



# TEST REPORT

No. 2013TAR511

for

**TCT Mobile Limited**

**HSDPA/HSUPA/UMTS Tri bands / GSM quad bands/LTE Quin bands  
mobile phone**

**Model Name: VIPER LTE**

**Marketing Name: ONE TOUCH 7030Y**

**FCC ID: RAD357**

with

**Hardware Version: PIO**

**Software Version: VA33**

**Issued Date: Jul. 16<sup>th</sup>, 2013**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

**Test Laboratory:**

**FCC 2.948 Listed: No.733176**

**IC O.A.T.S listed: No.6629B-1**

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## **CONTENTS**

<b>1. TEST LABORATORY.....</b>	<b>3</b>
<b>1.1. TESTING LOCATION.....</b>	<b>3</b>
<b>1.2. TESTING ENVIRONMENT.....</b>	<b>3</b>
<b>1.3. PROJECT DATA.....</b>	<b>3</b>
<b>1.4. SIGNATURE.....</b>	<b>3</b>
<b>2. CLIENT INFORMATION.....</b>	<b>4</b>
<b>2.1. APPLICANT INFORMATION.....</b>	<b>4</b>
<b>2.2. MANUFACTURER INFORMATION.....</b>	<b>4</b>
<b>3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE).....</b>	<b>5</b>
<b>3.1. ABOUT EUT.....</b>	<b>5</b>
<b>3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST.....</b>	<b>5</b>
<b>3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST.....</b>	<b>5</b>
<b>3.4. EUT SET-UPS.....</b>	<b>6</b>
<b>4. REFERENCE DOCUMENTS.....</b>	<b>7</b>
<b>4.1. REFERENCE DOCUMENTS FOR TESTING.....</b>	<b>7</b>
<b>5. LABORATORY ENVIRONMENT.....</b>	<b>8</b>
<b>6. SUMMARY OF TEST RESULTS.....</b>	<b>9</b>
<b>7. TEST EQUIPMENTS UTILIZED.....</b>	<b>10</b>
<b>ANNEX A: MEASUREMENT RESULTS.....</b>	<b>11</b>

## 1. Test Laboratory

### 1.1. Testing Location

#### Location D

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT  
Address: No.18A, Kangding Street, Beijing Economic-Technological  
Development Area, Beijing, China  
Postal Code: 100176

### 1.2. Testing Environment

Normal Temperature: 15-35°C  
Relative Humidity: 20-75%

### 1.3. Project data

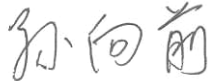
Testing Start Date: Jun. 24<sup>th</sup>, 2013  
Testing End Date: Jun. 28<sup>th</sup>, 2013

### 1.4. Signature



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Qu Pengfei  
(Prepared this test report)



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Sun Xiangqian  
(Reviewed this test report)



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Lu Bingsong  
Deputy Director of the laboratory  
(Approved this test report)

## **2. Client Information**

### **2.1. Applicant Information**

Company Name: TCT Mobile Limited  
Address /Post: 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park,  
Pudong Area Shanghai, P.R. China.  
City: Shanghai  
Postal Code: 201203  
Country: China  
Contact Person: Gong Zhizhou  
Contact Email: zhizhou.gong@jrdcom.com  
Telephone: 0086-21-61460890  
Fax: 0086-21-61460602

### **2.2. Manufacturer Information**

Company Name: TCT Mobile Limited  
Address /Post: 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park,  
Pudong Area Shanghai, P.R. China.  
City: Shanghai  
Postal Code: 201203  
Country: China  
Telephone: 0086-21-61460890  
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### **3. Equipment Under Test (EUT) and Ancillary Equipment (AE)**

#### **3.1. About EUT**

Description	HSDPA/HSUPA/UMTS Tri bands / GSM quad bands/LTE Quin bands mobile phone
Model Name	VIPER LTE
Marketing Name	ONE TOUCH 7030Y
FCC ID	RAD357
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.7VDC)

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

#### **3.2. Internal Identification of EUT used during the test**

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	013580000100632	PIO	VA33

\*EUT ID: is used to identify the test sample in the lab internally.

