



TEST REPORT

No. 2012TAR574

for

TCT Mobile Limited

GSM/EGPRS Quadband mobile phone

Model Name: Conet 2SIM

Marketing Name: ONE TOUCH 815D

FCC ID: RAD309

with

Hardware Version: PIO

Software Version: V321

Issued Date: Nov.28, 2012

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-1

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

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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℃
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: Oct. 11th, 2012
Testing End Date: Oct. 12th, 2012

1.4. Signature



Qu Pengfei
(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: 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
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Country: China
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Telephone: 0086-21-61460890
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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	GSM/EGPRS Quadband mobile phone
Model Name	Conet 2SIM
Marketing Name	ONE TOUCH 815D
FCC ID	RAD309
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. The EUT is a variant model of ONE TOUCH 815. All the result is coming from the initial model.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	866664010006464	PIO	V321

*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	B097156A26A
AE2	Battery	BAK2011110800333
AE3	Travel Adapter	/
AE4	USB Cable	/
AE5	USB Cable	/
AE6	USB Cable	/
AE7	USB Cable	/

AE1

Model	CAB3120000C1
Manufacturer	BYD
Capacitance	850 mAh
Nominal Voltage	3.7 V

AE2

Model	CAB3120000C3
Manufacturer	BAK
Capacitance	850 mAh
Nominal Voltage	3.7 V

AE3

Model	CBA3120AG0C2
Manufacturer	Tenpao
Length of cable	120 cm

AE4

Model	CDA3122002C1
Manufacturer	Juwei
Length of cable	150cm

AE5

Model	CDA3122002C2
Manufacturer	Shenhua
Length of cable	150cm

AE6

Model	CDA3122005C1
Manufacturer	Juwei
Length of cable	150cm

AE7

Model	CDA3122005C2
Manufacturer	Shenhua
Length of cable	150cm

*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.

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 SAC-2 (10 meters×6.7meters×6.1meters) 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	< 1Ω
Normalised site attenuation (NSA)	< ±3.5 dB, 3m distance, from 30 to 1000 MHz
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

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. = 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
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz

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

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	ESU26	100376	R&S	2013-11-07
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	100680	R&S	2013-09-05
7	Universal Radio Communication Tester	CMU200	102228	R&S	2013-07-07
8	PC	OPTIPLEX 755	3908243625	DELL	N/A
9	Monitor	E178FPc	CN-OWR979-6 4180-7AJ-D2M S	DELL	N/A
10	Printer	DeskJet D2368	TH72E12G7Q	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_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Charging Mode

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBuV)	Polarity
2794.200	44.4	-26.3	33.3	37.438	Horizontal
2795.400	44.4	-26.3	33.3	37.438	Horizontal
2805.200	44.4	-27.6	33.8	38.241	Horizontal
2779.800	44.4	-26.3	33.3	37.438	Vertical
2797.600	44.4	-26.3	33.3	37.438	Vertical
2804.000	44.4	-27.6	33.8	38.241	Vertical

USB Mode

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	G_A (dB/m)	P_{mea} (dBuV)	Polarity
3000.000	45.2	-28.4	34.1	39.472	Horizontal
2792.800	44.5	-26.3	33.3	37.538	Horizontal
2798.200	44.4	-26.3	33.3	37.438	Vertical
2783.200	44.4	-26.3	33.3	37.438	Vertical
2793.200	44.4	-26.3	33.3	37.438	Horizontal
2789.800	44.4	-26.3	33.3	37.438	Horizontal

