TEST REPORT

No. I18Z60340-EMC04

for

TCL Communication Ltd.

U3A 10 WIFI

Model Name: 8082

FCC ID: 2ACCJBT11

with

Hardware Version: V03

Software Version: G11

Issued Date: 2018-04-19

TESTING
NVLAP LAB CODE 600118-0

Note:

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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.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I18Z60340-EMC04	Rev.0	1st edition	2018-04-19

CONTENTS

1. Test Laboratory

1.1. Testing Location

Location: CTTL (huayuan North Road)

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

1.2. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2018-03-13

Testing End Date: 2018-04-11

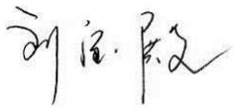
1.4. Signature

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:	TCL Communication Ltd.
Address /Post:	7/F, Block F4, TCL Communication Technology Building, TCL International E City, Zhong Shan Yuan Road, Nanshan District, Shenzhen, Guangdong, P.R. China 518052
Contact Person:	Gong Zhizhou
Contact Email	zhizhou.gong@tcl.com
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2.2. Manufacturer Information

Company Name:	TCL Communication Ltd.
Address /Post:	7/F, Block F4, TCL Communication Technology Building, TCL International E City, Zhong Shan Yuan Road, Nanshan District, Shenzhen, Guangdong, P.R. China 518052
Contact Person:	Gong Zhizhou
Contact Email	zhizhou.gong@tcl.com
Telephone:	0086-755-36611722
Fax:	/

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

3.1. About EUT

Description	U3A 10 WIFI
Model Name	8082
FCC ID	2ACCJBT11

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
EUT2	/	V03	G11

*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	Battery	/	/
AE3	USB Cable	/	/
AE4	USB Cable	/	/
AE6	Charger	/	/
AE7	Charger	/	/

AE1

Model	CAC4000010CC
Manufacturer	TCL HYPERPOWER
Capacitance	4000mAh
Nominal voltage	3.85V

AE2

Model	CAC4000006C1
Manufacturer	BYD
Capacitance	4000mAh
Nominal voltage	3.85V

AE3

Model	CDA3122005C1
Manufacturer	/
Length	/

AE4

Model	CDA3122005C2
Manufacturer	/
Length	/

AE6

Model	CBA0058AAAC5
Manufacturer	PUAN

Length	/

AE7

Model	CBA0058AAAC7
Manufacturer	CHENYANG
Length	/

*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	EUT2+ AE1+AE6+AE3/AE4	Charger
Set.2	EUT2+ AE1+AE7+AE3/AE4	Charger
Set.3	EUT2+ AE1+AE3/AE4	USB mode

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×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

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(huayuan North Road)
2	Conducted Emission	15.107(a)	A.2	P	CTTL(huayuan North Road)

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESCI3	100344	R&S	2019-02-28	1 year
2	Test Receiver	ESU26	100376	R&S	2019-02-28	1 year
3	EMI Antenna	VULB9163	9163-301	Schwarzbeck	2019-02-03	3 years
4	LISN	ENV216	101200	R&S	2018-07-04	1 year
5	Universal Radio Communication Tester	CMW500	116588	R&S	2018-11-26	1 year
6	Test Receiver	ESU26	100235	R&S	2019-02-28	1 year
7	EMI Antenna	3115	00167250	ETS-Lindgren	2019-02-28	3 years
8	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A	N/A
9	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
10	Keyboard	L100	CN0RH659658907ATOI40	DELL	N/A	N/A
11	Mouse	M-UAE119	LZ935220ZRC	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 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 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 (μV/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:

Result = P_{Mea} + A_{Rpl} = P_{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): 4.3dB, *k*=2.

Measurement results for Set.1:

Charging Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
6054.667	40.3	-33.6	35.2	38.700	H
6055.233	39.9	-33.6	35.2	38.300	H
17465.633	38.1	-19.2	41.5	15.800	V
17885.533	38.1	-18.5	45.6	11.000	H
17942.200	38.0	-17.7	45.6	10.100	H
17784.100	38.0	-18.5	45.6	10.900	H

Charging Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
17418.600	49.5	-19.2	41.5	27.200	H
17197.033	49.3	-19.8	41.5	27.600	H
17816.400	49.1	-18.5	45.6	22.000	V
17672.467	49.1	-18.9	45.6	22.400	H
17456.567	49.1	-19.2	41.5	26.800	H
17888.933	49.1	-18.5	45.6	22.000	H

