peak Search Next Peak Next Pk Rig Next Pk Lo Marker De
Res BW         SG           SG	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494	AC 6624 GHz PNO: IFGai	: Fast 😱	SENSE Trig: Free F	Run	AvgType	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (- TRA T) 2.397	40000 pts 66 12345 Fe Monthain 865 GH2 96 dBm	Peak Search Next Peak Next Pk Rig Next Pk Lo
Res BW         SG           SG	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494	AC 6624 GHz PNO: IFGai	: Fast 😱	SENSE Trig: Free F	Run	AvgType	STATUS ALIGN AUTO 2: Log-Pwr >100/100	33 ms (- TRA T) 2.397	40000 pts 66 12345 Fe Monthain 865 GH2 96 dBm	Peak Search Next Peak Next Pk Rig Next Pk Lo Marker De
Res BW           sc           keysight Speed           Arker 1           O dB/div           og           0.000	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494	AC 6624 GHz PNO IFGai Bm	: Fast C	SENSI	Run B	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr >100/100 MIKr1	33 ms (- TRA T) 2.397	40000 pts 66 12345 Fe Monthain 865 GH2 96 dBm	Peak Search Next Peak Next Pk Rig Next Pk Lo Marker De
0         dB/div           0         dB/div           0         gB/div           10         0	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494 Ref 20.00 d	AC 6624 GHz PNO IFGai Bm	: Fast C	SENSI	Run B	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr >100/100 MIKr1	33 ms (- TRA T) 2.397	40000 pts 66 12345 Fe Monthain 865 GH2 96 dBm	Peak Search Next Peak Next Pk Rig Next Pk Lo Marker De
Res BW           sc           keysight Speed           Arker 1           O dB/div           og           0.000	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494 Ref 20.00 d	AC 6624 GHz PNO IFGai Bm	: Fast C	SENSI	Run B	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr >100/100 MIKr1	33 ms (- TRA T) 2.397	40000 pts 66 12345 Fe Monthain 865 GH2 96 dBm	Peak Search Next Peak Next Pk Rig Next Pk Lo Marker De
Res BW         SG           SG         Image: Constraint spectrum           Image: Constraint spectrum         Image: Constra	100 kHz ctrum Analyzer - Swe RF 50 Ω 2.39786494 Ref 20.00 d 0.00 kHz 0.00 kHz	AC 6624 GHz PNO IFGai Bm	: Fast C	SENSI	Run B	Avg Type Avg Hold	ALIGN AUTO :: Log-Pwr >100/100 MIKr1	33 ms (* TRA TRA 7 2.397 -55.1	40000 pts 66 12345 Fe Monthain 865 GH2 96 dBm	Peak Search Next Peak Next Pk Rig Next Pk Lo Marker De Mkr→Ref L

# TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11b FOR MODULATION IN HIGH CHANNEL



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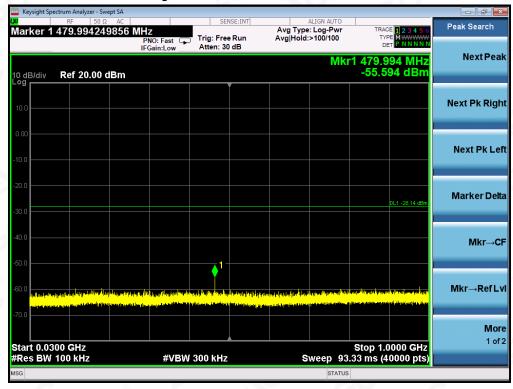
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Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Service Hotline:400 089 2118





#### TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11g FOR MODULATION IN LOW CHANNEL





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Add: 2/F., Building 2, Sanwei Chaxi Industrial Park, Sanwei Community,

