TEST REPORT

No. 2013TAR526

for

TCT Mobile Limited

GSM dual band mobile phone

Model Name: Tango Plus US

Marketing Name: ALCATEL 2001A

FCC ID: RAD379

with

Hardware Version: Proto

Software Version: vA15

Issued Date: Jul. 19th, 2013

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:

DAkks 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.6629A-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

Location D

Company Name:	TMC Beijing, Telecommunication Metrology Center of MIIT
Address:	No.18A, Kangding Street, Beijing Economic-Technological Development Area, Beijing, China
Postal Code:	100176

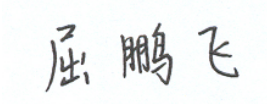
1.2. Testing Environment

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

1.3. Project data

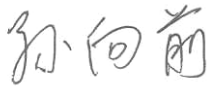
Testing Start Date:	Jul. 04th, 2012
Testing End Date:	Jul. 05th, 2013

1.4. Signature



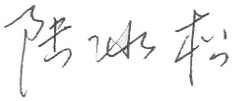
Qu Pengfei

(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
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, 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
Fax:	0086-21-61460602

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

3.1. About EUT

Description	GSM dual band mobile phone
Model Name	Tango Plus US
Marketing Name	ALCATEL 2001A
FCC ID	RAD379
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.8VDC)

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	013765000000060	Proto	vA15

*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	Battery	/
AE3	Travel charger	/
AE4	Travel charger	/
AE5	USB cable	/
AE6	USB cable	/
AE7	USB cable	/
AE8	USB cable	/

AE1

Model	CAB31L0000C1
Manufacturer	BYD
Capacitance	1000 mAh
Nominal voltage	3.7 V

AE2

Model	CAB31L0000C2
Manufacturer	BAK
Capacitance	1000 mAh
Nominal voltage	3.7 V

AE3

Model	CBA3007AG0C1
Manufacturer	BYD
Length of cable	/

AE4

Model	CBA3007AG0C2
Manufacturer	Tenpao
Length of cable	/

AE5

Model	CDA3122002C1
Manufacturer	Juwei
Length of cable	100cm

AE6

Model	CDA3122005C1
Manufacturer	Juwei
Length of cable	100cm

AE7

Model	CDA3122002C2
Manufacturer	Shenghua
Length of cable	100cm

AE8

Model	CDA3122005C2
Manufacturer	Shenghua
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 + AE5	USB mode
Set.2	EUT1+ AE1/AE2 + AE3 + AE5	Charging mode1
Set.3	EUT1+ AE1/AE2 + AE4 + AE5	Charging mode 2

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	10-1-12 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. = 35 ˚C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ± 4 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. = 35 ˚C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 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

Shielded room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	F	Fail
	NA	Not applicable
	NM	Not measured
Location Column	A/B/C/D	The test is performed in test location A, B, C or D which are described in section 1.1 of this report

Clause	List	Clause in FCC rules	Verdict	Test Location
1	Radiated Emission	15.109(a)	P	D
2	Conducted Emission	15.107(a)	P	D

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	9163-514	Schwarzbeck	2014-11-10
3	EMI Antenna	3117	00139065	ETS-Lindgren	2014-07-31
4	LISN	ESH2-Z5	829991/012	R&S	2014-04-14
5	Test Receiver	ESCI	100344	R&S	2014-03-28
6	Universal Radio Communication Tester	CMU200	102228	R&S	2014-06-23
7	PC	OPTIPLEX 755	3908243625	DELL	N/A
8	Monitor	E178FPc	CN-OWR979-64180-7AJ-D2MS	DELL	N/A
9	Printer	LaserJet 1160	CNM2D33740	HP	N/A
10	Keyboard	L100	CN0RH659658907ATOI40	DELL	N/A
11	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A
12	Universal Radio Communication Tester	E5515C	MY48361083	Agilent	2014-03-16

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	120kHz IF Bandwidth	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:

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 USB mode_Peak detector

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	G_A (dB/m)	P_{mea}(dBuV)	Polarity
2934.400	54.9	-28.1	32.5	50.511	HORIZONTAL
2998.200	54.8	-29.0	33.2	50.579	VERTICAL
2981.400	54.7	-29.0	33.2	50.479	VERTICAL
2997.400	54.7	-29.0	33.2	50.479	VERTICAL
2993.400	54.6	-29.0	33.2	50.379	VERTICAL
2999.600	54.6	-29.0	33.2	50.379	HORIZONTAL

Set.1 USB mode _Average detector

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	G_A (dB/m)	P_{mea}(dBuV)	Polarity
2934.400	41.1	-28.1	32.5	36.711	HORIZONTAL
2998.200	42.5	-29.0	33.2	38.279	VERTICAL
2981.400	42.1	-29.0	33.2	37.879	VERTICAL
2997.400	42.3	-29.0	33.2	38.079	VERTICAL
2993.400	42.4	-29.0	33.2	38.179	VERTICAL
2999.600	43.0	-29.0	33.2	38.779	HORIZONTAL

Set.2 Charging mode _Peak detector

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBuV)	Polarity
2997.800	54.8	-29.0	33.2	50.579	HORIZONTAL
2986.600	54.1	-29.0	33.2	49.879	HORIZONTAL
2994.600	54.0	-29.0	33.2	49.779	HORIZONTAL
3000.000	54.0	-28.4	32.8	49.572	VERTICAL
2995.200	54.0	-29.0	33.2	49.779	VERTICAL
2998.400	54.0	-29.0	33.2	49.779	HORIZONTAL

Set.2 Charging mode _ Average detector

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBuV)	Polarity
2997.800	42.4	-29.0	33.2	38.179	HORIZONTAL
2986.600	41.8	-29.0	33.2	37.579	HORIZONTAL
2994.600	42.4	-29.0	33.2	38.179	HORIZONTAL
3000.000	43.0	-28.4	32.8	38.572	VERTICAL
2995.200	42.3	-29.0	33.2	38.079	VERTICAL
2998.400	42.6	-29.0	33.2	38.379	HORIZONTAL

Set.3 Charging mode _Peak detector

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBuV)	Polarity
2991.400	54.5	-29.0	33.2	50.279	HORIZONTAL
2974.800	54.4	-28.6	33.1	49.915	HORIZONTAL
2991.000	54.3	-29.0	33.2	50.079	VERTICAL
2971.200	54.3	-28.6	33.1	49.815	VERTICAL
2973.800	54.3	-28.6	33.1	49.815	HORIZONTAL
2957.400	54.2	-28.6	32.5	50.315	VERTICAL

Set.3 Charging mode _ Average detector

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBuV)	Polarity
2991.400	42.1	-29.0	33.2	37.879	HORIZONTAL
2974.800	41.9	-28.6	33.1	37.415	HORIZONTAL
2991.000	42.0	-29.0	33.2	37.779	VERTICAL
2971.200	41.9	-28.6	33.1	37.415	VERTICAL
2973.800	41.8	-28.6	33.1	37.315	HORIZONTAL
2957.400	41.6	-28.6	32.5	37.715	VERTICAL

