



TEST REPORT

No. 2012TAR296

for

ZTE Corporation

GSM Dual-Band Digital Mobile Phone

Model Name: ZTE-G S518

FCC ID : Q78- GS518

with

Hardware Version: GMAQ

Software Version: ZTE-CN-9S-P110A17V1.0.0

Issued Date: 2012-06-11

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. DGA-PL-114/01-02

FCC 2.948 Listed: No.733176

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

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1. Test Laboratory

1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No.18A, KangDing Street, Beijing Economic-Technological
Development Area, Beijing, P.R.China
Postal Code: 100176
Telephone: 00861062304633-2678
Fax: 00861062304633-2504

1.2. Testing Environment

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

1.3. Project data

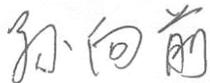
Testing Start Date: May 25, 2012
Testing End Date: May 26, 2012

1.4. Signature



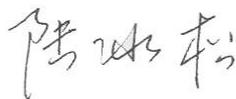
Liu Baodian

(Prepared this test report)



Sun Xiangqian

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: ZTE Corporation
Address /Post: #68 Zijin Hua Road, Nanjing, Jiangsu Province, P. R. China
City: Nan Jing
Postal Code: 210012
Country: China
Telephone: +86-25-52878232
Fax: +86-25-68897541

2.2. Manufacturer Information

Company Name: ZTE Corporation
Address /Post: #68 Zijin Hua Road, Nanjing, Jiangsu Province, P. R. China
City: Nan Jing
Postal Code: 210012
Country: China
Telephone: +86-25-52878232
Fax: +86-25-68897541

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

3.1. About EUT

Description	GSM Dual-Band Digital Mobile Phone
Model Name	ZTE-G S518
FCC ID	Q78-GS518
Extreme vol. Limits	3.5V DC to 4.2V DC (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 MII 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	864388010001422	GMAQ	ZTE-CN-9S-P110A17V1.0.0

*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	
AE2	Travel Adapter	/
AE3	USB Cable	/
AE1		
Model	Li3707T42P3h463548	
Manufacturer	ZTE	
Capacitance	720mAh	
Nominal Voltage	3.7V	
AE2		
Model	STC-A22O50I700M5-C	
Manufacturer	RUIDE	
Length of DC line	180cm	
AE3		
Model	/	
Manufacturer	ZTE	
Length of headset line	120cm	

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

3.4. General Description

Equipment Under Test (EUT) is a model of GSM Dual-Band Digital Mobile Phone with integrated antenna. It supports GSM 850/1900 bands.

It has MP3, functions.

It consists of normal options: Lithium Battery, Charger and USB Cable. Since subscribers often use MS during charging, EUT is to be test in accordance with “Base Station and ancillary equipment for fixed use” besides in accordance with “Portable and ancillary equipment for portable use”.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the Client.

3.5. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1+ AE1+AE2+AE3	Charging
Set.2	EUT1+ AE1+AE3	USB

4. Reference Documents

4.1. Reference Documents for testing

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

Reference	Title	Version
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

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

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 1 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. =30 %, Max. = 60 %
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. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber (8.6 meters×6.1 meters×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
Uniformity of field strength	Between 0 and 6 dB, from 80 to 4000 MHz

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:	
P	Pass
NA	Not applicable
F	Fail

Clause	List	Clause in FCC rules	Verdict
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	ESCI	100344	R&S	2013-03-28
2	Spectrum Analyzer	ESU26	100376	R&S	2012-11-08
3	BiLog Antenna	VUL9163	514	Schwarzbeck	2014-11-10
4	LISN	ESH2-Z5	829991/012	R&S	2013-04-16
5	Universal Radio Communication Tester	CMU200	100680	R&S	2012-09-05
6	Universal Radio Communication Tester	E5515C	MY48363198	Agilent	2012-07-09
7	Dual-Ridge Waveguide Horn Antenna	3117	00139065	ETS-Lindgren	2014-07-31
8	Test Receiver	ESCI	100344	R&S	2013-03-28
9	PC	OPTIPLEX 755	3908243625	DELL	N/A
10	Monitor	E178FPc	CN-OWR979-64 180-7AJ-D2MS	DELL	N/A
11	Printer	DeskJet D2368	TH72E12G7Q	HP	N/A
12	Keyboard	L100	CN0RH6596589 07ATOI40	DELL	N/A
13	Mouse	VR-301	6927225500198	XINGYU	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.

