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Report No.: EBO1705017-E290

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# FCC Report (WIFI)

Applicant: EKEN GROUP LIMITED

Address of Applicant: Room 2511-2512, Meilan Business Center, Qianjin Two

Road, XiXiang, Baoan District, ShenZhen, China

Manufacturer/Factory: EKEN GROUP LIMITED

Address of Room 2511-2512, Meilan Business Center, Qianjin Two

Manufacturer/Factory: Road, XiXiang, Baoan District, ShenZhen, China

**Equipment Under Test (EUT)** 

Product Name: ACTION CAMERA

Model No.: Please refer to page 5

FCC ID: 2ADDG-V8S

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart C Section 15.247:2016

Date of sample receipt: May 05, 2017

**Date of Test:** May 05, 2017 to May 19, 2017

Date of report issued: May 19, 2017

Test Result: PASS \*

Authorized Signature:

Kevin Yu Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the EBO product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of EBO International Electrical Approvals or testing done by EBO International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by EBO International Electrical Approvals in writing.

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



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#### 2 Version

Version No.	Date	Description
00	May 19, 2017	Original

Prepared By:	Jason	Date:	May 19, 2017	
	Project Engineer			
Check By:	Cenyv	Date:	May 19, 2017	_

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### 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

Pass: The EUT complies with the essential requirements in the standard.

Remark: Test according to ANSI C63.4:2014 and ANSI C63.10:2013.

#### **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						
Note (1): The measurement unce	Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.					

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### 5 General Information

### 5.1 General Description of EUT

Product Name:	ACTION CAMERA
Model No.:	V8s, A7, A8, A9, W7, W8, W9, W9R, W9se, W9Rse, H2, H2R, H2Rse, H3, H3R, N2, N9, H8, H8R, H8s, H8se, H8 Pro, H8 Plus, H9, H9R, H9Rse, H9 Pro, H9 Plus, G2, G3, K8, V1s, V2s, V3s, V4s, V5s, V6s, V7s, V9s, V8s Mack II
	Remark: All models are identical in the same PCB layout, interior structure and electrical circuits. The only differences are the model name and appearance color for commercial purpose
Test Model No.:	V8s
Operation Frequency:	2412MHz~2462MHz
Channel numbers:	11
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:	FPCB antenna
Antenna gain:	2dBi
Power supply:	Power Adapter
	Model:ZXT-051500E
	Input:AC 100-240V 50/60Hz, 0.4A
	Output:DC 5V,1A
	Or
	DC 3.7V,1050mAh,3.885Wh Rechargeable Li-ion battery pack

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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:

Took shammel	Frequency (MHz)
Test channel	802.11b/802.11g/802.11n(HT20)/802.11n(HT40)
Lowest channel	2412MHz/2422MHz
Middle channel	2437MHz
Highest channel	2462MHz/2452MHz

#### 5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
Hansiiiiiii Houe	

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 Test Location

All tests were performed at: FCC —Registration No.: 600491

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



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#### 6 Test Instruments list

Radia	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	9.0(L)*6.0(W)* 6.0(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	ESU EMI Test Receiver	R&S	ESU26	GTS203	June. 29 2016	June 28 2017		
4	Loop Antenna	Zhinan	ZN30900A	GTS534	June. 29 2016	June 28 2017		
5	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	June. 29 2016	June 28 2017		
6	Double-ridged horn antenna	SCHWARZBECK	9120D	GTS208	June. 29 2016	June 28 2017		
7	Horn Antenna	ETS-LINDGREN	3160-09	GTS218	June. 29 2016	June 28 2017		
8	RF Amplifier	HP	8347A	GTS204	June. 29 2016	June 28 2017		
9	RF Amplifier	HP	8349B	GTS206	June. 29 2016	June 28 2017		
10	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	June. 29 2016	June 28 2017		
11	PSA Series Spectrum Analyzer	Agilent	E4440A	GTS536	June. 29 2016	June 28 2017		
12	EMI Test Software	AUDIX	E3	N/A	N/A	N/A		
13	Coaxial Cable	GTS	N/A	GTS210	June. 29 2016	June 28 2017		
14	Coaxial Cable	GTS	N/A	GTS211	June. 29 2016	June 28 2017		
15	Coaxial Cable	GTS	N/A	GTS210	June. 29 2016	June 28 2017		
16	Coaxial Cable	GTS	N/A	GTS212	June. 29 2016	June 28 2017		
17	Thermo meter	N/A	N/A	GTS256	June. 29 2016	June 28 2017		
18	D.C. Power Supply	Instek	PS-3030	GTS232	June. 29 2016	June 28 2017		

Cond	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. 29 2016	June 28 2017		
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 29 2016	June 28 2017		
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 29 2016	June 28 2017		
5	High voltage probe	SCHWARZBECK	TK9420	GTS537	June. 29 2016	June 28 2017		
6	ISN	SCHWARZBECK	NTFM 8158	GTS565	June. 29 2016	June 28 2017		
7	Coaxial Cable	GTS	N/A	GTS227	June. 29 2016	June 28 2017		
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A		
9	Thermo meter	KTJ	TA328	GTS233	June. 29 2016	June 28 2017		

#### General used equipment:



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Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	ChangChun	DYM3	GTS257	June. 29 2016	June 28 2017



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### 7 Test results and Measurement Data

#### 7.1 Antenna requirement

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

#### 15.203 requirement:

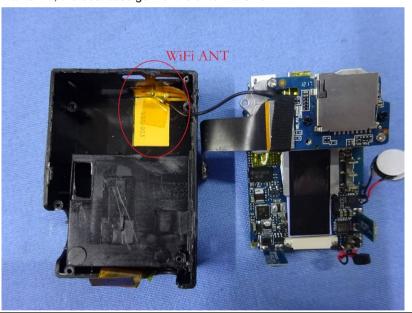
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit 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 PCB antenna, the best case gain of the antenna is 2dBi



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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	weep time=auto					
Limit:	[	lBuV)					
	Frequency range (MHz)	Quasi-peak	Average				
	0.15-0.5	66 to 56*	56 to 46*				
	0.5-5	56	46				
	5-30	60	50				
Test setup:	* Decreases with the logarithn  Reference Plane						
	LISN  40cm  80cm  Filter  AC power  Equipment  Test table/Insulation plane  Remark  E.U.T. Equipment Under Test LISN: Line impedence Stabilization Network  Test table height=0.8m						
Test procedure:	<ol> <li>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.</li> <li>The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</li> <li>Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.</li> </ol>						
Test Instruments:	Refer to section 6.0 for details	3					
Test mode:	Refer to section 5.2 for details						
Test results:	Pass						

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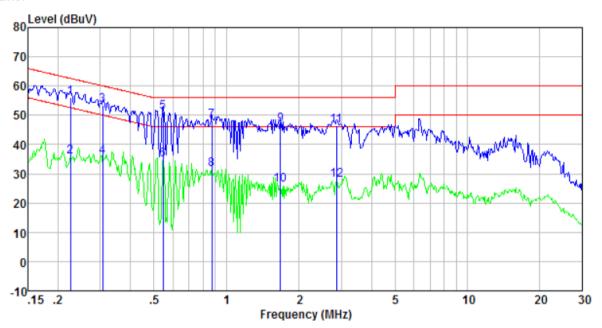


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#### Measurement data

Line:



Freq MHz	Reading level dBuV	1ISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.226	55.61	0.43	0.12	56.16	62.61	-6.45	QP
0.226	35.17	0.43	0.12	35.72	52.61	-16.89	Average
0.307	52.78	0.44	0.10	53.32	60.06	-6.74	QP
0.307	35.32	0.44	0.10	35.86	50.06	-14.20	Average
0.546	50.78	0.34	0.11	51.23	56.00	-4.77	QP
0.546	34.24	0.34	0.11	34.69	46.00	-11.31	Average
0.871	47.82	0.26	0.13	48.21	56.00	-7.79	QP
0.871	31.21	0.26	0.13	31.60	46.00	-14.40	Average
1.680	46.47	0.21	0.14	46.82	56.00	-9.18	QP
1.680	25.81	0.21	0.14	26.16	46.00	-19.84	Average
2.869	46.00	0.20	0.15	46.35	56.00	-9.65	QP
2,869	27.35	0.20	0.15	27, 70	46.00	-18.30	Average

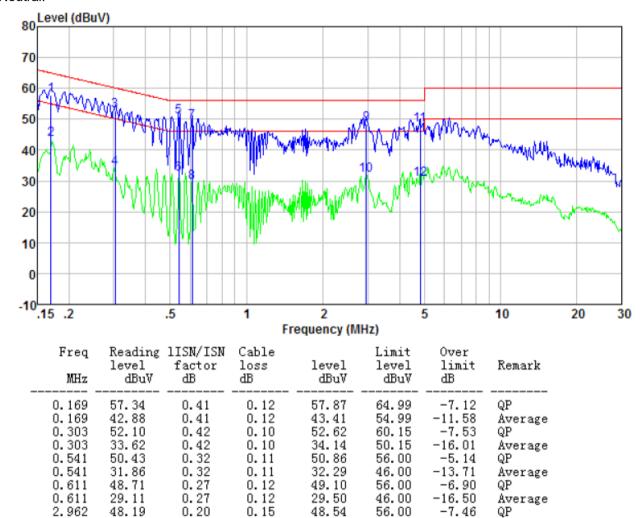
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#### Neutral:



#### Notes:

2.962

4.822

4.822

31.54

47.71

30.07

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

0.15

0.15

0.15

- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss

0.20

0.21

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.

31.89

48.07

30.43

46.00

56.00

46.00

-14.11

-15.57

-7.93

Average

Average

ΩP

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### 7.3 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)			
Test Method:	KDB558074 D01 DTS Meas Guidance V03			
Limit:	30dBm			
Test setup:	Power Meter  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**

		Peak Output	Power (dBm)			
Test CH	802.11b	802.11g	802.11n (HT20 )	802.11n (HT40 )	Limit(dBm)	Result
Lowest	8.65	8.60	8.21	7.16		
Middle	8.85	8.61	8.48	7.23	30.00	Pass
Highest	8.55	8.38	8.54	7.29		

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#### 7.4 Channel Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)		
Test Method:	KDB558074 D01 DTS Meas Guidance V03		
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**

		Channel Ba	indwidth (MHz)			
Test CH	802.11b	802.11g	802.11n(HT20 )	802.11n(HT40)	Limit(KHz)	Result
Lowest	9.597	16.378	17.632	36.146		
Middle	9.547	16.390	17.646	36.100	>500	Pass
Highest	10.074	16.448	17.627	36.131		

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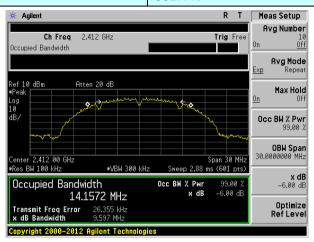


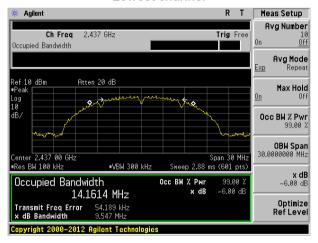
Report No.: EBO1705017-E290

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#### Test plot as follows:

Test mode: 802.11b



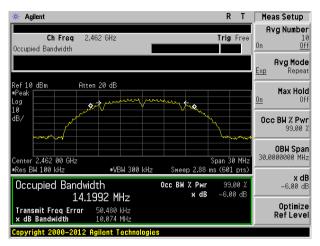


Middle channel

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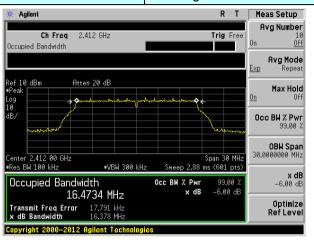


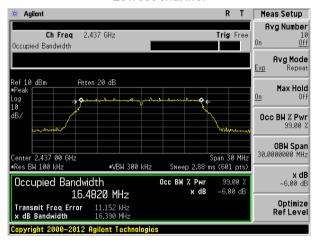
Highest channel



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Test mode: 802.11g



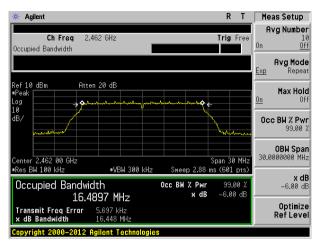


Middle channel

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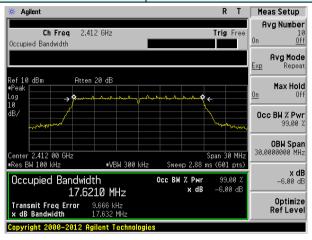


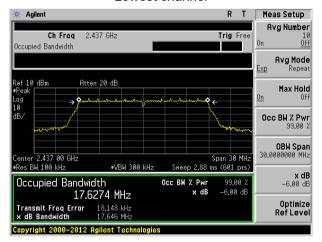
Highest channel



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Test mode: 802.11n(HT20)



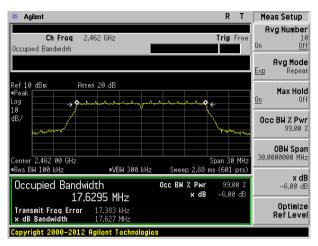


Middle channel

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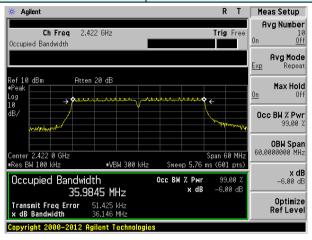


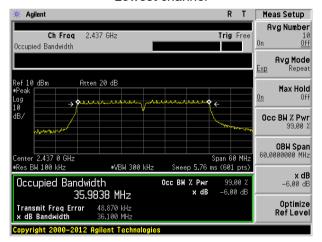
Highest channel



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Test mode: 802.11n(HT40)



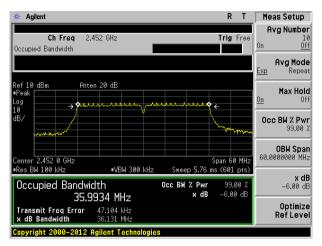


Middle channel

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Highest channel



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### 7.5 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)		
Test Method:	KDB558074 D01 DTS Meas Guidance V03		
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**

		Power Spect	tral Density (dBm)				
Test CH	802.11b	802.11g	802.11n(HT20 )	802.11n(HT40 )	Limit(dBm/3kHz)	Result	
Lowest	-17.61	-19.35	-20.45	-21.59			
Middle	-16.22	-18.97	-20.59	-24.32	8.00	Pass	
Highest	-17.93	-20.76	-20.99	-23.92			

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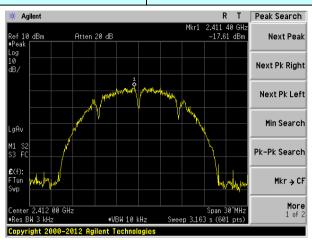


