

Report No: CCIS15070058204

# **FCC REPORT**

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: 15.6" Android non-touch LCD Media

Model No.: DT156-AS4-720, 502-1569ATM

**FCC ID**: 2AB6Z-DT156-AS4

Applicable standards: FCC CFR Title 47 Part 15 Subpart E Section 15.407

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.

\_una 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	15.203/15.407 (g)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.407 (a)	Pass*
26dB Occupied Bandwidth	15.407 (a)	Pass*
6dB Emission Bandwidth	15.407(e)	Pass*
Power Spectral Density	15.407 (a)	Pass*
Band Edge	15.407(b)	Pass
Spurious Emission	15.205/15.209	Pass
Frequency Stability	15.407(g)	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:	15.6" Android non-touch LCD Media
Model No.:	DT156-AS4-720, 502-1569ATM
Operation Frequency:	Band 1: 5180MHz-5240MHz Band 4: 5745MHz-5825MHz
Operation mode:	Indoor used
Channel numbers:	Band 1: 802.11a/802.11n20: 4, 802.11n40: 2 Band 4: 802.11a/802.11n20: 5, 802.11n40: 2
Channel separation:	802.11a/802.11n20: 20MHz, 802.11n40: 40MHz
Modulation technology: (IEEE 802.11a)	BPSK, QPSK,16-QAM, 64-QAM
Modulation technology: (IEEE 802.11n)	BPSK, QPSK, 16-QAM, 64-QAM
Data speed(IEEE 802.11a)	6Mbps, 9Mbps,12Mbps,18Mbps, 24Mbps,36Mbps,48Mbps, 54Mbps
Data speed (IEEE 802.11n20):	MCS0: 6.5Mbps, MCS1:13Mbps, MCS2:19.5Mbps, MCS3:26Mbps, MCS4:39Mbps, MCS5:52Mbps, MCS6:58.5Mbps, MCS7:65Mbps
Data speed (IEEE 802.11n40):	MCS0:15Mbps, MCS1:30Mbps, MCS2:45Mbps, MCS3:60Mbps, MCS4:90Mbps, MCS5:120Mbps, MCS6:135Mbps, MCS7:150Mbps
Antenna Type:	Omni-directional
Antenna gain:	2.5 dBi
Power supply:	AC 120V/ 60Hz
AC Adapter:	MODEL: PS24A120K2000UD Input: AC 100-240V 50/60Hz 1.0A Output: DC 12V, 2000mA
Remark:	Model No.: DT101-AS4-720, 502-1019ATM 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** 

Band 1				
802.11a/	802.11n20	802.11n40		
Channel	Frequency	Channel	Frequency	
36	5180MHz	39	5190MHz	
40	5200MHz	45	5230MHz	
44	5220MHz			
48	5240MHz			
	Bai	nd 4		
802.11a/	′802.11n20	802.11n40		
Channel	Frequency	Channel	Frequency	
149	5745MHz	151	5755MHz	
153	5765MHz	159	5795MHz	
157	5785MHz			
161	5805MHz			
165	5825MHz			

#### 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:

Band 1					
802.11a/802	2.11n20	802.11n	40		
Channel	Frequency	Channel	Frequency		
The lowest channel	5180MHz	The lowest channel	5190MHz		
The middle channel	5200MHz	The highest channel	5230MHz		
The highest channel	5240MHz				
	Bar	id 4			
802.11a/802	2.11n20	802.11n40			
Channel	Frequency	Channel	Frequency		
The lowest channel	ne lowest channel 5745MHz		5755MHz		
The middle channel	5785MHz	The highest channel	5795MHz		
The highest channel					



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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:				
Continuously transmitting mode	Keep the EUT in 100% duty cycle transmitting with modulation.			

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			
802.11a	6 Mbps			
802.11n20	6.5 Mbps			
802.11n40	13 Mbps			

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

According to ANSI C63.4 standards, the test results are both the "worst case" and "worst setup" 6 Mbps for 802.11a, 6.5 Mbps for 802.11n20 and 13 Mbps for 802.11n40. All test items for 802.11a and 802.11n were performed with duty cycle above 98%, meet the requirements of KDB789033.

### 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

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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





### 5.6 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	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 Part15 E Section 15.203 /407(a)

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.

This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

#### 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.



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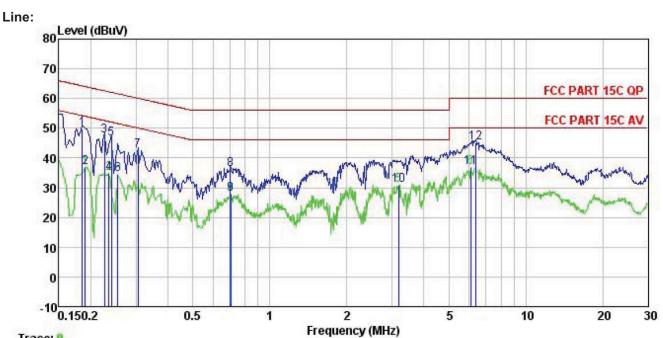
### 6.2 Conducted Emission

0.2 Oondaoted Emission					
Test Requirement:	FCC Part15 C Section 15.207				
Test Method:	ANSI C63.10: 2009				
Test Frequency Range:	150 kHz to 30 MHz				
Class / Severity:	Class B				
Receiver setup:	RBW=9 kHz, VBW=30 kHz				
Limit:	Frequency range (MHz)	Limit (c	BuV)		
	Quasi-peak Average				
	0.15-0.5	66 to 56*	56 to 46*		
	0.5-5	56	46		
	5-30	60	50		
Test procedure	* Decreases with the logarithm  1. The E.U.T and simulators				
	<ul> <li>a line impedance stabilization network (L.I.S.N.). It provides a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>2. 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>3. 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> </ul>				
Test setup:	Referen	nce Plane			
	AUX Equipment E.U  Test table/Insulation plan  Remark: E.U.T. Equipment Under Test LISN: Line Impedence Stabilization	EMI Receiver	r — AC power		
	Test table height=0.8m				
Test Instruments:	Refer to section 5.6 for details				
Test mode:	Refer to section 5.3 for details.				
Test results:	Passed				

### **Measurement Data**







Trace: 9

Site

Condition

: CCIS Shielding Room : FCC PART 15C QP LISN LINE : 15.6" Android non-touch LCD Media player EUT

