TEST REPORT

No. 2012TAR437

for

TCT Mobile Limited

UMTS Triband / GSM Quadband mobile phone

Model Name: ONE TOUCH 768T

FCC ID: RAD287

IC No.: 9238A-0012

with

Hardware Version: PIO01

Software Version: swC22

Issued Date: 2012-09-27

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.6629B-1

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

No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China 100191

Tel:+86(0)10-62304633-2561 , Fax:+86(0)10-62304633-2504 Email:welcome@emcite.com. www.emcite.com

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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

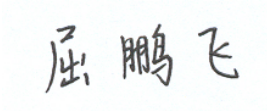
1.2. Testing Environment

Normal Temperature:	15-35℃
Relative Humidity:	20-75%

1.3. Project data

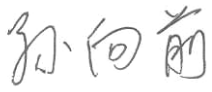
Testing Start Date:	Aug. 23rd, 2012
Testing End Date:	Aug. 24th, 2012

1.4. Signature



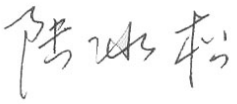
Qu Pengfei

(Prepared this test report)



Sun Xiangqian

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

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2. Client Information

2.1. Applicant Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, E 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, E 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
Fax:	0086 21 61460602

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

3.1. About EUT

Description	UMTS Triband / GSM Quadband mobile phone
Model Name	ONE TOUCH 768T
FCC ID	RAD287
IC Number	9238A-0012
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	013303000050545	PIO01	swC22

*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	B097155EA0A
AE2	Battery	B152153A1AA
AE3	Battery	B152153A1CA
AE4	Travel charger	/
AE5	Travel charger	/
AE8	USB cable	/
AE9	USB cable	/
AE10	USB cable	/
AE11	USB cable	/

AE1, AE2, AE3

Model	CAB3120000C1
Manufacturer	BYD
Capacitance	850mAh
Nominal voltage	3.7V

AE4

Model	CBA3002AG0C1
Manufacturer	BYD
Length of cable	121cm

AE5

Model	CBA3002AG0C3
Manufacturer	BYD
Length of cable	127cm

AE8

Model	CDA3122002C1
Manufacturer	Juwei
Length of cable	150cm

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AE9

Model	CDA3122002C2
Manufacturer	Shenhua
Length of cable	150cm

AE10

Model	CDA3122005C1
Manufacturer	Juwei
Length of cable	100cm

AE11

Model	CDA3122005C2
Manufacturer	Shenhua
Length of cable	100cm

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

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1+ AE1/AE2/AE3+ AE4	Charging mode
Set.2	EUT1+ AE1/AE2/AE3+ AE5	Charging mode
Set.3	EUT1+ AE1/AE2/AE3+ AE8/AE9/AE10/AE11	USB mode

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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
ICES-003	Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard Digital Apparatus	Issue 4

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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 ℃, Max. = 30 ℃
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 ℃, Max. = 30 ℃
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 ℃, Max. = 35 ℃
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

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6. SUMMARY OF TEST RESULTS

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

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict
1	Radiated Emission	15.109(a)	Section 5.5	A.1	P
2	Conducted Emission	15.107(a)	Section 5.3	A.2	P

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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	PC	OPTIPLEX 755	3908243625	DELL	N/A
7	Monitor	E178FPc	CN-OWR979-64180-7AJ-D2MS	DELL	N/A
8	Printer	DeskJet D2368	TH72E12G7Q	HP	N/A
9	Keyboard	L100	CN0RH659658907ATOI40	DELL	N/A
10	Mouse	M-BZ96C	810-000207	Logitech	N/A
11	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A
12	Universal Radio Communication Tester	CMU200	109914	R&S	2013-04-19

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ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission (§15.109(a))

Reference

FCC: CFR Part 15.109(a)

IC: ICES-003 Section 5.5.

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

Limit from CFR Part 15.109(a)

Frequency of emission (MHz)	Field strength (microvolts/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

Limit from ICES-003 Section 5.5

Frequency range (MHz)	Field strength limits* (dBμV/m)
30 to 230	40
230 to 1000	47

*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
1000-4000	1MHz/1MHz	15

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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:

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

Where

G_A: Antenna factor of receive antenna

G_{PL}: Path Loss

P_{Mea}: Measurement result on receiver.

