

# FCC REPORT

**Applicant:** GRUN MOBILE LLC

**Address of Applicant:** 2315 nw 107th Ave SUITE I M02 Mailbox # 33 Doral 33172,  
United States

**Equipment Under Test (EUT)**

Product Name: mobile phone

Model No.: U452

**FCC ID:** 2ACFG-U452

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart B

**Date of sample receipt:** 10 Nov., 2014

**Date of Test:** 11 Nov., to 21 Nov., 2014

**Date of report issued:** 24 Nov., 2014

**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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## 2 Version

Version No.	Date	Description
00	24 Nov., 2014	Original

Prepared by:

*Luna Gao*

Date:

24 Nov., 2014

**Report Clerk**

Reviewed by:

*Abomb Yang*

Date:

24 Nov., 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:	GRUN MOBILE LLC
Address of Applicant:	2315 nw 107th Ave SUITE I M02 Mailbox # 33 Doral 33172, United States
Manufacturer:	shenzhen tianruixiang communication equipment limited
Address of Manufacturer:	12F,Shenzhen science building, zhongshan university, xuefu road, Hi-tech park, nanshan district Shenzhen, Guangdong, China
Factory:	dongguan tianruixiang communication equipment limited
Address of Factory:	1,2,3F,B building,NO.1, keyuan 9 road, tangxia district dongguan, Guangdong, China

### 5.2 General Description of E.U.T.

Product Name:	mobile phone
Model No.:	U452
Power supply:	Rechargeable Li-ion Battery DC3.7V-1600mAh
AC adapter :	Input:100-240V AC, 50/60Hz 0.2A Output:5.0V DC, 1A

### 5.3 Test Mode

Operating mode	Detail description
PC mode	Keep the EUT in Downloading mode(Worst case)
Charging & Playing mode	Keep the EUT in Charging & Playing mode
Charging & FM mode	Keep the EUT in Charging & FM mode

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 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: 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	08-23-2014	08-22-2017
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	04-19-2014	04-19-2015
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	04-19-2014	04-19-2015
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
5	Coaxial Cable	CCIS	N/A	CCIS0016	04-01-2014	03-31-2015
6	Coaxial Cable	CCIS	N/A	CCIS0017	04-01-2014	03-31-2015
7	Coaxial cable	CCIS	N/A	CCIS0018	04-01-2014	03-31-2015
8	Coaxial Cable	CCIS	N/A	CCIS0019	04-01-2014	03-31-2015
9	Coaxial Cable	CCIS	N/A	CCIS0087	04-01-2014	03-31-2015
10	Amplifier(10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2014	03-31-2015
11	Amplifier(1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	06-09-2014	06-08-2015
12	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	04-01-2014	03-31-2015
13	Horn Antenna	ETS-LINDGREN	3160	GTS217	03-30-2014	03-29-2015
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	04-19-2014	04-19-2015
17	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	04-01-2014	03-31-2015
18	Loop antenna	Laplace instrument	RF300	EMC0701	04-01-2014	03-31-2015
19	Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	05-29-2014	05-28-2015
20	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	04-19-2014	04-19-2015

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	10-10-2012	10-09-2015
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	04-10-2014	04-09-2015
3	LISN	CHASE	MN2050D	CCIS0074	04-10-2014	04-10-2015
4	Coaxial Cable	CCIS	N/A	CCIS0086	04-01-2014	03-31-2015