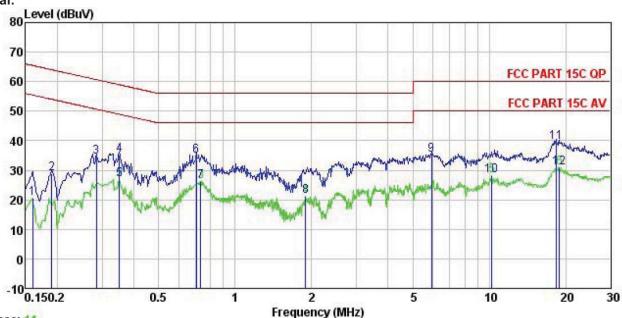
Model : DT156-AS4-720 Test Mode : 5G-WIFI mode Power Rating : AC 120V/60Hz

Environment : Temp: 23 °C Huni:56% Atmos:101KPa Test Engineer: Viki Remark :

/emark	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBu∜			dBu₹	dBu∜	dB	
1	0.185	38.80	0.28	10.77	49.85	64.24	-14.39	QP
1 2 3	0.190	25.87	0.28	10.76	36.91	54.02	-17.11	Average
3	0.226	36.35	0.27	10.75	47.37	62.61	-15.24	QP
4 5 6 7 8 9	0.235	23.76	0.27	10.75	34.78	52.26	-17.48	Average
5	0.240	35.59	0.27	10.75	46.61	62.08	-15.47	QP
6	0.255	23.37	0.27	10.75	34.39	51.60	-17.21	Average
7	0.305	31.53	0.26	10.74	42.53	60.10	-17.57	QP
8	0.701	25.11	0.22	10.77	36.10	56.00	-19.90	QP
9	0.705	16.76	0.22	10.77	27.75	46.00	-18.25	Average
10	3.190	19.69	0.27	10.91	30.87			Average
11	6.089	25.69	0.31	10.82	36.82	50.00	-13.18	Average
12	6.352	33.90	0.31	10.81	45.02	60.00	-14.98	QP







Trace: 11

Site : CCIS Shielding Room

Condition : FCC PART 15C QP LISN NEUTRAL

EUT : 15.6" Android non-touch LCD Media player Model : DT156-AS4-720

Model : DT156-AS4-720 Test Mode : 5G-WIFI mode Power Rating : AC 120V/60Hz

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

Test Engineer: Viki

Remark

NOMAL R	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBu∀	dB	₫B	dBu₹	dBu₹	<u>dB</u>	
1	0.160	9.49	0.25	10.78	20.52	55.47	-34.95	Average
2	0.190	17.90	0.25	10.76	28.91	64.02	-35.11	QP
3	0.285	23.56	0.26	10.74	34.56	60.68	-26.12	QP
4	0.350	24.12	0.25	10.73	35.10	58.96	-23.86	QP
2 3 4 5 6 7 8 9	0.350	15.83	0.25	10.73	26.81	48.96	-22.15	Average
6	0.705	23.83	0.18	10.77	34.78	56.00	-21.22	QP
7	0.731	15.29	0.18	10.78	26.25	46.00	-19.75	Average
8	1.898	9.92	0.29	10.95	21.16	46.00	-24.84	Average
9	5.929	24.05	0.27	10.82	35.14	60.00	-24.86	QP
10	10.233	16.90	0.25	10.94	28.09	50.00	-21.91	Average
11	18.328	28.38	0.26	10.91	39.55	60.00	-20.45	QP
12	18.920	19.83	0.26	10.92	31.01	50.00	-18.99	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 Part15 E Section 15.407 (a) (1) (ii) & (a) (3)						
Test Method:	ANSI C63.10: 2009, KDB 789033						
Limit:	<b>Band 1:</b> 1 W (For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.); <b>Band 4:</b> 1W.						
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						





# 6.4 Occupy Bandwidth

Test Requirement:	FCC Part15 E Section 15.407 (a) (5) and Section 15.407 (e)						
Test Method:	ANSI C63.10: 2009 and KDB 789033						
Limit:	Band 1: N/A(26dB Emission Bandwidth and 99% Occupy Bandwidth) Band 4: N/A(26dB Emission Bandwidth and 99% Occupy Bandwidth) Band 4: >500kHz(6dB Bandwidth)						
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

<u> </u>							
Test Requirement:	FCC Part15 E Section 15.407 (a) (1) (ii) & (a) (3)						
Test Method:	ANSI C63.10: 2009, KDB 789033						
Limit:	Band 1: 17 dBm/MHz (The maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.);  Band 4: 30dBm/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						