A.1.2 EUT Operating Mode:

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. 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", and including the gain of receive antenna and the path loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + F_A + G_{\text{PL}}$$

Where

F_A : Receive Antenna Factor

G_{PL} : Cable Loss

P_{Mea} : The measurement result on receiver.

Charging Mode

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	F_A (dB/m)	P_{Mea} (dBuV)	Polarity
2772.400	39.351	-26.3	33.8	31.851	HORIZONTAL
2775.000	39.345	-26.3	33.8	31.845	VERTICAL
2777.200	39.291	-26.3	33.8	31.791	VERTICAL
2777.000	39.282	-26.3	33.8	31.782	VERTICAL
2773.600	39.279	-26.3	33.8	31.779	HORIZONTAL
2779.200	39.263	-26.3	33.8	31.763	VERTICAL

USB Mode

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	F_A (dB/m)	P_{mea} (dBuV)	Polarity
1497.000	44.305	-32.5	26.3	50.505	VERTICAL
1496.600	44.281	-32.5	26.3	50.481	VERTICAL
1496.400	44.140	-32.5	26.3	50.340	VERTICAL
1496.000	44.130	-32.5	26.3	50.330	VERTICAL
1496.800	44.122	-32.5	26.3	50.322	VERTICAL
1496.200	44.018	-32.5	26.3	50.218	VERTICAL