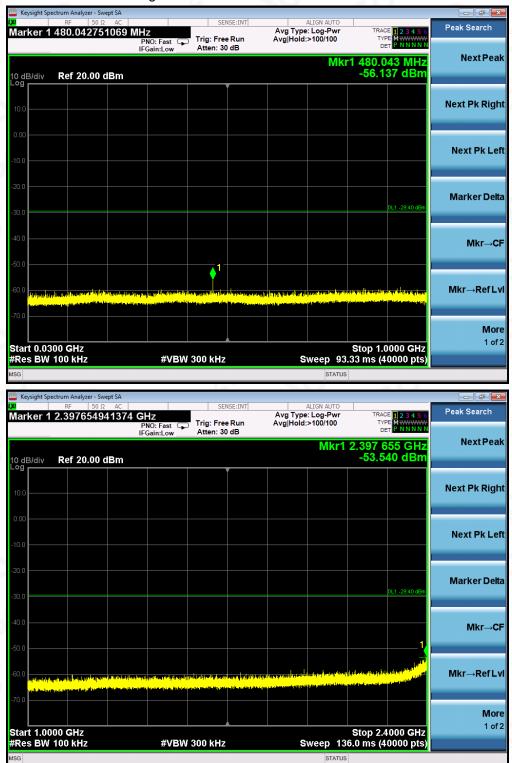


Keysight Sp		50 Ω AC			NSE:INT		ALIGN AUTO	70467		Peak Search
arker 1	2.39989	4997375	FRO: Fast ⊂ FO: Fast ⊂ FGain:Low	Trig: Free Atten: 30		Avg Type Avg Hold:	:: Log-Pwr :>100/100	TYPE DET	123456 M P NNNNN	
							Mkr1	2.399 89	95 GHz	NextPe
0 dB/div og	Ref 20.0	00 dBm						-33.39	3 dBm	
					Ī					Next Pk Ri
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	100 GHz		#\/B)	M 300 KHZ		•	woon 136	Stop 2.40	000 GHz	-
Res BW	00 GHz 100 kHz		#VB\	N 300 kHz		S	weep 136	Stop 2.40 .0 ms (40	000 GHz 1000 pts)	
Res BW	100 kHz		#VBI	№ 300 kHz		S	weep 136	Stop 2.40 .0 ms (40	000 GHz 1000 pts)	
Res BW	100 kHz ectrum Analyzer RF !	50 Ω AC			NSE:INT		ALIGN AUTO	.0 ms (40	0000 pts)	
Res BW	100 kHz ectrum Analyzer	50 Ω AC	52 GHz PNO: Fast	SEP	NSE:INT		ALIGN AUTO	.0 ms (40	000 GHz 0000 pts)	
Res BW	100 kHz ectrum Analyzer RF !	50 Ω AC	62 GHz	SE	NSE:INT	Avg Type	weep         136           STATUS	.0 ms (40	123456 M PNNNN 1 GHz	Peak Search
Res BW	100 kHz ectrum Analyzer RF !	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type	weep         136           STATUS	.0 ms (40	123456 MWWWWW PNNNN	Peak Search
Res BW G Keysight Sp larker 1 dB/div	100 kHz ectrum Analyzer RF 3 24.0841	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type	weep         136           STATUS	.0 ms (40	123456 M PNNNN 1 GHz	Peak Search Next Pe
Res BW G Keysight Sp larker 1	100 kHz ectrum Analyzer RF 3 24.0841	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type	weep         136           STATUS	.0 ms (40	123456 M PNNNN 1 GHz	Peak Search Next Pe
Res BW ag keysight Sp larker 1 0 dB/div og 0 dB/div	100 kHz ectrum Analyzer RF 3 24.0841	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type	weep         136           STATUS	.0 ms (40	123456 M PNNNN 1 GHz	Peak Search
Res BW G G Keysight Sp G G G G G G G G G G G G G G G G G G G	100 kHz ectrum Analyzer RF	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type	weep         136           STATUS	.0 ms (40	123456 M PNNNN 1 GHz	Peak Search Next Pe Next Pk Ri
Res BW G arker 1 0 dB/div og 0.00	100 kHz ectrum Analyzer RF	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type	weep         136           STATUS	.0 ms (40	123456 M PNNNN 1 GHz	Peak Search Next Pe
Res BW G G G G G G G G G G G G G G G G G G G	100 kHz ectrum Analyzer RF	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type	weep         136           STATUS	.0 ms (40	123456 M PNNNN 1 GHz	Peak Search Next Pe Next Pk Rig Next Pk L
Res BW G G G G G G G G G G G G G G G G G G G	100 kHz ectrum Analyzer RF	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type	weep         136           STATUS	.0 ms (40	123456 M PNNNN 1 GHz	Peak Search Next Pe Next Pk Rig
Res BW G G G G G G G G G G G G G G G G G G G	100 kHz ectrum Analyzer RF	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type	weep         136           STATUS	.0 ms (40	123456 M PNNNN 1 GHz	Peak Search Next Pe Next Pk Rig Next Pk L
Res BW G G G G G G G G G G G G G G G G G G G	100 kHz ectrum Analyzer RF	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type	weep         136           STATUS	.0 ms (40	1000 pts)	Peak Search Next Pe Next Pk Rig Next Pk L
Res BW G G G G G G G G G G G G G G G G G G G	100 kHz ectrum Analyzer RF	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type Avg Hold	weep 136 status	.0 ms (40	1000 pts)	Peak Search Next Pe Next Pk Rig Next Pk L
Res BW G Keysight Sp larker 1 0 dB/div 9 0 0 0	100 kHz ectrum Analyzer RF	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type	weep 136 status	.0 ms (40	12 3 4 5 5 MW-11 GHZ 6 dBm	Peak Search Next Pe Next Pk Rig Next Pk L Marker De
Res BW	100 kHz ectrum Analyzer RF	50 Ω AC 1846546	52 GHz PNO: Fast	SEP	NSE:INT	Avg Type Avg Hold	weep 136 status	.0 ms (40	12 3 4 5 5 MW-11 GHZ 6 dBm	Peak Search Next Pe Next Pk Rig Next Pk L
Res BW G Keysight Sp larker 1 0 dB/div 9 0 0 0	100 kHz ectrum Analyzer RF	50 Ω AC 1846546	52 GHz PNO: Fast	Trig: Free Atten: 30	NSE:INT	Avg Type Avg Hold	weep 136 status	.0 ms (40	12 3 4 5 5 MW-11 GHZ 6 dBm	Peak Search Next Pe Next Pk Rig Next Pk L Marker De
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#### TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11g FOR MODULATION IN MIDDLE CHANNEL

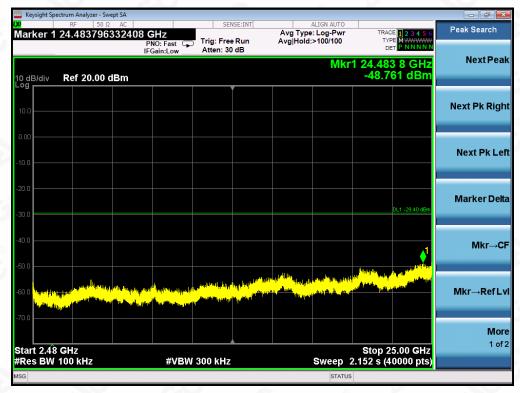
Attestation of Global Compliance

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Add: 2/F., Building 2, Sanwei Chaxi Industrial Park, Sanwei Community,

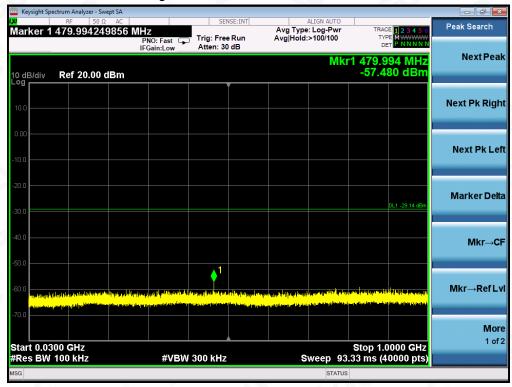
Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Service Hotline:400 089 2118





#### TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE

OF 802.11g FOR MODULATION IN HIGH CHANNEL





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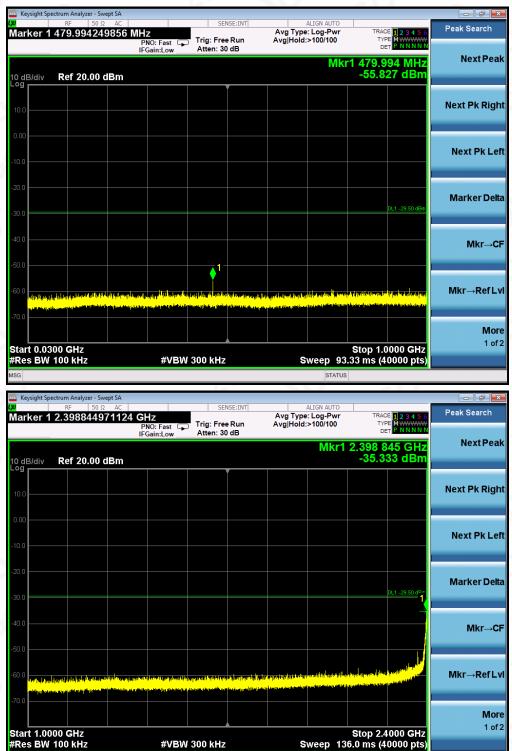


Attestation of Global Compliance(Shenzhen)Co.,Ltd.

