



TEST REPORT

No. 2013TAR864

for

TCT Mobile Limited

HSDPA/HSUPA/UMTS Tri bands / GSM quad bands/LTE 5 bands

mobile phone

Model Name: Diablo HD LTE EMEA 1.2GHz

Marketing Name: ONE TOUCH 6034R

FCC ID: RAD468

with

Hardware Version: PIO1

Software Version: v1B28

Issued Date: Jan. 06th, 2014

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:

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

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1. Test Laboratory

1.1. Testing Location

Location A

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No 52, Huayuan Bei Road, Haidian District, Beijing, P.R. China
Postal Code: 100191

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%

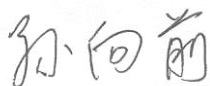
1.3. Project data

Testing Start Date: Sep. 25th, 2013
Testing End Date: Oct. 12th, 2013

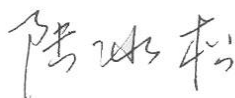
1.4. Signature



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	HSDPA/HSUPA/UMTS Tri bands / GSM quad bands/LTE 5 bands mobile phone
Model Name	Diablo HD LTE EMEA 1.2GHz
Marketing Name	ONE TOUCH 6034R
FCC ID	RAD468
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.9VDC)

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
EUT2	862780020000208	PIO1	v1B28

*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*	描述	序列号	备注
AE1	Travel charger	/	13C53CHR07
AE2	Travel charger	/	13C53CHR04
AE3	USB cable	/	/
AE4	Headset	/	13C53AE07
AE5	Headset	/	13C53AE03
AE6	Battery	/	/
AE7	Battery	/	/
AE8	USB cable	/	/
AE9	USB cable	/	/
AE10	USB cable	/	/

AE1

Model	CAB3000AG0C1
Manufacturer	Tenpao
Length of cable	/

AE2

Model	CAB3000AG0C2
Manufacturer	BYD
Length of cable	/

AE3

Model	CDA0000025C2
Manufacturer	Juwei
Length of cable	99.5cm

AE4
Model CCB3001A15C1
Manufacturer Shunda
Length of cable 159cm

AE5
Model CCB3001A15C2
Manufacturer Juwei
Length of cable 159cm

AE6
Model CAC2000005C2
Manufacturer SCUD
Capacitance 2000 mAh
Nominal voltage 3.8V

AE7
Model CAC2000008C1
Manufacturer BYD
Capacitance 2000 mAh
Nominal voltage 3.8V

AE8
Model CDA0000025C1
Manufacturer Shenghua
Length of cable 99.5cm

AE9
Model CDA3122002C1
Manufacturer Juwei
Length of cable 99.5cm

AE10
Model CDA3122002C2
Manufacturer Shenghua
Length of cable 99.5cm

*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.4	EUT2+AE1+AE3	Charger
Set.5	EUT2+AE2+AE3	Charger
Set.6	EUT2+ AE3	USB mode

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 - Unintentional Radiators	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×6.7 meters×6.15 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
Normalised site attenuation (NSA)	< ±4 dB, 3 m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 6GHz
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 3000 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
	NA	Not applicable
	F	Fail
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	Location
1	Radiated Emission	15.109(a)	P	A, D
2	Conducted Emission	15.107(a)	P	A, D

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESU26	100376	R&S	2014-11-05
2	Test Receiver	ESCI	100766	R&S	2014-04-08
3	EMI Antenna	VULB 9163	9163-514	Schwarzbeck	2014-11-10
4	EMI Antenna	3117	00139065	ETS-Lindgren	2014-07-31
5	LISN	ESH3-Z5	825562/028	R&S	2014-06-12
6	LISN	ESH2-Z5	829991/012	R&S	2014-04-14
7	Universal Radio Communication Tester	E5515C	MY48361083	Agilent	2014-03-16
8	PC	OPTIPLEX 755	3908243625	DELL	N/A
9	Monitor	E178FPc	CN-OWR979-6 4180-7AJ-D2M S	DELL	N/A
10	Printer	LaserJet 1160	CNM2D33740	HP	N/A
11	Keyboard	L100	CN0RH659658 907ATOI40	DELL	N/A
12	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A
13	Universal Radio Communication Tester	CMU200	109914	R&S	2014-04-18

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 range (MHz)	Field strength limit ($\mu\text{V/m}$)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

A.1.4 Test Condition

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/1MHz	15	Peak, Average

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.