Charging Mode

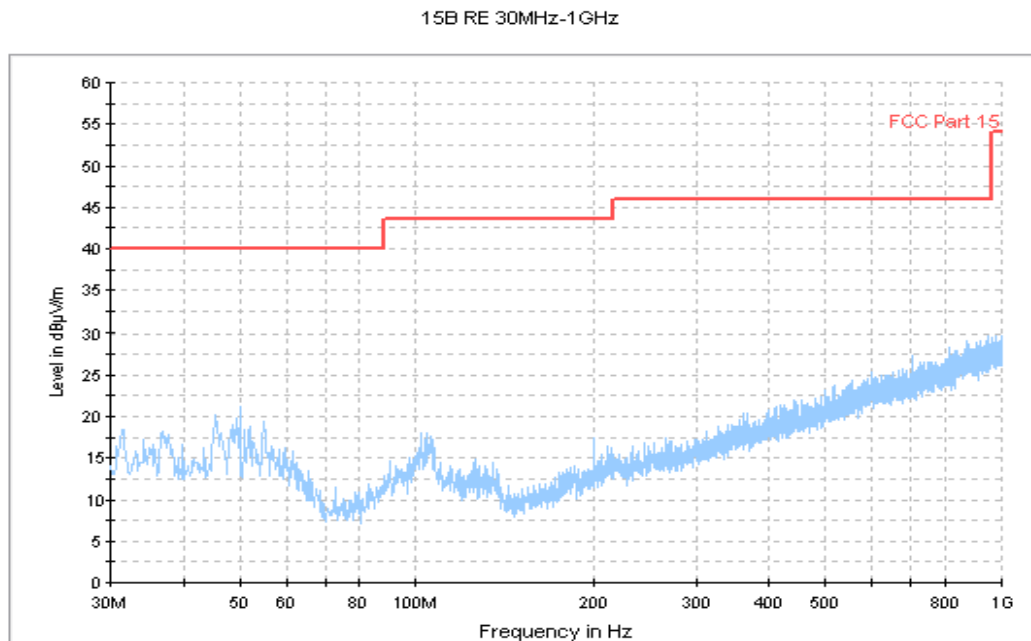


Figure A.1 Radiated Emission from 30MHz to 1GHz

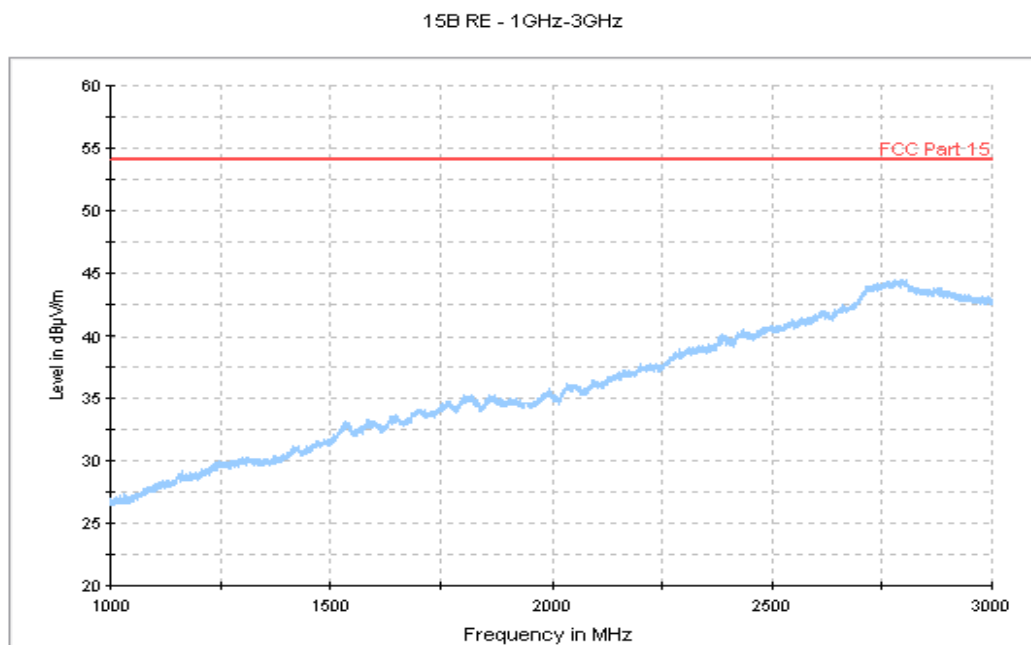


Figure A.2 Radiated Emission from 1GHz to 3GHz

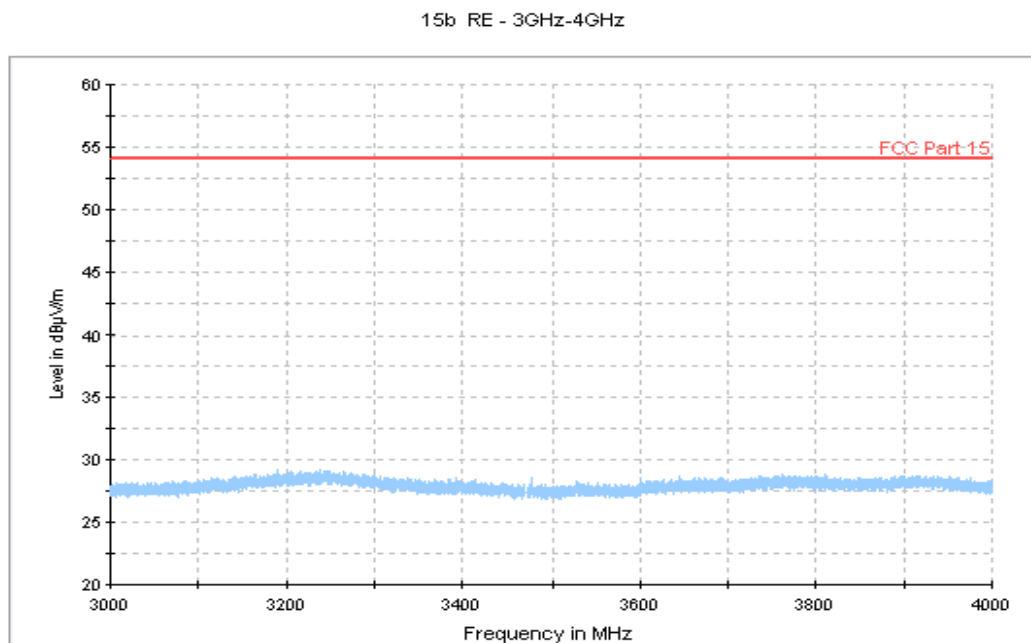