Measurement results for Set.2:

Charging Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
6054.667	40.6	-33.6	35.2	39.000	H
6055.233	40.4	-33.6	35.2	38.800	H
17418.033	38.2	-19.2	41.5	15.900	V
17371.000	38.1	-19.5	41.5	16.100	H
17336.433	38.1	-19.5	41.5	16.100	H
17741.600	38.0	-18.5	45.6	10.900	H

Charging Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
17314.900	50.1	-19.5	41.5	28.100	H
17836.233	49.3	-18.5	45.6	22.200	H
17814.700	49.1	-18.5	45.6	22.000	V
17535.333	49.1	-19.2	45.6	22.700	H
17473.567	49.1	-19.2	41.5	26.800	H
17569.900	49.1	-18.9	45.6	22.400	H

Measurement results for Set.3:

USB Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
17896.300	37.6	-18.5	45.6	10.500	H
17880.433	37.5	-18.5	45.6	10.400	H
17869.667	37.5	-18.5	45.6	10.400	V
17864.567	37.5	-18.5	45.6	10.400	H
17904.233	37.5	-18.5	45.6	10.400	H
17363.633	37.4	-19.5	41.5	15.400	H

USB Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
17467.900	49.5	-19.2	41.5	27.200	H
17910.467	48.8	-18.5	45.6	21.700	H
17908.200	48.8	-18.5	45.6	21.700	V
17928.600	48.8	-17.7	45.6	20.900	H
17379.500	48.7	-19.5	41.5	26.700	H
17791.467	48.7	-18.5	45.6	21.600	H

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

Charging Mode, Set.1

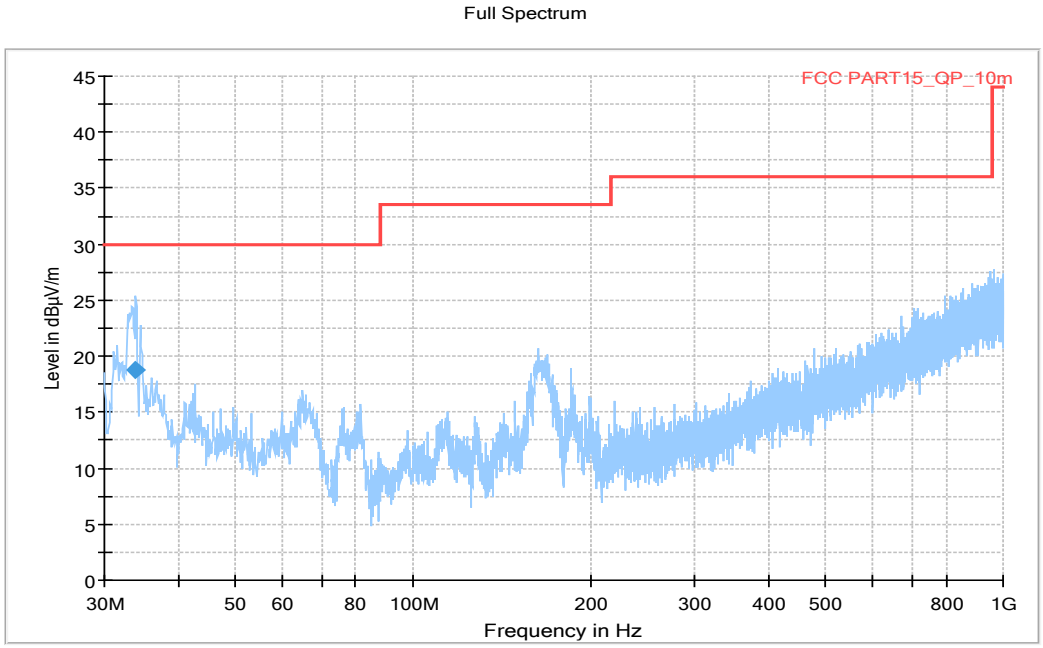

Figure A.1 Radiated Emission from 30MHz to 1GHz

Final_Result

Frequency (MHz)	QuasiPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
33.940000	18.82	30.00	11.18	1000.	120.000	125.0	V	60.0