Measurement uncertainty (worst case): $U = 4.3 \text{ dB}$, $k=2$.

Measurement result for Set.4:

Charging Mode/Average detector

Frequency(MHz)	Result(dB $\mu\text{V}/\text{m}$)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μV)	Polarity
3000.000	43.0	-28.4	32.8	38.57	VERTICAL
2999.400	42.8	-29.0	33.2	38.58	VERTICAL
2996.600	42.8	-29.0	33.2	38.58	VERTICAL
2997.000	42.8	-29.0	33.2	38.58	VERTICAL
2996.400	42.8	-29.0	33.2	38.58	HORIZONTAL
2998.400	42.7	-29.0	33.2	38.48	HORIZONTAL

Charging Mode/Peak detector

Frequency(MHz)	Result(dB $\mu\text{V}/\text{m}$)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μV)	Polarity
2933.800	54.6	-28.1	32.5	50.21	VERTICAL
2996.000	54.6	-29.0	33.2	50.38	VERTICAL
2962.800	54.4	-28.6	33.1	49.91	VERTICAL
2997.800	54.3	-29.0	33.2	50.08	VERTICAL
2982.600	54.1	-29.0	33.2	49.88	HORIZONTAL
2993.200	54.0	-29.0	33.2	49.78	VERTICAL

Measurement result for Set.5:
Charging Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V)	Polarity
2998.600	42.9	-29.0	33.2	38.68	VERTICAL
3000.000	42.9	-28.4	32.8	38.47	HORIZONTAL
2997.400	42.9	-29.0	33.2	38.68	VERTICAL
2995.400	42.8	-29.0	33.2	38.58	VERTICAL
2999.400	42.8	-29.0	33.2	38.58	HORIZONTAL
2993.800	42.7	-29.0	33.2	38.48	VERTICAL

Charging Mode/Peak detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V)	Polarity
2989.600	54.6	-29.0	33.2	50.38	HORIZONTAL
2996.600	54.5	-29.0	33.2	50.28	HORIZONTAL
2984.200	54.3	-29.0	33.2	50.08	VERTICAL
2997.200	54.3	-29.0	33.2	50.08	VERTICAL
2999.400	54.2	-29.0	33.2	49.98	VERTICAL
2989.200	54.2	-29.0	33.2	49.98	VERTICAL

Measurement result for Set.6:
USB Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dB μ V)	Polarity
3000.000	43.3	-28.4	32.8	38.87	VERTICAL
2999.400	42.9	-29.0	33.2	38.68	HORIZONTAL
2997.800	42.8	-29.0	33.2	38.58	VERTICAL
2995.800	42.8	-29.0	33.2	38.58	VERTICAL
2996.800	42.8	-29.0	33.2	38.58	HORIZONTAL
2999.000	42.8	-29.0	33.2	38.58	VERTICAL

USB Mode/ Peak detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dB μ V)	Polarity
2917.800	54.5	-28.1	32.8	49.81	HORIZONTAL
2987.200	54.5	-29.0	33.2	50.28	VERTICAL
2978.400	54.3	-29.0	33.1	50.18	HORIZONTAL
2906.000	54.1	-28.1	32.8	49.39	VERTICAL
2926.800	54.1	-28.1	32.5	49.71	VERTICAL
2990.000	54.0	-29.0	33.2	49.78	VERTICAL