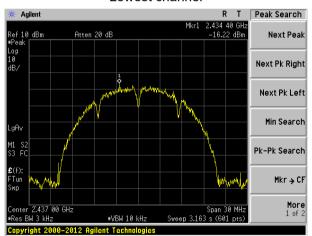
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#### Test plot as follows:

Test mode: 802.11b



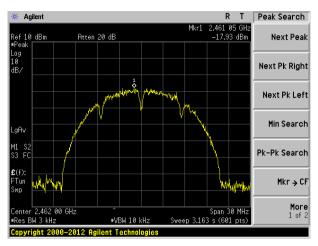


Middle channel

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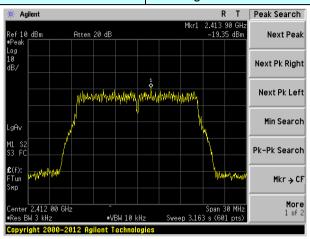


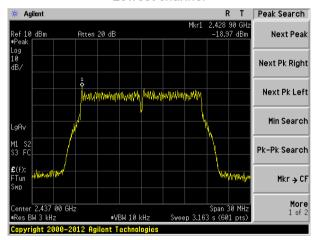
Highest channel



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Test mode: 802.11g



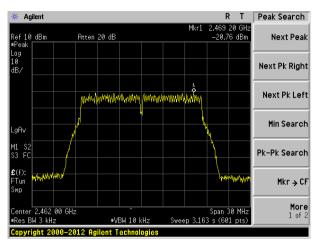


Middle channel

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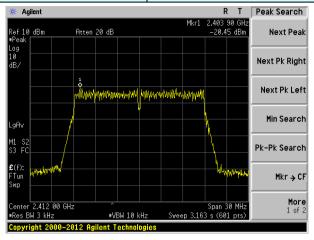


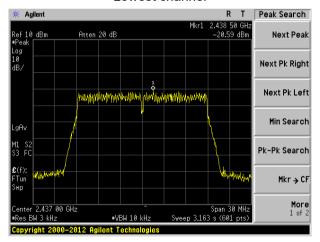
Highest channel



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Test mode: 802.11n(HT20)



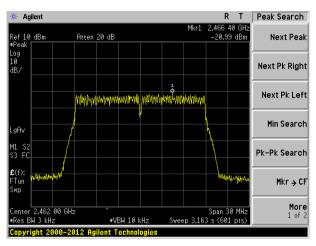


Middle channel

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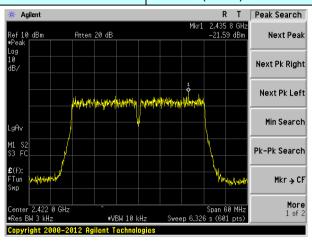


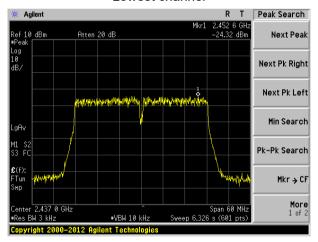
Highest channel



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Test mode: 802.11n(HT40)



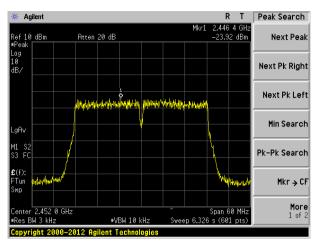


Middle channel

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Highest channel



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### 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 V03				
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				

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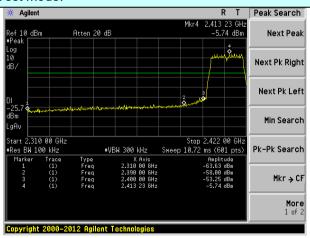
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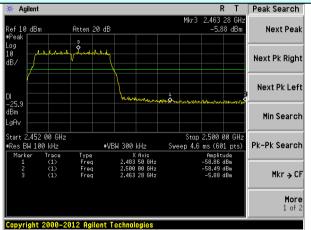
#### Test plot as follows:



#### Test mode:



802.11g



Highest channel

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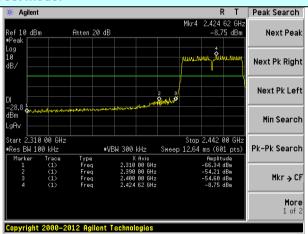
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#### 802.11n(HT20) Test mode: Agilent Agilent Peak Search Peak Search Next Peak Atten 20 dB Next Peak Next Pk Right Next Pk Right Next Pk Left Next Pk Left Min Search Min Search 2.452 00 GHz Stop 2.500 00 GHz Pk-Pk Search Pk-Pk Search #VBW 300 kHz Sweep 10.72 ms (601 pts) BW 100 kHz Res BW 100 kHz Sweep 4.6 ms (601 pts) Mkr → CF Mkr → CF Copyright 2000-2012 Agilent Technologies Copyright 2000-2012 Agilent Technologies

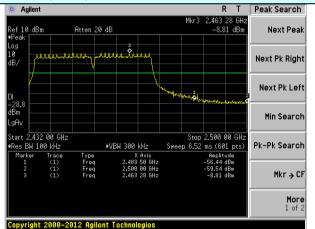
Lowest channel

Highest channel

#### Test mode:



802.11n(HT40)



Lowest channel Highest channel

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#### 7.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205						
Test Method:	ANSI C63.10:20	013					
Test Frequency Range:			ested, only	the worst ba	and's (2310MHz to		
	2500MHz) data						
Test site:	Measurement D	istance: 3m			,		
Receiver setup:	Frequency	Detector	RBW	VBW	Value		
	Above 1GHz	Peak	1MHz	3MHz	Peak		
	Above IGIIZ	RMS	1MHz	3MHz	Average		
Limit:	Freque	ency I	_imit (dBuV/	m @3m)	Value		
	Above 1	GH <sub>7</sub>	54.0	0	Average		
	Above	GHZ	74.0	0	Peak		
Test Procedure:  1. The EUT was placed on the top of a rotating ta							
	<ol> <li>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</li> </ol>						



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	sheet. 7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement data:

Test mode:	802.11b	Test channel:	Lowest
------------	---------	---------------	--------

#### 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
2390.00	50.79	27.59	5.38	34.01	49.75	74.00	-24.25	Horizontal
2400.00	59.52	27.58	5.39	34.01	58.48	74.00	-15.52	Horizontal
2390.00	52.41	27.59	5.38	34.01	51.37	74.00	-22.63	Vertical
2400.00	61.08	27.58	5.39	34.01	60.04	74.00	-13.96	Vertical

#### Average 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
2390.00	37.80	27.59	5.38	34.01	36.76	54.00	-17.24	Horizontal
2400.00	46.00	27.58	5.39	34.01	44.96	54.00	-9.04	Horizontal
2390.00	39.55	27.59	5.38	34.01	38.51	54.00	-15.49	Vertical
2400.00	47.06	27.58	5.39	34.01	46.02	54.00	-7.98	Vertical

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Test mode:	802.11b	Test channel:	Highest
root mode.	002.110	1 oot onamion.	riigiioot

### 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	51.08	27.53	5.47	33.92	50.16	74.00	-23.84	Horizontal
2500.00	47.18	27.55	5.49	29.93	50.29	74.00	-23.71	Horizontal
2483.50	53.16	27.53	5.47	33.92	52.24	74.00	-21.76	Vertical
2500.00	49.53	27.55	5.49	29.93	52.64	74.00	-21.36	Vertical

### Average 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	38.04	27.53	5.47	33.92	37.12	54.00	-16.88	Horizontal
2500.00	34.30	27.55	5.49	29.93	37.41	54.00	-16.59	Horizontal
2483.50	39.91	27.53	5.47	33.92	38.99	54.00	-15.01	Vertical
2500.00	36.15	27.55	5.49	29.93	39.26	54.00	-14.74	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.



