



FCC PART 15B TEST REPORT

No. I21Z60772-EMC01

for

Shenzhen Tinno Mobile Technology Corp.

Smart Phone

Model Name: U319AA

FCC ID: XD6U319AA

with

Hardware Version: V1.0

Software Version:

Issued Date: 2021-06-04

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

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504

Email: ctl_terminals@caict.ac.cn, website: www.caict.ac.cn

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I21Z60772-EMC01	Rev.0	1 st edition	2021-06-04

Note: the latest revision of the test report supersedes all previous version.

CONTENTS

1. TEST LABORATORY	4
1.1. INTRODUCTION & ACCREDITATION	4
1.2. TESTING LOCATION	4
1.3. TESTING ENVIRONMENT	4
1.4. PROJECT DATA	4
1.5. SIGNATURE	4
2. CLIENT INFORMATION	5
2.1. APPLICANT INFORMATION	5
2.2. MANUFACTURER INFORMATION	5
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	6
3.1. ABOUT EUT	6
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	6
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST	6
3.4. EUT SET-UPS	7
4. REFERENCE DOCUMENTS	8
4.1. REFERENCE DOCUMENTS FOR TESTING	8
5. LABORATORY ENVIRONMENT	9
6. SUMMARY OF TEST RESULTS	10
7. TEST EQUIPMENTS UTILIZED	11
ANNEX A: MEASUREMENT RESULTS	12
ANNEX B: PERSONS INVOLVED IN THIS TESTING	26

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.

1.2. Testing Location

CTTL (huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China 100191

1.3. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2021-05-14

Testing End Date: 2021-05-27

1.5. Signature



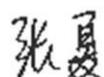
Wang Xue

(Prepared this test report)



Zhang Ying

(Reviewed this test report)



Zhang Xia

(Approved this test report)

2. Client Information

2.1. 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
Contact Person: xiaoping.li
Contact Email: xiaoping.li@tinno.com
Telephone: 0755-86095550
Fax: /

2.2. 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
Contact Person: xiaoping.li
Contact Email: xiaoping.li@tinno.com
Telephone: 0755-86095550
Fax: /

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

3.1. About EUT

Description	Smart Phone
Model Name	U319AA
FCC ID	XD6U319AA
Extreme vol. Limits	3.6VDC to 4.4VDC (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.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	860999050013731	V1.0	

*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	Remarks
AE1	Battery	/	
AE2	charger	/	
AE3	USB Cable	/	
AE1			
Model	LT25H426271W		
Manufacturer	Ningbo Veken Battery Company Limited		
Capacity	2500 mAh		
Nominal Voltage	3.85V		
AE2			
Model	TN-050120U8		
Manufacturer	/		
Length of cable	/		
AE3			
Model	/		
Manufacturer	/		
Length of cable	/		

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

Note: The USB cables are shielded.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1 + AE1+AE2+ AE3	REAR Camera
Set.2	EUT1 + AE1+AE2+ AE3	MP4+WCDMA 850 idle
Set.3	EUT1 + AE1+AE2+ PC	USB+Front Camera +LTE B5 idle

Note:

The device supports UMTS FDD Band 2/4/5; LTE FDD Band 2/4/5/12/14/30. It has WLAN (802.11a/b/g/n), Bluetooth (EDR, BLE) and GNSS (GPS&GLONASS&BDS& GALILEO) functions.

The device contains receivers which tune and operate between 30MHz-960MHz in the following bands: WCDMA850 ,LTE Band 5,LTE Band 12, LTE band 13 and LTE Band 14. All licensed band receivers that tune in the range of 30MHz-960MHz are investigated. Only the worst case emissions are reported.

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	2019
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.

