

# Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Report No: CCIS15070058403

# FCC REPORT (WIFI)

Applicant: HUNG WAI PRODUCTS LIMITED

Address of Applicant: Unit 11, 12/F., New Commerce Centre, 19 On Sum Street,

Shatin, Hong Kong

**Equipment Under Test (EUT)** 

Product Name: 18.5" Android touch LCD Media Player

Model No.: DT185-AC4-720, 502-1859ATATM

**FCC ID:** 2AB6Z-DT185-AC4

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

Date of sample receipt: 22 Jul., 2015

**Date of Test:** 23 Jul., to 17 Aug., 2015

Date of report issued: 17 Aug., 2015

Test Result: PASS\*

\* In the configuration tested, the EUT complied with the standards specified above.

#### Authorized Signature:



Bruce Zhang 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 CCIS 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.

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# Version

Version No.	Date	Description
00	17 Aug., 2015	Android player Main board with wireless module (FCC ID: 2AB6Z-1859ATMB) and same antenna were used by the device,
		only conducted emission and Radiated emission were re-tested.

Luna Gao Report Clerk Prepared by: Date: 17 Aug., 2015

Reviewed by: Date: 17 Aug., 2015

Project Engineer



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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*
6dB Emission Bandwidth 99% Occupied 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.

Pass\*: The test data refer to FCC ID: 2AB6Z-1859ATMB.

Remark: Test according to ANSI C63.4:2009



# 5 General Information

# **5.1 Client Information**

Applicant:	HUNG WAI PRODUCTS LIMITED
Address of Applicant:	Unit 11, 12/F., New Commerce Centre, 19 On Sum Street, Shatin, Hong Kong
Manufacturer:	HUNG WAI ELECTRONICS (HUIZHOU) LTD.
Address of Manufacturer:	3 <sup>rd</sup> floor, NO. 3, Minfeng Road, Huinan High and New Technology Industry Park, Huiao Avenue, Huizhou City, Guangdong, China

# 5.2 General Description of E.U.T.

Product Name:	18.5" Android touch LCD Media Player
Model No.:	DT185-AC4-720, 502-1859ATATM
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(H20)) 2422MHz~2452MHz (802.11n(H40))
Channel numbers:	11 for 802.11b/802.11g/802.11(H20) 7 for 802.11n(H40)
Channel separation:	5MHz
Modulation technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Modulation technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing(OFDM)
Data speed (IEEE 802.11b):	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data speed (IEEE 802.11g):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps,54Mbps
Data speed (IEEE 802.11n):	Up to 150Mbps
Antenna Type:	Omni-directional
Antenna gain:	2.5 dBi
Power supply:	AC 120V/ 60Hz
AC Adapter:	MODEL: PS36IBCAY3000S Input: AC 100-240V 50/60Hz 1.0A Output: DC 12V, 3000mA
Remark:	Model No.: DT185-AC4-720, 502-1859ATATM were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being different model number for customer and for HUNG WAI.





Operation Frequency each of channel For 802.11b/g/n(H20)								
Channel Frequency Channel Frequency Channel Frequency Channel Frequence								
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz	
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz	
3	2422MHz	6	2437MHz	9	2452MHz			

Operation Frequency each of channel For 802.11n(H40)								
Channel Frequency Channel Frequency Channel Frequency Channel Frequence								
		4	2427MHz	7	2442MHz			
		5	2432MHz	8	2447MHz			
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:

#### 802.11b/802.11g/802.11n (H20)

Channel	Frequency
The lowest channel	2412MHz
The middle channel	2437MHz
The Highest channel	2462MHz

#### 802.11n (H40)

Channel	Frequency		
The lowest channel	2422MHz		
The middle channel	2437MHz		
The Highest channel	2452MHz		



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#### 5.3 Test environment and mode

Operating Environment:				
Temperature:	24.0 °C			
Humidity:	54 % RH			
Atmospheric Pressure:	1010 mbar			
Test mode:				
Operation mode	Keep the EUT in continuous transmitting with modulation			

The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

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:

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

Mode	Data rate	
802.11b	1Mbps	
802.11g	6Mbps	
802.11n(H20)	6.5Mbps	
802.11n(H40)	13.5Mbps	

#### **Final Test Mode:**

According to ANSI C63.4 standards, the test results are both the "worst case" and "worst setup" 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n(H20) and 13.5 Mbps for 802.11n(H40). Duty cycle setting during the transmission is 100% with maximum power setting for all modulations.