Charging Mode, Set.4

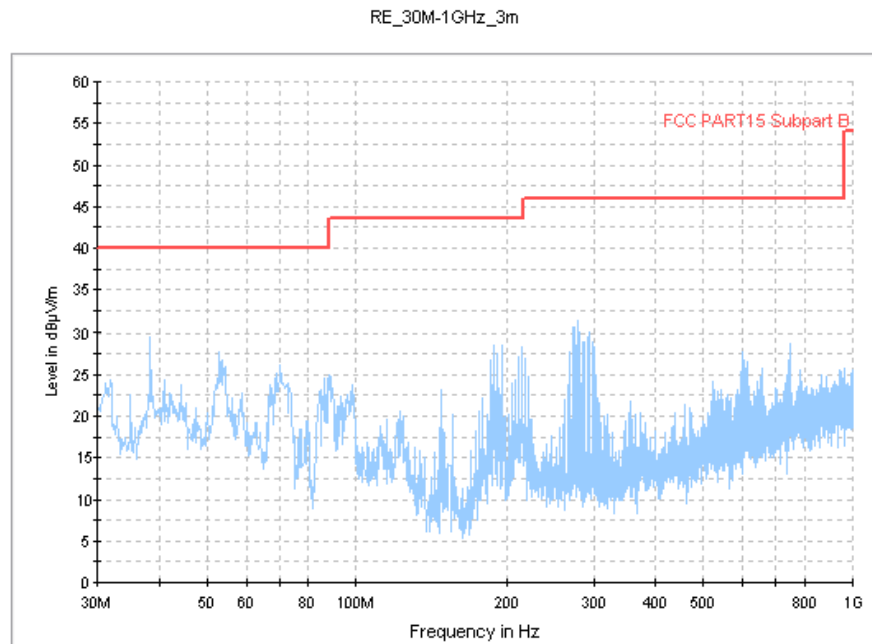


Figure A.1 Radiated Emission from 30MHz to 1GHz

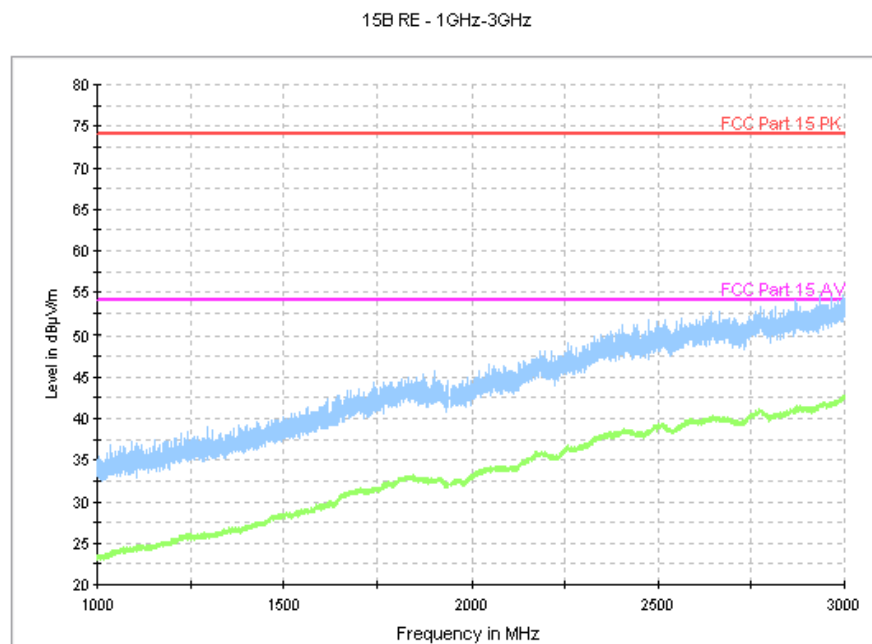


Figure A.2 Radiated Emission from 1GHz to 3GHz

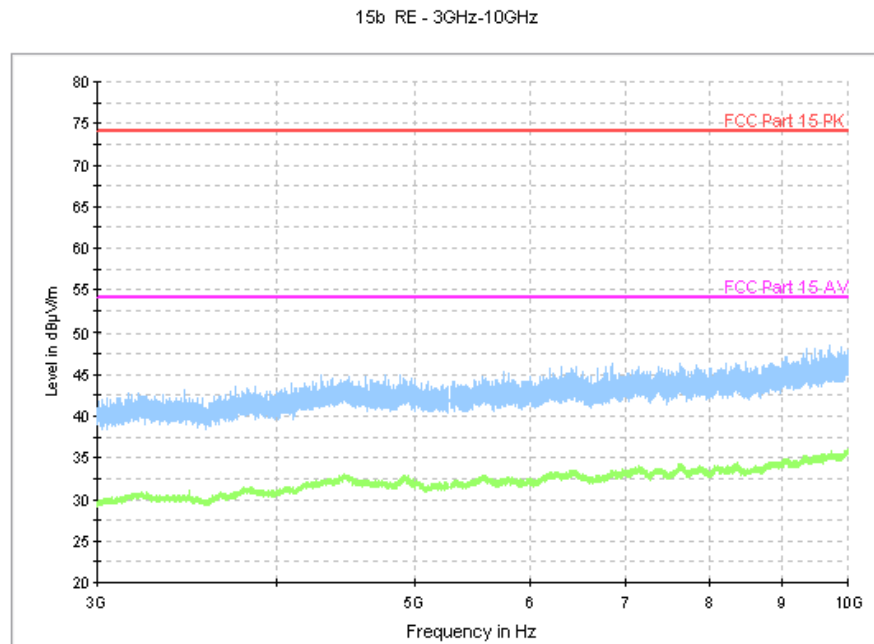