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (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
Site voltage standing-wave ratio (SvswR)	Between 0 and 6 dB, from 1GHz to 6GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 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

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)

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESU26	100235	R&S	2022-02-23	1 Year
2	LISN	ESH3-Z5	825562/028	R&S	2021-10-15	1 Year
3	Universal Radio Communication Tester	CMW500	116588	R&S	2021-12-07	1 year
4	Test Receiver	ESCI 7	100344	R&S	2022-02-23	1 Year
5	EMI Antenna	VULB 9163	483	Schwarzbeck	2021-08-27	1 year
6	EMI Antenna	3115	6914	ETS-Lindgren	2022-02-03	1 year
7	Printer	P1606dn	VNC3L52122	HP	/	/
8	Keyboard	KU-1601	2048361	Lenovo	/	/
9	Mouse	EMS-537A	8021S3MC	Lenovo	/	/
10	PC	M4000e-17	M706RMW2	Lenovo	/	/

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 3 meters 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 EUT was tested while operating in licensed band Rx mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, are investigated. Only the worst case emissions are reported.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

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 (μ V/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:

$$\text{Result} = P_{\text{Mea}} + A_{RPL} = P_{\text{Mea}} + G_A + G_{PL}$$

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty (worst case): $U = 4.74 \text{ dB}$, $k=2$.

Measurement results for Set.1:

Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17960.900	44.0	-29.1	46.7	26.4	54.0	10.0	H
17941.067	43.7	-28.9	46.7	26.0	54.0	10.3	V
17954.667	43.6	-28.9	46.7	25.9	54.0	10.4	V
17960.333	43.5	-29.1	46.7	25.9	54.0	10.5	H
17976.767	43.4	-29.1	46.7	25.8	54.0	10.6	V
17975.633	43.4	-29.1	46.7	25.8	54.0	10.6	V

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17963.167	53.3	-29.1	46.7	35.7	74.0	20.7	V
17962.033	52.2	-29.1	46.7	34.6	74.0	21.8	H
17982.433	52.2	-29.1	46.7	34.6	74.0	21.8	V
17827.167	52.0	-29.7	46.0	35.7	74.0	22.0	V
17945.033	52.0	-28.9	46.7	34.3	74.0	22.0	V
17975.067	52.0	-29.1	46.7	34.4	74.0	22.0	V

Measurement results for Set.2:
Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17978.467	43.8	-29.1	46.7	26.2	54.0	10.2	H
17958.067	43.5	-28.9	46.7	25.8	54.0	10.5	H
17506.433	43.4	-29.3	44.4	28.3	54.0	10.6	H
17541.567	43.2	-29.5	44.4	28.3	54.0	10.8	H
17856.067	43.1	-29.3	46.0	26.5	54.0	10.9	V
17897.433	43.0	-29.5	46.0	26.6	54.0	11.0	V

Charging Mode/Peak detector

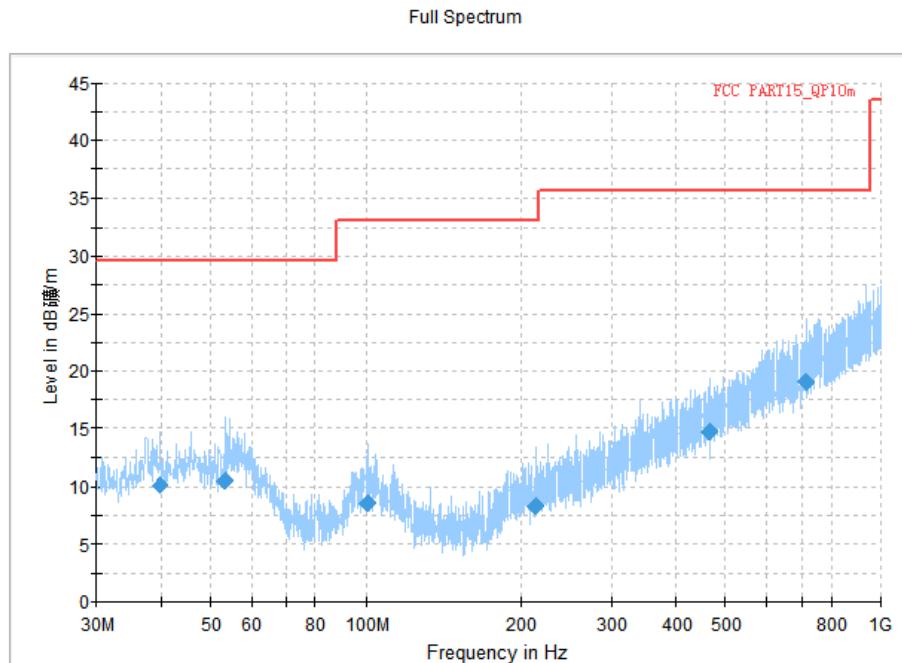
Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17865.700	52.8	-29.4	46.0	36.2	74.0	21.2	H
17695.133	52.8	-30.0	45.2	37.5	74.0	21.2	H
17981.867	52.8	-29.1	46.7	35.2	74.0	21.2	H
17835.100	52.6	-29.7	46.0	36.3	74.0	21.4	V
17922.933	52.3	-29.4	46.7	35.0	74.0	21.7	H
17969.967	52.1	-29.1	46.7	34.5	74.0	21.9	V