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# 5.4 Laboratory Facility

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

#### • FCC - Registration No.: 817957

Shenzhen Zhongjian Nanfang Testing Co., Ltd. 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 out files. Registration 817957, February 27, 2012.

#### • IC - Registration No.: 10106A-1

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

#### • CNAS - Registration No.: CNAS L6048

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

# 5.5 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,

Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-23118282 Fax: +86-755-23116366



# 5.6 Test Instruments list

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	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017	
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	03-28-2015	03-28-2016	
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	03-28-2015	03-28-2016	
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A	
5	Amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2015	03-31-2016	
6	Amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	04-01-2015	03-31-2016	
7	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	04-01-2015	03-31-2016	
8	Horn Antenna	ETS-LINDGREN	3160	GTS217	04-01-2015	03-31-2016	
9	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A	
10	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A	
11	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	03-28-2015	03-28-2016	
12	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	03-28-2015	03-28-2016	
13	Loop antenna	Laplace instrument	RF300	EMC0701	04-01-2015	03-31-2016	
14	Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	03-28-2015	03-28-2016	
15	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	04-08-2015	04-08-2016	

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	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	11-10-2012	11-09-2015					
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	03-28-2015	03-28-2016					
3	LISN	CHASE	MN2050D	CCIS0074	03-28-2015	03-28-2016					
4	Coaxial Cable	CCIS	N/A	CCIS0086	04-01-2015	03-31-2016					
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A					



## 6 Test results and Measurement Data

## **6.1 Antenna requirement:**

#### Standard requirement: FCC Part 15 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.

#### E.U.T Antenna:

The antenna of EUT is a reverse-SMA connector, which cannot be replaced by end-user. And the antenna gain is 2.5 dBi.







# 6.2 Conducted Emission

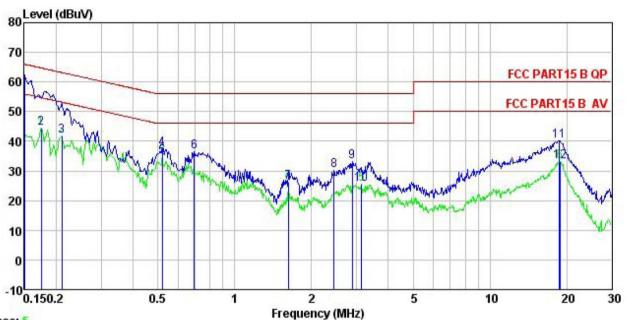
Test Method: ANSI C	art 15 C Section 15.207 63.4: 2009 z to 30 MHz	7						
Test Frequency Range: 150 kH	z to 30 MHz							
1 , , ,								
Class / Severity: Class E								
	3							
Receiver setup: RBW=9	RBW=9 kHz, VBW=30 kHz							
Limit:	Frequency range (MHz)  Limit (dBuV)							
Fred	quency range (MHZ)	Quasi-peak	Average					
	0.15-0.5	66 to 56*	56 to 46*					
	0.5-5	56	46					
* Do	5-30 eases with the logarithm	60	50					
a I 500 2. The three wife tests 3. Both interpolation in the poor characters are seen as a seen	ne E.U.T and simulators ine impedance stabilization in impedance stabilization in impedance stabilization in impedance are peripheral devices arough a LISN that proviets 50 hm termination. (at setup and photograph of the sides of A.C. line are reference. In order to finistions of equipment arough according to AN easurement.	ation network (L.I.S.N.) pedance for the measure also connected to the des a 500hm/50uH conference refer to the blocks). The checked for maximum at the maximum emissed all of the interface care	y, which provides a curing equipment. The main power cupling impedance cock diagram of the conducted sion, the relative ables must be					
E.U.	LISN 40cm		er — AC power					
			-					
Test Instruments: Refer to	o section 5.6 for details							
	o section 5.6 for details o section 5.3 for details							

#### **Measurement Data**





#### Neutral:



Trace: 5

Site

Condition

: CCIS Shielding Room : FCC PART15 B QP LISN NEUTRAL : 18.5" Android touch LCD Media player EUT

