

# Global United Technology Services Co., Ltd.

Report No.: GTS201807000076F03

# FCC Report (WIFI)

**Applicant:** SHENZHEN GIEC DIGITAL CO., LTD

**Address of Applicant:** 1st&3rd Building, No.26 Puzai Road, Pingdi, Longgang

District, Shenzhen, China

SHENZHEN GIEC DIGITAL CO., LTD Manufacturer/ Factory:

Address of 1st&3rd Building, No.26 Puzai Road, Pingdi, Longgang

District, Shenzhen, China **Manufacturer/ Factory:** 

**Equipment Under Test (EUT)** 

**Product Name:** Portable WIFI Speaker

Model No.: GK-DCM1003, GK-DCM5001, GK-DCM5002, GK-DCM1001,

GK-DCM0501B, A503, A2, 4001753

FCC ID: 2AHYK-4001753

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: July 19, 2018

Date of Test: July 20, 2018-August 20, 2018

Date of report issued: August 20, 2018

Test Result: PASS \*

Authorized Signature:

**Robinson Lo Laboratory Manager** 

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

<sup>\*</sup> In the configuration tested, the EUT complied with the standards specified above.



# 2 Version

Version No.	Date	Description
00	August 20, 2018	Original

Prepared By:	Bill. Yvan	Date:	August 20, 2018
	Project Engineer		
Check By:	Andy w	Date:	August 20, 2018



# 3 Contents

			Page
1	COV	/ER PAGE	1
2	VER	SION	2
_			
3	CON	NIENIS	3
4	TES	T SUMMARY	4
5	GEN	IERAL INFORMATION	5
	5.1	GENERAL DESCRIPTION OF EUT	5
	5.2	TEST MODE	7
	5.3		
	-		
2 VERSION			
	5.6	ADDITIONAL INSTRUCTIONS	8
6	TES	T INSTRUMENTS LIST	9
7	TES	T RESULTS AND MEASUREMENT DATA	11
	7.1	ANTENNA REQUIREMENT	11
	7.2		
	-		
	-		_
	_		
8	TES	T SETUP PHOTO	56
9	FUT	CONSTRUCTIONAL DETAILS	57



# 4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
Channel Bandwidth	15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247(d)	Pass
Spurious Emission	15.205/15.209	Pass

#### Remarks:

- 1. Test according to ANSI C63.10:2013.
- 2. Pass: The EUT complies with the essential requirements in the standard.

# **Measurement Uncertainty**

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	± 4.34dB	(1)
Radiated Emission	30MHz ~ 1000MHz	± 4.24dB	(1)
Radiated Emission	1GHz ~ 26.5GHz	± 4.68dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.45dB	(1)
Note (1): The measurement unce	rtainty is for coverage factor of k	=2 and a level of confidence of	95%.



# **5** General Information

# 5.1 General Description of EUT

Product Name:	Portable WIFI Speaker
Model No.:	GK-DCM1003, GK-DCM5001, GK-DCM5002, GK-DCM1001, GK-DCM0501B, A503, A2, 4001753
Test Model No:	GK-DCM1003
Remark: All above models are	identical in the same PCB layout, interior structure and electrical circuits.
The differences are color and m	odel name for commercial purpose.
Serial No.:	400175318080001
Test sample(s) ID:	GTS201807000076-1
Sample(s) Status	Engineer sample
Hardware Version:	AV-AMP-27BG
Software Version:	3.6.5014.1332
Operation Frequency:	2412MHz~2462MHz(802.11b/802.11g/802.11n(HT20))
	2422MHz~2452MHz(802.11n(HT40))
Channel numbers:	802.11b/802.11g /802.11n(HT20): 11
	802.11n(HT40):7
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum (DSSS)
	802.11g/802.11n(H20)/802.11n(HT40):
	Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	Internal Antenna
Antenna gain:	4.0dBi(declare by applicant)
Power supply:	Battery: DC 7.4V , 2200mAh, 16.28Wh
	Charge input: DC 5V,2A



Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

#### Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequen	cy (MHz)
rest channel	802.11b/802.11g/802.11n(HT20)	802.11n(HT40)
Lowest channel	2412MHz	2422MHz
Middle channel	2437MHz	2437MHz
Highest channel	2462MHz	2452MHz



#### 5.2 Test mode

Transmitting mode Keep the EUT in continuously transmitting mode

Remark: During the test, the dutycycle >98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)
Data rate	1Mbps	6Mbps	6.5Mbps	13Mbps

### 5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
APPLE	USB Charger	A1399	N/A

# 5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• FCC —Registration No.: 381383

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383, January 08, 2018.

• Industry Canada (IC) —Registration No.: 9079A-2

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.

### 5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480 Fax: 0755-27798960

Telephone: +86 (0) 755 2779 8480 Fax: +86 (0) 755 2779 8960



### 5.6 Additional Instructions

**EUT Fixed Frequency Settings:** 

Power level setup						
Support Units	Description	Manufacturer	Model			
Wideband Radio Communication Tester		Rohde & Schwarz	CMW 500			
Mode	Channel Frequency (MHz)		Level Set			
802.11b/g/n(HT20)	CH1	CH1 2412				
	CH6	2437				
	CH11	2462	TX level : default			
802.11n(HT40)	СНЗ	2422	TA level . delault			
	CH6 2437					
	CH9	2452	]			



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# 6 Test Instruments list

Radi	Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)	
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020	
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A	
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 27 2018	June. 26 2019	
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 27 2018	June. 26 2019	
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 27 2018	June. 26 2019	
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 27 2018	June. 26 2019	
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A	
8	Coaxial Cable	GTS	N/A	GTS213	June. 27 2018	June. 26 2019	
9	Coaxial Cable	GTS	N/A	GTS211	June. 27 2018	June. 26 2019	
10	Coaxial cable	GTS	N/A	GTS210	June. 27 2018	June. 26 2019	
11	Coaxial Cable	GTS	N/A	GTS212	June. 27 2018	June. 26 2019	
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 27 2018	June. 26 2019	
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 27 2018	June. 26 2019	
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 27 2018	June. 26 2019	
15	Band filter	Amindeon	82346	GTS219	June. 27 2018	June. 26 2019	
16	Power Meter	Anritsu	ML2495A	GTS540	June. 27 2018	June. 26 2019	
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 27 2018	June. 26 2019	
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 27 2018	June. 26 2019	
19	Splitter	Agilent	11636B	GTS237	June. 27 2018	June. 26 2019	
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 27 2018	June. 26 2019	



Conc	Conducted Emission								
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)			
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.16 2014	May.15 2019			
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2018	June. 26 2019			
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 27 2018	June. 26 2019			
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 27 2018	June. 26 2019			
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A			
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A			
7	Thermo meter	KTJ	TA328	GTS233	June. 27 2018	June. 26 2019			
8	Absorbing clamp	Elektronik- Feinmechanik	MDS21	GTS229	June. 27 2018	June. 26 2019			

RF C	RF Conducted Test:								
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)			
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 27 2018	June. 26 2019			
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2018	June. 26 2019			
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 27 2018	June. 26 2019			
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 27 2018	June. 26 2019			
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 27 2018	June. 26 2019			
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 27 2018	June. 26 2019			
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 27 2018	June. 26 2019			
8	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2018	June. 26 2019			
9	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 27 2018	June. 26 2019			

Gene	General used equipment:							
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)		
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 27 2018	June. 26 2019		
2	Barometer	ChangChun	DYM3	GTS255	June. 27 2018	June. 26 2019		



