



# TEST REPORT

No. I14N00904-EMC

for

**ZTE Corporation**

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

**Model Name: ZTE R528**

**Marketing Name: ZTE R528**

**FCC ID: SRQ-ZTER528**

with

**Hardware Version: GMBF**

**Software Version: ZTE-EN-8D-P153A40V0.0.1**

**Issued Date: 2014-08-26**

**Test Laboratory:**

*FCC 2.948 Listed: No.310359*

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

**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.

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## 1. Test Laboratory

### 1.1. Testing Location

Company Name: TMC Shenzhen, Telecommunication Metrology Center of MIIT  
Address: No. 12 Building, Shangsha Innovation and Technology Park, Futian District  
Postal Code: 518048  
Telephone: +86(0)755-33322000  
Fax: +86(0)755-33322001

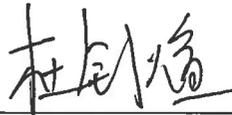
### 1.2. Testing Environment

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

### 1.3. Project data

Testing Start Date: 2014-08-13  
Testing End Date: 2014-08-25

### 1.4. Signature



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Du Zhaoxuan

(Prepared this test report)



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Zhang Bojun

(Reviewed this test report)



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Lu Minniu

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 , Shenzhen,China  
City: ShenZhen  
Postal Code: 518000  
Country: China

### **2.2. Manufacturer Information**

Company Name: ZTE Corporation  
Address /Post: ZTE Plaza, Keji Road South , Shenzhen,China  
City: ShenZhen  
Postal Code: 518000  
Country: China

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

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

Description	GSM (GPRS) Dual-Mode Digital Mobile Phone
Model Name	ZTE R528
Marketing Name	ZTE R528
FCC ID	SRQ-ZTER528

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

##### **EUT ID\* SN or IMEI**

EUT1 865501025003311

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

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

<b>AE ID*</b>	<b>Description</b>	<b>SN</b>
AE1	Battery	/
AE2	Travel charger	/
AE3	USB cable	/

##### AE1

Model	Li3706T42P3h453756
Manufacturer	Shenzhen Ruide Electronic Industrial Co., Ltd.
Capacitance	400mAh
Nominal voltage	3.7V

##### AE2

Model	STC-A22O50I400M5-C
Manufacturer	Shenzhen Ruide Electronic Industrial Co., Ltd.
Length of cable	120cm

##### AE3

Model	/
Manufacturer	/
Length of cable	98cm

\*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	Charging mode
Set.2	EUT1+ AE1 + AE3	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	10-1-2013 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** (11.20 meters×6.10meters×5.60meters) 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	> 2MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.5 dB, 3 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

**Control room** 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	> 2MΩ
Ground system resistance	< 0.5 Ω

**Conducted chamber** 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	> 2MΩ
Ground system resistance	< 0.5 Ω

**Fully-anechoic chamber** (11.20 meters×6.10 meters×6.60 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	> 2MΩ
Ground system resistance	< 0.5 Ω
Voltage Standing Wave Ratio (VSWR)	≤ 6 dB, from 1 to 6 GHz, 3 m distance

## 6. SUMMARY OF TEST RESULTS

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

<b>Items</b>	<b>Test Name</b>	<b>Clause in FCC rules</b>	<b>Section in this report</b>	<b>Verdict</b>
1	Radiated Emission	15.109(a)	A.1	P
2	Conducted Emission	15.107(a)	A.2	P

**7. Test Equipments Utilized**

<b>NO.</b>	<b>Description</b>	<b>TYPE</b>	<b>SERIES NUMBER</b>	<b>MANUFACTURE</b>	<b>CAL DUE DATE</b>	<b>CAL PERIOD</b>
1	Test Receiver	ESCI	100701	R&S	2015.07.30	1 year
2	Test Receiver	ESCI	100702	R&S	2015.07.30	1 year
3	Spectrum Analyzer	FSP 40	100378	R&S	2014.12.20	1 year
4	BiLog Antenna	VULB9163	9163 329	Schwarzbeck	2017.01.20	3 years
5	LISN	ESH2-Z5	100196	R&S	2015.01.14	1 year
6	Dual-Ridge Waveguide Horn Antenna	3117	00066577	ETS-Lindgren	2016.04.01	3 years
7	Universal Radio Communication Tester	E5515C	GB44051324	Agilent	2015.05.20	1 year

## **ANNEX A: MEASUREMENT RESULTS**

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

#### **Reference**

FCC: CFR Part 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 Lenovo Thinkcentre M4099t, and the serial number of the PC is SA08850737. 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**

Limit from CFR Part 15.109(a)

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

\*Note: The original limit is defined at 10m test distance. This limit is calculated according to CISPR requirements.