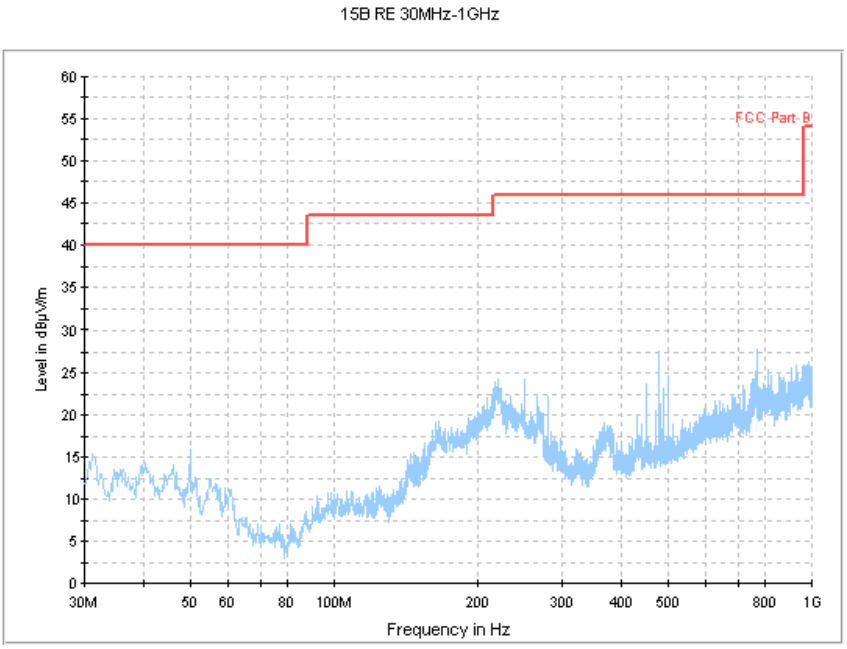


Figure A.1 Radiated Emission from 30MHz to 1GHz (Set.1, USB mode)

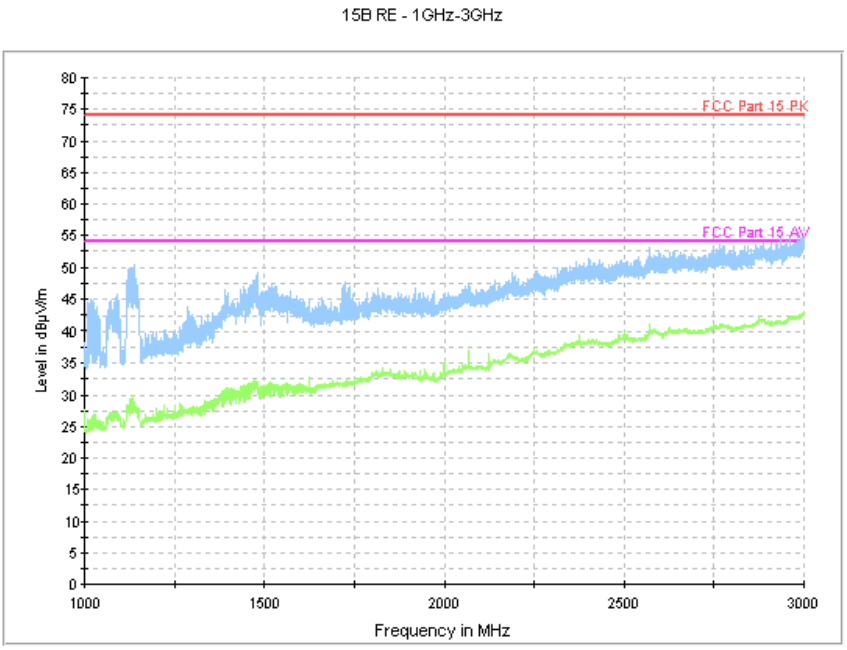


Figure A.2 Radiated Emission from 1GHz to 3GHz (Set.1, USB mode)