## 6 Test results and Measurement Data

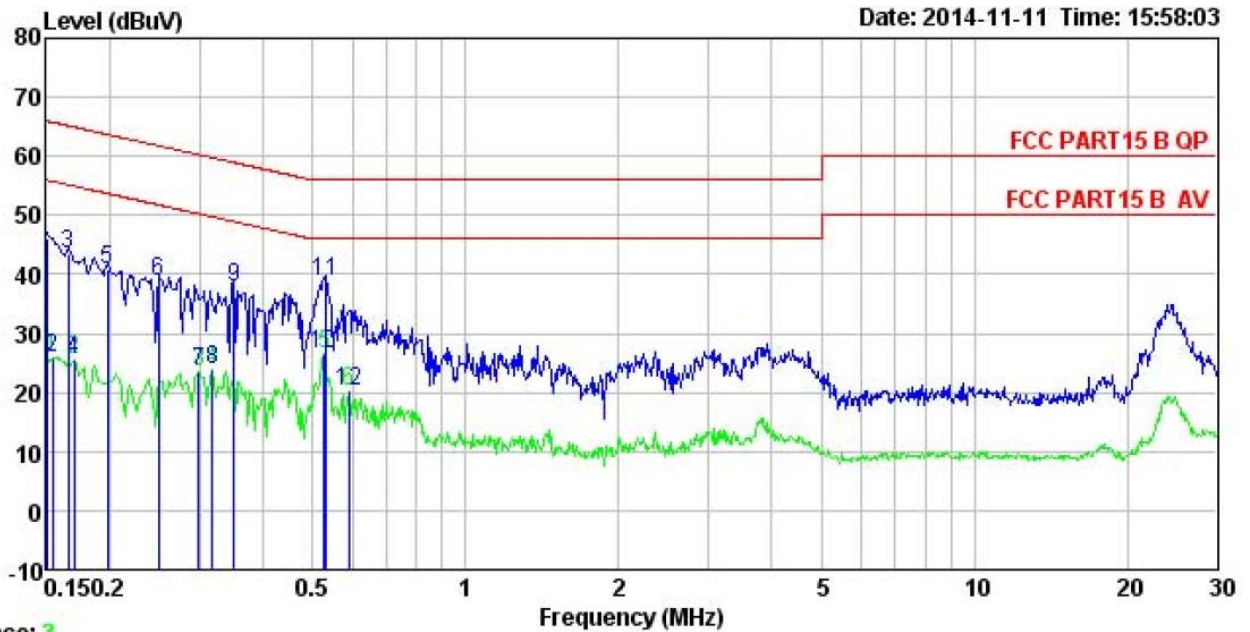
### 6.1 Conducted Emission

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 border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBμV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <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> </tbody> </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:	<p><i>Remark</i>  E.U.T: Equipment Under Test  LISN: Line Impedance Stabilization Network  Test table height=0.8m</p>														
Test procedure	<ol style="list-style-type: none"> <li>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.</li> <li>The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs).</li> <li>Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.</li> </ol>														
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:	Passed														



**Measurement data:**

Line:

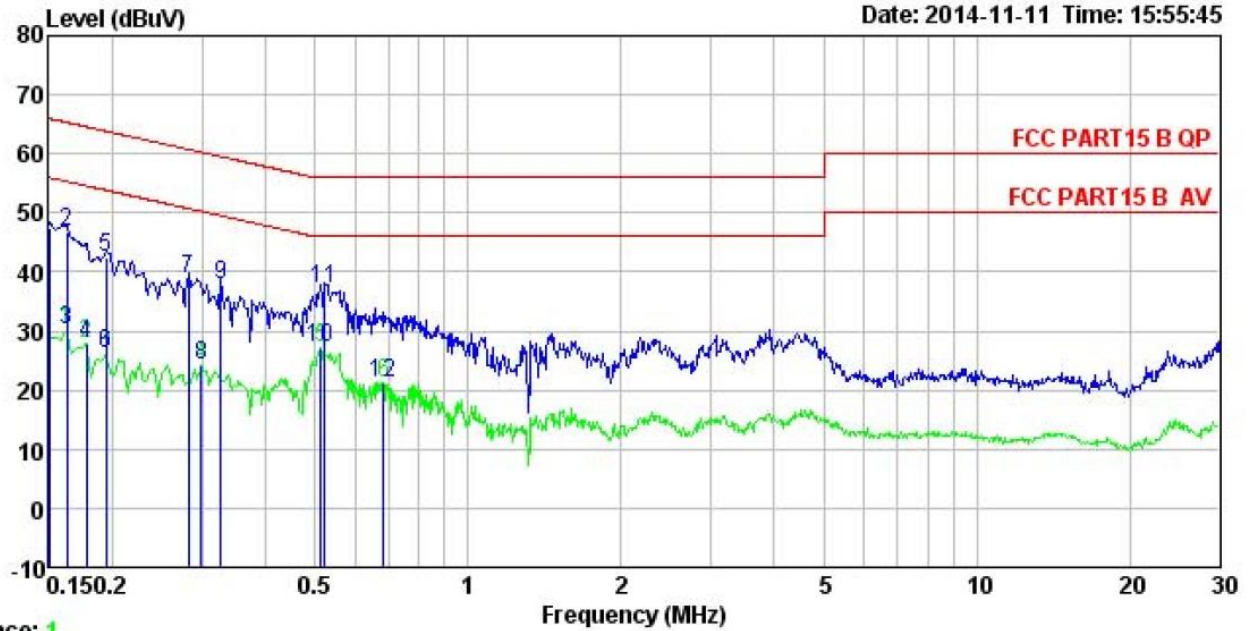


**Trace: 3**

Site : CCIS Shielding Room  
 Condition : FCC PART15 B QP LISN LINE  
 Job No. : 934RF  
 EUT : mobile phone  
 Model : U452  
 Test Mode : PC mode  
 Power Rating : AC 120V/ 60 Hz  
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa  
 Test Engineer: Carey  
 Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	35.00	0.27	10.78	46.05	66.00	-19.95	QP
2	0.154	14.83	0.27	10.78	25.88	55.78	-29.90	Average
3	0.166	32.37	0.27	10.77	43.41	65.16	-21.75	QP
4	0.170	14.56	0.27	10.77	25.60	54.94	-29.34	Average
5	0.198	29.75	0.28	10.76	40.79	63.71	-22.92	QP
6	0.249	27.91	0.27	10.75	38.93	61.78	-22.85	QP
7	0.299	12.61	0.26	10.74	23.61	50.28	-26.67	Average
8	0.318	12.83	0.26	10.74	23.83	49.75	-25.92	Average
9	0.350	26.66	0.27	10.73	37.66	58.96	-21.30	QP
10	0.527	15.57	0.28	10.76	26.61	46.00	-19.39	Average
11	0.529	27.71	0.28	10.76	38.75	56.00	-17.25	QP
12	0.589	9.29	0.26	10.77	20.32	46.00	-25.68	Average

Neutral:



Trace: 1

Site : CCIS Shielding Room  
 Condition : FCC PART15 B QP LISN NEUTRAL  
 Job No. : 934RF  
 EUT : mobile phone  
 Model : U452  
 Test Mode : PC mode  
 Power Rating : AC 120V/ 60 Hz  
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa  
 Test Engineer: Carey  
 Remark :

	Read Freq	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.150	36.54	0.25	10.78	47.57	66.00	-18.43 QP
2	0.162	35.67	0.25	10.77	46.69	65.34	-18.65 QP
3	0.162	19.33	0.25	10.77	30.35	55.34	-24.99 Average
4	0.178	16.91	0.25	10.77	27.93	54.59	-26.66 Average
5	0.194	31.56	0.25	10.76	42.57	63.84	-21.27 QP
6	0.194	15.15	0.25	10.76	26.16	53.84	-27.68 Average
7	0.282	27.91	0.26	10.74	38.91	60.76	-21.85 QP
8	0.299	13.18	0.26	10.74	24.18	50.28	-26.10 Average
9	0.327	26.69	0.26	10.73	37.68	59.53	-21.85 QP
10	0.513	16.24	0.28	10.76	27.28	46.00	-18.72 Average
11	0.521	26.27	0.28	10.76	37.31	56.00	-18.69 QP
12	0.683	10.40	0.19	10.77	21.36	46.00	-24.64 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