### 6.6 Band Edge

Test Requirement:  FCC Part15 E Section 15.407 (b)  Test Method:  ANSI C63.10: 2009, KDB 789033  Receiver setup:  Detector RBW VBW Remark Quasi-peak Value RMS 11MHz 3MHz Quasi-peak Value RMS 11MHz 3MHz Average Value  Limit:  Limit:  Limit (dBuV/m @3m) Remark	6.6 Band Edge							
Detector RBW VBW Remark   Quasi-peak Value   RMS   10kHz   30kHz   Quasi-peak Value   RMS   11kHz   3MHz   Average Value   Remark   68.20   Peak Value   Remark   68.20   Peak Value   Remark   78.20   Peak Value   Remark   78.20   Peak Value   Remark   Remar	Test Requirement:	FCC Part15 E S	ection 15.4	07 (b)				
Detector RBW VBW Remark   Quasi-peak Value   RMS   1MHz   300kHz   Quasi-peak Value   RMS   1MHz   300kHz   Quasi-peak Value   RMS   1MHz   300kHz   Quasi-peak Value   RMS   1MHz   3MHz   Average Value   RMS   1MHz   S4.00   Average Value   Band 1   54.00   Average Value   Band 4   54.00   Average Value   Remark   1. Band 1 limit:   E[dByV/m] = EIRP[dBm] + 95.2=68.2 dBvV/m, for EIPR[dBm]= -27dBm.   2. Band 4 limit:   E[dByV/m] = EIRP[dBm] + 95.2=78.2 dBvV/m, for EIPR[dBm]= -17dBm.   2. Band 4 limit:   E[dByV/m] = EIRP[dBm] + 95.2=78.2 dBvV/m, for EIPR[dBm]= -17dBm.   2. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.   2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.   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 tunned from 0 degrees to 360 degrees to find the maximum reading.   5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.   6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.   Test setup:   Test set	Test Method:	ANSI C63.10: 20	009, KDB 7	89033				
Limit (dBuV/m @3m)   Remark   68.20   Peak Value   76.20   Peak Value	Receiver setup:	Quasi-peak	120kHz	300kHz	Quasi-peak Va			
Limit (dBuV/m @3m)   Remark   68.20   Peak Value   76.20   Peak Value	Limit:			1				
Band 1  Band 4  Band 4  Band 4  Band 54.00  Remark:  1. Band 1 limit:  E[dByV/m] = EIRP[dBm] + 95.2=68.2 dBuV/m, for EIPR[dBm]= -27dBm.  2. Band 4 limit:  E[dByV/m] = EIRP[dBm] + 95.2=78.2 dBuV/m, for EIPR[dBm]= -17dBm.  1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.  2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.  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.  5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.  6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data sheet.  Test setup:  Refer to section 5.6 for details  Refer to section 5.3 for details								
Remark:  1. Band 1 limit:		Band	1					
Remark:  1. Band 1 limit:						•		
1. Band 1 limit:  E[dByV/m] = EIRP[dBm] + 95.2=68.2 dBuV/m, for EIPR[dBm]= -27dBm. 2. Band 4 limit:  E[dByV/m] = EIRP[dBm] + 95.2=78.2 dBuV/m, for EIPR[dBm]= -17dBm.  1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.  2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.  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 turned from 0 degrees to 360 degrees to find the maximum reading.  5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.  6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT on the tested one by one using peak, quasipeak or average method as specified and then reported in a data sheet.  Test setup:  Test Instruments:  Refer to section 5.6 for details  Refer to section 5.3 for details		Band	4					
the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.  2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.  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.  5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.  6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data sheet.  Test setup:  Refer to section 5.6 for details  Refer to section 5.3 for details		1. Band 1 limit: Ε[dBμV/m] = EIRP[dBm] + 95.2=68.2 dBuV/m, for EIPR[dBm]= -270 2. Band 4 limit:						
Test Instruments:  Refer to section 5.6 for details  Test mode:  Refer to section 5.3 for details	Test Procedure:	the ground to determin 2. The EUT wantenna, who tower. 3. The antennathe ground Both horizo make the make the make the maters and to find the meters and to find the maters and to find the material Both the limit specified Barries of the EUT have 10dB peak or aversion.	at a 3 mete e the positi- as set 3 mete hich was m a height is to determinated and vent neasurement aspected enter the ante- the rota tall maximum receiver system and width weigen level of ecified, there would be re- margin wou	er camber. Toon of the higher saway from the term await rical polarizat.  In the enna was turned the was turned the was turned the was turned the term awas set with Maximu the EUT in the term of the	The table was roghest radiation. from the interfer he top of a variation one meter to formum value of the zations of the arrangle EUT was arrangled to heights from 0 degreto Peak Detect m Hold Mode. peak mode was uld be stopped an erwise the emissisted one by one	ence-receiving able-height antenna our meters above e field strength. Intenna are set to aged to its worst from 1 meter to 4 ees to 360 degrees  Function and s 10dB lower than and the peak values ssions that did not e using peak, quasi-		
Test mode: Refer to section 5.3 for details	Test setup:	Antenna Tower  Horn Antenna  Spectrum Analyzer  Turn 0,8m 1m						
	Test Instruments:	Refer to section	5.6 for deta	ails				
Test results: Passed	Test mode:							
	Test results:	Passed						





### Band 1:

			802.11a										
Test c	hannel	Lowest			Le	vel	F	Peak					
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization					
5150.00	37.55	32.07	9.13	40.06	38.69	68.20	-29.51	Horizontal					
5150.00	38.21	32.07	9.13	40.06	39.35	68.20	-28.85	Vertical					
	802.11a												
Test c	hannel		Lowest		Le	vel	Av	erage					
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization					
5150.00	27.64	32.07	9.13	40.06	28.78	54.00	-25.22	Horizontal					
5150.00	26.36	32.07	9.13	40.06	27.50	54.00	-26.50	Vertical					
				802.11a									
Test c	hannel	Highest			Le	vel	F	Peak					
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization					
5350.00	35.82	31.78	9.15	40.18	36.57	68.20	-31.63	Horizontal					
5350.00	34.34	31.78	9.15	40.18	35.09	68.20	-33.11	Vertical					
				802.11a									
Test c	hannel		Highest		Le	vel	Av	rerage					
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization					
5350.00	27.83	31.78	9.15	40.18	28.58	54.00	-25.42	Horizontal					
5350.00	27.54	31.78	9.15	40.18	28.29	54.00	-25.71	Vertical					

	802.11n-HT20										
Test c	hannel	Lowest			Le	vel	Р	'eak			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
5150.00	35.22	32.07	9.13	40.06	36.36	68.20	-31.84	Horizontal			
5150.00	36.12	32.07	9.13	40.06	37.26	68.20	-30.94	Vertical			
	802.11n-HT20										
Test c	hannel		Lowest		Le	vel	Ave	erage			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
5150.00	27.45	32.07	9.13	40.06	28.59	54.00	-25.41	Horizontal			
5150.00	27.36	32.07	9.13	40.06	28.50	54.00	-25.50	Vertical			
			8	302.11n-HT20							
Test c	hannel	Highest			Le	vel	Р	eak			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
5350.00	36.88	31.78	9.15	40.18	37.63	68.20	-30.57	Horizontal			
5350.00	36.24	31.78	9.15	40.18	36.99	68.20	-31.21	Vertical			
			8	302.11n-HT20							
Test c	hannel		Highest		Le	vel	Ave	erage			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
5350.00	25.33	31.78	9.15	40.18	26.08	54.00	-27.92	Horizontal			
5350.00	25.18	31.78	9.15	40.18	25.93	54.00	-28.07	Vertical			





	802.11n-HT40										
Test c	hannel	Lowest			Le	vel	F	Peak			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
5150.00	36.97	32.07	9.13	40.06	38.11	68.20	-30.09	Horizontal			
5150.00	35.74	32.07	9.13	40.06	36.88	68.20	-31.32	Vertical			
	802.11n-HT40										
Test c	hannel		Lowest		Le	vel	Av	erage			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
5150.00	26.38	32.07	9.13	40.06	27.52	54.00	-26.48	Horizontal			
5150.00	26.19	32.07	9.13	40.06	27.33	54.00	-26.67	Vertical			
			8	02.11n-HT40							
Test c	hannel	Highest			Le	vel	F	Peak			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
5350.00	34.25	31.78	9.15	40.18	35.00	68.20	-33.20	Horizontal			
5350.00	34.16	31.78	9.15	40.18	34.91	68.20	-33.29	Vertical			
			8	02.11n-HT40							
Test c	hannel		Highest		Le	vel	Av	erage			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
5350.00	25.78	31.78	9.15	40.18	26.53	54.00	-27.47	Horizontal			
5350.00	26.18	31.78	9.15	40.18	26.93	54.00	-27.07	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.





