



# TEST REPORT

No. I14Z46994-EMC01

for

**TCT Mobile Limited**

**GSM dual band mobile phone**

**Model Name: 1035A**

**FCC ID: RAD505**

with

**Hardware Version: PIO**

**Software Version: SWC13**

**Issued Date: Jul. 04<sup>th</sup>, 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***

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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°C  
Relative Humidity: 20-75%

### 1.3. Project data

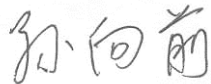
Testing Start Date: Jun. 17<sup>th</sup>, 2014  
Testing End Date: Jun. 24<sup>th</sup>, 2014

### 1.4. Signature



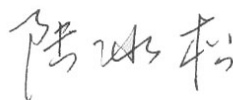
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Qu Pengfei  
(Prepared this test report)



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## **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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### **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	1035A
FCC ID	RAD505
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
EUT3	014129000001074	PIO	SWC13

\*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	Battery	/	TCT-B-1943
AE2	Battery	/	TCT-B-1962
AE3	Battery	/	1445997BA020
AE4	Battery	/	1446997BA002
AE5	Battery	/	TCT-B-0555
AE7	Travel charger	/	TCT-CHR-1978
AE8	Travel charger		TCT-CHR-0354
AE9	Travel charger		TCT-CHR-1962
AE10	Travel charger		TCT-CHR-1966
AE11	USB cable	/	TCT-DC-0135
AE12	USB cable	/	TCT-DC-0487
AE13	Headset	/	TCT-E-1148
AE14	Headset	/	TCT-E-1112

#### AE1, AE2

Model	CAB0400000C1
Manufacturer	BYD
Capacitance	400mAh
Nominal voltage	3.7V

#### AE3, AE4

Model	CAB0400003CB
Manufacturer	OCEANSUN
Capacitance	400mAh
Nominal voltage	3.7V

AE5	
Model	CAB22D0000C1
Manufacturer	BYD
Capacitance	650mAh
Nominal voltage	3.7V
AE7, AE8	
Model	CBA3002AG0C1
Manufacturer	BYD
Length of cable	98cm
AE9, AE10	
Model	CBA3002AG0C3
Manufacturer	YINGJU
Length of cable	99cm
AE11	
Model	CDA3122002C2
Manufacturer	Shenhua
Length of cable	98cm
AE12	
Model	CDA3122002C1
Manufacturer	JUWEI
Length of cable	99cm
AE13	
Model	CCB3160A11C2
Manufacturer	Shunda
Length of cable	151cm
AE14	
Model	CCB3160A11C1
Manufacturer	Juwei
Length of cable	157cm

\*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.6	EUT3+ AE2+ AE7	Charging mode
Set.7	EUT3+ AE2+ AE9	Charging mode
Set.8	EUT3+ AE2+ AE11	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 - Unintentional Radiators	10-1-13 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	2009

## 5. LABORATORY ENVIRONMENT

**Semi-anechoic chamber SAC-1** (23 meters×17meters×10meters) 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/10m 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 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	D
2	Conducted Emission	15.107(a)	P	D

## 7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESCI	100344	R&S	2015-03-03	1 year
2	Test Receiver	ESCI 7	100948	R&S	2014-07-18	1 year
3	Universal Radio Communication Tester	CMU200	109914	R&S	2015-04-13	1 year
4	Test Receiver	FSV	101047	R&S	2014-06-30	1 year
5	LISN	ESH2-Z5	829991/012	R&S	2015-04-14	1 year
6	EMI Antenna	VULB 9163	9163-234	Schwarzbeck	2016-09-16	3 years
7	EMI Antenna	3115	6914	ETS-Lindgren	2014-12-15	3 years
8	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A	N/A
9	Monitor	E178FPc	CN-OWR979-64180 -7AJ-D2MS	DELL	N/A	N/A
10	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
11	Keyboard	L100	CN0RH659658907 ATOI40	DELL	N/A	N/A
12	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A	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 (above 1GHz) and 10 meters (below 1GHz) is tested. Tested in accordance with the procedures of ANSI C63.4 - 2009, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters (above 1GHz) and 10 meters (below 1GHz) 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 OPTIPLEX 380, and the serial number of the PC is 2X1YV2X. 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 ( $\mu\text{V}/\text{m}$ )		
	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