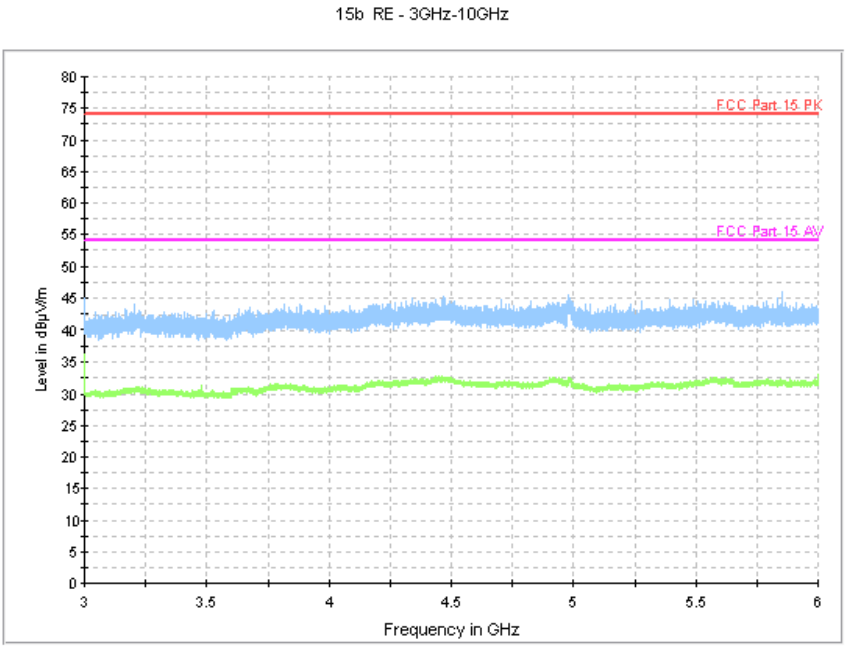


Figure A.3 Radiated Emission from 3GHz to 4GHz (Set.1, USB mode)

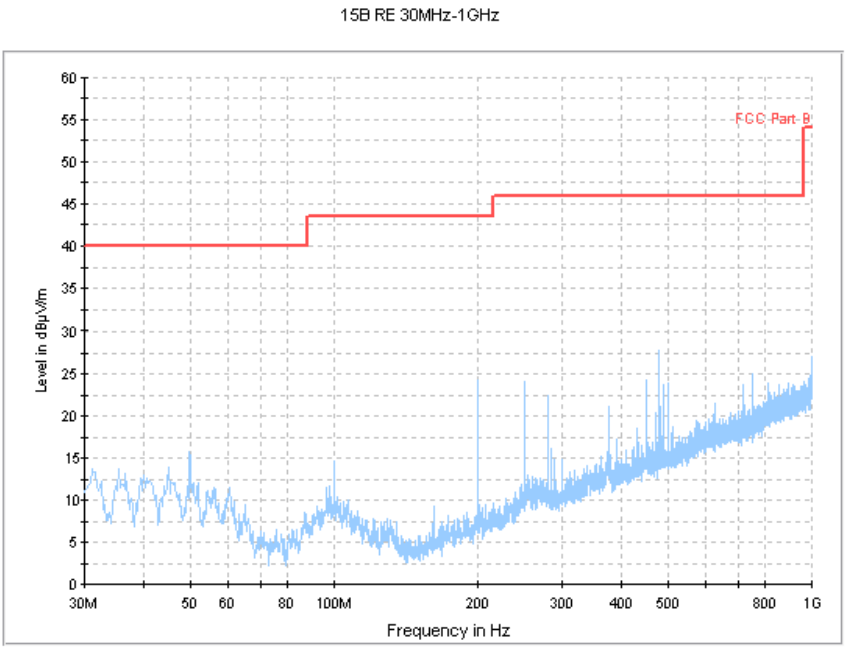


Figure A.4 Radiated Emission from 30MHz to 1GHz (Set.2, Charging mode)

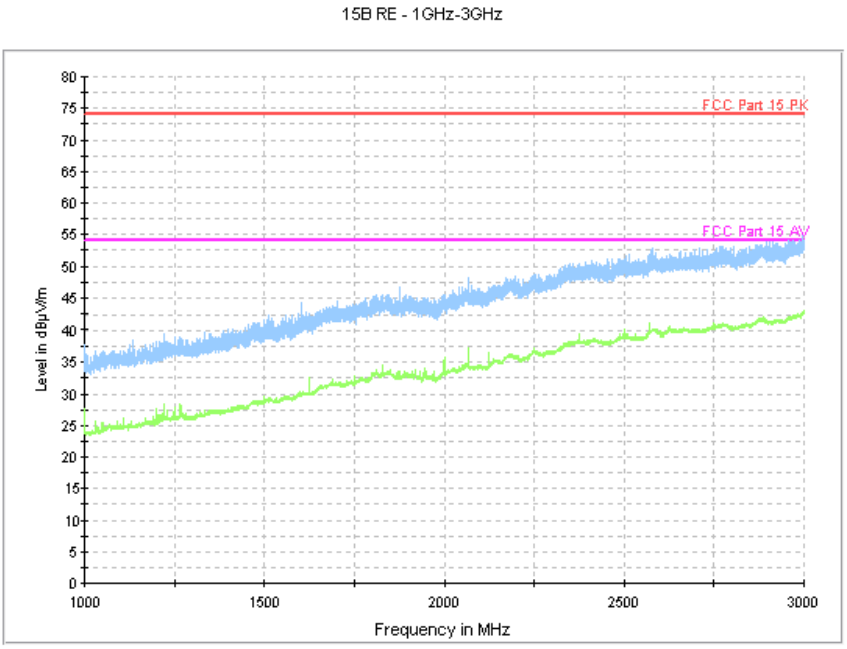


Figure A.5 Radiated Emission from 1GHz to 3GHz (Set.2, Charging mode)