Charging Mode

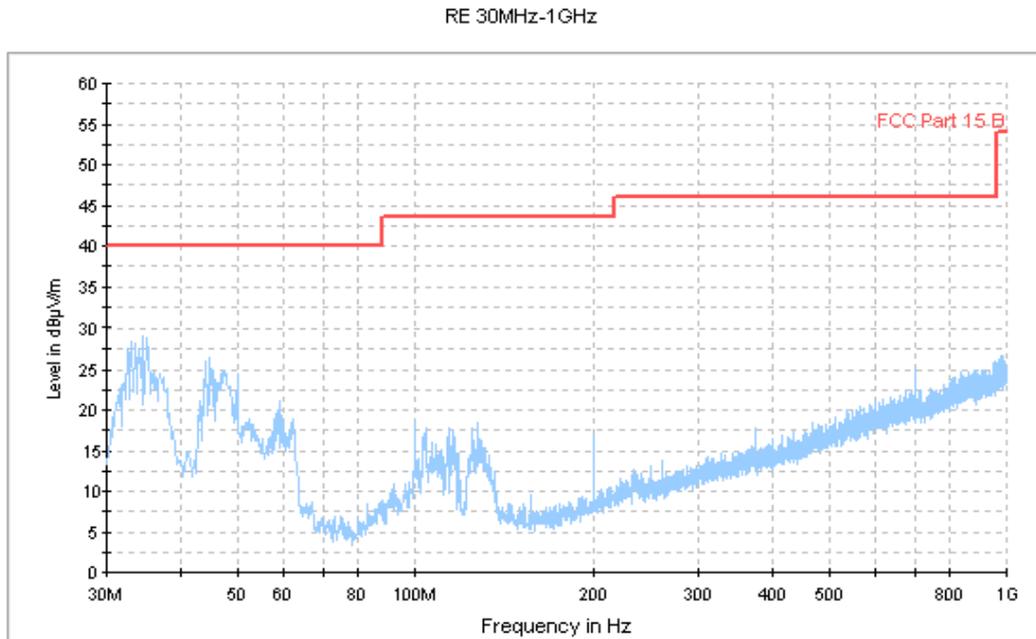


Figure A.1 Radiated Emission from 30MHz to 1GHz

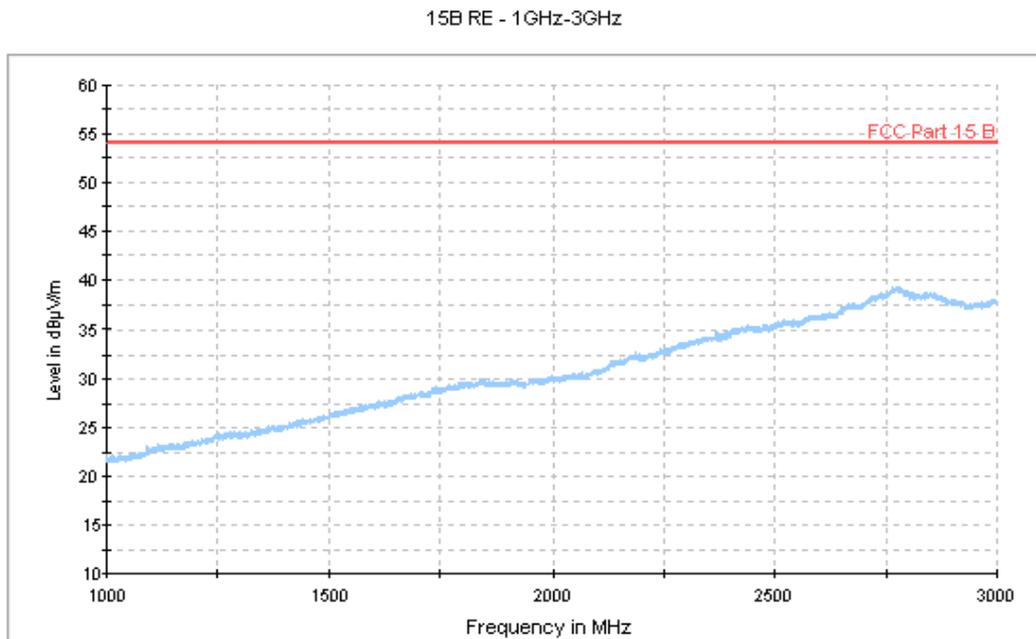


Figure A.2 Radiated Emission from 1GHz to 3GHz

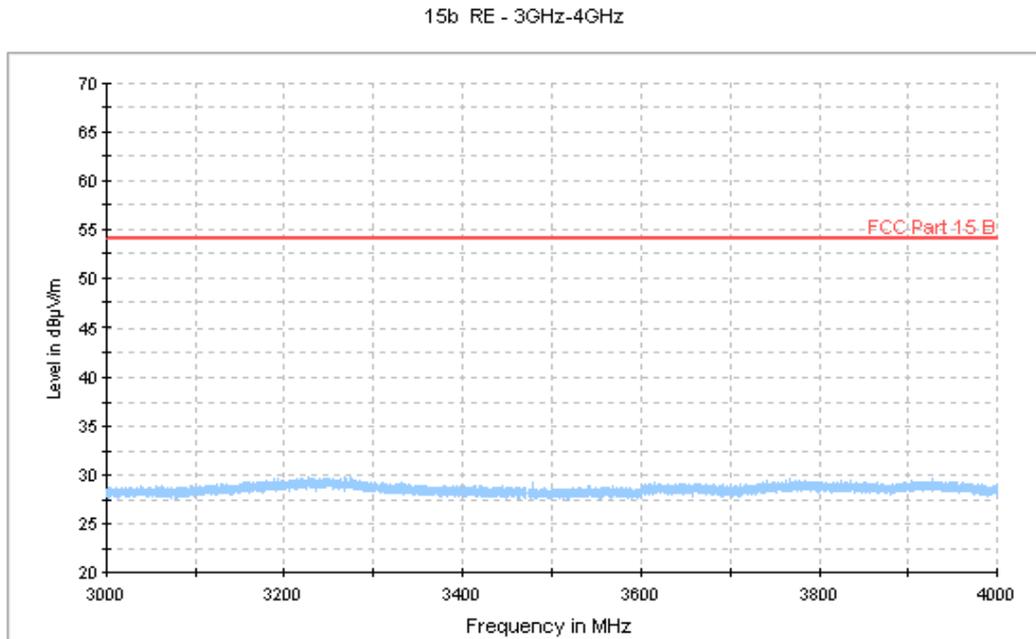