Figure A.3 Radiated Emission from 3GHz to 10GHz

Charging Mode, Set.5

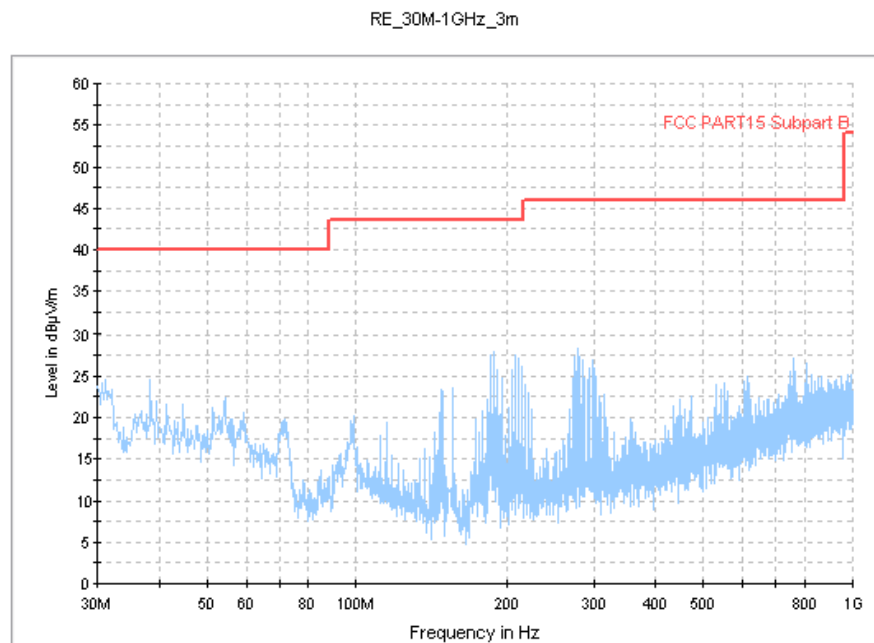


Figure A.4 Radiated Emission from 30MHz to 1GHz

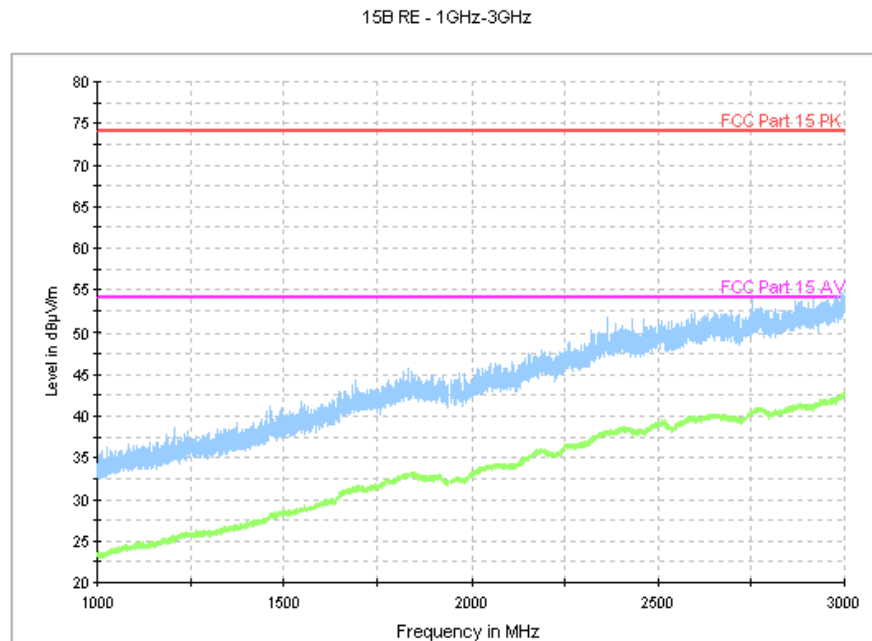


Figure A.5 Radiated Emission from 1GHz to 3GHz

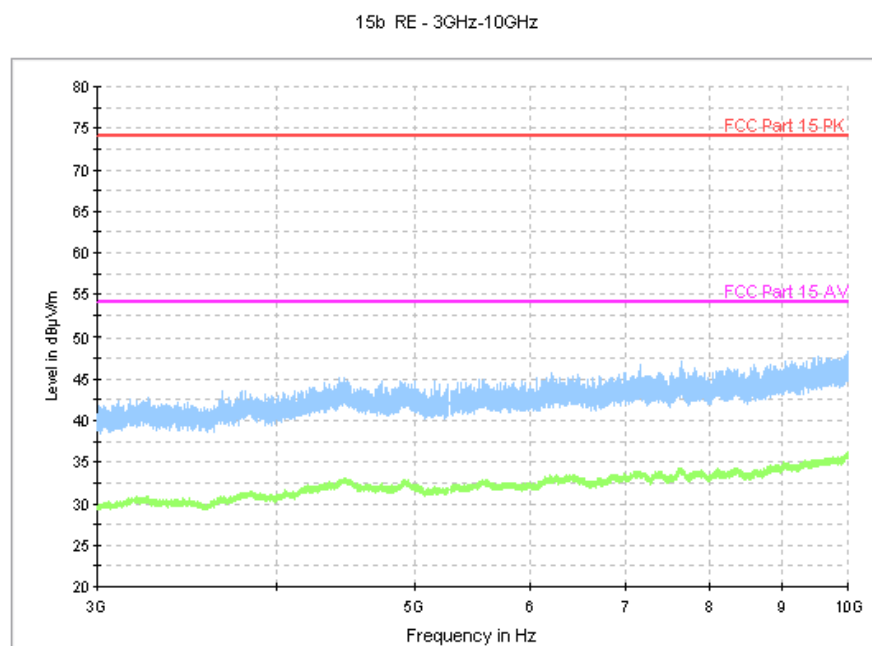


