



TEST REPORT

No. I18Z62006-EMC01

for

Wiko SAS

smart phone

Model Name: W-U300

FCC ID: 2AM86WU300AS

with

Hardware Version: V1.0

Software Version: W-U300-V01.28

Issued Date: 2018-11-26



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
I18Z62006-EMC01	Rev.0	1 st edition	2018-11-26



CONTENTS

1. TEST LABORATORY	4
1.1. TESTING LOCATION	4
1.2. TESTING ENVIRONMENT	4
1.3. PROJECT DATA	4
1.4. 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.....	7
4.1. REFERENCE DOCUMENTS FOR TESTING.....	7
5. LABORATORY ENVIRONMENT.....	8
6. SUMMARY OF TEST RESULTS.....	9
7. TEST EQUIPMENTS UTILIZED.....	10
ANNEX A: MEASUREMENT RESULTS	11
ANNEX B: PERSONS INVOLVED IN THIS TESTING	21

1. Test Laboratory

1.1. Testing Location

CTTL (BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology Development Area, Beijing, P. R. China 100176

1.2. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2018-11-08

Testing End Date: 2018-11-22

1.4. Signature



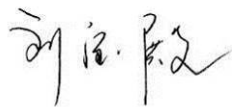
Li Yan

(Prepared this test report)



Zhang Ying

(Reviewed this test report)



Liu Baodian

Deputy Director of the laboratory

(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: Wiko SAS
Address: 1, rue Capitaine Dessemond 13007 - Marseille - France.
City: /
Postal Code: /
Country: /
Contact Person: Laurent Dahan
Contact Email: ldahan@wikomobile.com
Telephone: 33488089515
Fax: 33488089520

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
City: /
Postal Code: /
Country: /
Contact Person: Jingwen.Guo
Contact Email: jingwen.guo@tinno.com
Telephone: 0755-86095550
Fax: 0755-86095551

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

3.1. About EUT

Description	smart phone
Model Name	W-U300
FCC ID	2AM86WU300AS
Extreme vol. Limits	3.55VDC 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.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT3	352798100014854	V1.0	W-U300-V01.28

*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	/	/
AE4	Headset	/	/

AE1

Model	C210AEBATT
Manufacturer	Ningbo Veken Battery Co.,Ltd
Capacitance	2500mAh
Nominal voltage	3.8V

AE2

Model	TN-050100U4A
Manufacturer	Shenzhen BMT Electronics Co.,Ltd
Length of cable	/

AE3

Model	/
Manufacturer	/
Length of cable	/

AE4

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	EUT3+ AE1+ AE2+ AE3+ AE4	Charger+FM
Set.2	EUT3+ AE1+ AE3	USB mode+MP3+GNSS

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	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.

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters×17 meters×10 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	< 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

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



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)	A.1	P	CTTL(BDA)
2	Conducted Emission	15.107(a)	A.2	P	CTTL(BDA)

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESU26	100376	R&S	2018-12-30	1 year
2	Test Receiver	ESCI	100766	R&S	2019-04-16	1 year
3	Universal Radio Communication Tester	CMW500	159408	R&S	2019-03-15	1 year
4	LISN	ESH3-Z5	825562/028	R&S	2019-01-31	1 year
5	EMI Antenna	VULB9163	9163-514	Schwarzbeck	2019-02-03	1 year
6	EMI Antenna	3117	00139065	ETS-Lindgren	2020-09-21	3 years
7	Universal Radio Communication Tester	CMW500	127406	R&S	2019-02-19	1 year
8	Signal Generator	SMF100A	101295	R&S	2018-12-23	1 year
9	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
10	Keyboard	KU-1601	2048361	Lenovo	N/A	N/A
11	Mouse	EMS-537A	8021S3MC	Lenovo	N/A	N/A

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V9.01	R&S
Conducted Emission	EMC32 V8.52.0	R&S

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(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. During the charging mode the FM application is started up. During the USB mode The EUT is keeping on playing MP3 and the GNSS application is started up. The model of the PC is DELL 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.

