

FCC REPORT

Applicant: B mobile HK Limited

Address of Applicant: Ground floor, 144 Un Chau Street, Sham Shui Po, Hong Kong

Equipment Under Test (EUT)

Product Name: Qwerty feature phone

Model No.: QS820

FCC ID: ZSW-QS820

Applicable standards: FCC CFR Title 47 Part 15 Subpart B

Date of sample receipt: 28 Apr., 2014

Date of Test: 29 Apr., to 08 May 2014

Date of report issued: 09 May 2014

Test Result: Pass *

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

Authorized Signature:

A blue circular stamp with the text "SHENZHEN ZHONGJIAN NANFANG TESTING CO., LTD." around the perimeter and "CCIS" in the center. A handwritten signature in black ink is written over the stamp.

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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2 Version

Version No.	Date	Description
00	09 May 2014	Original

Prepared by:

Sera Xiang

Date:

09 May 2014

Report Clerk

Reviewed by:

Gaven Liu

Date:

09 May 2014

Project Engineer

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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:	B mobile HK Limited
Address of Applicant:	Ground floor, 144 Un Chau Street, Sham Shui Po, Hong Kong
Manufacturer/Factory:	Fortune Ship Technology (HK) Limited
Address of Manufacturer/Factory:	7th Floor, Kanghesheng Building, Chuangsheng Road 1#, Xili Town, Nanshan District, Shenzhen, China

5.2 General Description of E.U.T.

Product Name:	Qwerty feature phone
Model No.:	QS820
Power supply:	Rechargeable Li-ion Battery DC3.7V-850mAh
AC adapter :	Input:100-240V AC,50/60Hz 0.15A Output:5.0V DC MAX500mA

5.3 Test Mode

Operating mode	Detail description
PC mode	Keep the EUT in Downloading mode(Worst case)
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

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 our 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: 0755-23118282

Fax: 0755-23116366

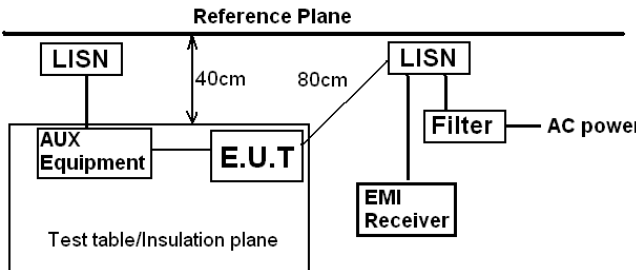
5.7 Test Instruments list

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 2013	June 08 2014
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	May 25 2013	May 24 2014
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	May 25 2013	May 24 2014
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
5	Coaxial Cable	CCIS	N/A	CCIS0016	Apr. 01 2014	Mar. 31 2015
6	Coaxial Cable	CCIS	N/A	CCIS0017	Apr. 01 2014	Mar. 31 2015
7	Coaxial cable	CCIS	N/A	CCIS0018	Apr. 01 2014	Mar. 31 2015
8	Coaxial Cable	CCIS	N/A	CCIS0019	Apr. 01 2014	Mar. 31 2015
9	Coaxial Cable	CCIS	N/A	CCIS0087	Apr. 01 2014	Mar. 31 2015
10	Amplifier(10kHz-1.3GHz)	HP	8447D	CCIS0003	Apr. 01 2014	Mar. 31 2015
11	Amplifier(1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	June 09 2013	June 08 2014
12	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Apr. 01 2014	Mar. 31 2015
13	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2014	Mar. 29 2015
14	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
15	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
16	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	May. 25 2013	May. 24 2014
17	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	Apr 01 2014	Mar. 31 2015
18	Loop antenna	Laplace instrument	RF300	EMC0701	Aug. 12 2013	Aug. 11 2014
19	Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	May. 25 2013	May. 24 2014
20	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	May. 25 2013	May. 24 2014

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 2013	June 08 2014
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	May 25 2013	May. 24 2014
3	LISN	CHASE	MN2050D	CCIS0074	Apr. 01 2014	Mar. 31 2015
4	Coaxial Cable	CCIS	N/A	CCIS0086	Apr. 01 2014	Mar. 31 2015