Model : DT185-AC4-720 Test Mode : WIFI mode

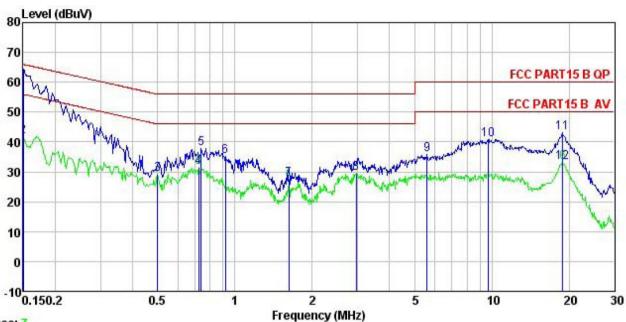
Power Rating: AC 120V/60Hz
Environment: Temp: 23 °C Huni:56% Atmos:101KPa
Test Engineer: Viki
Remark:

.cmark	Freq	Read Level	LISN Factor	Cable Loss		Limit Line	Over Limit	Remark
	MHz	dBu₹	<u>dB</u>	₫B	dBu₹	dBu∇	<u>dB</u>	
1	0.150	51.25	0.25	10.78	62.28	66.00	-3.72	QP
2	0.175	33.60	0.25	10.77	44.62	54.72	-10.10	Average
3	0.211	30.73	0.25	10.76	41.74	53.18	-11.44	Average
1 2 3 4 5 6 7 8 9	0.521	26.44	0.28	10.76	37.48	56.00	-18.52	QP
5	0.521	23.72	0.28	10.76	34.76	46.00	-11.24	Average
6	0.694	25.55	0.18	10.77	36.50	56.00	-19.50	QP
7	1.619	15.15	0.27	10.93	26.35	46.00	-19.65	Average
8	2.448	18.84	0.29	10.94	30.07	56.00	-25.93	QP
9	2.884	21.89	0.29	10.92	33.10	56.00	-22.90	QP
10	3.140	14.40	0.29	10.91	25.60	46.00	-20.40	Average
11	18.721	29.08	0.26	10.91	40.25	60.00	-19.75	QP
12	18.820	22.14	0.26	10.92	33.32	50.00	-16.68	Average





#### Line:



Trace: 7

Site

Condition

: CCIS Shielding Room : FCC PART15 B QP LISN LINE : 18.5" Android touch LCD Media player : DTTTT EUT

Model Test Mode : WIFI mode Power Rating : AC 120V/60Hz

Environment : Temp: 23 °C Huni: 56% Atmos: 101KPa

Test Engineer: Viki

Remark

emark								
		Read	LISN	Cable		Limit	Over	
	Freq	Level	Factor	Loss	Level	Line	Limit	Remark
	MHz	dBu∀	<u>dB</u>	dB	dBu₹	dBu√	<u>dB</u>	
1	0.150	53.45	0.27	10.78	64.50	66.00	-1.50	QP
1 2 3 4 5 6 7 8	0.150	30.91	0.27	10.78	41.96	56.00	-14.04	Average
3	0.499	18.05	0.29	10.76	29.10	46.01	-16.91	Average
4	0.724	20.59	0.22	10.78	31.59	46.00	-14.41	Average
5	0.739	26.79	0.22	10.79	37.80	56.00	-18.20	QP
6	0.918	24.23	0.24	10.84	35.31	56.00	-20.69	QP
7	1.619	16.48	0.26	10.93	27.67	46.00	-18.33	Average
8	2.962	18.47	0.27	10.92	29.66	46.00	-16.34	Average
9	5.594	24.54	0.30	10.83	35.67	60.00	-24.33	QP
10	9.654	29.55	0.31	10.92	40.78	60.00	-19.22	QP
11	18.820	31.81	0.34	10.92	43.07	60.00	-16.93	QP
12	18.920	21.76	0.34	10.92	33.02	50.00	-16.98	Average

#### Notes:

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



# **6.3 Conducted Output Power**

Test Requirement:	FCC Part 15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	30dBm
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table
	Ground Reference Plane
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Refer to FCC ID: 2AB6Z-1859ATMB
Remark:	Test method refer to KDB558074 (DTS Measure Guidance) section 8.2, option 1.



