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:	Wireless Module - Android
Model No.:	DTCOMM-DL, 410-BWRTL87000
FCC ID:	2AB6Z-DTCOMM-DL
Applicable standards:	FCC CFR Title 47 Part 15 Subpart B
Date of sample receipt:	29 Jul., 2014
Date of Test:	29 Jul., to 11 Aug., 2014
Date of report issued:	11 Aug., 2014
Test Result:	Pass*

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

Authorized Signature:

Bruce Zhang
Laboratory Manager

2 Version

Version No.	Date	Description
00	*11 Aug., 2014*	*Original*

Prepared by: Luna Gao ***Date:*** *11 Aug., 2014*

Report Clerk

Reviewed by: Wimer Zhang ***Date:*** *11 Aug., 2014*

Project Engineer

3 Contents

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4 Test Summary

Test Item	Section in CFR 47	Result
Conducted Emission	Part15.107	Pass
Radiated Emission	Part15.109	Pass

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

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 / Factory:	HUNG WAI ELECTRONICS (HUIZHOU) LTD.
Address of Manufacturer / Factory:	3rd 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:	Wireless Module - Android
Model No.:	DTCOMM-DL, 410-BWRTL87000
Power supply:	DC 5V by USB Port
Remark:	The Model: DTCOMM-DL and 410-BWRTL87000 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.

5.3 Test Mode

Operating mode	Detail description
PC mode	Data communication with PC
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.	

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
DELL	PC	OPTIPLEX745	N/A	DoC
DELL	MONITOR	E178FPC	N/A	DoC
DELL	KEYBOARD	SK-8115	N/A	DoC
DELL	MOUSE	MOC5UO	N/A	DoC
HP	Printer	CB495A	05257893	DoC
MERCURY	Wireless router	MW150R	12922104015	FCC ID
MEIZU	Smart Phone	M040	040ACGDK6HA9	N/A

5.5 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.

5.6 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

5.7 Test Instruments list

Radiated Emission:

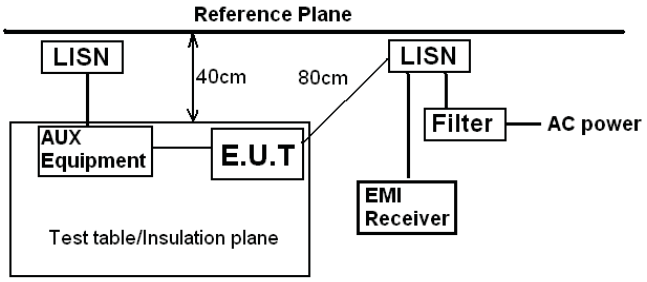
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	June 09 2014	June 08 2015
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	May 25 2014	May 24 2015
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	May 25 2014	May 24 2015
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
5	Amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	Apr. 01 2014	Mar. 31 2015
6	Amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	June 09 2014	June 08 2015
7	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Apr. 01 2014	Mar. 31 2015
8	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2014	Mar. 29 2015
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	May. 25 2014	May. 24 2015
12	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	May 25 2014	May. 24 2015
13	Loop antenna	Laplace instrument	RF300	EMC0701	Aug 12 2013	Aug 12 2014
14	Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	May. 25 2014	May. 24 2015
15	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	May. 25 2014	May. 24 2015

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	June 09 2014	June 08 2015
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	May 25 2014	May. 24 2015
3	LISN	CHASE	MN2050D	CCIS0074	Apr. 01 2014	Mar. 31 2015
4	Coaxial Cable	CCIS	N/A	CCIS0086	Apr. 01 2014	Mar. 31 2015