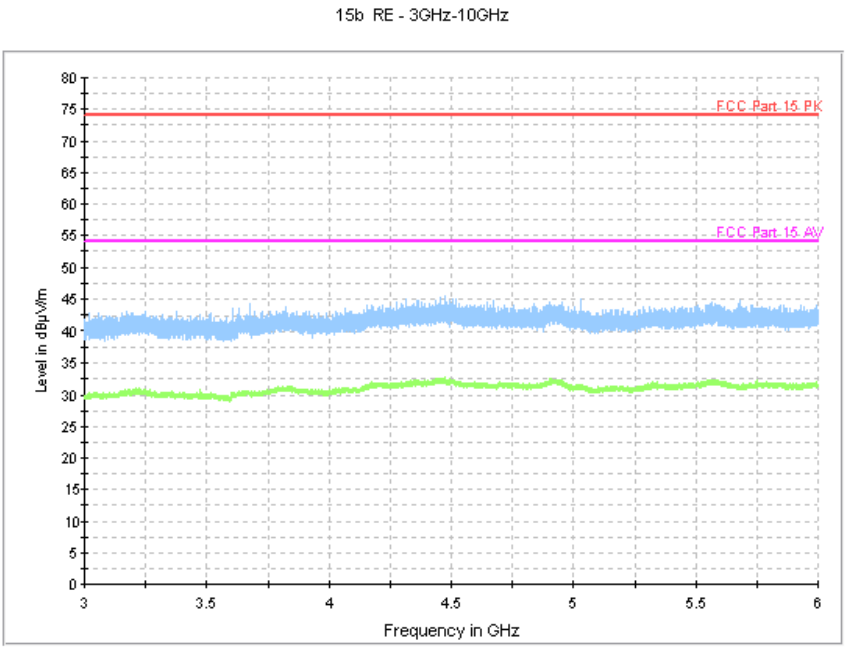


Figure A.6 Radiated Emission from 3GHz to 4GHz (Set.2, Charging mode)

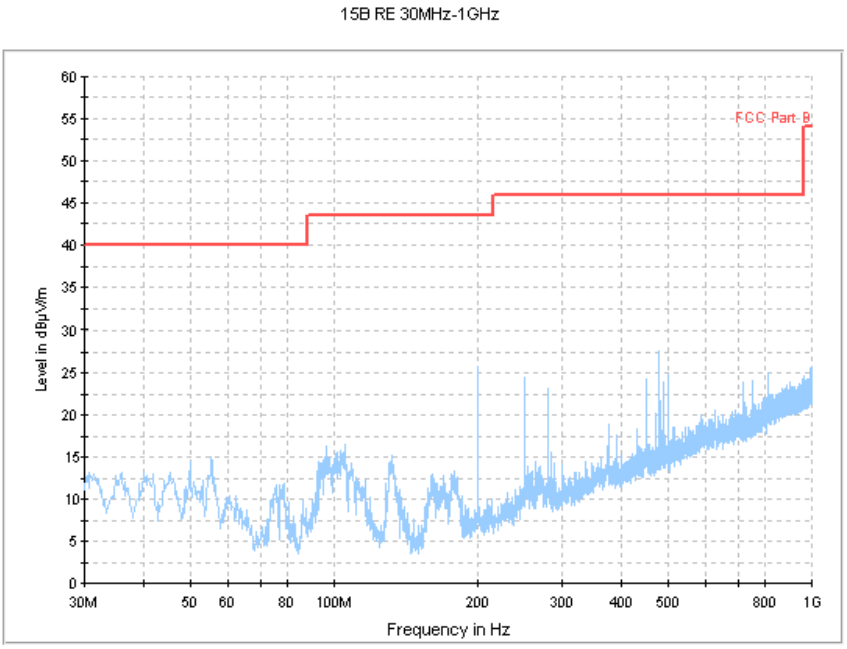


Figure A.7 Radiated Emission from 30MHz to 1GHz (Set.3, Charging mode)