# 6.4 Occupy Bandwidth

Test Requirement:	FCC Part 15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	>500kHz
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Refer to FCC ID: 2AB6Z-1859ATMB



# 6.5 Power Spectral Density

To at De audine as east.	FOO Don't 45 O Continue 45 047 (a)
Test Requirement:	FCC Part 15 C Section 15.247 (e)
Test Method:	ANSI C63.4:2009 and KDB558074
Limit:	8dBm
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane
Toot Instruments:	Pafar to paging 5.6 for details
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Refer to FCC ID: 2AB6Z-1859ATMB



# 6.6 Band Edge

## 6.6.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)					
Test Method:	ANSI C63.4:2009 and KDB558074					
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 30 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 5.6 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Refer to FCC ID: 2AB6Z-1859ATMB					



## 6.6.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C	Section 15.209	and 15.205			
Test Method:	ANSI C63.4: 20	09				
Test Frequency Range:	2.3GHz to 2.5GHz					
Test site:	Measurement Distance: 3m					
Receiver setup:	Frequency Above 1GHz	Detector Peak	RBW VBW		Remark Peak Value	
	Above IGHZ	Peak	1MHz	3MHz	Average Value	
Limit:	Freque	ency	Limit (dBuV		Remark	
	Above 1	GHz	54.0 74.0		Average Value Peak Value	
Test Procedure:	the ground to determin 2. The EUT wantenna, wantenna, wantenna and the ground Both horizon make the numbers and to find the substitute of the emission of the EUT have 10dB	at a 3 meter come the position was set 3 meter which was mount a height is varied to determine to the and vertice measurement. The authority of the antennal the rota table maximum read ceiver system and width with sion level of the ecified, then te would be reported as the position of the would be reported to the sion of the would be reported to the terminal than the sion level of the ecified, then the would be reported to the terminal than the sion level of the would be reported to the terminal than the sion level of the would be reported to the sion of the sion level of the would be reported to the sion level of the would be reported to the sion of the sion level of the would be reported to the sion of	he top of a reamber. The of the highests away from the on the total read on the total read from one he maximum all polarizations to P. Maximum He EUT in peasting could borted. Otherwise re-tested	table was rest radiation. The interfer op of a variation of the analysis of the eart of the ea	e 0.8 meters above otated 360 degrees rence-receiving able-height antenna our meters above he field strength. Intenna are set to reged to its worst from 1 meter to 4 hees to 360 degrees.  Function and s 10dB lower than and the peak values ssions that did not be using peak, quasi-	
Test setup:	peak or average method as specified and then reported in a data					
Test Instruments:	Refer to section	5.6 for details				
Test mode:	Refer to section	5.3 for details				
Test results:	Passed					





#### **Measurement Data:**

Test mode: 802.11b			Test channel: Lowest			Remark: Peak				
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)	Polar.		
2390.00	22.97	27.58	6.63	0.00	57.18	74.00	-16.82	Vertical		
2390.00	22.65	27.58	6.63	0.00	56.86	74.00	-17.14	Horizontal		
Test mode: 80	Test mode: 802.11b			Test channel: Lowest			Remark: Average			
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)	Polar.		
2390.00	11.25	27.58	6.63	0.00	45.46	54.00	-8.54	Vertical		
2390.00	11.38	27.58	6.63	0.00	45.59	54.00	-8.41	Horizontal		

Test mode: 802.11b			Test channel: Highest			Remark: Peak		
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)	Polar.
2483.50	22.38	27.52	6.85	0.00	56.75	74.00	-17.25	Vertical
2483.50	22.78	27.52	6.85	0.00	57.15	74.00	-16.85	Horizontal
Test mode: 802.11b								
Test mode: 80	)2.11b		Test chan	nel: Highest		Remark: Ave	erage	
Test mode: 80 Frequency (MHz)	02.11b Read Level (dBuV)	Antenna Factor (dB/m)	Test char Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Remark: Ave Limit Line (dBuV/m)	Over Limit (dB)	Polar.
Frequency	Read Level	Factor	Cable Loss	Preamp Factor		Limit Line	Over Limit	Polar.

Test mode: 802.11g		Test chan	nel: Lowest		Remark: Peak				
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)	Polar.	
2390.00	27.54	27.58	6.63	0.00	61.75	74.00	-12.25	Vertical	
2390.00	27.33	27.58	6.63	0.00	61.54	74.00	-12.46	Horizontal	
Test mode: 80	Test mode: 802.11g		Test channel: Lowest			Remark: Average			
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)	Polar.	
2390.00	11.74	27.58	6.63	0.00	45.95	54.00	-8.05	Vertical	
2000.00	11.77	1	0.00						