#### **3.3. Internal Identification of AE used during the test**

AE ID*	Description	SN
AE1	Battery	B2200001C11000QK
AE2	Battery	B2200000C3Y00306
AE3	Travel charger	/
AE4	USB cable	/

##### AE1

Model	TLi022A1
Manufacturer	BYD
Capacitance	2200 mAh
Nominal voltage	3.8 V

##### AE2

Model	TLi022A2
Manufacturer	SCUD
Capacitance	2200 mAh
Nominal voltage	3.8 V

##### AE3

Model	CBA3000AG0C2
Manufacturer	BYD
Length of cable	100 cm (length of USB cable)

##### AE4

Model	CDA3122002C1
Manufacturer	Juwei
Length of cable	100 cm

\*AE ID: is used to identify the test sample in the lab internally.

### 3.4. EUT set-ups

<b>EUT set-up No.</b>	<b>Combination of EUT and AE</b>	<b>Remarks</b>
Set.1	EUT1+ AE1/AE2 + AE3 + AE4	Charging mode
Set.2	EUT1+ AE1/AE2 + AE4	USB mode

## **4. Reference Documents**

### **4.1. Reference Documents for testing**

The following documents listed in this section are referred for testing.

<b>Reference</b>	<b>Title</b>	<b>Version</b>
FCC Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	10-1-12 Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low - Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003

## 5. LABORATORY ENVIRONMENT

**Semi-anechoic chamber SAC-2** (10 meters×6.7 meters×6.15 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ±4 dB, 3 m distance
Site voltage standing-wave ratio ( $S_{VSWR}$ )	Between 0 and 6 dB, from 1GHz to 6GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

**Fully-anechoic chamber FAC-3** (9 meters×6.5 meters×4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz -1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
Site voltage standing-wave ratio ( $S_{VSWR}$ )	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

**Shielded room** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz—1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω



## 6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	NA	Not applicable
	F	Fail
Location Column	A/B/C/D	The test is performed in test location A, B, C or D which are described in section 1.1 of this report

Clause	List	Clause in FCC rules	Verdict	Location
1	Radiated Emission	15.109(a)	P	D
2	Conducted Emission	15.107(a)	P	D

## 7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESU26	100376	R&S	2013-11-07
2	Test Receiver	ESU26	100235	R&S	2014-01-05
3	EMI Antenna	VULB 9163	9163-514	Schwarzbeck	2014-11-10
4	EMI Antenna	3117	00139065	ETS-Lindgren	2014-07-31
5	LISN	ESH3-Z5	825562/028	R&S	2014-06-12
6	Universal Radio Communication Tester	E5515C	MY48361083	Agilent	2014-03-16
7	Universal Radio Communication Tester	CMU200	100680	R&S	2013-09-05
8	PC	OPTIPLEX 755	3908243625	DELL	N/A
9	Monitor	E178FPc	CN-OWR979-6 4180-7AJ-D2M S	DELL	N/A
10	Printer	LaserJet 1160	CNM2D33740	HP	N/A
11	Keyboard	L100	CN0RH659658 907ATOI40	DELL	N/A
12	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A

## **ANNEX A: MEASUREMENT RESULTS**

### **A.1 Radiated Emission (§15.109(a))**

#### **A.1.1 Method of measurement**

The field strength of radiated emissions from the unintentional radiator (USB mode of MS and charging mode of MS) at a distance of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

#### **A.1.2 EUT Operating Mode:**

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

#### **A.1.3 Measurement Limit**

Frequency range (MHz)	Field strength limit ( $\mu\text{V}/\text{m}$ )		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

#### **A.1.4 Test Condition**

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/1MHz	15	Peak, Average

### A.1.5 Measurement Results

A "reference path loss" is established and the  $A_{Rpl}$  is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}} = P_{\text{Mea}} + G_A + G_{\text{PL}}$$

Where

$G_A$ : Antenna factor of receive antenna

$G_{\text{PL}}$ : Path Loss

$P_{\text{Mea}}$ : Measurement result on receiver.

Measurement uncertainty (worst case):  $U = 4.3 \text{ dB}$ ,  $k=2$ .

