TEST REPORT

No. I17Z61133-EMC01

for

TCL Communication Ltd.

GSM Quad-band/ UMTS three-band/LTE six-band mobile phone

Model Name: 5044S

FCC ID: 2ACCJB090

with

Hardware Version: 02

Software Version: R36-6Z10

Issued Date: 2017-07-31

TESTING
NVLAP LAB CODE 600118-0

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: cttl_terminals@caict.ac.cn, website: www.caict.ac.cn

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I17Z61133-EMC01	Rev.0	1st edition	2017-07-31

CONTENTS

1. Test Laboratory

1.1. Testing Location

Location BDA: CTTL(kangding Road)

Address: No. A18, Kangding Road, Yizhuang, Beijing, P. R. China 100176

1.2. Testing Environment

Normal Temperature: 15-35℃

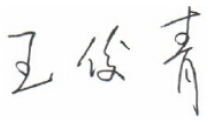
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2017-05-26

Testing End Date: 2017-06-01

1.4. Signature

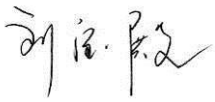


Wang Junqing

(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:	5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
City:	Shanghai
Postal Code:	201203
Country:	P. R. China
Contact Person:	Gong Zhizhou
Contact Email	zhizhou.gong@tcl.com
Telephone:	0086-21-31363544
Fax:	0086-21-61460602

2.2. Manufacturer Information

Company Name:	TCL Communication Ltd.
Address /Post:	5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
City:	Shanghai
Postal Code:	201203
Country:	P. R. China
Contact Person:	Gong Zhizhou
Contact Email	zhizhou.gong@tcl.com
Telephone:	0086-21-31363544
Fax:	0086-21-61460602

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

3.1. About EUT

Description	GSM Quad-band/ UMTS three-band/LTE six-band mobile phone
Model Name	5044S
FCC ID	2ACCJB090
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, Academy of Telecommunication Research, MIIT.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT4	/	02	R36-6Z10

*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	Travel charger	/	17TCT-CH-0248
AE3	USB Cable	/	16TCT-DC-0563

AE1

Model	CAB2000088C1
Manufacturer	BYD
Capacitance	2000 mAh
Nominal voltage	3.8V

AE2

Model	CBA0058AGAC2
Manufacturer	Tenpao
Length of cable	/

AE3

Model	CDA3122005C1
Manufacturer	Juwei
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.4	EUT4 + AE1 + AE2 + AE3	Charger
Set.5	EUT4 + AE1 + AE3	USB

Note: The GSM Quad-band/ UMTS three-band/LTE six-band mobile phone 5044S manufactured by TCL Communication Ltd. is a variant model based on 5044G for conformance test. According to the declaration of changes, no test needs to been performed, all results are cited from the initial model. The report number for initial model is I17Z60758-EMC01.

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 Edition
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-2 (10 meters×6.7meters×6.1meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 1Ω
Normalised site attenuation (NSA)	< ±4 dB, 3 m 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 ℃, Max. = 35 ℃
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	**BDA**
2	Conducted Emission	15.107(a)	B.2	P	**BDA**

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESU26	100376	R&S	2017-10-30	1 year
2	Test Receiver	ESCI	100766	R&S	2018-04-06	1 year
3	Universal Radio Communication Tester	CMW500	127406	R&S	2018-01-19	1 year
5	LISN	ESH2-Z5	829991/012	R&S	2018-04-10	1 year
6	EMI Antenna	VULB 9163	9163-514	Schwarzbeck	2017-11-24	3 years
7	EMI Antenna	3117	00139065	ETS-Lindgren	2017-09-21	3 years

Test Item	Test Software and Version	Software Vendor	Test operator
Radiated Continuous Emission	EMC32 V9.01	R&S	Yang Fei
Conducted Emission	EMC32 V8.52.0	R&S	Dong Enran

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 (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 charging mode. During the test MS is connected to a charger in the case of charging mode.

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): 30MHz-1GHz：4.86dB, 1GHz-18GHz：5.26dB, *k*=2.

