

FCC REPORT

Applicant: Antel Communications LLC

Address of Applicant: 21 Bennetts Road, Suite 201 Setauket, NY 11733, USA

Equipment Under Test (EUT)

Product Name: Rugged Mobile Phone

Model No.: TLR500

Trade mark: OLE

FCC ID: 2AE62-TLR500

Applicable standards: FCC CFR Title 47 Part 15 Subpart B

Date of sample receipt: 17 Nov., 2015

Date of Test: 17 Nov., to 01 Dec., 2015

Date of report issued: 01 Dec., 2015

Test Result: Pass *

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

Authorized Signature:

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

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

2 Version

Version No.	Date	Description
00	01 Dec., 2015	Original

Tested by:

Carey Chen

Test Engineer

Date:

01 Dec., 2015

Reviewed by:

Wimer Zhang

Project Engineer

Date:

01 Dec., 2015

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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:	Antel Communications LLC
Address of Applicant:	21 Bennetts Road, Suite 201Setauket, NY 11733, USA
Manufacturer/ Factory:	SHENZHEN TIANLONG CENTURY DEVELOPMENT CO LTD.
Address of Manufacturer/ Factory:	4/F, BCI BLDG, BEIHUAN AVENUE, NANSHAN DIST.,SHENZHEN,CHINA

5.2 General Description of E.U.T.

Product Name:	Rugged Mobile Phone
Model No.:	TLR500
Power supply:	Rechargeable Li-ion Battery DC3.8V/3400mAh
AC adapter :	Model: CR-UP01 Input:100-240V AC, 50/60Hz 500mA Output:5V DC MAX 1A

5.3 Test Mode

Operating mode	Detail description
PC mode	Keep the EUT in Downloading mode(Worst case)
Charging+Recording mode	Keep the EUT in Charging+Recording mode
Charging+Playing mode	Keep the EUT in Charging+Playing mode
FM mode	Keep the EUT in FM receiver mode
GPS mode	Keep the EUT in GPS receiver 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
NAKAMICHI	Bluetooth earphone	T8	N/A	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: +86-755-23118282
Fax: +86-755-23116366

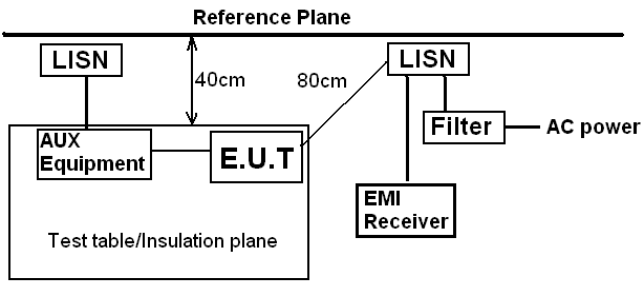
5.7 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	3m SAC	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
2	BiConiLog Antenna	SCHWARZBECK	VULB9163	CCIS0005	03-28-2015	03-28-2016
3	Horn Antenna	SCHWARZBECK	BBHA9120D	CCIS0006	03-28-2015	03-28-2016
4	Pre-amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2015	03-31-2016
5	Pre-amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	04-01-2015	03-31-2016
6	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP30	CCIS0023	03-28-2015	03-28-2016
7	EMI Test Receiver	Rohde & Schwarz	ESRP7	CCIS0167	03-28-2015	03-28-2016

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	08-23-2014	08-22-2017
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