Figure A.3 Radiated Emission from 3GHz to 4GHz

USB Mode

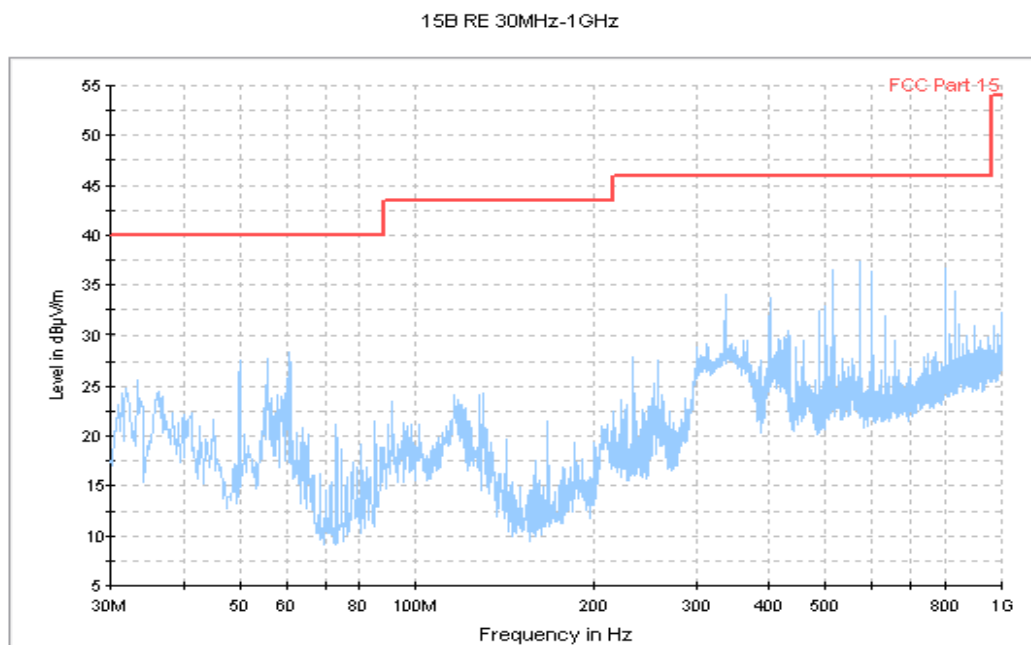


Figure A.4 Radiated Emission from 30MHz to 1GHz

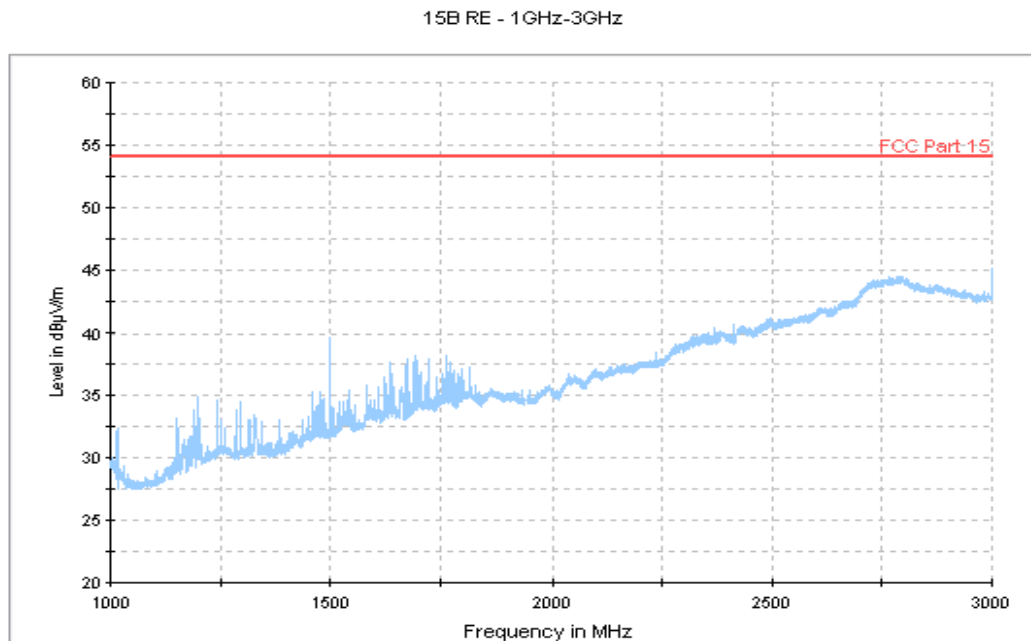


Figure A.5 Radiated Emission from 1GHz to 3GHz