Set.1 charging mode

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBuV)	Polarity
2999.400	48.9	-29.0	33.8	44.037	VERTICAL
2994.000	48.8	-29.0	33.8	43.991	HORIZONTAL
2999.200	48.8	-29.0	33.8	43.945	HORIZONTAL
2948.600	48.8	-28.6	33.8	43.577	VERTICAL
2998.200	48.8	-29.0	33.8	43.935	HORIZONTAL
2998.800	48.8	-29.0	33.8	43.935	HORIZONTAL

Set.2 charging mode

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBuV)	Polarity
2998.200	48.9	-29.0	33.8	44.049	VERTICAL
2995.000	48.8	-29.0	33.8	44.020	HORIZONTAL
2994.800	48.8	-29.0	33.8	44.004	HORIZONTAL
2995.600	48.8	-29.0	33.8	43.949	VERTICAL
2997.000	48.8	-29.0	33.8	43.948	HORIZONTAL
2989.400	48.7	-29.0	33.8	43.900	HORIZONTAL

Set.3 USB mode

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	G_A (dB/m)	P_{mea}(dBuV)	Polarity
2999.200	48.8	-29.0	33.8	44.015	VERTICAL
2992.200	48.8	-29.0	33.8	44.013	HORIZONTAL
2999.400	48.8	-29.0	33.8	43.963	HORIZONTAL
2998.000	48.8	-29.0	33.8	43.942	VERTICAL
2997.000	48.7	-29.0	33.8	43.924	HORIZONTAL
2997.800	48.7	-29.0	33.8	43.911	HORIZONTAL

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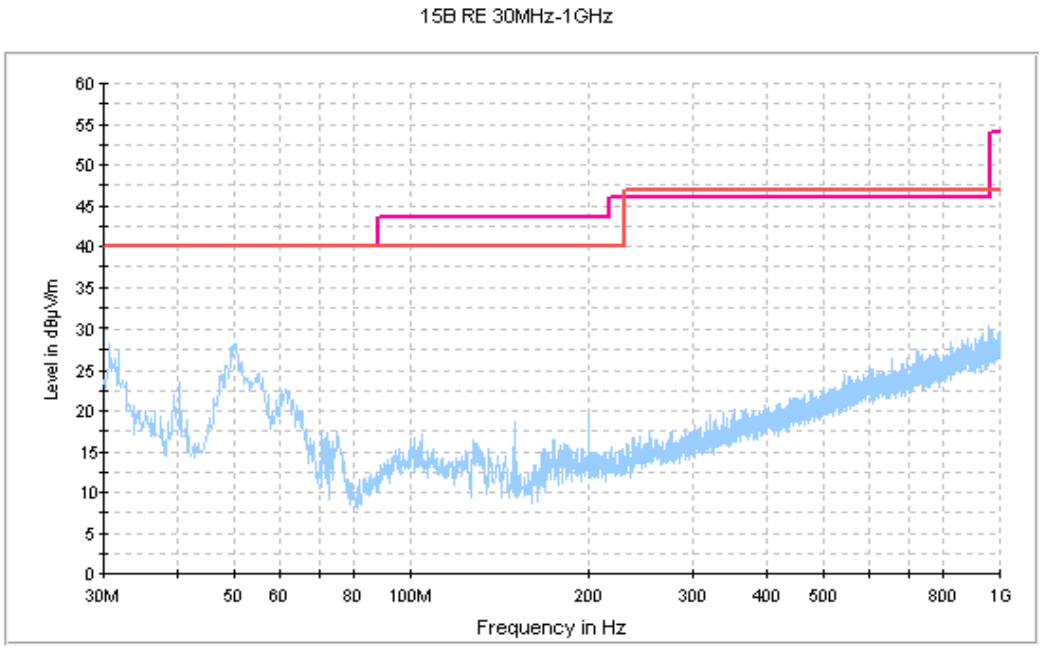

Figure A.1 Radiated Emission from 30MHz to 1GHz (Set.1, Charging mode)

