



# TEST REPORT

No. 2012TAR480

for

**ZTE Corporation**

**WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone**

**Model Name: ZTE Z788G**

**FCC ID : Q78- Z788G**

with

**Hardware Version: y50A**

**Software Version: Z788GV1.0.0B01**

**Issued Date: 2012-09-28**

**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:**

***DAR accreditation (DIN EN ISO/IEC 17025): No. D-PL-12123-01-01***

***FCC 2.948 Listed: No.733176***

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

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## 1. Test Laboratory

### 1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT  
Address: No 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China  
Postal Code: 100191  
Telephone: 0086-10-62304633-2561  
Fax: 0086-10-62304633-2504

### 1.2. Testing Environment

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

### 1.3. Project data

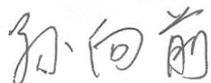
Testing Start Date: Sep. 13<sup>th</sup>, 2012  
Testing End Date: Sep. 14<sup>th</sup>, 2012

### 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: ZTE Corporation  
Address /Post: ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China  
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### **2.2. Manufacturer Information**

Company Name: ZTE Corporation  
Address /Post: ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China  
Contact: Zhang Min  
Email: zhang.min13@zte.com.cn  
Telephone: 0086 21 68897541  
Fax: 0086 21 50801070

### **3. Equipment Under Test (EUT) and Ancillary Equipment (AE)**

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

Description	WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone
Model Name	ZTE Z788G
FCC ID	Q78-Z788G
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	864183010018074	y50A	Z788GV1.0.0B01

\*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	30031207160313392
AE2	Battery	30031207160316531
AE3	Battery	30031207160342147
AE4	Travel charger	/
AE5	USB cable	/

AE1, AE2, AE3

Model	Li3714T42P3h504857
Manufacturer	ZTE
Capacitance	1400mAh
Nominal voltage	3.7V

AE4

Model	STC-A22O50I700USBA-Z
Manufacturer	RUIDE
Length of cable	120cm (length of USB cable)

,AE5

Model	/
Manufacturer	ZTE
Length of cable	120cm

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

## **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	10-1-10 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

**Control room/ conducted chamber** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

**Fully-anechoic chamber FAC-3** (8.6 meters X 6.1 meters X 3.85 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 1 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 4000 MHz

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

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.5 dB, 3 m distance
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

## 6. SUMMARY OF TEST RESULTS

<b>Abbreviations used in this clause:</b>	
P	Pass
NA	Not applicable
F	Fail

<b>Clause</b>	<b>List</b>	<b>Clause in FCC rules</b>	<b>Verdict</b>
1	Radiated Emission	15.109(a)	P
2	Conducted Emission	15.107(a)	P

## 7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESU26	100376	R&S	2012-11-08
2	EMI Antenna	VULB 9163	514	Schwarzbeck	2014-11-10
3	EMI Antenna	3117	00139065	ETS-Lindgren	2014-07-31
4	LISN	ESH2-Z5	829991/012	R&S	2013-04-16
5	Test Receiver	ESCI	100344	R&S	2013-03-28
6	Universal Radio Communication Tester	CMU200	102228	R&S	2013-07-07
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 of emission (MHz)	Field strength (microvolts/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

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

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100kHz/300kHz	5
1000-4000	1MHz/1MHz	15