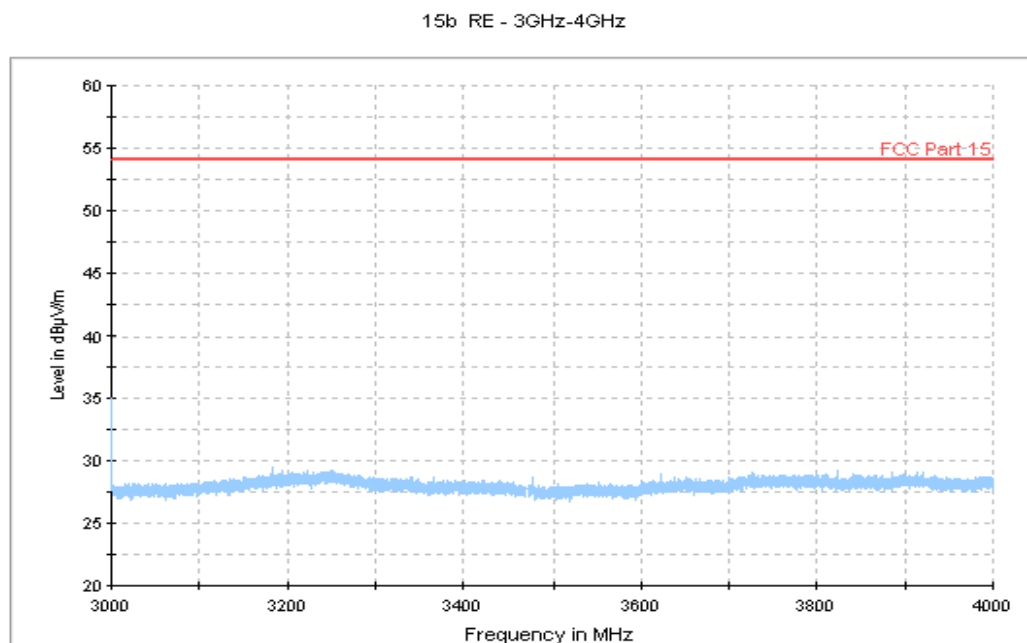


Figure A.6 Radiated Emission from 3GHz to 4GHz

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 (dBμV)	
	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