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

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

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

#### Measurement result for Set.6:

##### Charging Mode/Average detector

Frequency(MHz)	Result(dB $\mu$ V/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{Mea}}$ (dB $\mu$ V)	Polarity
17894.813	49.3	-18.5	45.6	22.200	V
17876.219	49.3	-18.5	45.6	22.200	V
17885.250	49.2	-18.5	45.6	22.100	V
17888.438	49.2	-18.5	45.6	22.100	H
17871.438	49.2	-18.5	45.6	22.100	V
17898.000	49.2	-18.5	45.6	22.100	V

##### Charging Mode/Peak detector

Frequency(MHz)	Result(dB $\mu$ V/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{Mea}}$ (dB $\mu$ V)	Polarity
17882.594	61.1	-18.5	45.6	34.000	V
17878.344	60.9	-18.5	45.6	33.800	V
17994.688	60.9	-17.7	45.6	33.000	V
17881.531	60.9	-18.5	45.6	33.800	V
17898.000	60.6	-18.5	45.6	33.500	H
17860.813	60.6	-18.5	45.6	33.500	V

**Measurement result for Set.7:**

**Charging Mode/Average detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17874.094	49.3	-18.5	45.6	22.200	V
17898.000	49.2	-18.5	45.6	22.100	V
17884.719	49.2	-18.5	45.6	22.100	V
17893.750	49.0	-18.5	45.6	21.900	V
17870.906	49.0	-18.5	45.6	21.900	V
17885.250	49.0	-18.5	45.6	21.900	V

**Charging Mode/Peak detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>Mea</sub> (dB $\mu$ V)	Polarity
17917.656	61.4	-17.7	45.6	33.500	V
17872.500	61.4	-18.5	45.6	34.300	H
17881.531	61.0	-18.5	45.6	33.900	V
17869.313	60.7	-18.5	45.6	33.600	V
17864.531	60.7	-18.5	45.6	33.600	V
17862.938	60.6	-18.5	45.6	33.500	V

**Measurement result for Set.8:**

**USB Mode/Average detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>mea</sub> (dB $\mu$ V)	Polarity
17866.656	49.2	-18.5	45.6	22.100	V
17881.000	49.2	-18.5	45.6	22.100	V
17886.844	49.1	-18.5	45.6	22.000	V
17885.250	49.1	-18.5	45.6	22.000	V
17902.250	49.1	-18.5	45.6	22.000	H
17891.094	49.1	-18.5	45.6	22.000	V

**USB Mode/ Peak detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	G <sub>PL</sub> (dB)	G <sub>A</sub> (dB/m)	P <sub>mea</sub> (dB $\mu$ V)	Polarity
17863.469	61.4	-18.5	45.6	34.300	V
17890.031	61.0	-18.5	45.6	33.900	V
17887.375	60.8	-18.5	45.6	33.700	V
17911.813	60.6	-18.5	45.6	33.500	H
17877.281	60.5	-18.5	45.6	33.400	V
17852.313	60.5	-18.5	45.6	33.400	V