# 7 Test results and Measurement Data

# 7.1 Antenna requirement

**Standard requirement:** FCC Part15 C Section 15.203 /247(c)

#### 15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

# 15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

#### **EUT Antenna:**

The antenna is Internal antenna, the best case gain of the antenna is 4.0dBi



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# 7.2 Conducted Emissions

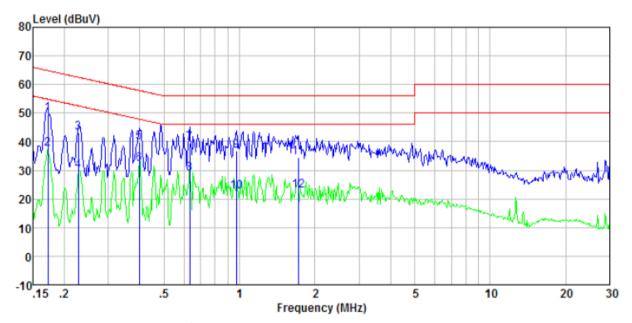
Test Requirement:	FCC Part15 C Section 15.207					
Test Method:	ANSI C63.10:2013					
Test Frequency Range:	150KHz to 30MHz					
Receiver setup:	RBW=9KHz, VBW=30KHz, Sv	veep time=auto				
Limit:	Fragues ou range (MILIT)	Limit (d	lBuV)			
	Prequency range (MHZ)  Quasi-peak  Average					
	0.15-0.5	0.15-0.5 66 to 56*				
	0.5-5	56	46			
	5-30	60	50			
Test setup:	* Decreases with the logarithm	of the frequency.				
Test procedure:	Reference Plane  LISN  40cm 80cm Filter AC power  Equipment  Remark E.U.T. Equipment Under Test LISN Line impedance Stabilization Network Test table height=0.8m  1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.					
<ol> <li>The peripheral devices are also connected to the main power LISN that provides a 50ohm/50uH coupling impedance with 5 termination. (Please refer to the block diagram of the test setuphotographs).</li> <li>Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relatipositions of equipment and all of the interface cables must be according to ANSI C63.10:2013 on conducted measurement.</li> </ol>						
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test voltage:	AC120V 60Hz					
Test results:	Pass					

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### Measurement data

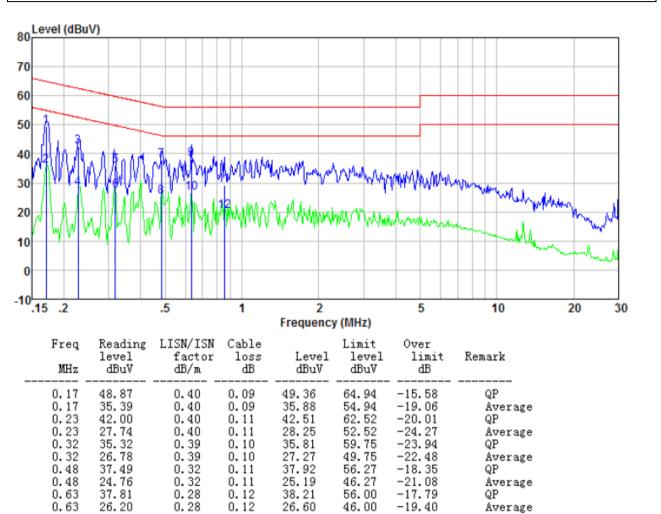
Mode:	Transmitting mode	Test by:	Bill
Temp./Hum.(%H):	26℃/56%RH	Probe:	Line



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.17	49.32	0.40	0.09	49.81	64.86	-15.05	QP
0.17	36.98	0.40	0.09	37.47	54.86	-17.39	Average
0.23	42.64	0.40	0.11	43.15	62.52	-19.37	QP
0.23	29.36	0.40	0.11	29.87	52.52	-22.65	Average
0.40	39.50	0.35	0.11	39.96	57.90	-17.94	QP
0.40	31.84	0.35	0.11	32.30	47.90	-15.60	Average
0.63	39.00	0.28	0.12	39.40	56.00	-16.60	QP
0.63	28.33	0.28	0.12	28.73	46.00	-17.27	Average
0.97	36.42	0.21	0.15	36.78	56.00	-19.22	QP
0.97	22.10	0.21	0.15	22.46	46.00	-23.54	Average
1.72	34.08	0.20	0.17	34.45	56.00	-21.55	QP
1.72	22.43	0.20	0.17	22.80	46.00	-23.20	Average



Mode:	Transmitting mode	Test by:	Bill
Temp./Hum.(%H):	26℃/56%RH	Probe:	Neutral



#### Notes:

0.85

0.85

28.91

19.91

1. An initial pre-scan was performed on the line and neutral lines with peak detector.

0.14

0.14

2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.

29.28

20.28

56.00

46.00

-26.72

-25.72

QΡ

Average

3. Final Level = Receiver Read level + LISN Factor + Cable Loss

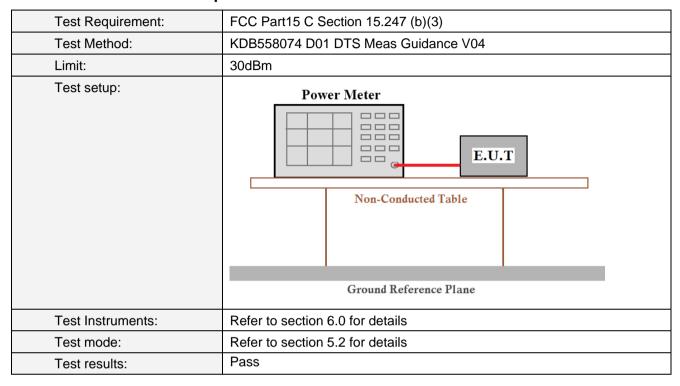
0.23

4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

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# 7.3 Conducted Peak Output Power



#### **Measurement Data**

Test CH		Peak Outp	Limit(dBm)	Result		
Test Off	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	Lillit(GDIII)	Result
Lowest	8.24	7.89	7.25	6.43		
Middle	8.23	8.15	7.68	6.71	30.00	Pass
Highest	8.43	7.77	7.10	6.57		



# 7.4 Channel Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)		
Test Method:	KDB558074 D01 DTS Meas Guidance V04		
Limit:	>500KHz		
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane		
Test Instruments:	Refer to section 6.0 for details		
Test mode:	Refer to section 5.2 for details		
Test results:	Pass		

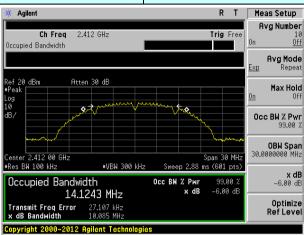
### **Measurement Data**

Test CH		Channel E	Limit(KHz)	Result		
1631 011	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	Liiiiii((Ki iZ)	Nesult
Lowest	10.085	16.389	17.665	36.386		
Middle	10.96	16.410	17.635	36.023	>500	Pass
Highest	10.91	16.428	17.677	35.803		

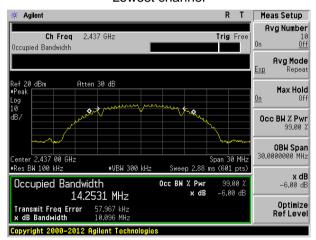


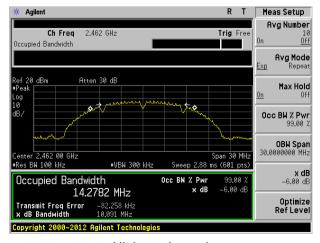
### Test plot as follows:

Test mode: 802.11b



#### Lowest channel

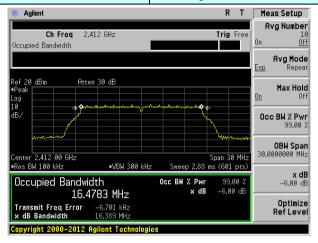




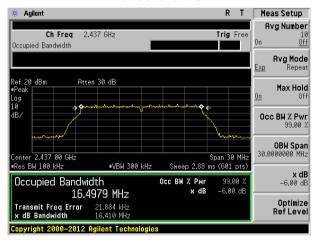
Highest channel

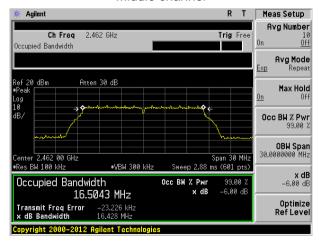


Test mode: 802.11g



#### Lowest channel

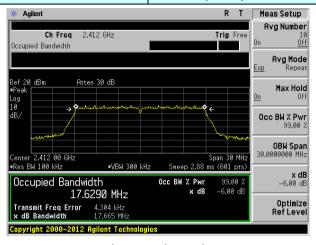




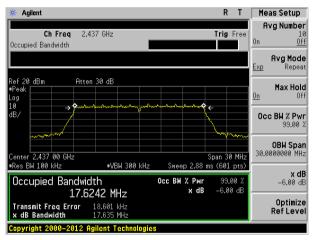
Highest channel

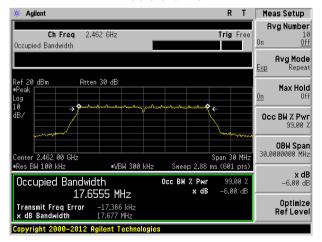


Test mode: 802.11n(HT20)



#### Lowest channel

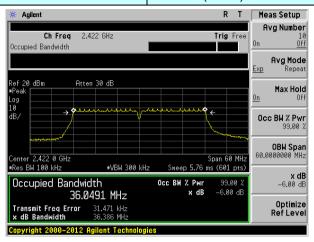




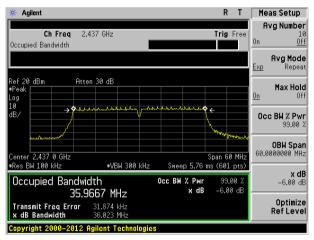
Highest channel

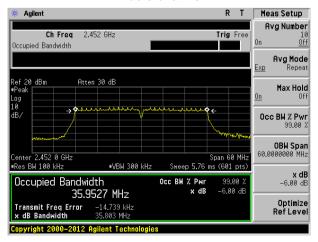


Test mode: 802.11n(HT40)



#### Lowest channel





Highest channel



# 7.5 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)		
Test Method:	KDB558074 D01 DTS Meas Guidance V04		
Limit:	8dBm/3kHz		
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane		
Test Instruments:	Refer to section 6.0 for details		
Test mode:	Refer to section 5.2 for details		
Test results:	Pass		

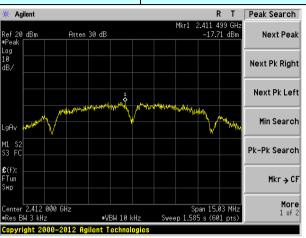
#### **Measurement Data**

Test CH		Power Spe	ctral Density (dBm)		Limit	Result
1631 011	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	(dBm/3kHz)	Nesuit
Lowest	-17.71	-20.95	-22.22	-24.53		
Middle	-17.54	-19.83	-21.41	-23.47	8.00	Pass
Highest	-16.98	-21.04	-21.73	-24.85		

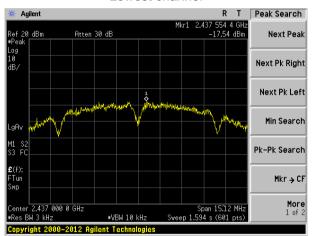


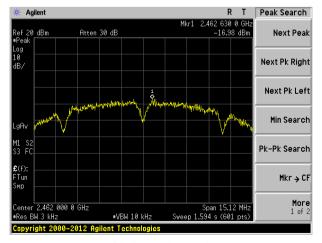
### Test plot as follows:

Test mode: 802.11b



#### Lowest channel

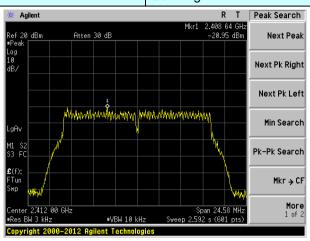




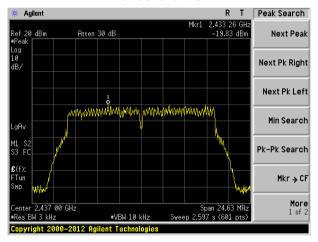
Highest channel



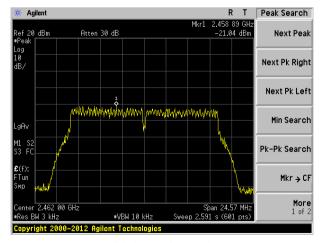
Test mode: 802.11g



#### Lowest channel



#### Middle channel

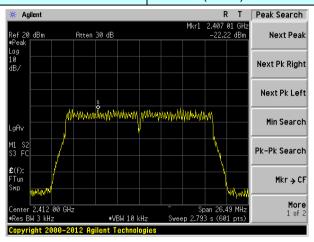


Highest channel

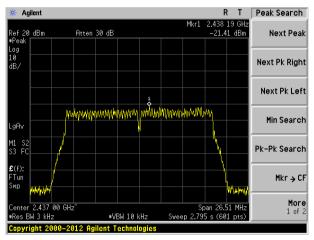
Telephone: +86 (0) 755 2779 8480 Fax: +86 (0) 755 2779 8960

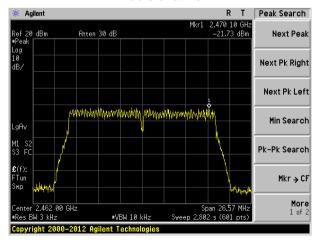


Test mode: 802.11n(HT20)



#### Lowest channel

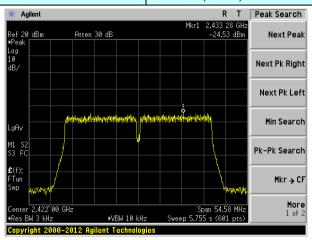




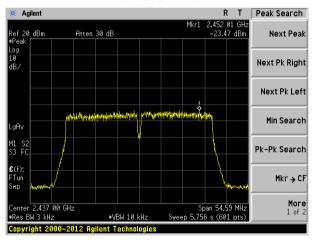
Highest channel

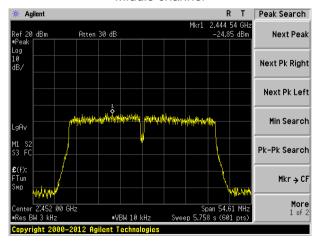


Test mode: 802.11n(HT40)



#### Lowest channel





Highest channel



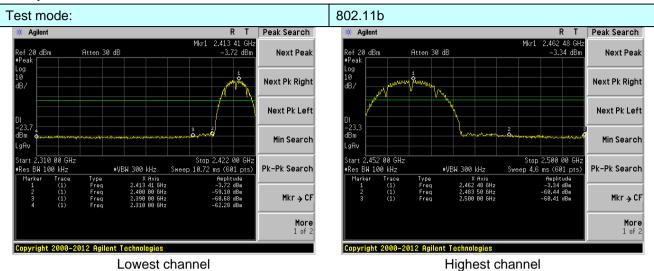
# 7.6 Band edges

# 7.6.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)					
Test Method:	KDB558074 D01 DTS Meas Guidance V04					
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.					
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test results:	Pass					