#### Charging Mode/Average detector

Frequency(MHz)	Result(dB $\mu$ V/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{Mea}}$ (dB $\mu$ V)	Polarity
3000.000	44.9	-28.4	32.8	40.472	HORIZONTAL
2999.800	44.5	-29.0	33.2	40.279	HORIZONTAL
2999.600	43.8	-29.0	33.2	39.579	VERTICAL
2572.400	43.4	-29.6	32.1	40.935	HORIZONTAL
2999.400	43.3	-29.0	33.2	39.079	HORIZONTAL
2572.600	43.2	-29.6	32.1	40.735	HORIZONTAL

#### Charging Mode/Peak detector

Frequency(MHz)	Result(dB $\mu$ V/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{Mea}}$ (dB $\mu$ V)	Polarity
3000.000	56.1	-28.4	32.8	51.672	HORIZONTAL
2998.800	55.2	-29.0	33.2	50.979	HORIZONTAL
2999.600	55.0	-29.0	33.2	50.779	VERTICAL
2999.800	54.9	-29.0	33.2	50.679	HORIZONTAL
2891.200	54.8	-28.1	32.3	50.594	VERTICAL
2999.000	54.8	-29.0	33.2	50.579	HORIZONTAL

#### USB Mode/Average detector

Frequency(MHz)	Result(dB $\mu$ V/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{mea}}$ (dB $\mu$ V)	Polarity
3000.000	45.0	-28.4	32.8	40.572	HORIZONTAL
2999.800	43.8	-29.0	33.2	39.579	HORIZONTAL
2999.400	43.5	-29.0	33.2	39.279	HORIZONTAL
2999.600	43.4	-29.0	33.2	39.179	VERTICAL
2999.200	42.9	-29.0	33.2	38.679	VERTICAL
2572.800	42.8	-29.6	32.1	40.335	HORIZONTAL

#### USB Mode/ Peak detector

Frequency(MHz)	Result(dB $\mu$ V/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{mea}}$ (dB $\mu$ V)	Polarity
3000.000	56.7	-28.4	32.8	52.272	HORIZONTAL
2987.400	55.1	-29.0	33.2	50.879	HORIZONTAL
2972.400	54.7	-28.6	33.1	50.215	VERTICAL
2981.400	54.7	-29.0	33.2	50.479	VERTICAL
2875.200	54.7	-27.8	31.9	50.603	VERTICAL
2999.800	54.6	-29.0	33.2	50.379	HORIZONTAL