Test mode: 80	)2.11g		Test char	nel: Highest		Remark: Peak		
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)	Polar.
2483.50	23.18	27.52	6.85	0.00	57.55	74.00	-16.45	Vertical
2483.50	23.36	27.52	6.85	0.00	57.73	74.00	-16.27	Horizontal
Test mode: 80	)2.11g		Test channel: Highest			Remark: Ave	erage	
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)	Polar.
2483.50	12.51	27.52	6.85	0.00	46.88	54.00	-7.12	Vertical
2483.50	12.36	27.52	6.85	0.00	46.73	54.00	-7.27	Horizontal

#### Remark:

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
Bao'an District, Shenzhen, Guangdong, China
Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366

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





Test mode: 80	)2.11n-HT20	)	Test chan	nel: Lowest		Remark: Peak			
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)	Polar.	
2390.00	31.22	27.58	6.63	0.00	65.43	74.00	-8.57	Vertical	
2390.00	31.78	27.58	6.63	0.00	65.99	74.00	-8.01	Horizontal	
Test mode: 80	)2.11n-HT20	)	Test channel: Lowest			Remark: Ave	erage		
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)	Polar.	
2390.00	12.36	27.58	6.63	0.00	46.57	54.00	-7.43	Vertical	
2390.00	12.55	27.58	6.63	0.00	46.76	54.00	-7.24	Horizontal	

Test mode: 80	)2.11n-HT20		Test chan	nel: Highest		Remark: Peak			
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)	Polar.	
2483.50	22.87	27.52	6.85	0.00	57.24	74.00	-16.76	Vertical	
2483.50	22.34	27.52	6.85	0.00	56.71	74.00	-17.29	Horizontal	
Test mode: 80	)2.11n -HT2	0	Test chan	nel: Highest		Remark: Ave	erage		
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)	Polar.	
2483.50	11.55	27.52	6.85	0.00	45.92	54.00	-8.08	Vertical	
2483.50	11.26	27.52	6.85	0.00	45.63	54.00	-8.37	Horizontal	

Test mode: 80	02.11n -HT4	0	Test chan	nel: Lowest		Remark: Peak			
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)	Polar.	
2390.00	22.35	27.58	6.63	0.00	56.56	74.00	-17.44	Vertical	
2390.00	22.33	27.58	6.63	0.00	56.54	74.00	-17.46	Horizontal	
Test mode: 80	02.11n -HT4	0	Test channel: Lowest			Remark: Ave	erage		
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)	Polar.	
2390.00	11.86	27.58	6.63	0.00	46.07	54.00	-7.93	Vertical	
2390.00	11.25	27.58	6.63	0.00	45.46	54.00	-8.54	Horizontal	

Test mode: 80	)2.11n -HT4	0	Test chan	nel: Highest		Remark: Peak		
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)	Polar.
2483.50	21.33	27.52	6.85	0.00	55.70	74.00	-18.30	Vertical
2483.50	21.78	27.52	6.85	0.00	56.15	74.00	-17.85	Horizontal
Test mode: 80	)2.11n -HT4	0	Test chan	nel: Highest		Remark: Ave	erage	
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)	Polar.
2483.50	11.21	27.52	6.85	0.00	45.58	54.00	-8.42	Vertical
2483.50	11.73	27.52	6.85	0.00	46.10	54.00	-7.90	Horizontal

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



# 6.7 Spurious Emission

## 6.7.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)						
	ANSI C63.4:2009 and KDB558074						
Test Method:							
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 5.6 for details						
Test mode:	Refer to section 5.3 for details						
Test results:	Refer to FCC ID: 2AB6Z-1859ATMB						