### 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.

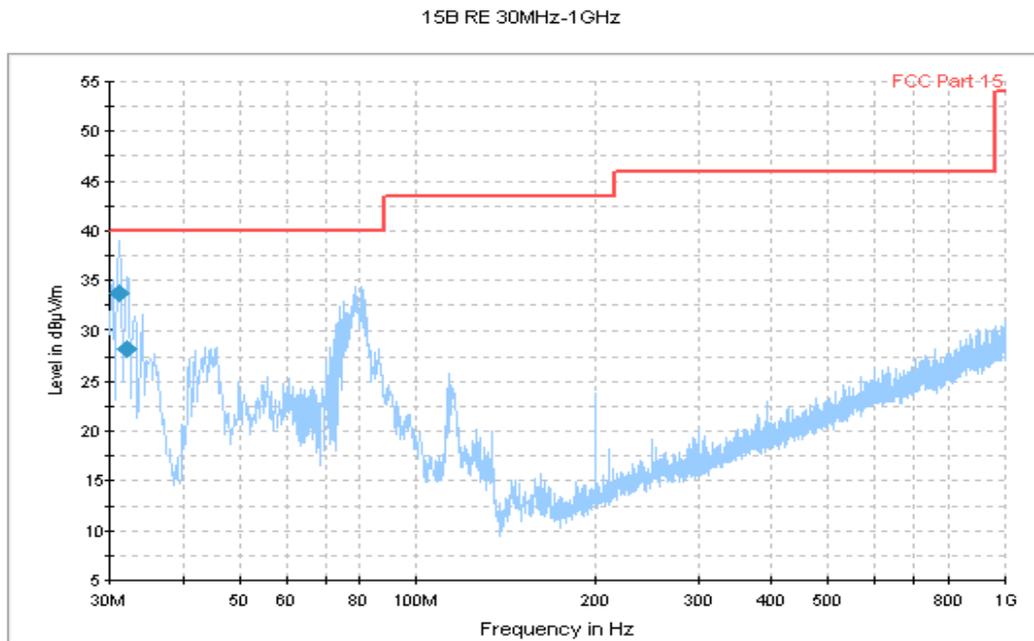
### Charging Mode

Frequency(MHz)	Result(dBuV/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{Mea}}$ (dBuV)	Polarity
2997.600	45.0	-29.0	33.8	40.152	VERTICAL
2996.400	44.9	-29.0	33.8	40.106	VERTICAL
2946.400	44.9	-28.6	33.8	39.698	VERTICAL
2942.400	44.8	-28.1	33.8	39.154	HORIZONTAL
2994.400	44.8	-29.0	33.8	40.016	HORIZONTAL
2940.800	44.8	-28.1	33.8	39.100	VERTICAL

### USB Mode

Frequency(MHz)	Result(dBuV/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{mea}}$ (dBuV)	Polarity
2998.0	45.0	-29.0	33.8	40.1	VERTICAL
2999.6	44.9	-29.0	33.8	40.1	VERTICAL
2997.0	44.9	-29.0	33.8	40.1	VERTICAL
2993.4	44.9	-29.0	33.8	40.1	VERTICAL
2997.4	44.9	-29.0	33.8	40.1	HORIZONTAL
2993.0	44.9	-29.0	33.8	40.1	HORIZONTAL