Figure A.6 Radiated Emission from 3GHz to 10GHz

USB Mode, Set.6

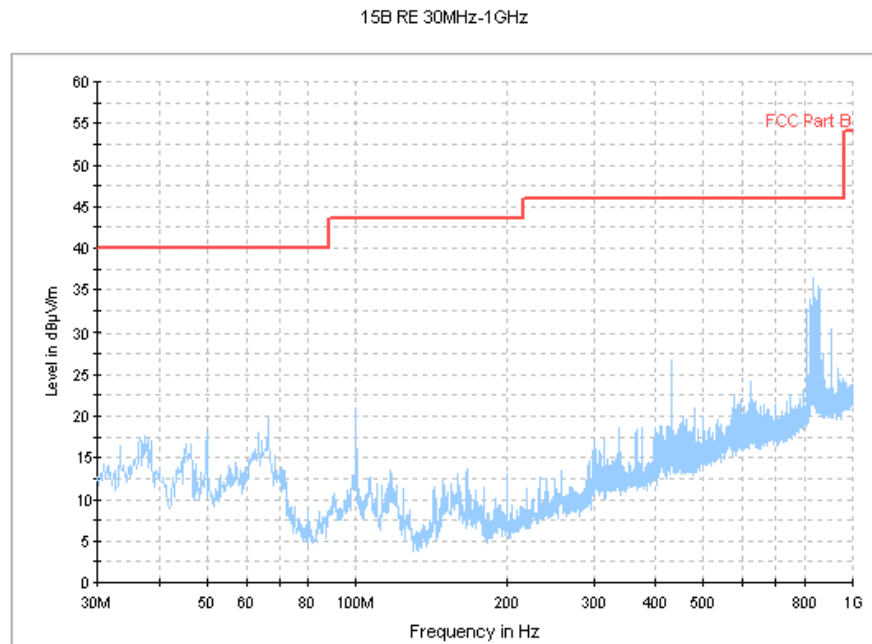


Figure A.7 Radiated Emission from 30MHz to 1GHz

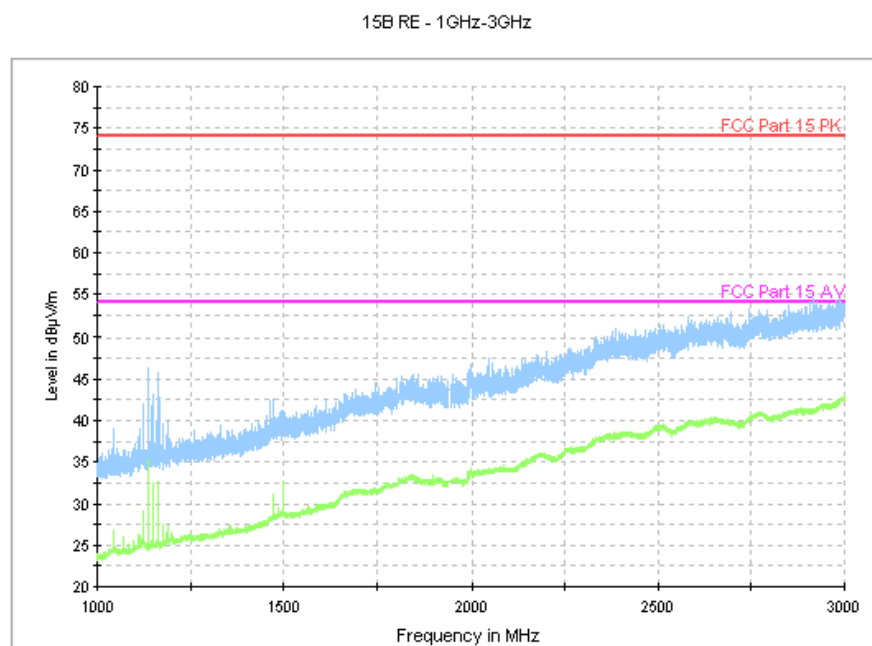


Figure A.8 Radiated Emission from 1GHz to 3GHz