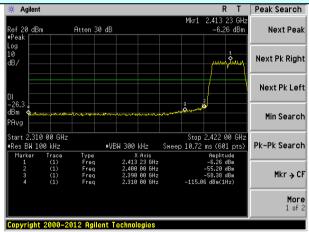


### Test plot as follows:



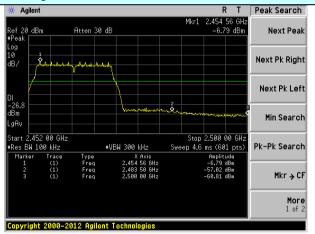
Lowest channel





Lowest channel

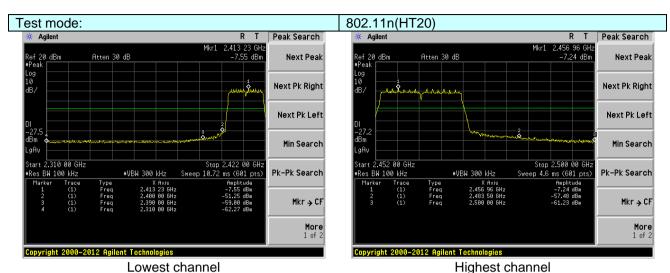
# 802.11g



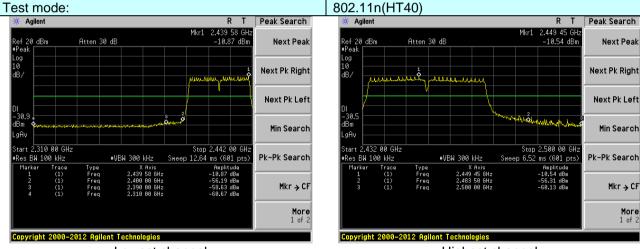
Highest channel

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802.11n(HT40)





# 7.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205						
Test Method:	ANSI C63.10:2013						
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.						
Test site:	Measurement Distance: 3m						
Receiver setup:	Frequency	Detector	RBW	VBW	Value		
		Peak	1MHz	3MHz	Peak		
	Above 1GHz	Average	1MHz	3MHz	Average		
Limit:	Frequen		Limit (dBuV		Value		
	Above 10	SHz –	54.0		Average		
Test setup:			74.0	0	Peak		
	Tum Tables <150cm>	EUT+		Antenna - Am >  Preamplifie	F		
Test Procedure:	<ol> <li>The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data sheet.</li> <li>The radiation measurements are performed in X, Y, Z axis positioning.</li> </ol>						
Toot Instruments:	worst case mo			л.			
Test Instruments:	Refer to section 6						
Test mode:	Refer to section 8	J.∠ IUI UEIAIIS	1				

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Test results:	Pass	
---------------	------	--

### Measurement data:

Remark: The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.

(lowest and highest frequencies) data was showed.								
Test mode:		802.11b Test channel:			L	owest		
Peak value	:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	39.16	27.61	5.36	34.01	38.12	74.00	-35.88	Horizontal
2390.00	52.05	27.59	5.38	34.01	51.01	74.00	-22.99	Horizontal
2310.00	39.40	27.61	5.36	34.01	38.36	74.00	-35.64	Vertical
2390.00	54.19	27.59	5.38	34.01	53.15	74.00	-20.85	Vertical
Average va	lue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	32.23	27.61	5.36	34.01	31.19	54.00	-22.81	Horizontal
2390.00	38.38	27.59	5.38	34.01	37.34	54.00	-16.66	Horizontal
2310.00	32.83	27.61	5.36	34.01	31.79	54.00	-22.21	Vertical
2390.00	40.16	27.59	5.38	34.01	39.12	54.00	-14.88	Vertical
Test mode:		802.1	1b	Te	st channel:	ŀ	lighest	
Peak value	:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	51.73	27.53	5.47	33.92	50.81	74.00	-23.19	Horizontal
2500.00	47.69	27.55	5.49	29.93	50.80	74.00	-23.20	Horizontal
2483.50	53.91	27.53	5.47	33.92	52.99	74.00	-21.01	Vertical
2500.00	50.12	27.55	5.49	29.93	53.23	74.00	-20.77	Vertical
Average va	lue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	38.43	27.53	5.47	33.92	37.51	54.00	-16.49	Horizontal
2500.00	34.61	27.55	5.49	29.93	37.72	54.00	-16.28	Horizontal
2483.50	40.34	27.53	5.47	33.92	39.42	54.00	-14.58	Vertical
2500.00	36.47	27.55	5.49	29.93	39.58	54.00	-14.42	Vertical

Page 30 of 57



Test mode:		802.1	1g	Te	Test channel:			
Peak value:	:				_			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	38.31	27.61	5.36	34.01	37.27	74.00	-36.73	Horizontal
2390.00	50.92	27.59	5.38	34.01	49.88	74.00	-24.12	Horizontal
2310.00	38.50	27.61	5.36	34.01	37.46	74.00	-36.54	Vertical
2390.00	52.82	27.59	5.38	34.01	51.78	74.00	-22.22	Vertical
Average va	lue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	31.63	27.61	5.36	34.01	30.59	54.00	-23.41	Horizontal
2390.00	37.69	27.59	5.38	34.01	36.65	54.00	-17.35	Horizontal
2310.00	32.15	27.61	5.36	34.01	31.11	54.00	-22.89	Vertical
2390.00	39.40	27.59	5.38	34.01	38.36	54.00	-15.64	Vertical
Test mode: Peak value:	<u> </u>	802.1	1g	Te	st channel:		Highest	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	50.52	27.53	5.47	33.92	49.60	74.00	-24.40	Horizontal
2500.00	46.74	27.55	5.49	29.93	49.85	74.00	-24.15	Horizontal
2483.50	52.52	27.53	5.47	33.92	51.60	74.00	-22.40	Vertical
2500.00	49.02	27.55	5.49	29.93	52.13	74.00	-21.87	Vertical
Average va	lue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	37.69	27.53	5.47	33.92	36.77	54.00	-17.23	Horizontal
2500.00	34.04	27.55	5.49	29.93	37.15	54.00	-16.85	Horizontal
2483.50	39.53	27.53	5.47	33.92	38.61	54.00	-15.39	Vertical
2403.30				29.93	38.98	54.00	-15.02	



Test mode:		802.1	1n(HT20)	Tes	st channel:	L	owest	
Peak value:								_
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	38.40	27.61	5.36	34.01	37.36	74.00	-36.64	Horizontal
2390.00	51.04	27.59	5.38	34.01	50.00	74.00	-24.00	Horizontal
2310.00	38.59	27.61	5.36	34.01	37.55	74.00	-36.45	Vertical
2390.00	52.97	27.59	5.38	34.01	51.93	74.00	-22.07	Vertical
Average va	lue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	31.69	27.61	5.36	34.01	30.65	54.00	-23.35	Horizontal
2400.00	37.76	27.58	5.39	34.01	36.72	54.00	-17.28	Horizontal
2310.00	32.23	27.61	5.36	34.01	31.19	54.00	-22.81	Vertical
2400.00	39.48	27.58	5.39	34.01	38.44	54.00	-15.56	Vertical
Test mode:		802.1	1n(HT20)	Tes	st channel:	H	lighest	
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	50.65	27.53	5.47	33.92	49.73	74.00	-24.27	Horizontal
2500.00	46.84	27.55	5.49	29.93	49.95	74.00	-24.05	Horizontal
2483.50	52.67	27.53	5.47	33.92	51.75	74.00	-22.25	Vertical
2500.00	49.14	27.55	5.49	29.93	52.25	74.00	-21.75	Vertical
Average va	lue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	37.77	27.53	5.47	33.92	36.85	54.00	-17.15	Horizontal
2500.00	34.10	27.55	5.49	29.93	37.21	54.00	-16.79	Horizontal
2483.50	39.62	27.53	5.47	33.92	38.70	54.00	-15.30	Vertical
2500.00	35.93	27.55	5.49	29.93	39.04	54.00	-14.96	Vertical