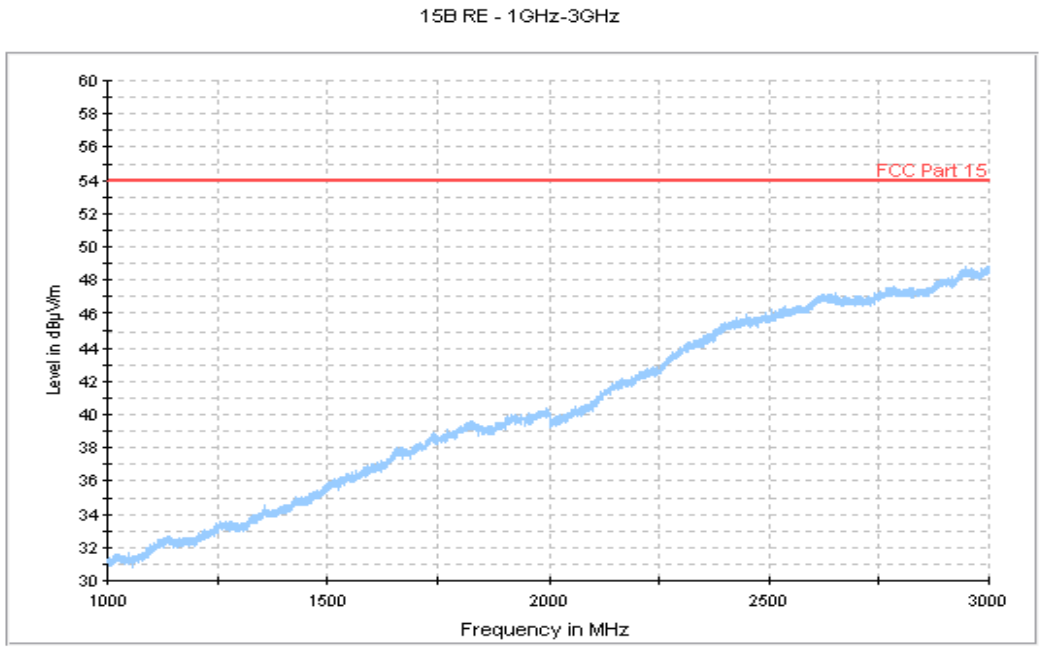

Figure A.2 Radiated Emission from 1GHz to 3GHz (Set.1, Charging mode)

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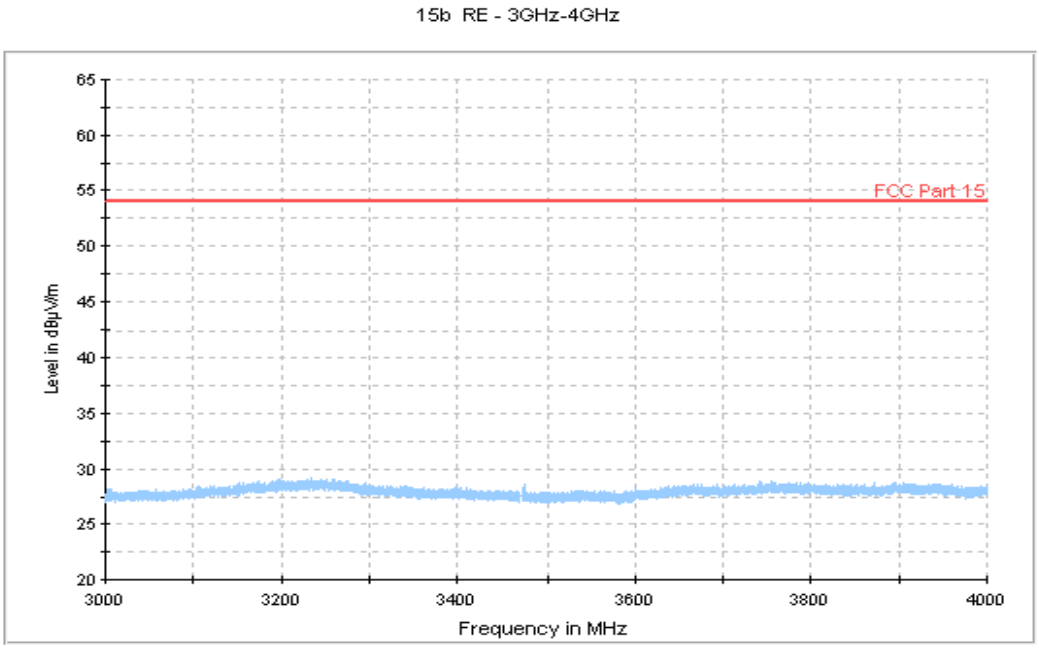

Figure A.3 Radiated Emission from 3GHz to 4GHz (Set.1, Charging mode)

