



# TEST REPORT

No. 2011TAR452

for

**TCT Mobile Limited**

**GSM/GPRS/EDGE Quad bands mobile phone**

**Model Name: Diamond\_US**

**Marketing Name: one touch 810A**

**FCC ID: RAD201**

with

**Hardware Version: PIO**

**Software Version: swC17**

**Issued Date: 2011-09-05**

**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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## **CONTENTS**

<b>1. TEST LABORATORY.....</b>	<b>3</b>
<b>1.1. TESTING LOCATION.....</b>	<b>3</b>
<b>1.2. TESTING ENVIRONMENT.....</b>	<b>3</b>
<b>1.3. PROJECT DATA.....</b>	<b>3</b>
<b>1.4. SIGNATURE.....</b>	<b>3</b>
<b>2. CLIENT INFORMATION.....</b>	<b>4</b>
<b>2.1. APPLICANT INFORMATION.....</b>	<b>4</b>
<b>2.2. MANUFACTURER INFORMATION.....</b>	<b>4</b>
<b>3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE).....</b>	<b>5</b>
<b>3.1. ABOUT EUT.....</b>	<b>5</b>
<b>3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST.....</b>	<b>5</b>
<b>3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST.....</b>	<b>5</b>
<b>3.4. EUT SET-UPS.....</b>	<b>6</b>
<b>4. REFERENCE DOCUMENTS.....</b>	<b>7</b>
<b>4.1. REFERENCE DOCUMENTS FOR TESTING.....</b>	<b>7</b>
<b>5. LABORATORY ENVIRONMENT.....</b>	<b>8</b>
<b>6. SUMMARY OF TEST RESULTS.....</b>	<b>9</b>
<b>7. TEST EQUIPMENTS UTILIZED.....</b>	<b>10</b>
<b>ANNEX A: MEASUREMENT RESULTS.....</b>	<b>11</b>

## **1. Test Laboratory**

### **1.1. Testing Location**

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT  
Address: No 52, Huayuan beilu, Haidian District, Beijing, P. R. China  
Postal Code: 100191  
Telephone: 00861062304633  
Fax: 00861062304633

### **1.2. Testing Environment**

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

### **1.3. Project data**

Testing Start Date: Aug. 29, 2011  
Testing End Date: Aug. 31, 2011

### **1.4. Signature**



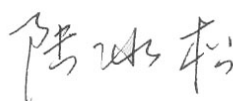
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**Qu Pengfei**  
**(Prepared this test report)**



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**Sun Xiangqian**  
**(Reviewed this test report)**



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**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, 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  
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Telephone: 0086-21-61460890  
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### **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

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

#### **3.1. About EUT**

Description	GSM/GPRS/EDGE Quad bands mobile phone
Model Name	Diamond_US
Marketing Name	one touch 810A
FCC ID	RAD201
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	012818000020561	PIO	swC17

\*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	B1521539FFA
AE2	Battery	B152153A15A
AE3	Travel Adapter	/
AE4	Travel Adapter	/
AE5	USB Cable	/
AE6	USB Cable	/

##### AE1, AE2

Model	CAB3120000C1
Manufacturer	BYD
Capacitance	850mAh
Nominal Voltage	3.7V

##### AE3

Model	CBA3120AG0C2
Manufacturer	Tenpao
Length of cable	120cm

##### AE4

Model	CBA3002AG0C1
Manufacturer	BYD
Length of cable	120cm

##### AE5

Model	CDA3122005C1
Manufacturer	TCT
Length of cable	100cm

AE6

Model	CDA3122005C2
Manufacturer	TCT
Length of cable	100cm

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

### 3.4. EUT set-ups

<b>EUT set-up No.</b>	<b>Combination of EUT and AE</b>	<b>Remarks</b>
Set.1	EUT1+ AE1/AE2+ AE3	--
Set.2	EUT1+ AE1/AE2+ AE4	--
Set.3	EUT1+ AE1/AE2+ AE5/AE6	USB mode

## **4. Reference Documents**

### **4.1. Reference Documents for testing**

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

<b>Reference</b>	<b>Title</b>	<b>Version</b>
FCC Part 15, Subpart B	Radio frequency devices	July 10, 2008 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** (23 meters×17meters×10meters) 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	> 2 MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