Measurement results for Set.4:

Charging Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
17806.500	41.19	-23.0	41.0	23.27	V
17796.000	40.96	-23.2	41.0	23.21	V
17805.000	40.95	-23.1	41.0	23.06	V
17799.000	40.86	-23.2	41.0	23.06	H
17808.750	40.84	-23.0	41.0	22.89	H
17803.500	40.82	-23.1	41.0	22.96	V

Charging Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
5874.630	35.42	-32.2	35.1	32.49	H
17803.500	40.92	-23.1	41.0	23.05	V
17810.250	40.70	-23.0	41.0	22.75	V
17799.750	40.68	-23.2	41.0	22.87	V
17796.000	40.67	-23.2	41.0	22.92	H
17799.000	40.66	-23.2	41.0	22.87	V

Measurement results for Set.5:

USB Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
17802.750	53.0	-23.1	41.0	35.16	V
17830.500	52.4	-23.3	40.9	34.79	H
17819.250	52.4	-23.1	40.9	34.58	H
17889.000	52.3	-24.1	40.9	35.50	V
17814.750	51.9	-23.1	40.9	34.04	V
17787.750	51.9	-23.3	41.0	34.28	H

USB Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
5998.530	45.5	-31.6	35.3	41.75	H
17827.500	51.9	-23.2	40.9	34.23	H
17828.250	51.9	-23.2	40.9	34.17	V
17798.250	51.7	-23.2	41.0	33.96	H
17790.750	51.7	-23.3	41.0	34.05	H
17796.750	51.7	-23.2	41.0	33.91	H

Sample calculation: Peak detector, 5998.530MHz

Result =P_{Mea} (41.75dBμV)+ G_A (35.3dB/m)+ G_{PL}(-31.6dB) =45.5dBμV/m

Charging Mode, Set.4

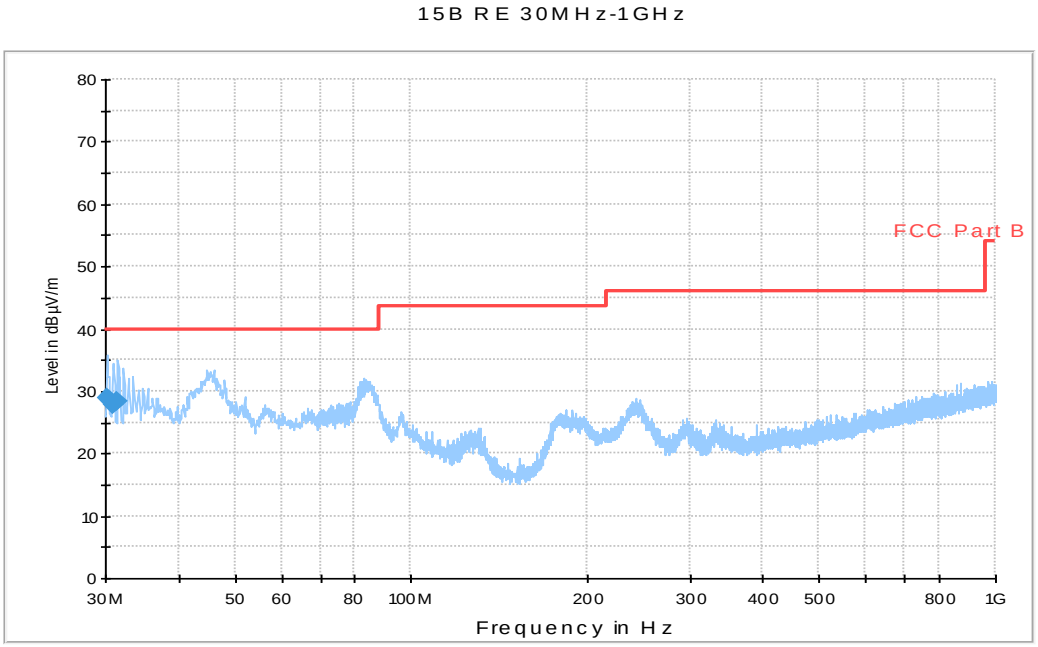


Figure A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.194000	28.8	100.0	V	40.0	-22.4	11.2	40.0
30.873000	27.8	100.0	V	135.0	-22.0	12.2	40.0
31.455000	28.3	100.0	V	14.0	-21.6	11.7	40.0