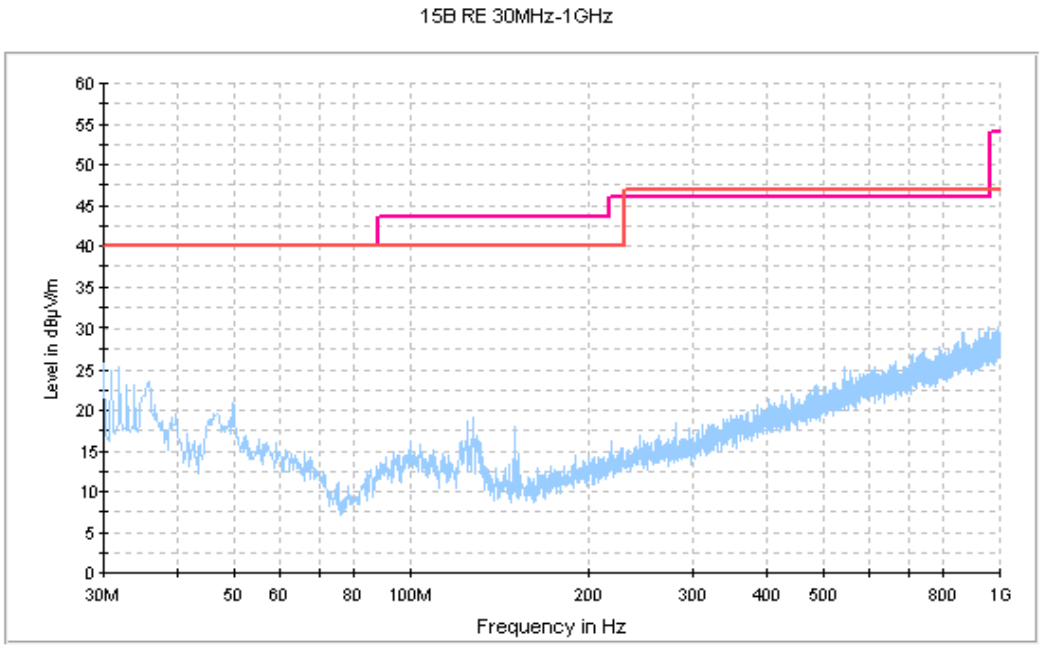

Figure A.4 Radiated Emission from 30MHz to 1GHz (Set.2, Charging mode)

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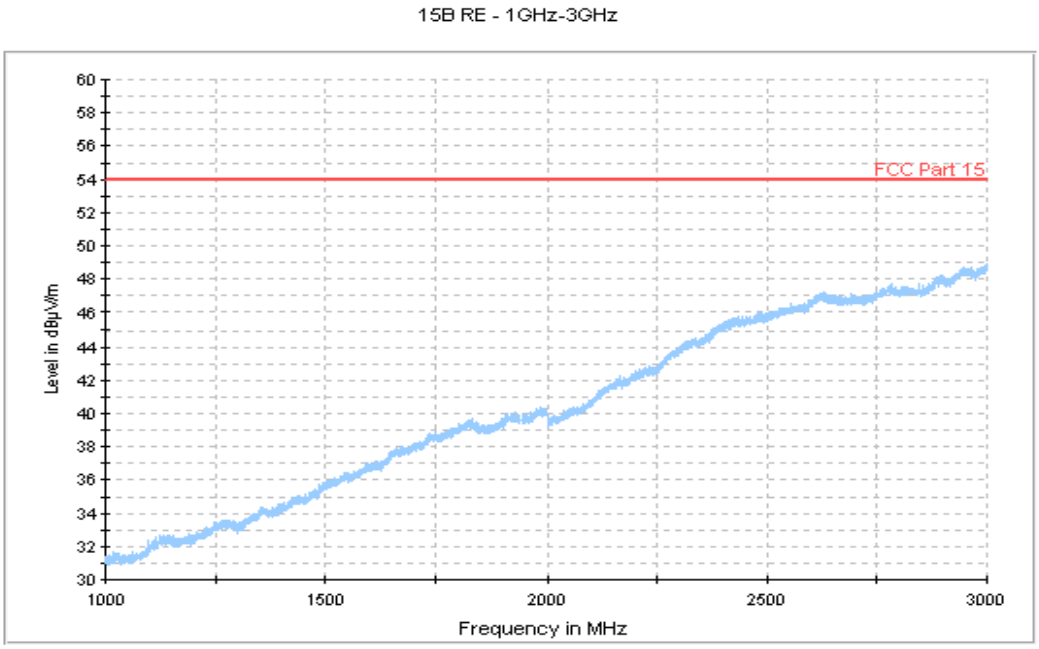

Figure A.5 Radiated Emission from 1GHz to 3GHz (Set.2, Charging mode)