**Control room** 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

**Conducted chamber** 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	< 0.5 Ω

**Fully-anechoic chamber1** (6.8 meters×3.08 meters×3.53 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	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

**Fully-anechoic chamber2** (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

<b>Abbreviations used in this clause:</b>	
P	Pass
NA	Not applicable
F	Fail

<b>Clause</b>	<b>List</b>	<b>Clause in FCC rules</b>	<b>Verdict</b>
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	2012-03-12
2	Test Receiver	ESCI	100766	R&S	2011-12-06
3	Test Receiver	ESI40	831564/002	R&S	2012-02-11
4	BiLog Antenna	VUL9163	9163-302	Schwarzbeck	2012-02-10
5	Signal Generator	SMB100A	102063	R&S	2012-03-05
6	LISN	ESH2-Z5	R&S	829991/012	2012-04-17
7	Universal Radio Communication Tester	CMU200	100680	R&S	2012-09-05
8	Dual-Ridge Waveguide Horn Antenna	3115	6914	EMCO	2012-2-18
9	PC	OPTIPLEX 755	3908243625	DELL	N/A
10	Monitor	E178FPc	CN-OWR979-6 4180-7AJ-D2M S	DELL	N/A
11	Printer	DeskJet D2368	TH72E12G7Q	HP	N/A
12	Keyboard	L100	CN0RH659658 907ATOI40	DELL	N/A
13	Mouse	VR-301	692722550019 8	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.

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

$G_{\text{PL}}$ : Path Loss

$P_{\text{Mea}}$ : Measurement result on receiver.

#### Set.1 Charging mode

Frequency(MHz)	Result(dBuV/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{Mea}}$ (dBuV)	Polarity
3701.403	39.38	-19.4	33.4	25.38	VERTICAL
3699.399	39.33	-19.5	33.4	25.43	VERTICAL
3703.407	39.29	-19.4	33.4	25.29	VERTICAL
3705.411	39.27	-19.4	33.4	25.27	VERTICAL
3697.395	39.25	-19.5	33.4	25.35	VERTICAL
3707.415	39.25	-19.4	33.4	25.25	VERTICAL

#### Set.2 Charging mode

Frequency(MHz)	Result(dBuV/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{mea}}$ (dBuV)	Polarity
3699.399	39.45	-19.5	33.4	25.55	VERTICAL
3701.403	39.43	-19.4	33.4	25.43	VERTICAL
3703.407	39.38	-19.4	33.4	25.38	VERTICAL
3697.395	39.37	-19.5	33.4	25.47	VERTICAL
3705.411	39.36	-19.4	33.4	25.36	VERTICAL
3695.391	39.35	-19.5	33.4	25.45	VERTICAL

#### Set.3 USB mode

Frequency(MHz)	Result(dBuV/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{mea}}$ (dBuV)	Polarity
2995.992	40.71	-19.5	29.2	31.01	VERTICAL
2991.984	40.04	-19.5	29.2	30.34	VERTICAL
1496.994	39.81	-21.8	24.7	36.91	HORIZONTAL
3701.403	39.78	-19.4	33.4	25.78	VERTICAL
3699.399	39.77	-19.5	33.4	25.87	VERTICAL
3697.395	39.72	-19.5	33.4	25.82	VERTICAL