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_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty (worst case): 30MHz-1GHz: 5.16dB, 1GHz-18GHz: 5.44dB, $k=2$.

Measurement results for Set.1:

Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17985.000	38.6	-25.3	40.8	23.17	54.0	15.4	V
17975.250	38.4	-25.2	40.8	22.78	54.0	15.6	V
17957.250	38.3	-25.0	40.8	22.46	54.0	15.7	V
17985.750	38.3	-25.4	40.8	22.85	54.0	15.7	V
17969.250	38.3	-25.1	40.8	22.61	54.0	15.7	H
17991.750	38.3	-25.2	40.8	22.66	54.0	15.7	H

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17601.000	50.5	-25.8	41.1	35.12	74.0	23.5	H
16257.000	50.4	-25.4	40.6	35.14	74.0	23.6	V
17508.750	50.2	-25.4	41.2	34.37	74.0	23.8	V
17844.750	50.1	-23.5	40.9	32.63	74.0	23.9	H
17328.750	50.1	-25.8	41.2	34.64	74.0	23.9	V
17543.250	50.1	-25.5	41.2	34.42	74.0	23.9	V

Measurement results for Set.2:

USB Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17589.750	38.3	-25.7	41.1	22.90	54.0	15.7	H
17582.250	38.3	-25.7	41.1	22.81	54.0	15.7	H
17632.500	38.2	-25.9	41.1	23.04	54.0	15.8	V
17613.750	38.2	-25.8	41.1	22.95	54.0	15.8	H
17585.250	38.2	-25.7	41.1	22.81	54.0	15.8	H
17987.250	38.2	-25.4	40.8	22.74	54.0	15.8	V

USB Mode/Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17573.250	50.7	-25.7	41.1	35.20	74.0	23.3	H
17571.000	50.2	-25.6	41.1	34.71	74.0	23.8	V
16786.500	50.2	-26.2	41.5	34.93	74.0	23.8	H
17965.500	50.2	-25.1	40.8	34.44	74.0	23.8	H
17918.250	50.2	-24.5	40.9	33.77	74.0	23.8	V
17115.750	50.2	-25.5	41.3	34.32	74.0	23.8	V

Sample calculation: PK detector, 17573.250MHz

$$\text{Result} = P_{\text{Mea}} (35.20 \text{ dB}\mu\text{V}) + G_A (41.1 \text{ dB/m}) + G_{\text{PL}} (-25.7 \text{ dB}) = 50.7 \text{ dB}\mu\text{V/m}$$

Note: The measurement results of Set.1, Set.2 and Set.3 showed here are worst cases of the combinations of different USB cables.