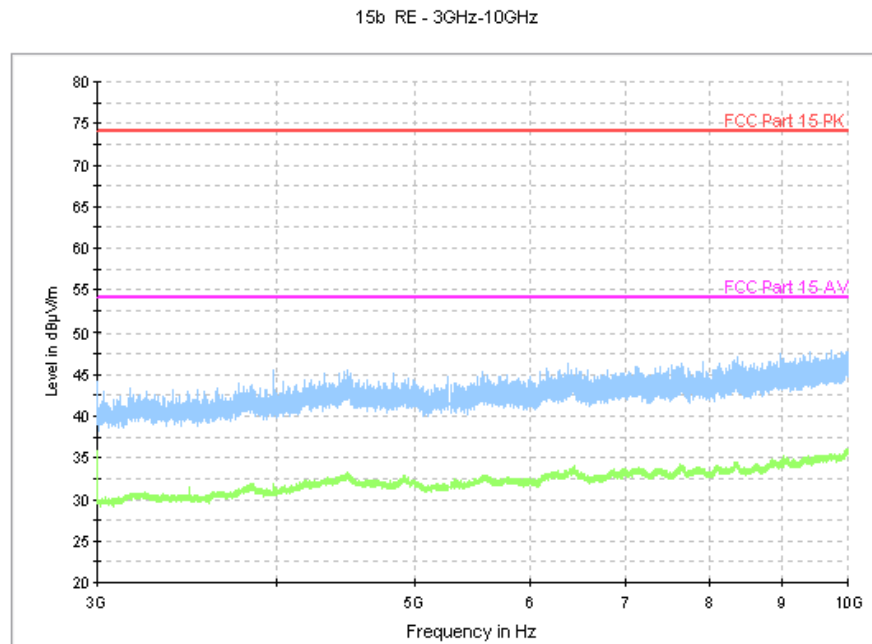


Figure A.9 Radiated Emission from 3GHz to 10GHz

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/IF bandwidth	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

Measurement uncertainty: $U = 2.9 \text{ dB}$, $k=2$.