### Band 4:

	802.11a										
Test c	hannel	Lowest			Le	vel	F	Peak			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
5725.00	42.56	32.27	9.30	40.54	43.59	78.20	-34.61	Horizontal			
5725.00	42.18	32.27	9.30	40.54	43.21	78.20	-34.99	Vertical			
	802.11a										
Test c	hannel		Lowest		Le	vel	Av	erage			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
5725.00	32.41	32.27	9.30	40.54	33.44	54.00	-20.56	Horizontal			
5725.00	32.74	32.27	9.30	40.54	33.77	54.00	-20.23	Vertical			
				802.11a							
Test c	hannel	Highest			Le	vel	F	Peak			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
5850.00	42.33	32.71	9.37	40.69	43.72	78.20	-34.48	Horizontal			
5850.00	42.56	32.71	9.37	40.69	43.95	78.20	-34.25	Vertical			
				802.11a							
Test c	hannel		Highest		Le	vel	Av	rerage			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
5850.00	29.39	32.71	9.37	40.69	30.78	54.00	-23.22	Horizontal			
5850.00	28.46	32.71	9.37	40.69	29.85	54.00	-24.15	Vertical			

000 44m LIT00										
802.11n-HT20										
Test c	hannel	Lowest			Le	vel	Peak			
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
5725.00	42.33	32.27	9.30	40.54	43.36	78.20	-34.84	Horizontal		
5725.00	45.97	32.27	9.30	40.54	47.00	78.20	-31.20	Vertical		
802.11n-HT20										
Test c	hannel		Lowest		Le	vel	Av	erage		
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
5725.00	32.46	32.27	9.30	40.54	33.49	54.00	-20.51	Horizontal		
5725.00	32.18	32.27	9.30	40.54	33.21	54.00	-20.79	Vertical		
	802.11n-HT20									
Test c	hannel	Highest			Le	vel	F	Peak		
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
5850.00	42.57	32.71	9.37	40.69	43.96	78.20	-34.24	Horizontal		
5850.00	42.36	32.71	9.37	40.69	43.75	78.20	-34.45	Vertical		
			8	302.11n-HT20						
Test c	hannel		Highest		Le	vel	Av	erage		
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
5850.00	32.78	32.71	9.37	40.69	34.17	54.00	-19.83	Horizontal		
5850.00	32.18	32.71	9.37	40.69	33.57	54.00	-20.43	Vertical		





			8	302.11n-HT40					
Test cl	hannel	Lowest			Le	vel	F	Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
5725.00	37.55	32.27	9.30	40.54	38.58	78.20	-39.62	Horizontal	
5725.00	37.15	32.27	9.30	40.54	38.18	78.20	-40.02	Vertical	
802.11n-HT40									
Test cl	hannel		Lowest		Le	vel	Av	rerage	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
5725.00	31.22	32.27	9.30	40.54	32.25	54.00	-21.75	Horizontal	
5725.00	31.18	32.27	9.30	40.54	32.21	54.00	-21.79	Vertical	
			8	302.11n-HT40					
Test cl	hannel	Highest			Le	vel	F	Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
5850.00	42.33	32.71	9.37	40.69	43.72	78.20	-34.48	Horizontal	
5850.00	42.17	32.71	9.37	40.69	43.56	78.20	-34.64	Vertical	
			8	02.11n-HT40					
Test cl	hannel		Highest		Le	vel	Av	rerage	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
5850.00	32.46	32.71	9.37	40.69	33.85	54.00	-20.15	Horizontal	
5850.00	32.18	32.71	9.37	40.69	33.57	54.00	-20.43	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.



# **6.7 Spurious Emission**

### 6.7.1 Restricted Band

6.7.1	1 Restricted Band										
	Test Requirement:	FCC Part15 E Section 15.407(b)									
	Test Method:	ANSI C63.10: 2009,									
	Test Frequency Range:		Band 1: 4.5 GHz to 5.15 GHz and 5.35GHz to 5.46GHz Band 4: 5.35 GHz to 5.46 GHz  Measurement Distance: 3m								
	Test site:	Measurement [	Distance: 3m								
	Receiver setup:			1	1						
		Frequency	Above 1GHz Peak 1MHz 3MHz Peak Value								
		Above 1GHz RMS 1MHz 3MHz Average Value									
	Limit:		RIVIS   TIVIHZ   SIVIHZ   Average								
	<del>-</del>	Freque	ency	Limit (dBuV	/m @3m)	Remark					
		Above 1	GHz	74.0		Peak Value					
		7.0070	0112	54.0	0	Average Value					
	Test setup:	the ground to determine 8. The EUT wantenna, watower.  9. The anten the ground Both horiz make the reaches case and to find the 11. The test-results of the EUT have 10dE	I at a 3 meter come the position was set 3 meter which was mour ma height is var to determine to ontal and vertice measurement. Suspected emischen the antenned the rota table maximum read eceiver system Bandwidth with sion level of the pecified, then te would be reposed margin would	amber. The of the highers away from the on the tried from one he maximum all polarizations on the EU awas turned ing.  was set to Form Maximum he EUT in peases to the could lorted. Otherwas the extension of the could lorted.	table was rest radiation. In the interference of a variation of a variation of the automatic form of the automatic formatic fo	rence-receiving able-height antenna our meters above he field strength. Intenna are set to higher to 4 rees to 360 degrees					
	Test setup:	Antenna Tower  Horn Antenna  Spectrum  Analyzer  Amplifier									
	Test Instruments:	Refer to section	n 5.6 for details								
	Test mode:	Refer to section	5.3 for details								
	Test results:	Passed									





#### Band 1:

### 802.11a

Test c	hannel		Lowest		Le	vel	F	Peak
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	36.87	30.72	8.54	40.67	35.46	74.00	-38.54	Horizontal
4500.00	36.53	30.72	8.54	40.67	35.12	74.00	-38.88	Vertical
Test c	hannel		Lowest		Le	vel	Av	erage
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	25.36	30.72	8.54	40.67	23.95	54.00	-30.05	Horizontal
4500.00	25.22	30.72	8.54	40.67	23.81	54.00	-30.19	Vertical
Test c	hannel	Highest			Le	vel	F	Peak
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
								Polarization Horizontal
(MHz)	(dBuV/m)	Factor (dB)	Loss (dB)	Factor (dB)	(dBuV/m)	(dBuV/m)	Limit (dB)	
(MHz) 5460.00 5460.00	(dBuV/m) 36.87	Factor (dB) 31.99	Loss (dB) 9.16	Factor (dB) 40.23	(dBuV/m) 37.79	(dBuV/m) 74.00 74.00	Limit (dB) -36.21 -36.72	Horizontal
(MHz) 5460.00 5460.00	(dBuV/m) 36.87 36.36	Factor (dB) 31.99	9.16 9.16	Factor (dB) 40.23	(dBuV/m) 37.79 37.28	(dBuV/m) 74.00 74.00	Limit (dB) -36.21 -36.72	Horizontal Vertical
(MHz) 5460.00 5460.00 Test c Frequency	(dBuV/m) 36.87 36.36 hannel Read Level	31.99 31.99 Antenna	9.16 9.16 Highest Cable	Factor (dB) 40.23 40.23 Preamp	(dBuV/m) 37.79 37.28 Level	(dBuV/m) 74.00 74.00 vel Limit Line	Limit (dB) -36.21 -36.72 Av Over	Horizontal Vertical erage