Measurement results for Set. 3:
USB Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17959.767	44.3	-28.9	46.7	26.6	54.0	9.7	V
17953.533	43.2	-28.9	46.7	25.5	54.0	10.8	V
17992.633	43.1	-29.1	46.7	25.5	54.0	10.9	V
17973.933	43.1	-29.1	46.7	25.5	54.0	10.9	H
17534.767	43.0	-29.3	44.4	28.0	54.0	11.0	V
17853.233	42.9	-29.3	46.0	26.3	54.0	11.1	H

USB Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17818.667	52.1	-29.6	46.0	35.8	74.0	21.9	H
17945.600	52.0	-28.9	46.7	34.3	74.0	22.0	V
17739.900	51.9	-29.7	46.0	35.6	74.0	22.1	V
17949.000	51.8	-28.9	46.7	34.1	74.0	22.2	H
17941.067	51.700	-28.9	46.7	34.0	74.0	22.3	V
17435.033	51.7	-29.7	44.4	37.1	74.0	22.3	H

Measurement results for Set.1:

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

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
39.797000	10.11	29.50	19.43	1000.0	120.000	228.0	V	300.0
53.377000	10.47	29.50	19.07	1000.0	120.000	125.0	V	17.0
101.004000	8.62	33.10	24.44	1000.0	120.000	116.0	V	287.0
213.427000	8.34	33.10	24.72	1000.0	120.000	125.0	V	10.0
464.075000	14.80	35.60	20.76	1000.0	120.000	310.0	V	120.0
719.185000	19.08	35.60	16.48	1000.0	120.000	345.0	V	283.0

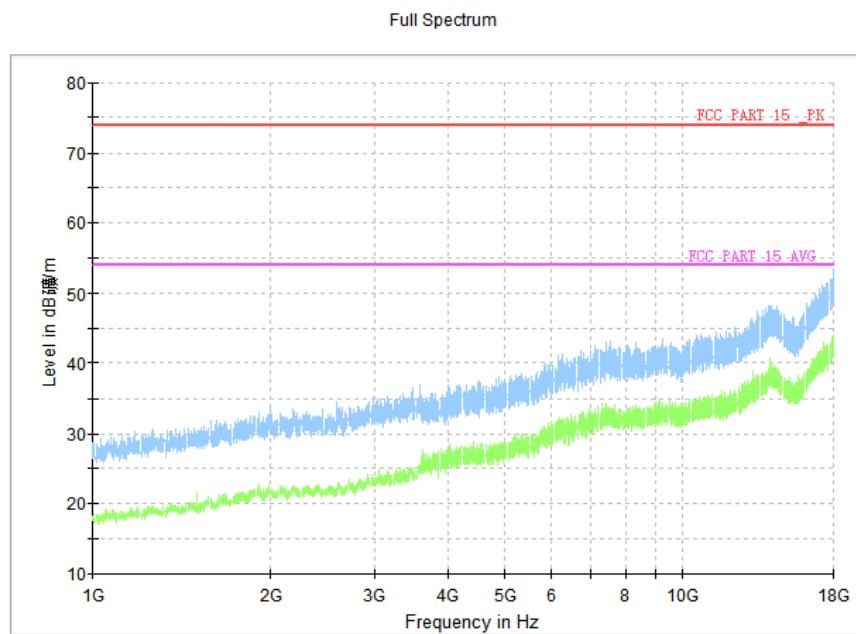
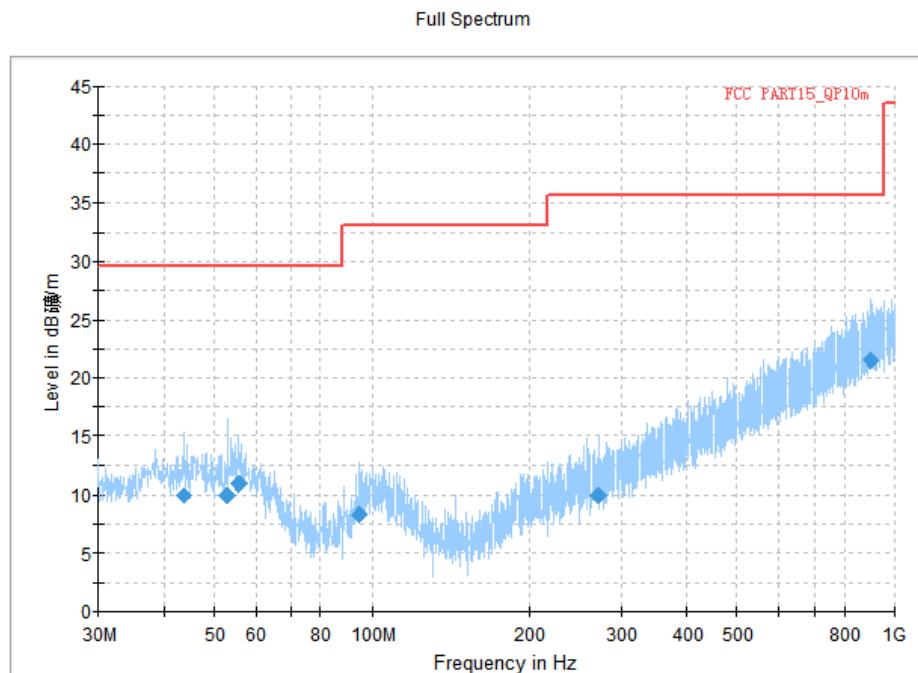