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Test mode:	802.11g	Test channel:	Lowest
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
2390.00	50.37	27.59	5.38	34.01	49.33	74.00	-24.67	Horizontal
2400.00	58.96	27.58	5.39	34.01	57.92	74.00	-16.08	Horizontal
2390.00	51.97	27.59	5.38	34.01	50.93	74.00	-23.07	Vertical
2400.00	60.41	27.58	5.39	34.01	59.37	74.00	-14.63	Vertical

### Average 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
2390.00	37.50	27.59	5.38	34.01	36.46	54.00	-17.54	Horizontal
2400.00	45.66	27.58	5.39	34.01	44.62	54.00	-9.38	Horizontal
2390.00	39.22	27.59	5.38	34.01	38.18	54.00	-15.82	Vertical
2400.00	46.69	27.58	5.39	34.01	45.65	54.00	-8.35	Vertical

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Test mode: 802.11g 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
2483.50	50.48	27.53	5.47	33.92	49.56	74.00	-24.44	Horizontal
2500.00	46.72	27.55	5.49	29.93	49.83	74.00	-24.17	Horizontal
2483.50	52.48	27.53	5.47	33.92	51.56	74.00	-22.44	Vertical
2500.00	48.99	27.55	5.49	29.93	52.10	74.00	-21.90	Vertical

### Average 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	37.67	27.53	5.47	33.92	36.75	54.00	-17.25	Horizontal
2500.00	34.02	27.55	5.49	29.93	37.13	54.00	-16.87	Horizontal
2483.50	39.51	27.53	5.47	33.92	38.59	54.00	-15.41	Vertical
2500.00	35.85	27.55	5.49	29.93	38.96	54.00	-15.04	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.



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Test mode: 802.11n(HT20) Test channel: Lowest
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### 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
2390.00	50.50	27.59	5.38	34.01	49.46	74.00	-24.54	Horizontal
2400.00	59.12	27.58	5.39	34.01	58.08	74.00	-15.92	Horizontal
2390.00	52.10	27.59	5.38	34.01	51.06	74.00	-22.94	Vertical
2400.00	60.61	27.58	5.39	34.01	59.57	74.00	-14.43	Vertical

### Average 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
2390.00	37.59	27.59	5.38	34.01	36.55	54.00	-17.45	Horizontal
2400.00	45.76	27.58	5.39	34.01	44.72	54.00	-9.28	Horizontal
2390.00	39.32	27.59	5.38	34.01	38.28	54.00	-15.72	Vertical
2400.00	46.80	27.58	5.39	34.01	45.76	54.00	-8.24	Vertical

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Test mode:	802.11n(HT20)	Test channel:	Highest
root mode.	002.1111(11120)	1 oot onamion.	riigiioot

#### 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	50.66	27.53	5.47	33.92	49.74	74.00	-24.26	Horizontal
2500.00	46.85	27.55	5.49	29.93	49.96	74.00	-24.04	Horizontal
2483.50	52.68	27.53	5.47	33.92	51.76	74.00	-22.24	Vertical
2500.00	49.15	27.55	5.49	29.93	52.26	74.00	-21.74	Vertical

### Average 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	37.78	27.53	5.47	33.92	36.86	54.00	-17.14	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	35.94	27.55	5.49	29.93	39.05	54.00	-14.95	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.

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Test mode:	802.11n(HT40)	Test channel:	Lowest
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### 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
2390.00	50.00	27.59	5.38	34.01	48.96	74.00	-25.04	Horizontal
2400.00	58.46	27.58	5.39	34.01	57.42	74.00	-16.58	Horizontal
2390.00	51.57	27.59	5.38	34.01	50.53	74.00	-23.47	Vertical
2400.00	59.81	27.58	5.39	34.01	58.77	74.00	-15.23	Vertical

### Average 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
2390.00	37.24	27.59	5.38	34.01	36.20	54.00	-17.80	Horizontal
2400.00	45.35	27.58	5.39	34.01	44.31	54.00	-9.69	Horizontal
2390.00	38.92	27.59	5.38	34.01	37.88	54.00	-16.12	Vertical
2400.00	46.35	27.58	5.39	34.01	45.31	54.00	-8.69	Vertical

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Test mode:   802.11n(HT40)   Test channel:   Highest	Test mode:	802.11n(HT40)	Test channel:	Highest
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#### 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	49.95	27.53	5.47	33.92	49.03	74.00	-24.97	Horizontal
2500.00	46.30	27.55	5.49	29.93	49.41	74.00	-24.59	Horizontal
2483.50	51.87	27.53	5.47	33.92	50.95	74.00	-23.05	Vertical
2500.00	48.50	27.55	5.49	29.93	51.61	74.00	-22.39	Vertical

### Average 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	37.35	27.53	5.47	33.92	36.43	54.00	-17.57	Horizontal
2500.00	33.77	27.55	5.49	29.93	36.88	54.00	-17.12	Horizontal
2483.50	39.15	27.53	5.47	33.92	38.23	54.00	-15.77	Vertical
2500.00	35.58	27.55	5.49	29.93	38.69	54.00	-15.31	Vertical

### Remark:

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

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## 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 V03				
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  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				

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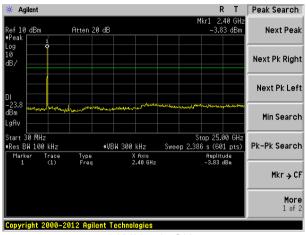
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### Test plot as follows:

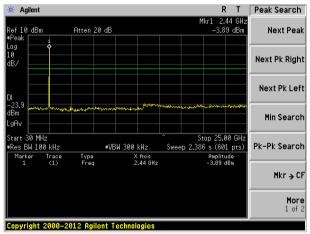
Test mode: 802.11b

Lowest channel



30MHz~25GHz

Middle channel



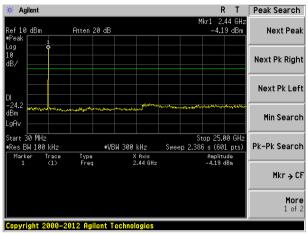
30MHz~25GHz

Highest channel

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30MHz~25GHz

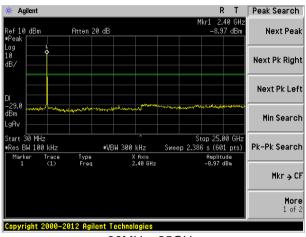


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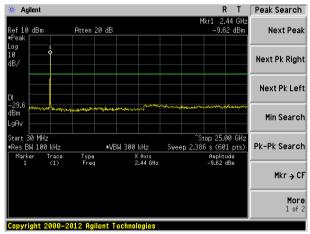
Test mode: 802.11g

Lowest channel



30MHz~25GHz

Middle channel



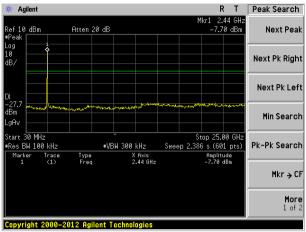
30MHz~25GHz

Highest channel

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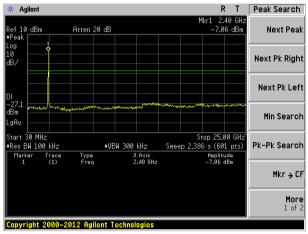
30MHz~25GHz