Charging Mode, Set.6

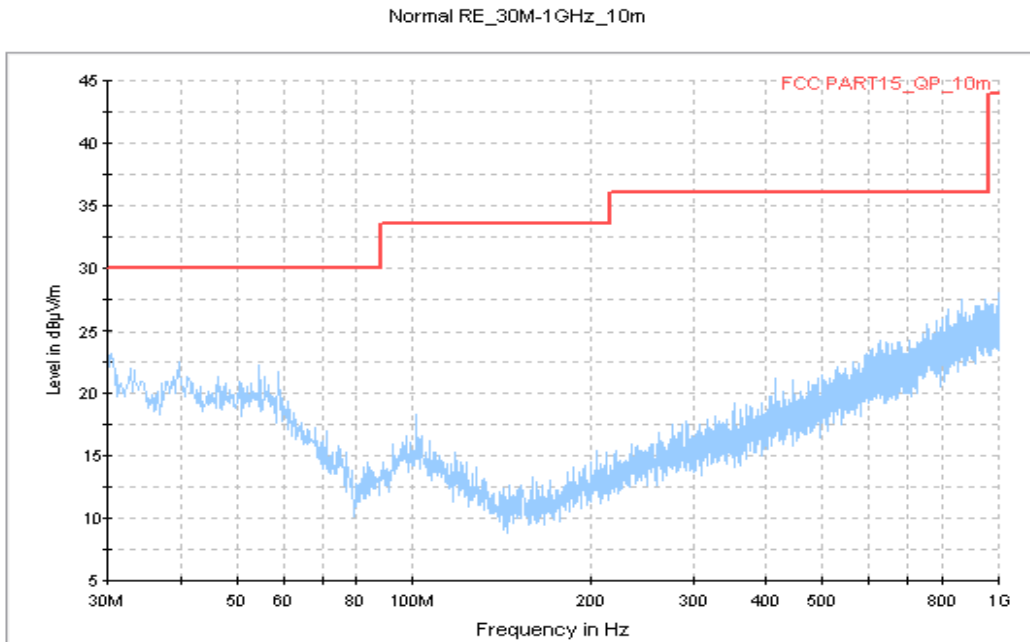


Figure A.1 Radiated Emission from 30MHz to 1GHz