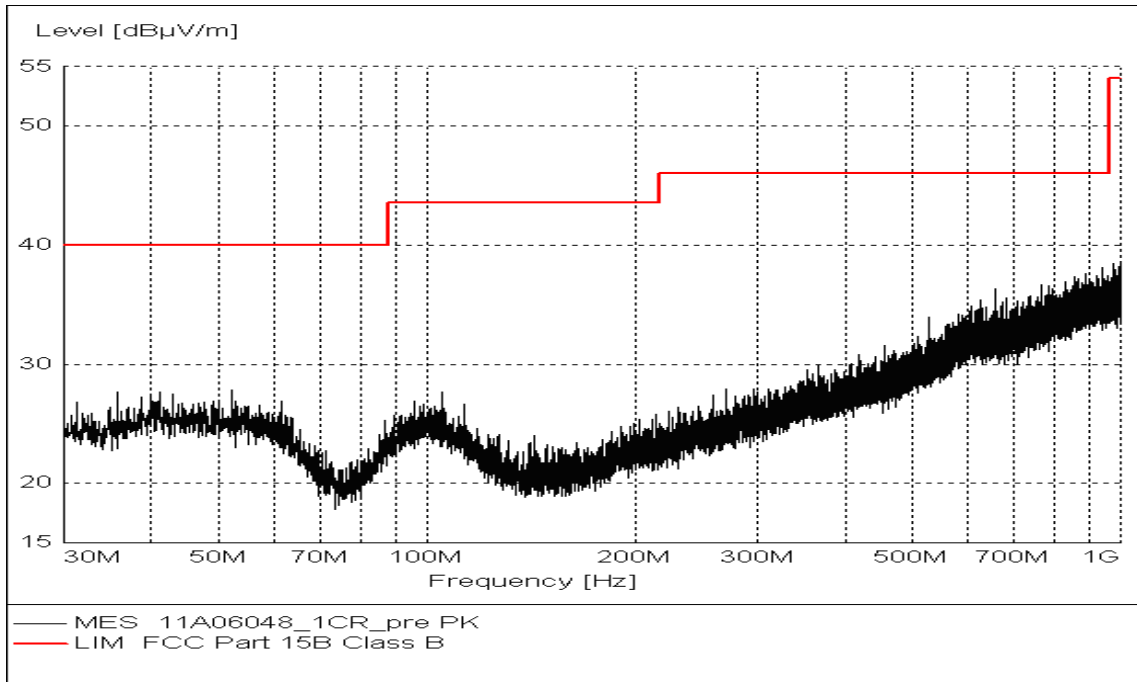


Figure A.1 Radiated Emission from 30MHz to 1GHz (Set.1, Charging mode)

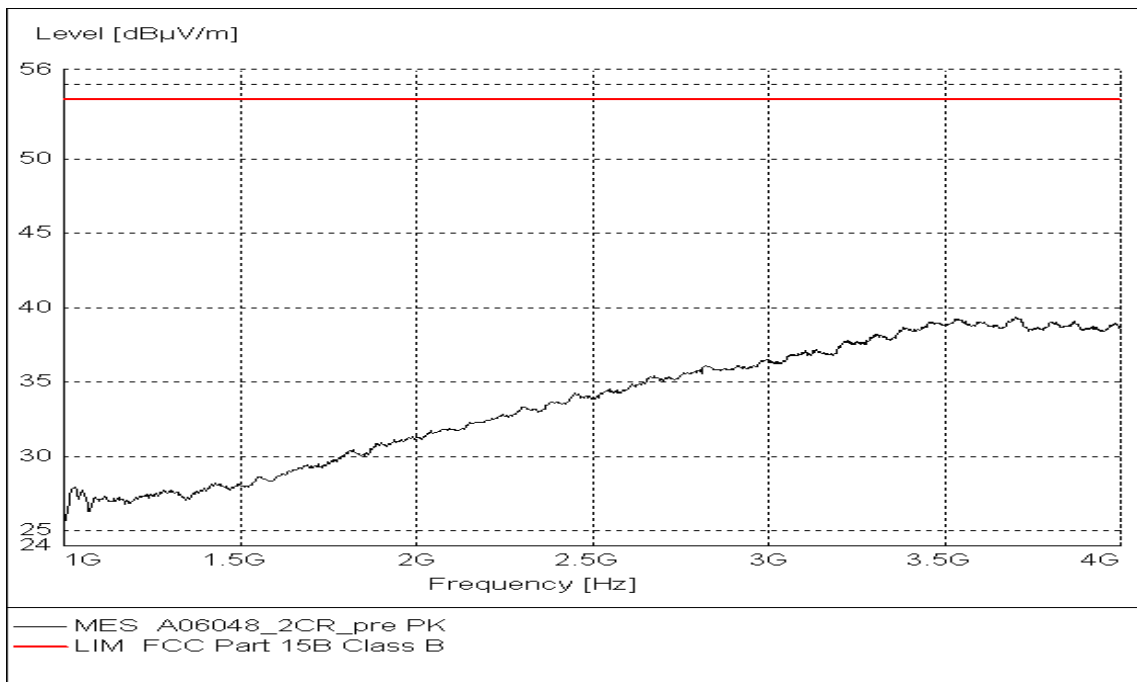


Figure A.2 Radiated Emission from 1GHz to 4GHz (Set.1, Charging mode)

