



# TEST REPORT

## No. I19Z61125-EMC01

for

**Shenzhen Tinno Mobile Technology Corp.**

**Smart Phone**

**Model Name: U202AA**

**FCC ID: XD6U202AA**

with

**Hardware Version: V1.0**

**Software Version: U202AAV01.26.10**

**Issued Date: 2019-07-25**

**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 CTTL.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

**Test Laboratory:**

CTTL, Telecommunication Technology Labs, CAICT

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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I19Z61125-EMC01	Rev.0	1 <sup>st</sup> edition	2019-07-18
I19Z61125-EMC01	Rev.1	Remove the inbuilt remark for battery in section 4.3	2019-07-25

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## **1. Test Laboratory**

### **1.1. Introduction & Accreditation**

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

## **2. Test Laboratory**

### **2.1. Testing Location**

**CTTL(huayuan North Road)**

Address: No. 52, Huayuan North Road, Haidian District, Beijing,  
P. R. China100191

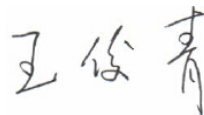
### **2.2. Testing Environment**

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

### **2.3. Project data**

Testing Start Date: 2019-07-03  
Testing End Date: 2019-07-15

### **2.4. Signature**



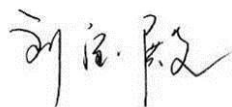
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**Wang Junqing**  
**(Prepared this test report)**



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**Zhang Ying**  
**(Reviewed this test report)**



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**Liu Baodian**  
**Deputy Director of the laboratory**  
**(Approved this test report)**



### **3. Client Information**

#### **3.1. Applicant Information**

Company Name: Shenzhen Tinno Mobile Technology Corp.  
Address: 4/F, H-3 Building,OCT Eastern Industrial Park. NO.1 XiangShan East  
Road, Nan Shan District, Shenzhen, P.R.China  
City: Shenzhen  
Postal Code: /  
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Contact Person Jingwen.Guo  
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#### **3.2. Manufacturer Information**

Company Name: Shenzhen Tinno Mobile Technology Corp.  
Address: 4/F, H-3 Building,OCT Eastern Industrial Park. NO.1 XiangShan East  
Road, Nan Shan District, Shenzhen, P.R.China  
City: Shenzhen  
Postal Code: /  
Country: China  
Contact Jingwen.Guo  
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Fax: /

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

##### **4.1. About EUT**

Description	Smart Phone
Model Name	U202AA
FCC ID	XD6U202AA
Extreme vol. Limits	3.5VDC to 4.35VDC (nominal: 3.8VDC)

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL, Telecommunication Technology Labs, CAICT.

##### **4.2. Internal Identification of EUT used during the test**

<b>EUT ID*</b>	<b>SN or IMEI</b>	<b>HW Version</b>	<b>SW Version</b>
EUT1	865376040014043	V1.0	U202AAV01.26.10

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

##### **4.3. Internal Identification of AE used during the test**

<b>AE ID*</b>	<b>Description</b>	<b>SN</b>	<b>Remarks</b>
AE1	Battery	/	/
AE2	Charger	/	CH003/012
AE3	USB Cable	/	DC0007/020
AE4	USB Cable	/	DC010/013
AE5	Headset	/	/

###### **AE1**

Model	LT20H445170B
Manufacturer	Shenzhen BYD Lithium Battery Company Limited
Capacitance	2000mAh
Nominal voltage	3.8V

###### **AE2**

Model	TN-050100U6
Manufacturer	Guangdong Beicom Electronics Co.,Ltd
Length of cable	/

###### **AE3**

Model	P103-ASH130-010
Manufacturer	/
Length of cable	/

###### **AE4**

Model	P103-ASH130-000
Manufacturer	/
Length of cable	/



AE5

Model /  
Manufacturer /  
Length of cable /

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

Note: The USB cables are shielded.