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

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz (IF bandwidth)	5
Above 1000	1MHz/3MHz	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.

Note: the result contains vertical part and Horizontal part

#### Set.1 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	$A_{Rpl}$ (dB)	Margin(dB)	Limit (dB $\mu$ V/m)
14393.000000	56.6	H	13.4	17.4	74.0
15173.000000	57.9	H	13.1	16.1	74.0
15758.000000	59.5	V	14.1	14.5	74.0
16253.000000	59.5	V	14.6	14.5	74.0
16879.000000	59.9	V	15.8	14.1	74.0
17407.000000	59.5	V	15.6	14.5	74.0

#### Set.1 Charging mode / Average detector

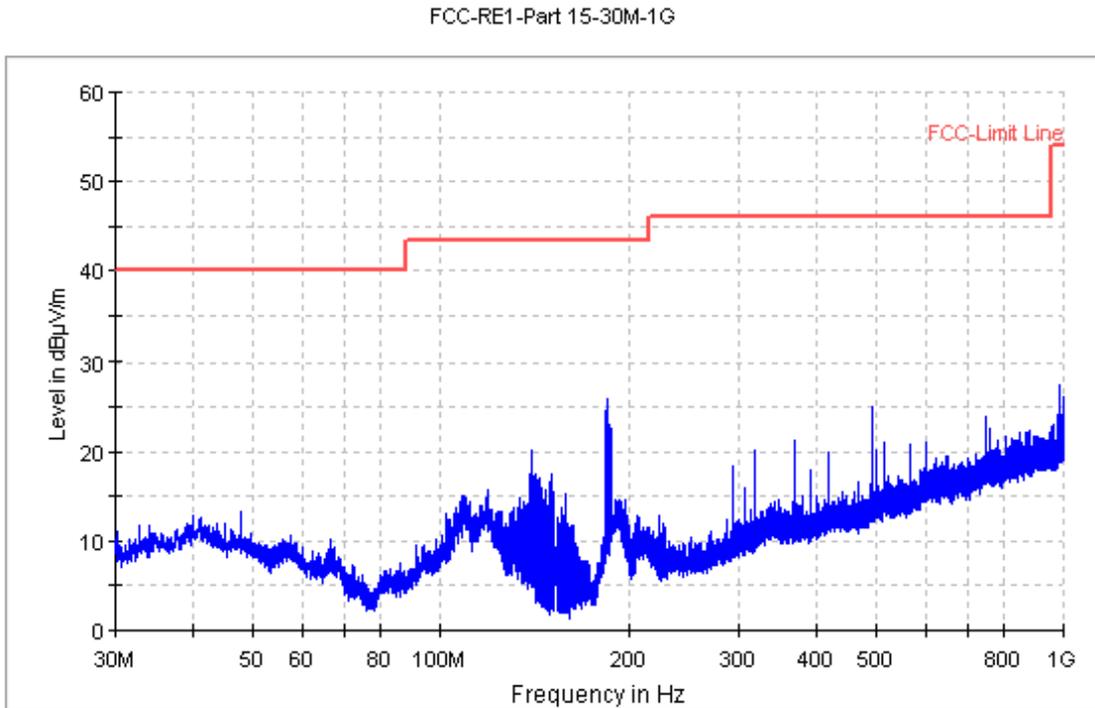
Frequency(MHz)	Result(dBuV/m)	Polarity	$A_{Rpl}$ (dB)	Margin(dB)	Limit (dB $\mu$ V/m)
14396.000000	44.8	V	13.4	9.2	54.0
14973.000000	45.7	H	13.8	8.3	54.0
15771.000000	47.2	H	14.1	6.8	54.0
16342.000000	47.3	V	15.1	6.7	54.0
16819.000000	47.9	V	15.5	6.1	54.0
17363.000000	47.4	H	15.5	6.6	54.0