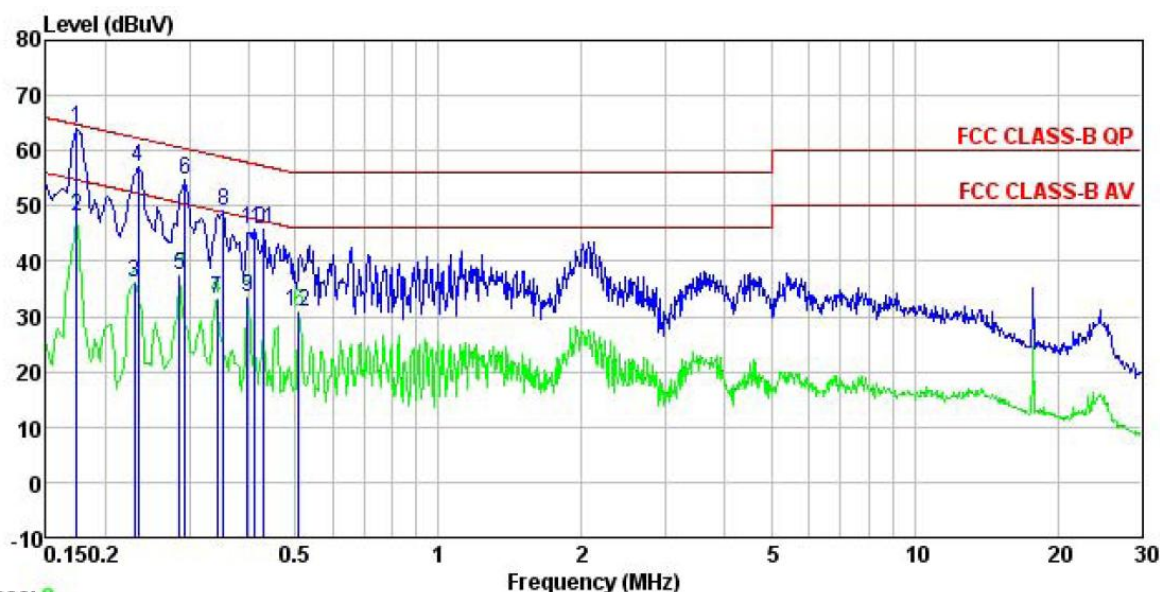
6 Test results and Measurement Data

6.1 Conducted Emission

Test Requirement:	FCC Part15 B Section 15.107		
Test Method:	ANSI C63.4:2009		
Test Frequency Range:	150kHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9kHz, VBW=30kHz		
Limit:	Frequency range (MHz)	Limit (dB μ V)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	0.5-30	60	50
* Decreases with the logarithm of the frequency.			
Test setup:	 <p>Remark: 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"> 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: 2009 on conducted measurement. 		
Test environment:	Temp.: 23°C	Humid.: 56%	Press.: 101kPa
Measurement Record:	Uncertainty: ± 3.28 dB		
Test Instruments:	Refer to section 5.7 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		

Measurement data:

Line:

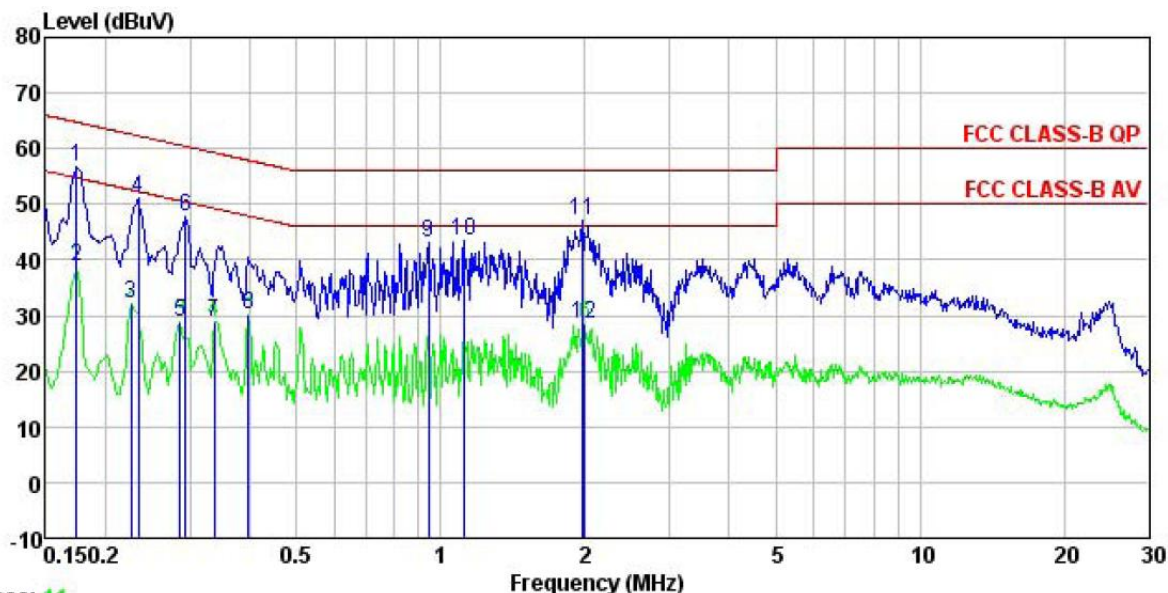


Trace: 9

Site : CCIS Shielding Room
 Condition : FCC CLASS-B QP LISN LINE
 : 890RF
 EUT : Rugged Mobile Phone
 Model : V4
 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	0.174	52.92	0.27	10.77	63.96	64.77	-0.81	QP
2	0.174	37.19	0.27	10.77	48.23	54.77	-6.54	Average
3	0.230	25.03	0.27	10.75	36.05	52.44	-16.39	Average
4	0.234	46.10	0.27	10.75	57.12	62.30	-5.18	QP
5	0.286	26.43	0.26	10.74	37.43	50.63	-13.20	Average
6	0.294	43.61	0.26	10.74	54.61	60.41	-5.80	QP
7	0.343	22.16	0.27	10.73	33.16	49.13	-15.97	Average
8	0.354	37.99	0.27	10.73	48.99	58.87	-9.88	QP
9	0.398	22.61	0.28	10.72	33.61	47.90	-14.29	Average
10	0.410	34.84	0.28	10.72	45.84	57.64	-11.80	QP
11	0.431	34.68	0.28	10.73	45.69	57.24	-11.55	QP
12	0.510	19.93	0.28	10.76	30.97	46.00	-15.03	Average

Neutral:



Trace: 11

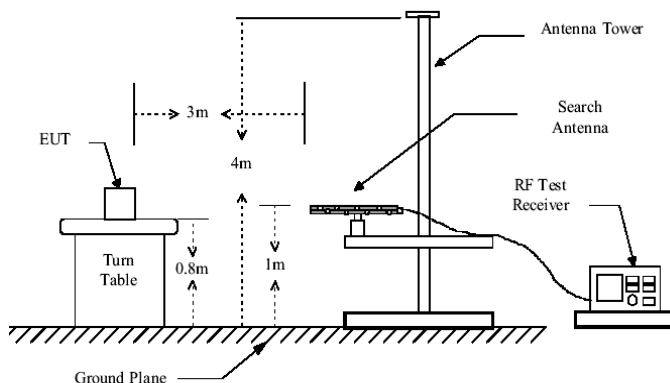
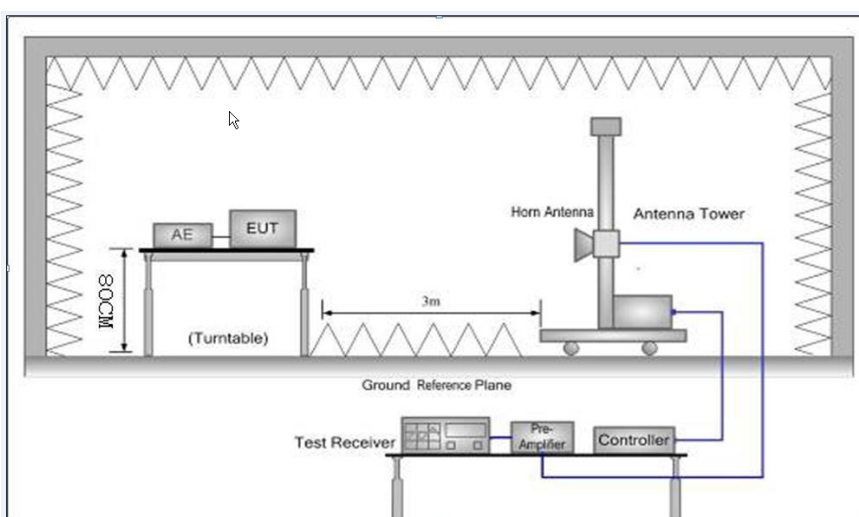
Site : CCIS Shielding Room
 Condition : FCC CLASS-B QP LISN NEUTRAL
 : 890RF
 EUT : Rugged Mobile Phone
 Model : V4
 Test Mode : PC mode
 Power Rating : AC 120V/ 60 Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Carey
 Remark :

	Freq	Read	LISN	Cable	Level	Limit	Over	
	MHz	Level	Factor	Loss	dBuV	Line	Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.174	45.64	0.25	10.77	56.66	64.77	-8.11	QP
2	0.174	27.72	0.25	10.77	38.74	54.77	-16.03	Average
3	0.226	21.17	0.25	10.75	32.17	52.61	-20.44	Average
4	0.234	40.07	0.25	10.75	51.07	62.30	-11.23	QP
5	0.286	17.84	0.26	10.74	28.84	50.63	-21.79	Average
6	0.294	36.73	0.26	10.74	47.73	60.41	-12.68	QP
7	0.337	18.00	0.26	10.73	28.99	49.27	-20.28	Average
8	0.398	19.17	0.25	10.72	30.14	47.90	-17.76	Average
9	0.943	32.17	0.21	10.85	43.23	56.00	-12.77	QP
10	1.117	32.34	0.23	10.88	43.45	56.00	-12.55	QP
11	1.970	35.74	0.29	10.96	46.99	56.00	-9.01	QP
12	2.001	17.26	0.29	10.96	28.51	46.00	-17.49	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