Charging Mode+FM, Set.1

15B RE 30MHz-1GHz

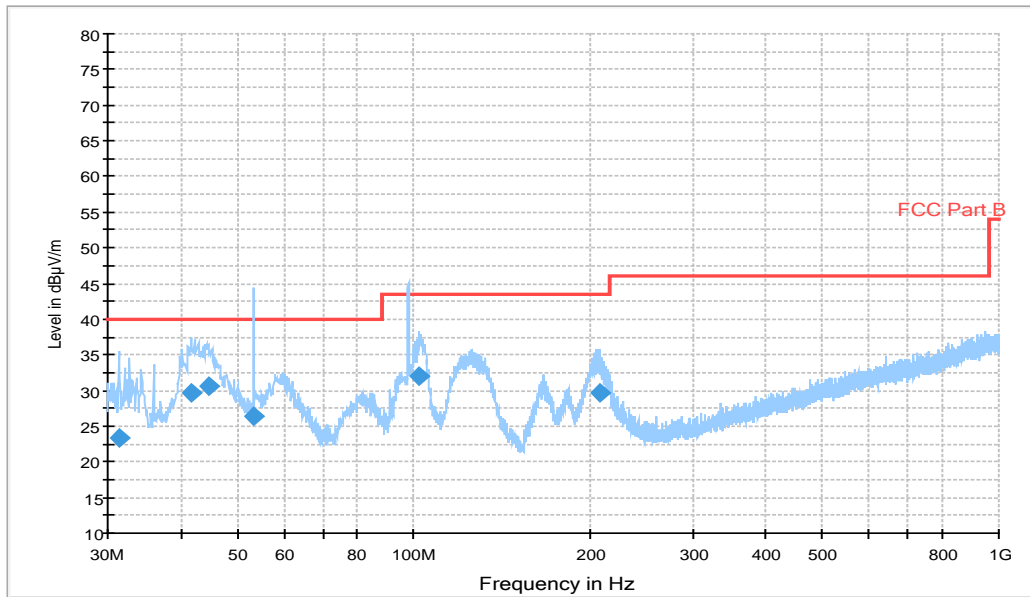


Figure A.1 Radiated Emission from 30MHz to 1GHz

Note: the spike over the limit (98MHz) is coming from FM signal source.

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
31.358000	23.4	100.0	V	79.0	-1.0	16.6	40.0
41.640000	29.7	125.0	V	97.0	0.4	10.3	40.0
44.647000	30.6	100.0	V	301.0	0.5	9.4	40.0
53.183000	26.5	100.0	V	100.0	0.4	13.5	40.0
102.07100	32.1	109.0	V	242.0	-1.4	11.4	43.5
208.09200	29.8	100.0	V	-1.0	-1.5	13.7	43.5