**Set.2 USB mode / Peak detector**

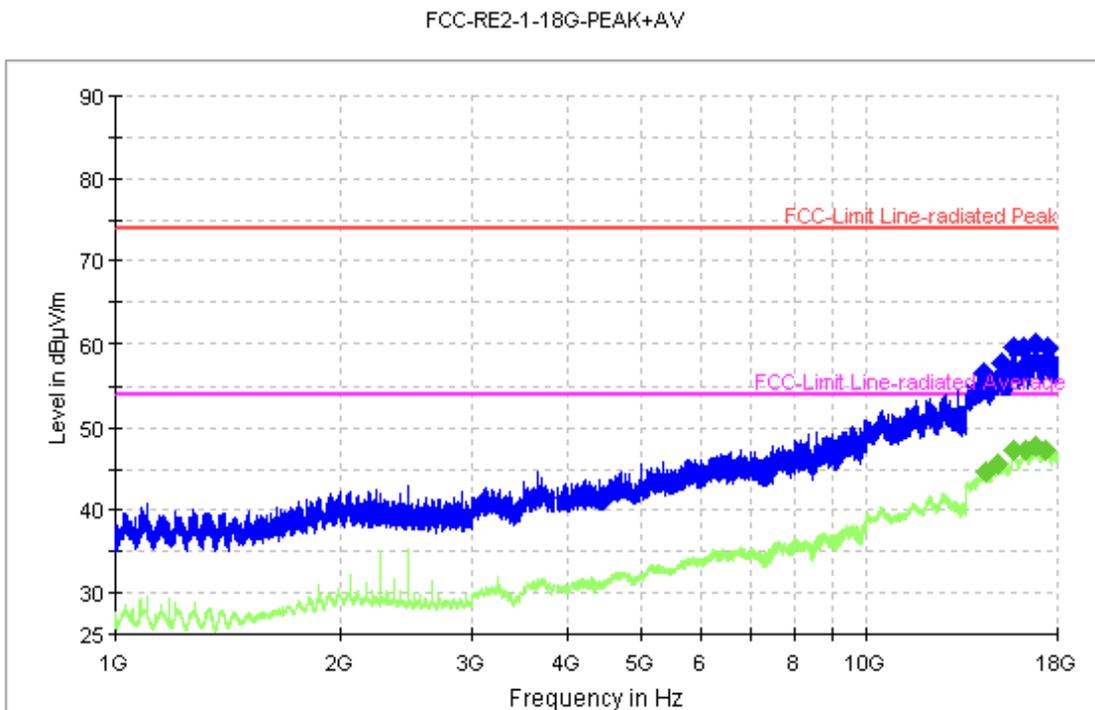
Frequency(MHz)	Result(dBuV/m)	Polarity	A <sub>Rpl</sub> (dB)	Margin(dB)	Limit (dB $\mu$ V/m)
14470.000000	58.5	V	13.0	15.5	74.0
15128.000000	58.9	V	12.8	15.1	74.0
15749.000000	60.6	V	14.1	13.4	74.0
16259.000000	61.0	H	14.6	13.0	74.0
16860.000000	61.0	H	15.7	13.0	74.0
17410.000000	61.0	H	15.6	13.0	74.0