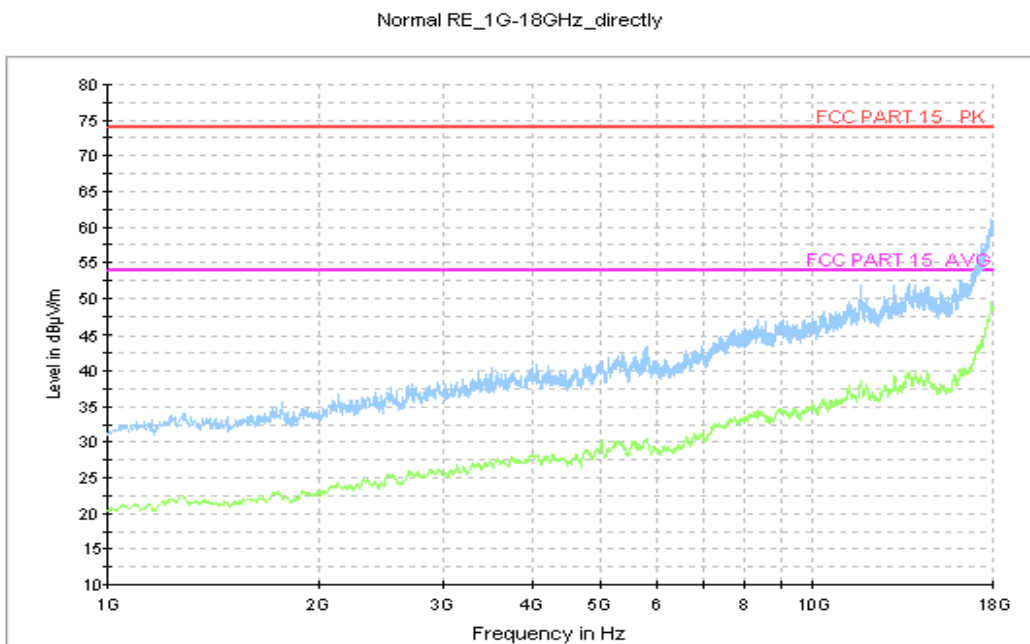
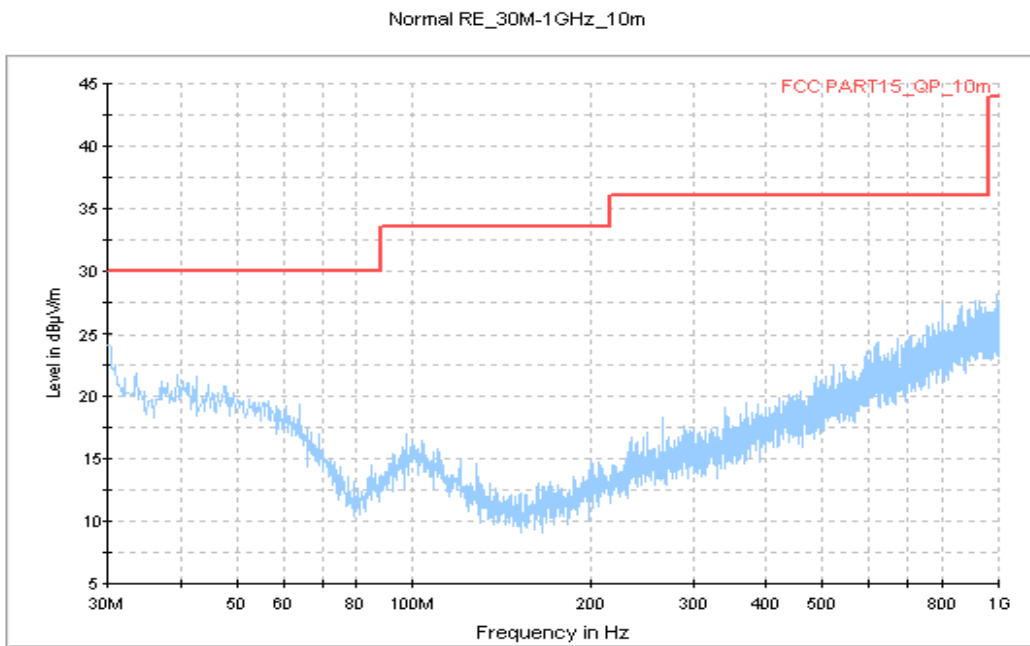
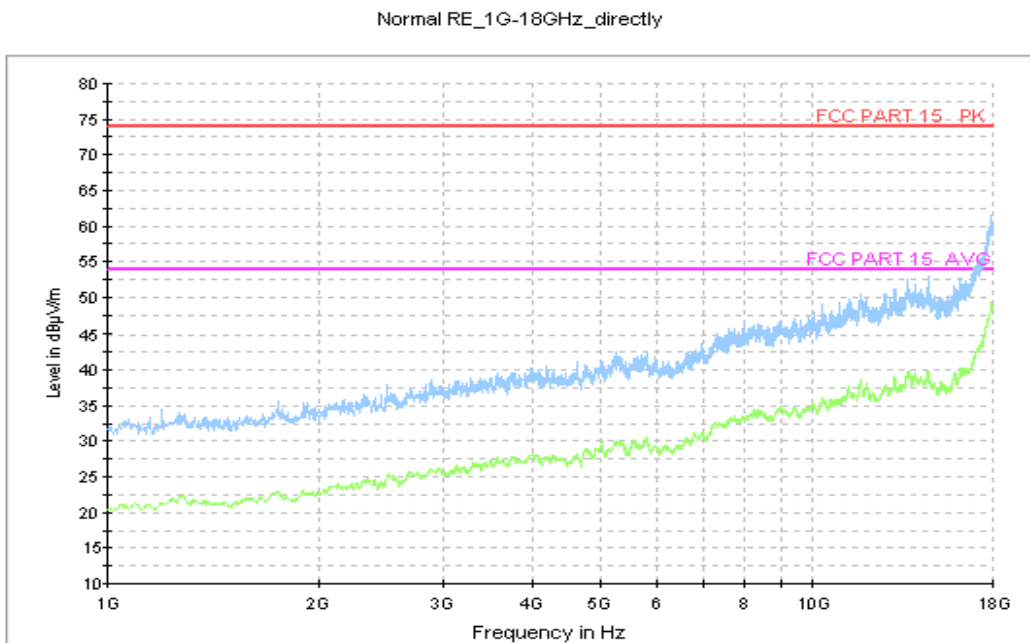