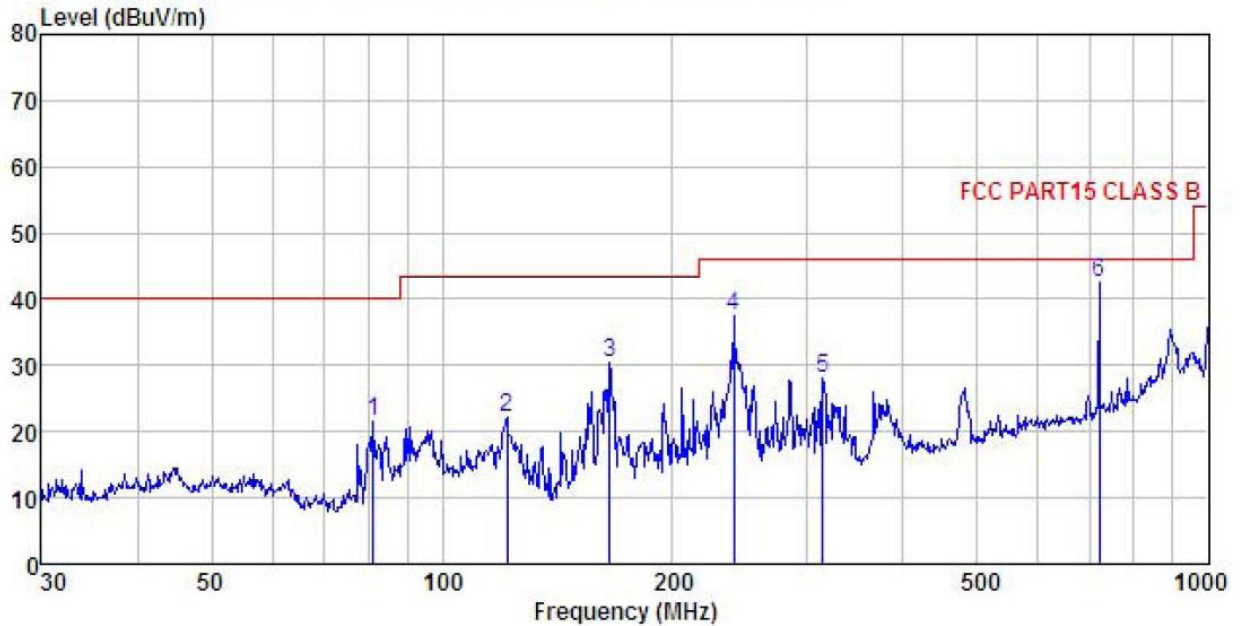
Test Requirement:	FCC Part15 B Section 15.109			
Test Method:	ANSI C63.4:2003			
Test Frequency Range:	30MHz to 6000MHz			
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)			
Receiver setup:	Frequency	Detector	RBW	VBW
	30MHz-1GHz	Quasi-peak	120 kHz	300KHz
	Above 1GHz	Peak	1MHz	3MHz
Peak		1MHz	10Hz	
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
	Above 1GHz	54.0		Average Value
74.0		Peak Value		
Test setup:	Below 1GHz			
Test setup:	Above 1GHz			

Test Procedure:	<ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>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.</li> </ol>
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:

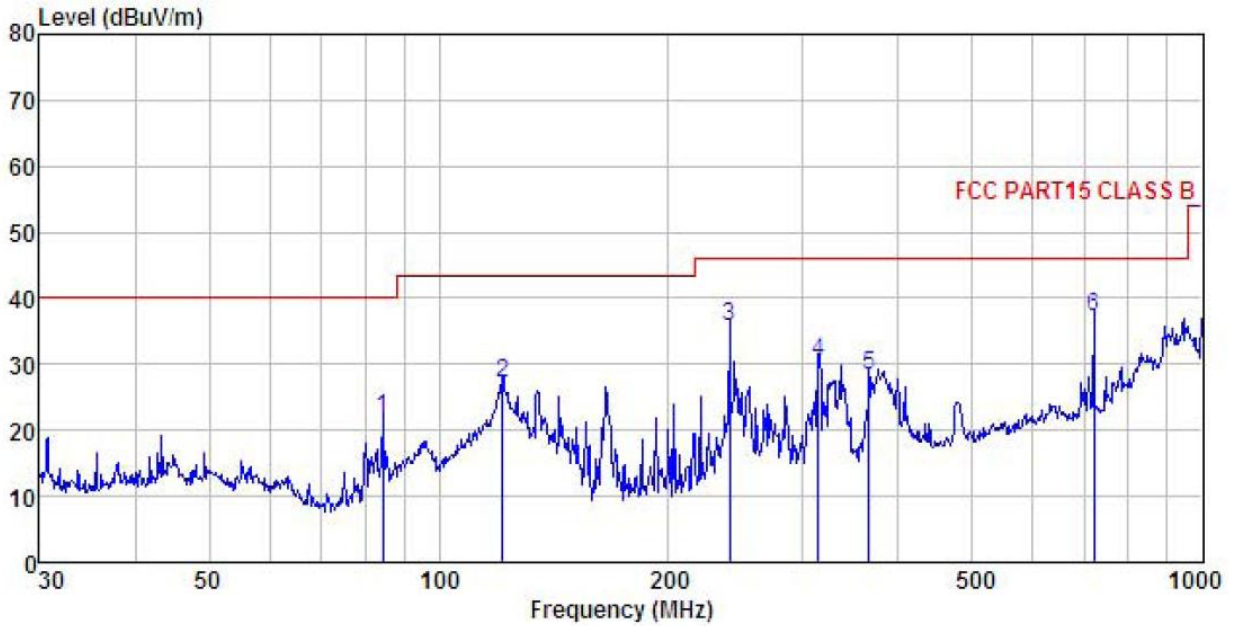


```

Site       : 3m chamber
Condition  : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
Jobi NO.   : 934RF
EUT        : mobile phone
Model      : U452
Test mode  : PC mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: Carey
Remark     :
    
```