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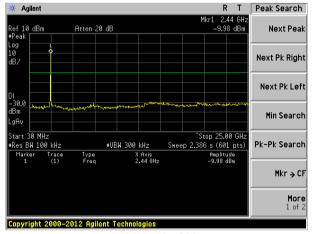
Test mode: 802.11n(HT20)

Lowest channel



30MHz~25GHz

Middle channel



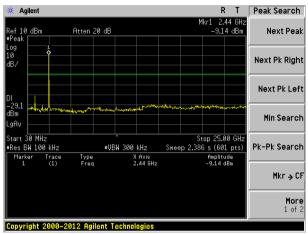
30MHz~25GHz

Highest channel

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30MHz~25GHz

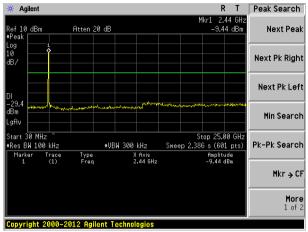
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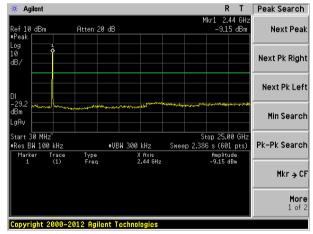
Test mode: 802.11n(HT40)

Lowest channel



30MHz~25GHz

Middle channel



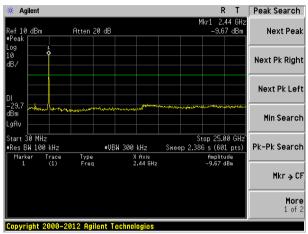
30MHz~25GHz

Highest channel

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30MHz~25GHz



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### 7.7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Se	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:20	ANSI C63.10:2013				
Test Frequency Range:	30MHz to 25GHz					
Test site:	Measurement Di	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value	
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak	
	Above 1GHz	Peak	1MHz	3MHz	Peak	
	Above IGHZ	RMS	1MHz	3MHz	Average	
Limit:	Frequer	ісу	Limit (dBuV/	/m @3m)	Value	
	30MHz-88	MHz	40.0	0	Quasi-peak	
	88MHz-216	6MHz	43.5	0	Quasi-peak	
	216MHz-96	0MHz	46.0	0	Quasi-peak	
	960MHz-1	GHz	54.0	0	Quasi-peak	
	Above 10	211-7	54.0	0	Average	
	Above 10	JI 12	74.0	0	Peak	
Test setup:	Below 1GHz	EUT-		Antenna 4m >	iner-	
	Above 1GHz		Receiver-	Preamplif	ñer»	

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	Tum Table    Company   Preamplifier    Receiver   Preamplifier
Test Procedure:	The EUT was placed on the top of a rotating table(0.8 meters below 1G and 1.5 meters above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
	The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
	3. 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.
	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, quasipeak or average method as specified and then reported in a data sheet.
	7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details



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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.



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### **Measurement Data**

### ■ Below 1GHz

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
96.10	53.87	11.35	1.16	29.82	36.56	43.50	-6.94	Vertical
216.02	49.63	10.78	1.93	29.52	32.82	46.00	-13.18	Vertical
283.98	51.57	13.01	2.29	30.08	36.79	46.00	-9.21	Vertical
422.06	51.36	15.92	2.96	29.58	40.66	46.00	-5.34	Vertical
568.61	46.72	18.72	3.59	29.43	39.60	46.00	-6.40	Vertical
782.35	43.79	21.03	4.40	29.12	40.10	46.00	-5.90	Vertical
189.07	51.98	9.70	1.78	29.45	34.01	43.50	-9.49	Horizontal
206.40	53.46	10.39	1.88	29.45	36.28	43.50	-7.22	Horizontal
283.98	55.05	13.01	2.29	30.08	40.27	46.00	-5.73	Horizontal
404.67	50.84	15.56	2.88	29.59	39.69	46.00	-6.31	Horizontal
459.11	51.17	16.65	3.13	29.54	41.41	46.00	-4.59	Horizontal
576.64	48.54	18.88	3.63	29.42	41.63	46.00	-4.37	Horizontal

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Test channel:

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Lowest

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#### ■ Above 1GHz

802.11b

Test mode:

rest mode.		002.110		1631	Chariner.	LOWE	,31	
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	41.18	31.79	8.62	32.10	49.49	74.00	-24.51	Vertical
7236.00	34.78	36.19	11.68	31.97	50.68	74.00	-23.32	Vertical
9648.00	33.12	38.07	14.16	31.56	53.79	74.00	-20.21	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	39.71	31.79	8.62	32.10	48.02	74.00	-25.98	Horizontal
7236.00	34.46	36.19	11.68	31.97	50.36	74.00	-23.64	Horizontal
9648.00	32.66	38.07	14.16	31.56	53.33	74.00	-20.67	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	30.20	31.79	8.62	32.10	38.51	54.00	-15.49	Vertical
7236.00	23.63	36.19	11.68	31.97	39.53	54.00	-14.47	Vertical
9648.00	23.45	38.07	14.16	31.56	44.12	54.00	-9.88	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	29.21	31.79	8.62	32.10	37.52	54.00	-16.48	Horizontal
7236.00	23.03	36.19	11.68	31.97	38.93	54.00	-15.07	Horizontal

## 16884.00 Remark:

9648.00

12060.00

14472.00

22.40

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

14.16

2. "\*", means this data is the too weak instrument of signal is unable to test.

38.07

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31.56

43.07

54.00

54.00

54.00

54.00

-10.93

Horizontal

Horizontal

Horizontal

Horizontal



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Test mode:		802.11b			Test	channel:		Midd	le	
Peak value:										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Fac	amp ctor B)	Level (dBuV/m)	Limit (dBu\		Over Limit (dB)	polarization
4874.00	40.09	31.85	8.66	32	.12	48.48	74.	00	-25.52	Vertical
7311.00	34.76	36.37	11.71	31	.91	50.93	74.	00	-23.07	Vertical
9748.00	34.07	38.27	14.25	31	.56	55.03	74.	00	-18.97	Vertical
12185.00	*						74.	00		Vertical
14622.00	*						74.	00		Vertical
17059.00	*						74.	00		Vertical
4874.00	40.45	31.85	8.66	32	.12	48.84	74.	00	-25.16	Horizontal
7311.00	33.34	36.37	11.71	31	.91	49.51	74.	00	-24.49	Horizontal
9748.00	33.93	38.27	14.25	31	.56	54.89	74.	00	-19.11	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)	Fac	amp ctor B)	Level (dBuV/m)	Limit (dBu\		Over Limit (dB)	polarization
4874.00	30.88	31.85	8.66	32	.12	39.27	54.	00	-14.73	Vertical
7311.00	23.06	36.37	11.71	31	.91	39.23	54.	00	-14.77	Vertical
9748.00	23.31	38.27	14.25	31	.56	44.27	54.	00	-9.73	Vertical
12185.00	*						54.	00		Vertical
14622.00	*						54.	00		Vertical
17059.00	*						54.	00		Vertical
4874.00	30.52	31.85	8.66	32	.12	38.91	54.	00	-15.09	Horizontal
7311.00	22.41	36.37	11.71	31	.91	38.58	54.	00	-15.42	Horizontal
9748.00	23.63	38.27	14.25	31	.56	44.59	54.	00	-9.41	Horizontal
12185.00	*						54.	00		Horizontal
14622.00	*						54.	00		Horizontal
17059.00	*						54.	00		Horizontal

### Remark:

- 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.