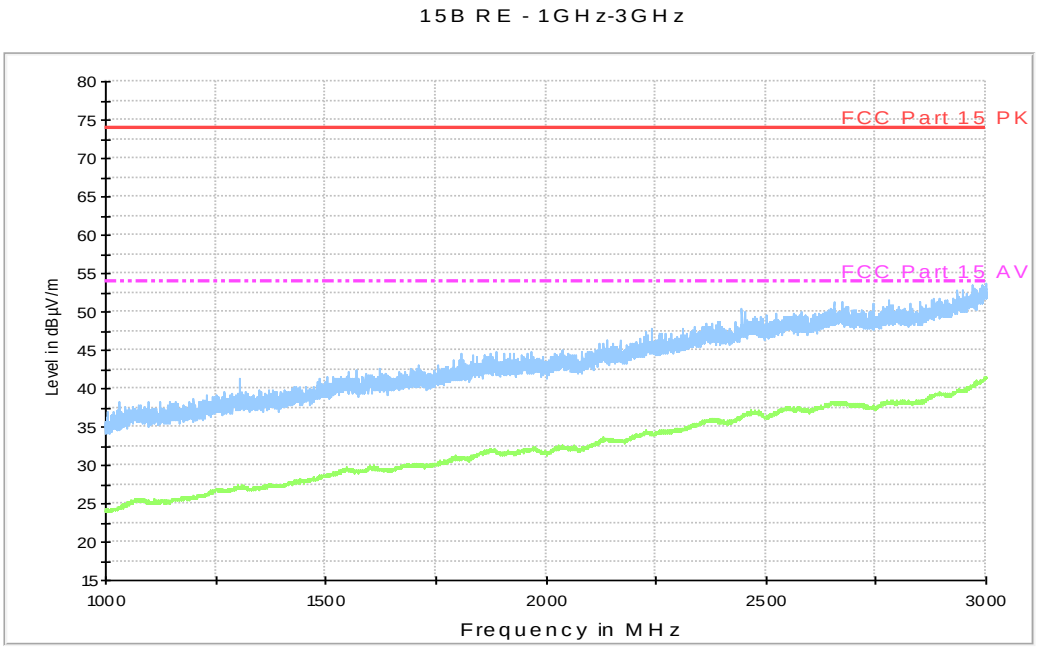


Figure A.2 Radiated Emission from 1GHz to 3GHz

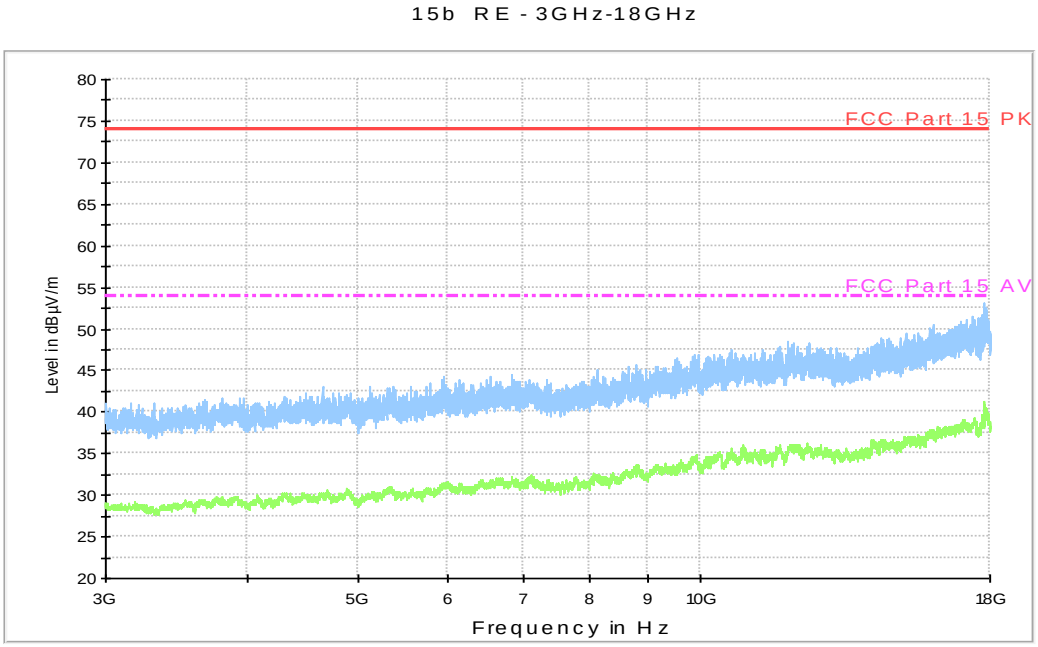


Figure A.3 Radiated Emission from 3GHz to 18GHz

USB Mode, Set.5

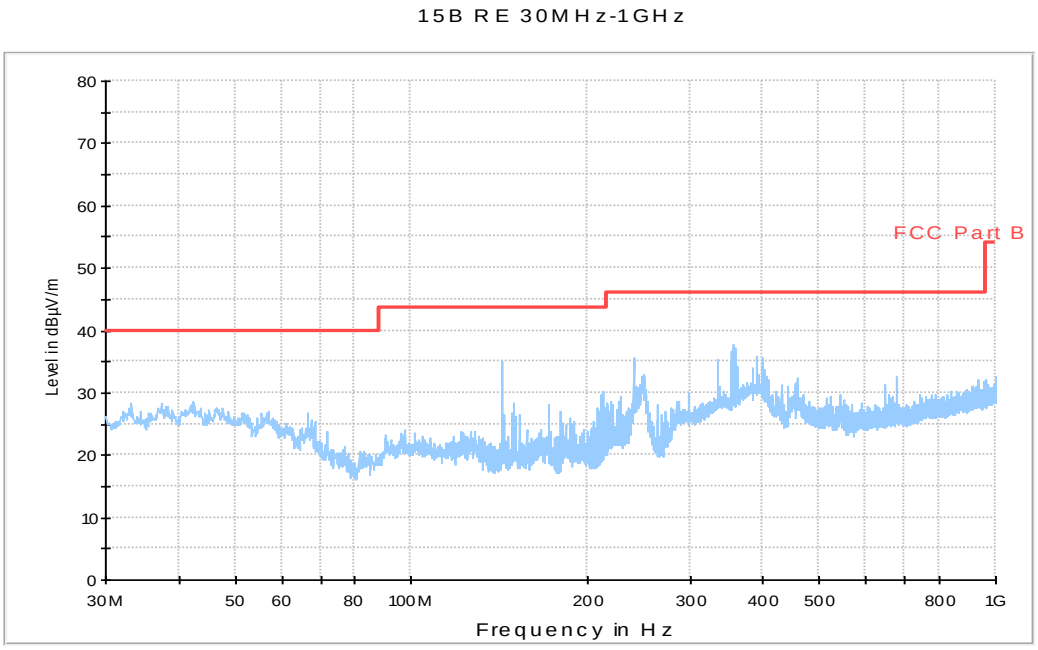