	Read	Antenna	Cable	Preamp	Level	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	81.212	41.24	8.98	0.86	29.63	21.45	40.00	-18.55 QP
2	121.549	40.21	10.19	1.13	29.38	22.15	43.50	-21.35 QP
3	165.487	49.37	8.82	1.34	29.09	30.44	43.50	-13.06 QP
4	239.987	52.48	12.09	1.58	28.59	37.56	46.00	-8.44 QP
5	314.377	41.59	13.26	1.82	28.48	28.19	46.00	-17.81 QP
6	721.726	49.15	19.10	2.97	28.58	42.64	46.00	-3.36 QP

Vertical:

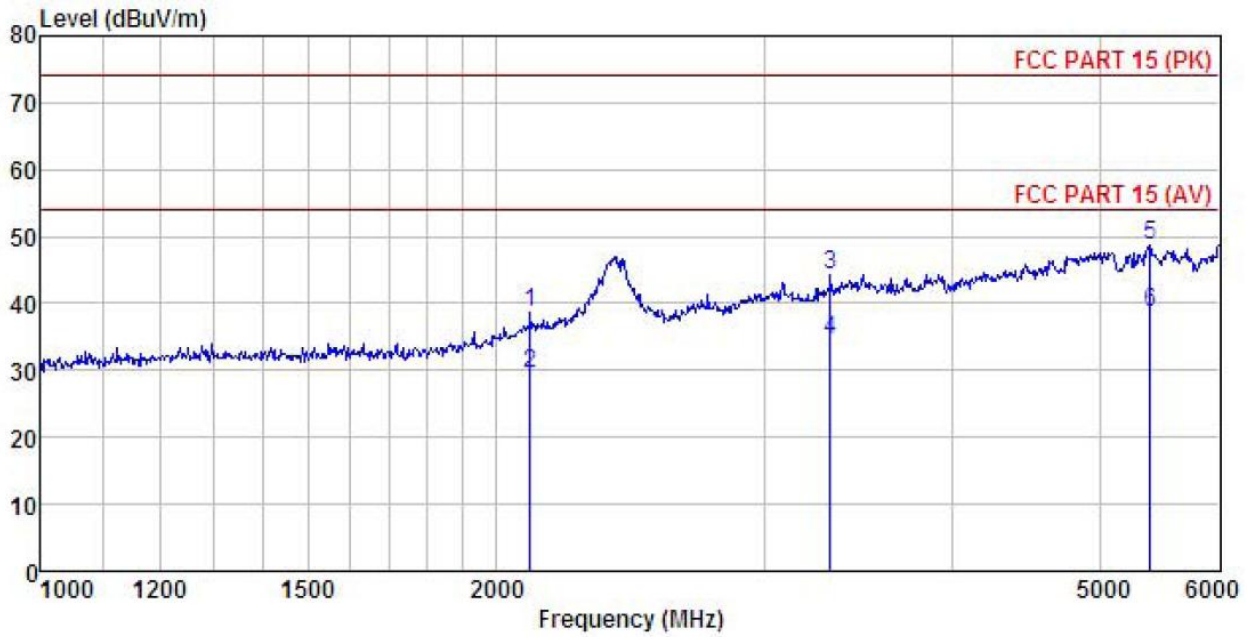


Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL  
 Jobi NO. : 934RF  
 EUT : mobile phone  
 Model : U452  
 Test mode : PC mode  
 Power Rating : AC 120V/60Hz  
 Environment : Temp:25.5°C Humi:55%  
 Test Engineer: Carey  
 Remark :

	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	84.405	40.27	10.16	0.88	29.60	21.71	40.00	-18.29	QP
2	121.123	45.12	10.29	1.13	29.38	27.16	43.50	-16.34	QP
3	239.987	50.64	12.09	1.58	28.59	35.72	46.00	-10.28	QP
4	314.377	43.92	13.26	1.82	28.48	30.52	46.00	-15.48	QP
5	365.539	40.64	14.48	2.00	28.63	28.49	46.00	-17.51	QP
6	721.726	43.65	19.10	2.97	28.58	37.14	46.00	-8.86	QP