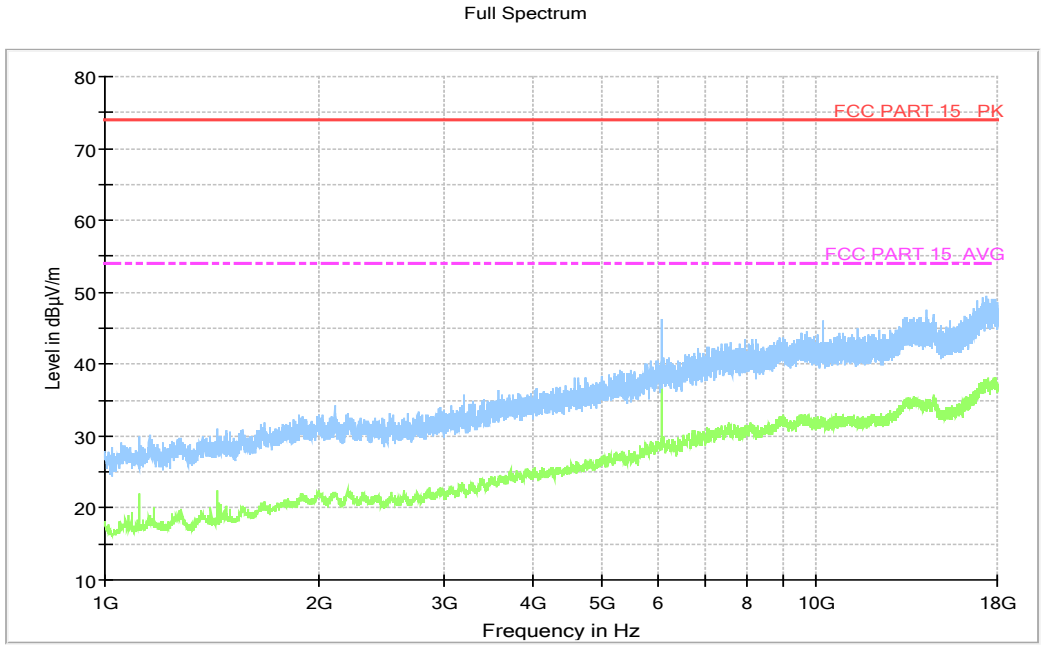

Figure A.2 Radiated Emission from 1GHz to 18GHz

Charging Mode, Set.2

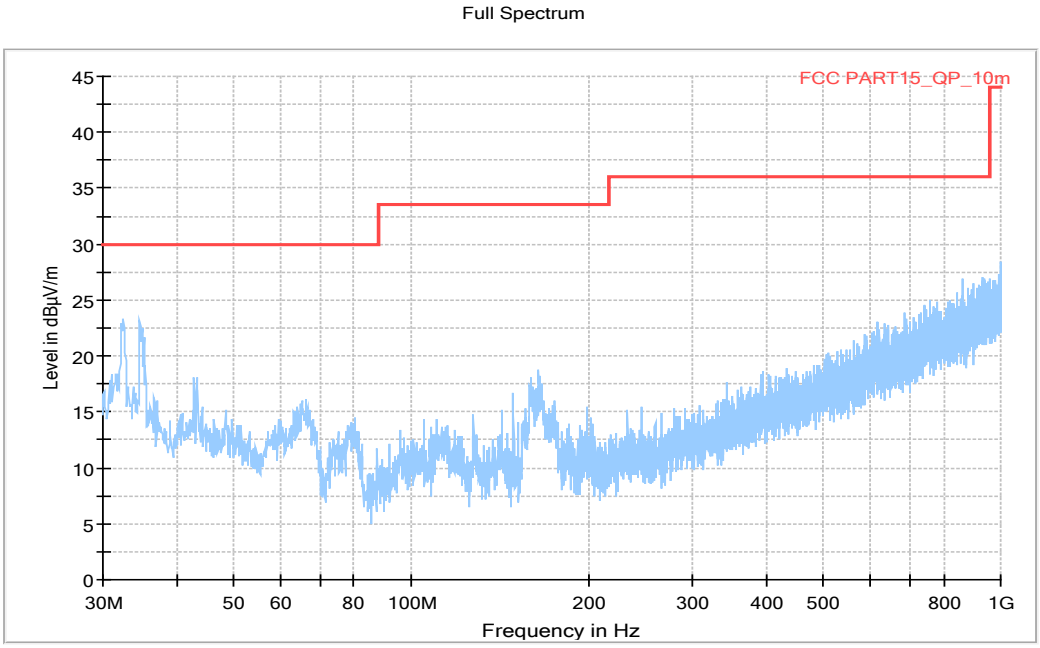

Figure A.3 Radiated Emission from 30MHz to 1GHz