**Set.2 USB mode / Average detector**

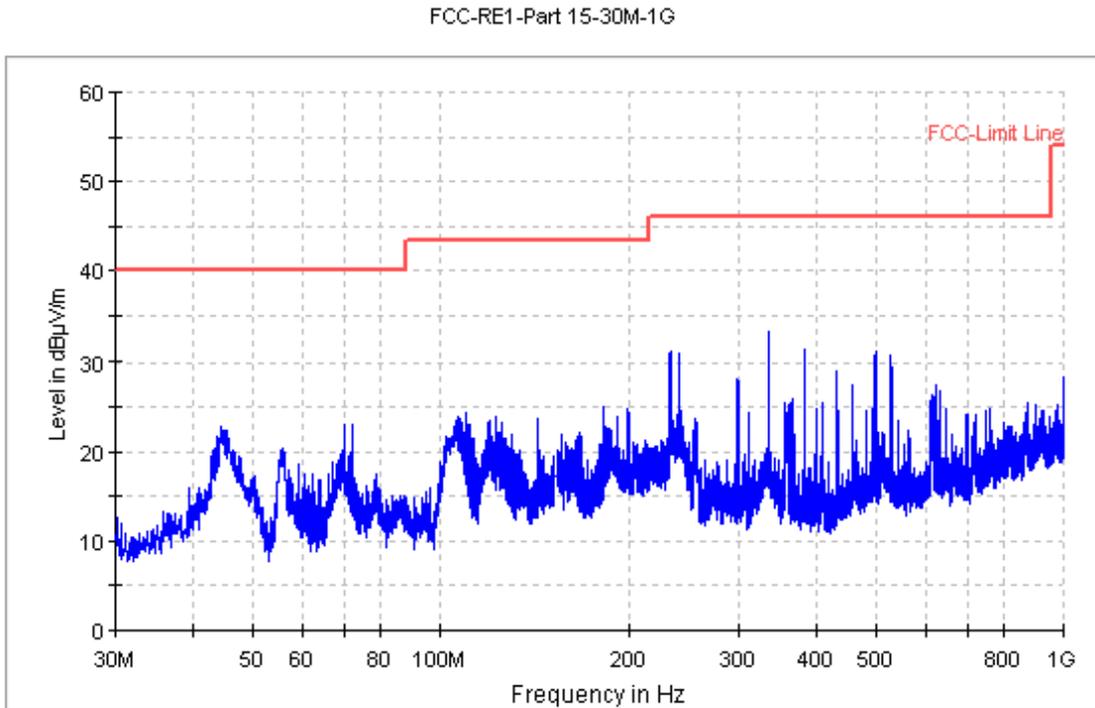
Frequency(MHz)	Result(dBuV/m)	Polarity	A <sub>Rpl</sub> (dB)	Margin(dB)	Limit (dB $\mu$ V/m)
14469.000000	45.7	V	13.0	8.3	54.0
14958.000000	46.4	H	13.7	7.6	54.0
15787.000000	48.1	H	14.2	5.9	54.0
16340.000000	48.2	V	15.1	5.8	54.0
16828.000000	48.8	V	15.5	5.2	54.0
17320.000000	48.6	V	15.4	5.4	54.0



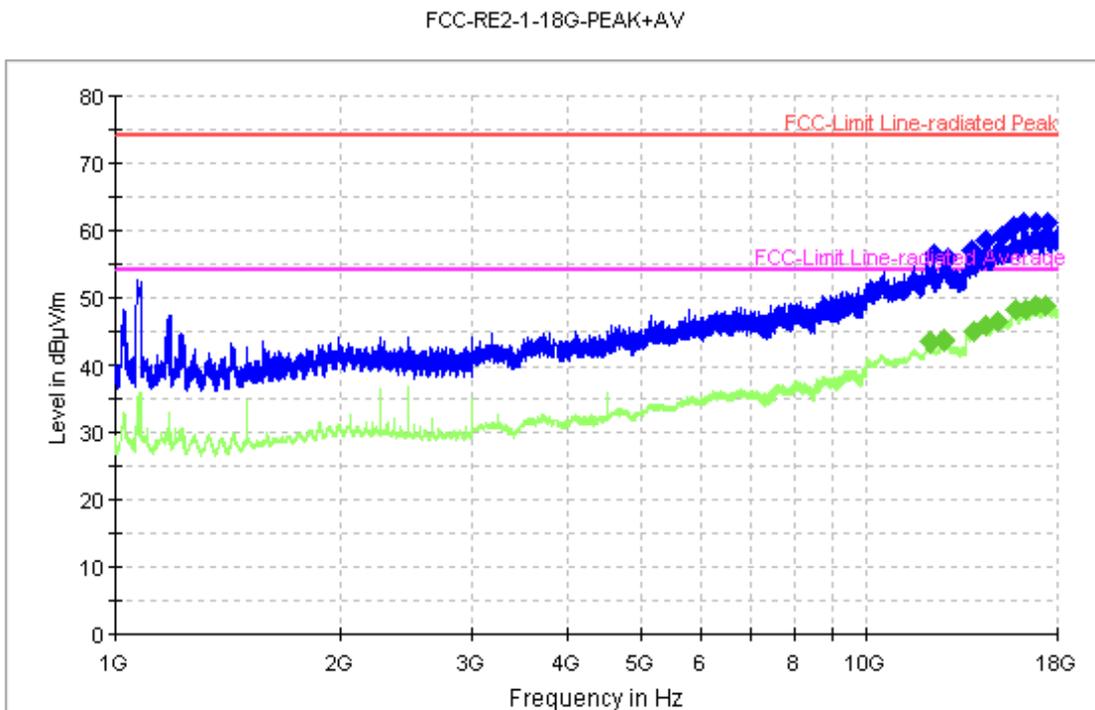
**Figure A.1 Radiated Emission from 30MHz to 1GHz (Set.1, Charging mode)**