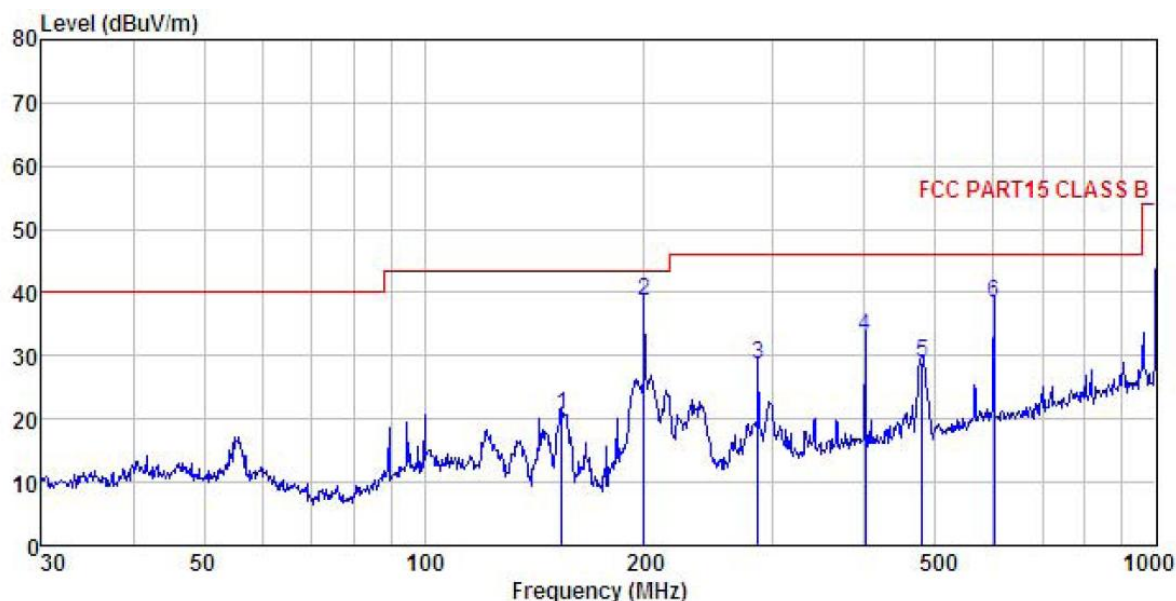
Test Requirement:	FCC Part15 B Section 15.109				
Test Method:	ANSI C63.4:2009				
Test Frequency Range:	30MHz to 6000MHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
RMS		1MHz	3MHz	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:	<ol style="list-style-type: none"> 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 rotating 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.:	101kPa
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