Test mode:		802.1	1n(HT40)	Te	st channel:	l	_owest	
Peak value:	İ	•	,			•		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	37.68	27.61	5.36	34.01	36.64	74.00	-37.36	Horizontal
2390.00	50.09	27.59	5.38	34.01	49.05	74.00	-24.95	Horizontal
2310.00	37.83	27.61	5.36	34.01	36.79	74.00	-37.21	Vertical
2390.00	51.82	27.59	5.38	34.01	50.78	74.00	-23.22	Vertical
Average va	lue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	31.18	27.61	5.36	34.01	30.14	54.00	-23.86	Horizontal
2390.00	37.18	27.59	5.38	34.01	36.14	54.00	-17.86	Horizontal
2310.00	31.66	27.61	5.36	34.01	30.62	54.00	-23.38	Vertical
2390.00	38.84	27.59	5.38	34.01	37.80	54.00	-16.20	Vertical
Test mode: Peak value:		802.1	1n(HT40)	Te	st channel:	ŀ	Highest	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	49.62	27.53	5.47	33.92	48.70	74.00	-25.30	Horizontal
2500.00	46.05	27.55	5.49	29.93	49.16	74.00	-24.84	Horizontal
2483.50	51.50	27.53	5.47	33.92	50.58	74.00	-23.42	Vertical
2500.00	48.21	27.55	5.49	29.93	51.32	74.00	-22.68	Vertical
Average va	lue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	37.15	27.53	5.47	33.92	36.23	54.00	-17.77	Horizontal
2500.00	33.61	27.55	5.49	29.93	36.72	54.00	-17.28	Horizontal
2483.50	38.93	27.53	5.47	33.92	38.01	54.00	-15.99	Vertical
2500.00	35.42	27.55	5.49	29.93	38.53	54.00	-15.47	Vertical
Remark:								

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



# 7.7 Spurious Emission

# 7.7.1 Conducted Emission Method

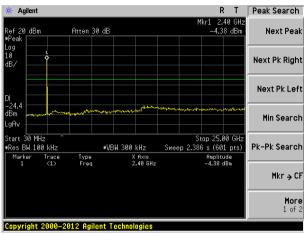
Test Requirement:	FCC Part15 C Section 15.247 (d)					
Test Method:	KDB558074 D01 DTS Meas Guidance V04					
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.					
Test setup:	l 3					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test results:	Pass					



#### Test plot as follows:

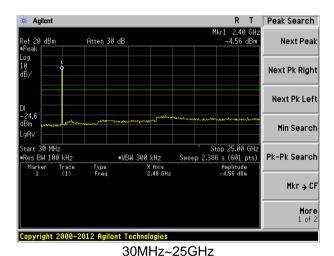
Test mode: 802.11b

Lowest channel

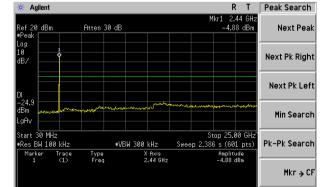


30MHz~25GHz

#### Middle channel



Highest channel



30MHz~25GHz

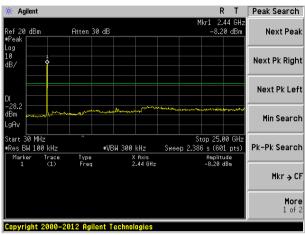
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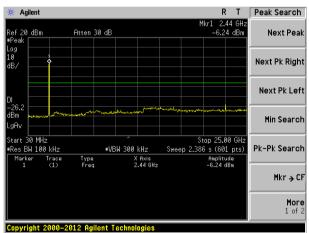


Test mode: 802.11g

Lowest channel

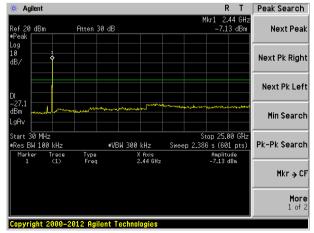


30MHz~25GHz



Highest channel

30MHz~25GHz

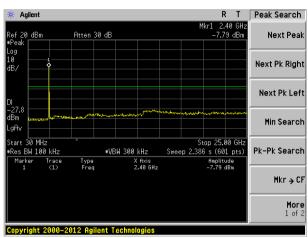


30MHz~25GHz



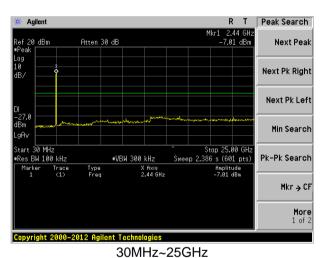
Test mode: 802.11n(HT20)

Lowest channel



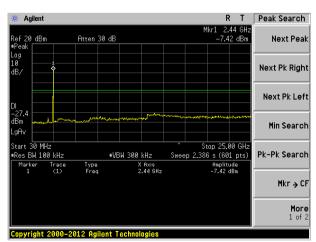
30MHz~25GHz

Middle channel



30IVIH2~25C

Highest channel



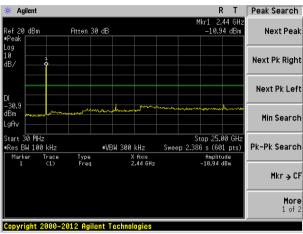
30MHz~25GHz

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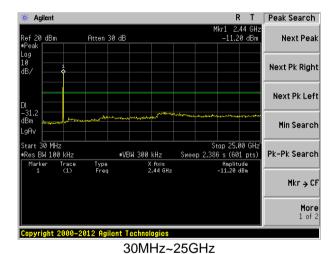
Test mode: 802.11n(HT40)

Lowest channel

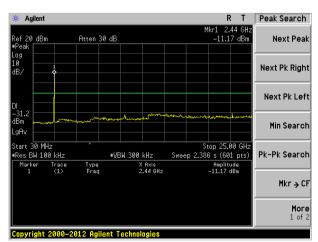


30MHz~25GHz

Middle channel



Highest channel



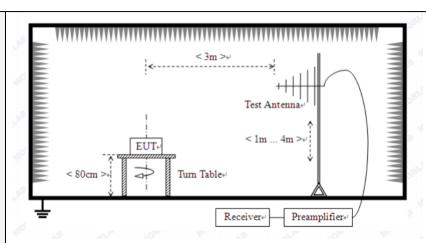
30MHz~25GHz



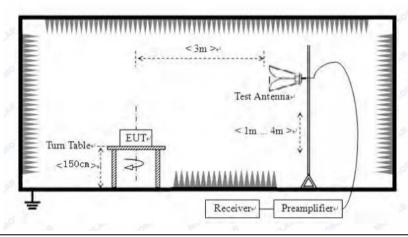
# 7.7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section	on 15	5.209							
Test Method:	ANSI C63.10:2013									
Test Frequency Range:	9kHz to 25GHz									
Test site:	Measurement Distar	nce:	3m							
Receiver setup:	Frequency		Detector RB <sup>1</sup>		W VBW		Value			
	9KHz-150KHz	Qı	uasi-peak	200	Hz	600Hz	z Quasi-peak			
	150KHz-30MHz	Qı	uasi-peak	9KI	Ηz	30KHz	z Quasi-peak			
	30MHz-1GHz	Qı	uasi-peak	100k	(Hz	300KH	Iz Quasi-peak			
	Above 4011=		Peak	1MI	Hz	3MHz	z Peak			
	Above 1GHz		Peak	1MI	Hz	10Hz	Average			
Limit:	Frequency		Limit (u\	//m)	٧	'alue	Measurement Distance			
	0.009MHz-0.490M	1Hz	2400/F(h	(Hz)		QP	300m			
	0.490MHz-1.705M	1Hz	24000/F(	KHz)		QP	300m			
	1.705MHz-30MH	łz	30			QP	30m			
	30MHz-88MHz		100			QP				
	88MHz-216MHz	Z	150			QP				
	216MHz-960MH	Z	200	)		QP	3m			
	960MHz-1GHz		500			QP	Om			
	Above 1GHz		500		Average					
	7.0000 10112		5000	)	F	Peak				
Test setup:	Tum Table	EUT	< 3m	>↓ < 1m> Receive		Preamplific	er <sub>t</sub> ,			
	For radiated emiss	sions	from 30M	Hz to	1GH	Z				