#### 4.4. 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/AE4 +AE5	Charger +FM
Set.2	EUT1+ AE1+ AE3/AE4	USB mode

## **5. Reference Documents**

### **5.1. 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	2016
ANSI C63.4	American National Standard for Methods of Measurement of Radio- Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

Note: The test methods have no deviation with standards.



## 6. 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	< 4 Ω
Normalised site attenuation (NSA)	< ±4 dB, 10 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

**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	< 4 Ω
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

**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



## 7. SUMMARY OF TEST RESULTS

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

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	B.1	P	CTTL(huayuan North Road)
2	Conducted Emission	15.107(a)	B.2	P	CTTL(huayuan North Road)



### 8. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESU26	100235	R&S	2020-03-01	1 Year
2	Test Receiver	ESC13	100344	R&S	2020-02-14	1 Year
3	Universal Radio Communication Tester	CMW500	150344	R&S	2019-12-27	1 year
4	Universal Radio Communication Tester	CMW500	116588	R&S	2019-12-26	1 year
5	LISN	ENV216	101200	R&S	2020-03-14	1 year
6	Signal Power	SMBV100A	260613	R&S	2019-12-27	1 year
7	EMI Antenna	VULB 9163	9163-483	Schwarzbeck	2019-08-21	1 year
7	EMI Antenna	3115	6914	ETS-Lindgren	2020-01-03	1 year
8	PC	M4000E-17	M706GWXD	LENOVO	N/A	N/A
9	Printer	P1606dn	VNC3L52122	HP	N/A	N/A

## **ANNEX A: MEASUREMENT RESULTS**

### **A.1 Radiated Emission**

#### **Reference**

FCC: CFR Part 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 distances of 10 meters(for 30MHz-1GHz) and 3 meters (for above 1GHz) is tested. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3/10 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 M4000E-17, and the serial number of the PC is M706GWXD. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note: I/O information: Printer – USB, Mouse – PS/2, Keyboard – USB.

#### **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

Note: the above limit is for 3 meters test distance. 10 meters' limit is got by converting.

#### **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):  $U = 5.44 \text{ dB}$ ,  $k=2$ .

#### Measurement results for Set.1:

##### Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Antenna Pol. (H/V)
17954.100	35.5	-5.4	43.4	-2.484	H
17978.467	35.2	-5.4	33.8	6.816	H
17988.667	35.1	-5.4	43.4	-2.884	V
17947.300	34.9	-5.4	43.4	-3.084	H
17964.300	34.9	-5.4	43.4	-3.084	H
17480.367	34.9	-5.9	40.1	0.725	H

##### Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Antenna Pol. (H/V)
17812.433	47.1	-5.7	43.4	9.438	H
17979.600	46.9	-5.4	33.8	18.516	H
17867.400	46.7	-5.7	43.4	9.038	V
17904.800	46.7	-5.7	43.4	9.038	H
17722.333	46.6	-6.9	43.4	10.102	H
17535.333	46.6	-5.9	43.4	9.125	H

**Measurement results for Set.2:**

**USB Mode/Average detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Antenna Pol. (H/V)
9919.900	45.7	-13.3	37.6	21.376	H
9920.467	44.8	-13.3	33.8	24.276	H
9919.333	44.2	-13.3	37.6	19.876	V
17954.100	34.9	-5.4	43.4	-3.084	H
17935.400	34.8	-5.4	43.4	-3.184	H
17895.167	34.8	-5.7	43.4	-2.862	H

**USB Mode/ Peak detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Antenna Pol. (H/V)
9919.333	55.0	-13.3	37.6	30.676	H
9920.467	54.6	-13.3	33.8	34.076	H
9919.900	54.1	-13.3	37.6	29.776	V
17327.933	47.1	-6.5	40.1	13.496	H
17837.933	46.7	-5.7	43.4	9.038	H
17490.567	46.6	-5.9	40.1	12.425	H

Note: The measurement results of Set.1, Set.2 showed here are worst cases of the combinations of different USB cables.