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 Tel: +86-755 2523 4088
 E-mail: agc@agc-cert.com
 Service Hotline:400 089 2118





#### TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11n20 FOR MODULATION IN LOW CHANNEL

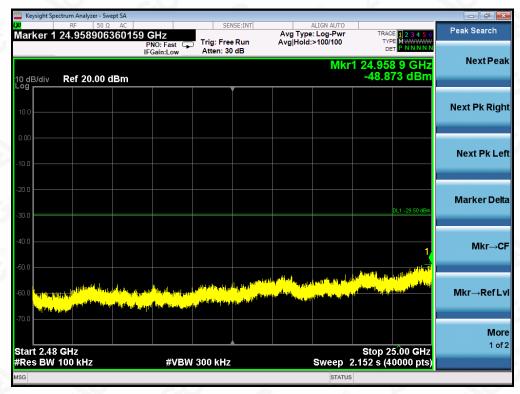
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Add: 2/F., Building 2, Sanwei Chaxi Industrial Park, Sanwei Community,

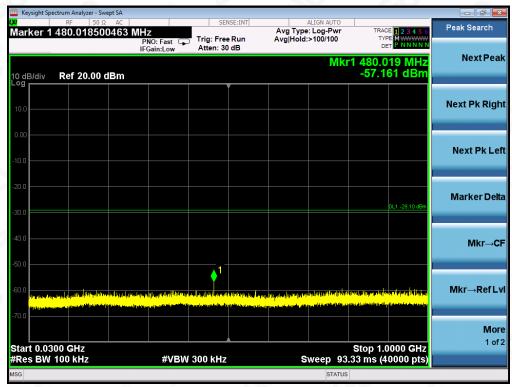
Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China Tel: +86-755 2523 4088 E-mail:agc@agc-cert.com Service Hotline:400 089 2118





#### TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE

OF 802.11n20 FOR MODULATION IN MIDDLE CHANNEL





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Add: 2/F., Building 2, Sanwei Chaxi Industrial Park, Sanwei Community,



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Attestation of Global Compliance(Shenzhen)Co.,Ltd.



Keysight Spe K	RF 50 Ω	AC		SENSE	:INT	ALIC	GN AUTO			
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Keysight Spo Keysight Spo Aarker 1	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498	AC B6875 GH PN IFG	lz NO: Fast ⊆	SENSE	tun A	ALIC vg Type: Lo	STATUS           SN AUTO           og-Pwr           00/100	3 ms (4 TRAC TYP 2.399 4	0000 pts) 1 2 3 4 5 6 2 M W W W T P NNNN 75 GHz	Peak Search Next Pea
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Res BW sa keysight Spr Aarker 1 0 dB/div 0 0 10.0	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498	AC B6875 GH PN IFG	lz NO: Fast ⊆	SENSE	tun A	ALIC vg Type: Lo	STATUS           SN AUTO           og-Pwr           00/100	3 ms (4 TRAC TYP 2.399 4	0000 pts) 1 2 3 4 5 6 2 M W W W T P NNNN 75 GHz	Peak Search Next Pea Next Pk Rigi
#Res BW       sc	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498	AC B6875 GH PN IFG	lz NO: Fast ⊆	SENSE	tun A	ALIC vg Type: Lo	STATUS           SN AUTO           og-Pwr           00/100	3 ms (4 TRAC TYP 2.399 4	0000 pts) 1 2 3 4 5 6 2 M W W W T P NNNN 75 GHz	Peak Search Next Pea
#Res BW       sc       Sc       Keysight Spr       Ø       Aarker 1       0 dB/div       0 0       10.0       10.0       10.0	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498	AC B6875 GH PN IFG	lz NO: Fast ⊆	SENSE	tun A	ALIC vg Type: Lo	STATUS           SN AUTO           og-Pwr           00/100	3 ms (4 TRAC TYP 2.399 4	0000 pts) 1 2 3 4 5 6 2 M W W W T P NNNN 75 GHz	Peak Search Next Pea Next Pk Righ
#Res BW           SG           SG           Keysight Spr           Marker 1           0	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498	AC B6875 GH PN IFG	lz NO: Fast ⊆	SENSE	tun A	ALIC vg Type: Lo	STATUS           SN AUTO           og-Pwr           00/100	3 ms (4 TRAC TYP 2.399 4	0000 pts) 1 2 3 4 5 6 2 M W W W T P NNNN 75 GHz	Peak Search Next Pea Next Pk Righ
Keysight Spo Keysight Spo A Marker 1 10 dB/div	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498	AC B6875 GH PN IFG	lz NO: Fast ⊆	SENSE	tun A	ALIC vg Type: Lo	STATUS           SN AUTO           og-Pwr           00/100	3 ms (4 TRAC TYP 2.399 4	0000 pts)	Peak Search Next Pea Next Pk Righ
#Res BW           SG           Keysight Spe           Arrker 1           0 dB/div           0 0 0           0 0 0           0 0 0           0 0 0           0 0 0           0 0 0           0 0 0           0 0 0	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498	AC B6875 GH PN IFG	lz NO: Fast ⊆	SENSE	tun A	ALIC vg Type: Lo	STATUS           SN AUTO           og-Pwr           00/100	3 ms (4 TRAC TYP 2.399 4	0000 pts)	Peak Search Next Pea Next Pk Righ
#Res BW           SG           SG           Arrker 1           Aarker 1           0	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498	AC B6875 GH PN IFG	lz NO: Fast ⊆	SENSE	tun A	ALIC vg Type: Lo	STATUS           SN AUTO           og-Pwr           00/100	3 ms (4 TRAC TYP 2.399 4	0000 pts)	Peak Search Next Pea Next Pk Righ Next Pk Le
#Res BW           SG           SG           Arrker 1           Aarker 1           0	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498	AC B6875 GH PN IFG	lz NO: Fast ⊆	SENSE	tun A	ALIC vg Type: Lo	STATUS           SN AUTO           og-Pwr           00/100	3 ms (4 TRAC TYP 2.399 4	0000 pts)	Peak Search Next Pea Next Pk Righ Next Pk Le
#Res BW           Issa           Keysight Spress           Marker 1           Marker 1           0.00	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498	Bm	Z NO: Fast Sain:Low	Trig: Free R Atten: 30 d	Atun Ar B	Vg Type: La Vg Type: La Vg Hold:>1(	STATUS           SN AUTO           og-Pwr           00/100	3 ms (4 TRAC TYP 2.399 4	0000 pts)	Peak Search Next Pea Next Pk Righ Next Pk Le
#Res BW           SG           Keysight Speed           Aarker 1           O dB/div	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498 Ref 20.00 d	Bm	Z NO: Fast Sain:Low	Trig: Free R Atten: 30 d	Atun Ar B	Vg Type: La Vg Type: La Vg Hold:>1(	STATUS           SN AUTO           og-Pwr           00/100	3 ms (4 TRAC TYP 2.399 4	0000 pts)	Peak Search Next Pea Next Pk Righ Next Pk Le Marker Def
Res         BW           SG         Image: SG           Reysight Spectral         Image: SG           Aarker 1         Image: SG           Aarker 1         Image: SG           0 dB/div         Image: SG           0 0 dB/div         Image: SG           0 0 000         Image: SG           0 0000         Image: SG </td <td>100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498 Ref 20.00 d</td> <td>Bm</td> <td>Z NO: Fast Sain:Low</td> <td>Trig: Free R Atten: 30 d</td> <td>Atun Ar B</td> <td>Vg Type: La Vg Type: La Vg Hold:&gt;1(</td> <td>STATUS           SN AUTO           og-Pwr           00/100</td> <td>3 ms (4 TRAC TYP 2.399 4</td> <td>0000 pts)</td> <td>Peak Search Next Pea Next Pk Righ Next Pk Le Marker Def</td>	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498 Ref 20.00 d	Bm	Z NO: Fast Sain:Low	Trig: Free R Atten: 30 d	Atun Ar B	Vg Type: La Vg Type: La Vg Hold:>1(	STATUS           SN AUTO           og-Pwr           00/100	3 ms (4 TRAC TYP 2.399 4	0000 pts)	Peak Search Next Pea Next Pk Righ Next Pk Le Marker Def
#Res BW           SG           Keysight Speed           Aarker 1           O dB/div	100 kHz ectrum Analyzer - Swe RF 50 Ω 2.39947498 Ref 20.00 d	Bm	Z NO: Fast Sain:Low	Trig: Free R Atten: 30 d	Atun Ar B	Vg Type: La Vg Type: La Vg Hold:>1(	SN AUTO Og-Pwr O0/100 Mkr1 2	3 ms (4	0000 pts)	Peak Search Next Pea Next Pk Righ Next Pk Le Marker Deb Mkr→Ref L

# TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11n20 FOR MODULATION IN HIGH CHANNEL

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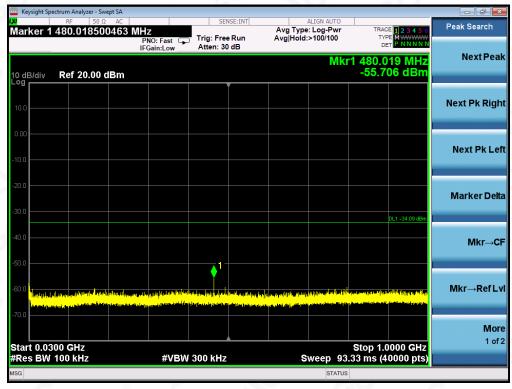
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## TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11n40 FOR MODULATION IN LOW CHANNEL





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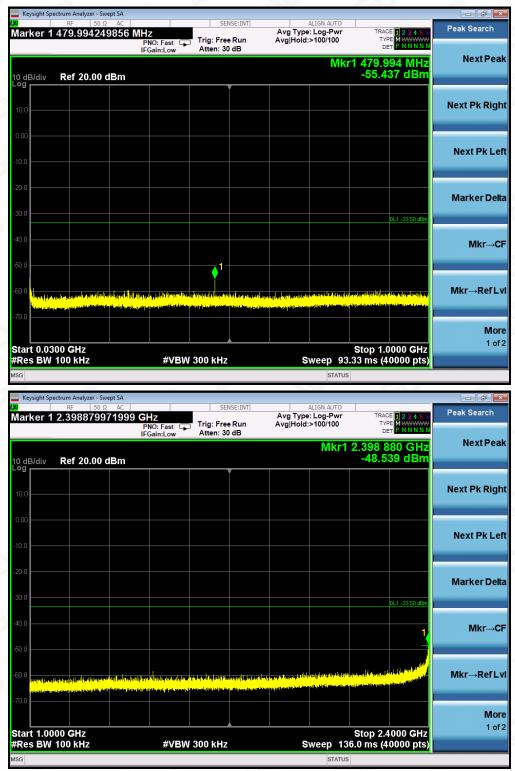


Peak Search		ALIGN AUTO		SENSE:INT		Analyzer - Swept SA 50 Ω AC	
	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N	: Log-Pwr >100/100	Avg Type Avg Hold	Trig: Free Run Atten: 30 dB	PNO: Fast 😱	99194979875	rker 1
	2.399 195 GHz	Mkr1_2		Atten. W ub	IFGain:Low		
	-41.500 dBm					f 20.00 dBm	dB/div
Next Dis D				ľ			2
Next Pk Ri							0
							o
Next Pk							
							o
Marker D							
	DL1 -34.09 dBm						
Mkr–							o
							o
Mkr→Ref		den et ble die strende die		en halle billing bestelling i son	Tennes a tel tra fra fra fra fra fra fra fra fra fra f	and the state of the	0
			in the state of a second s	i ng katula kalan kana papa kana ka	tai ( Antri I ann ai stàinni ( m. chaire Aibr	nan da kana di kubunan kili kina k	o <mark>o <sup>be</sup>lieven de la c</mark>
M							
1				<u>.</u>			
	Stop 2.4000 GHz					;Hz	art 1.000
	Stop 2.4000 GHz .0 ms (40000 pts)	weep 136.	s	300 kHz	#VBW		es BW 1
	Stop 2.4000 GHZ .0 ms (40000 pts)	weep 136	S	300 kHz	#VBW		
	stop 2.4000 GHz .0 ms (40000 pts)	weep 136. status	9		#VBW	KHZ Analyzer - Swept SA	es BW 1
Peak Search	.0 ms (40000 pts)	ALIGN AUTO	Avg Type	SENSE:INT	4 GHz	kHz	es BW 1
Peak Search	.0 ms (40000 pts)	weep         136           STATUS				KHZ Analyzer - Swept SA 50 Ω AC	es BW 1
Peak Search	.0 ms (40000 pts)	weep         136           STATUS	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHz Analyzer - Swept SA : 50 Ω AC   57724214355	es BW 1 Keysight Spec
Peak Search	.0 ms (40000 pts) TRACE 12 3 4 5 6 TYPE MWWWWWW DET P NNNNN 24.577 2 GHz	weep         136           STATUS	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHZ Analyzer - Swept SA 50 Ω AC	es BW 1
Peak Search	.0 ms (40000 pts) TRACE 12 3 4 5 6 TYPE MWWWWWW DET P NNNNN 24.577 2 GHz	weep         136           STATUS	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHz Analyzer - Swept SA : 50 Ω AC   57724214355	es BW 1 Keysight Spec
Peak Search Next P	.0 ms (40000 pts) TRACE 12 3 4 5 6 TYPE MWWWWWW DET P NNNNN 24.577 2 GHz	weep         136           STATUS	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHz Analyzer - Swept SA : 50 Ω AC   57724214355	es BW 1 Keysight Speci Irker 1
Peak Search Next P Next Pk Ri	.0 ms (40000 pts) TRACE 12 3 4 5 6 TYPE MWWWWWW DET P NNNNN 24.577 2 GHz	weep         136           STATUS	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHz Analyzer - Swept SA : 50 Ω AC   57724214355	es BW 1 Keysight Speci Irker 1
Peak Search Next P	.0 ms (40000 pts) TRACE 12 3 4 5 6 TYPE MWWWWWW DET P NNNNN 24.577 2 GHz	weep         136           STATUS	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHz Analyzer - Swept SA : 50 Ω AC   57724214355	es BW 1 Keysight Speci Irker 1
Peak Search Next P Next Pk Ri	.0 ms (40000 pts) TRACE 12 3 4 5 6 TYPE MWWWWWW DET P NNNNN 24.577 2 GHz	weep         136           STATUS	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHz Analyzer - Swept SA : 50 Ω AC   57724214355	es BW 1
Peak Search Next P Next Pk Ri	.0 ms (40000 pts) TRACE 12 3 4 5 6 TYPE MWWWWWW DET P NNNNN 24.577 2 GHz	weep         136           STATUS	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHz Analyzer - Swept SA : 50 Ω AC   57724214355	es BW 1 keysight Spece irker 1 2 dB/div
Peak Search Next P Next Pk Ri Next Pk I	.0 ms (40000 pts)	weep         136           STATUS	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHz Analyzer - Swept SA : 50 Ω AC   57724214355	es BW 1
Peak Search Next P Next Pk Ri Next Pk I	.0 ms (40000 pts) TRACE 12 3 4 5 6 TYPE MWWWWWW DET P NNNNN 24.577 2 GHz	weep 136 status ALIGN AUTO : Log-Pwr >100/100	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHz Analyzer - Swept SA : 50 Ω AC   57724214355	es BW 1
Peak Search Next P Next Pk Ri Next Pk I	.0 ms (40000 pts)	weep 136 status ALIGN AUTO : Log-Pwr >100/100	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHz Analyzer - Swept SA : 50 Ω AC   57724214355	es BW 1 Keysight Speci
Peak Search Next P Next Pk Ri Next Pk I	.0 ms (40000 pts)	weep 136. status align auto : Log.Pwr >100/100 Mkr1	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHz Analyzer - Swept SA : 50 Ω AC   57724214355	es BW 1
Peak Search Next P Next Pk Ri Next Pk Ri Marker D Mkr-	0 ms (40000 pts)	weep 136. status aLIGN AUTO : Log-Pwr >100/100 Mkr1	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	KHz Analyzer - Swept SA : 50 Ω AC   57724214355	es BW 1
Peak Search Next P Next Pk Ri Next Pk I	.0 ms (40000 pts)	weep 136. status aLIGN AUTO : Log-Pwr >100/100 Mkr1	Avg Type	SENSE:INT	4 GHz PNO: Fast 😱	kHz Analyzer - Swept SA ⇒  50 Ω AC   57724214355 f 20.00 dBm   	es BW 1  (eysight Spec (eysigh
Peak Search Next P Next Pk R Next Pk R Marker D Mkr→Ref	.0 ms (40000 pts)	weep 136. status aLIGN AUTO : Log-Pwr >100/100 Mkr1	Avg Type	SENSE:INT	4 GHz PNO: Fast PIEGain:Low	kHz Analyzer - Swept SA ⇒  50 Ω AC   57724214355 f 20.00 dBm   	es BW 1
Peak Search Next P Next Pk Ri Next Pk I Marker D Mkr-Ref	.0 ms (40000 pts)	weep 136. status aLIGN AUTO : Log-Pwr >100/100 Mkr1	Avg Type	SENSE:INT	4 GHz PNO: Fast PIEGain:Low	kHz Analyzer - Swept SA ⇒  50 Ω AC   577724214355 f 20.00 dBm f 20.00 dBm an 1 an 1	es BW 1  keysight Speceret key
Peak Search Next P Next Pk R Next Pk R Marker D Mkr→Ref	.0 ms (40000 pts)	weep 136. status align Auto : Log-Pwr >100/100 Mkr1 	Avg Type	SENSE:INT	4 GHz PNO: Fast IFGain:Low	Analyzer - Swept SA           Ξ         50 Ω           577724214355           f         20.00 dBm           g         1 <td>es BW 1  (eysight Spec (eysigh</td>	es BW 1  (eysight Spec (eysigh