15B RE - 1GHz-3GHz

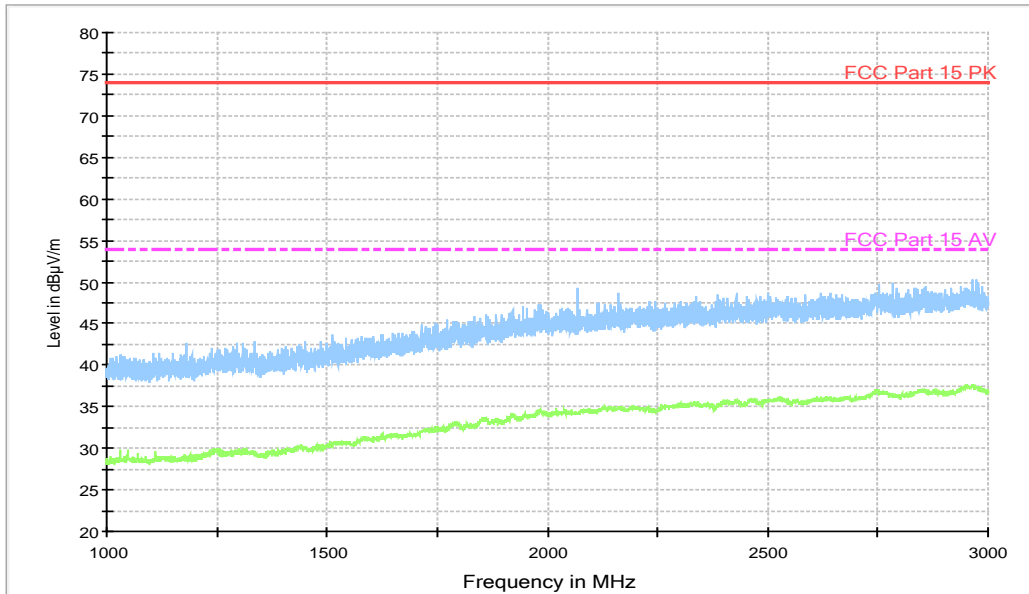


Figure A.2 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

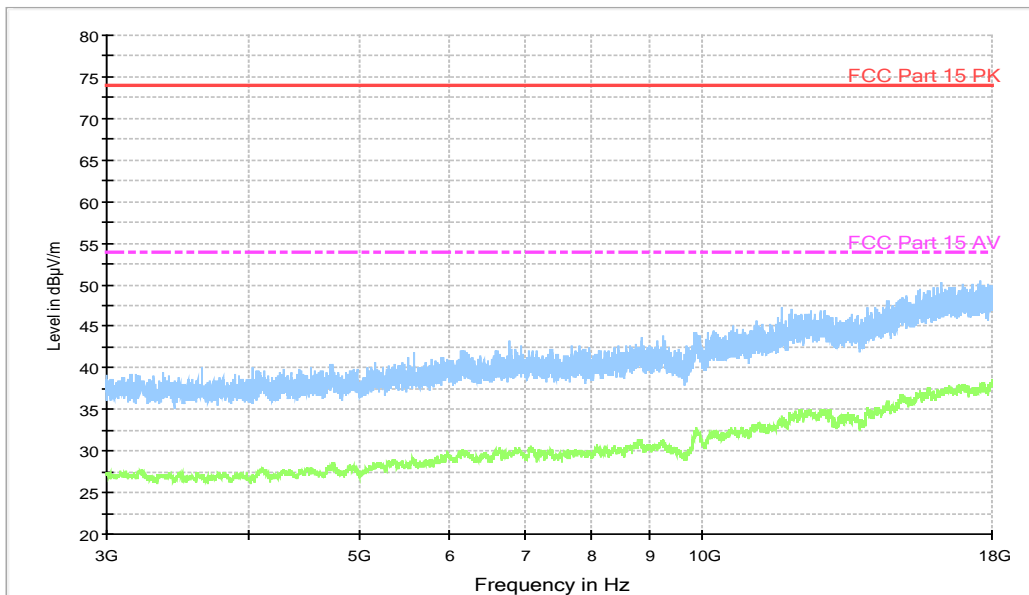


Figure A.3 Radiated Emission from 3GHz to 18GHz

USB Mode+MP3+GNSS, Set.2

15B RE 30MHz-1GHz

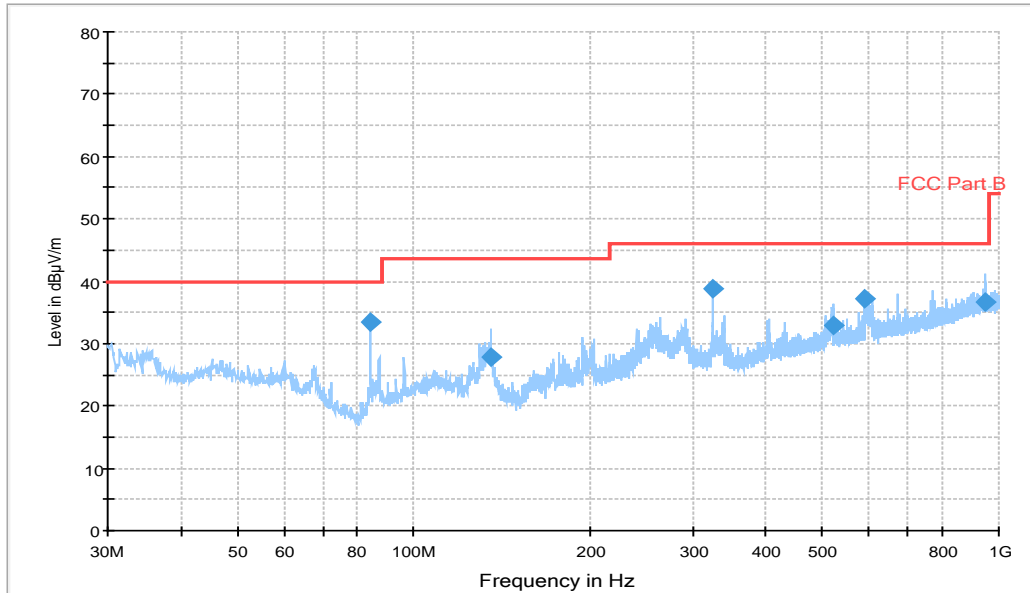


Figure A.4 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
84.320000	33.4	213.0	H	245.0	-4.8	6.6	40.0
135.53600	27.9	184.0	H	69.0	-4.4	15.6	43.5
323.52200	38.7	125.0	V	-11.0	2.3	7.3	46.0
520.62600	32.9	100.0	V	-24.0	7.3	13.1	46.0
591.33900	37.3	125.0	V	15.0	8.7	8.7	46.0
949.17200	36.6	115.0	H	80.0	13.1	9.4	46.0