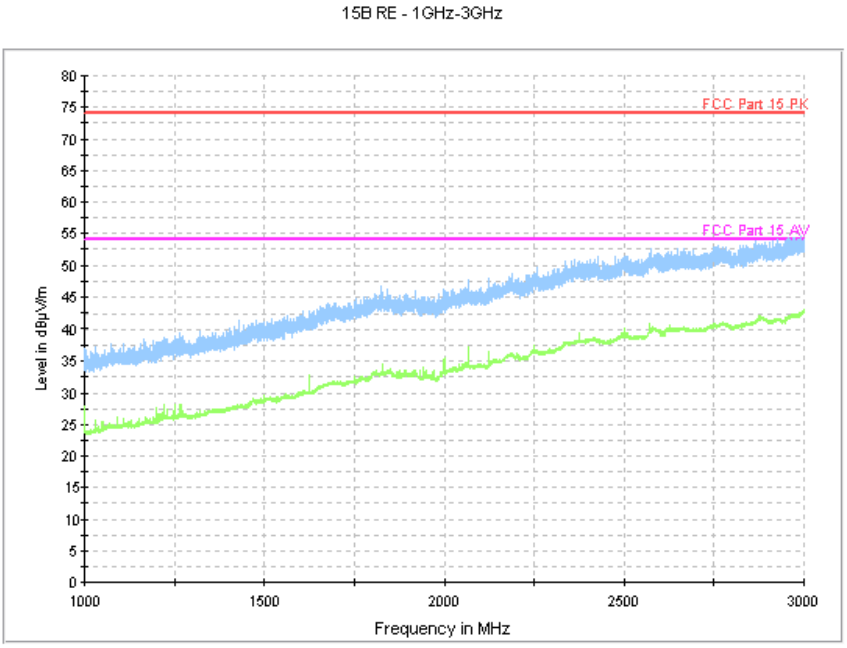


Figure A.8 Radiated Emission from 1GHz to 3GHz (Set.3, Charging mode)

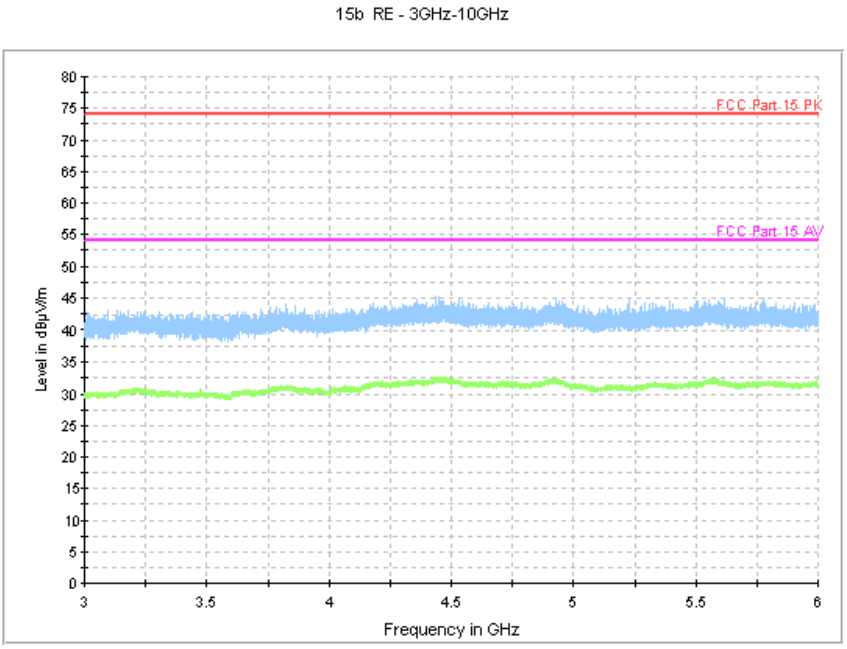


Figure A.9 Radiated Emission from 3GHz to 4GHz (Set.3, Charging mode)