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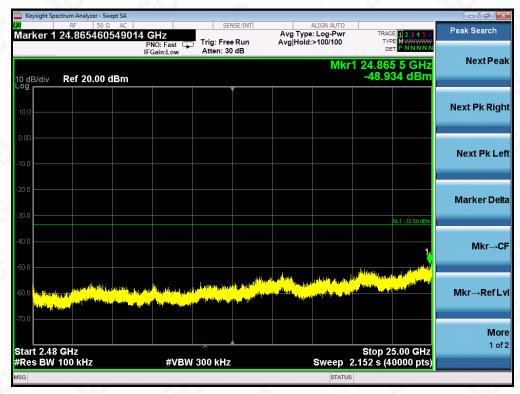
# TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE OF 802.11n40 FOR MODULATION IN MIDDLE CHANNEL

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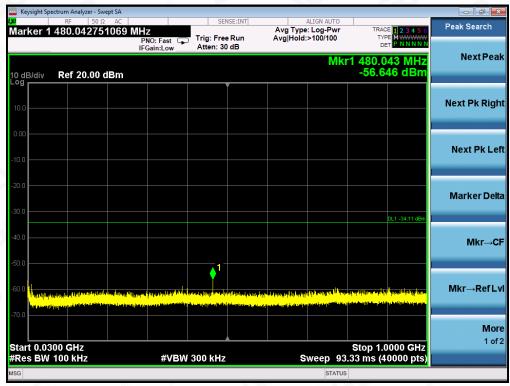
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### TEST PLOT OF OUT OF BAND EMISSIONS THE WORST CASE