Figure A.3 Radiated Emission from 3GHz to 4GHz

USB Mode

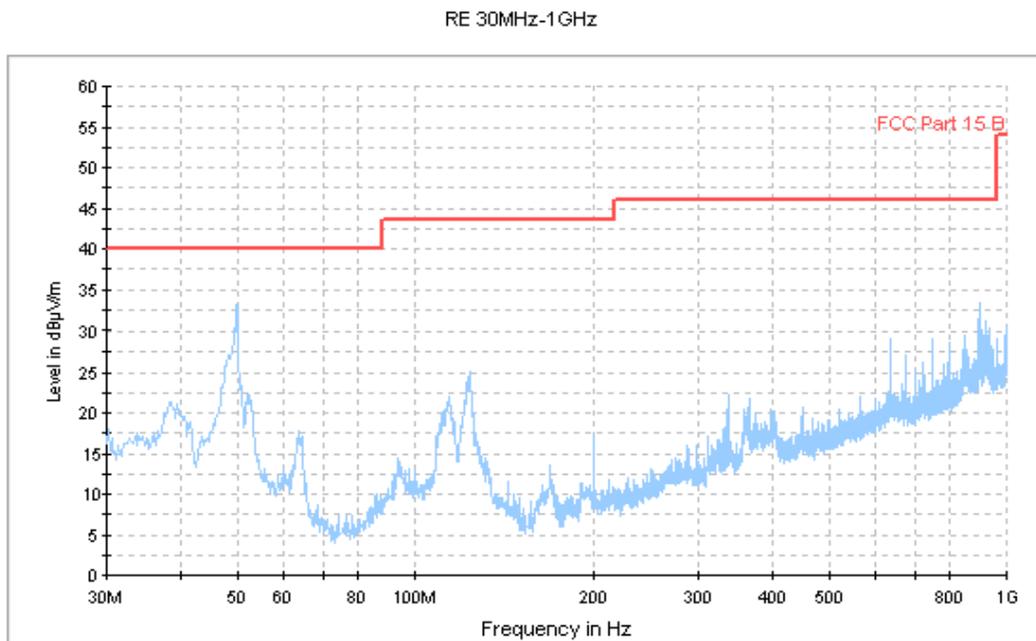


Figure A.4 Radiated Emission from 30MHz to 1GHz

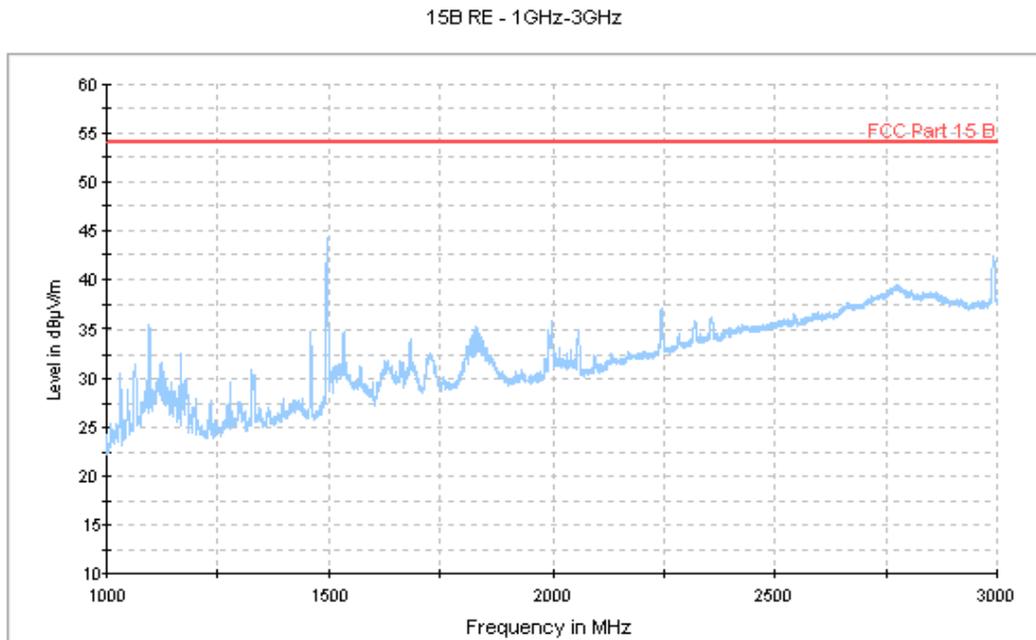


Figure A.5 Radiated Emission from 1GHz to 3GHz