Charging Mode, Set.1

Full Spectrum

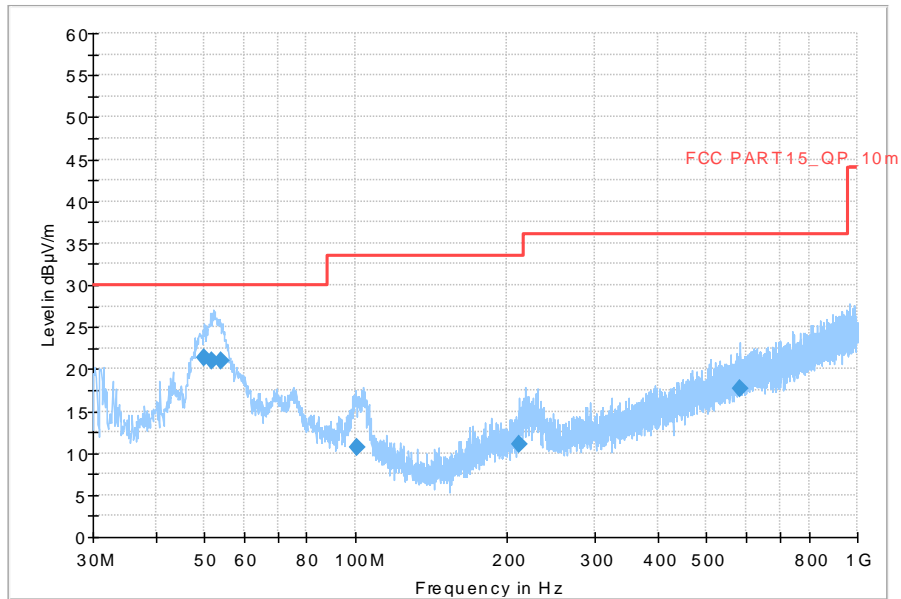
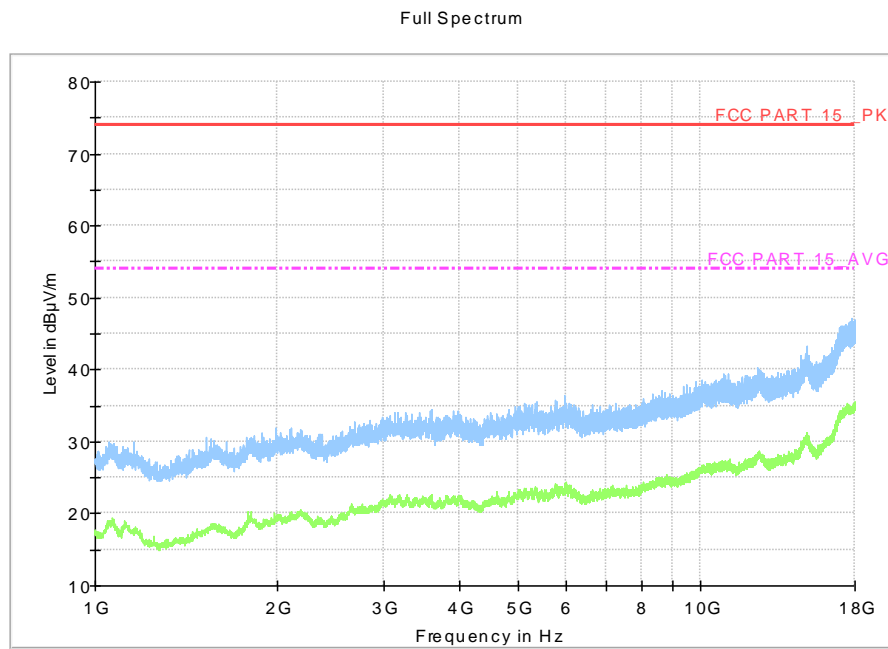