Fig A.2 Radiated Emission from 1GHz to 18GHz

Measurement results for Set. 2:

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

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
43.580000	9.96	29.50	19.58	1000.0	120.000	332.0	V	300.0
52.795000	10.00	29.50	19.54	1000.0	120.000	102.0	V	92.0
55.511000	10.91	29.50	18.63	1000.0	120.000	295.0	V	200.0
94.796000	8.26	33.10	24.80	1000.0	120.000	106.0	V	150.0
271.821000	10.00	35.60	25.56	1000.0	120.000	107.0	V	-18.0
899.799000	21.53	35.60	14.03	1000.0	120.000	225.0	V	210.0

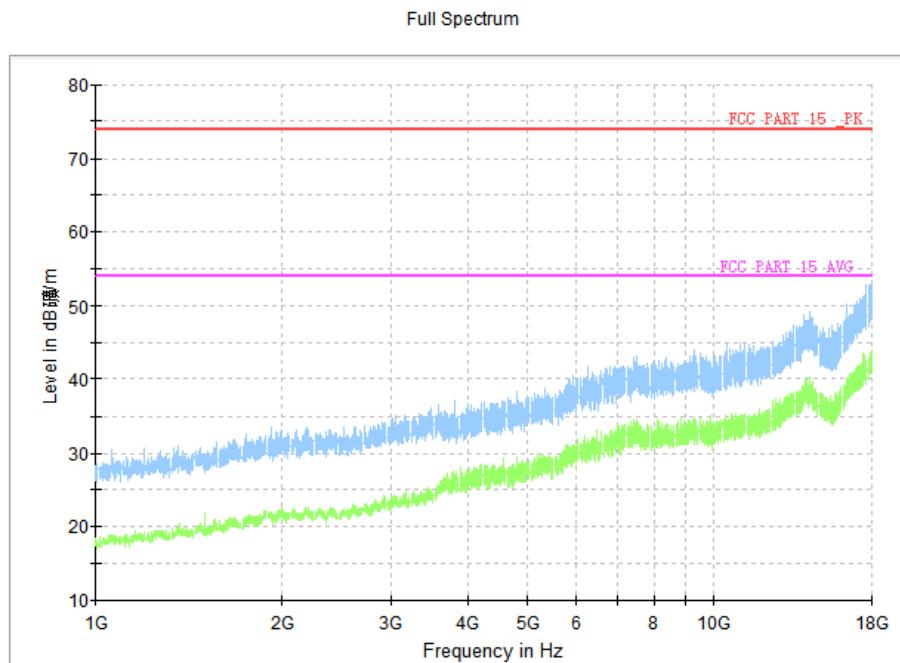
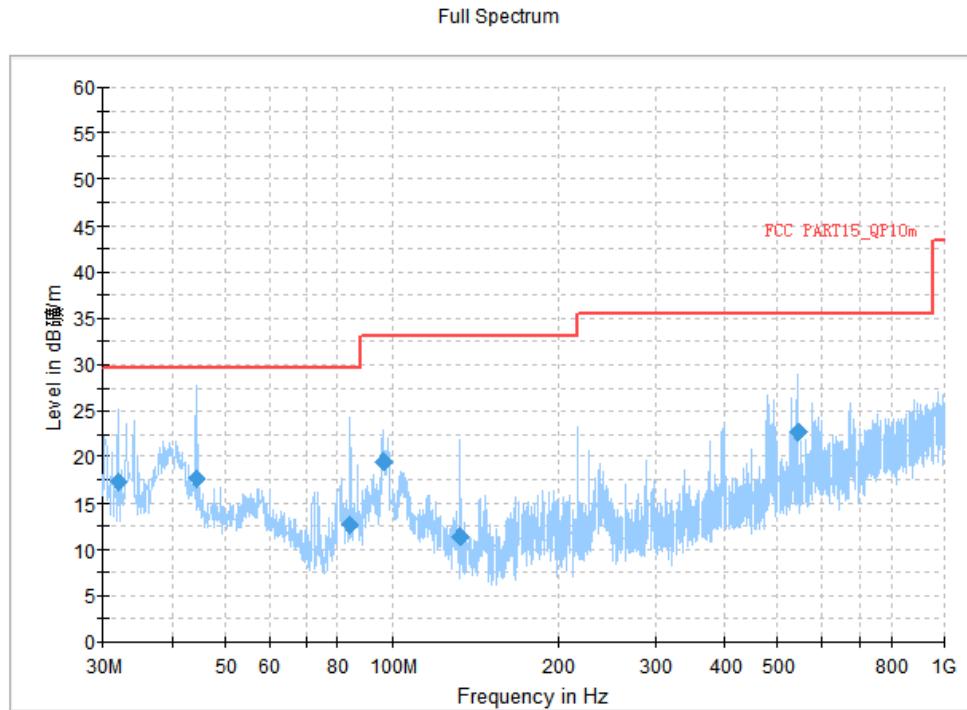


Fig A.4 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.3:

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

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
31.940000	17.36	29.50	12.18	1000.0	120.000	181.0	V	96.0
44.356000	17.59	29.50	11.95	1000.0	120.000	176.0	V	210.0
83.738000	12.72	29.50	16.82	1000.0	120.000	225.0	V	26.0
96.251000	19.47	33.10	13.59	1000.0	120.000	113.0	V	195.0
133.208000	11.33	33.10	21.73	1000.0	120.000	100.0	V	175.0
542.354000	22.72	35.60	12.84	1000.0	120.000	225.0	V	-21.0