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

IF Bandwidth	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

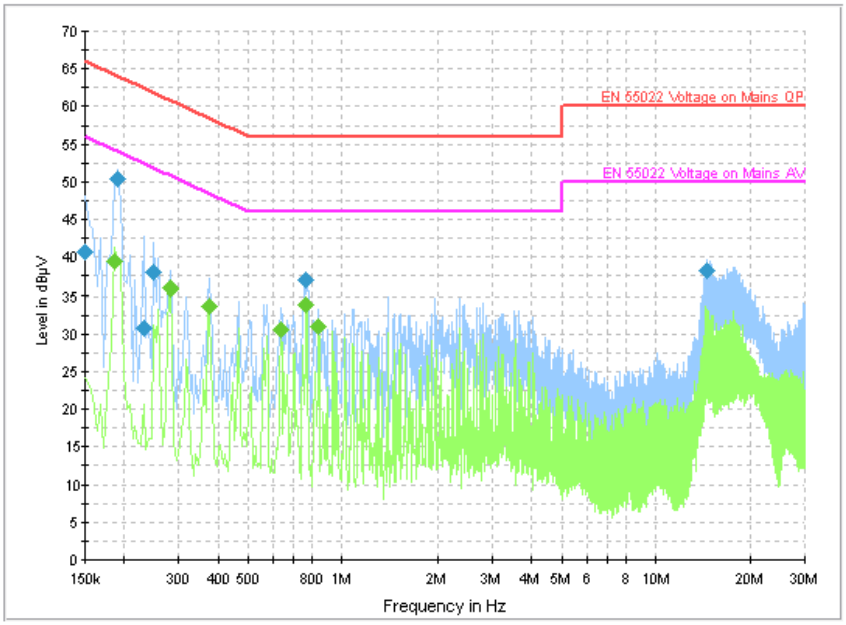


Figure A.10 Conducted Emission (Set.1, USB mode)

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150001	40.6	GND	L1	9.9	25.4	66.0
0.190501	50.3	GND	L1	9.9	13.7	64.0
0.231001	30.7	GND	L1	9.9	31.7	62.4
0.249001	38.1	GND	N	9.9	23.7	61.8
0.766501	37.0	GND	L1	9.9	19.0	56.0
14.532001	38.1	GND	N	9.6	21.9	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186001	39.5	GND	N	9.9	14.7	54.2
0.280501	36.0	GND	N	9.9	14.8	50.8
0.375001	33.7	GND	L1	9.9	14.7	48.4
0.636001	30.6	GND	L1	9.9	15.4	46.0
0.766501	33.8	GND	L1	9.9	12.2	46.0
0.838501	31.0	GND	L1	9.9	15.0	46.0