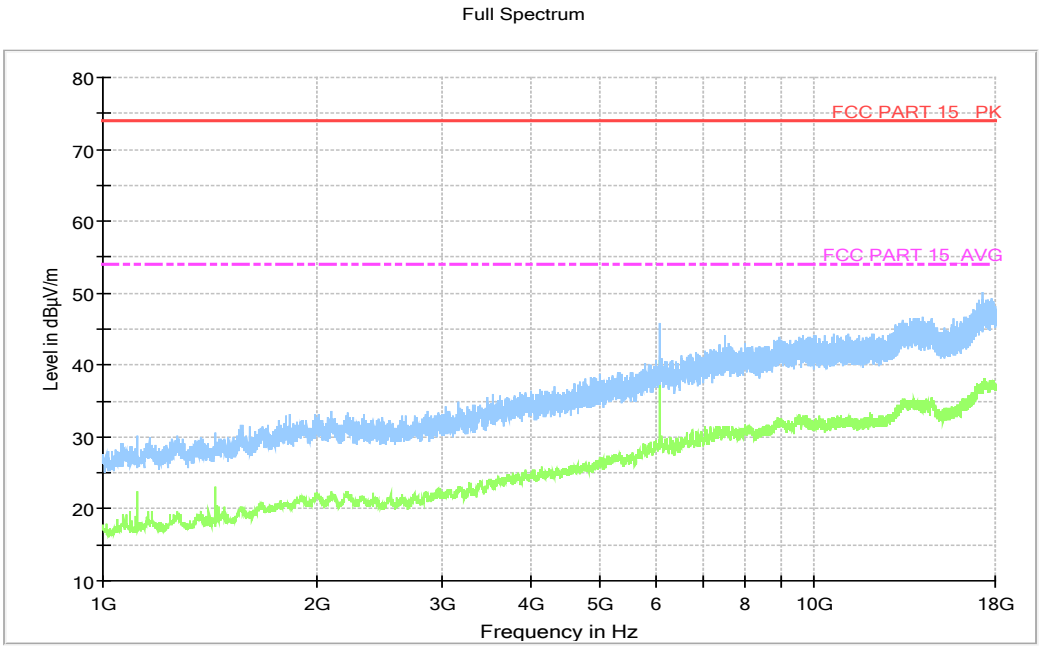

Figure A.4 Radiated Emission from 1GHz to 18GHz

USB Mode, Set.3

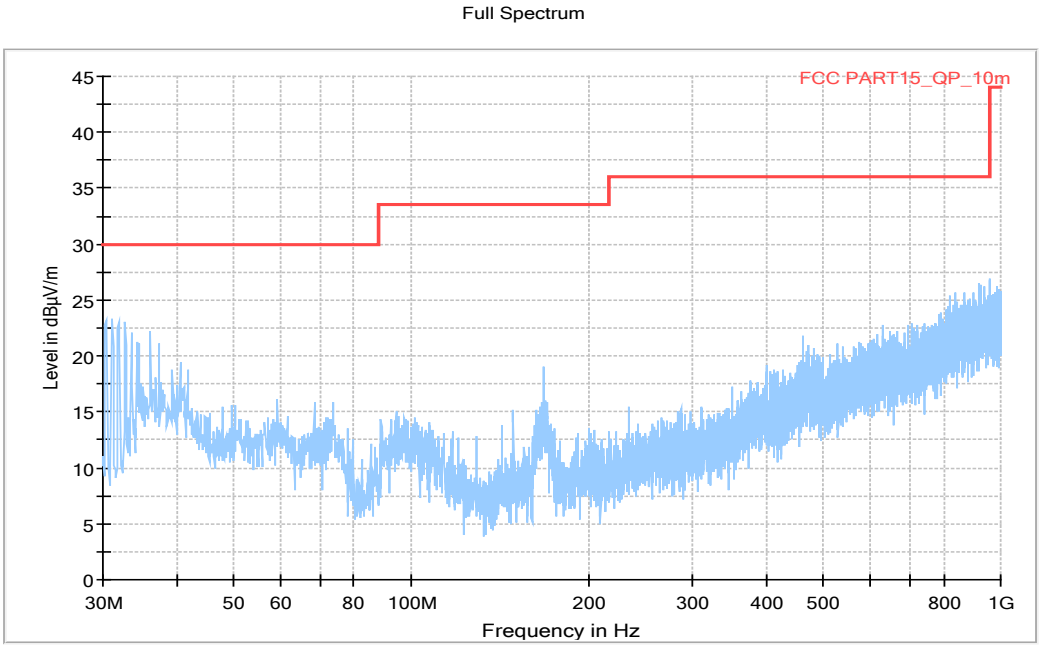

Figure A.5 Radiated Emission from 30MHz to 1GHz

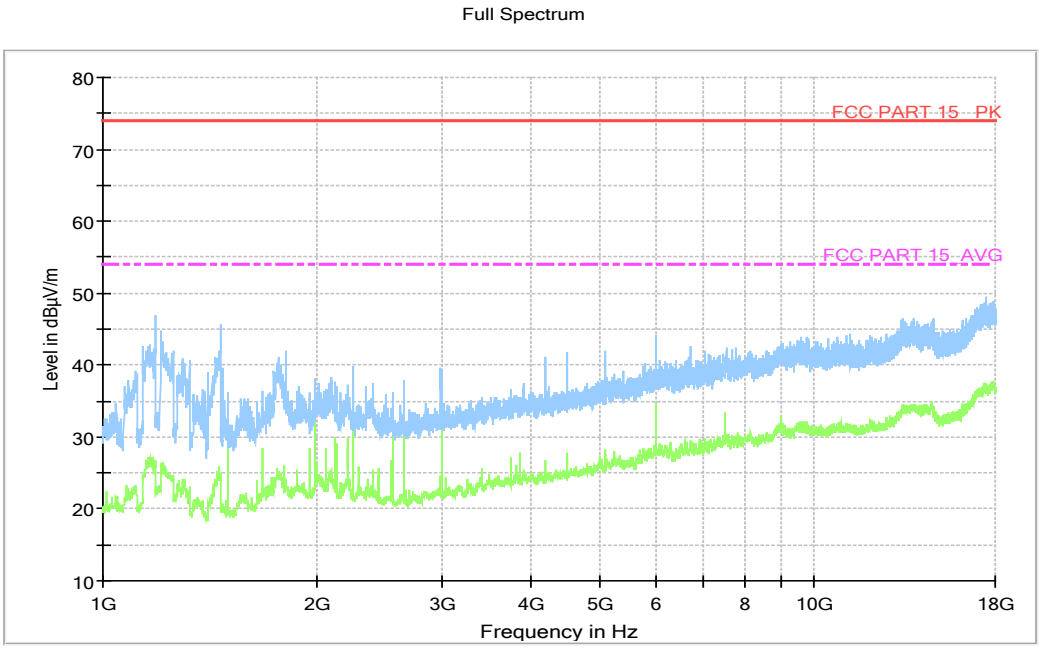

Figure A.6 Radiated Emission from 1GHz to 18GHz

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 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 (dBμV)	
	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.1