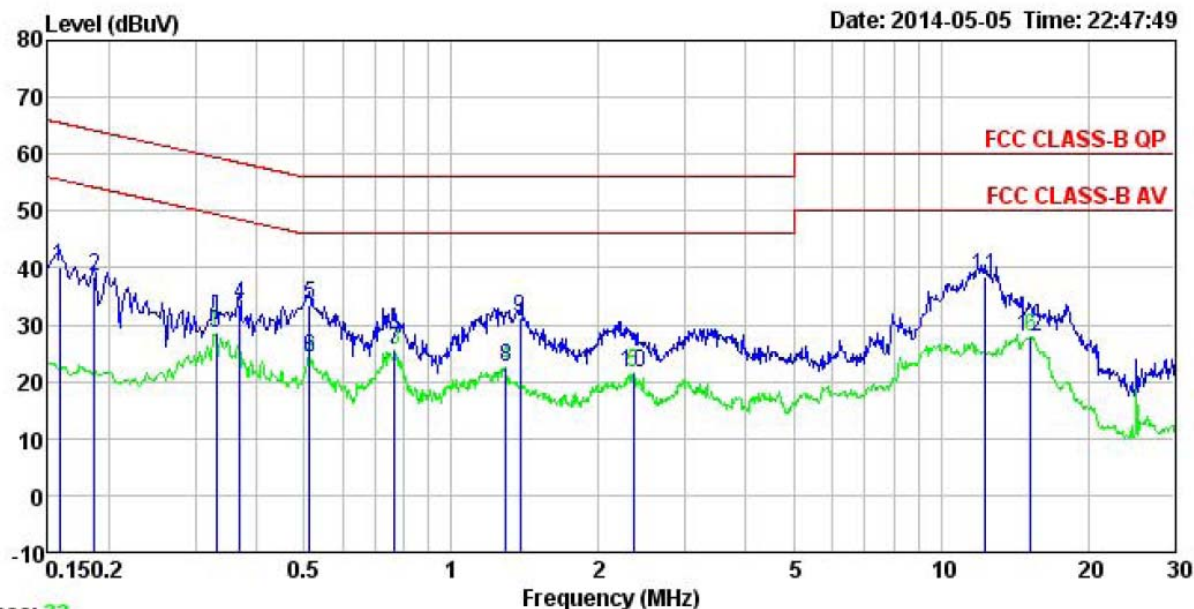
6 Test results and Measurement Data

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:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>0.5-30</td><td>60</td><td>50</td></tr></table>			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
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:	Reference Plane  Remark: E.U.T: Equipment Under Test LISN: Line Impedance 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%														
Measurement Record:			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:

Line:

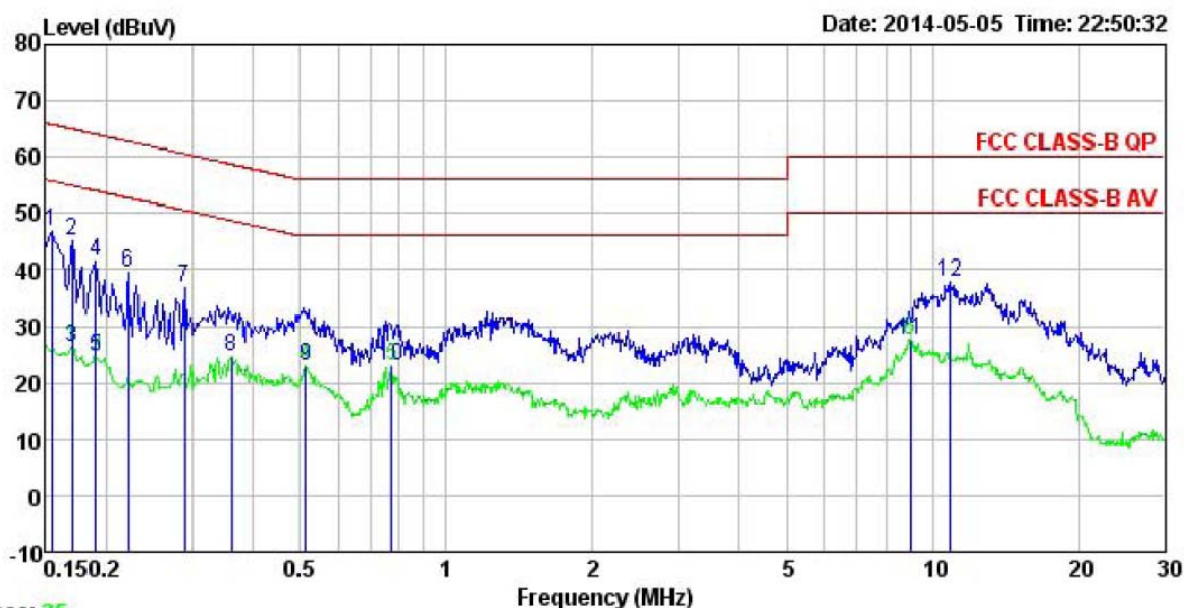


Trace: 33

Site : CCIS Shielding Room
 Condition : FCC CLASS-B QP LISN LINE
 EUT : Qwerty feature phone
 Model : QS820
 Test Mode : PC
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi: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	0.158	29.00	0.27	10.78	40.05	65.56	-25.51	QP
2	0.186	27.36	0.28	10.76	38.40	64.20	-25.80	QP
3	0.330	17.40	0.27	10.73	28.40	49.44	-21.04	Average
4	0.369	22.59	0.27	10.73	33.59	58.52	-24.93	QP
5	0.513	22.63	0.28	10.76	33.67	56.00	-22.33	QP
6	0.513	13.28	0.28	10.76	24.32	46.00	-21.68	Average
7	0.767	14.44	0.23	10.80	25.47	46.00	-20.53	Average
8	1.296	11.44	0.25	10.90	22.59	46.00	-23.41	Average
9	1.381	20.19	0.25	10.91	31.35	56.00	-24.65	QP
10	2.358	10.27	0.26	10.94	21.47	46.00	-24.53	Average
11	12.253	27.35	0.31	10.92	38.58	60.00	-21.42	QP
12	15.226	16.76	0.32	10.90	27.98	50.00	-22.02	Average

Neutral:



Trace: 35

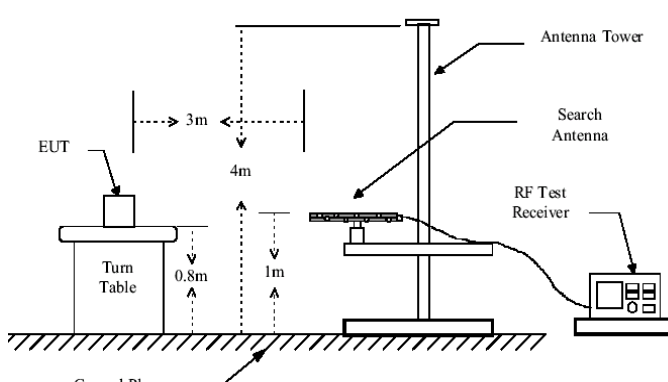
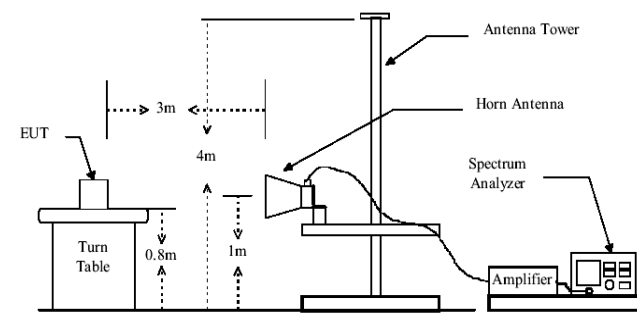
Site : CCIS Shielding Room
Condition : FCC CLASS-B QP LISN NEUTRAL
EUT : Qwerty feature phone
Model : QS820
Test Mode : PC
Power Rating : AC 120V/60Hz
Environment : Temp: 23 °C Humi:56% Atmos:101KPa
Test Engineer: Garen
Remark :

	Freq	Read	LISN	Cable	Level	Limit	Over	
	MHz	Level	Factor	Loss	dBuV	Line	Limit	Remark
		dBuV	dB	dB		dBuV	dB	
1	0.154	35.73	0.25	10.78	46.76	65.78	-19.02	QP
2	0.170	34.12	0.25	10.77	45.14	64.94	-19.80	QP
3	0.170	15.32	0.25	10.77	26.34	54.94	-28.60	Average
4	0.190	30.63	0.25	10.76	41.64	64.02	-22.38	QP
5	0.190	13.60	0.25	10.76	24.61	54.02	-29.41	Average
6	0.222	28.33	0.25	10.75	39.33	62.74	-23.41	QP
7	0.289	25.84	0.26	10.74	36.84	60.54	-23.70	QP
8	0.361	13.68	0.25	10.73	24.66	48.69	-24.03	Average
9	0.513	11.70	0.28	10.76	22.74	46.00	-23.26	Average
10	0.771	11.77	0.19	10.80	22.76	46.00	-23.24	Average
11	9.011	16.21	0.25	10.90	27.36	50.00	-22.64	Average
12	10.905	26.54	0.25	10.93	37.72	60.00	-22.28	QP