#### For radiated emissions above 1GHz



#### Test Procedure:

- 1. The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
- 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 6. If the emission level of the EUT in peak mode was 10dB lower than the



	limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test voltage:	AC120V 60Hz & DC 7.4V
Test results:	Pass

#### Remark:

Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

#### Measurement data:

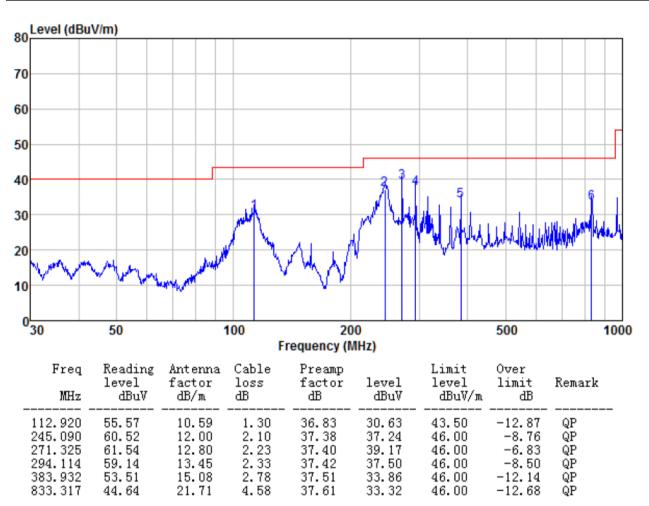
# ■ 9kHz~30MHz

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.



#### ■ Below 1GHz

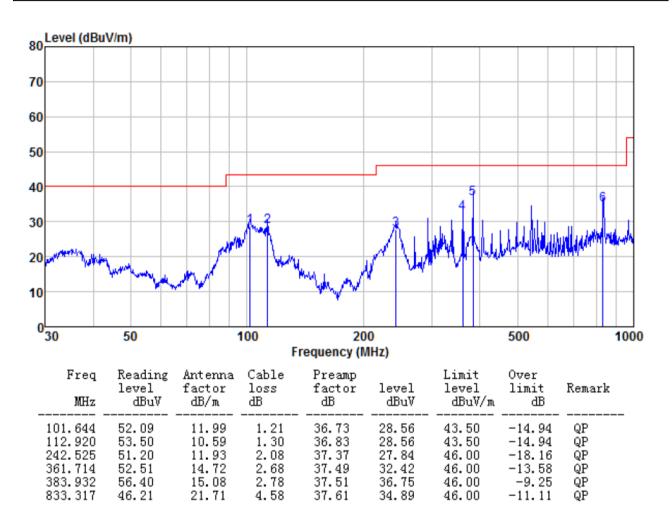
Mode:	Transmitting mode	Test by:	Bill
Temp./Hum.(%H):	26℃/56%RH	Polarziation:	Horizontal



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Mode:Transmitting modeTest by:BillTemp./Hum.(%H):26℃/56%RHPolarziation:Vertical





# ■ Above 1GHz

Test mode:		802.11b		Test	channel:	Lowe	est	
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	39.24	31.79	8.62	32.10	47.55	74.00	-26.45	Vertical
7236.00	33.55	36.19	11.68	31.97	49.45	74.00	-24.55	Vertical
9648.00	32.24	38.07	14.16	31.56	52.91	74.00	-21.09	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	38.07	31.79	8.62	32.10	46.38	74.00	-27.62	Horizontal
7236.00	33.39	36.19	11.68	31.97	49.29	74.00	-24.71	Horizontal
9648.00	31.85	38.07	14.16	31.56	52.52	74.00	-21.48	Horizontal
12060.00	*					74.00		Horizontal
14472.00	*					74.00		Horizontal
16884.00	*					74.00		Horizontal
Average val	ue:						ı	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	28.41	31.79	8.62	32.10	36.72	54.00	-17.28	Vertical
7236.00	22.44	36.19	11.68	31.97	38.34	54.00	-15.66	Vertical
9648.00	22.60	38.07	14.16	31.56	43.27	54.00	-10.73	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	27.67	31.79	8.62	32.10	35.98	54.00	-18.02	Horizontal
7236.00	21.99	36.19	11.68	31.97	37.89	54.00	-16.11	Horizontal
9648.00	21.62	38.07	14.16	31.56	42.29	54.00	-11.71	Horizontal
12060.00	*					54.00		Horizontal
14472.00	*					54.00		Horizontal
16884.00	*					54.00		Horizontal

#### Remark.

<sup>1.</sup> Final Level =Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

<sup>2. &</sup>quot;\*", means this data is the too weak instrument of signal is unable to test.



Test mode:		802.11b		Test	channel:	Midd	le	
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	38.48	31.85	8.66	32.12	46.87	74.00	-27.13	Vertical
7311.00	33.74	36.37	11.71	31.91	49.91	74.00	-24.09	Vertical
9748.00	33.34	38.27	14.25	31.56	54.30	74.00	-19.70	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	39.09	31.85	8.66	32.12	47.48	74.00	-26.52	Horizontal
7311.00	32.45	36.37	11.71	31.91	48.62	74.00	-25.38	Horizontal
9748.00	33.26	38.27	14.25	31.56	54.22	74.00	-19.78	Horizontal
12185.00	*					74.00		Horizontal
14622.00	*					74.00		Horizontal
17059.00	*					74.00		Horizontal
Average val	ue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	29.40	31.85	8.66	32.12	37.79	54.00	-16.21	Vertical
7311.00	22.07	36.37	11.71	31.91	38.24	54.00	-15.76	Vertical
9748.00	22.61	38.27	14.25	31.56	43.57	54.00	-10.43	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	29.25	31.85	8.66	32.12	37.64	54.00	-16.36	Horizontal
7311.00	21.55	36.37	11.71	31.91	37.72	54.00	-16.28	Horizontal
9748.00	22.99	38.27	14.25	31.56	43.95	54.00	-10.05	Horizontal
12185.00	*					54.00		Horizontal
14622.00	*	_				54.00		Horizontal
17059.00	*					54.00		Horizontal

<sup>1.</sup> Final Level =Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

<sup>2. &</sup>quot;\*", means this data is the too weak instrument of signal is unable to test.



Test mode:		802.11b		Test	channel:	Highe	est	
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	43.38	31.90	8.70	32.15	51.83	74.00	-22.17	Vertical
7386.00	34.02	36.49	11.76	31.83	50.44	74.00	-23.56	Vertical
9848.00	36.35	38.62	14.31	31.77	57.51	74.00	-16.49	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	42.92	31.90	8.70	32.15	51.37	74.00	-22.63	Horizontal
7386.00	33.04	36.49	11.76	31.83	49.46	74.00	-24.54	Horizontal
9848.00	32.57	38.62	14.31	31.77	53.73	74.00	-20.27	Horizontal
12310.00	*					74.00		Horizontal
14772.00	*					74.00		Horizontal
17234.00	*					74.00		Horizontal
Average val	ue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	34.41	31.90	8.70	32.15	42.86	54.00	-11.14	Vertical
7386.00	23.97	36.49	11.76	31.83	40.39	54.00	-13.61	Vertical
9848.00	24.88	38.62	14.31	31.77	46.04	54.00	-7.96	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	33.36	31.90	8.70	32.15	41.81	54.00	-12.19	Horizontal
7386.00	22.45	36.49	11.76	31.83	38.87	54.00	-15.13	Horizontal
9848.00	21.86	38.62	14.31	31.77	43.02	54.00	-10.98	Horizontal
12310.00	*					54.00		Horizontal
14772.00	*					54.00		Horizontal
17234.00	*					54.00		Horizontal

<sup>1.</sup> Final Level =Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

<sup>2. &</sup>quot;\*", means this data is the too weak instrument of signal is unable to test.



