



TEST REPORT

No. I19Z60364-EMC01

for

TCL Communication Ltd.

Tablet PC

Model Name: 9027G

FCC ID: 2ACCJBT15

with

Hardware Version: 03

Software Version: E7B

Issued Date: 2019-04-12



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

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I19Z60364-EMC01	Rev.0	1 st edition	2019-04-12

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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.

1.2. Testing Location

CTTL (huayuan North Road)

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

CTTL (BDA)

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

1.3. Testing Environment

Normal Temperature: 15-35°C

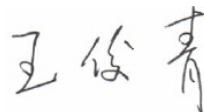
Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2019-03-07

Testing End Date: 2019-03-18

1.5. 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. Certification Manager Information

Company Name: TCL Communication Ltd.
7/F, Block F4, TCL Communication Technology Building, TCL
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2.2. Applicant Information

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2.3. Manufacturer Information

Company Name: TCL Communication Ltd.
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Shenzhen, Guangdong, P.R. China 518052
Contact Person: Gong Zhizhou
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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Tablet PC
Model Name	9027G
FCC ID	2ACCJBT15
Extreme vol. Limits	3.65VDC to 4.3VDC (nominal: 3.9VDC)

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
EUT1	015450000000141	03	E7B

*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	/	inbuilt
AE2	Charger	/	1960364CH006
AE3	Charger	/	1960364CH011
AE4	USB Cable	/	1960364DC006
AE5	USB Cable	/	1960364DC001
AE6	Headset	/	/

AE1

Model	TLp040J1
Manufacturer	BYD
Capacitance	4000mAh
Nominal voltage	3.85V

AE2

Model	CBA0059AGAC5
Manufacturer	PUAN
Length of cable	/

AE3

Model	CBA0059AGAC7
Manufacturer	Chenyang
Length of cable	/

AE4

Model	CDA0000024C8
Manufacturer	/
Length of cable	cm

AE5

Model	CDA0000024C2
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Manufacturer	/
Length of cable	cm
AE6	
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+ AE4/AE5 +AE6	Charger + FM
Set.2	EUT1+ AE1+ AE3+ AE4/AE5	Charger + MP3
Set.3	EUT1+ AE1+ AE4/AE5	USB mode +GPS

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, 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)	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	2020-02-28	1 year
2	Test Receiver	ESCI3	100344	R&S	2020-02-14	1 year
3	Universal Radio Communication Tester	CMW500	116588	R&S	2019-12-26	1 year
4	LISN	ENV216	101200	R&S	2019-04-15	1 year
5	Signal Power	SMBV100A	260613	R&S	2019-12-27	1 year
6	EMI Antenna	VULB 9163	9163-483	Schwarzbeck	2021-08-21	3 years
7	EMI Antenna	3115	00167250	ETS-Lindgren	2020-05-21	3 years
8	PC	M4000e-17	M706GWXD	Lenovo	N/A	N/A
9	Printer	P1606dn	VNC3L52122	HP	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 LENOVO 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): $U = 4.3 \text{ dB}$, $k=2$.

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)	Antenna Pol. (H/V)
17462.233	31.9	-19.2	41.5	9.600	H
17443.533	31.7	-19.2	41.5	9.400	H
17603.333	31.6	-18.9	45.6	4.900	V
17470.167	31.6	-19.2	41.5	9.300	H
17567.067	31.5	-18.9	45.6	4.800	H
17485.467	31.5	-19.2	41.5	9.200	H

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Antenna Pol. (H/V)
17409.533	44.5	-19.2	41.5	22.200	H
17114.867	43.7	-19.8	41.5	22.000	H
17269.000	43.6	-19.5	41.5	21.600	V
17816.400	43.5	-18.5	45.6	16.400	H
17762.000	43.4	-18.5	45.6	16.300	H
17499.633	43.2	-19.2	41.5	20.900	H

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)	Antenna Pol. (H/V)
4960.433	50.1	-34.9	33.1	51.900	H
4961.000	41.7	-34.9	33.1	43.500	H
17970.533	39.9	-17.7	45.6	12.000	V
17821.500	39.8	-18.5	45.6	12.700	H
17856.067	39.7	-18.5	45.6	12.600	H
17902.533	39.7	-18.5	45.6	12.600	H

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Antenna Pol. (H/V)
4960.433	57.5	-34.9	33.1	59.300	H
4961.000	53.5	-34.9	33.1	55.300	H
17476.967	51.3	-19.2	41.5	29.000	V
17916.133	50.7	-17.7	45.6	22.800	H
17762.000	50.6	-18.5	45.6	23.500	H
17810.167	50.5	-18.5	45.6	23.400	H