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

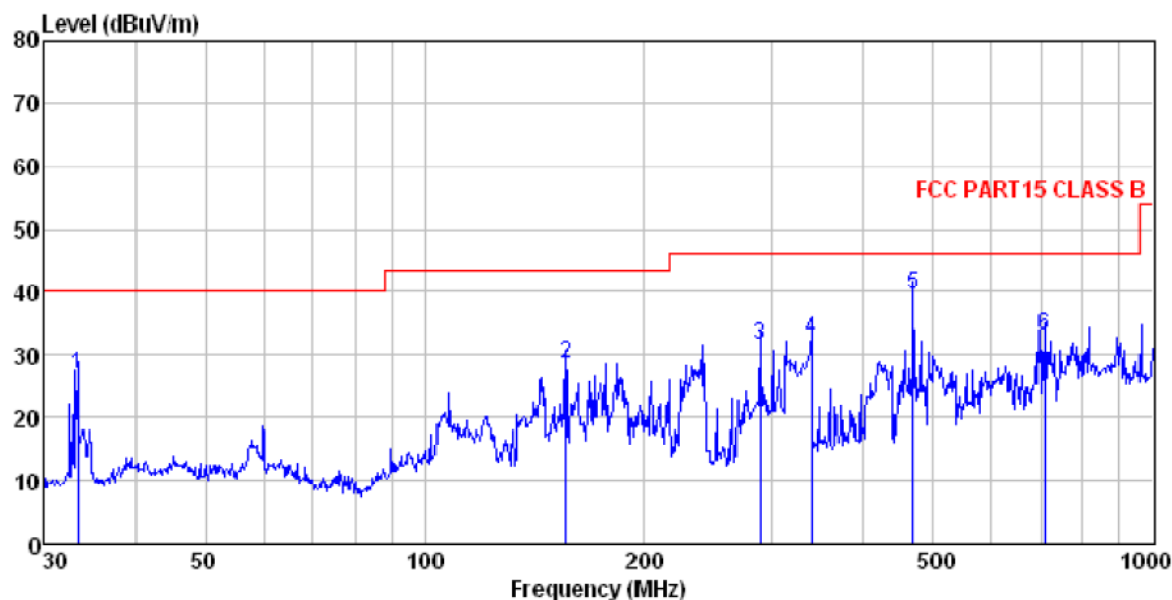
Test Requirement:	FCC Part15 B Section 15.109				
Test Method:	ANSI C63.4:2003				
Test Frequency Range:	30MHz to 6000MHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120 kHz	300KHz	Quasi-peak Value
	Above 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				
					
Test setup:	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 chamber. 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