Test mode:		802.11g		Test	channel:	lowes	st	
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	39.03	31.79	8.62	32.10	47.34	74.00	-26.66	Vertical
7236.00	33.42	36.19	11.68	31.97	49.32	74.00	-24.68	Vertical
9648.00	32.14	38.07	14.16	31.56	52.81	74.00	-21.19	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	37.90	31.79	8.62	32.10	46.21	74.00	-27.79	Horizontal
7236.00	33.27	36.19	11.68	31.97	49.17	74.00	-24.83	Horizontal
9648.00	31.77	38.07	14.16	31.56	52.44	74.00	-21.56	Horizontal
12060.00	*					74.00		Horizontal
14472.00	*					74.00		Horizontal
16884.00	*					74.00		Horizontal
Average val	ue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	28.22	31.79	8.62	32.10	36.53	54.00	-17.47	Vertical
7236.00	22.32	36.19	11.68	31.97	38.22	54.00	-15.78	Vertical
9648.00	22.51	38.07	14.16	31.56	43.18	54.00	-10.82	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertica
4824.00	27.50	31.79	8.62	32.10	35.81	54.00	-18.19	Horizontal
7236.00	21.87	36.19	11.68	31.97	37.77	54.00	-16.23	Horizontal
9648.00	21.53	38.07	14.16	31.56	42.20	54.00	-11.80	Horizontal
12060.00	*					54.00		Horizontal
14472.00	*	_				54.00		Horizontal
16884.00	*					54.00		Horizontal

<sup>1.</sup> Final Level =Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

<sup>2. &</sup>quot;\*", means this data is the too weak instrument of signal is unable to test.



Test mode:		802.11g		Test	channel:	Midd	le	
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	38.31	31.85	8.66	32.12	46.70	74.00	-27.30	Vertical
7311.00	33.63	36.37	11.71	31.91	49.80	74.00	-24.20	Vertical
9748.00	33.26	38.27	14.25	31.56	54.22	74.00	-19.78	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	38.95	31.85	8.66	32.12	47.34	74.00	-26.66	Horizontal
7311.00	32.35	36.37	11.71	31.91	48.52	74.00	-25.48	Horizontal
9748.00	33.19	38.27	14.25	31.56	54.15	74.00	-19.85	Horizontal
12185.00	*					74.00		Horizontal
14622.00	*					74.00		Horizontal
17059.00	*					74.00		Horizontal
Average val	ue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	29.24	31.85	8.66	32.12	37.63	54.00	-16.37	Vertical
7311.00	21.97	36.37	11.71	31.91	38.14	54.00	-15.86	Vertical
9748.00	22.53	38.27	14.25	31.56	43.49	54.00	-10.51	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	29.12	31.85	8.66	32.12	37.51	54.00	-16.49	Horizontal
7311.00	21.46	36.37	11.71	31.91	37.63	54.00	-16.37	Horizontal
9748.00	22.92	38.27	14.25	31.56	43.88	54.00	-10.12	Horizontal
12185.00	*					54.00		Horizontal
14622.00	*	_				54.00		Horizontal
17059.00	*					54.00		Horizontal

<sup>1.</sup> Final Level =Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

<sup>2. &</sup>quot;\*", means this data is the too weak instrument of signal is unable to test.



Test mode:		802.11g			Test	channel:		High	est	
Peak value:										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Prea Fac (d	ctor	Level (dBuV/m)	Limit (dBu)		Over Limit (dB)	polarization
4924.00	43.08	31.90	8.70	32.	.15	51.53	74.	00	-22.47	Vertical
7386.00	33.83	36.49	11.76	31.	.83	50.25	74.	00	-23.75	Vertical
9848.00	36.22	38.62	14.31	31.	.77	57.38	74.	00	-16.62	Vertical
12310.00	*						74.	00		Vertical
14772.00	*						74.	00		Vertical
17234.00	*						74.	00		Vertical
4924.00	42.67	31.90	8.70	32.	.15	51.12	74.	00	-22.88	Horizontal
7386.00	32.87	36.49	11.76	31.	.83	49.29	74.	00	-24.71	Horizontal
9848.00	32.45	38.62	14.31	31.	.77	53.61	74.	00	-20.39	Horizontal
12310.00	*						74.	00		Horizontal
14772.00	*						74.	00		Horizontal
17234.00	*						74.	00		Horizontal
Average val										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Prea Fac (d	ctor	Level (dBuV/m)	Limit (dBu		Over Limit (dB)	polarization
4924.00	34.14	31.90	8.70	32.	.15	42.59	54.	00	-11.41	Vertical
7386.00	23.78	36.49	11.76	31.	.83	40.20	54.	00	-13.80	Vertical
9848.00	24.75	38.62	14.31	31.	.77	45.91	54.	00	-8.09	Vertical
12310.00	*						54.	00		Vertical
14772.00	*						54.	00		Vertical
17234.00	*						54.	00		Vertical
4924.00	33.13	31.90	8.70	32.	.15	41.58	54.	00	-12.42	Horizontal
7386.00	22.29	36.49	11.76	31.	.83	38.71	54.	00	-15.29	Horizontal
9848.00	21.74	38.62	14.31	31.	.77	42.90	54.	00	-11.10	Horizontal
12310.00	*						54.	00		Horizontal
14772.00	*						54.	00		Horizontal
17234.00	*						54.	00		Horizontal

<sup>1.</sup> Final Level =Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

<sup>2. &</sup>quot;\*", means this data is the too weak instrument of signal is unable to test.



Test mode:		802.11n(H	IT20)	Test	channel:	Lowe	est	
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	38.92	31.79	8.62	32.10	47.23	74.00	-26.77	Vertical
7236.00	33.35	36.19	11.68	31.97	49.25	74.00	-24.75	Vertical
9648.00	32.10	38.07	14.16	31.56	52.77	74.00	-21.23	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	37.81	31.79	8.62	32.10	46.12	74.00	-27.88	Horizontal
7236.00	33.21	36.19	11.68	31.97	49.11	74.00	-24.89	Horizontal
9648.00	31.72	38.07	14.16	31.56	52.39	74.00	-21.61	Horizontal
12060.00	*					74.00		Horizontal
14472.00	*					74.00		Horizontal
16884.00	*					74.00		Horizontal
Average val	ue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	28.12	31.79	8.62	32.10	36.43	54.00	-17.57	Vertical
7236.00	22.25	36.19	11.68	31.97	38.15	54.00	-15.85	Vertical
9648.00	22.47	38.07	14.16	31.56	43.14	54.00	-10.86	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	27.42	31.79	8.62	32.10	35.73	54.00	-18.27	Horizontal
7236.00	21.82	36.19	11.68	31.97	37.72	54.00	-16.28	Horizontal
9648.00	21.49	38.07	14.16	31.56	42.16	54.00	-11.84	Horizontal
12060.00	*					54.00		Horizontal
14472.00	*					54.00		Horizontal
16884.00	*	_				54.00		Horizontal

<sup>1.</sup> Final Level =Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

<sup>2. &</sup>quot;\*", means this data is the too weak instrument of signal is unable to test.



Test mode:		802.11n(H	IT20)	Test	channel:	Midd	le	
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	38.22	31.85	8.66	32.12	46.61	74.00	-27.39	Vertical
7311.00	33.57	36.37	11.71	31.91	49.74	74.00	-24.26	Vertical
9748.00	33.22	38.27	14.25	31.56	54.18	74.00	-19.82	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	38.87	31.85	8.66	32.12	47.26	74.00	-26.74	Horizontal
7311.00	32.30	36.37	11.71	31.91	48.47	74.00	-25.53	Horizontal
9748.00	33.15	38.27	14.25	31.56	54.11	74.00	-19.89	Horizontal
12185.00	*					74.00		Horizontal
14622.00	*					74.00		Horizontal
17059.00	*					74.00		Horizontal
Average val	ue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	29.16	31.85	8.66	32.12	37.55	54.00	-16.45	Vertical
7311.00	21.91	36.37	11.71	31.91	38.08	54.00	-15.92	Vertical
9748.00	22.49	38.27	14.25	31.56	43.45	54.00	-10.55	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	29.04	31.85	8.66	32.12	37.43	54.00	-16.57	Horizontal
7311.00	21.41	36.37	11.71	31.91	37.58	54.00	-16.42	Horizontal
9748.00	22.88	38.27	14.25	31.56	43.84	54.00	-10.16	Horizontal
12185.00	*					54.00		Horizontal
14622.00	*	_				54.00		Horizontal
17059.00	*					54.00		Horizontal

<sup>1.</sup> Final Level =Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

<sup>2. &</sup>quot;\*", means this data is the too weak instrument of signal is unable to test.