15B RE - 1GHz-3GHz

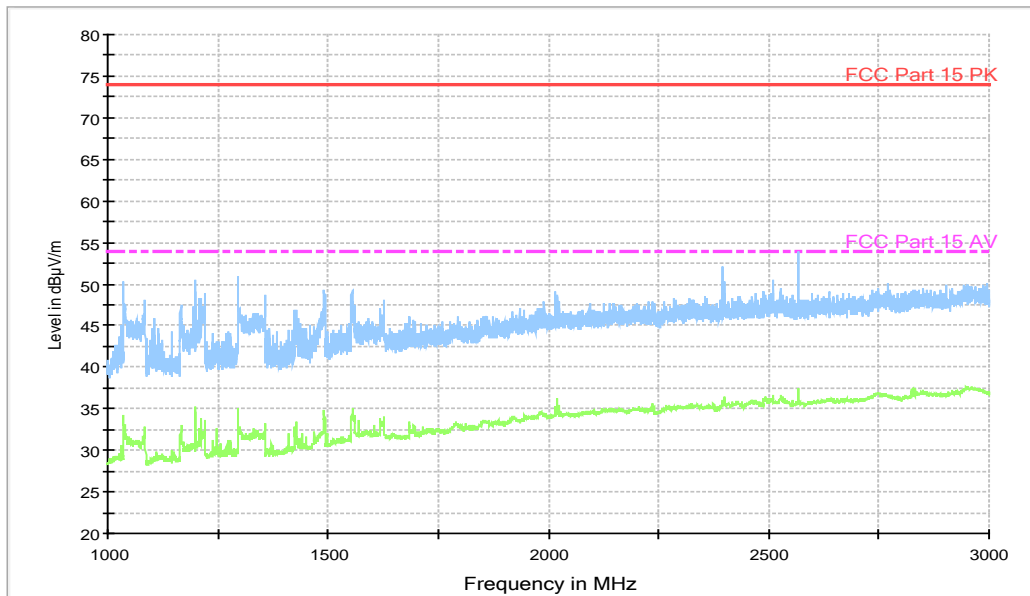


Figure A.5 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

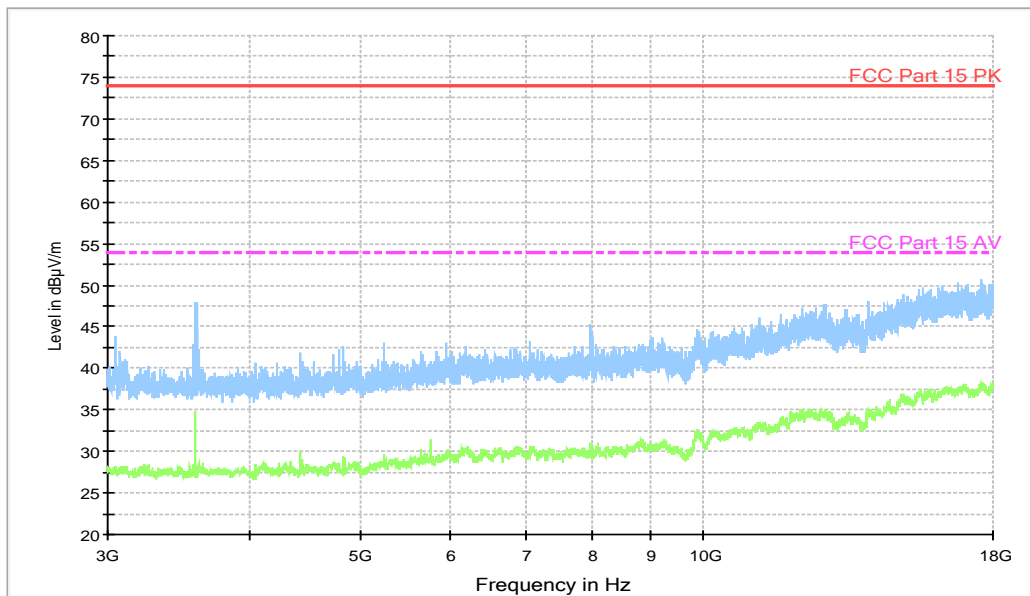


Figure A.6 Radiated Emission from 3GHz to 18GHz

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 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.

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: $U= 3.08$ dB, $k=2$.

Charging Mode+FM, Set.1

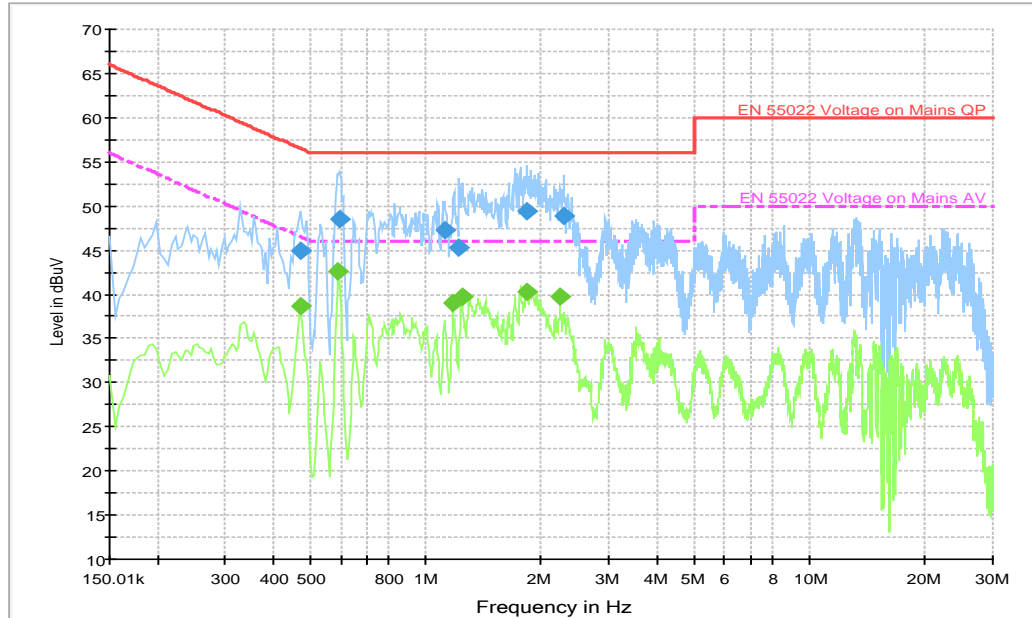


Figure A.7 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.474000	44.9	2000.0	9.000	GND	L1	10.1	11.5	56.4
0.595500	48.5	2000.0	9.000	GND	L1	10.1	7.5	56.0
1.117500	47.3	2000.0	9.000	GND	L1	10.2	8.7	56.0
1.221000	45.3	2000.0	9.000	GND	L1	10.2	10.7	56.0
1.833000	49.4	2000.0	9.000	GND	L1	10.2	6.6	56.0
2.283000	48.8	2000.0	9.000	GND	L1	9.0	7.2	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.469500	38.6	2000.0	9.000	GND	L1	10.1	7.9	46.5
0.591000	42.5	2000.0	9.000	GND	L1	10.1	3.5	46.0
1.176000	39.0	2000.0	9.000	GND	L1	10.2	7.0	46.0
1.239000	39.8	2000.0	9.000	GND	L1	10.1	6.2	46.0
1.837500	40.3	2000.0	9.000	GND	L1	10.2	5.7	46.0
2.229000	39.7	2000.0	9.000	GND	L1	8.8	6.3	46.0