Figure A.2 Radiated Emission from 1GHz to 18GHz

**Charging Mode, Set.7**



**Figure A.3 Radiated Emission from 30MHz to 1GHz**



**Figure A.4 Radiated Emission from 1GHz to 18GHz**



USB Mode, Set.8

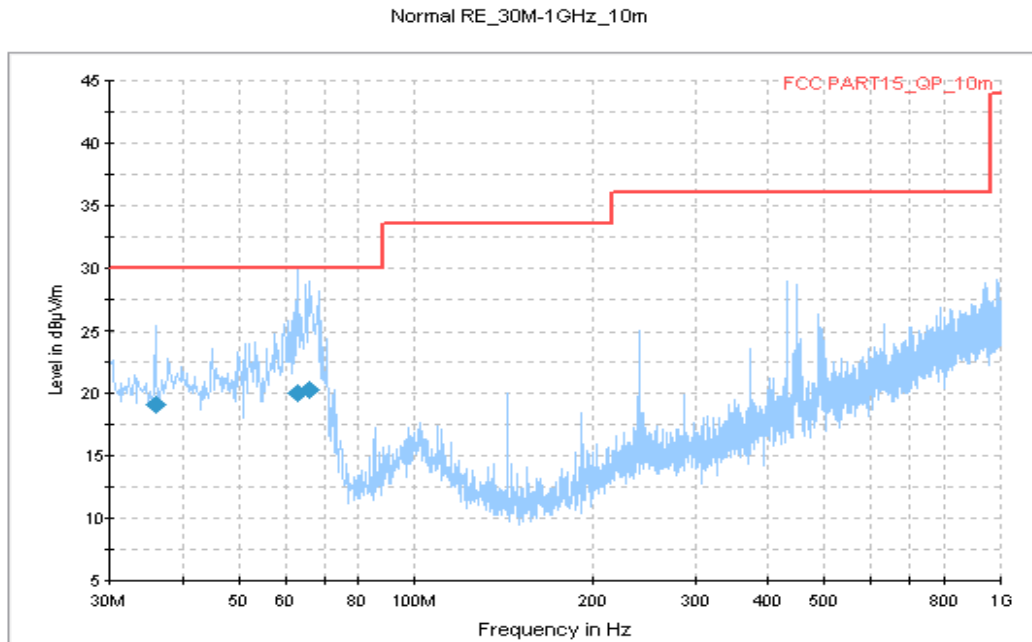


Figure A.5 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
36.001250	19.1	220.0	V	253.0	-19.2	10.9	30.0
62.860000	20.0	212.0	V	9.0	-19.3	10.0	30.0
65.828750	20.3	100.0	V	60.0	-20.1	9.7	30.0

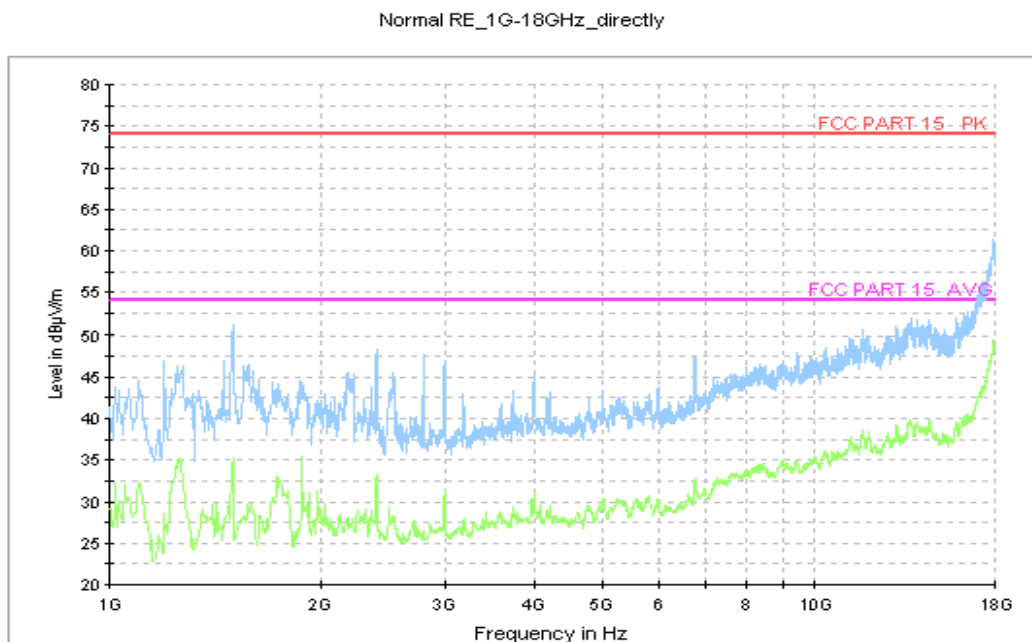


Figure A.6 Radiated Emission from 1GHz to 18GHz

## 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 - 2009, section 7.3.

### 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 OPTIPLEX 380, and the serial number of the PC is 2X1YV2X. 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/IF bandwidth	Sweep Time(s)
9kHz	1

### A.2.5 Measurement Results

Measurement uncertainty:  $U= 2.9$  dB,  $k=2$ .