Charging Mode

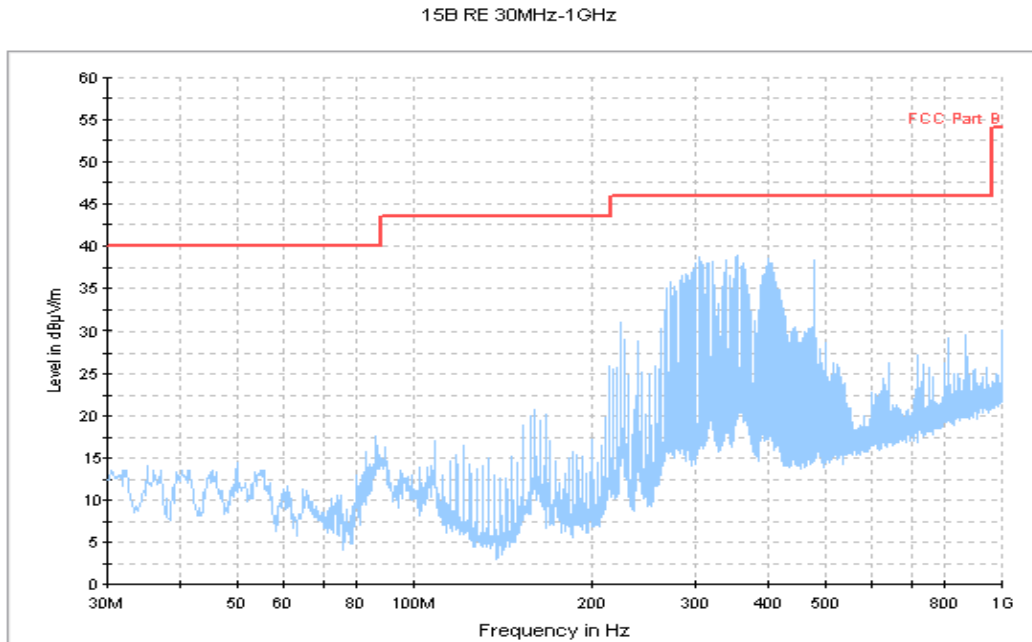


Figure A.1 Radiated Emission from 30MHz to 1GHz