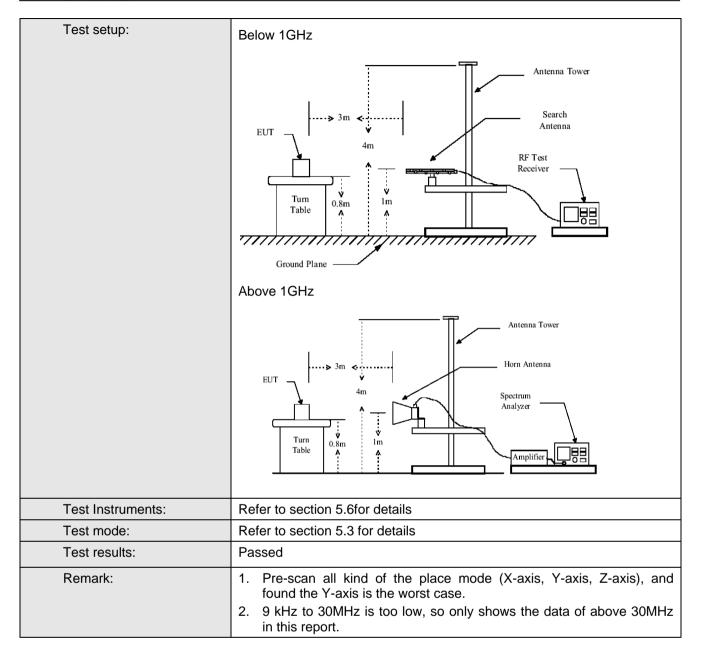




## 6.7.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C	Section 15.209	and 15.205							
Test Method:	ANSI C63.4:200	)9								
Test Frequency Range:	9KHz to 25GHz									
Test site:	Measurement Distance: 3m									
Receiver setup:										
·	Frequency	Detector	RBW	VBW	Remark					
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value					
	Above 1GHz	Peak	1MHz	3MHz	Peak Value					
	7,0070 10112	Peak	1MHz	3MHz	Average Value					
Limit:										
	Freque		Limit (dBuV/		Remark					
	30MHz-8		40.0		Quasi-peak Value					
	88MHz-21		43.5 46.0		Quasi-peak Value Quasi-peak Value					
	216MHz-9 960MHz-		46.0 54.0		Quasi-peak Value  Quasi-peak Value					
			54.0		Average Value					
	Above 1	GHz	74.0		Peak Value					
Test Procedure:	the ground to determin 2. The EUT wantenna, wantenna, wantenna to ground Both horizon make the numbers and to find the numbers and numbers	at a 3 meter of the position was set 3 meter which was mountained and vertical and	camber. The tage of the highest restaway from the maximum cal polarization was turned wa	able was ro st radiation. The interfer op of a variation of the analysis of the each petect of the petec	rence-receiving able-height antenna our meters above he field strength. Intenna are set to haged to its worst from 1 meter to 4 hees to 360 degrees					



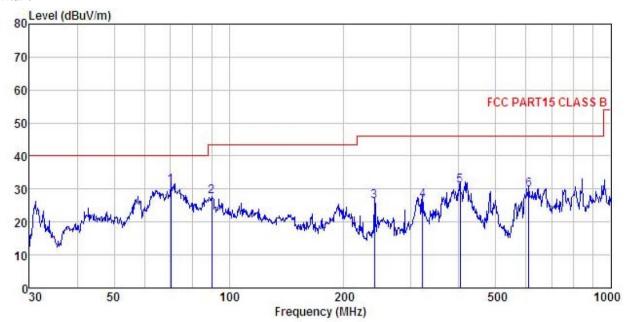






#### **Below 1GHz**

Horizontal:



Site : 3m chamber

: FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL : 18.5" Android touch LCD Media Player : DT185-AC4-720 Condition

EUT

Model Test mode : WIFI mode Power Rating: AC120V/60Hz Environment: Temp:25.5°C Test Engineer: Viki REMARK:

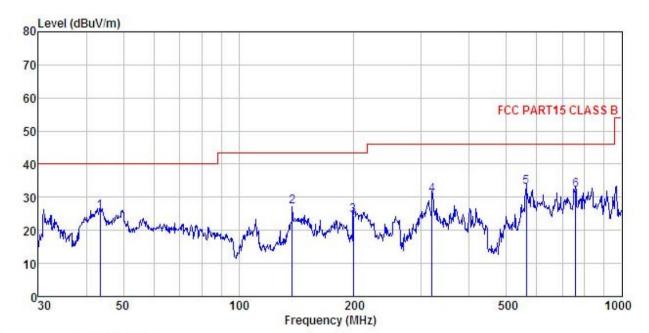
Huni:55% 101KPa

EMAKK										
		Read	Antenna	Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark	
_	MHz	dBu∜	<u>dB</u> /m	<u>dB</u>	<u>dB</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>dB</u>		
1	70.337	51.30	8.58	0.79	29.72	30.95	40.00	-9.05	QP	
2	90.220	44.31	11.99	0.91	29.57	27.64	43.50	-15.86	QP	
3	239.987	41.26	12.09	1.58	28.59	26.34	46.00	-19.66	QP	
4	321.061	39.69	13.40	1.84	28.50	26.43	46.00	-19.57	QP	
5	403.250	42.66	15.14	2.13	28.79	31.14	46.00	-14.86	QP	
6	609.922	37.69	18.48	2.66	28.91	29.92	46.00	-16.08	QP	