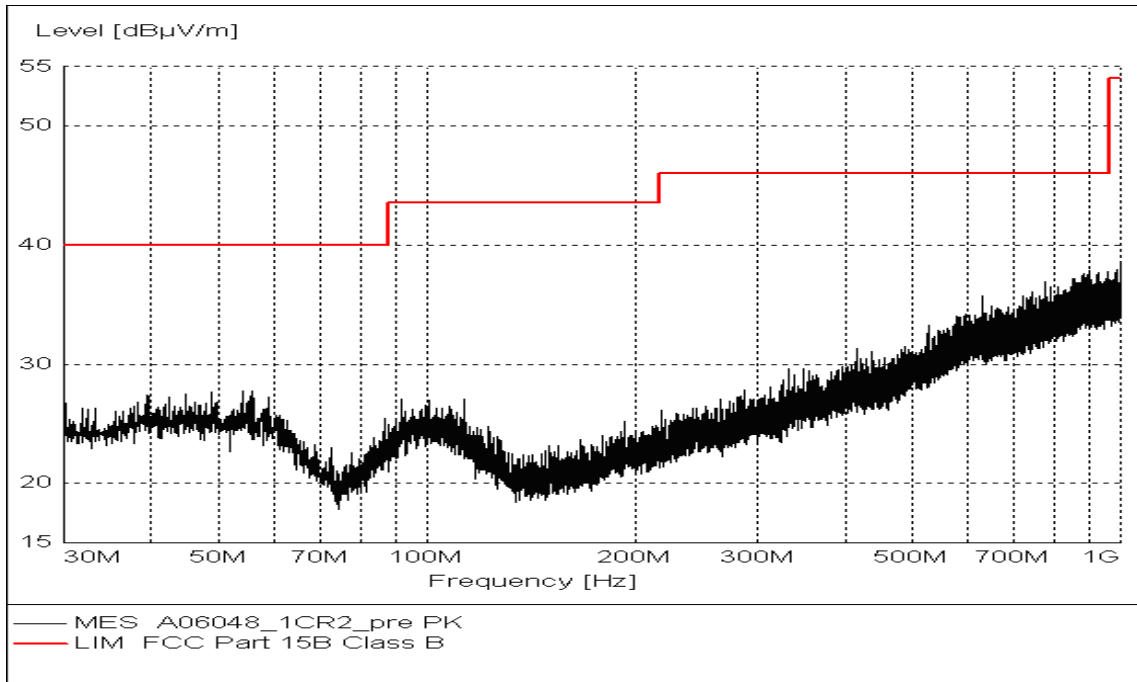


Figure A.3 Radiated Emission from 30MHz to 1GHz (Set.2, Charging mode)