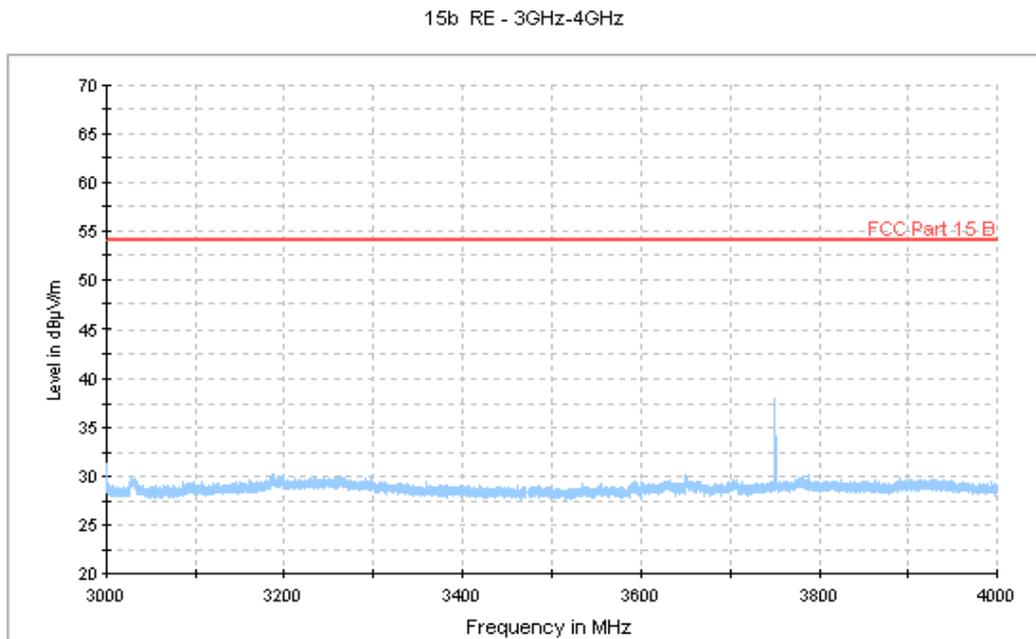


Figure A.6 Radiated Emission from 3GHz to 4GHz

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 μ 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.2.4 Measurement Results Charging Mode