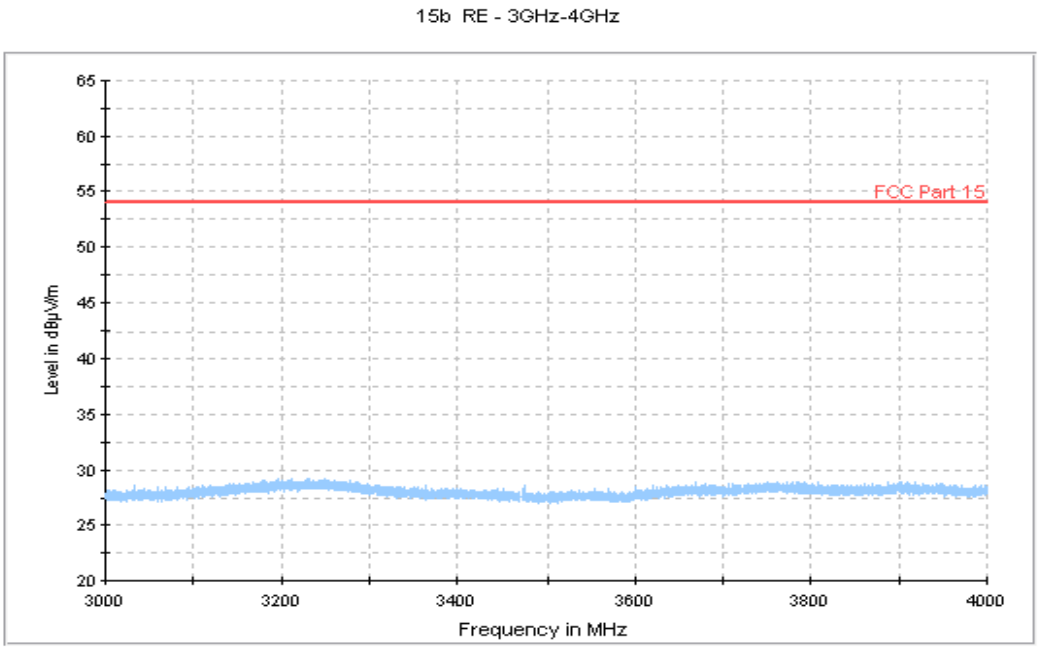

Figure A.6 Radiated Emission from 3GHz to 4GHz (Set.2, Charging mode)

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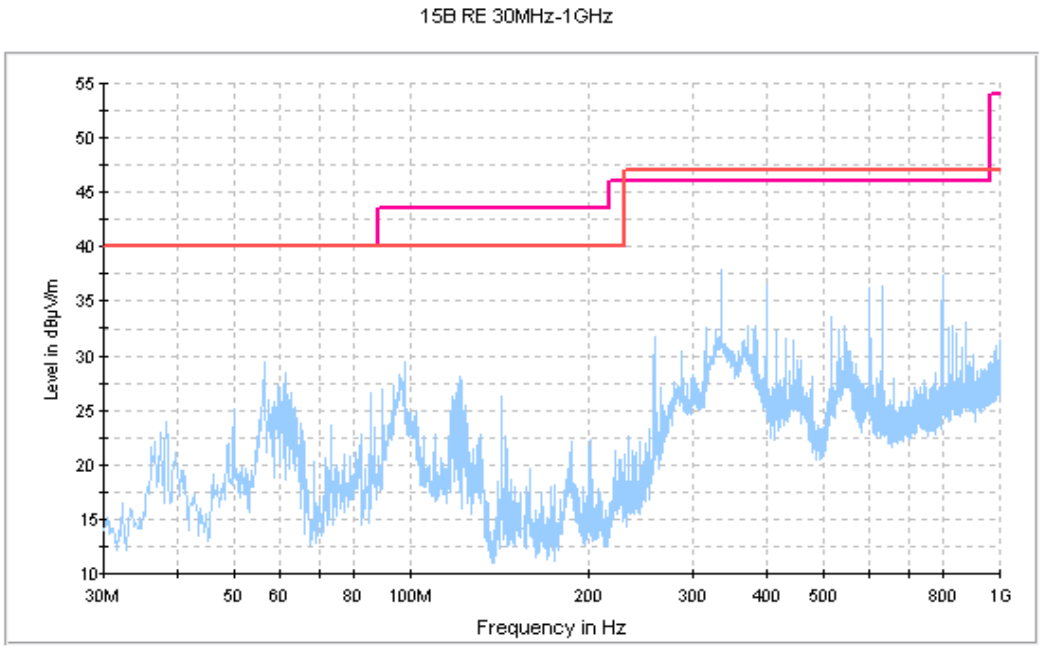

Figure A.7 Radiated Emission from 30MHz to 1GHz (Set.3, USB mode)