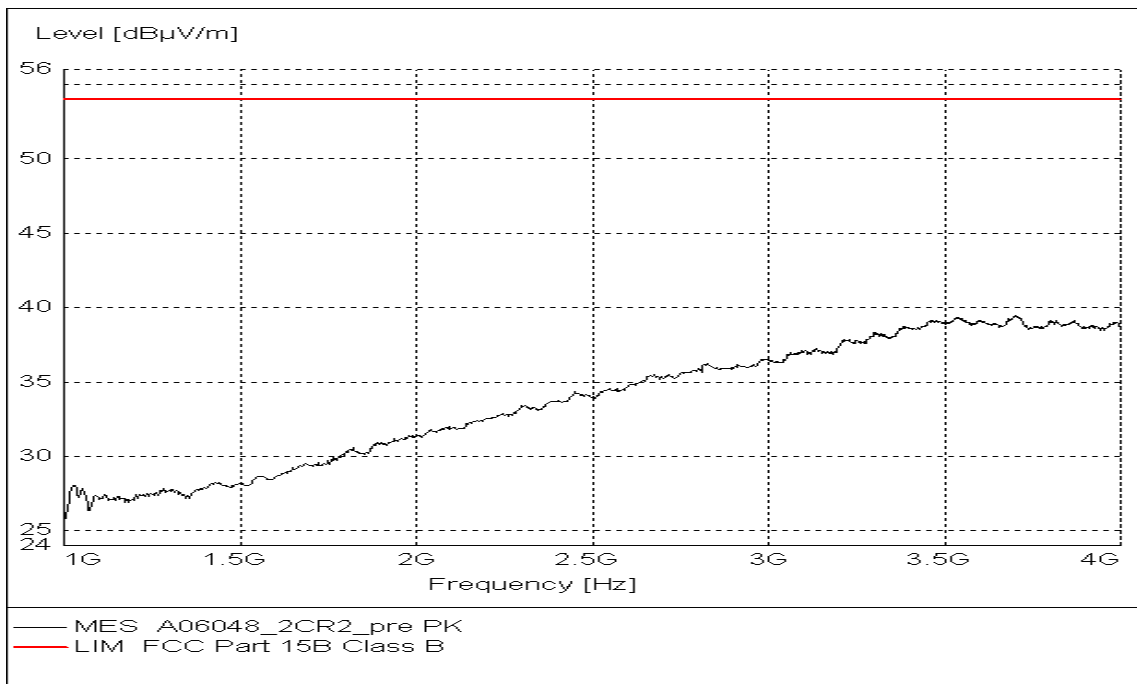


Figure A.4 Radiated Emission from 1GHz to 4GHz (Set.2, Charging mode)

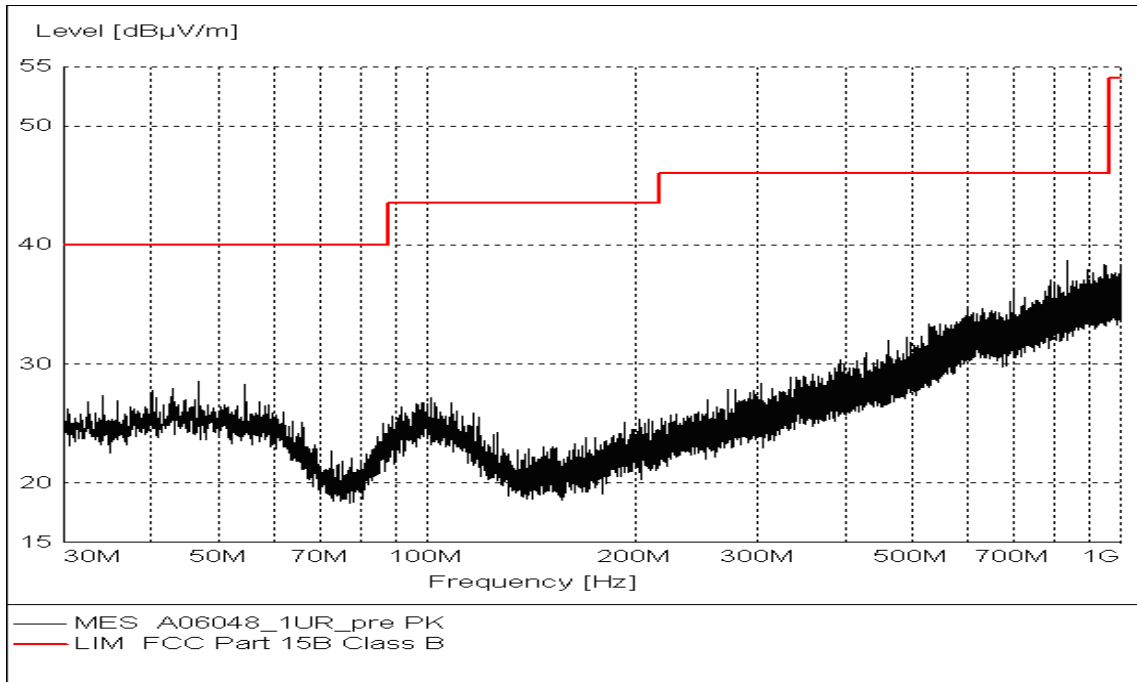


Figure A.5 Radiated Emission from 30MHz to 1GHz (Set.3, USB mode)