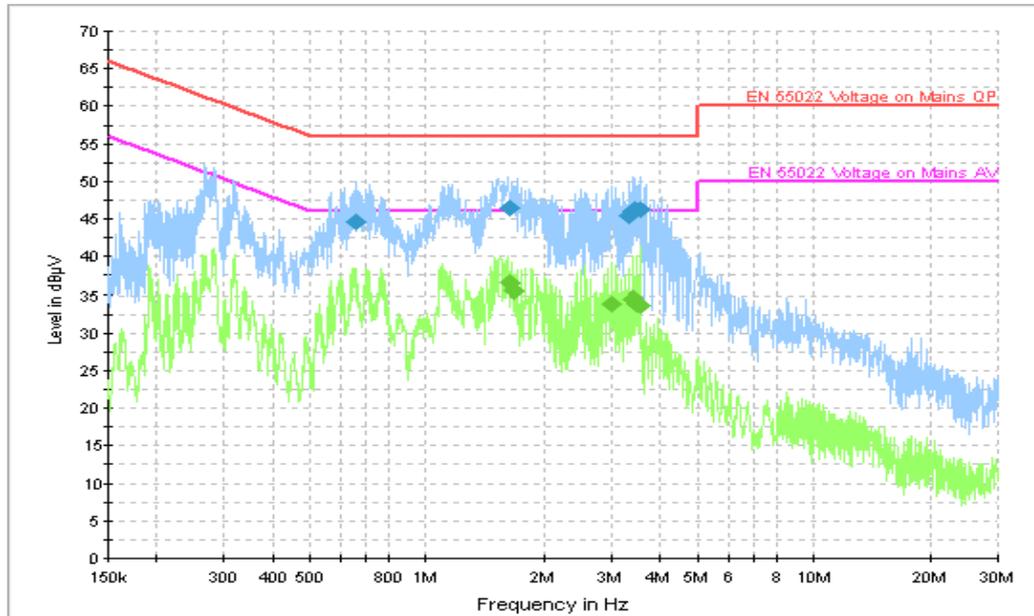


Figure A.5 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.660774	44.7	15000.0	9.000	GND	L1	10.3	11.3	56.0
1.637706	46.5	15000.0	9.000	GND	L1	10.3	9.5	56.0
3.330864	45.5	15000.0	9.000	GND	L1	10.4	10.5	56.0
3.401445	46.1	15000.0	9.000	GND	L1	10.4	9.9	56.0
3.452774	46.2	15000.0	9.000	GND	L1	10.4	9.8	56.0
3.547125	46.2	15000.0	9.000	GND	L1	10.4	9.8	56.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
1.627923	36.5	15000.0	9.000	GND	L1	10.3	9.5	46.0
1.662419	35.5	15000.0	9.000	GND	L1	10.3	10.5	46.0
2.981415	33.9	15000.0	9.000	GND	L1	10.4	12.1	46.0
3.401445	34.5	15000.0	9.000	GND	L1	10.4	11.5	46.0
3.473522	33.9	15000.0	9.000	GND	L1	10.4	12.1	46.0
3.547125	33.7	15000.0	9.000	GND	L1	10.4	12.3	46.0

USB Mode

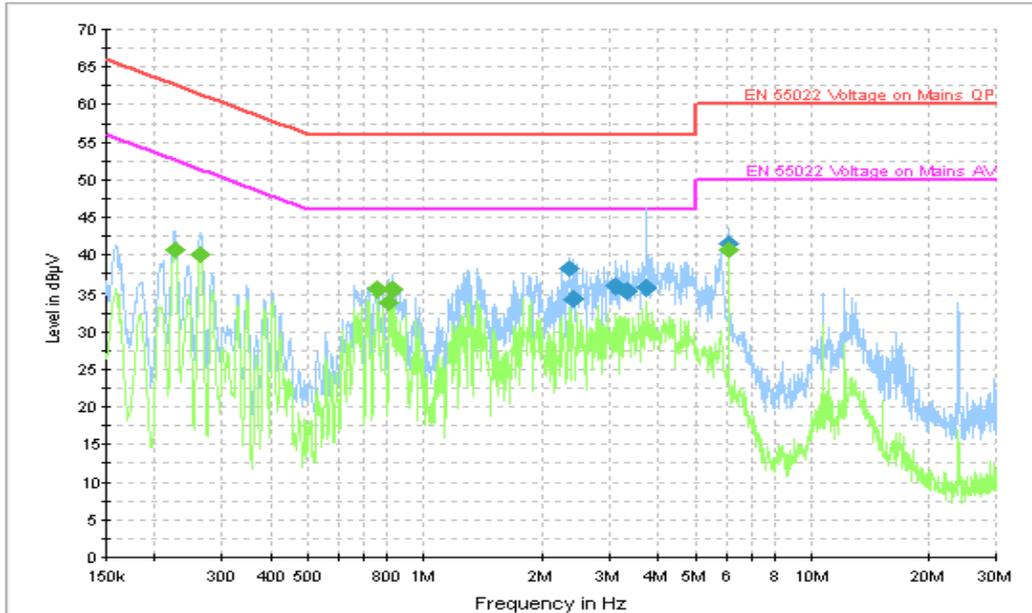


Figure A.6 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dB µ V)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
2.353145	38.3	15000.0	9.000	GND	N	10.4	17.7	56.0
2.417448	34.2	15000.0	9.000	GND	N	10.4	21.8	56.0
3.109106	35.9	15000.0	9.000	GND	N	10.4	20.1	56.0
3.320902	35.2	15000.0	9.000	GND	L1	10.4	20.8	56.0
3.721272	35.8	15000.0	9.000	GND	N	10.4	20.2	56.0
6.100219	41.5	15000.0	9.000	GND	N	10.5	18.5	60.0

Final Result 2

Frequency (MHz)	Average (dB µ V)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.226110	40.6	15000.0	9.000	GND	L1	10.3	12.0	52.6
0.264221	40.1	15000.0	9.000	GND	L1	10.2	11.2	51.3
0.753866	35.5	15000.0	9.000	GND	L1	10.3	10.5	46.0
0.812489	33.8	15000.0	9.000	GND	L1	10.3	12.2	46.0
0.829706	35.6	15000.0	9.000	GND	L1	10.3	10.4	46.0
6.100219	40.7	15000.0	9.000	GND	N	10.5	9.3	50.0

END OF REPORT