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)	Antenna Pol. (H/V)
17640.733	32.0	-18.9	45.6	5.300	H
17494.533	32.0	-19.2	41.5	9.700	H
17466.767	32.0	-19.2	41.5	9.700	V
17376.667	31.8	-19.5	41.5	9.800	H
17427.100	31.8	-19.2	41.5	9.500	H
17471.300	31.8	-19.2	41.5	9.500	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)	Antenna Pol. (H/V)
17822.633	43.9	-18.5	45.6	16.800	H
17480.367	43.7	-19.2	41.5	21.400	H
17584.067	43.4	-18.9	45.6	16.700	V
17106.367	43.3	-19.8	41.5	21.600	H
17505.867	43.3	-19.2	45.6	16.900	H
17390.833	43.2	-19.2	41.5	20.900	H

Charging Mode, Set.1

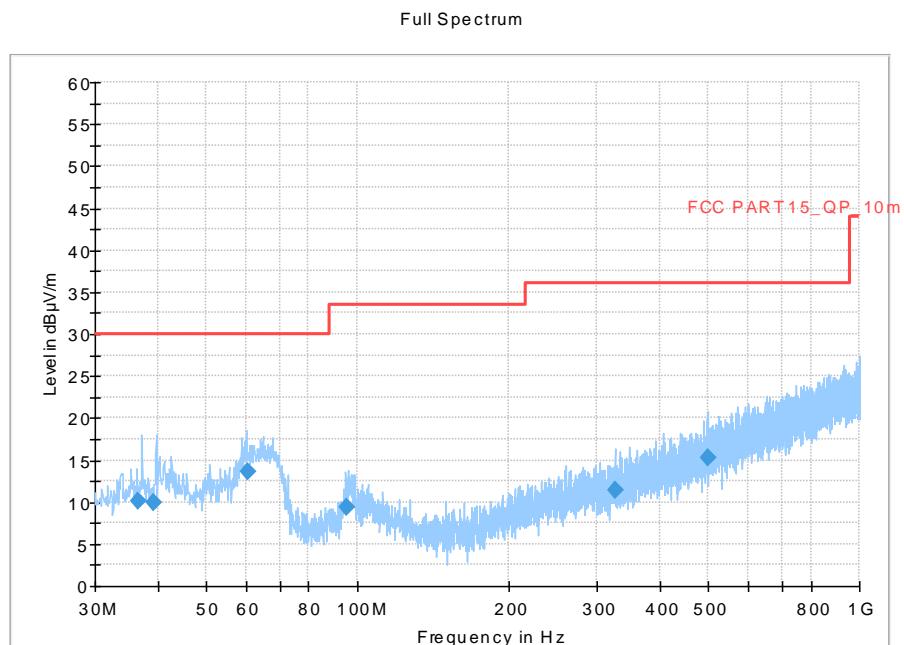


Fig A.1 Radiated Emission from 30MHz to 1GHz

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
36.698000	10.08	30.00	19.92	1000.0	120.000	297.0	V	150.0
39.220000	9.93	30.00	20.07	1000.0	120.000	107.0	V	-23.0
60.393000	13.65	30.00	16.35	1000.0	120.000	108.0	V	204.0
95.216000	9.39	33.50	24.13	1000.0	120.000	325.0	V	-25.0
326.002000	11.34	36.00	24.68	1000.0	120.000	108.0	V	210.0
497.734000	15.25	36.00	20.77	1000.0	120.000	300.0	V	30.0