Charging Mode

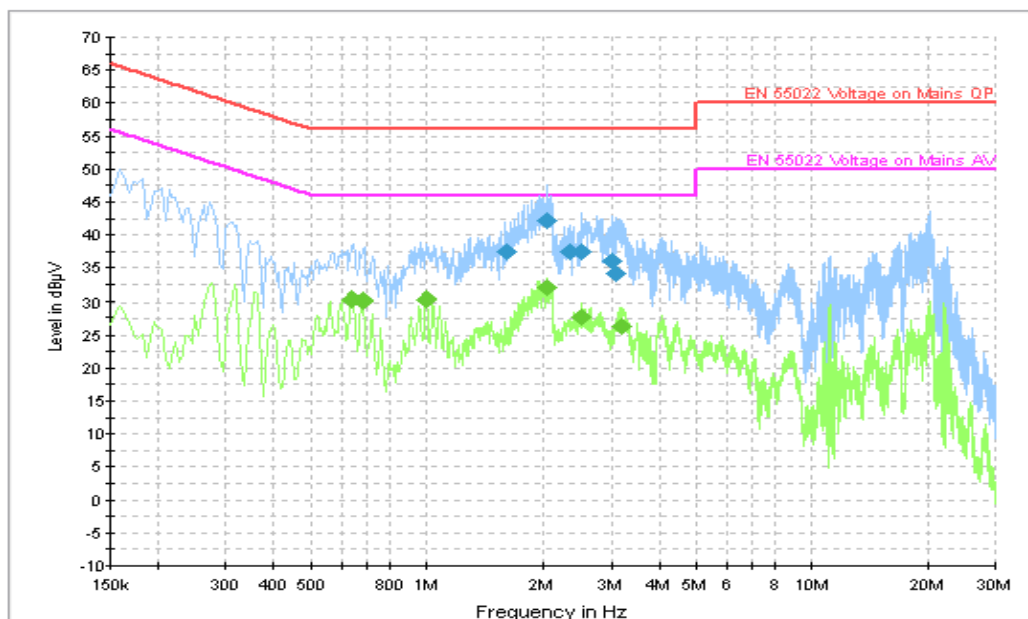


Figure A.7 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
1.608000	37.4	GND	L1	10.0	18.6	56.0
2.040000	42.1	GND	L1	10.0	13.9	56.0
2.346000	37.4	GND	N	10.0	18.6	56.0
2.503500	37.5	GND	L1	10.0	18.5	56.0
3.007500	36.0	GND	L1	10.0	20.0	56.0
3.075000	34.2	GND	L1	10.0	21.8	56.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.640500	30.3	GND	N	10.0	15.7	46.0
0.681000	30.1	GND	N	10.0	15.9	46.0
0.996000	30.5	GND	N	10.0	15.5	46.0
2.040000	32.0	GND	L1	10.0	14.0	46.0
2.512500	27.8	GND	L1	10.0	18.2	46.0
3.201000	26.4	GND	N	10.0	19.6	46.0

USB Mode

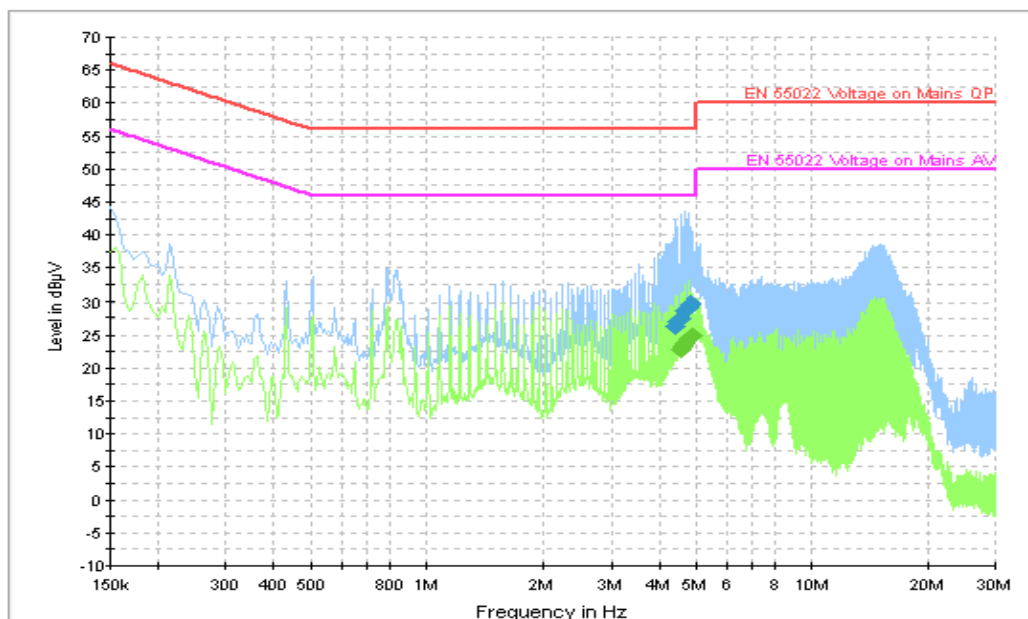


Figure A.8 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
4.393500	26.3	GND	N	10.0	29.7	56.0
4.465500	27.0	GND	N	10.0	29.0	56.0
4.537500	27.5	GND	N	10.0	28.5	56.0
4.686000	28.7	GND	N	10.0	27.3	56.0
4.758000	29.2	GND	N	10.0	26.8	56.0
4.830000	29.6	GND	N	10.0	26.4	56.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
4.542000	22.9	GND	N	10.0	23.1	46.0
4.614000	23.3	GND	N	10.0	22.7	46.0
4.686000	23.8	GND	N	10.0	22.2	46.0
4.758000	24.4	GND	N	10.0	21.6	46.0
4.830000	24.8	GND	N	10.0	21.2	46.0
4.902000	24.8	GND	N	10.0	21.2	46.0

END OF REPORT