OF 802.11n40 FOR MODULATION IN HIGH CHANNEL





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Keysight Spe	RF 50	Ω AC		SEI	NSE:INT		ALIGN AUTO			
larker 1	2.392089		PNO: Fast C	Trig: Free	e Run		: Log-Pwr	TYP	E 1 2 3 4 5 6 E MWWWW T P N N N N N	Peak Search
			IFGain:Low	Atten: 30	dB		Mkr1	2 392 0	90 GHz	NextPe
0 dB/div og	Ref 20.00	) dBm						-54.4	20 dBm	
10.0										Next Pk Rig
).00										Next Pk L
0.0										NEXT PK L
0.0										Marker D
0.0									DL1 -34.11 dBm	
									DL1 -34.11 dBm	
0.0										Mkr
0.0										
									A Street Barrier	
0.0 Helperior		al a final di ta a	land an eileanach filteachta				s for the set of the s	n film og skillet i Segnal sig senellet	and the second state	Mkr→Ref
0.0	متعلمانية بمترة اللتروك									
										м
tart 1.00										1
								Stop 2.4	1000 GHz	
Res BW			#VBI	N 300 kHz		s	weep 13	Stop 2.4 6.0 ms (4	000 GHz 0000 pts)	
Res BW			#VBI	N 300 kHz		s	weep 13 status	Stop 2.4 6.0 ms (4	1000 GHz 10000 pts)	
Res BW	100 kHz ctrum Analyzer -		#VBI		_	_	STATUS	Stop 2.4 6.0 ms (4	1000 GHz 0000 pts)	
Res BW	100 kHz ctrum Analyzer -	Ω AC	4 GHz	SE	NSE:INT	Avg Type	STATUS	6.0 ms (4	0000 pts)	
Res BW	100 kHz ctrum Analyzer - 3 RF 50	Ω AC		SE	NSE:INT		STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	20000 pts)	Peak Search
Res BW	100 kHz ctrum Analyzer - RF 50 24.40836	Ω AC 4171604	4 GHz PNO: Fast	SEP	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	20000 pts)	Peak Search
Res BW	100 kHz ctrum Analyzer - 3 RF 50	Ω AC 4171604	4 GHz PNO: Fast	SEP	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	20000 pts)	Peak Search
Res BW G Keysight Spe larker 1	100 kHz ctrum Analyzer - RF 50 24.40836	Ω AC 4171604	4 GHz PNO: Fast	SEP	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	20000 pts)	Peak Search Next Pe
Res BW G Keysight Spe arker 1	100 kHz ctrum Analyzer - RF 50 24.40836	Ω AC 4171604	4 GHz PNO: Fast	SEP	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	20000 pts)	Peak Search Next Po
Res BW  G  G  Keysight Spe Iarker 1  O dB/div  O	100 kHz ctrum Analyzer - RF 50 24.40836	Ω AC 4171604	4 GHz PNO: Fast	SEP	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	20000 pts)	Peak Search Next Pe
G Keysight Spectra (Constraint)	100 kHz ctrum Analyzer - RF 50 24.40836	Ω AC 4171604	4 GHz PNO: Fast	SEP	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	20000 pts)	Peak Search Next Po Next Pk Ri
Res BW G Keysight Spec arker 1 O dB/div O O	100 kHz ctrum Analyzer - RF 50 24.40836	Ω AC 4171604	4 GHz PNO: Fast	SEP	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	20000 pts)	Peak Search Next Pe Next Pk Ri
Res BW G Keysight Spectrum arker 1 0 dB/div 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 kHz ctrum Analyzer - RF 50 24.40836	Ω AC 4171604	4 GHz PNO: Fast	SEP	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	20000 pts)	Peak Search Next Po Next Pk Ri Next Pk L
Res BW G Keysight Spectro arker 1 O dB/div O dB/div	100 kHz ctrum Analyzer - RF 50 24.40836	Ω AC 4171604	4 GHz PNO: Fast	SEP	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	20000 pts)	Peak Search Next Pe Next Pk Ri Next Pk L
Res BW G G G G G G G G G G G G G G G G G G G	100 kHz ctrum Analyzer - RF 50 24.40836	Ω AC 4171604	4 GHz PNO: Fast	SEP	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	20000 pts)	Peak Search Next Pe Next Pk Ri Next Pk L
Res BW  G  Keysight Spe Iarker 1  O dB/div  O d  O d  O d  O d  O d  O d  O d  O	100 kHz ctrum Analyzer - RF 50 24.40836	Ω AC 4171604	4 GHz PNO: Fast	SEP	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	0000 pts)	Peak Search Next Pc Next Pk Rig Next Pk L
Res BW  G  Keysight Spe Iarker 1  O dB/div  O d  O d  O d  O d  O d  O d  O d  O	100 kHz ctrum Analyzer - RF 50 24.40836	Ω AC 4171604	4 GHz PNO: Fast	SEP	NSE:INT	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	0000 pts)	Peak Search Next Pc Next Pk Rig Next Pk L
Res BW  G  Keysight Spe Iarker 1  O dB/div  O d  O d  O d  O d  O d  O d  O d  O	100 kHz ctrum Analyzer - RF 50 24.40836	Ω AC 4171604	4 GHz PNO: Fast	SEP	vse:INT e Run d B	Avg Type Avg Hold	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	0000 pts)	Peak Search Next Pc Next Pk Rig Next Pk L
Res BW G G Keysight Spe Larker 1	100 kHz	Ω AC 4171604	4 GHz PNO: Fast	SEP	vse:INT e Run d B	Avg Type	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	0000 pts)	Peak Search Next Pe Next Pk Rig Next Pk L Marker De
Res BW	100 kHz	Ω AC 4171604	4 GHz PNO: Fast	SEP	vse:INT e Run d B	Avg Type Avg Hold:	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	0000 pts)	Peak Search Next Pc Next Pk Ri Next Pk L Marker D
Res BW G Keysight Spectrum Iarker 1 0 dB/div 9 g 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 kHz	Ω AC 4171604	4 GHz PNO: Fast	SEP	vse:INT e Run d B	Avg Type Avg Hold:	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	0000 pts)	Peak Search Next Pe Next Pk Rig Next Pk L Marker De Mkr→Ref
Res BW G Keysight Spectro C C C C C C C C C	100 kHz	Ω AC 4171604	4 GHz PNO: Fast	SEP	vse:INT e Run d B	Avg Type Avg Hold:	STATUS ALIGN AUTO 2: Log-Pwr 2: 100/100	6.0 ms (4	0000 pts)	Peak Search Next Pc Next Pk Rig Next Pk L Marker Do Mkr→Ref
Res BW G Keysight Spectro C C C C C C C C C	100 kHz	Ω AC 4171604	4 GHz PNO: Fast C IFGain:Low	SEP	vse:INT	Avg Type Avg Hold:	STATUS	6.0 ms (4	0000 pts)	Peak Search Next Pc Next Pk Rig Next Pk L Marker Du Mkr-A



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 Service Hotline:400 089 2118



# **10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY**

## **10.1 MEASUREMENT PROCEDURE**

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set SPA Trace 1 Max hold, then View.

Note: The method of AVGPSD-1 in the ANSI C63.10 (2013) item 11.10 was used in this testing.

## **10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)**

Refer To Section 8.2.

### **10.3 MEASUREMENT EQUIPMENT USED**

Refer To Section 6.

### **10.4 LIMITS AND MEASUREMENT RESULT**

TEST ITEM	POWER SPECTRAL DENSITY
TEST MODE	802.11b with data rate 1

Channel No.	Power density (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	4.665	8	Pass
Middle Channel	3.450	8	Pass
High Channel	5.194	8	Pass

TEST ITEM	POWER SPECTRAL DENSITY			S
TEST MODE	802.11g with data rate 6	c.C	8	

Channel No.	Power density (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-0.494	8	Pass
Middle Channel	0.963	8	Pass
High Channel	0.088	8	Pass



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TEST ITEM	POWER SPECTRAL DENSITY	©		200	~
TEST MODE	802.11n 20 with data rate 6.5	SC	~Č	8	N

Channel No.	Power density (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-0.280	8	Pass
Middle Channel	-0.175	8	Pass
High Channel	-0.734	8	Pass

TEST ITEM	POWER SPECTRAL DENSITY	2
TEST MODE	802.11n 40 with data rate 13.5	8

Channel No.	Power density (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-5.610	8	Pass
Middle Channel	-4.960	8	Pass
High Channel	-5.450	8	Pass



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# 802.11b TEST RESULT TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



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## TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

## 802.11g TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

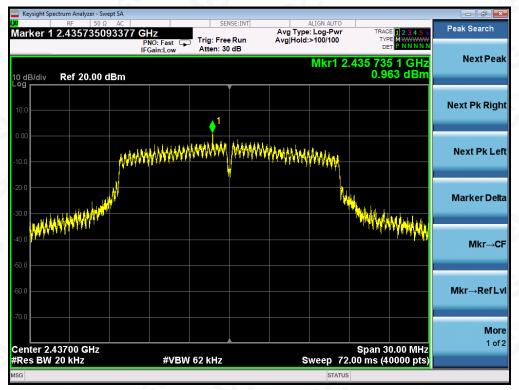




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## TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

# TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL





Attestation of Global Compliance(Shenzhen)Co.,Ltd.