Below 1GHz

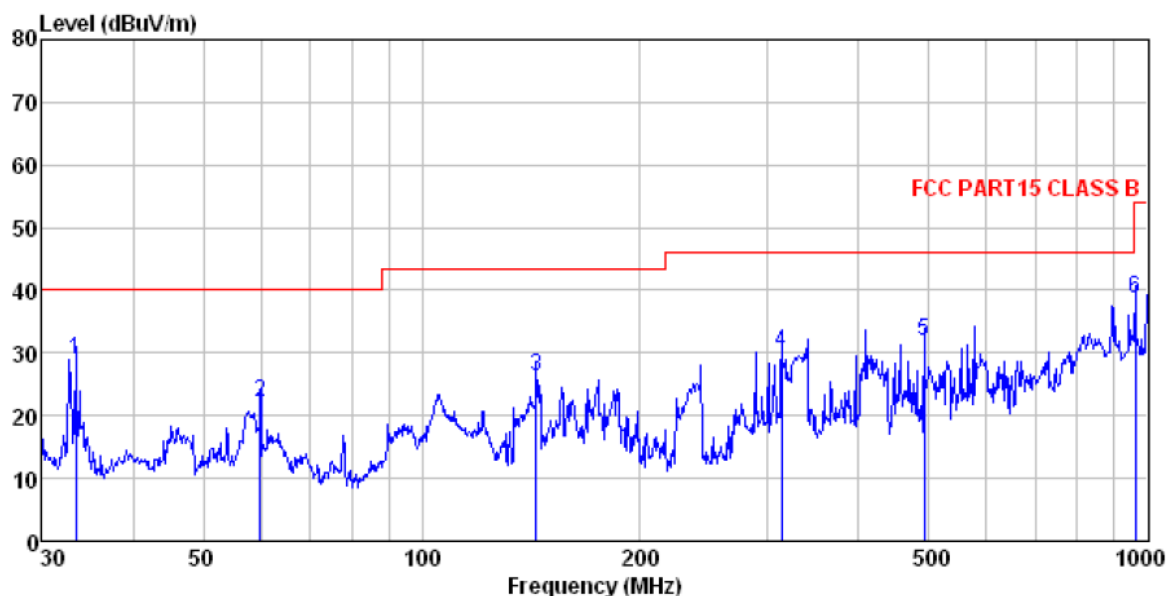
Horizontal:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
EUT : Qwerty feature phone
Model : QS820
Test mode : PC MODE
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Garen
REMARK :

	Freq	ReadAntenna	Cable	Preamp	Limit	Over	
		Level	Factor	Loss	Factor	Level	Line
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m
1	33.328	44.02	12.31	0.46	29.96	26.83	40.00
2	155.910	47.98	8.51	1.33	29.17	28.65	43.50
3	287.990	45.53	12.84	1.74	28.47	31.64	46.00
4	339.589	44.89	14.12	1.91	28.54	32.38	46.00
5	468.876	50.46	15.83	2.31	28.90	39.70	46.00
6	709.182	39.87	18.91	2.94	28.63	33.09	46.00

Vertical:

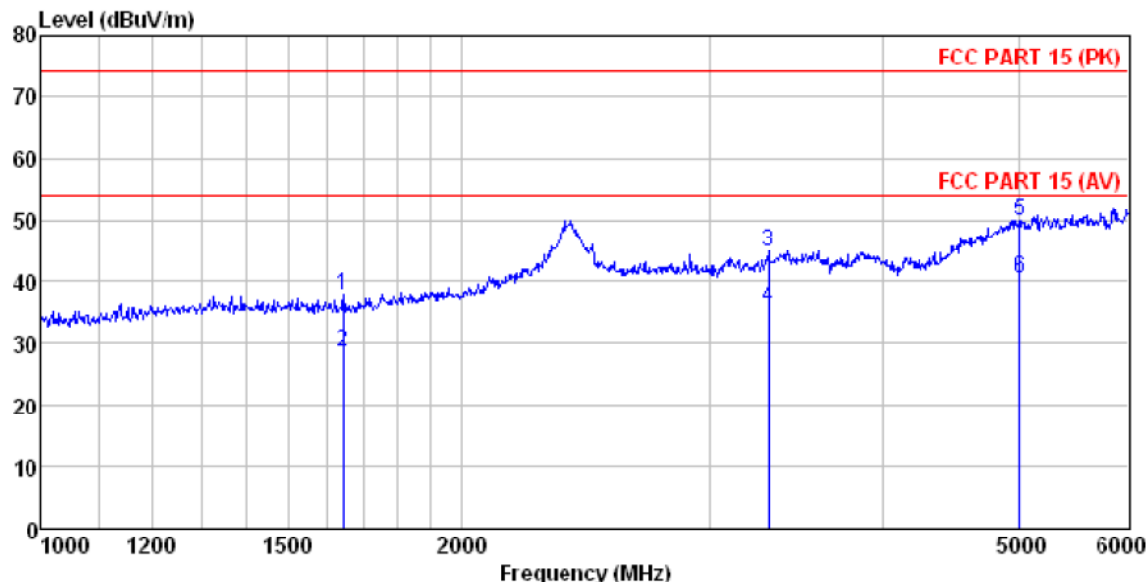


Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL
EUT : Qwerty feature phone
Model : QS820
Test mode : PC MODE
Power Rating : AC120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Garen
REMARK :