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Test mode:		802.11b			Test	channel:		Highe	est	
Peak value:										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Fa	amp ctor IB)	Level (dBuV/m)	Limit (dBu\		Over Limit (dB)	polarization
4924.00	46.15	31.90	8.70	32	.15	54.60	74.	00	-19.40	Vertical
7386.00	35.77	36.49	11.76	31	.83	52.19	74.	00	-21.81	Vertical
9848.00	37.60	38.62	14.31	31	.77	58.76	74.	00	-15.24	Vertical
12310.00	*						74.	00		Vertical
14772.00	*						74.	00		Vertical
17234.00	*						74.	00		Vertical
4924.00	45.26	31.90	8.70	32	.15	53.71	74.	00	-20.29	Horizontal
7386.00	34.57	36.49	11.76	31	.83	50.99	74.	00	-23.01	Horizontal
9848.00	33.73	38.62	14.31	31	.77	54.89	74.	00	-19.11	Horizontal
12310.00	*						74.	00		Horizontal
14772.00	*						74.	00		Horizontal
17234.00	*						74.	00		Horizontal
Average valu										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Fa	amp ctor IB)	Level (dBuV/m)	Limit (dBu\		Over Limit (dB)	polarization
4924.00	36.97	31.90	8.70	32	.15	45.42	54.	00	-8.58	Vertical
7386.00	25.66	36.49	11.76	31	.83	42.08	54.	00	-11.92	Vertical
9848.00	26.08	38.62	14.31	31	.77	47.24	54.	00	-6.76	Vertical
12310.00	*						54.	00		Vertical
14772.00	*						54.	00		Vertical
17234.00	*						54.	00		Vertical
4924.00	35.56	31.90	8.70	32	.15	44.01	54.	00	-9.99	Horizontal
7386.00	23.94	36.49	11.76	31	.83	40.36	54.	00	-13.64	Horizontal
9848.00	22.97	38.62	14.31	31	.77	44.13	54.	00	-9.87	Horizontal
12310.00	*						54.	00		Horizontal
14772.00	*						54.	00		Horizontal
17234.00	*						54.	00		Horizontal

### Remark:

- 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.



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Test mode:		802.11g		Test channel:				lowes	st	
Peak value:		<u> </u>								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Pream Facto (dB)	r	Level (dBuV/m)	Limit (dBu		Over Limit (dB)	polarization
4824.00	39.58	31.79	8.62	32.10	)	47.89	74.	00	-26.11	Vertical
7236.00	33.77	36.19	11.68	31.97	7	49.67	74.	00	-24.33	Vertical
9648.00	32.39	38.07	14.16	31.56	3	53.06	74.	00	-20.94	Vertical
12060.00	*						74.	00		Vertical
14472.00	*						74.	00		Vertical
16884.00	*						74.	00		Vertical
4824.00	38.36	31.79	8.62	32.10	)	46.67	74.	00	-27.33	Horizontal
7236.00	33.57	36.19	11.68	31.97	7	49.47	74.	00	-24.53	Horizontal
9648.00	32.00	38.07	14.16	31.56	3	52.67	74.	00	-21.33	Horizontal
12060.00	*						74.	00		Horizontal
14472.00	*						74.	00		Horizontal
16884.00	*						74.	00		Horizontal
Average val			T	1						
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Pream Facto (dB)	r	Level (dBuV/m)	Limit (dBu		Over Limit (dB)	polarization
4824.00	28.72	31.79	8.62	32.10	)	37.03	54.	00	-16.97	Vertical
7236.00	22.65	36.19	11.68	31.97	7	38.55	54.	00	-15.45	Vertical
9648.00	22.75	38.07	14.16	31.56	3	43.42	54.	00	-10.58	Vertical
12060.00	*						54.	00		Vertical
14472.00	*						54.	00		Vertical
16884.00	*						54.	00		Vertica
4824.00	27.94	31.79	8.62	32.10	)	36.25	54.	00	-17.75	Horizontal
7236.00	22.17	36.19	11.68	31.97	7	38.07	54.	00	-15.93	Horizontal
9648.00	21.75	38.07	14.16	31.56	3	42.42	54.	00	-11.58	Horizontal
12060.00	*						54.	00		Horizontal
14472.00	*						54.	00		Horizontal
16884.00	*						54.	00		Horizontal

### Remark:

- 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.



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Test mode:		802.11g			Test	channel:		Midd	le	
Peak value:										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Fa	amp ctor IB)	Level (dBuV/m)	Limit (dBu		Over Limit (dB)	polarization
4874.00	38.76	31.85	8.66	32	.12	47.15	74.	00	-26.85	Vertical
7311.00	33.92	36.37	11.71	31	.91	50.09	74.	00	-23.91	Vertical
9748.00	33.47	38.27	14.25	31	.56	54.43	74.	00	-19.57	Vertical
12185.00	*						74.	00		Vertical
14622.00	*						74.	00		Vertical
17059.00	*						74.	00		Vertical
4874.00	39.33	31.85	8.66	32	.12	47.72	74.	00	-26.28	Horizontal
7311.00	32.61	36.37	11.71	31	.91	48.78	74.	00	-25.22	Horizontal
9748.00	33.38	38.27	14.25	31	.56	54.34	74.	00	-19.66	Horizontal
12185.00	*						74.	00		Horizontal
14622.00	*						74.	00		Horizontal
17059.00	*						74.	00		Horizontal
Average valu										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Fa	amp ctor IB)	Level (dBuV/m)	Limit (dBu		Over Limit (dB)	polarization
4874.00	29.66	31.85	8.66	32	.12	38.05	54.	00	-15.95	Vertical
7311.00	22.25	36.37	11.71	31	.91	38.42	54.	00	-15.58	Vertical
9748.00	22.73	38.27	14.25	31	.56	43.69	54.	00	-10.31	Vertical
12185.00	*						54.	00		Vertical
14622.00	*						54.	00		Vertical
17059.00	*						54.	00		Vertical
4874.00	29.48	31.85	8.66	32	.12	37.87	54.	00	-16.13	Horizontal
7311.00	21.70	36.37	11.71	31	.91	37.87	54.	00	-16.13	Horizontal
9748.00	23.10	38.27	14.25	31	.56	44.06	54.	00	-9.94	Horizontal
12185.00	*						54.	00		Horizontal
14622.00	*						54.	00		Horizontal
17059.00	*						54.	00		Horizontal

### Remark:

- 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.



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Test mode:		802.11g		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	43.87	31.90	8.70	32.15	52.32	74.00	-21.68	Vertical
7386.00	34.32	36.49	11.76	31.83	50.74	74.00	-23.26	Vertical
9848.00	36.57	38.62	14.31	31.77	57.73	74.00	-16.27	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	43.33	31.90	8.70	32.15	51.78	74.00	-22.22	Horizontal
7386.00	33.31	36.49	11.76	31.83	49.73	74.00	-24.27	Horizontal
9848.00	32.78	38.62	14.31	31.77	53.94	74.00	-20.06	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)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	34.86	31.90	8.70	32.15	43.31	54.00	-10.69	Vertical
7386.00	24.26	36.49	11.76	31.83	40.68	54.00	-13.32	Vertical
9848.00	25.09	38.62	14.31	31.77	46.25	54.00	-7.75	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	33.75	31.90	8.70	32.15	42.20	54.00	-11.80	Horizontal
7386.00	22.71	36.49	11.76	31.83	39.13	54.00	-14.87	Horizontal
9848.00	22.05	38.62	14.31	31.77	43.21	54.00	-10.79	Horizontal
12310.00	*					54.00		Horizontal
14772.00	*					54.00		Horizontal
17234.00	*					54.00		Horizontal

### Remark:

- 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.