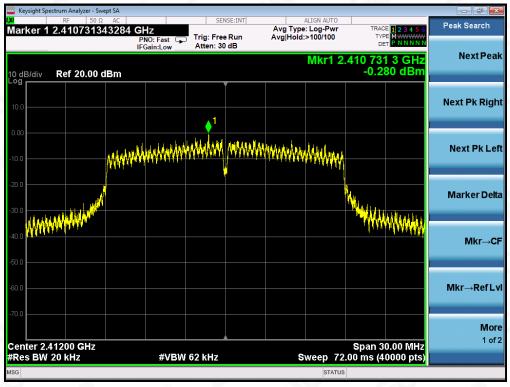
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 Tel:
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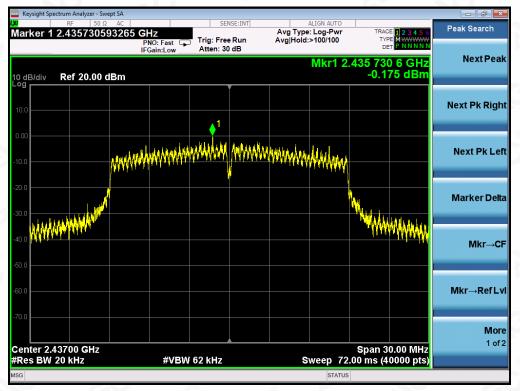
 E-mail: agc@agc-cert.com
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# 802.11n 20 TEST RESULT TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

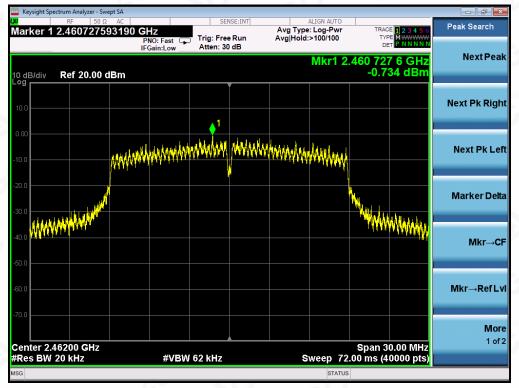


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## TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

#### 802.11n 40 TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

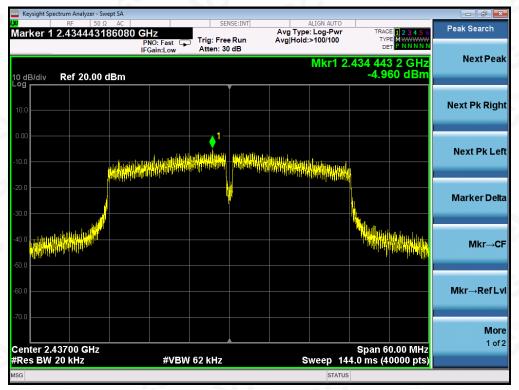




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## TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

## ctrum Analyzer - Swept SA Marker 1 2.449444686117 GHz **Peak Search** Avg Type: Log-Pwi Avg|Hold:>100/100 Trig: Free Run Atten: 30 dB PNO: Fast 🖵 IFGain:Low Next Peak Mkr1 2.449 444 7 GHz -5.450 dBm Ref 20.00 dBm 10 dB/div Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl More 1 of 2 Center 2.45200 GHz #Res BW 20 kHz Span 60.00 MHz Sweep 144.0 ms (40000 pts) #VBW 62 kHz

TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



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# **11. RADIATED EMISSION**

#### **11.1. MEASUREMENT PROCEDURE**

- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.



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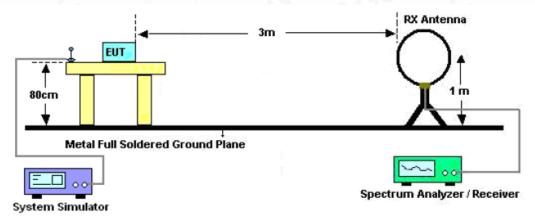
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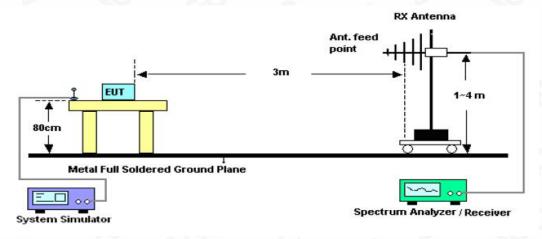


## 11.2. TEST SETUP

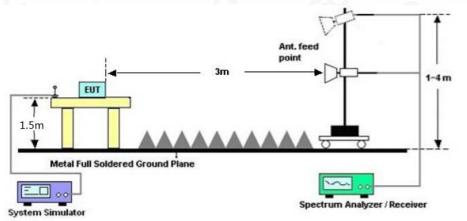
Radiated Emission Test-Setup Frequency Below 30MHz



### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



### RADIATED EMISSION TEST SETUP ABOVE 1000MHz





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## **11.3. LIMITS AND MEASUREMENT RESULT**

#### 15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
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

Note: All modes were tested For restricted band radiated emission,

the test records reported below are the worst result compared to other modes.

# 11.4. TEST RESULT

# **RADIATED EMISSION BELOW 30MHZ**

No emission found between lowest internal used/generated frequencies to 30MHz.



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#### Report No.: AGC08834190701FE05 Page 54 of 90

# **RADIATED EMISSION BELOW 1GHZ**

EUT	WiFi Bluetooth Wall Amplifier	Model Name	VX-1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Horizontal



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	•	MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		55.8667	10.54	19.23	29.77	40.00	-10.23	peak			
2		88.2000	20.98	14.97	35.95	43.50	-7.55	peak			
3	*	157.7167	19.95	19.19	39.14	43.50	-4.36	peak			
4		181.9667	18.89	17.02	35.91	43.50	-7.59	peak			
5		624.9333	2.05	27.25	29.30	46.00	-16.70	peak			
6		903.0000	2.53	31.73	34.26	46.00	-11.74	peak			

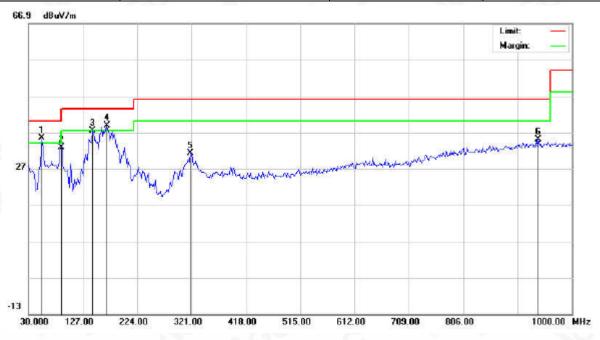
### **RESULT: PASS**



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EUT	WiFi Bluetooth Wall Amplifier	Model Name	VX-1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Vertical