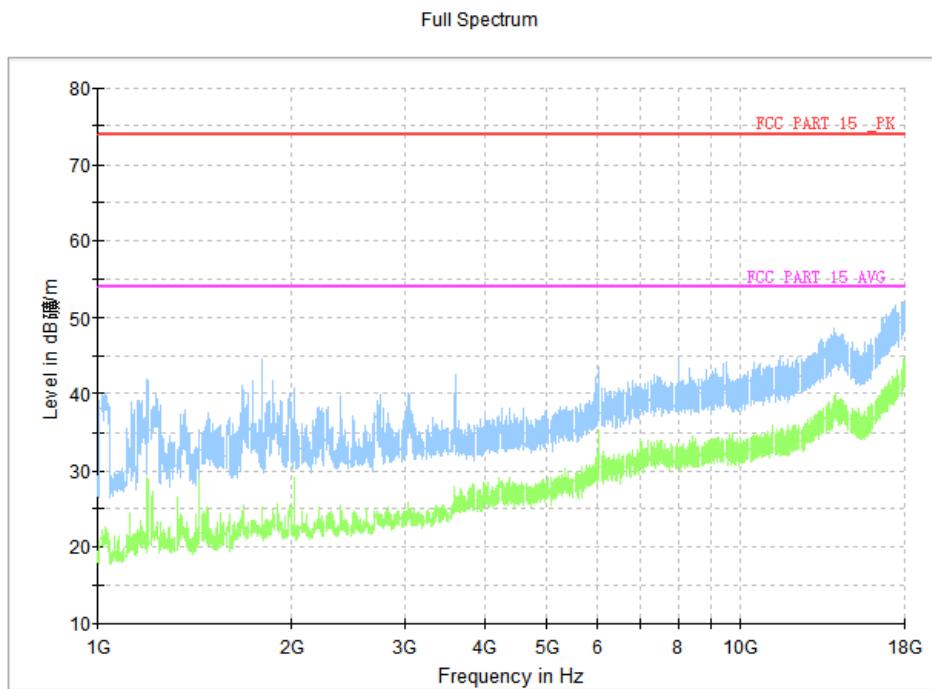


Fig A.6 Radiated Emission from 1GHz to 18GHz

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 μ 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: $U = 3.1 \text{ dB}$, $k=2$.

Charging Mode, Set.1:

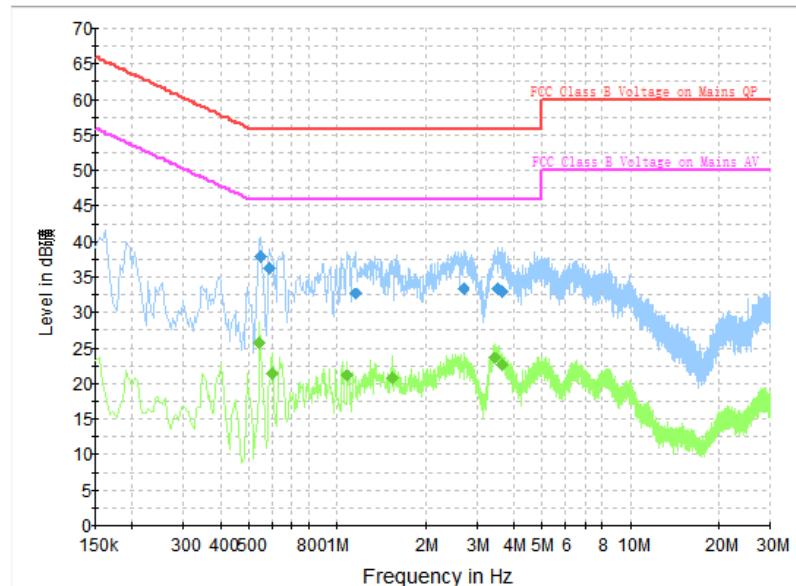