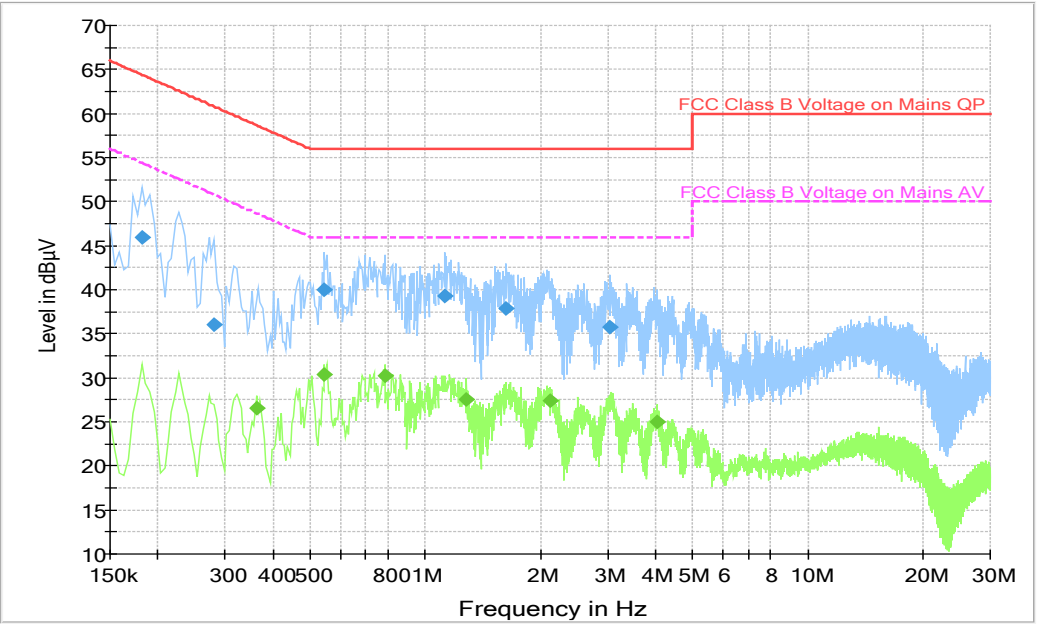

Figure A.7 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.181500	45.9	2000.0	9.000	L1	19.8	18.5	64.4
0.280500	36.0	2000.0	9.000	L1	19.8	24.8	60.8
0.546000	40.0	2000.0	9.000	L1	19.9	16.0	56.0
1.126500	39.2	2000.0	9.000	L1	19.6	16.8	56.0
1.630500	37.8	2000.0	9.000	L1	19.7	18.2	56.0
3.034500	35.8	2000.0	9.000	L1	19.7	20.2	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.361500	26.5	2000.0	9.000	L1	19.8	22.2	48.7
0.546000	30.3	2000.0	9.000	L1	19.9	15.7	46.0
0.784500	30.2	2000.0	9.000	L1	19.7	15.8	46.0
1.284000	27.5	2000.0	9.000	L1	19.6	18.5	46.0
2.125500	27.5	2000.0	9.000	L1	19.7	18.5	46.0
4.038000	25.0	2000.0	9.000	L1	19.6	21.0	46.0