Figure A.1 Radiated Emission from 30MHz to 1GHz

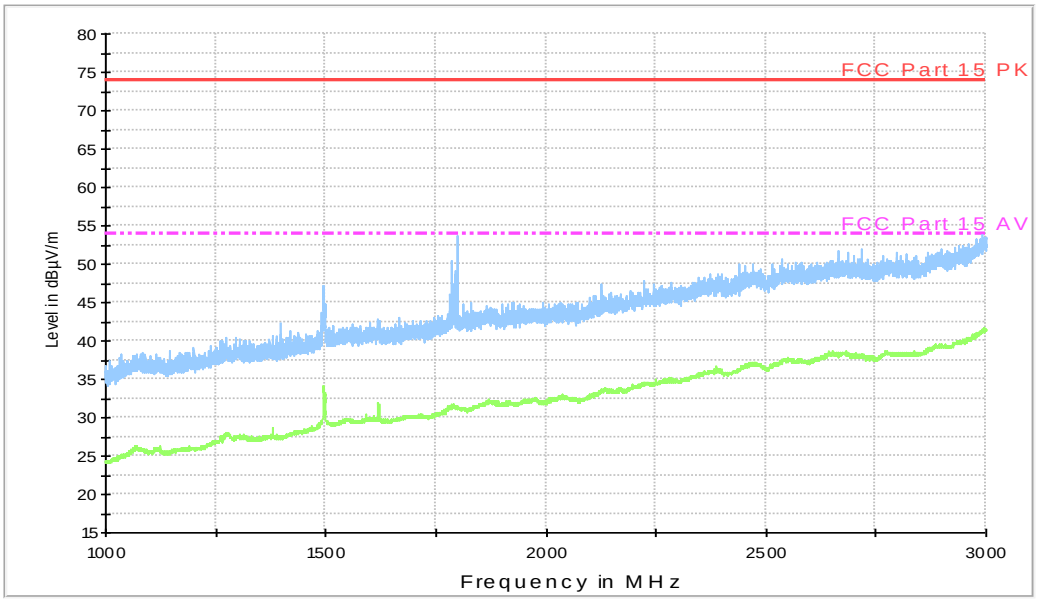


Figure A.2 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

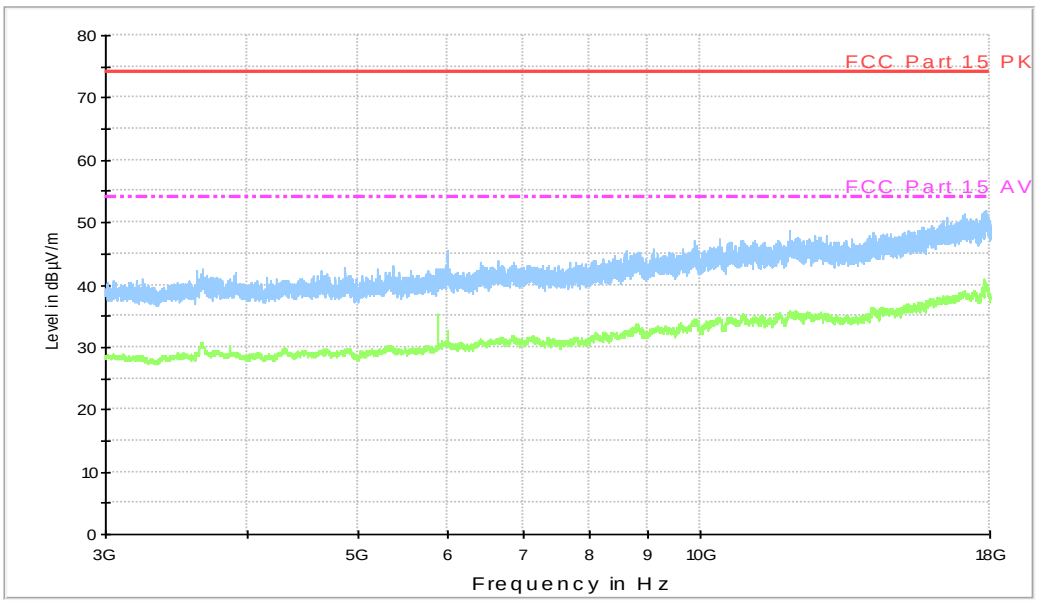


Figure A.3 Radiated Emission from 3GHz to 18GHz

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 charging mode. During the test MS is connected to a charger in the case of charging mode.

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*= 4.08dB, *k*=2.