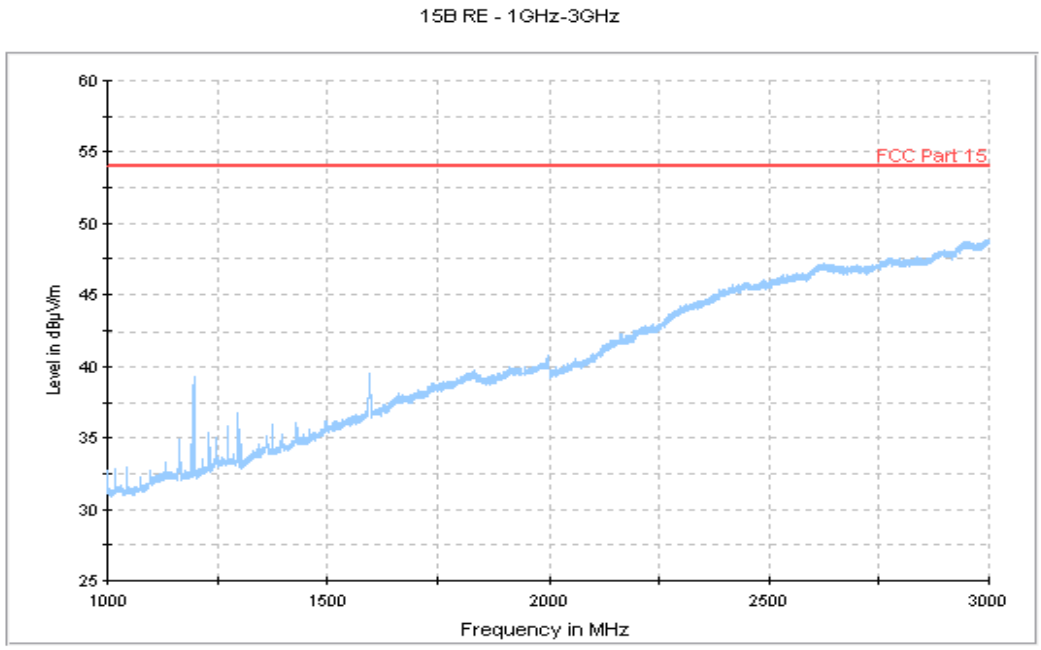

Figure A.8 Radiated Emission from 1GHz to 3GHz (Set.3, USB mode)

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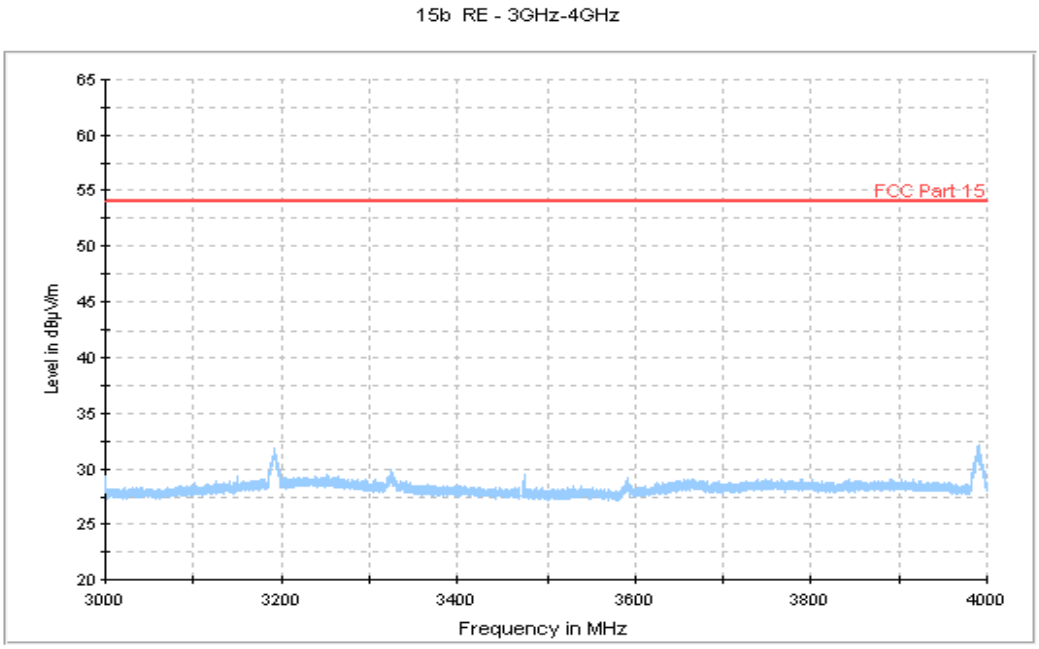

Figure A.9 Radiated Emission from 3GHz to 4GHz (Set.3, USB mode)

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A.2 Conducted Emission (§15.107(a))

Reference

FCC: CFR Part 15.107(a)

IC: ICES-003 Section 5.3.