**Figure A.2 Radiated Emission from 1GHz to 18GHz (Set.1, Charging mode)**



**Figure A.3 Radiated Emission from 30MHz to 1GHz (Set.2, USB mode)**



**Figure A.4 Radiated Emission from 1GHz to 18GHz (Set.2, USB mode)**

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

### Reference

FCC: CFR Part 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 Lenovo Thinkcentre M4099t, and the serial number of the PC is SA08850737. 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

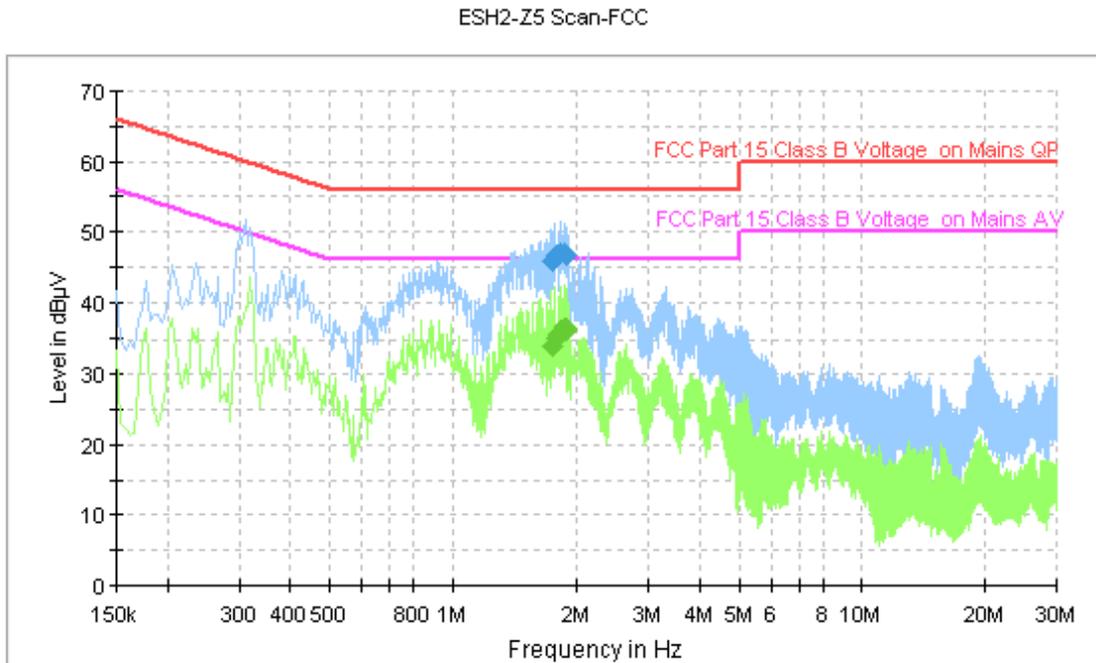
\*Decreases with the logarithm of the frequency