#### Vertical:



Site

: 3m chamber : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL : 18.5" Android touch LCD Media Player : DT185-AC4-720 Condition

EUT

Model Test mode : WIFI mode Power Rating : AC120V/60Hz

Environment : Temp: 25.5°C Huni: 55% 101KPa Test Engineer: Viki REMARK :

	Freq		Antenna Factor					Over Limit	Remark
-	MHz	—dBu∀	<u>dB</u> /m		<u>dB</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>d</u> B	
1	43.506	41.38	13.56	0.55	29.87	25.62	40.00	-14.38	QP
2	137.903	46.77	8.35	1.25	29.28	27.09	43.50	-16.41	QP
3	199.286	41.48	10.57	1.38	28.83	24.60	43.50	-18.90	QP
4	319.937	44.13	13.33	1.84	28.50	30.80	46.00	-15.20	QP
5	562.662	41.65	17.83	2.56	29.06	32.98	46.00	-13.02	QP
6	758.041	38.05	19.53	3.06	28.43	32.21	46.00	-13.79	QP





#### **Above 1GHz**

Test mode: 8	02.11b		Test char	nnel: Lowest		Remark: Peak			
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)	Polar.	
4824.00	46.42	31.54	10.58	40.22	48.32	74.00	-25.68	Vertical	
4824.00	44.75	31.54	10.58	40.22	46.65	74.00	-27.35	Horizontal	
Test mode: 80	02.11b		Test char	nnel: Lowest		Remark: Ave	erage		
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)	Polar.	
4824.00	37.86	31.54	10.58	40.22	39.76	54.00	-14.24	Vertical	
4824.00	35.53	31.54	10.58	40.22	37.43	54.00	-16.57	Horizontal	

Test mode: 80	02.11b		Test char	nnel: Middle		Remark: Peak		
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)	Polar.
4874.00	46.06	31.57	10.64	40.15	48.12	74.00	-25.88	Vertical
4874.00	46.21	31.57	10.64	40.15	48.27	74.00	-25.73	Horizontal
Test mode: 80	02.11b		Test char	nnel: Middle		Remark: Ave	rage	
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)	Polar.
4874.00	37.52	31.57	10.64	40.15	39.58	54.00	-14.42	Vertical
4874.00	37.77	31.57	10.64	40.15	39.83	54.00	-14.17	Horizontal

Test mode: 8	02.11b		Test channel: Highest			Remark: Peak		
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)	Polar.
4924.00	44.42	31.61	10.70	40.08	46.65	74.00	-27.35	Vertical
4924.00	44.68	31.61	10.70	40.08	46.91	74.00	-27.09	Horizontal
Test mode: 8	02.11b		Test char	nnel: Highest		Remark: Ave	rage	
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)	Polar.
4924.00	36.55	31.61	10.70	40.08	38.78	54.00	-15.22	Vertical
4924.00	35.52	31.61	10.70	40.08	37.75	54.00	-16.25	Horizontal

#### 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.





Test mode: 80	02.11g		Test channel: Lowest			Remark: Peak		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4824.00	46.23	31.54	10.58	40.22	48.13	74.00	-25.87	Vertical
4824.00	44.95	31.54	10.58	40.22	46.85	74.00	-27.15	Horizontal
Test mode: 80	02.11g		Test chan	nel: Lowest		Remark: Ave	rage	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4824.00	36.53	31.54	10.58	40.22	38.43	54.00	-15.57	Vertical
4824.00	35.44	31.54	10.58	40.22	37.34	54.00	-16.66	Horizontal

Test mode: 80	02.11g		Test channel: Middle			Remark: Peak		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4874.00	46.47	31.57	10.64	40.15	48.53	74.00	-25.47	Vertical
4874.00	46.93	31.57	10.64	40.15	48.99	74.00	-25.01	Horizontal
Test mode: 80	02.11g		Test char	nel: Middle		Remark: Ave	rage	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/)	Limit Line (dBuV/m)	Over Limit (dB)	Polar.
4874.00	36.95	31.57	10.64	40.15	39.01	54.00	-14.99	Vertical
4874.00	36.22	31.57	10.64	40.15	38.28	54.00	-15.72	Horizontal

Test mode: 80	02.11g		Test char	nnel: Highest		Remark: Pea	k	
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)	Polar.
4924.00	44.93	31.61	10.70	40.08	47.16	74.00	-26.84	Vertical
4924.00	44.74	31.61	10.70	40.08	46.97	74.00	-27.03	Horizontal
Test mode: 80	02.11g		Test char	nnel: Highest		Remark: Ave	rage	
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)	Polar.
4924.00	35.52	31.61	10.70	40.08	37.75	54.00	-16.25	Vertical
4924.00	35.75	31.61	10.70	40.08	37.98	54.00	-16.02	Horizontal

- 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.