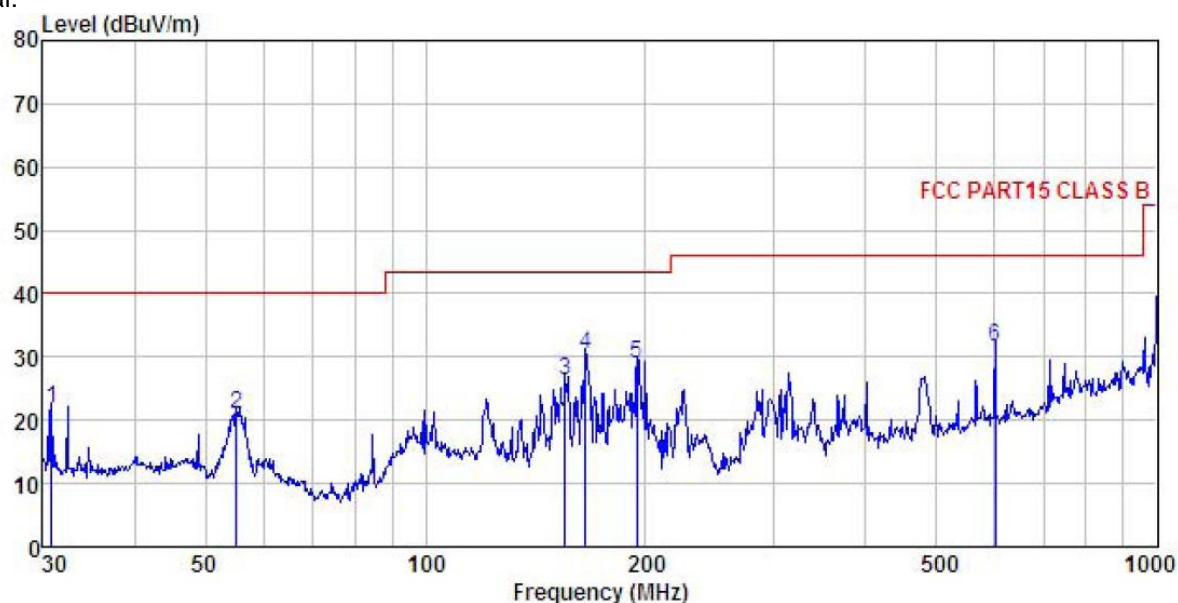
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
 EUT : Rugged Mobile Phone
 Model : V4
 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	Remark
-----MHz-----	-----dBUV-----	-----dB/m-----	-----dB-----	-----dB-----	-----dBUV/m-----	-----dBUV/m-----	-----dB-----	-----
1	154.279	40.10	8.45	1.33	29.18	20.70	43.50	-22.80 QP
2	199.986	55.69	10.57	1.38	28.83	38.81	43.50	-4.69 QP
3	285.978	42.53	12.78	1.73	28.47	28.57	46.00	-17.43 QP
4	400.432	44.52	15.10	2.12	28.78	32.96	46.00	-13.04 QP
5	478.846	39.48	16.07	2.34	28.92	28.97	46.00	-17.03 QP
6	601.427	46.19	18.46	2.63	28.93	38.35	46.00	-7.65 QP

Vertical:

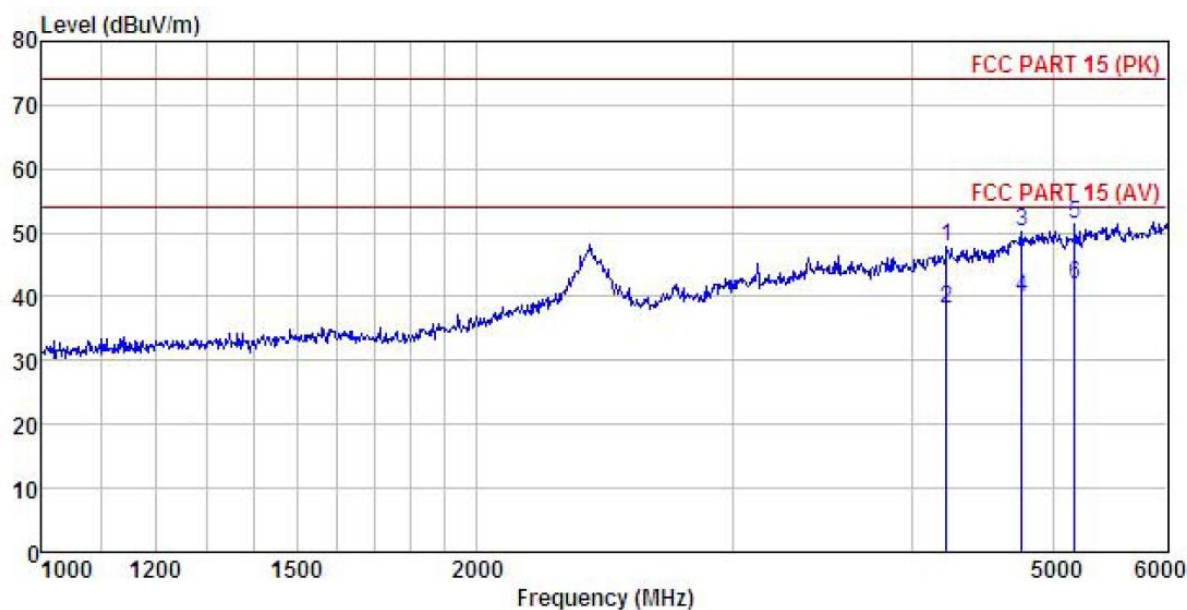


Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL
 EUT : Rugged Mobile Phone
 Model : V4
 Test mode : PC Mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Carey
 REMARK :