6 Test results and Measurement Data

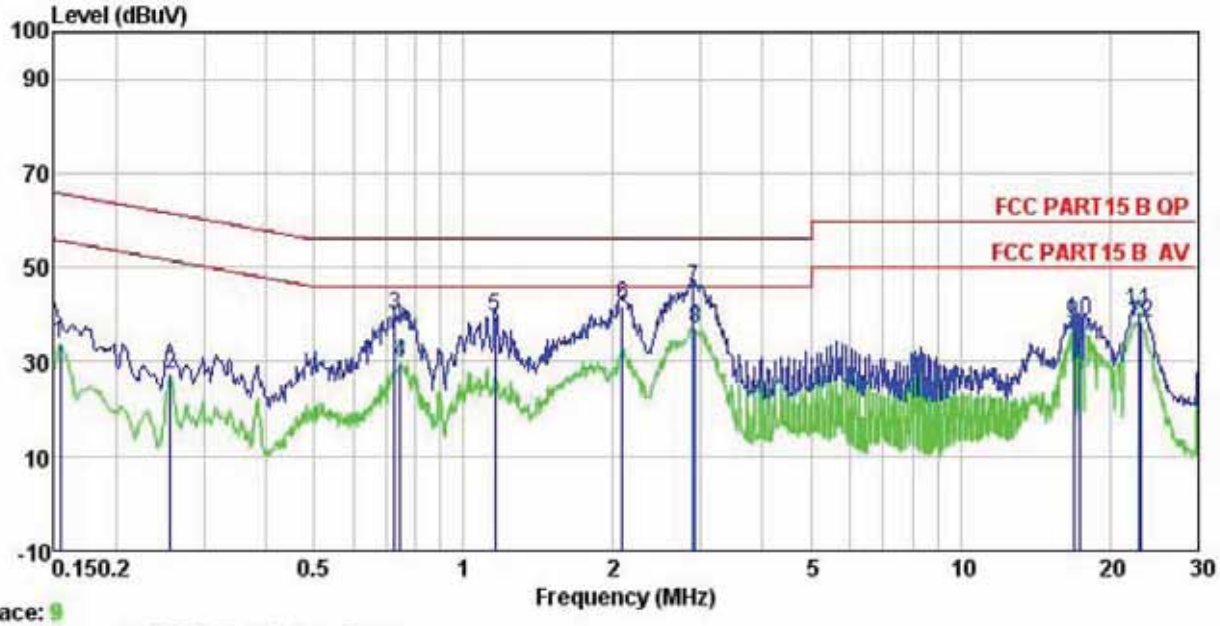
6.1 Conducted Emission

Test Requirement:	FCC Part15 B Section 15.107
Test Method:	ANSI C63.4:2003
Test Frequency Range:	150kHz to 30MHz
Class / Severity:	Class B
Receiver setup:	RBW=9kHz, VBW=30kHz
Limit:	Frequency range (MHz) / Limit (dBμV): Quasi-peak / Average 0.15-0.5: 66 to 56* / 56 to 46* 0.5-5: 56 / 46 0.5-30: 60 / 50
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 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 refers to the block diagram of the test setup and photographs). 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 C63.4: 2003 on conducted measurement.
Test environment:	Temp.: 23 °C / Humid.: 56% / Press.: 1 01kPa
Measurement Record:	Uncertainty: 3.28dB
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement data:

PC Mode

Line:

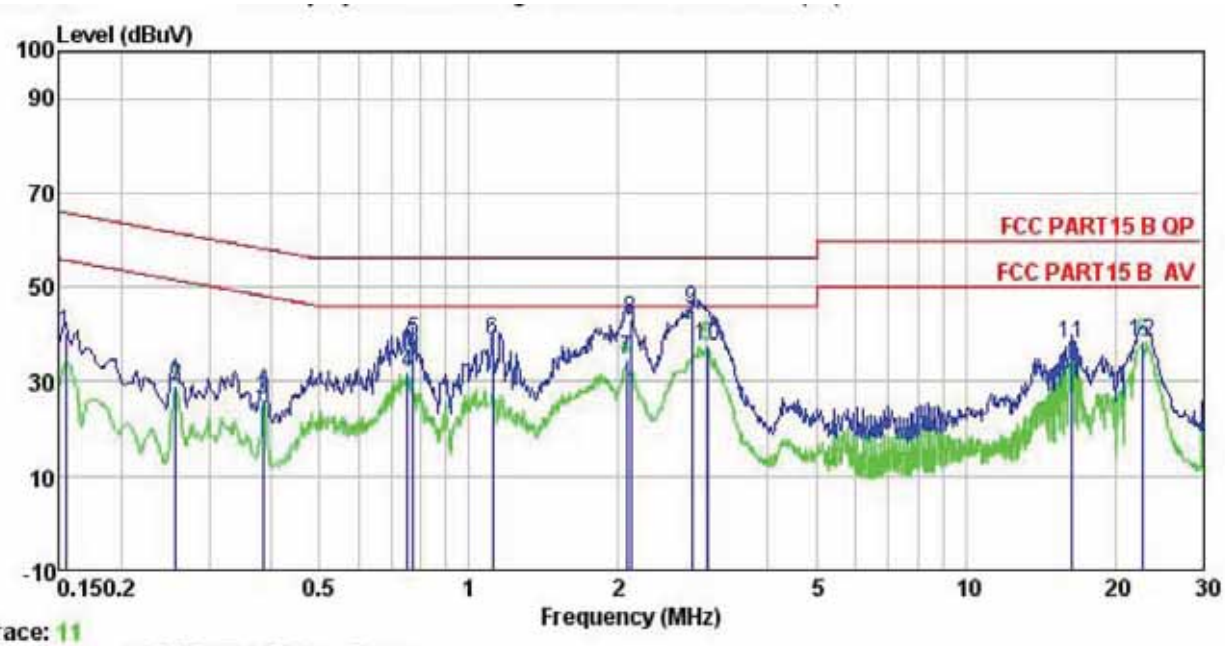


Trace: 9

Site : CCIS Shielding Room
Condition : FCC PART15 B QP LISN LINE
EUT : Wireless Module
Model : DTCOMM-DL
Test Mode : PC Mode
Power Rating : AC 120V/60Hz
Environment : Temp: 23 ℃ Huni:56% Atmos:101KPa
Test Engineer: Garen
Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.154	22.90	0.27	10.78	33.95	55.78	-21.83	Average
2	0.258	16.39	0.27	10.75	27.41	51.51	-24.10	Average
3	0.727	28.92	0.22	10.78	39.92	56.00	-16.08	QP
4	0.747	18.64	0.23	10.79	29.66	46.00	-16.34	Average
5	1.160	28.37	0.25	10.89	39.51	56.00	-16.49	QP
6	2.088	30.92	0.26	10.96	42.14	56.00	-13.86	QP
7	2.900	34.31	0.27	10.92	45.50	56.00	-10.50	QP
8	2.931	25.86	0.27	10.92	37.05	46.00	-8.95	Average
9	16.928	26.68	0.33	10.91	37.92	50.00	-12.08	Average
10	17.383	27.29	0.33	10.91	38.53	60.00	-21.47	QP
11	22.896	29.34	0.45	10.89	40.68	60.00	-19.32	QP
12	23.018	27.12	0.45	10.89	38.46	50.00	-11.54	Average

Neutral:



Trace: 11

Site : CCIS Shielding Room
Condition : FCC PART15 B QP LISN NEUTRAL
EUT : Wireless Module
Model : DTCOMM-DL
Test Mode : PC Mode
Power Rating : AC 120V/60Hz
Environment : Temp: 23 'C Huni:56% Atmos:101KPa
Test Engineer: Garen
Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.154	29.48	0.25	10.78	40.51	65.78	-25.27	QP
2	0.258	17.92	0.26	10.75	28.93	51.51	-22.58	Average
3	0.385	15.29	0.25	10.72	26.26	48.17	-21.91	Average
4	0.751	20.69	0.19	10.79	31.67	46.00	-14.33	Average
5	0.771	27.64	0.19	10.80	38.63	56.00	-17.37	QP
6	1.117	27.47	0.23	10.88	38.58	56.00	-17.42	QP
7	2.077	23.52	0.29	10.96	34.77	46.00	-11.23	Average
8	2.121	31.93	0.29	10.95	43.17	56.00	-12.83	QP
9	2.809	34.05	0.29	10.93	45.27	56.00	-10.73	QP
10	3.025	26.34	0.29	10.92	37.55	46.00	-8.45	Average
11	16.398	26.73	0.25	10.91	37.89	60.00	-22.11	QP
12	22.775	27.15	0.39	10.89	38.43	50.00	-11.57	Average

Notes:
1. The following Quasi-Peak and Average measurements were performed on the EUT
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

6.2 Radiated Emission

Test Requirement:	FCC Part15 B Section 15.109
Test Method:	ANSI C63.4:2003
Test Frequency Range:	30MHz to 6000MHz
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver setup:

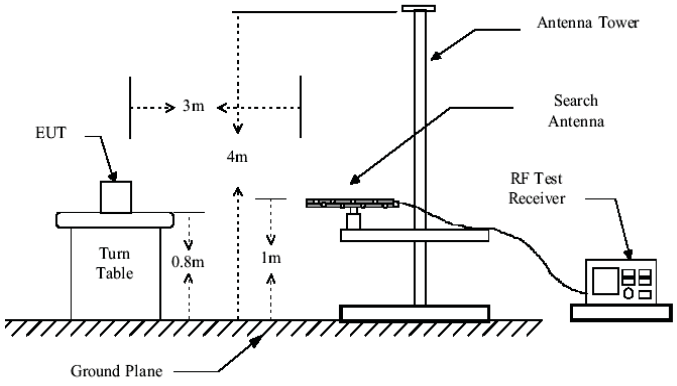
Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	120 kHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	Peak	1MHz	10Hz	Average Value

Limit:

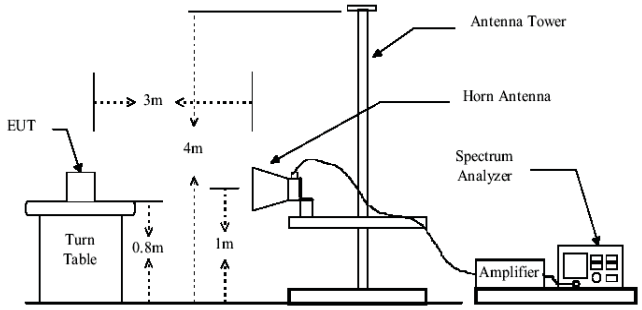
Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test setup:

Below 1GHz



Above 1GHz

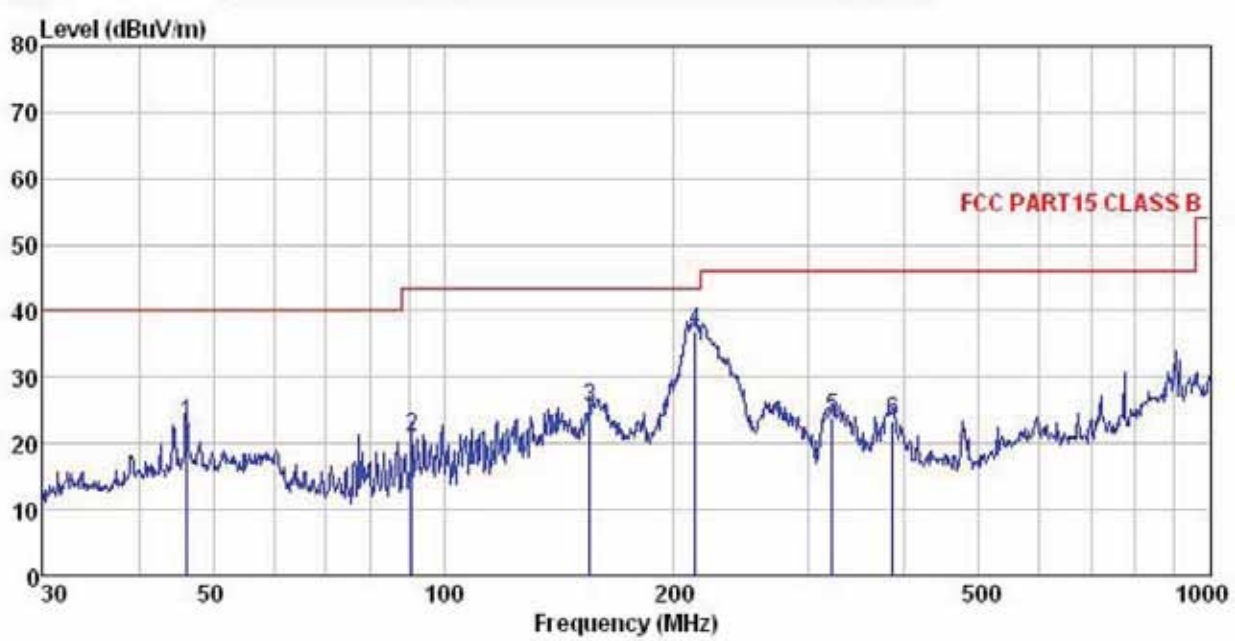


Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.					
Test environment:	Temp.:	25 °C	Humid.:	55%	Press.:	1 01kPa
Measurement Record:	Uncertainty: 4.88dB					
Test Instruments:	Refer to section 5.7 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Passed					