Charging Mode, Set.4

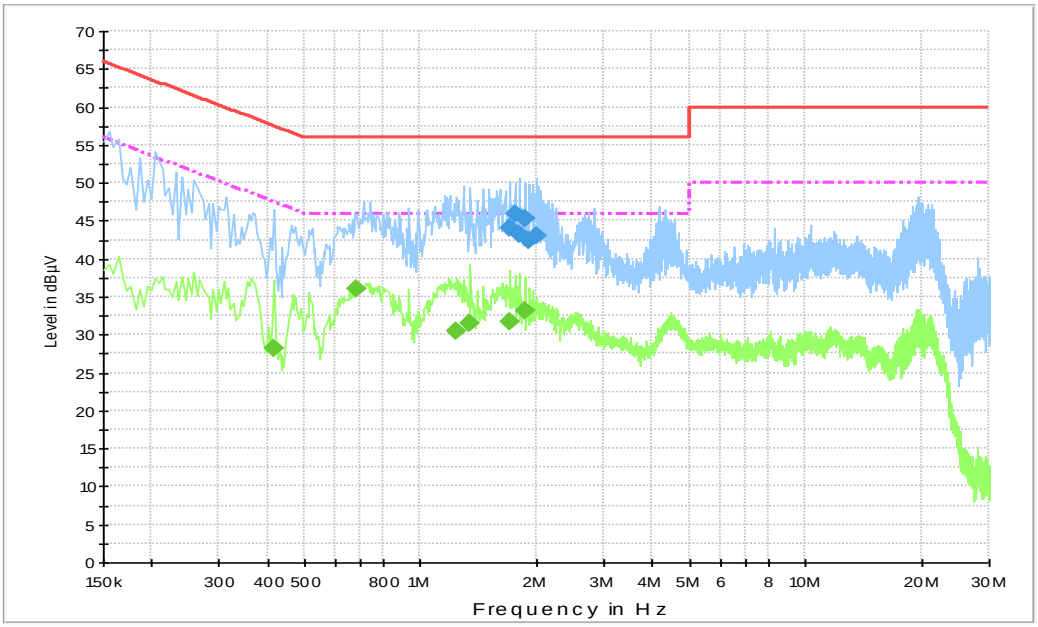


Figure A.4 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.707000	44.1	GND	L1	10.2	11.9
1.765500	45.9	GND	L1	10.2	10.1
1.810500	43.3	GND	L1	10.3	12.7
1.869000	45.3	GND	L1	10.3	10.7
1.914000	42.5	GND	L1	10.3	13.5
1.999500	42.9	GND	L1	10.3	13.1

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.415500	28.1	GND	L1	10.2	19.4
0.681000	36.0	GND	N	10.3	10.0
1.243500	30.4	GND	L1	10.2	15.6
1.347000	31.4	GND	L1	10.2	14.6
1.707000	31.7	GND	L1	10.2	14.3
1.869000	33.1	GND	L1	10.3	12.9

USB Mode, Set.5

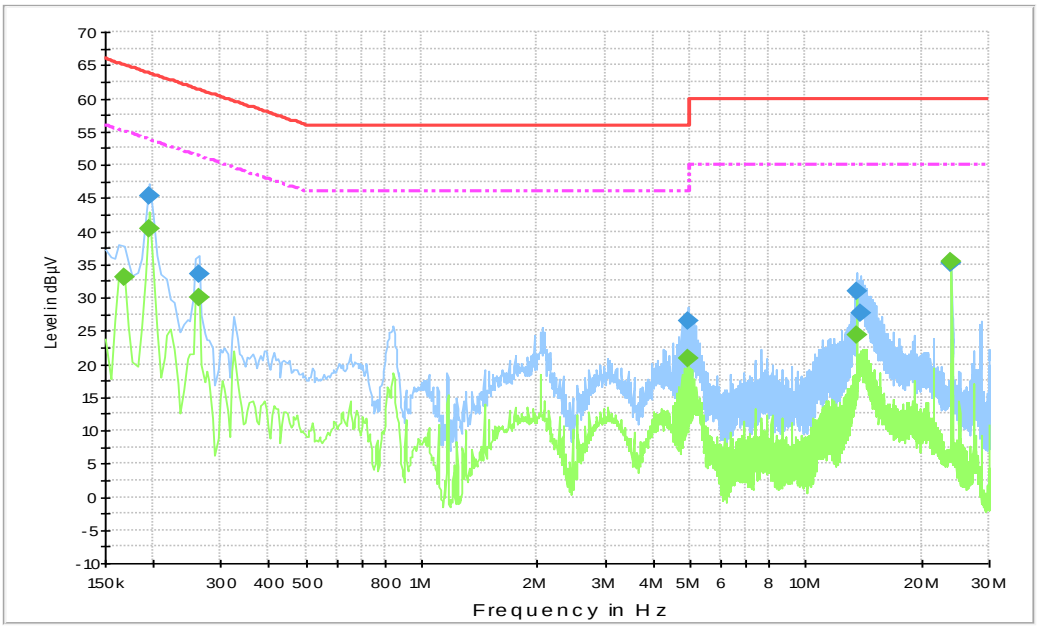


Figure A.4 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.195000	45.2	GND	L1	10.2	18.6
0.262500	33.5	GND	L1	10.2	27.9
4.938000	26.6	GND	L1	10.4	29.4
13.560000	31.1	GND	N	10.7	28.9
13.911000	27.6	GND	N	10.8	32.4
23.968500	35.2	GND	L1	11.3	24.8

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.168000	33.1	GND	L1	10.2	22.0
0.195000	40.4	GND	L1	10.2	13.5
0.262500	30.0	GND	L1	10.2	21.3
4.938000	20.8	GND	L1	10.4	25.2
13.560000	24.4	GND	N	10.7	25.6
23.968500	35.3	GND	L1	11.3	14.7

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).

2016-09-29 through 2017-09-30
Effective Dates

For the National Voluntary Laboratory Accreditation Program

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