Test mode:		802.11n(H	IT20)	Test	channel:	Highe	est	
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	42.93	31.90	8.70	32.15	51.38	74.00	-22.62	4924.00
7386.00	33.73	36.49	11.76	31.83	50.15	74.00	-23.85	7386.00
9848.00	36.15	38.62	14.31	31.77	57.31	74.00	-16.69	9848.00
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	42.54	31.90	8.70	32.15	50.99	74.00	-23.01	Horizontal
7386.00	32.79	36.49	11.76	31.83	49.21	74.00	-24.79	Horizontal
9848.00	32.38	38.62	14.31	31.77	53.54	74.00	-20.46	Horizontal
12310.00	*					74.00		Horizontal
14772.00	*					74.00		Horizontal
17234.00	*					74.00		Horizontal
Average val	ue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	34.00	31.90	8.70	32.15	42.45	54.00	-11.55	Vertical
7386.00	23.69	36.49	11.76	31.83	40.11	54.00	-13.89	Vertical
9848.00	24.68	38.62	14.31	31.77	45.84	54.00	-8.16	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	33.00	31.90	8.70	32.15	41.45	54.00	-12.55	Horizontal
7386.00	22.21	36.49	11.76	31.83	38.63	54.00	-15.37	Horizontal
9848.00	21.67	38.62	14.31	31.77	42.83	54.00	-11.17	Horizontal
12310.00	*					54.00		Horizontal
14772.00	*	_				54.00		Horizontal
17234.00	*					54.00		Horizontal

<sup>1</sup> Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

<sup>2 &</sup>quot;\*", means this data is the too weak instrument of signal is unable to test.



Test mode:		802.11n(HT40)			Test channel:			Lowe	st	
Peak value:										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)		Level (dBuV/m)	Limit (dBu)		Over Limit (dB)	polarization
4844.00	38.44	31.81	8.63	32.11		46.77	74.00		-27.23	Vertical
7266.00	33.05	36.28	11.69	31.	94	49.08	74.	00	-24.92	Vertical
9688.00	31.88	38.13	14.21	31.52		52.70	74.	00	-21.30	Vertical
12060.00	*						74.	00		Vertical
14472.00	*						74.	00		Vertical
16884.00	*						74.	00		Vertical
4844.00	37.40	31.81	8.63	32.	11	45.73	74.	00	-28.27	Horizontal
7266.00	32.94	36.28	11.69	31.	94	48.97	74.	00	-25.03	Horizontal
9688.00	31.52	38.13	14.21	31.	52	52.34	74.	00	-21.66	Horizontal
12060.00	*						74.	00		Horizontal
14472.00	*						74.	00		Horizontal
16884.00	*						74.	00		Horizontal

#### Average value:

Average var	uc.							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4844.00	27.67	31.81	8.63	32.11	36.00	54.00	-18.00	Vertical
7266.00	21.95	36.28	11.69	31.94	37.98	54.00	-16.02	Vertical
9688.00	22.26	38.13	14.21	31.52	43.08	54.00	-10.92	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4844.00	27.03	31.81	8.63	32.11	35.36	54.00	-18.64	Horizontal
7266.00	21.56	36.28	11.69	31.94	37.59	54.00	-16.41	Horizontal
9688.00	21.30	38.13	14.21	31.52	42.12	54.00	-11.88	Horizontal
12060.00	*					54.00		Horizontal
14472.00	*					54.00		Horizontal
16884.00	*					54.00		Horizontal

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. "\*", means this data is the too weak instrument of signal is unable to test.



Test mode:		802.11n(HT40)		Test	channel:	Middle		
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	37.82	31.85	8.66	32.12	46.21	74.00	-27.79	Vertical
7311.00	33.32	36.37	11.71	31.91	49.49	74.00	-24.51	Vertical
9748.00	33.04	38.27	14.25	31.56	54.00	74.00	-20.00	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	38.53	31.85	8.66	32.12	46.92	74.00	-27.08	Horizontal
7311.00	32.08	36.37	11.71	31.91	48.25	74.00	-25.75	Horizontal
9748.00	32.98	38.27	14.25	31.56	53.94	74.00	-20.06	Horizontal
12185.00	*					74.00		Horizontal
14622.00	*					74.00		Horizontal
17059.00	*					74.00		Horizontal
Average val	ue:		_		_			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	28.79	31.85	8.66	32.12	37.18	54.00	-16.82	Vertical
7311.00	21.67	36.37	11.71	31.91	37.84	54.00	-16.16	Vertical
9748.00	22.32	38.27	14.25	31.56	43.28	54.00	-10.72	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	28.73	31.85	8.66	32.12	37.12	54.00	-16.88	Horizontal
7311.00	21.20	36.37	11.71	31.91	37.37	54.00	-16.63	Horizontal
9748.00	22.72	38.27	14.25	31.56	43.68	54.00	-10.32	Horizontal
12185.00	*					54.00		Horizontal
14622.00	*					54.00		Horizontal
17059.00	*					54.00		Horizontal

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. "\*", means this data is the too weak instrument of signal is unable to test.



Test mode:		802.11n(H	IT40)	Test channel:		Highest			
Peak value:									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization	
4904.00	42.24	31.88	8.68	32.13	50.67	74.00	-23.33	Vertical	
7356.00	33.29	36.45	11.75	31.86	49.63	74.00	-24.37	Vertical	
9808.00	35.83	38.43	14.29	31.68	56.87	74.00	-17.13	Vertical	
12310.00	*					74.00		Vertical	
14772.00	*					74.00		Vertical	
17234.00	*					74.00		Vertical	
4904.00	41.95	31.88	8.68	32.13	50.38	74.00	-23.62	Horizontal	
7356.00	32.40	36.45	11.75	31.86	48.74	74.00	-25.26	Horizontal	
9808.00	32.10	38.43	14.29	31.68	53.14	74.00	-20.86	Horizontal	
12310.00	*					74.00		Horizontal	
14772.00	*					74.00		Horizontal	
17234.00	*					74.00		Horizontal	
Average val	ue:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization	
4904.00	33.36	31.88	8.68	32.13	41.79	54.00	-12.21	Vertical	
7356.00	23.27	36.45	11.75	31.86	39.61	54.00	-14.39	Vertical	
9808.00	24.38	38.43	14.29	31.68	45.42	54.00	-8.58	Vertical	
12310.00	*					54.00		Vertical	
14772.00	*					54.00		Vertical	
17234.00	*					54.00		Vertical	
4904.00	32.46	31.88	8.68	32.13	40.89	54.00	-13.11	Horizontal	
7356.00	21.84	36.45	11.75	31.86	38.18	54.00	-15.82	Horizontal	
9808.00	21.40	38.43	14.29	31.68	42.44	54.00	-11.56	Horizontal	
12310.00	*					54.00		Horizontal	
14772.00	*					54.00		Horizontal	
17234.00	*					54.00		Horizontal	

<sup>1</sup> Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

<sup>2 &</sup>quot;\*", means this data is the too weak instrument of signal is unable to test.



# 8 Test Setup Photo

**Radiated Emission** 







Conducted Emission



# 9 EUT Constructional Details

Reference to the test report No. GTS201807000076F01

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