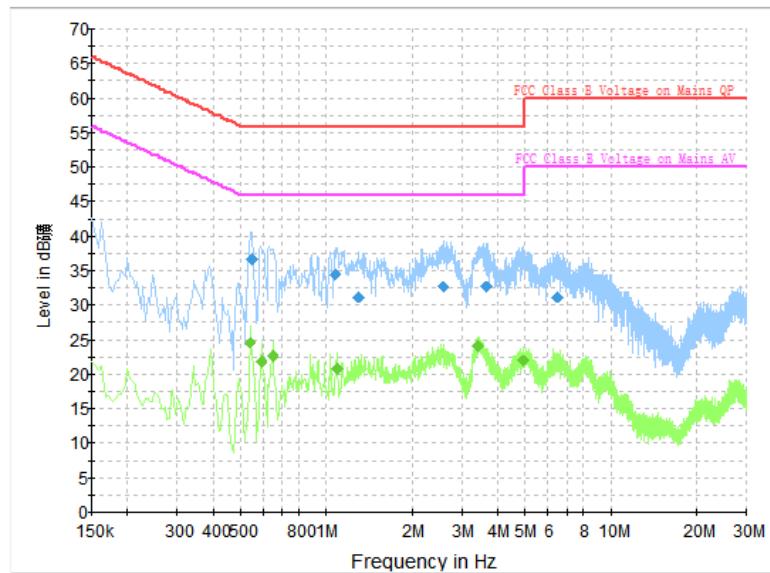
Fig A.7 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.550500	38.0	GND	L1	10.0	18.0	56.0
0.586500	36.3	GND	N	9.9	19.7	56.0
1.153500	32.7	GND	N	10.0	23.3	56.0
2.692500	33.4	GND	N	10.0	22.6	56.0
3.534000	33.4	GND	N	10.1	22.6	56.0
3.637500	33.0	GND	L1	10.1	23.0	56.0