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Test mode:		802.11n(H	IT20)		Test channel:		Lowest			
Peak value:										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Fa	amp ctor IB)	Level (dBuV/m)	Limit (dBu		Over Limit (dB)	polarization
4824.00	40.27	31.79	8.62	32	.10	48.58	74.	00	-25.42	Vertical
7236.00	34.20	36.19	11.68	31.97		50.10	74.00		-23.90	Vertical
9648.00	32.70	38.07	14.16	31	.56	53.37	74.	00	-20.63	Vertical
12060.00	*						74.	00		Vertical
14472.00	*						74.	00		Vertical
16884.00	*						74.	00		Vertical
4824.00	38.94	31.79	8.62	32	.10	47.25	74.	00	-26.75	Horizontal
7236.00	33.95	36.19	11.68	31	.97	49.85	74.	00	-24.15	Horizontal
9648.00	32.28	38.07	14.16	31	.56	52.95	74.	00	-21.05	Horizontal
12060.00	*						74.	00		Horizontal
14472.00	*						74.	00		Horizontal
16884.00	*						74.	00		Horizontal
Average val										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Fa	amp ctor IB)	Level (dBuV/m)	Limit (dBu'		Over Limit (dB)	polarization
4824.00	29.35	31.79	8.62	32	.10	37.66	54.	00	-16.34	Vertical
7236.00	23.07	36.19	11.68	31	.97	38.97	54.	00	-15.03	Vertical
9648.00	23.05	38.07	14.16	31	.56	43.72	54.	00	-10.28	Vertical
12060.00	*						54.	00		Vertical
14472.00	*						54.	00		Vertical
16884.00	*						54.	00		Vertical
4824.00	28.48	31.79	8.62	32	.10	36.79	54.	00	-17.21	Horizontal
7236.00	22.53	36.19	11.68	31	.97	38.43	54.	00	-15.57	Horizontal
9648.00	22.03	38.07	14.16	31	.56	42.70	54.	00	-11.30	Horizontal
12060.00	*						54.	00		Horizontal
14472.00	*						54.	00		Horizontal
16884.00	*						54.	00		Horizontal

### Remark:

- 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.



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Test mode:		802.11n(H	T20)	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	39.33	31.85	8.66	32.12	47.72	74.00	-26.28	Vertical
7311.00	34.28	36.37	11.71	31.91	50.45	74.00	-23.55	Vertical
9748.00	33.72	38.27	14.25	31.56	54.68	74.00	-19.32	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	39.81	31.85	8.66	32.12	48.20	74.00	-25.80	Horizontal
7311.00	32.92	36.37	11.71	31.91	49.09	74.00	-24.91	Horizontal
9748.00	33.61	38.27	14.25	31.56	54.57	74.00	-19.43	Horizontal
12185.00	*					74.00		Horizontal
14622.00	*					74.00		Horizontal
17059.00	*					74.00		Horizontal
Average val								
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	30.18	31.85	8.66	32.12	38.57	54.00	-15.43	Vertical
7311.00	22.59	36.37	11.71	31.91	38.76	54.00	-15.24	Vertical
9748.00	22.98	38.27	14.25	31.56	43.94	54.00	-10.06	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	29.92	31.85	8.66	32.12	38.31	54.00	-15.69	Horizontal
7311.00	22.01	36.37	11.71	31.91	38.18	54.00	-15.82	Horizontal
9748.00	23.33	38.27	14.25	31.56	44.29	54.00	-9.71	Horizontal
12185.00	*					54.00		Horizontal
14622.00	*					54.00		Horizontal
17059.00	*					54.00		Horizontal

### Remark:

- 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.



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Test mode:		802.11n(H	T20)	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	44.84	31.90	8.70	32.15	53.29	74.00	-20.71	Vertical
7386.00	34.94	36.49	11.76	31.83	51.36	74.00	-22.64	Vertical
9848.00	37.01	38.62	14.31	31.77	58.17	74.00	-15.83	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	44.15	31.90	8.70	32.15	52.60	74.00	-21.40	Horizontal
7386.00	33.84	36.49	11.76	31.83	50.26	74.00	-23.74	Horizontal
9848.00	33.18	38.62	14.31	31.77	54.34	74.00	-19.66	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)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	35.76	31.90	8.70	32.15	44.21	54.00	-9.79	Vertical
7386.00	24.86	36.49	11.76	31.83	41.28	54.00	-12.72	Vertical
9848.00	25.51	38.62	14.31	31.77	46.67	54.00	-7.33	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	34.52	31.90	8.70	32.15	42.97	54.00	-11.03	Horizontal
7386.00	23.23	36.49	11.76	31.83	39.65	54.00	-14.35	Horizontal
9848.00	22.44	38.62	14.31	31.77	43.60	54.00	-10.40	Horizontal
12310.00	*					54.00		Horizontal
14772.00	*					54.00		Horizontal
17234.00	*					54.00		Horizontal

### Remark:

- 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:

## **Shenzhen EBO Testing Center**

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Lowest

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Test channel:

802.11n(HT40)

rest mode.		002.1111(1	1170)	1030	oriariro.	LOW	,51	
Peak value:				<u> </u>		•		
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	31.81	8.63	32.11	47.25	74.00	-26.75	Vertical
7236.00	33.35	36.28	11.69	31.94	49.38	74.00	-24.62	Vertical
9648.00	32.09	38.13	14.21	31.52	52.91	74.00	-21.09	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	37.80	31.81	8.63	32.11	46.13	74.00	-27.87	Horizontal
7236.00	33.21	36.28	11.69	31.94	49.24	74.00	-24.76	Horizontal
9648.00	31.72	38.13	14.21	31.52	52.54	74.00	-21.46	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	28.11	31.81	8.63	32.11	36.44	54.00	-17.56	Vertical
7236.00	22.25	36.28	11.69	31.94	38.28	54.00	-15.72	Vertical
9648.00	22.46	38.13	14.21	31.52	43.28	54.00	-10.72	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	27.41	31.81	8.63	32.11	35.74	54.00	-18.26	Horizontal
7236.00	21.81	36.28	11.69	31.94	37.84	54.00	-16.16	Horizontal
9648.00	21.49	38.13	14.21	31.52	42.31	54.00	-11.69	Horizontal
12060.00	*					54.00		Horizontal
14472.00	*					54.00		Horizontal
16884.00	*					54.00		Horizontal

### Remark:

- 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.



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Test mode:		802.11n(H	IT40)		Test channel:		Middle		le	
Peak value:										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Fa	amp ctor IB)	Level (dBuV/m)	Limit (dBu		Over Limit (dB)	polarization
4874.00	38.21	31.85	8.66	32	.12	46.60	74.	00	-27.40	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										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Fa	amp ctor IB)	Level (dBuV/m)	Limit (dBu		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

### Remark:

- 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.