### 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.





### 802.11n-HT20

Test c	hannel		Lowest		Le	vel	F	Peak
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	36.54	30.72	8.54	40.67	35.13	74.00	-38.87	Horizontal
4500.00	38.98	30.72	8.54	40.67	37.57	74.00	-36.43	Vertical
Test c	hannel		Lowest		Le	vel	Av	erage
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	23.65	30.72	8.54	40.67	22.24	54.00	-31.76	Horizontal
4500.00	23.78	30.72	8.54	40.67	22.37	54.00	-31.63	Vertical
Test c	hannel		Highest			vel	F	Peak
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	35.87	31.99	9.16	40.23	36.79	74.00	-37.21	Horizontal
5460.00	35.28	31.99	9.16	40.23	36.20	74.00	-37.80	Vertical
Test c	hannel		Highest		Le	vel	Av	erage
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	25.34	31.99	9.16	40.23	26.26	54.00	-27.74	Horizontal
5460.00	25.74	31.99	9.16	40.23	26.66	54.00	-27.34	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.





### 802.11n-HT40

Test cl	hannel		Lowest		Le	vel	F	Peak
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	36.54	30.72	8.54	40.67	35.13	74.00	-38.87	Horizontal
4500.00	36.33	30.72	8.54	40.67	34.92	74.00	-39.08	Vertical
Test cl	hannel		Lowest		Le	vel	Av	erage
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	26.87	30.72	8.54	40.67	25.46	54.00	-28.54	Horizontal
4500.00	26.34	30.72	8.54	40.67	24.93	54.00	-29.07	Vertical
Test cl	hannel		Highest			vel	F	Peak
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	36.22	31.99	9.16	40.23	37.14	74.00	-36.86	Horizontal
5460.00	36.98	31.99	9.16	40.23	37.90	74.00	-36.10	Vertical
Test cl	hannel		Highest		Le	vel	Av	erage
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	26.58	31.99	9.16	40.23	27.50	54.00	-26.50	Horizontal
5460.00	23.65	31.99	9.16	40.23	24.57	54.00	-29.43	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.



### Band 4:

### 802.11a

Test cl	hannel		Lowest		Le	vel	F	Peak
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	44.25	31.78	9.15	40.18	45.00	74.00	-29.00	Horizontal
5460.00	44.98	31.99	9.16	40.23	45.90	74.00	-28.10	Horizontal
5350.00	44.32	31.78	9.15	40.18	45.07	74.00	-28.93	Vertical
5460.00	43.28	31.99	9.16	40.23	44.20	74.00	-29.80	Vertical
Test cl	hannel	Lowest			Le	vel	Av	erage
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	32.54	31.78	9.15	40.18	33.29	54.00	-20.71	Horizontal
5460.00	32.85	31.99	9.16	40.23	33.77	54.00	-20.23	Horizontal
5350.00	33.98	31.78	9.15	40.18	34.73	54.00	-19.27	Vertical
5460.00	31.21	31.99	9.16	40.23	32.13	54.00	-21.87	Vertical

### 802.11n-HT20

Test c	hannel		Lowest		Le	vel	F	Peak
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	44.25	31.78	9.15	40.18	45.00	74.00	-29.00	Horizontal
5460.00	44.36	31.99	9.16	40.23	45.28	74.00	-28.72	Horizontal
5350.00	43.58	31.78	9.15	40.18	44.33	74.00	-29.67	Vertical
5460.00	42.78	31.99	9.16	40.23	43.70	74.00	-30.30	Vertical
Test c	hannel		Lowest		Level		Av	erage
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	32.68	31.78	9.15	40.18	33.43	54.00	-20.57	Horizontal
5460.00	32.48	31.99	9.16	40.23	33.40	54.00	-20.60	Horizontal
5350.00	33.72	31.78	9.15	40.18	34.47	54.00	-19.53	Vertical
5460.00	33.16	31.99	9.16	40.23	34.08	54.00	-19.92	Vertical

### Remark:

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

<sup>2.</sup> The emission levels of other frequencies are very lower than the limit and not show in test report.





### 802.11n-HT40

Test c	hannel		Lowest		Le	vel	F	Peak
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	41.35	31.78	9.15	40.18	42.10	74.00	-31.90	Horizontal
5460.00	41.88	31.99	9.16	40.23	42.80	74.00	-31.20	Horizontal
5350.00	42.36	31.78	9.15	40.18	43.11	74.00	-30.89	Vertical
5460.00	42.78	31.99	9.16	40.23	43.70	74.00	-30.30	Vertical
Test c	hannel	Lowest			Le	vel	Av	erage
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	34.25	31.78	9.15	40.18	35.00	54.00	-19.00	Horizontal
5460.00	36.89	31.99	9.16	40.23	37.81	54.00	-16.19	Horizontal
5350.00	35.25	31.78	9.15	40.18	36.00	54.00	-18.00	Vertical
5460.00	34.98	31.99	9.16	40.23	35.90	54.00	-18.10	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.