Fig A.1 Radiated Emission from 30MHz to 1GHz

Final Result

Frequency (MHz)	QuasiPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
50.037000	21.32	30.00	8.68	1000.0	120.000	107.0	V	30.0
51.913000	21.06	30.00	8.94	1000.0	120.000	102.0	V	87.0
53.844000	20.95	30.00	9.05	1000.0	120.000	197.0	V	120.0
100.574000	10.69	33.50	22.83	1000.0	120.000	325.0	V	-10.0
212.600000	11.04	33.50	22.48	1000.0	120.000	125.0	V	179.0
583.468000	17.67	36.00	18.35	1000.0	120.000	316.0	V	73.0



**Fig A.2 Radiated Emission from 1GHz to 18GHz**



USB Mode, Set.2

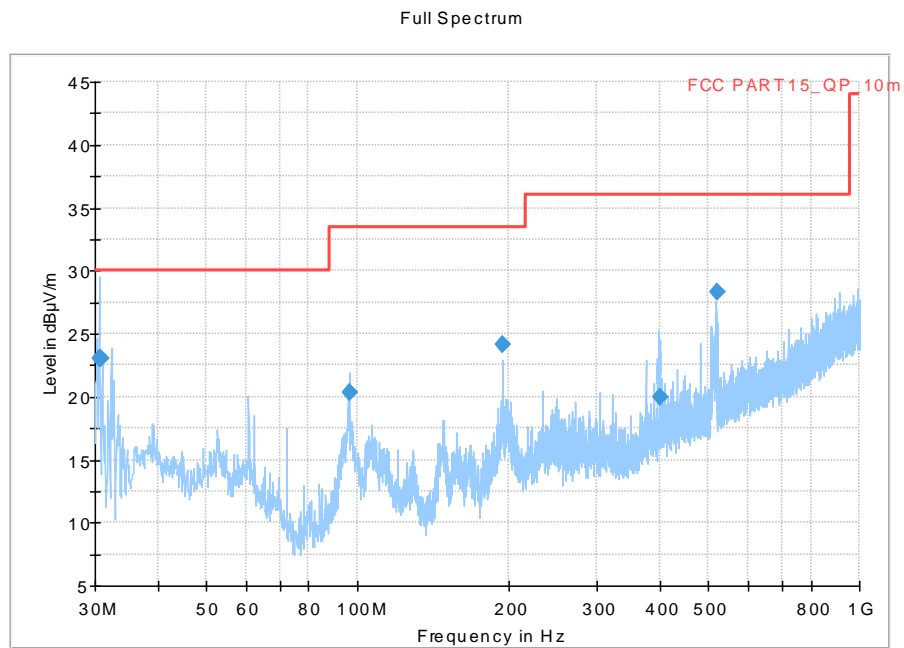
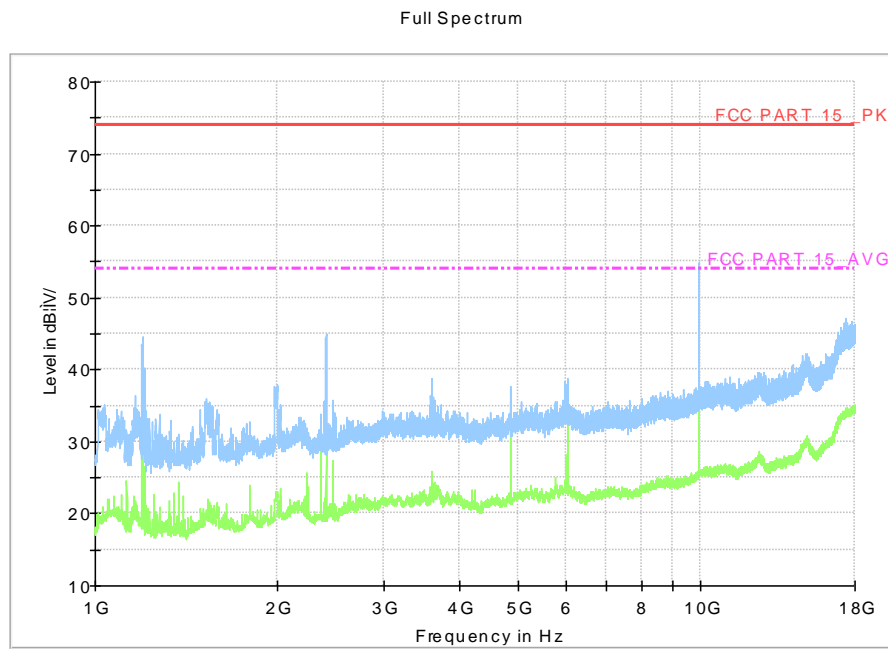