Measurement Data

PC Mode

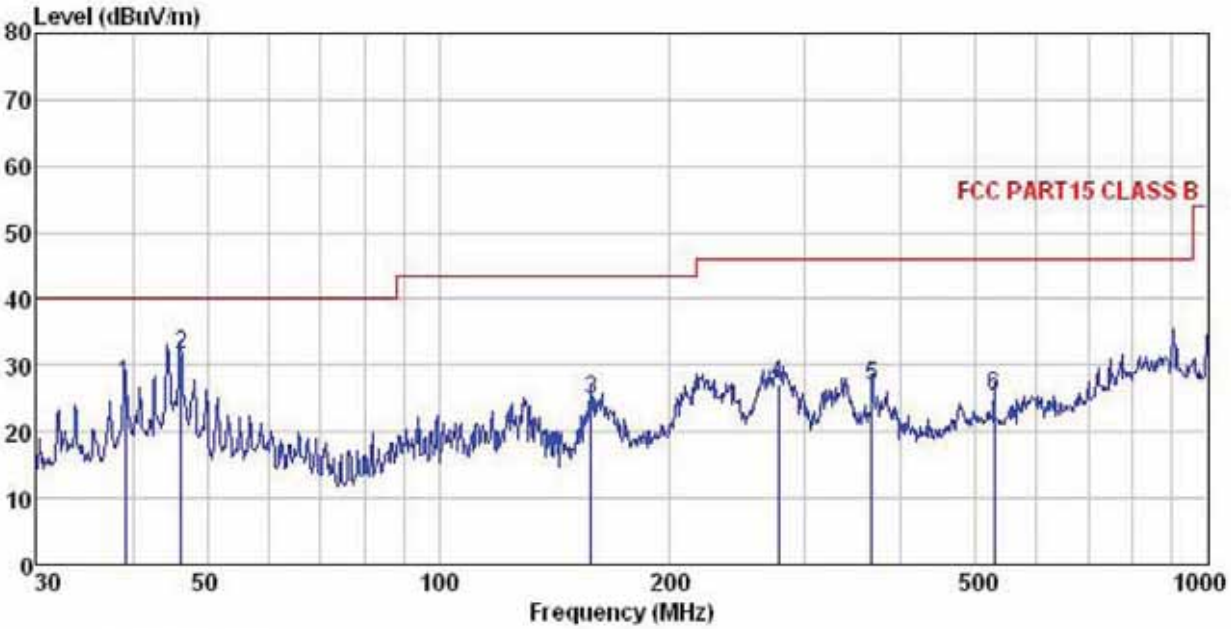
Horizontal:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
EUT : Wireless Module - Android
Model : DTCOMM-D
Test mode : PC Mode
Power Rating : AC120V / 60Hz
Environment : Temp:25.5'C Huni:55%
Test Engineer: Garen
REMARK :

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	46.178	38.74	13.48	0.57	29.85	22.94	40.00	-17.06	QP
2	90.855	37.68	12.07	0.91	29.57	21.09	43.50	-22.41	QP
3	155.364	44.64	8.48	1.33	29.17	25.28	43.50	-18.22	QP
4	213.015	53.21	10.97	1.45	28.75	36.88	43.50	-6.62	QP
5	321.061	37.23	13.40	1.84	28.50	23.97	46.00	-22.03	QP
6	385.281	35.30	14.73	2.07	28.72	23.38	46.00	-22.62	QP

Vertical:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL
EUT : Wireless Module - Android
Model : DTCOMM-D
Test mode : PC Mode
Power Rating : AC120V / 60Hz
Environment : Temp:25.5'C Huni:55%
Test Engineer: Garen
REMARK :

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	39.162	43.30	13.34	0.51	29.91	27.24	40.00	-12.76	QP
2	46.178	47.33	13.48	0.57	29.85	31.53	40.00	-8.47	QP
3	158.112	44.09	8.58	1.33	29.15	24.85	43.50	-18.65	QP
4	277.094	41.41	12.59	1.70	28.49	27.21	46.00	-18.79	QP
5	365.539	38.89	14.48	2.00	28.63	26.74	46.00	-19.26	QP
6	528.246	34.83	17.15	2.48	29.04	25.42	46.00	-20.58	QP

Above 1 GHz Data

Note: The emissions above 1 GHz were not shown in report because of the emissions above 1 GHz just were noise floor.

7 Test Setup Photo

Radiated Emission

Conducted Emission

8 EUT Constructional Details

Reference to the test report No. CCIS14070062001

------End of report------