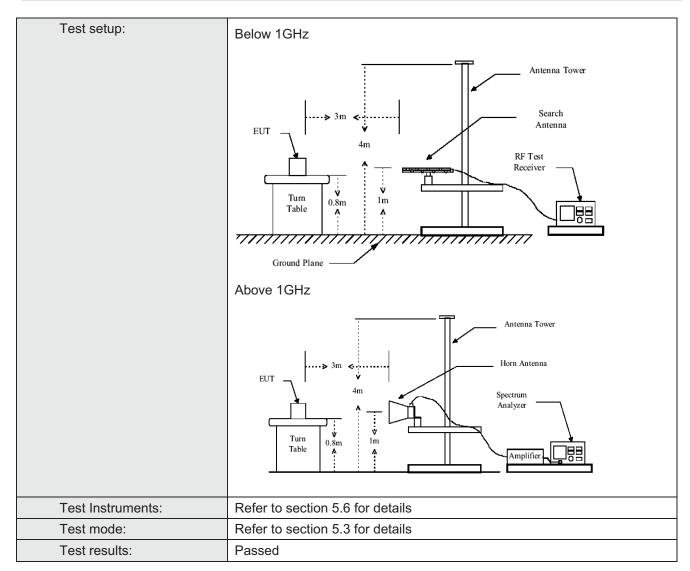


### 6.7.2 Unwanted Emissions in the Restricted Bands

Test Requirement:	FCC Part15 C S	Section 15.209 a	and 15.205								
Test Method:	FCC Part15 C Section 15.209 and 15.205  ANSI C63.10: 2009										
Test Frequency Range:	30MHz to 40GH	lz									
Test site:	Measurement D	istance: 3m									
Receiver setup:											
. 10001101 00144	Above 1GHz Peak 1MHz 3MHz Peak Value										
	30MHz-1GHz	Quasi-peak	100kHz	300kHz	Quasi-peak Value						
	Above 1GHz	Peak Value									
Limit:											
	Freque	ncy	Limit (dBuV/	m @3m)	Remark						
	30MHz-8	8MHz	40.0	)	Quasi-peak Value						
	88MHz-21	Quasi-peak Value									
	216MHz-9		46.0		Quasi-peak Value						
	960MHz-	1GHz	54.0	)	Quasi-peak Value						
	Freque	ncv	Limit (dBn	n/MHz)	Remark						
		_	68.2	•	Peak Value						
	Above 1	GHz	54.0		Average Value						
Test Procedure:	The EUT we the ground determine to the EUT we determine th	RP[dBm] + 95.2=  ras placed on the at a 3 meter cathe position of the ras set 3 meters	ne top of a roumber. The the highest rough	otating table table was re adiation. the interfe	e 0.8 meters above otated 360 degrees to rence-receiving able-height antenna						
	ground to de horizontal a measurement of the second of the measurement of the second o	letermine the mand vertical polarit. uspected emissive antenna was a table was turreding. ceiver system vertical table with I sion level of the ed, then testing ould be reported	naximum valuerizations of a circument to he he to he t	ue of the fid the antennal T was arrar ights from legrees to 3 eak Detect old Mode. Ik mode was opped and the emiss by one using	is 10dB lower than the the peak values of ions that did not have g peak, quasi-peak or						





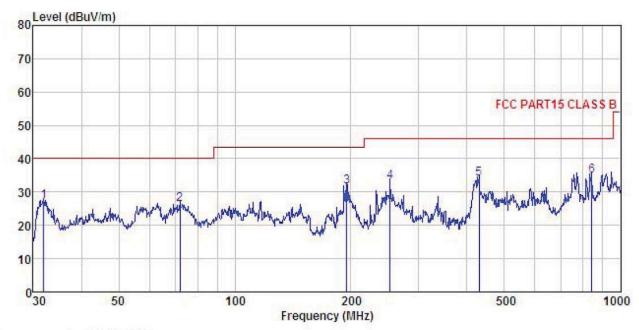






### **Below 1GHz**

#### Horizontal:



Site

: 3m chamber : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL : 15.6" Android non-touch LCD Media Player : DT156-AS4-720 : 5G-WIFI mode Condition

EUT

Model Test mode Power Rating : AC120V/60Hz

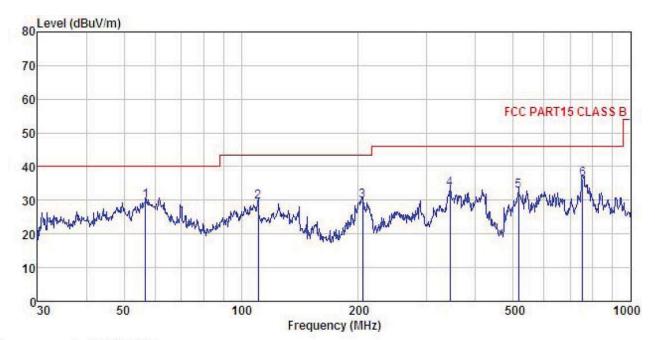
Environment : Temp:25.5°C Huni:55% 101KPa Test Engineer: Viki REMARK :

Freq								Remark
MHz	dBu∇	<u>dB</u> /m	<u>d</u> B	<u>dB</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>dB</u>	
31.955	44.27	12.32	0.45	29.97	27.07	40.00	-12.93	QP
72.084	47.03	8.26	0.80	29.70	26.39	40.00	-13.61	QP
195.137	48.49	10.57	1.37	28.86	31.57	43.50	-11.93	QP
252.948	47.76	12.06	1.63	28.53	32.92	46.00	-13.08	QP
429.523	45.02	15.51	2.20	28.83	33.90	46.00	-12.10	QP
842.130	39.21	20.51	3.24	28.03	34.93	46.00	-11.07	QP
	MHz 31. 955 72. 084 195. 137 252. 948 429. 523	MHz dBuV  31.955 44.27 72.084 47.03 195.137 48.49 252.948 47.76 429.523 45.02	Freq Level Factor  MHz dBuV dB/m  31.955 44.27 12.32 72.084 47.03 8.26 195.137 48.49 10.57 252.948 47.76 12.06 429.523 45.02 15.51	Freq Level Factor Loss  MHz dBuV dB/m dB  31.955 44.27 12.32 0.45 72.084 47.03 8.26 0.80 195.137 48.49 10.57 1.37 252.948 47.76 12.06 1.63 429.523 45.02 15.51 2.20	Freq Level Factor Loss Factor  MHz dBuV dB/m dB dB  31.955 44.27 12.32 0.45 29.97 72.084 47.03 8.26 0.80 29.70 195.137 48.49 10.57 1.37 28.86 252.948 47.76 12.06 1.63 28.53 429.523 45.02 15.51 2.20 28.83	Freq Level Factor Loss Factor Level  MHz dBuV dB/m dB dB dBuV/m  31.955 44.27 12.32 0.45 29.97 27.07 72.084 47.03 8.26 0.80 29.70 26.39 195.137 48.49 10.57 1.37 28.86 31.57 252.948 47.76 12.06 1.63 28.53 32.92 429.523 45.02 15.51 2.20 28.83 33.90	Freq Level Factor Loss Factor Level Line  MHz dBuV dB/m dB dB dBuV/m dBuV/m  31.955 44.27 12.32 0.45 29.97 27.07 40.00 72.084 47.03 8.26 0.80 29.70 26.39 40.00 195.137 48.49 10.57 1.37 28.86 31.57 43.50 252.948 47.76 12.06 1.63 28.53 32.92 46.00 429.523 45.02 15.51 2.20 28.83 33.90 46.00	MHz         dBuV         dB/m         dB         dB         dBuV/m         dBuV/m <t< td=""></t<>