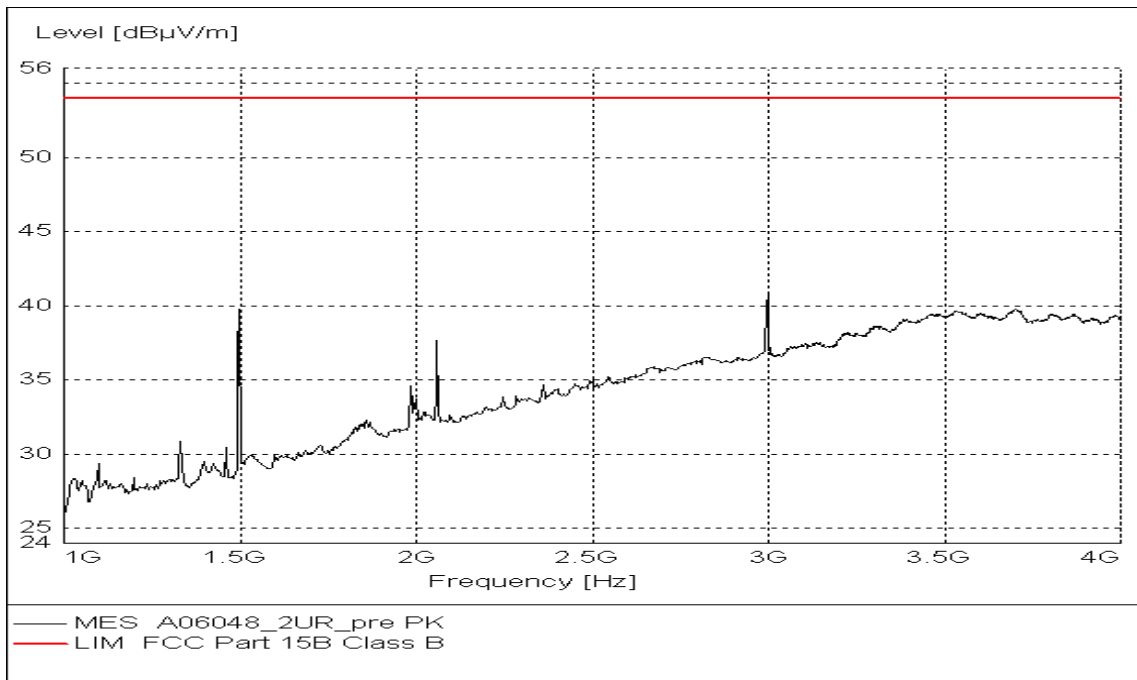


Figure A.6 Radiated Emission from 1GHz to 4GHz (Set.3, USB mode)

## 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 (dB $\mu$ 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.2.5 Measurement Results

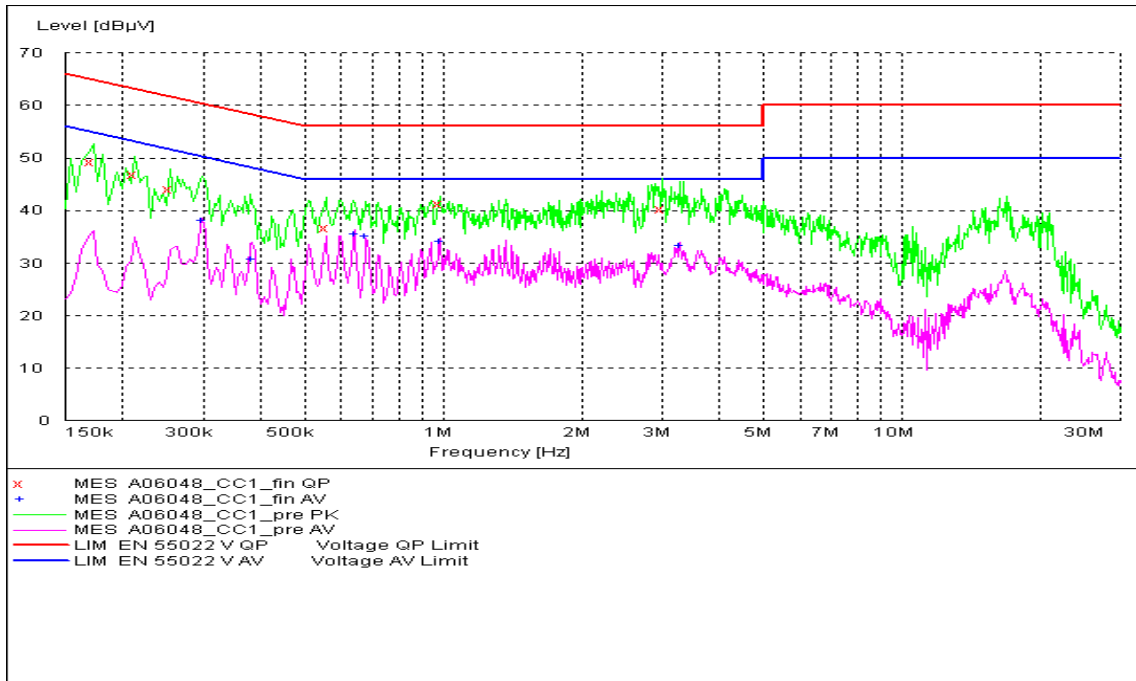


Figure A.7 Conducted Emission (Set.1, Charging mode)