	Freq	Read	Antenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	dBuV/m	dBuV/m	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	33.328	46.08	12.31	0.46	29.96	28.89	40.00	-11.11	QP
2	59.859	38.64	12.71	0.69	29.77	22.27	40.00	-17.73	QP
3	143.830	45.95	8.22	1.28	29.25	26.20	43.50	-17.30	QP
4	313.276	43.63	13.24	1.82	28.48	30.21	46.00	-15.79	QP
5	492.469	42.13	16.39	2.38	28.94	31.96	46.00	-14.04	QP
6	962.162	41.37	21.49	3.47	27.65	38.68	54.00	-15.32	QP

Above 1GHz

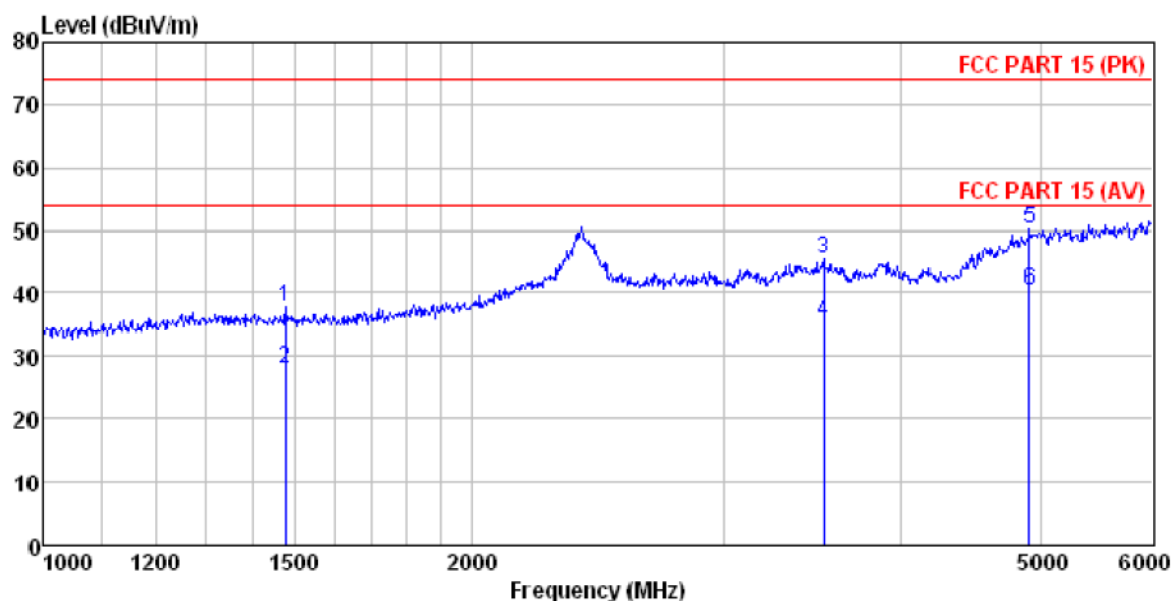
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 EUT : Qwerty feature phone
 Model : QS820
 Test mode : PC mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Garen
 Remark :

	Freq	ReadAntenna	Cable	Preamp	Limit	Over	
		Level	Factor	Loss	Factor	Level	Line
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m
1	1642.661	49.78	24.86	4.23	40.97	37.90	74.00
2	1642.661	40.48	24.86	4.23	40.97	28.60	54.00
3	3315.761	50.01	28.33	6.22	39.62	44.94	74.00
4	3315.761	40.89	28.33	6.22	39.62	35.82	54.00
5	5006.774	49.03	31.85	9.12	39.99	50.01	74.00
6	5006.774	39.56	31.85	9.12	39.99	40.54	54.00

Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 EUT : Qwerty feature phone
 Model : QS820
 Test mode : PC mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Garen
 Remark :

	Freq	Read	Antenna	Cable	Preamplifier	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	dBuV/m	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1477.873	49.61	25.35	3.85	40.95	37.86	74.00	-36.14	Peak
2	1477.873	39.72	25.35	3.85	40.95	27.97	54.00	-26.03	Average
3	3530.356	49.97	29.01	6.21	39.83	45.36	74.00	-28.64	Peak
4	3530.356	40.17	29.01	6.21	39.83	35.56	54.00	-18.44	Average
5	4917.863	49.53	31.61	9.02	40.10	50.06	74.00	-23.94	Peak
6	4917.863	39.79	31.61	9.02	40.10	40.32	54.00	-13.68	Average