### Vertical:



Site : 3m chamber

: FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL : 15.6" Android non-touch LCD Media Player : DT156-AS4-720 Condition

EUT

Model Test mode : 5G-WIFI mode Power Rating : AC120V/60Hz

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

Freq						Limit Line	Over Limit	Remark
MHz	dBu∇	<u>dB</u> /π	₫B	<u>d</u> B	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>dB</u>	
56.792	45.93	12.91	0.66	29.79	29.71	40.00	-10.29	QP
110.569	45.80	12.15	1.05	29.45	29.55	43.50	-13.95	QP
204.955	46.56	10.74	1.41	28.80	29.91	43.50	-13.59	QP
344.386	45.90	14.20	1.92	28.55	33.47	46.00	-12.53	QP
515.437	42.30	16.89	2.45	29.00	32.64	46.00	-13.36	QP
752.743	42.28	19.48	3.05	28.46	36.35	46.00	-9.65	QP
	MHz 56. 792 110. 569 204. 955 344. 386 515. 437	Freq Level  MHz dBuV  56.792 45.93 110.569 45.80 204.955 46.56 344.386 45.90 515.437 42.30	Freq Level Factor  MHz dBuV dB/m  56.792 45.93 12.91 110.569 45.80 12.15 204.955 46.56 10.74 344.386 45.90 14.20 515.437 42.30 16.89	Freq Level Factor Loss  MHz dBuV dB/m dB  56.792 45.93 12.91 0.66 110.569 45.80 12.15 1.05 204.955 46.56 10.74 1.41 344.386 45.90 14.20 1.92 515.437 42.30 16.89 2.45	Freq         Level         Factor         Loss         Factor           MHz         dBuV         dB/m         dB         dB           56.792         45.93         12.91         0.66         29.79           110.569         45.80         12.15         1.05         29.45           204.955         46.56         10.74         1.41         28.80           344.386         45.90         14.20         1.92         28.55           515.437         42.30         16.89         2.45         29.00	MHz dBuV dB/m dB dB dBuV/m  56.792 45.93 12.91 0.66 29.79 29.71 110.569 45.80 12.15 1.05 29.45 29.55 204.955 46.56 10.74 1.41 28.80 29.91 344.386 45.90 14.20 1.92 28.55 33.47 515.437 42.30 16.89 2.45 29.00 32.64	Freq         Level         Factor         Loss Factor         Level         Line           MHz         dBuV         dB/m         dB         dB         dB dBuV/m         dBuV/m         dBuV/m           56.792         45.93         12.91         0.66         29.79         29.71         40.00           110.569         45.80         12.15         1.05         29.45         29.55         43.50           204.955         46.56         10.74         1.41         28.80         29.91         43.50           344.386         45.90         14.20         1.92         28.55         33.47         46.00           515.437         42.30         16.89         2.45         29.00         32.64         46.00	Freq Level Factor Loss Factor Level Line Limit  MHz dBuV dB/m dB dB dBuV/m dBuV/m dB  56.792 45.93 12.91 0.66 29.79 29.71 40.00 -10.29 110.569 45.80 12.15 1.05 29.45 29.55 43.50 -13.95 204.955 46.56 10.74 1.41 28.80 29.91 43.50 -13.59 344.386 45.90 14.20 1.92 28.55 33.47 46.00 -12.53 515.437 42.30 16.89 2.45 29.00 32.64 46.00 -13.36





### **Above 1GHz:**

#### Band 1:

		802.1	1a mode Lov	west chann	el (Peak Val	lue)		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360.00	45.66	39.23	13.84	41.34	57.39	68.20	-10.81	Vertical
10360.00	44.17	39.23	13.84	41.34	55.90	68.20	-12.30	Horizontal
		802.11	a mode Lowe	est channe	I (Average V	/alue)		
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
10360.00	32.59	39.23	13.84	41.34	44.32	54.00	-9.68	Vertical
10360.00	33.63	39.23	13.84	41.34	45.36	54.00	-8.64	Horizontal

	802.11a mode Middle channel (Peak Value)											
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization				
10400.00	44.69	39.36	13.85	41.27	56.63	68.20	-11.57	Vertical				
10400.00	44.93	39.36	13.85	41.27	56.87	68.20	-11.33	Horizontal				
		802.11	a mode Mido	de channe	(Average V	alue)						
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				
10400.00	34.58	39.36	13.85	41.27	46.52	54.00	-7.48	Vertical				
10400.00	35.06	39.36	13.85	41.27	47.00	54.00	-7.00	Horizontal				

	802.11a mode Highest channel (Peak Value)										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization			
10480.00	43.65	39.56	13.90	41.06	56.05	68.20	-12.15	Vertical			
10480.00	42.39	39.56	13.90	41.06	54.79	68.20	-13.41	Horizontal			
		802.11a	a mode High	est channe	I (Average \	/alue)					
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			
10480.00	33.17	39.56	13.90	41.06	45.57	54.00	-8.43	Vertical			
10480.00	32.55	39.56	13.90	41.06	44.95	54.00	-9.05	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.

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	802.11n20 mode Lowest channel (Peak Value)										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization			
10360.00	45.37	39.23	13.84	41.34	57.10	68.20	-11.10	Vertical			
10360.00	44.24	39.23	13.84	41.34	55.97	68.20	-12.23	Horizontal			
		802.11n2	20 mode Lov	vest chann	el (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			
10360.00	35.68	39.23	13.84	41.34	47.41	54.00	-6.59	Vertical			
10360.00	34.83	39.23	13.84	41.34	46.56	54.00	-7.44	Horizontal			

	802.11n20 mode Middle channel (Peak Value)										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization			
10400.00	45.68	39.36	13.85	41.27	57.62	68.20	-10.58	Vertical			
10400.00	44.24	39.36	13.85	41.27	56.18	68.20	-12.02	Horizontal			
		802.11n	20 mode Mic	ldle chann	el (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			
10400.00	35.65	39.36	13.85	41.27	47.59	54.00	-6.41	Vertical			
10400.00	34.87	39.36	13.85	41.27	46.81	54.00	-7.19	Horizontal			

	802.11n20 mode Highest channel (Peak Value)										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization			
10480.00	43.30	39.56	13.90	41.06	55.70	68.20	-12.50	Vertical			
10480.00	44.09	39.56	13.90	41.06	56.49	68.20	-11.71	Horizontal			
		802.11n2	20 mode Hig	hest chann	el (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			
10480.00	32.17	39.56	13.90	41.06	44.57	54.00	-9.43	Vertical			
10480.00	31.12	39.56	13.90	41.06	43.52	54.00	-10.48	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.