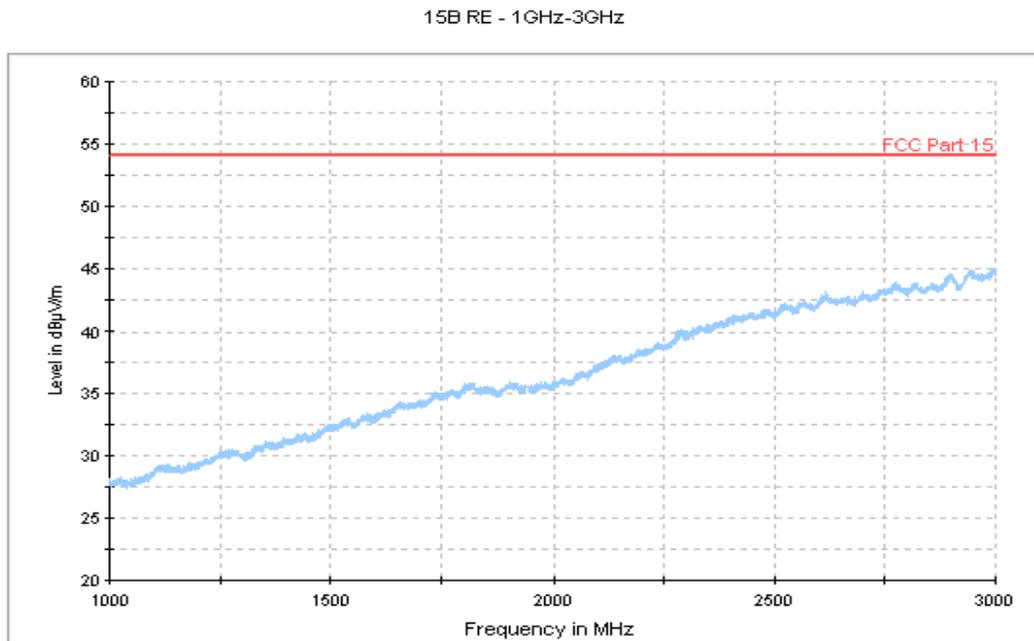
**Charging Mode**



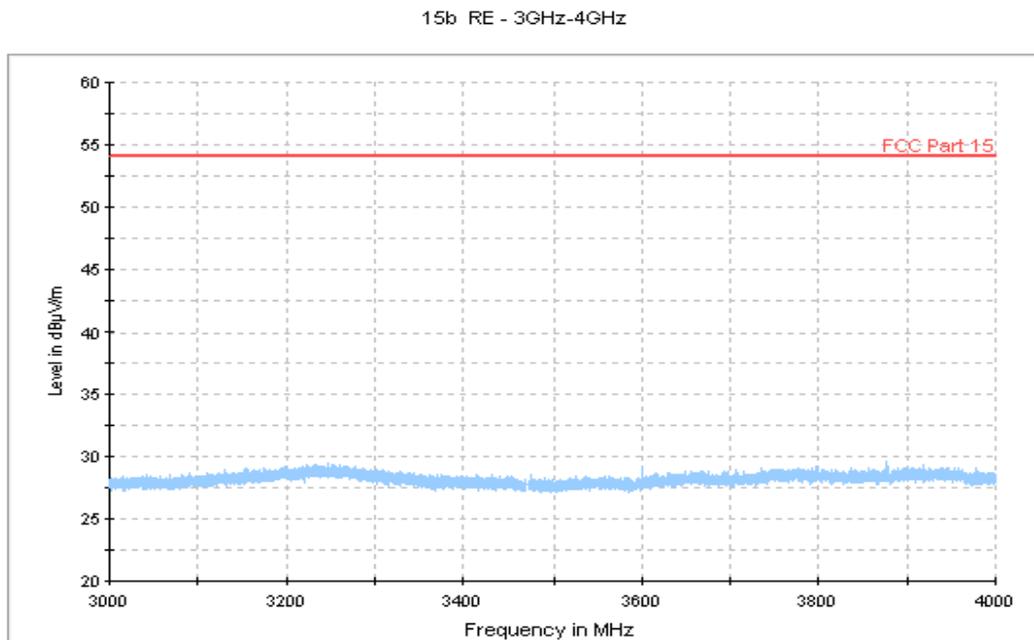
**Figure A.1 Radiated Emission from 30MHz to 1GHz**

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
31.164000	33.7	100.0	V	-20.0	-9.4	6.3
32.134000	28.2	100.0	V	-23.0	-9.6	11.8