	Freq	ReadAntenna	Cable Preamp		Limit	Over	
		Level Factor	Loss Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	30.853	39.07	12.32	0.44	29.97	21.86	40.00 -18.14 QP
2	55.221	37.02	13.03	0.65	29.80	20.90	40.00 -19.10 QP
3	155.364	45.72	8.48	1.33	29.17	26.36	43.50 -17.14 QP
4	165.487	49.22	8.82	1.34	29.09	30.29	43.50 -13.21 QP
5	194.453	45.81	10.56	1.37	28.87	28.87	43.50 -14.63 QP
6	601.427	39.44	18.46	2.63	28.93	31.60	46.00 -14.40 QP

Above 1GHz

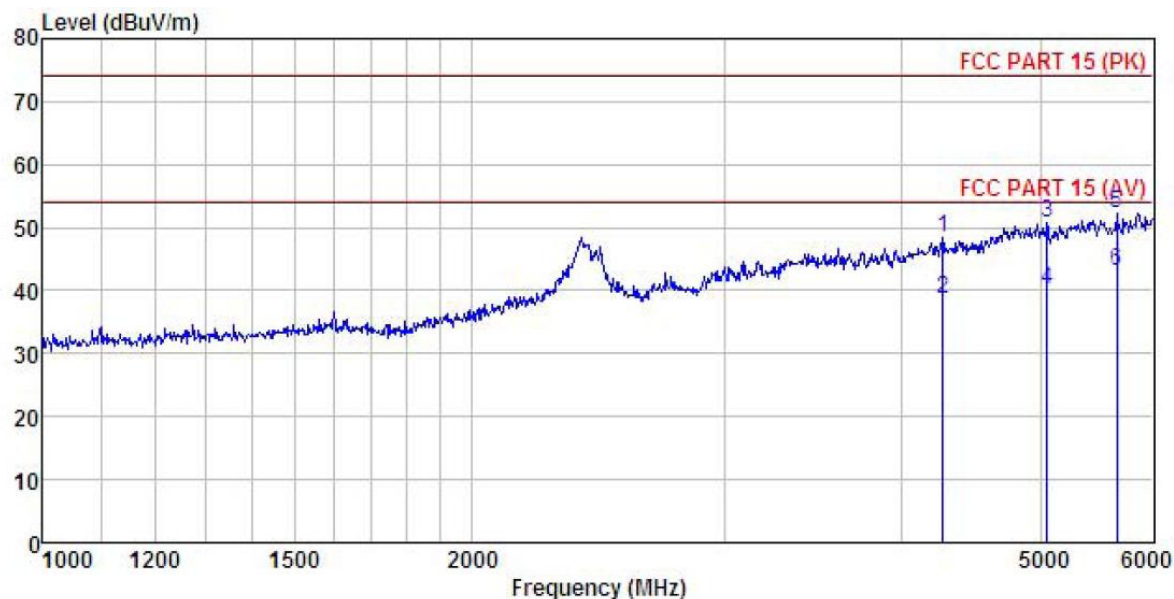
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 EUT : Rugged Mobile Phone
 Model : V4
 Test mode : PC Mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Carey
 REMARK :

	Freq	Read	Antenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4223.122	48.65	30.24	9.89	40.93	47.85	74.00	-26.15	Peak
2	4223.122	38.87	30.24	9.89	40.93	38.07	54.00	-15.93	Average
3	4761.785	48.47	31.47	10.52	40.31	50.15	74.00	-23.85	Peak
4	4761.785	38.05	31.47	10.52	40.31	39.73	54.00	-14.27	Average
5	5180.156	48.45	32.01	11.00	40.08	51.38	74.00	-22.62	Peak
6	5180.156	38.88	32.01	11.00	40.08	41.81	54.00	-12.19	Average

Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 EUT : Rugged Mobile Phone
 Model : V4
 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	4268.768	49.01	30.35	9.95	40.89	48.42	74.00
2	4268.768	39.33	30.35	9.95	40.89	38.74	54.00
3	5051.830	47.99	31.96	10.83	40.01	50.77	74.00
4	5051.830	37.42	31.96	10.83	40.01	40.20	54.00
5	5655.516	48.98	32.13	11.53	40.45	52.19	74.00
6	5655.516	39.91	32.13	11.53	40.45	43.12	54.00