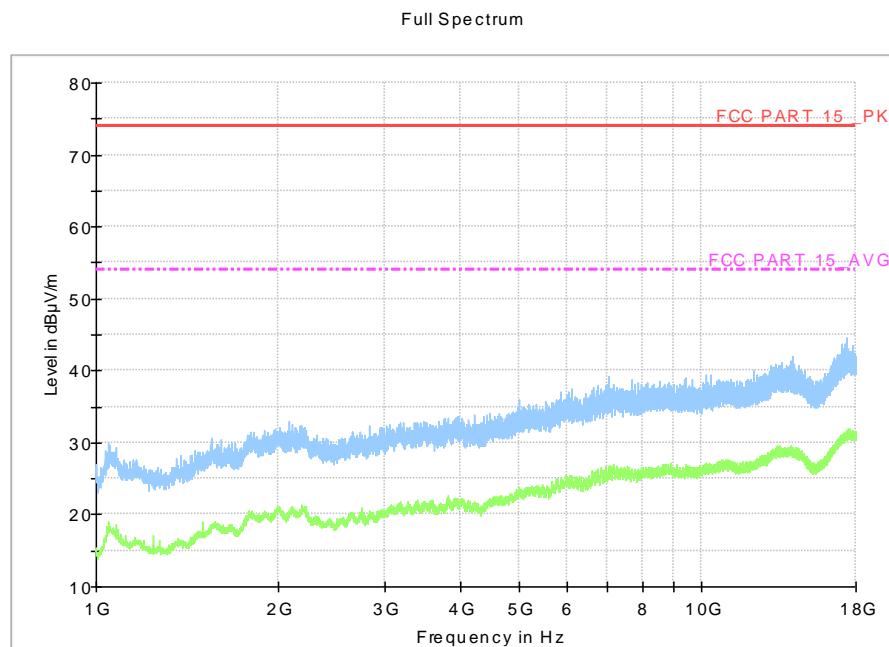


Fig A.2 Radiated Emission from 1GHz to 18GHz

Charging Mode, Set.2

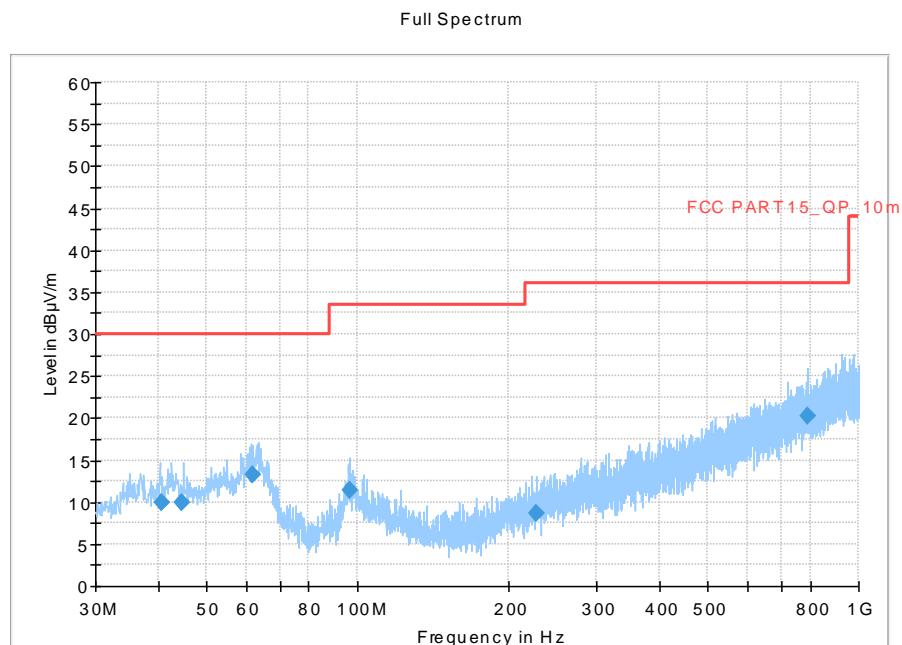


Fig A.3 Radiated Emission from 30MHz to 1GHz

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)
40.762000	9.86	30.00	20.14	1000.0	120.000	116.0	V	73.0
44.458000	9.92	30.00	20.08	1000.0	120.000	317.0	V	-7.0
61.631000	13.29	30.00	16.71	1000.0	120.000	123.0	V	60.0
96.828000	11.36	33.50	22.16	1000.0	120.000	100.0	V	15.0
227.400000	8.68	36.00	27.34	1000.0	120.000	296.0	V	-30.0
791.584000	20.16	36.00	15.86	1000.0	120.000	202.0	V	-29.0