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Test mode:		802.11n(HT40)			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
4924.00	42.92	31.88	8.68	32.13		51.35	74.00		-22.65	Vertical
7386.00	33.73	36.45	11.75	31.86		50.07	74.00		-23.93	Vertical
9848.00	36.14	38.43	14.29	31.68		57.18	74.00		-16.82	Vertical
12310.00	*						74.00			Vertical
14772.00	*						74.00			Vertical
17234.00	*						74.00			Vertical
4924.00	42.53	31.88	8.68	32	.13	50.96	74.	00	-23.04	Horizontal
7386.00	32.78	36.45	11.75	31	.86	49.12	49.12 74.00		-24.88	Horizontal
9848.00	32.38	38.43	14.29	31	.68	53.42	74.	00	-20.58	Horizontal
12310.00	*						74.00			Horizontal
14772.00	*						74.	00		Horizontal
17234.00	*						74.	00		Horizontal
Average value:										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Fa	amp ctor IB)	Level (dBuV/m)	Limit Line (dBuV/m)		Over Limit (dB)	polarization
4924.00	33.99	31.88	8.68	32	.13	42.42	54.	00	-11.58	Vertical
7386.00	23.68	36.45	11.75	31	.86	40.02	54.	00	-13.98	Vertical
9848.00	24.68	38.43	14.29	31	.68	45.72	54.	00	-8.28	Vertical
12310.00	*						54.	00		Vertical
14772.00	*						54.	00		Vertical
17234.00	*						54.	00		Vertical
4924.00	33.00	31.88	8.68	32	.13	41.43	54.	00	-12.57	Horizontal
7386.00	22.20	36.45	11.75	31	.86	38.54	54.	00	-15.46	Horizontal
9848.00	21.67	38.43	14.29	31	.68	42.71	54.	00	-11.29	Horizontal
12310.00	*						54.	00		Horizontal
14772.00	*						54.	00		Horizontal
17234.00	*						54.	00		Horizontal

### Remark:

- 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.

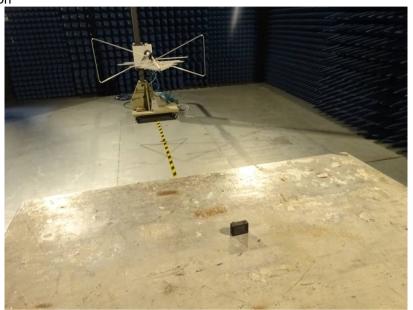


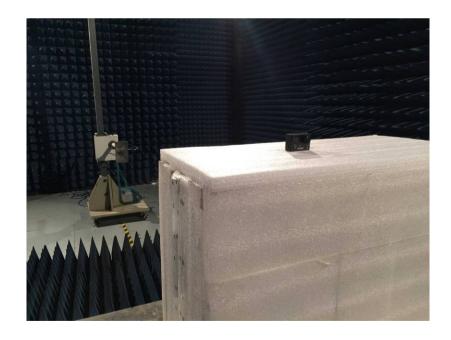
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## 8 Test Setup Photo

Radiated Emission







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### Conducted Emission



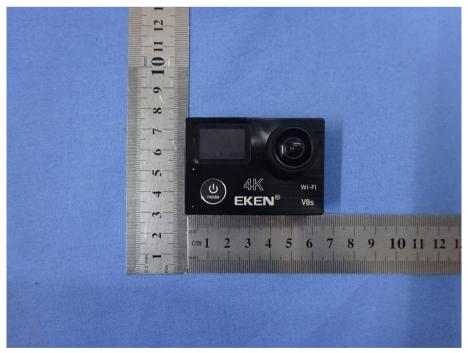


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## 9 EUT Constructional Details

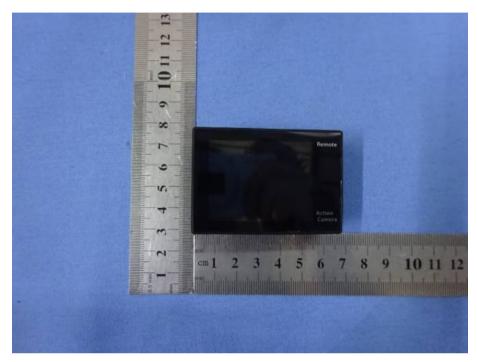






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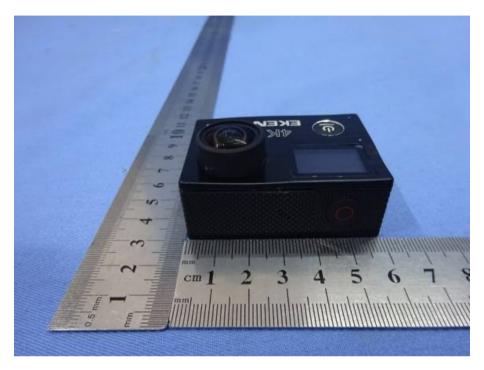


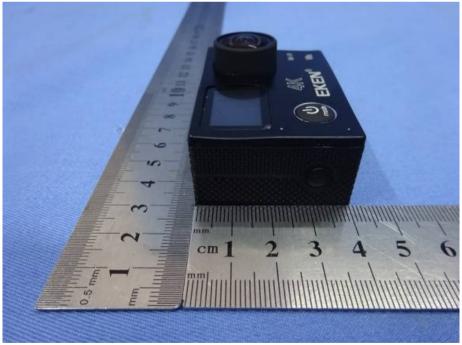




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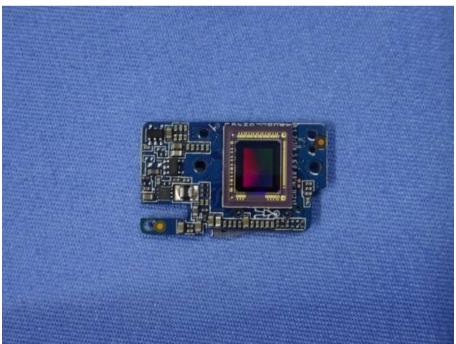




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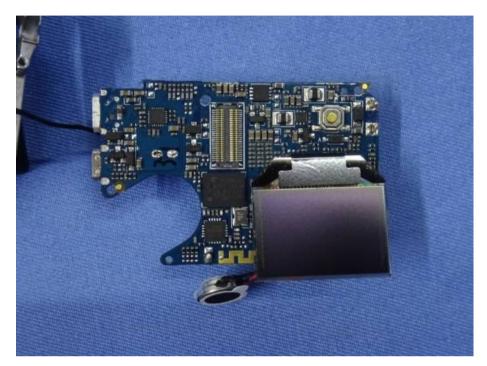






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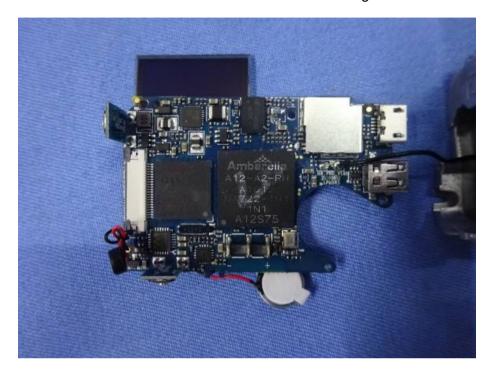


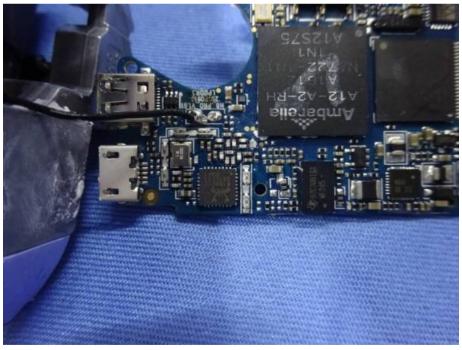




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