Charging Mode, Set.4

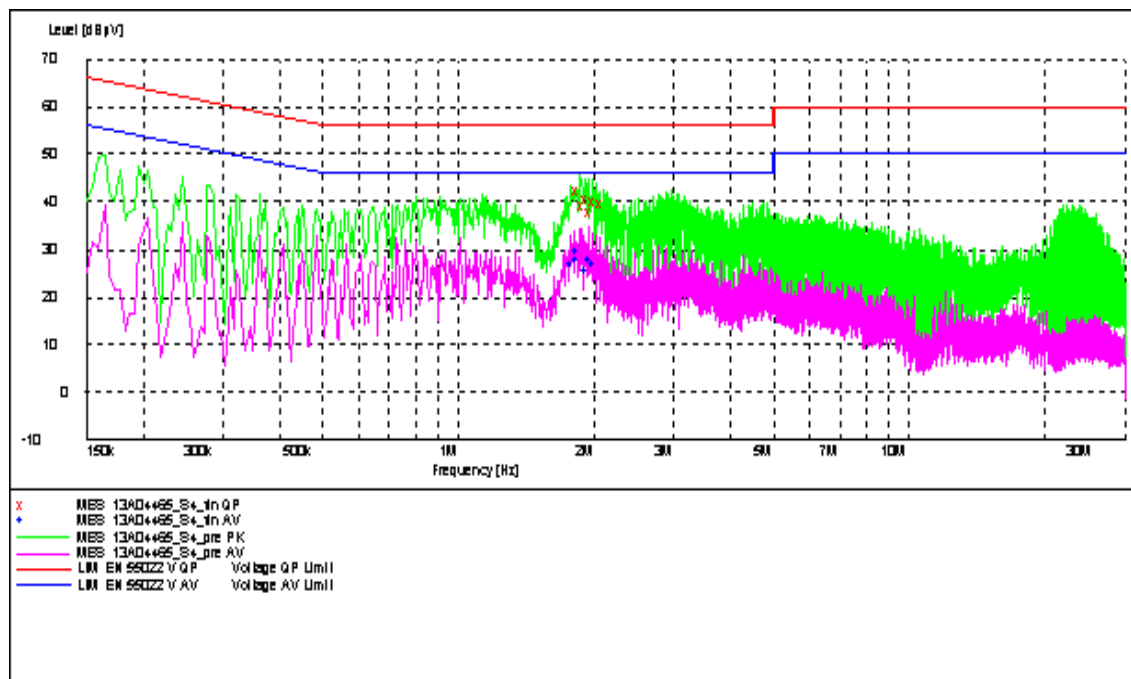


Figure A.10 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
1.846500	42.10	GND	L1	9.7	13.9	56
1.905000	39.20	GND	N	9.7	16.8	56
1.941000	40.50	GND	N	9.7	15.5	56
1.968000	37.80	GND	N	9.7	18.2	56
2.013500	39.90	GND	L1	9.7	16.1	56
2.085500	39.40	GND	L1	9.7	16.6	56

Final Result 2

Frequency (MHz)	CAverage (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
1.801500	26.70	GND	N	9.7	19.3	46
1.846500	27.50	GND	N	9.7	18.5	46
1.855500	29.50	GND	N	9.7	16.5	46
1.941000	25.30	GND	L1	9.7	20.7	46
1.972500	27.50	GND	N	9.7	18.5	46
2.013500	26.80	GND	L1	9.7	19.2	46