#### MEASUREMENT RESULT: "A06048\_CC1\_fin QP"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.172500	49.20	10.1	65	15.6	L1	GND
0.213000	46.90	10.1	63	16.2	L1	GND
0.253500	44.10	10.1	62	17.5	L1	GND
0.555000	36.60	10.1	56	19.4	L1	GND
0.982500	41.30	10.1	56	14.7	N	GND
3.010558	40.30	10.1	56	15.7	N	GND

#### MEASUREMENT RESULT: "A06048\_CC1\_fin AV"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.298500	38.10	10.1	50	12.2	N	GND
0.384000	30.60	10.1	48	17.6	N	GND
0.640500	35.50	10.1	46	10.5	N	GND
0.681000	35.10	10.1	46	10.9	N	GND
0.982500	34.10	10.1	46	11.9	N	GND
3.293337	33.30	10.1	46	12.7	N	GND

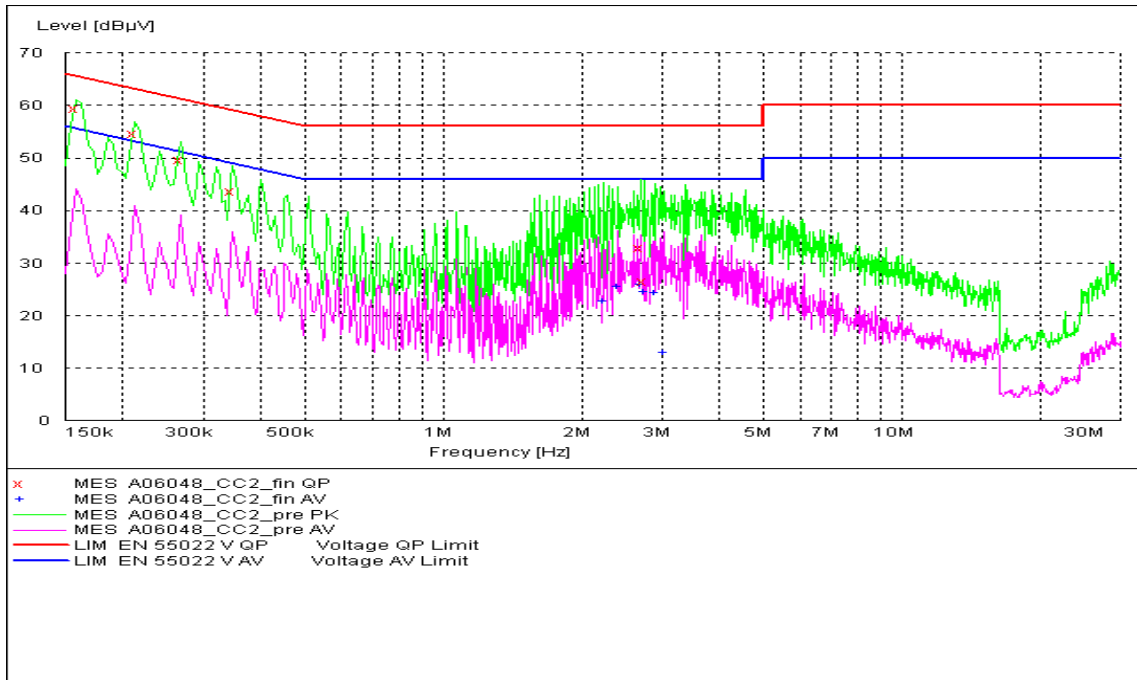


Figure A.8 Conducted Emission (Set.2, Charging mode)