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	•	MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	54.2500	15.98	19.36	35.34	40.00	-4.66	peak			
2		88.2000	17.93	14.97	32.90	43.50	-10.60	peak			
3		144.7831	18.22	19.22	37.44	43.50	-6.06	peak			
4	Ţ	170.6499	20.68	18.09	38.77	43.50	-4.73	peak			
5		319.3833	11.03	20.15	31.18	46.00	-14.82	peak			
6		940.1833	3.02	32.05	35.07	46.00	-10.93	peak			

### **RESULT: PASS**

**Note:** 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

- 2. The "Factor" value can be calculated automatically by software of measurement system.
- 3. All test modes had been pre-tested. The 802.11b at low channel is the worst case and recorded in the report.



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## **RADIATED EMISSION ABOVE 1GHZ**

EUT	WiFi Bluetooth Wall Amplifier	Model Name	VX-1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Horizontal

(MHz) 4824.022 4824.022 7236.033	er Reading	Ea atan				
4824.022 4824.022 7236.033		Factor	Emission Level	Limits	Margin	
4824.022 7236.033	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
7236.033	47.69	3.72	51.41	74.00	-22.59	peak
	44.32	3.72	48.04	54.00	-5.96	AVG
7000 000	36.90	8.15	45.05	74.00	-28.96	peak
7236.033	33.47	8.15	41.62	54.00	-12.38	AVG
		6			- 62	6
	~ 61	<u> </u>	0			
emark:		~0~	- 6	8		

Factor = Antenna Factor + Cable Loss - Pre-amplifier.

EUT	WiFi Bluetooth Wall Amplifier	Model Name	VX-1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Vertical

(MHz)         (dBµV)         (dB)         (dBµV/m)         (dBµV/m)         (dB)           4824.022         49.72         3.72         53.44         74.00         -20.56         pe           4824.022         44.26         3.72         47.98         54.00         -6.02         AV           7236.033         38.32         8.15         46.47         74.00         -27.53         pe	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
4824.022         44.26         3.72         47.98         54.00         -6.02         Av           7236.033         38.32         8.15         46.47         74.00         -27.53         pe	(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
7236.033 38.32 8.15 46.47 74.00 -27.53 pe	4824.022	49.72	3.72	53.44	74.00	-20.56	peak
	4824.022	44.26	3.72	47.98	54.00	-6.02	AVG
	7236.033	38.32	8.15	46.47	74.00	-27.53	peak
1230.033 31.34 0.15 45.09 54.00 -0.51 A	7236.033	37.54	8.15	45.69	54.00	-8.31	AVG
			- 61	8		~ 67	- 6

#### Remark:

Factor = Antenna Factor + Cable Loss - Pre-amplifier.



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EUT	WiFi Bluetooth Wall Amplifier	Model Name	VX-1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Tree
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.022	46.99	3.75	50.74	74.00	-23.26	peak
4874.022	43.05	3.75	46.80	54.00	-7.20	AVG
7311.033	40.88	8.16	49.04	74.00	-24.96	peak
7311.033	39.39	8.16	47.55	54.00	-6.45	AVG
emark:	-G	0		204	~0	8

EUT VX-1 WiFi Bluetooth Wall Amplifier **Model Name** 25°C Temperature **Relative Humidity** 55.4% 960hPa Normal Voltage Pressure **Test Voltage** 802.11b with date rate 1 **Test Mode** Vertical Antenna 2437MHZ

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB) 💿	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.022	47.72	3.75	51.47	74.00	-22.53	peak
4874.022	44.31	3.75	48.06	54.00	-5.94	AVG
7311.033	40.84	8.16	49.00	74.00	-25.00	peak
7311.033	38.25	8.16	46.41	54.00	-7.59	AVG
	10	<i>c.</i> 0			<u> </u>	20



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EUT	WiFi Bluetooth Wall Amplifier	Model Name	VX-1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	© Limits	Margin	Malue Trees
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4924.022	46.66	3.81	50.47	74.00	-23.53	peak
4924.022	44.81	3.81	48.62	54.00	-5.38	AVG
7386.033	39.72	8.19	47.91	74.00	-26.09	peak
7386.033	36.81	8.19	45.00	54.00	-9.00	AVG
emark:				NO I	- CC	8

EUT WiFi Bluetooth Wall Amplifier		Model Name	VX-1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Vertical

Meter Reading	Factor	Emission Level	Limits	Margin	
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
47.60	3.81	51.41	74.00	-22.59	💿 peak 💆
44.26	3.81	48.07	54.00	-5.93	AVG
39.50	8.19	47.69	74.00	-26.31	peak
37.36	8.19	45.55	54.00	-8.45	AVG
- Ci	8				
	(dBµV) 47.60 44.26 39.50	(dBµV)         (dB)           47.60         3.81           44.26         3.81           39.50         8.19	(dBµV)         (dB)         (dBµV/m)           47.60         3.81         51.41           44.26         3.81         48.07           39.50         8.19         47.69	(dBµV)         (dB)         (dBµV/m)         (dBµV/m)           47.60         3.81         51.41         74.00           44.26         3.81         48.07         54.00           39.50         8.19         47.69         74.00	(dBµV)         (dB)         (dBµV/m)         (dBµV/m)         (dB)           47.60         3.81         51.41         74.00         -22.59           44.26         3.81         48.07         54.00         -5.93           39.50         8.19         47.69         74.00         -26.31

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

### **RESULT: PASS**

Note:

Other emissions from 1G to 25 GHz are considered as ambient noise. No recording in the test report. Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

All test modes had been pre-tested. The 802.11b mode is the worst case and recorded in the report.



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# **12. BAND EDGE EMISSION**

### **12.1. MEASUREMENT PROCEDURE**

Radiated restricted band edge measurements

The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting

#### 12.2. TEST SET-UP

same as 11.2

Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level

2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB( $\mu$ V) to represent the Amplitude. Use the F dB( $\mu$ V/m) to represent the Field Strength. So A=F.



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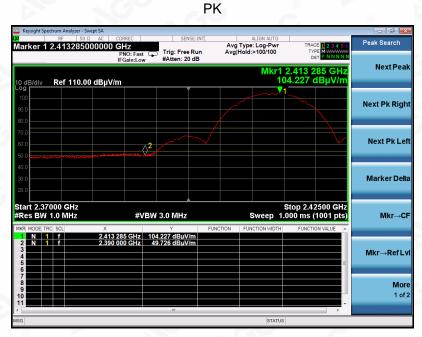
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# 12.3. TEST RESULT

EUT	WiFi Bluetooth Wall Amplifier	Model Name	VX-1
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Horizontal



AV



**RESULT: PASS** 



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