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/IF bandwidth	Sweep Time(s)
9kHz	1

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A.2.5 Measurement Results

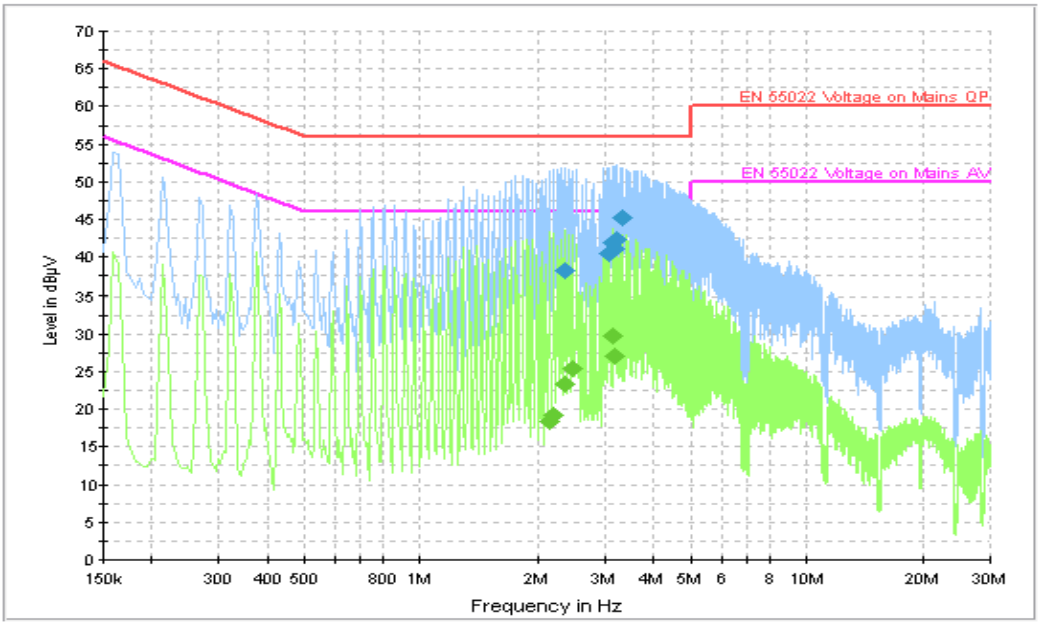

Figure A.10 Conducted Emission (Set.1, Charging mode)

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.364000	38.1	GND	L1	10.0	17.9	56.0
3.066000	40.6	GND	L1	10.0	15.4	56.0
3.120000	42.0	GND	L1	10.0	14.0	56.0
3.169500	41.1	GND	L1	10.0	14.9	56.0
3.223500	42.4	GND	L1	10.0	13.6	56.0
3.331500	45.2	GND	L1	10.0	10.8	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.148000	18.3	GND	L1	10.0	27.7	46.0
2.202000	19.1	GND	L1	10.0	26.9	46.0
2.364000	23.3	GND	L1	10.0	22.7	46.0
2.467500	25.4	GND	L1	10.0	20.6	46.0
3.120000	29.7	GND	L1	10.0	16.3	46.0
3.169500	27.1	GND	L1	10.0	18.9	46.0

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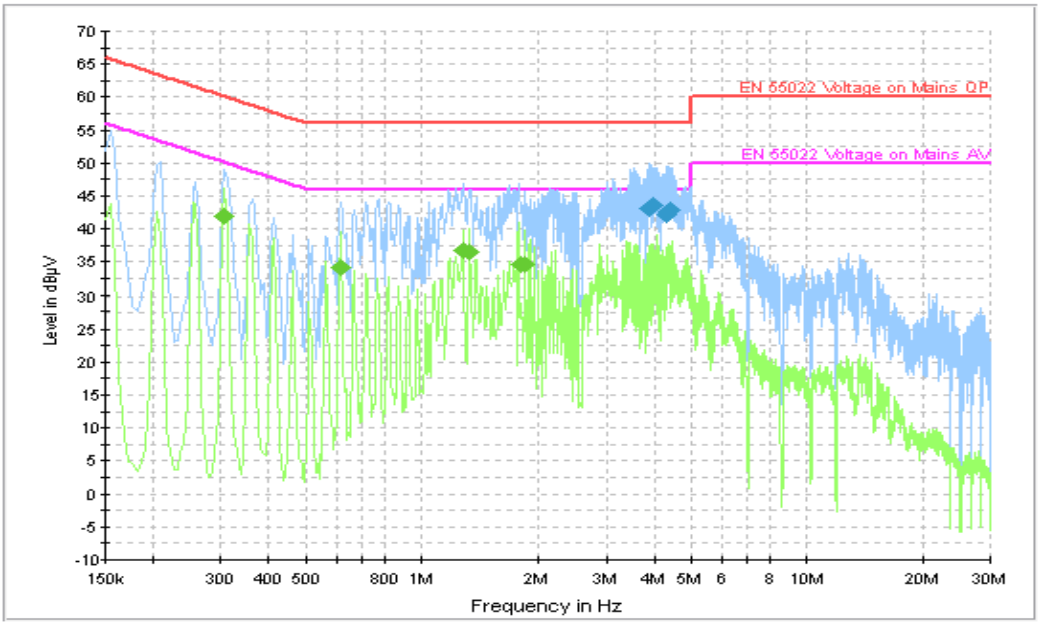