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

.USB Mode+MP3+GNSS, Set.2

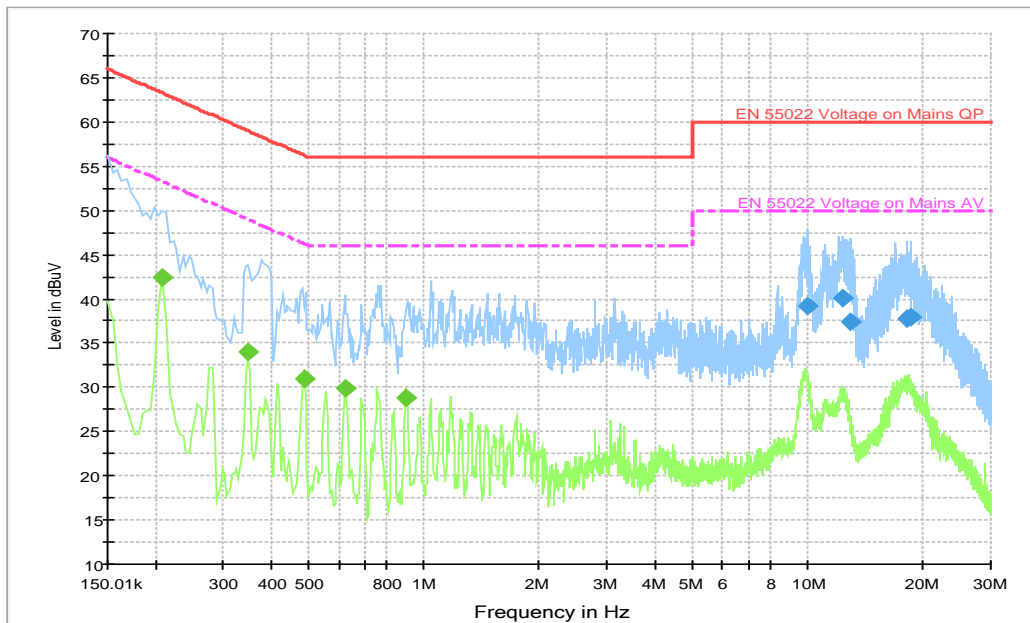


Figure A.8 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	48.6	2000.0	9.000	GND	N	10.1	17.4	66.0
9.987000	39.3	2000.0	9.000	GND	N	10.3	20.7	60.0
12.385500	40.1	2000.0	9.000	GND	N	10.5	19.9	60.0
12.912000	37.3	2000.0	9.000	GND	N	10.5	22.7	60.0
18.096000	37.7	2000.0	9.000	GND	L1	10.9	22.3	60.0
18.537000	37.9	2000.0	9.000	GND	N	10.7	22.1	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	32.4	2000.0	9.000	GND	L1	10.1	23.6	56.0
0.208500	42.4	2000.0	9.000	GND	N	10.1	10.9	53.3
0.348000	34.0	2000.0	9.000	GND	N	10.1	15.0	49.0
0.487500	31.0	2000.0	9.000	GND	N	10.1	15.2	46.2
0.627000	29.9	2000.0	9.000	GND	N	10.1	16.1	46.0
0.901500	28.9	2000.0	9.000	GND	N	10.1	17.1	46.0

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

ANNEX B: Persons involved in this testing

Test Item	Tester
Radiated Emission	Zhao Wenhui
Conducted Emission	Li Zongliang

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