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

Charging Mode, Set.2

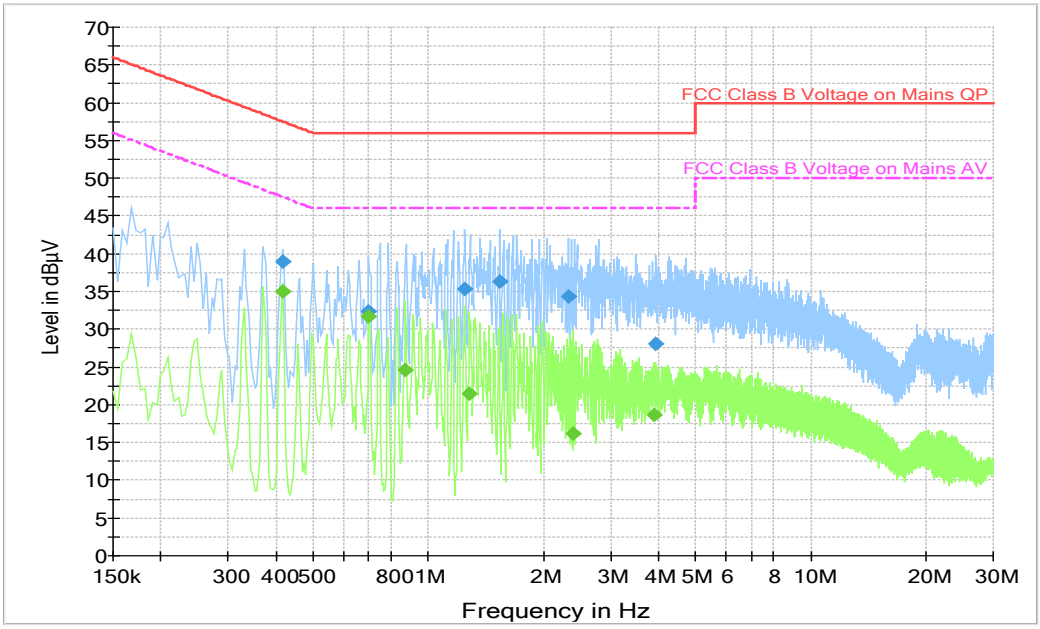

Figure A.8 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.415500	39.0	2000.0	9.000	L1	19.9	18.6	57.5
0.699000	32.4	2000.0	9.000	N	19.9	23.6	56.0
1.248000	35.3	2000.0	9.000	N	19.6	20.7	56.0
1.536000	36.3	2000.0	9.000	N	19.6	19.7	56.0
2.323500	34.3	2000.0	9.000	N	19.6	21.7	56.0
3.943500	28.1	2000.0	9.000	N	19.7	27.9	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.415500	35.1	2000.0	9.000	L1	19.9	12.5	47.5
0.699000	31.6	2000.0	9.000	L1	19.8	14.4	46.0
0.870000	24.7	2000.0	9.000	L1	19.7	21.3	46.0
1.279500	21.5	2000.0	9.000	L1	19.6	24.5	46.0
2.395500	16.1	2000.0	9.000	L1	19.7	29.9	46.0
3.880500	18.7	2000.0	9.000	L1	19.6	27.3	46.0

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

USB Mode, Set.3

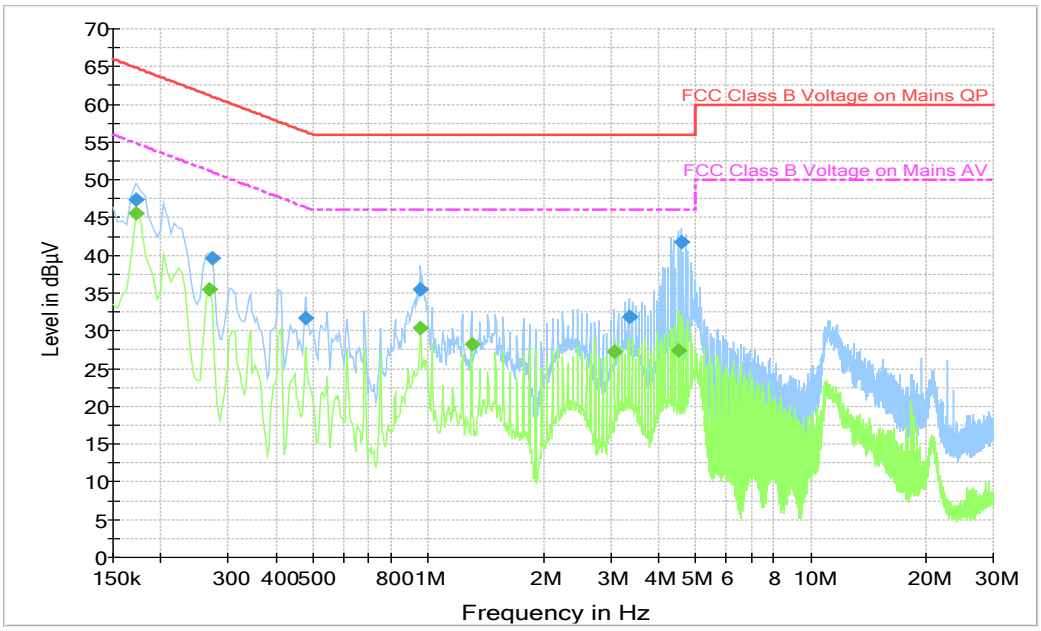

Figure A.9 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.172500	47.5	2000.0	9.000	N	19.8	17.4	64.8
0.271500	39.6	2000.0	9.000	L1	19.8	21.4	61.1
0.478500	31.6	2000.0	9.000	L1	19.9	24.7	56.4
0.955500	35.5	2000.0	9.000	N	19.7	20.5	56.0
3.345000	31.9	2000.0	9.000	N	19.7	24.1	56.0
4.573500	41.8	2000.0	9.000	N	19.7	14.2	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.172500	45.6	2000.0	9.000	N	19.8	9.2	54.8
0.267000	35.4	2000.0	9.000	L1	19.8	15.8	51.2
0.955500	30.3	2000.0	9.000	N	19.7	15.7	46.0
1.297500	28.3	2000.0	9.000	N	19.6	17.7	46.0
3.070500	27.2	2000.0	9.000	N	19.6	18.8	46.0
4.501500	27.3	2000.0	9.000	N	19.7	18.7	46.0

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

ANNEX B: Accreditation Certificate

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 600118-0

Telecommunication Technology Labs, CAICT
Beijing
China

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Electromagnetic Compatibility & Telecommunications

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2017-08-22 through 2018-09-30
Effective Dates

For the National Voluntary Laboratory Accreditation Program

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