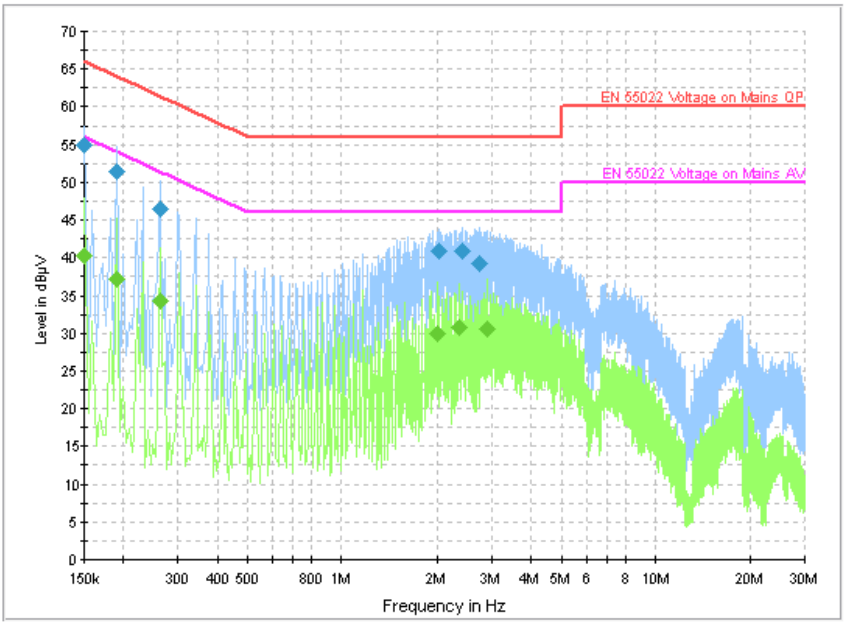


Figure A.11 Conducted Emission (Set.2, Charging mode)

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150001	55.0	GND	L1	9.9	11.0	66.0
0.190501	51.3	GND	L1	9.9	12.7	64.0
0.262501	46.4	GND	L1	9.9	14.9	61.4
2.035501	40.9	GND	N	9.9	15.1	56.0
2.418001	40.9	GND	N	9.9	15.1	56.0
2.737501	39.2	GND	N	9.9	16.8	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150001	40.3	GND	L1	9.9	15.7	56.0
0.190501	37.3	GND	L1	9.9	16.7	54.0
0.262501	34.2	GND	L1	9.9	17.2	51.4
1.995001	29.9	GND	N	9.9	16.1	46.0
2.341501	30.7	GND	N	9.9	15.3	46.0
2.904001	30.6	GND	N	9.9	15.4	46.0

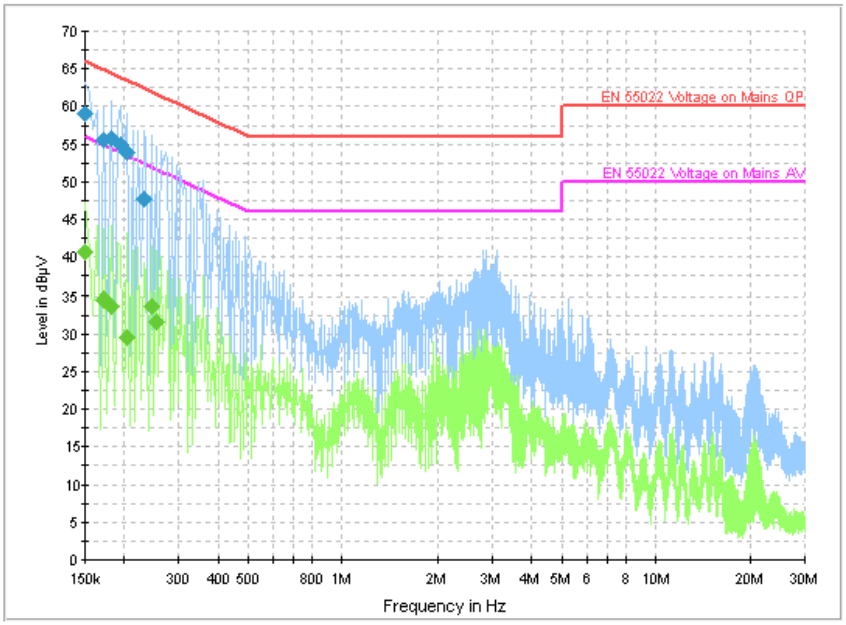


Figure A.12 Conducted Emission (Set.3, Charging mode)

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150001	59.0	GND	L1	9.9	7.0	66.0
0.172501	55.5	GND	L1	9.9	9.3	64.8
0.181501	55.7	GND	L1	9.9	8.7	64.4
0.195001	55.0	GND	L1	9.9	8.8	63.8
0.204001	54.0	GND	L1	9.9	9.5	63.4
0.231001	47.7	GND	L1	9.9	14.7	62.4

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150001	40.6	GND	L1	9.9	15.4	56.0
0.172501	34.4	GND	L1	9.9	20.4	54.8
0.181501	33.8	GND	L1	9.9	20.7	54.4
0.204001	29.6	GND	L1	9.9	23.8	53.4
0.244501	33.8	GND	L1	9.9	18.2	51.9
0.253501	31.6	GND	L1	9.9	20.0	51.6

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