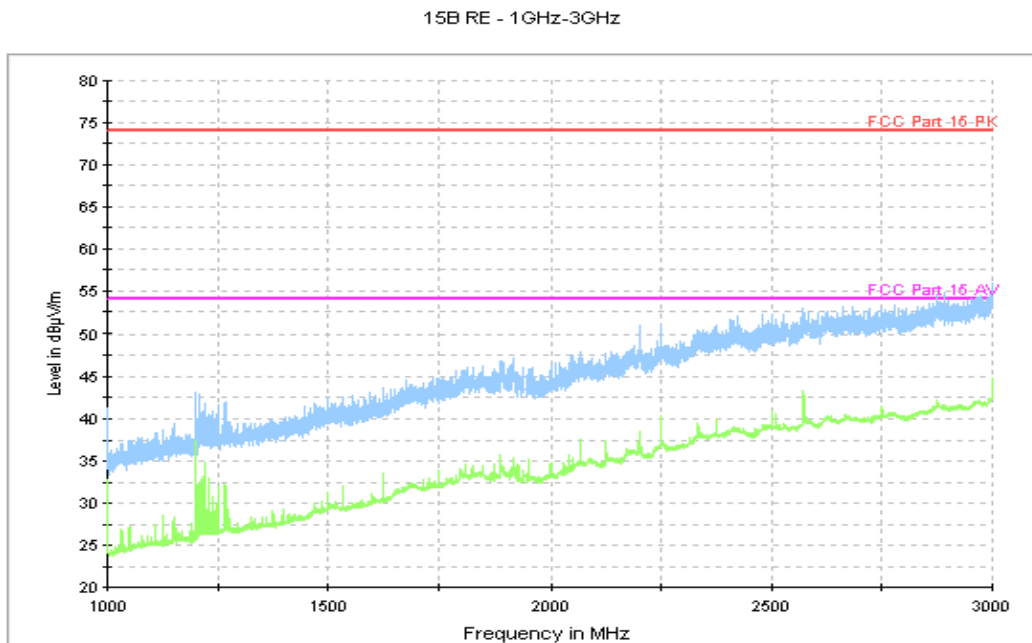
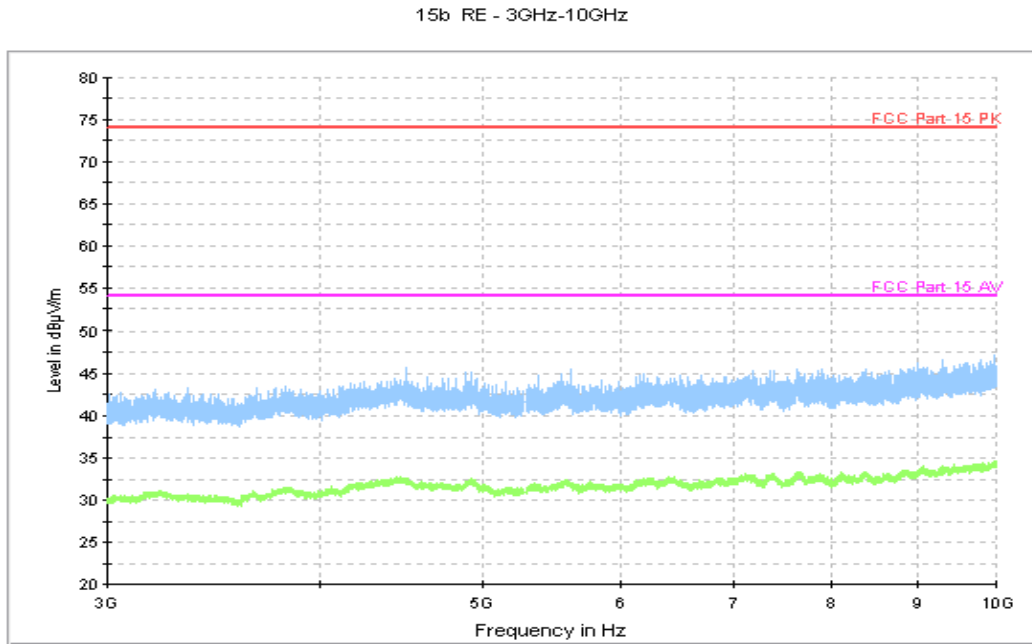
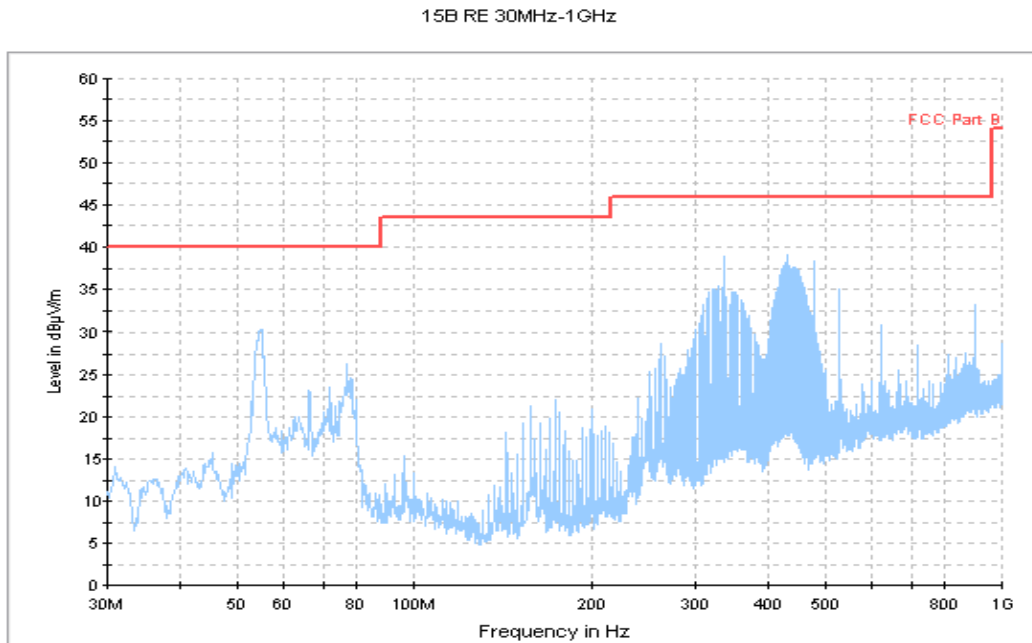