Test mode: 80	Test mode: 802.11n(H20)			Test channel: Lowest			Remark: Peak		
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)	Polar.	
4824.00	46.12	31.54	10.58	40.22	48.02	74.00	-25.98	Vertical	
4824.00	45.56	31.54	10.58	40.22	47.46	74.00	-26.54	Horizontal	
Test mode: 80	02.11n(H20)		Test char	nnel: Lowest		Remark: Ave	rage		
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)	Polar.	
4824.00	37.03	31.54	10.58	40.22	38.93	54.00	-15.07	Vertical	
4824.00	36.55	31.54	10.58	40.22	38.45	54.00	-15.55	Horizontal	

Test mode: 8	02.11n(H20)		Test channel: Middle			Remark: Peak		
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)	Polar.
4874.00	46.14	31.57	10.64	40.15	48.20	74.00	-25.80	Vertical
4874.00	46.55	31.57	10.64	40.15	48.61	74.00	-25.39	Horizontal
Test mode: 80	02.11n(H20)		Test char	nnel: Middle		Remark: Ave	rage	
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)	Polar.
4874.00	36.58	31.57	10.64	40.15	38.64	54.00	-15.36	Vertical
4874.00	37.03	31.57	10.64	40.15	39.09	54.00	-14.91	Horizontal

Test mode: 80	02.11n(H20)		Test char	nnel: Highest		Remark: Pea	ık	
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)	Polar.
4924.00	46.29	31.61	10.70	40.08	48.52	74.00	-25.48	Vertical
4924.00	45.15	31.61	10.70	40.08	47.38	74.00	-26.62	Horizontal
Test mode: 80	02.11n(H20)		Test char	nnel: Highest		Remark: Ave	rage	
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)	Polar.
4924.00	37.44	31.61	10.70	40.08	39.67	54.00	-14.33	Vertical
4924.00	35.03	31.61	10.70	40.08	37.26	54.00	-16.74	Horizontal

- 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.





Test mode: 8	Test mode: 802.11n(H40)			Test channel: Lowest			Remark: Peak		
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)	Polar.	
4844.00	45.77	31.55	10.61	40.19	47.74	74.00	-26.26	Vertical	
4844.00	45.96	31.55	10.61	40.19	47.93	74.00	-26.07	Horizontal	
Test mode: 80	02.11n(H40)		Test char	nnel: Lowest		Remark: Ave	rage		
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)	Polar.	
4844.00	35.88	31.55	10.61	40.19	37.85	54.00	-16.15	Vertical	
4844.00	36.56	31.55	10.61	40.19	38.53	54.00	-15.47	Horizontal	

Test mode: 8	est mode: 802.11n(H40)			Test channel: Middle			Remark: Peak		
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)	Polar.	
4874.00	46.22	31.57	10.64	40.15	48.28	74.00	-25.72	Vertical	
4874.00	47.07	31.57	10.64	40.15	49.13	74.00	-24.87	Horizontal	
Test mode: 8	02.11n(H40)		Test char	nnel: Middle		Remark: Ave	rage		
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)	Polar.	
4874.00	36.85	31.57	10.64	40.15	38.91	54.00	-15.09	Vertical	
4874.00	37.74	31.57	10.64	40.15	39.80	54.00	-14.20	Horizontal	

Test mode: 8	02.11n(H40)		Test channel: Highest			Remark: Peak		
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)	Polar.
4904.00	46.23	31.59	10.67	40.10	48.39	74.00	-25.61	Vertical
4904.00	46.15	31.59	10.67	40.10	48.31	74.00	-25.69	Horizontal
Test mode: 80	02.11n(H40)		Test char	nnel: Highest		Remark: Ave	rage	
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)	Polar.
4904.00	36.55	31.59	10.67	40.10	38.71	54.00	-15.29	Vertical
4904.00	36.93	31.59	10.67	40.10	39.09	54.00	-14.91	Horizontal

- 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.