**MEASUREMENT RESULT: "A06048\_CC2\_fin QP"**

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.159000	59.40	10.1	66	6.1	L1	GND
0.213000	54.60	10.1	63	8.4	N	GND
0.267000	49.60	10.1	61	11.6	N	GND
0.348000	43.70	10.1	59	15.4	N	GND
2.697700	33.00	10.1	56	23.0	L1	GND
2.752060	26.60	10.1	56	29.4	N	GND

**MEASUREMENT RESULT: "A06048\_CC2\_fin AV"**

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
2.243104	22.70	10.1	46	23.3	L1	GND
2.405328	25.60	10.1	46	20.4	L1	GND
2.697700	26.00	10.1	46	20.0	L1	GND
2.752060	24.50	10.1	46	21.5	L1	GND
2.907265	24.30	10.1	46	21.7	L1	GND
3.040739	12.90	10.1	46	33.1	L1	GND

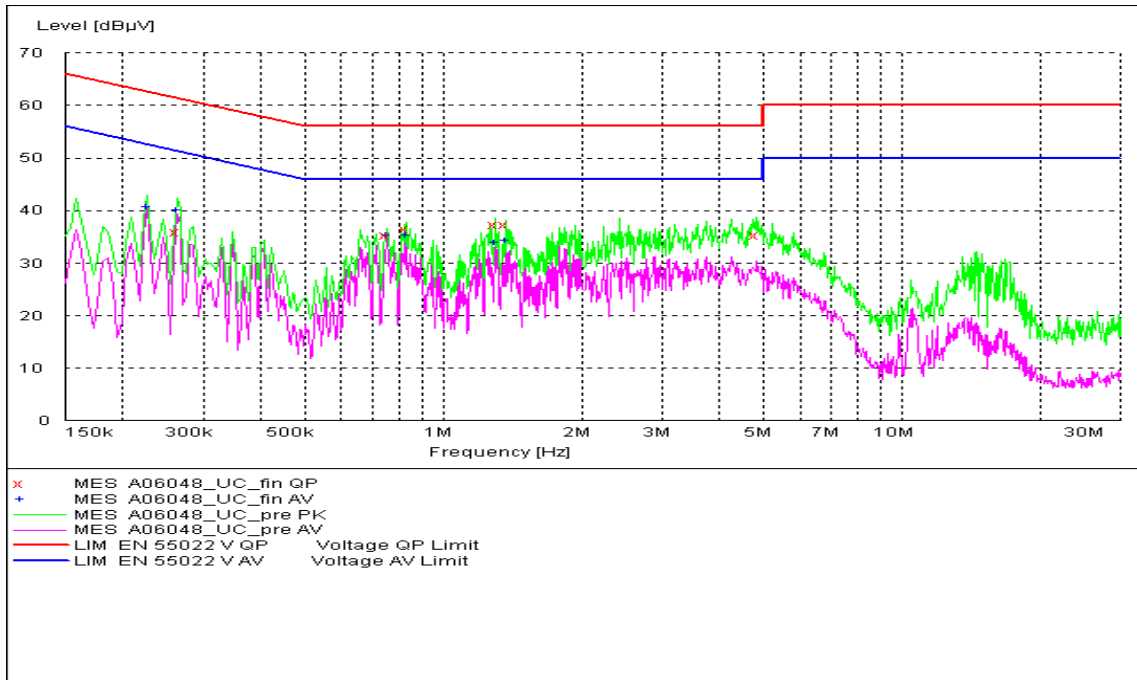


Figure A.9 Conducted Emission (Set.3, USB mode)

**MEASUREMENT RESULT: "A06048\_UC\_fin QP"**

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.262500	35.80	10.1	61	25.6	L1	GND
0.753000	35.30	10.1	56	20.7	N	GND
0.829500	36.50	10.1	56	19.5	N	GND
1.297500	37.20	10.1	56	18.8	N	GND
1.374000	37.30	10.1	56	18.7	N	GND
4.835294	35.40	10.2	56	20.6	N	GND

**MEASUREMENT RESULT: "A06048\_UC\_fin AV"**

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.226500	40.60	10.1	53	12.0	N	GND
0.262500	40.00	10.1	51	11.4	N	GND
0.753000	35.40	10.1	46	10.6	N	GND
0.829500	35.30	10.1	46	10.7	N	GND
1.297500	34.00	10.1	46	12.0	N	GND
1.374000	34.40	10.1	46	11.6	N	GND

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