Figure A.2 Radiated Emission from 1GHz to 3GHz

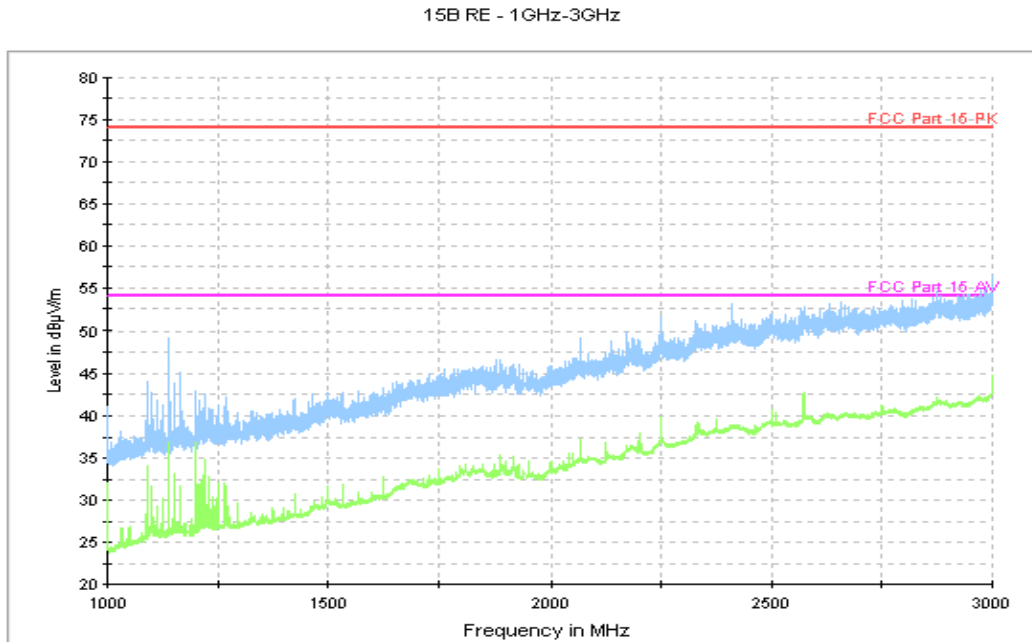


**Figure A.3 Radiated Emission from 3GHz to 10GHz**

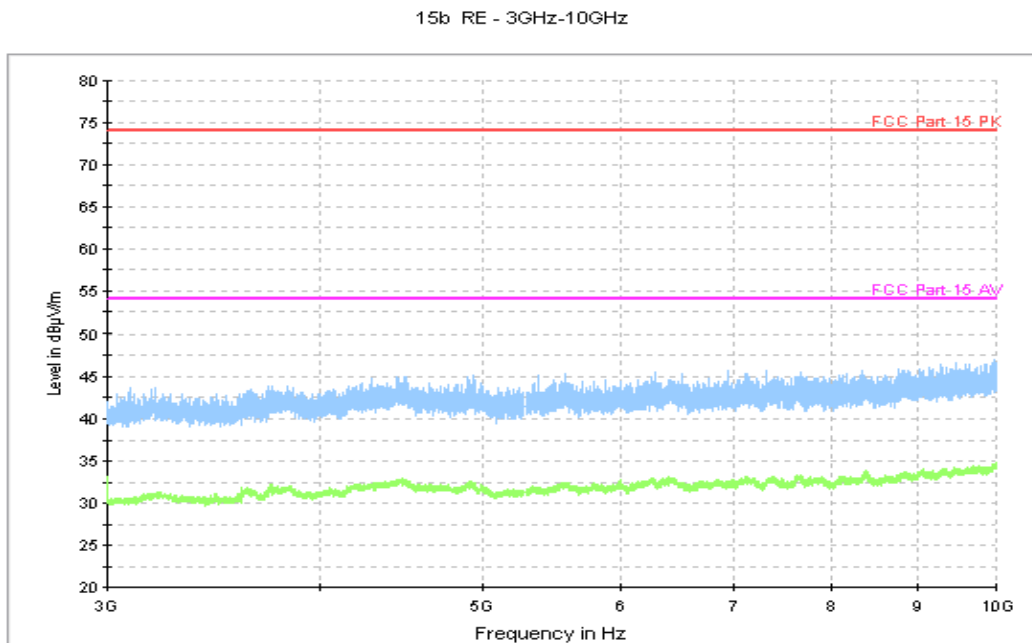
**USB Mode**



**Figure A.4 Radiated Emission from 30MHz to 1GHz**



**Figure A.5 Radiated Emission from 1GHz to 3GHz**



**Figure A.6 Radiated Emission from 3GHz to 10GHz**

## A.2 Conducted Emission (§15.107(a))

### A.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 7.2.

### A.2.2 EUT Operating Mode:

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

### A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency

### A.2.4 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1



### A.2.5 Measurement Results

Measurement uncertainty:  $U= 2.9$  dB,  $k=2$ .