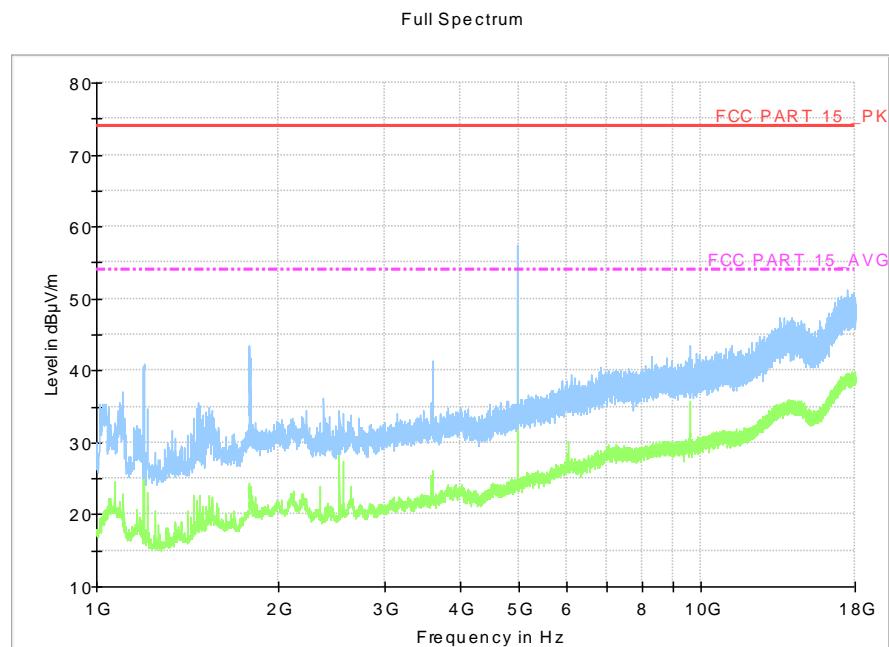
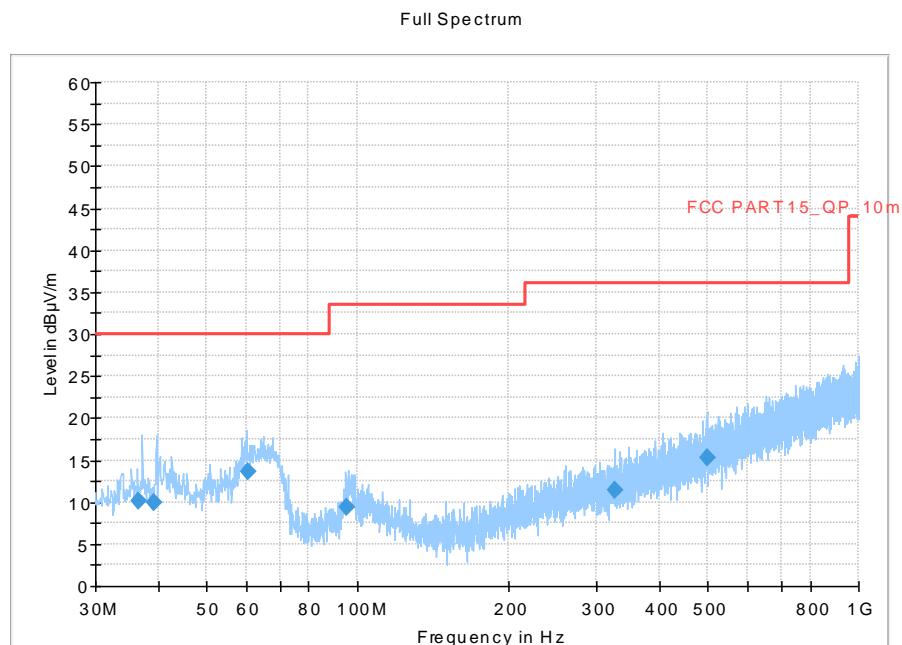


Fig A.4 Radiated Emission from 1GHz to 18GHz

USB Mode, Set.3

Fig A.5 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)
36.698000	10.08	30.00	19.92	1000.0	120.000	297.0	V	150.0
39.220000	9.93	30.00	20.07	1000.0	120.000	107.0	V	-23.0
60.393000	13.65	30.00	16.35	1000.0	120.000	108.0	V	204.0
95.216000	9.39	33.50	24.13	1000.0	120.000	325.0	V	-25.0
326.002000	11.34	36.00	24.68	1000.0	120.000	108.0	V	210.0
497.734000	15.25	36.00	20.77	1000.0	120.000	300.0	V	30.0