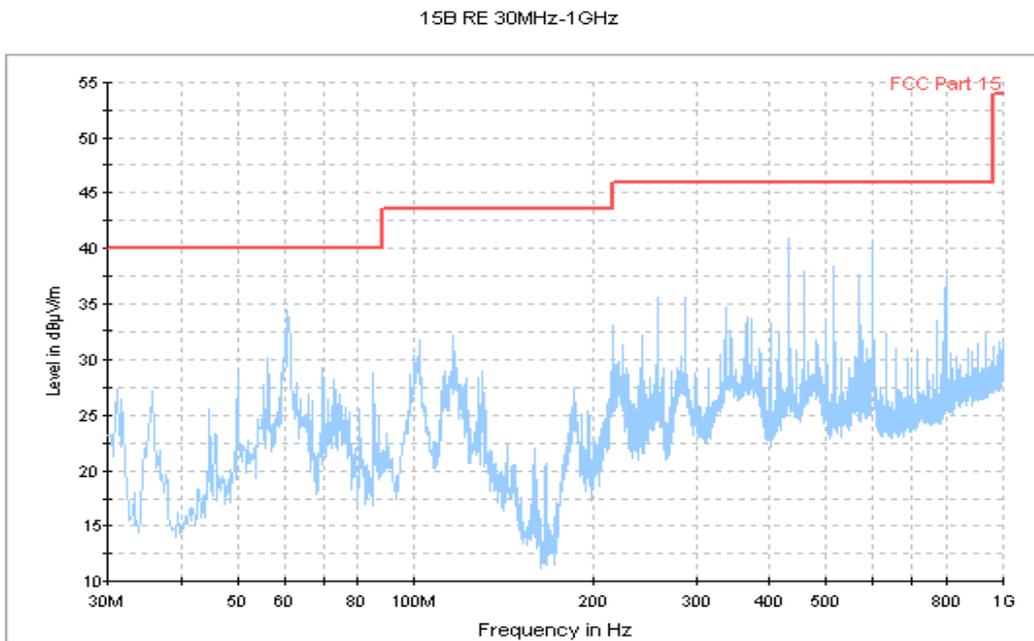


**Figure A.2 Radiated Emission from 1GHz to 3GHz**

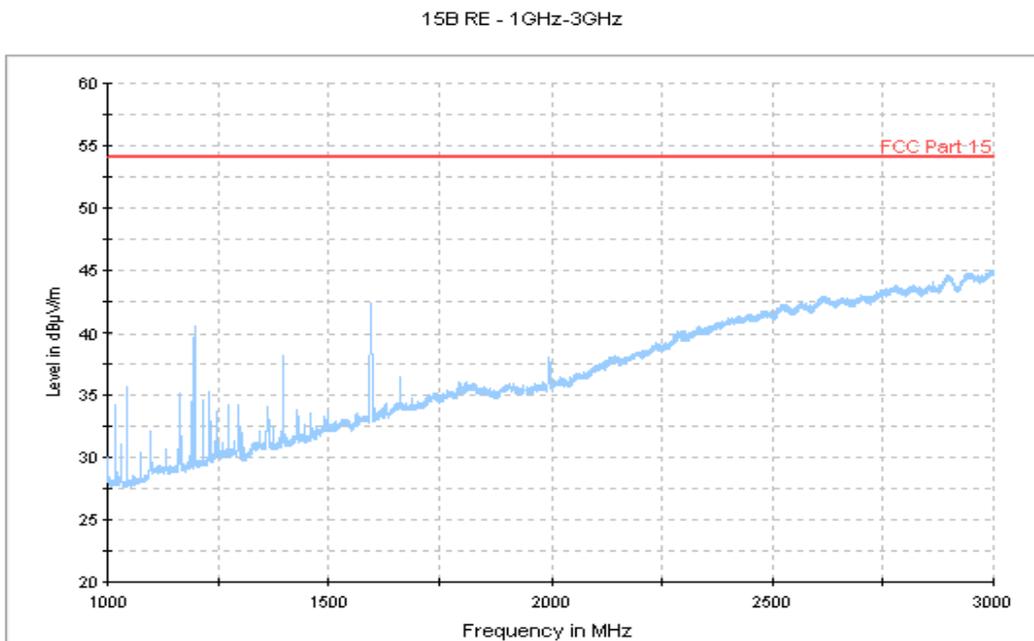


**Figure A.3 Radiated Emission from 3GHz to 4GHz**

**USB Mode**



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



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

15b RE - 3GHz-4GHz

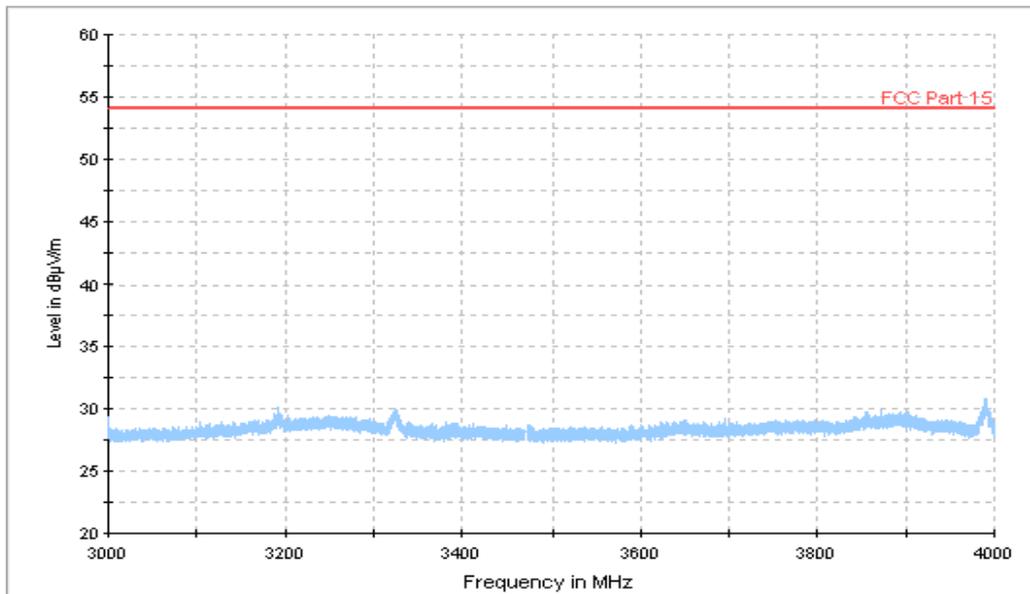


Figure A.6 Radiated Emission from 3GHz to 4GHz

## 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 Charging Mode

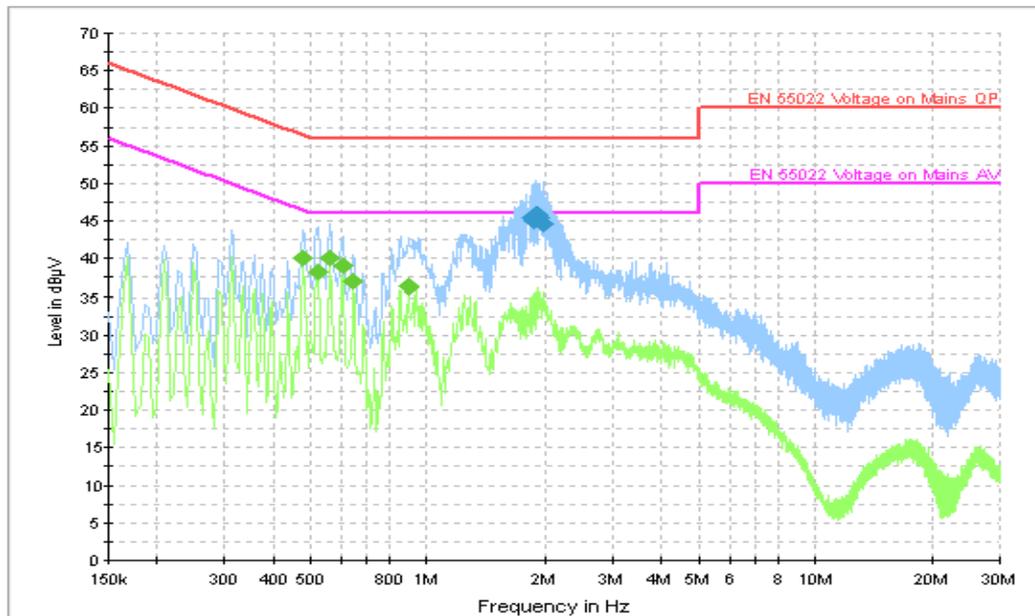


Figure A.7 Conducted Emission

#### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.855500	45.4	GND	L1	10.0	10.6	56.0
1.878000	45.0	GND	L1	10.0	11.0	56.0
1.896000	45.7	GND	L1	10.0	10.3	56.0
1.905000	45.8	GND	L1	10.0	10.2	56.0
1.945500	45.5	GND	L1	10.0	10.5	56.0
1.986000	44.6	GND	L1	10.0	11.4	56.0

#### Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.478500	40.1	GND	N	10.0	6.3	46.4
0.523500	38.1	GND	N	10.0	7.9	46.0
0.564000	40.1	GND	N	10.0	5.9	46.0
0.604500	39.1	GND	N	10.0	6.9	46.0
0.645000	36.9	GND	N	10.0	9.1	46.0
0.897000	36.4	GND	N	10.0	9.6	46.0

USB Mode

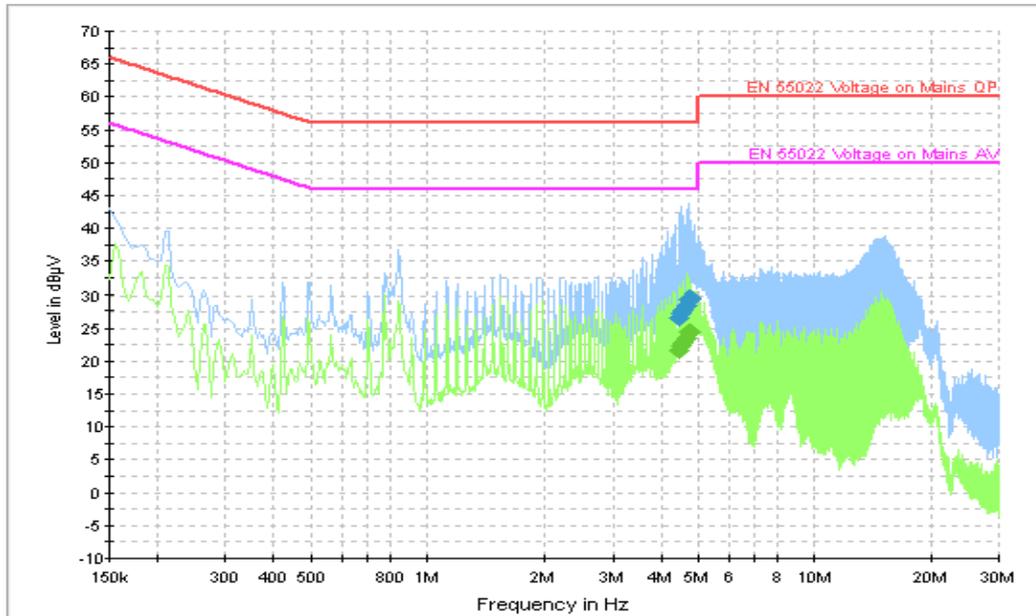


Figure A.8 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
4.438500	26.5	GND	N	10.0	29.5	56.0
4.510500	27.2	GND	N	10.0	28.8	56.0
4.578000	27.7	GND	N	10.0	28.3	56.0
4.650000	28.4	GND	N	10.0	27.6	56.0
4.722000	29.4	GND	N	10.0	26.6	56.0
4.794000	29.4	GND	N	10.0	26.6	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
4.438500	21.7	GND	N	10.0	24.3	46.0
4.506000	22.4	GND	N	10.0	23.6	46.0
4.578000	22.9	GND	N	10.0	23.1	46.0
4.650000	23.6	GND	N	10.0	22.4	46.0
4.722000	24.5	GND	N	10.0	21.5	46.0
4.789500	24.4	GND	N	10.0	21.6	46.0

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