Charging Mode, Set.5

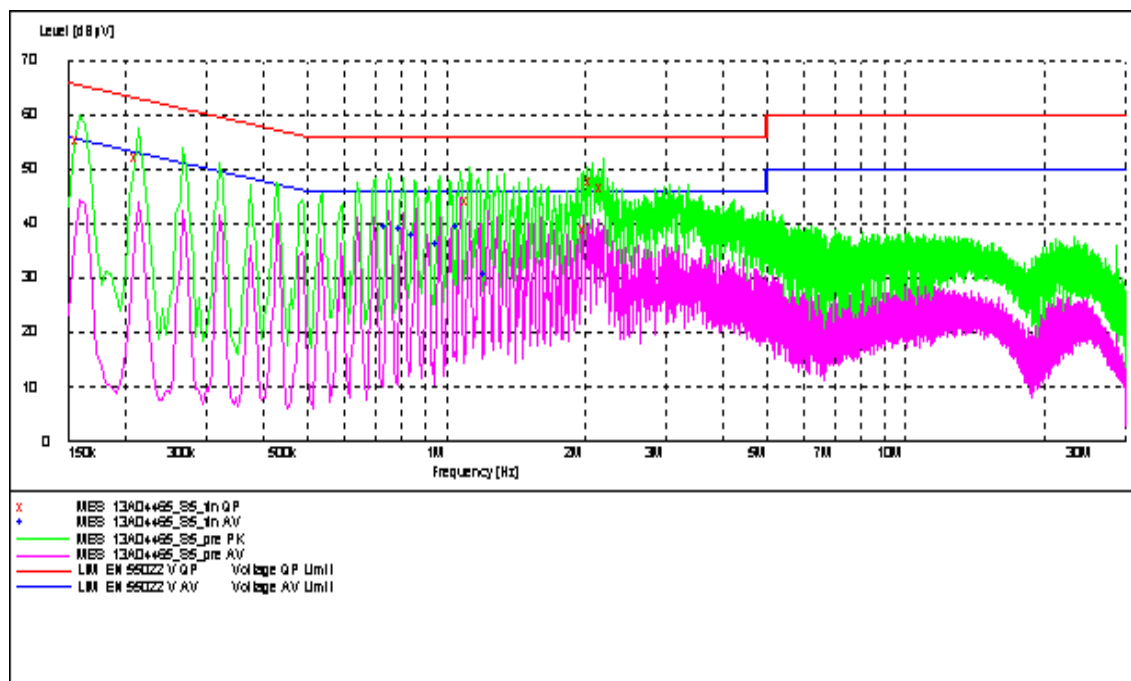


Figure A.11 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	55.40	GND	L1	9.8	10.1	66
0.213000	51.90	GND	N	9.8	11.2	63
1.117500	44.00	GND	L1	9.7	12.0	56
2.027000	39.10	GND	N	9.7	16.9	56
2.085500	47.70	GND	L1	9.7	8.3	56
2.198000	46.60	GND	L1	9.7	9.4	56

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.748500	39.20	GND	L1	9.8	6.8	46
0.802500	38.90	GND	L1	9.8	7.1	46
0.856500	37.90	GND	L1	9.8	8.1	46
0.964500	36.00	GND	L1	9.7	10.0	46
1.072500	39.40	GND	L1	9.7	6.6	46
1.225500	30.50	GND	L1	9.7	15.5	46

USB Mode, Set.6

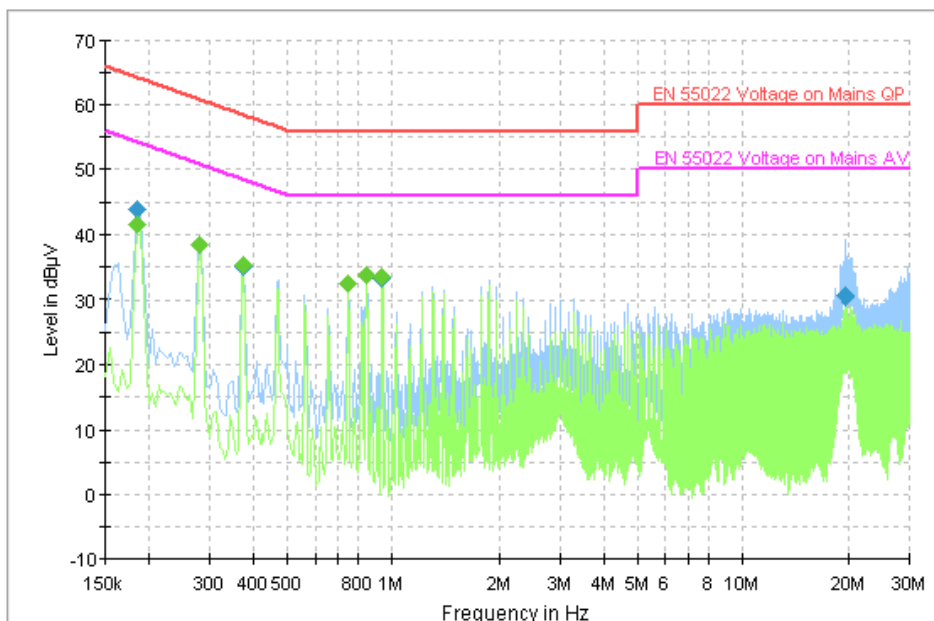


Figure A.12 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186001	43.8	GND	N	9.9	20.5	64.2
0.280501	38.3	GND	L1	9.9	22.5	60.8
0.375001	35.0	GND	L1	9.9	23.4	58.4
0.843001	33.7	GND	L1	9.9	22.3	56.0
0.933001	33.2	GND	L1	9.9	22.8	56.0
19.617001	30.6	GND	N	9.5	29.4	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186001	41.6	GND	N	9.9	12.6	54.2
0.280501	38.3	GND	L1	9.9	12.5	50.8
0.375001	35.2	GND	L1	9.9	13.2	48.4
0.748501	32.3	GND	L1	9.9	13.7	46.0
0.843001	33.8	GND	L1	9.9	12.2	46.0
0.933001	33.5	GND	L1	9.9	12.5	46.0

END OF REPORT