Above 1GHz

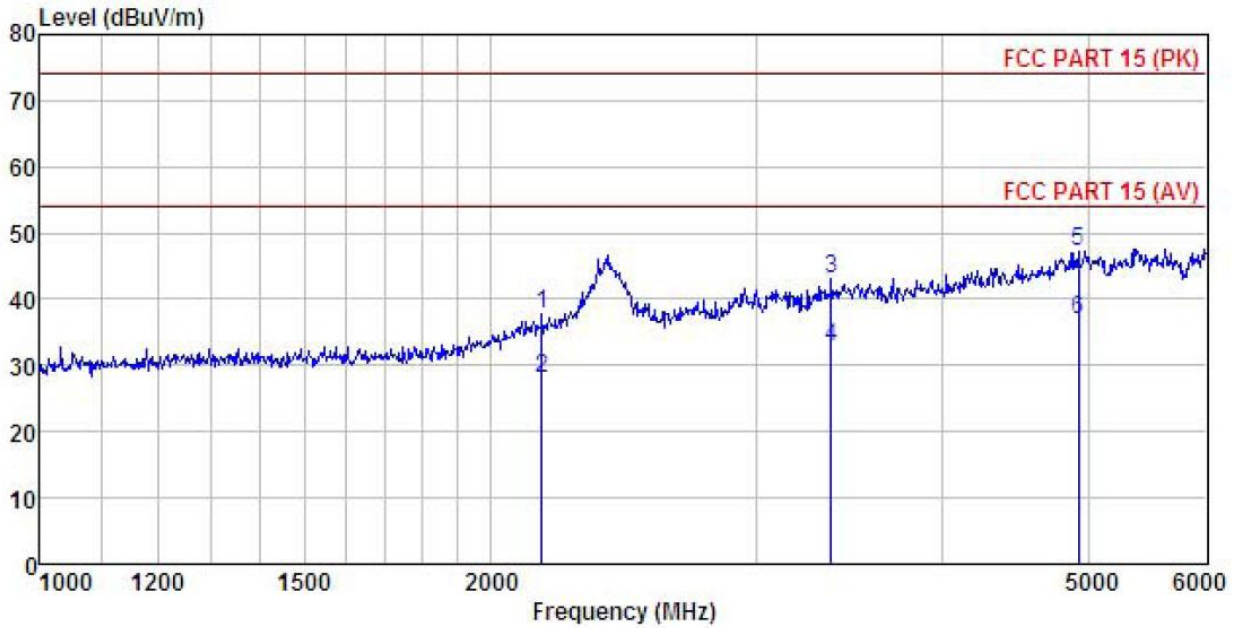
Horizontal:



Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL  
 Jobi NO. : 934RF  
 EUT : mobile phone  
 Model : U452  
 Test mode : PC mode  
 Power Rating : AC 120V/60Hz  
 Environment : Temp:25.5°C Humi:55%  
 Test Engineer: Carey  
 Remark :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Loss	Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2103.453	47.00	27.15	5.05	40.50	38.70	74.00	-35.30	Peak
2	2103.453	37.96	27.15	5.05	40.50	29.66	54.00	-24.34	Average
3	3321.707	49.11	28.33	6.26	39.46	44.24	74.00	-29.76	Peak
4	3321.707	39.39	28.33	6.26	39.46	34.52	54.00	-19.48	Average
5	5398.093	47.88	31.87	9.15	40.20	48.70	74.00	-25.30	Peak
6	5398.093	37.95	31.87	9.15	40.20	38.77	54.00	-15.23	Average

Vertical:



Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL  
 Jobi NO. : 934RF  
 EUT : mobile phone  
 Model : U452  
 Test mode : PC mode  
 Power Rating : AC 120V/60Hz  
 Environment : Temp:25.5°C Humi:55%  
 Test Engineer: Carey  
 Remark :

	ReadAntenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	
-----	-----	-----	-----	-----	-----	-----	-----	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2160.753	45.29	27.66	5.15	40.34	37.76	74.00 -36.24	Peak
2	2160.753	35.46	27.66	5.15	40.34	27.93	54.00 -26.07	Average
3	3369.664	47.53	28.35	6.35	39.15	43.08	74.00 -30.92	Peak
4	3369.664	37.26	28.35	6.35	39.15	32.81	54.00 -21.19	Average
5	4926.683	46.58	31.61	9.04	40.08	47.15	74.00 -26.85	Peak
6	4926.683	36.38	31.61	9.04	40.08	36.95	54.00 -17.05	Average