Fig A.3 Radiated Emission from 30MHz to 1GHz

Final\_Result

Frequency (MHz)	QuasiPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.720000	23.09	30.00	6.91	1000.0	120.000	181.0	V	240.0
30.780000	22.98	30.00	7.02	1000.0	120.000	188.0	V	240.0
96.251000	20.38	33.50	13.14	1000.0	120.000	121.0	V	-23.0
194.706000	24.08	33.50	9.44	1000.0	120.000	115.0	V	-26.0
399.736000	20.01	36.00	16.01	1000.0	120.000	102.0	V	18.0
519.328000	28.26	36.00	7.76	1000.0	120.000	280.0	V	-25.0



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

## A.2 Conducted Emission

### Reference

FCC: CFR Part 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 – 2014, 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 DELL M4000E-17, and the serial number of the PC is M706GWXD. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note: I/O information: Printer – USB, Mouse – PS/2, Keyboard – USB.

### 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:  $U= 3.38$  dB,  $k=2$ .

#### Charging Mode, Set.1

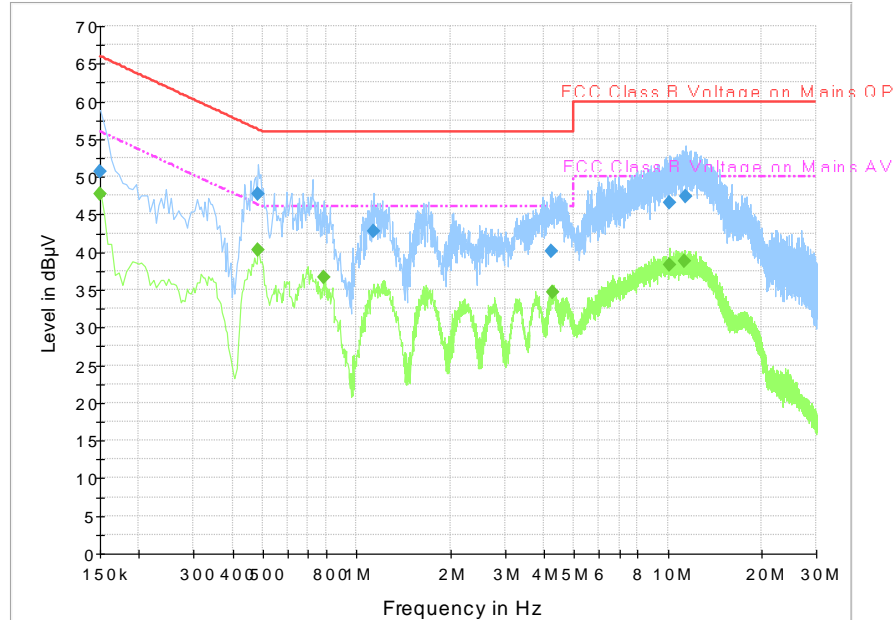


Fig A.5 Radiated Emission from 30MHz to 1GHz

#### Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.150000	50.6	2000.0	9.000	On	N	30.6	15.4	66.0	
0.483000	47.8	2000.0	9.000	On	L1	19.8	8.5	56.3	
1.131000	42.8	2000.0	9.000	On	L1	19.7	13.2	56.0	
4.218000	40.1	2000.0	9.000	On	N	19.6	15.9	56.0	
10.135500	46.5	2000.0	9.000	On	L1	19.7	13.5	60.0	
11.413500	47.3	2000.0	9.000	On	L1	19.7	12.7	60.0	

#### Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.150000	47.6	2000.0	9.000	On	L1	30.7	8.4	56.0	
0.483000	40.3	2000.0	9.000	On	L1	19.8	6.0	46.3	
0.784500	36.7	2000.0	9.000	On	L1	19.8	9.3	46.0	
4.263000	34.7	2000.0	9.000	On	L1	19.6	11.3	46.0	
10.176000	38.3	2000.0	9.000	On	L1	19.7	11.7	50.0	
11.269500	38.8	2000.0	9.000	On	L1	19.7	11.2	50.0	

Note: The measurement results showed here are worst cases of the combinations of different USB cables.