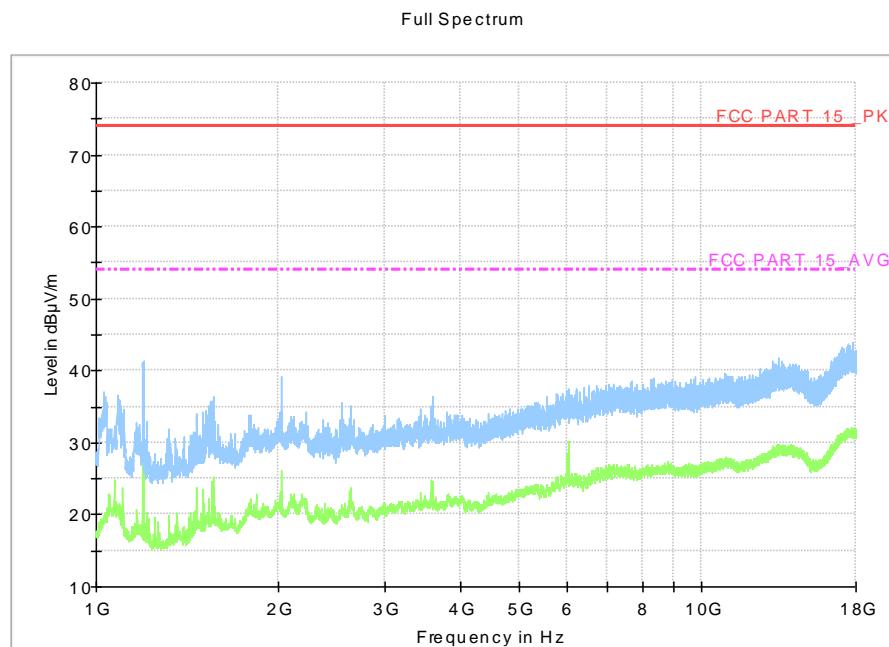


Fig A.6 Radiated Emission from 1GHz to 18GHz

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 LENOVO 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: $U = 2.9 \text{ dB}$, $k=2$.

Charging Mode, Set.1

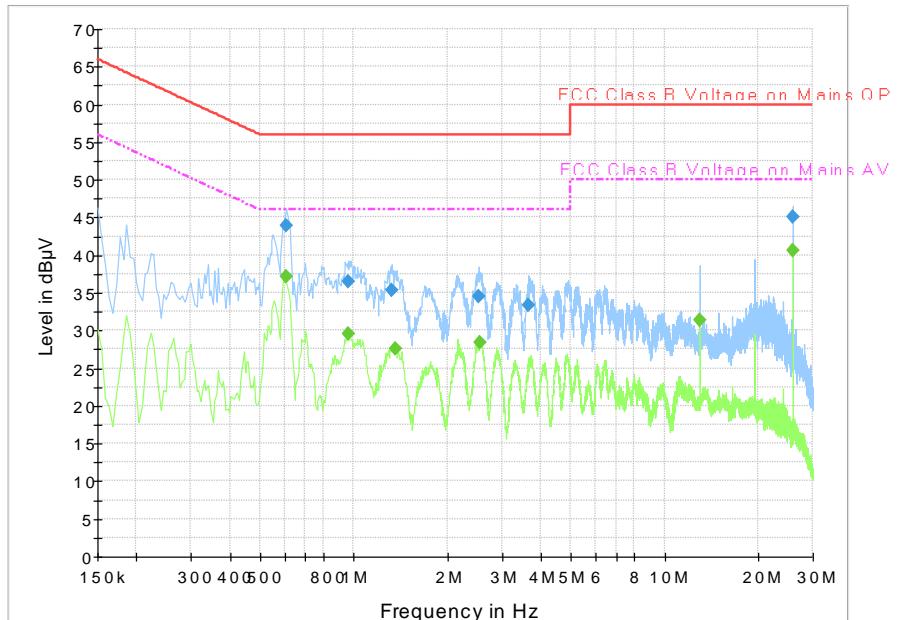


Fig A.7 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.604500	44.0	2000.0	9.000	On	L1	19.8	12.0	56.0	
0.964500	36.5	2000.0	9.000	On	L1	19.6	19.5	56.0	
1.324500	35.3	2000.0	9.000	On	L1	19.6	20.7	56.0	
2.521500	34.6	2000.0	9.000	On	L1	19.7	21.4	56.0	
3.655500	33.4	2000.0	9.000	On	L1	19.6	22.6	56.0	
25.998000	45.1	2000.0	9.000	On	L1	20.1	14.9	60.0	

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.604500	37.1	2000.0	9.000	On	L1	19.8	8.9	46.0	
0.964500	29.6	2000.0	9.000	On	L1	19.6	16.4	46.0	
1.360500	27.6	2000.0	9.000	On	L1	19.6	18.4	46.0	
2.548500	28.4	2000.0	9.000	On	L1	19.7	17.6	46.0	
13.002000	31.4	2000.0	9.000	On	L1	19.9	18.6	50.0	
26.002500	40.6	2000.0	9.000	On	L1	20.1	9.4	50.0	