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	802.11n40 mode Lowest channel (Peak Value)										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization			
10380.00	43.29	39.29	13.84	41.31	55.11	68.20	-13.09	Vertical			
10380.00	44.53	39.29	13.84	41.31	56.35	68.20	-11.85	Horizontal			
		802.11n	40 mode Lov	vest chann	el (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			
10380.00	31.45	39.29	13.84	41.31	43.27	54.00	-10.73	Vertical			
10380.00	32.28	39.29	13.84	41.31	44.10	54.00	-9.90	Horizontal			

	802.11n40 mode Highest channel (Peak Value)										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization			
10460.00	43.21	39.54	13.88	41.17	55.46	68.20	-12.74	Vertical			
10460.00	42.26	39.54	13.88	41.17	54.51	68.20	-13.69	Horizontal			
		802.11n <sup>2</sup>	10 mode Hig	hest chann	el (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			
10460.00	33.28	39.54	13.88	41.17	45.53	54.00	-8.47	Vertical			
10460.00	32.23	39.54	13.88	41.17	44.48	54.00	-9.52	Horizontal			

### Remark:

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



### Band 4:

	802.11a mode Lowest channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
11490.00	43.63	40.25	13.82	40.75	56.95	68.20	-11.25	Vertical		
11490.00	43.15	40.25	13.82	40.75	56.47	68.20	-11.73	Horizontal		
		802.11	a mode Lowe	est channe	l (Average V	/alue)				
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		
11490.00	30.26	40.25	13.82	40.75	43.58	54.00	-10.42	Vertical		
11490.00	30.11	40.25	13.82	40.75	43.43	54.00	-10.57	Horizontal		

	802.11a mode Middle channel (Peak Value)										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization			
11570.00	43.29	40.17	13.78	40.91	56.33	68.20	-11.87	Vertical			
11570.00	43.32	40.17	13.78	40.91	56.36	68.20	-11.84	Horizontal			
		802.11	a mode Mido	dle channe	l (Average V	alue)					
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			
11570.00	31.29	40.17	13.78	40.91	44.33	54.00	-9.67	Vertical			
11570.00	30.24	40.17	13.78	40.91	43.28	54.00	-10.72	Horizontal			

	802.11a mode Highest channel (Peak Value)										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization			
11650.00	44.25	39.89	13.74	41.06	56.82	68.20	-11.38	Vertical			
11650.00	43.67	39.89	13.74	41.06	56.24	68.20	-11.96	Horizontal			
		802.11a	a mode High	est channe	I (Average \	/alue)					
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			
11650.00	33.53	39.89	13.74	41.06	46.10	54.00	-7.90	Vertical			
11650.00	31.27	39.89	13.74	41.06	43.84	54.00	-10.16	Horizontal			

### Remark:

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



	802.11n20 mode Lowest channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
11490.00	43.29	40.25	13.82	40.75	56.61	68.20	-11.59	Vertical		
11490.00	42.12	40.25	13.82	40.75	55.44	68.20	-12.76	Horizontal		
		802.11n2	20 mode Lov	vest chann	el (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		
11490.00	30.28	40.25	13.82	40.75	43.60	54.00	-10.40	Vertical		
11490.00	29.77	40.25	13.82	40.75	43.09	54.00	-10.91	Horizontal		

	802.11n20 mode Middle channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
11570.00	43.62	40.17	13.78	40.91	56.66	68.20	-11.54	Vertical		
11570.00	43.28	40.17	13.78	40.91	56.32	68.20	-11.88	Horizontal		
		802.11n	20 mode Mic	dle chann	el (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		
11570.00	30.27	40.17	13.78	40.91	43.31	54.00	-10.69	Vertical		
11570.00	30.41	40.17	13.78	40.91	43.45	54.00	-10.55	Horizontal		

	802.11n20 mode Highest channel (Peak Value)										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization			
11650.00	42.38	39.89	13.74	41.06	54.95	68.20	-13.25	Vertical			
11650.00	42.74	39.89	13.74	41.06	55.31	68.20	-12.89	Horizontal			
		802.11n2	20 mode Hig	hest chann	el (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			
11650.00	32.65	39.89	13.74	41.06	45.22	54.00	-8.78	Vertical			
11650.00	30.48	39.89	13.74	41.06	43.05	54.00	-10.95	Horizontal			

### Remark:

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





802.11n40 mode Lowest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
11510.00	41.27	40.26	13.83	40.77	54.59	68.20	-13.61	Vertical
11510.00	42.83	40.26	13.83	40.77	56.15	68.20	-12.05	Horizontal
802.11n40 mode Lowest channel (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
11510.00	29.67	40.26	13.83	40.77	42.99	54.00	-11.01	Vertical
11510.00	29.46	40.26	13.83	40.77	42.78	54.00	-11.22	Horizontal

802.11n40 mode Highest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
11590.00	41.51	40.08	13.77	40.95	54.41	68.20	-13.79	Vertical
11590.00	42.35	40.08	13.77	40.95	55.25	68.20	-12.95	Horizontal
802.11n40 mode Highest channel (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
11590.00	29.33	40.08	13.77	40.95	42.23	54.00	-11.77	Vertical
11590.00	29.75	40.08	13.77	40.95	42.65	54.00	-11.35	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.





# 6.8 Frequency stability

Test Requirement:	FCC Part15 E Section 15.407 (g)			
Limit:	Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.			
Test setup:	Spectrum analyzer  EUT  Att.  Variable Power Supply  Note: Measurement setup for testing on Antenna connector			
Test procedure:	<ol> <li>The EUT is installed in an environment test chamber with external power source.</li> <li>Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT.</li> <li>A sufficient stabilization period at each temperature is used prior to each frequency measurement.</li> <li>When temperature is stabled, measure the frequency stability.</li> <li>The test shall be performed under -30 to 50 centigrade and 85 to 115 percent of the nominal voltage. Change setting of chamber and external power source to complete all conditions.</li> </ol>			
Test Instruments:	Refer to section 5.6 for details			
Test mode:	Refer to section 5.3 for details, and all channels have been tested, only shows the worst channel data in this report.			
Test results:	Refer to FCC ID: 2AB6Z-1859ATMB			