#### Charging Mode, Set.6

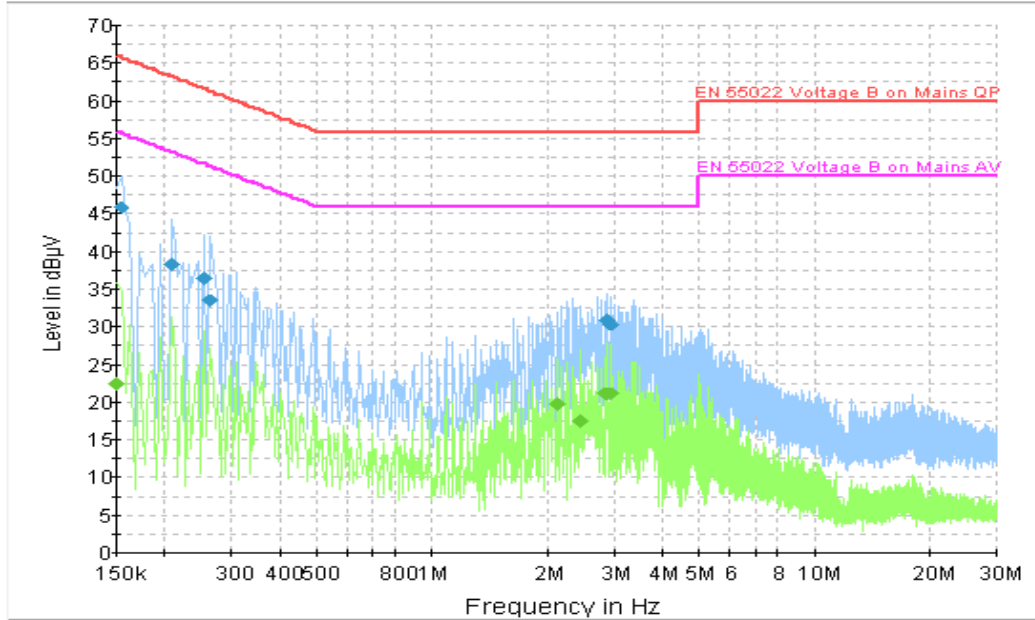


Figure A.7 Conducted Emission

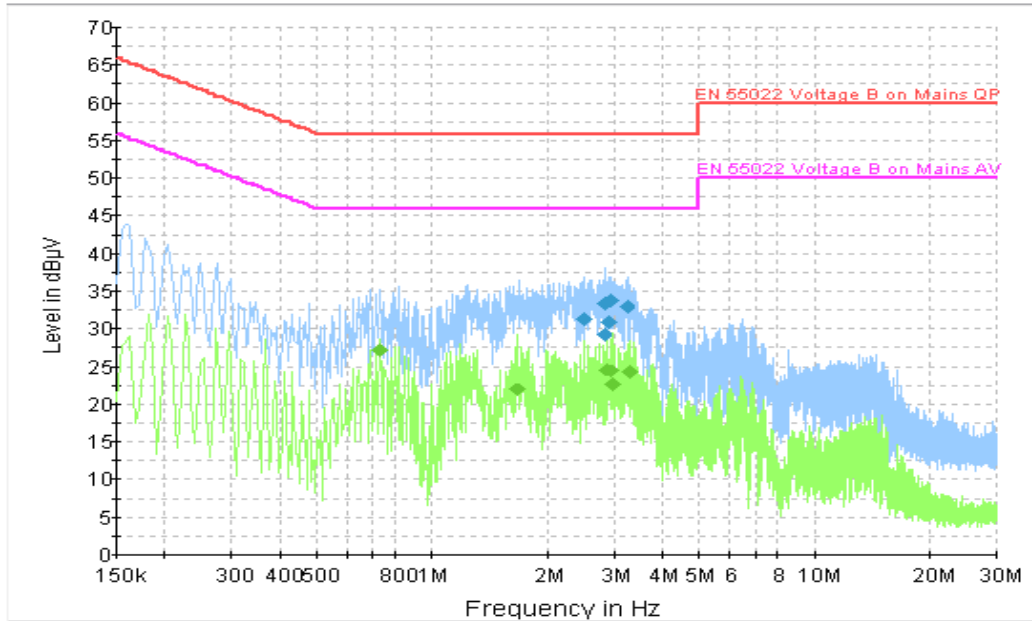
#### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154500	45.8	GND	L1	10.1	19.9	65.8
0.208500	38.3	GND	L1	10.0	24.9	63.3
0.253500	36.5	GND	L1	10.0	25.1	61.6
0.262500	33.6	GND	L1	10.0	27.8	61.4
2.872500	30.8	GND	L1	9.8	25.2	56.0
2.917500	30.3	GND	L1	9.8	25.7	56.0

#### Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	22.5	GND	L1	9.9	33.5	56.0
2.130000	19.9	GND	L1	9.9	26.1	46.0
2.436000	17.5	GND	L1	9.8	28.5	46.0
2.814000	21.2	GND	L1	9.8	24.8	46.0
2.872500	21.1	GND	L1	9.8	24.9	46.0
2.917500	21.1	GND	L1	9.8	24.9	46.0

**Charging Mode, Set.7**



**Figure A.8 Conducted Emission**

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
2.499000	31.4	GND	N	9.8	24.6	56.0
2.818500	29.2	GND	N	9.8	26.8	56.0
2.836500	33.4	GND	L1	9.8	22.6	56.0
2.904000	30.9	GND	N	9.8	25.1	56.0
2.922000	33.9	GND	L1	9.8	22.1	56.0
3.228000	33.0	GND	L1	9.8	23.0	56.0

**Final Result 2**

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.730500	27.2	GND	N	10.0	18.8	46.0
1.671000	21.9	GND	L1	9.9	24.1	46.0
2.877000	24.5	GND	L1	9.8	21.5	46.0
2.922000	24.5	GND	L1	9.8	21.5	46.0
2.994000	22.6	GND	L1	9.8	23.4	46.0
3.300000	24.4	GND	L1	9.8	21.6	46.0

USB Mode, Set.8

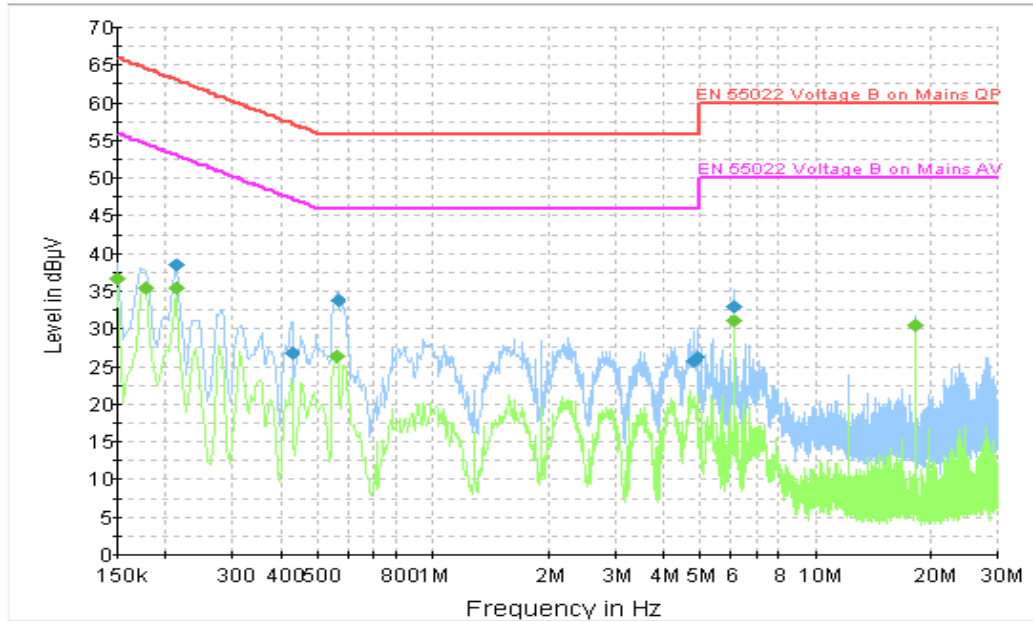


Figure A.9 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.213000	38.5	GND	N	9.9	24.6	63.1
0.429000	26.7	GND	L1	10.1	30.6	57.3
0.564000	33.8	GND	L1	10.1	22.2	56.0
4.816500	25.7	GND	N	9.7	30.3	56.0
4.920000	26.3	GND	L1	9.7	29.7	56.0
6.099000	32.9	GND	N	9.7	27.1	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	36.6	GND	N	9.9	19.4	56.0
0.177000	35.6	GND	N	10.2	19.1	54.6
0.213000	35.4	GND	N	9.9	17.6	53.1
0.559500	26.4	GND	L1	10.1	19.6	46.0
6.099000	31.0	GND	N	9.7	19.0	50.0
18.298500	30.6	GND	N	9.9	19.4	50.0

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