#### Charging Mode

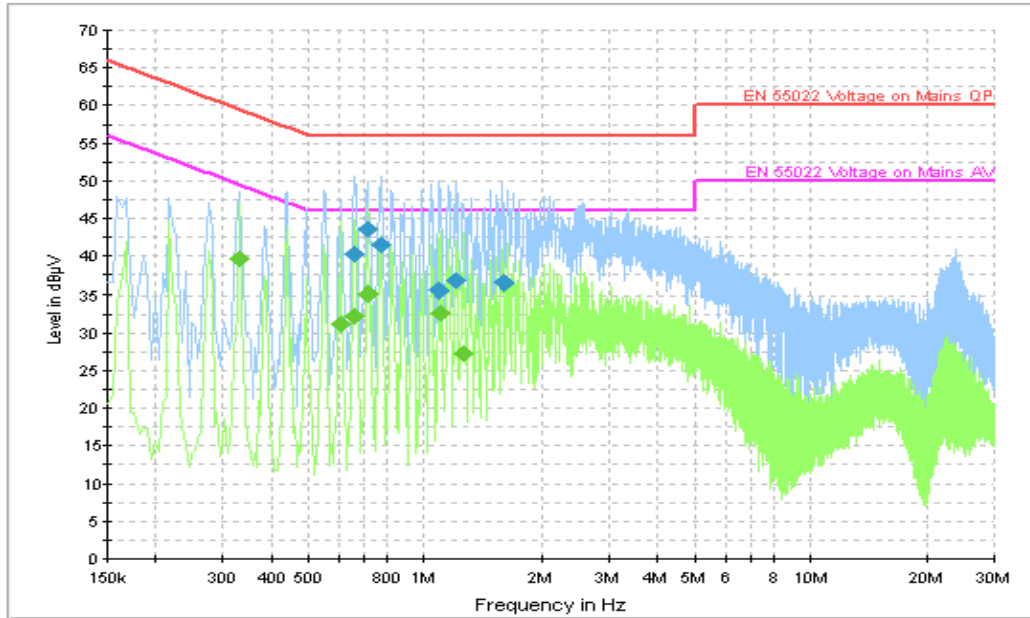


Figure A.7 Conducted Emission

#### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.658501	40.3	GND	N	9.9	15.7	56.0
0.717001	43.6	GND	N	9.9	12.4	56.0
0.771001	41.5	GND	N	9.9	14.5	56.0
1.095001	35.5	GND	N	9.9	20.5	56.0
1.207501	36.8	GND	N	9.9	19.2	56.0
1.594501	36.6	GND	N	9.9	19.4	56.0

#### Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.330001	39.7	GND	N	9.9	9.8	49.5
0.604501	31.1	GND	N	9.9	14.9	46.0
0.658501	32.2	GND	N	9.9	13.8	46.0
0.717001	35.1	GND	N	9.9	10.9	46.0
1.104001	32.6	GND	N	9.9	13.4	46.0
1.266001	27.3	GND	N	9.9	18.7	46.0

USB Mode

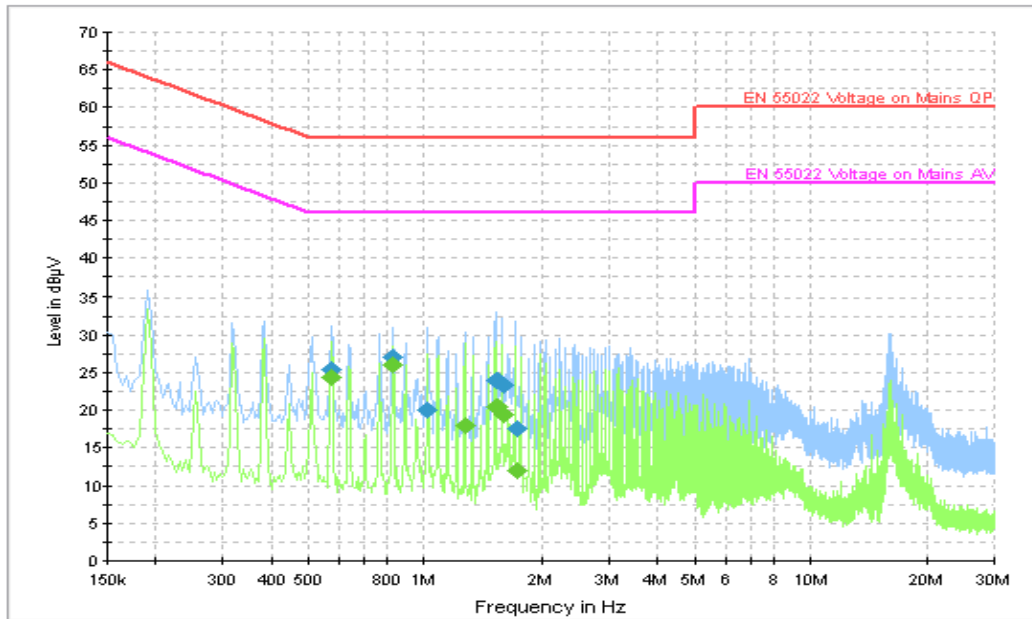


Figure A.8 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.573001	25.4	GND	N	9.9	30.6	56.0
0.829501	27.1	GND	N	9.9	28.9	56.0
1.018501	20.1	GND	N	9.9	35.9	56.0
1.531501	23.9	GND	N	9.9	32.1	56.0
1.594501	23.4	GND	N	9.9	32.6	56.0
1.720501	17.5	GND	N	9.9	38.5	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.573001	24.4	GND	N	9.9	21.6	46.0
0.829501	26.0	GND	N	9.9	20.0	46.0
1.275001	18.0	GND	N	9.9	28.0	46.0
1.531501	20.4	GND	N	9.9	25.6	46.0
1.594501	19.4	GND	N	9.9	26.6	46.0
1.720501	12.0	GND	N	9.9	34.0	46.0

\*\*\*END OF REPORT\*\*\*