### A.2.4 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
120	60

RBW	Sweep Time(s)
9kHz	1

### A.2.5 Measurement Results



**Figure A.5 Conducted Emission (Set.1, Charging mode)**

#### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.742000	45.9	FLO	L1	10.1	10.1	56.0
1.786000	46.6	FLO	L1	10.1	9.4	56.0
1.814000	46.8	FLO	L1	10.1	9.2	56.0
1.858000	47.0	FLO	L1	10.1	9.0	56.0
1.874000	46.9	FLO	L1	10.1	9.1	56.0
1.890000	46.8	FLO	L1	10.1	9.2	56.0

#### Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.742000	33.9	FLO	L1	10.1	12.1	46.0
1.786000	35.1	FLO	L1	10.1	10.9	46.0
1.802000	35.8	FLO	L1	10.1	10.2	46.0
1.830000	35.9	FLO	L1	10.1	10.1	46.0
1.874000	36.2	FLO	L1	10.1	9.8	46.0
1.890000	36.4	FLO	L1	10.1	9.6	46.0

ESH2-Z5 Scan-FCC

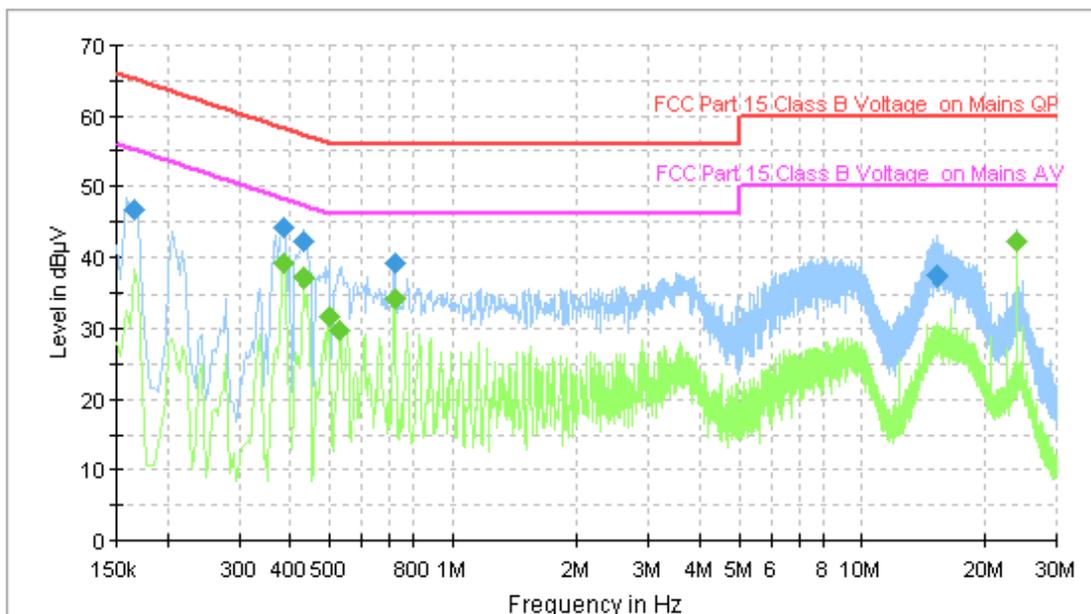


Figure A.6 Conducted Emission (Set.2, USB mode)

**Final Measurement Detector 1**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	46.6	FLO	N	10.1	18.6	65.2
0.386000	44.2	FLO	N	10.0	13.9	58.1
0.434000	42.1	FLO	L1	10.0	15.1	57.2
0.722000	39.2	FLO	L1	10.0	16.8	56.0
15.250000	37.3	FLO	L1	10.5	22.7	60.0
24.002000	42.3	FLO	L1	10.6	17.7	60.0

**Final Measurement Detector 2**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.386000	39.0	FLO	N	10.0	9.1	48.1
0.434000	37.1	FLO	L1	10.0	10.0	47.2
0.498000	31.6	FLO	L1	10.0	14.4	46.0
0.530000	29.7	FLO	L1	10.0	16.3	46.0
0.722000	34.4	FLO	L1	10.0	11.6	46.0
24.002000	42.1	FLO	L1	10.6	7.9	50.0

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