Figure A.11 Conducted Emission (Set.2, Charging mode)

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
3.889500	43.2	GND	L1	10.0	12.8	56.0
3.943500	43.3	GND	L1	10.0	12.7	56.0
3.984000	43.6	GND	L1	10.0	12.4	56.0
4.299000	42.1	GND	L1	10.0	13.9	56.0
4.348500	42.6	GND	L1	10.0	13.4	56.0
4.402500	42.8	GND	L1	10.0	13.2	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.307500	42.0	GND	N	10.0	8.1	50.0
0.613500	34.1	GND	N	10.0	11.9	46.0
1.279500	36.8	GND	N	10.0	9.2	46.0
1.333500	36.5	GND	N	10.0	9.5	46.0
1.788000	34.6	GND	N	10.0	11.4	46.0
1.837500	34.6	GND	N	10.0	11.5	46.0

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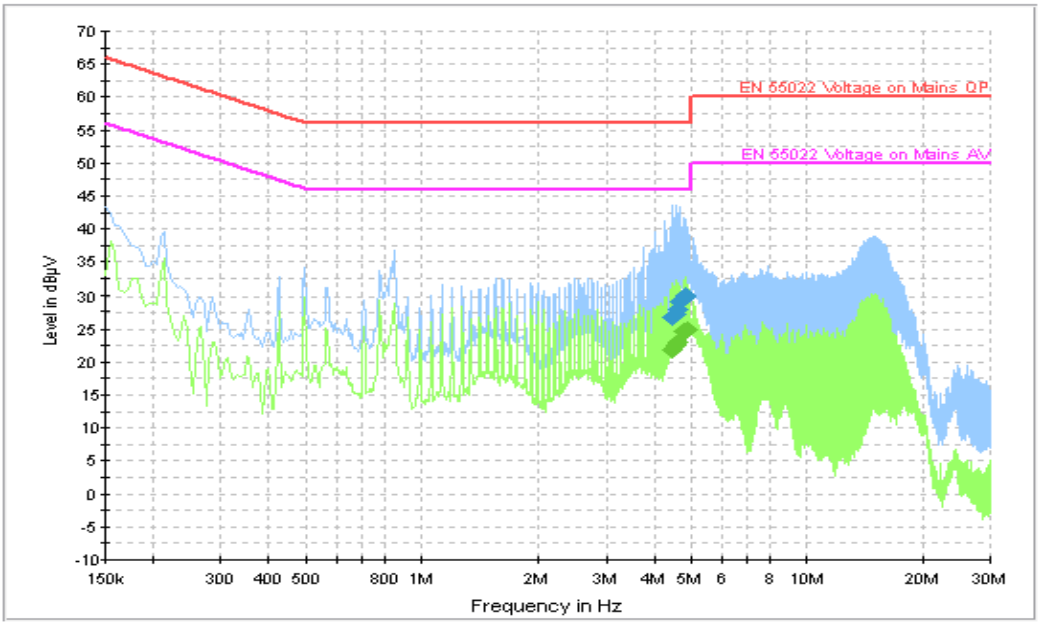

Figure A.12 Conducted Emission (Set.3, USB mode)

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
4.461000	26.8	GND	N	10.0	29.2	56.0
4.533000	27.2	GND	N	10.0	28.8	56.0
4.605000	28.0	GND	N	10.0	28.0	56.0
4.677000	29.2	GND	N	10.0	26.8	56.0
4.744500	29.6	GND	N	10.0	26.4	56.0
4.816500	29.8	GND	N	10.0	26.2	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
4.461000	21.8	GND	N	10.0	24.2	46.0
4.533000	22.6	GND	N	10.0	23.4	46.0
4.605000	23.1	GND	N	10.0	22.9	46.0
4.744500	24.7	GND	N	10.0	21.3	46.0
4.816500	24.6	GND	N	10.0	21.4	46.0
4.888500	24.8	GND	N	10.0	21.2	46.0

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

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