USB Mode, Set.2

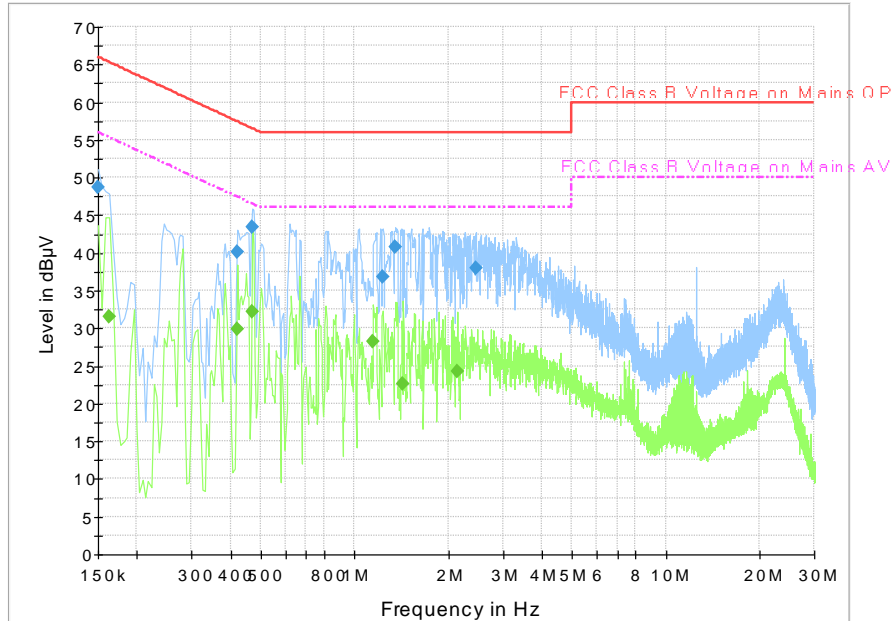


Fig A.6 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.150000	48.7	2000.0	9.000	On	L1	30.7	17.3	66.0	
0.420000	40.2	2000.0	9.000	On	L1	19.8	17.3	57.4	
0.469500	43.5	2000.0	9.000	On	L1	19.8	13.0	56.5	
1.234500	36.8	2000.0	9.000	On	N	19.6	19.2	56.0	
1.356000	40.8	2000.0	9.000	On	L1	19.6	15.2	56.0	
2.449500	38.0	2000.0	9.000	On	N	19.6	18.0	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.163500	31.5	2000.0	9.000	On	L1	27.7	23.7	55.3	
0.420000	29.9	2000.0	9.000	On	L1	19.8	17.5	47.4	
0.469500	32.1	2000.0	9.000	On	L1	19.8	14.4	46.5	
1.149000	28.2	2000.0	9.000	On	L1	19.7	17.8	46.0	
1.432500	22.6	2000.0	9.000	On	N	19.6	23.4	46.0	
2.143500	24.3	2000.0	9.000	On	L1	19.6	21.7	46.0	

Note: The measurement results showed here are worst cases of the combinations of different cables.



**ANNEX B: PERSONS INVOLVED IN THIS TESTING**

<b>Test Item</b>	<b>Test Software and Version</b>	<b>Software Vendor</b>	<b>Test operator</b>
Conducted Emission	EMC32 V8.5.2	R&S	Shi Suolan
Radiated Emission	EMC32 V9.01.00	R&S	Li Pengfei

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