Final Result 2

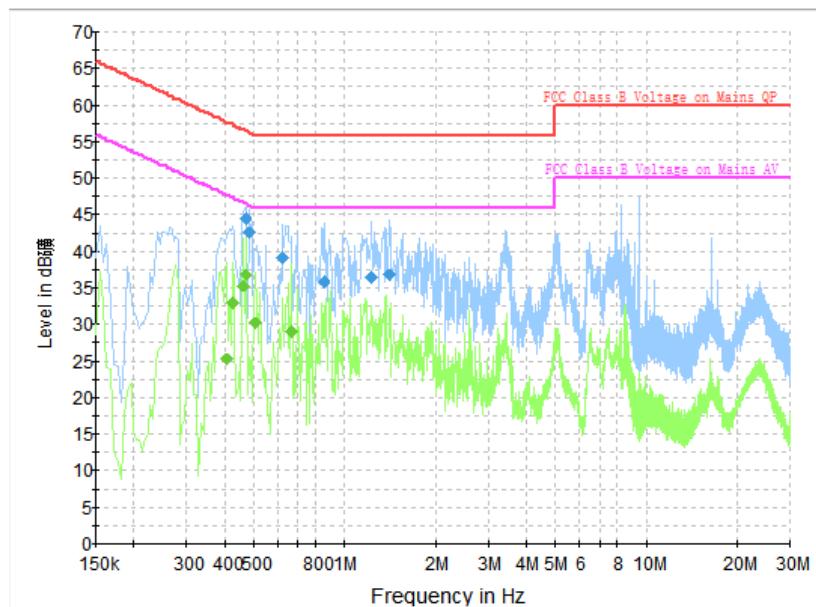
Frequency (MHz)	CAverage (dB μ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.546000	25.8	GND	L1	10.0	20.2	46.0
0.600000	21.5	GND	L1	9.9	24.5	46.0
1.081500	21.1	GND	L1	10.0	24.9	46.0
1.531500	20.9	GND	L1	10.0	25.1	46.0
3.444000	23.6	GND	N	10.1	22.4	46.0
3.651000	22.6	GND	N	10.1	23.4	46.0

Charging Mode, Set.2:

Fig A.8 Radiated Emission from 30MHz to 1GHz
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.550500	36.6	GND	L1	10.0	19.4	56.0
1.077000	34.5	GND	L1	10.0	21.5	56.0
1.297500	31.2	GND	N	10.0	24.8	56.0
2.584500	32.6	GND	L1	10.1	23.4	56.0
3.642000	32.7	GND	L1	10.1	23.3	56.0
6.477000	31.1	GND	L1	10.3	28.9	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.537000	24.7	GND	N	10.0	21.3	46.0
0.591000	21.9	GND	L1	9.9	24.1	46.0
0.645000	22.6	GND	L1	9.9	23.4	46.0
1.090500	20.8	GND	N	10.0	25.2	46.0
3.408000	24.1	GND	L1	10.1	21.9	46.0
4.960500	21.9	GND	L1	10.2	24.1	46.0

USB Mode, Set.3:

Fig A.9 Radiated Emission from 30MHz to 1GHz
Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.469500	44.5	GND	N	10.0	12.0	56.5
0.483000	42.7	GND	L1	10.0	13.6	56.3
0.627000	39.2	GND	N	9.9	16.8	56.0
0.856500	35.8	GND	N	10.0	20.2	56.0
1.225500	36.5	GND	N	10.0	19.5	56.0
1.405500	36.9	GND	N	10.0	19.1	56.0

Final Result 2

Frequency (MHz)	CAverage (dB μ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.406500	25.3	GND	L1	9.9	22.4	47.7
0.424500	33.0	GND	L1	10.0	14.4	47.4
0.460500	35.3	GND	L1	10.0	11.4	46.7
0.469500	36.9	GND	N	10.0	9.7	46.5
0.505500	30.2	GND	N	10.0	15.8	46.0
0.667500	29.0	GND	N	9.9	17.0	46.0

ANNEX B: PERSONS INVOLVED IN THIS TESTING

Test Item	Test Software and Version	Software Vendor	Test operator
Conducted Emission	EMC32 V8.5.2	R&S	Yang Mengke
Radiated Emission	EMC32 V9.01.00	R&S	Zhang Tianli

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