Charging Mode, Set.2

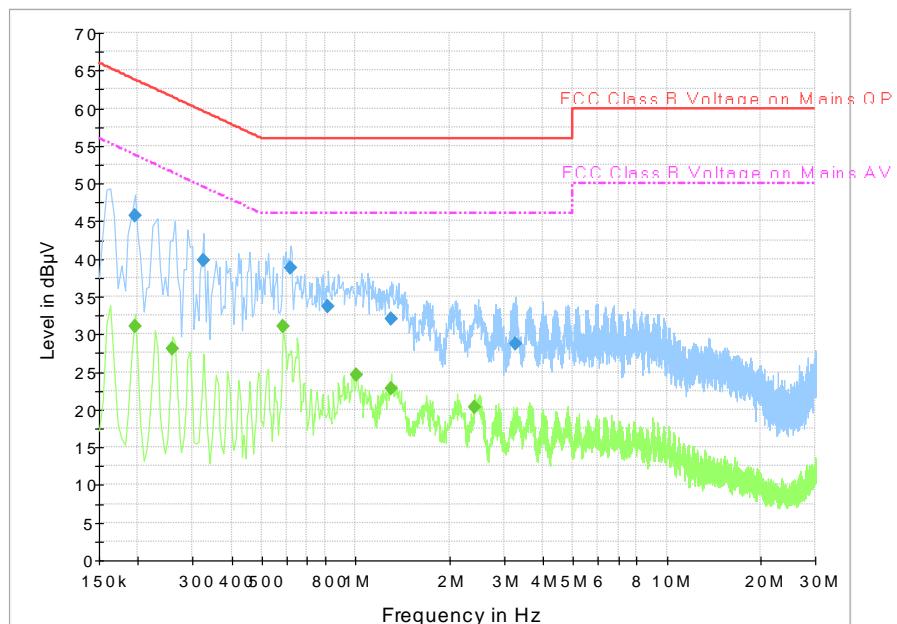


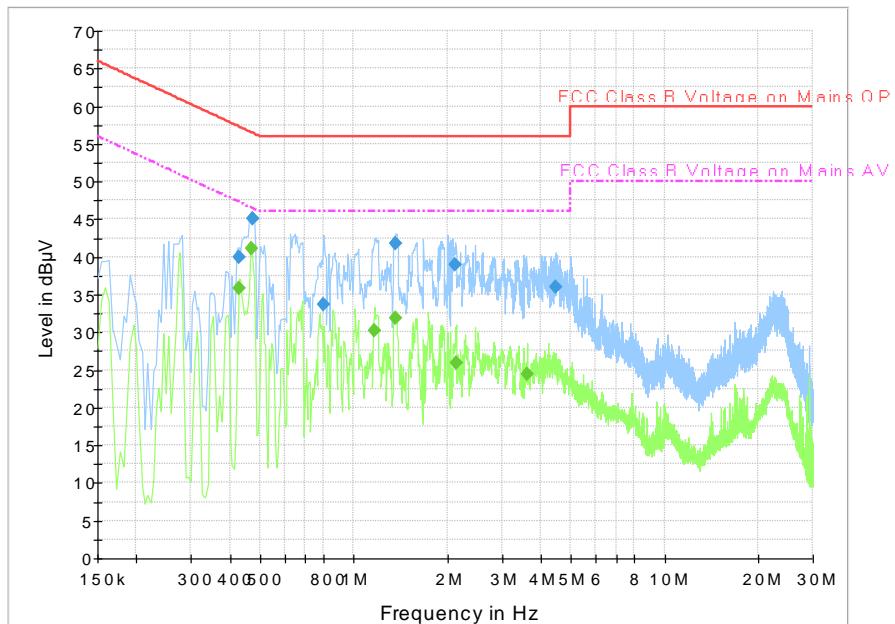
Fig A.8 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.195000	45.8	2000.0	9.000	On	N	19.8	18.1	63.8	
0.325500	39.8	2000.0	9.000	On	N	19.9	19.8	59.6	
0.618000	38.8	2000.0	9.000	On	N	19.9	17.2	56.0	
0.816000	33.8	2000.0	9.000	On	N	19.8	22.2	56.0	
1.302000	32.1	2000.0	9.000	On	L1	19.6	23.9	56.0	
3.255000	28.8	2000.0	9.000	On	L1	19.7	27.2	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.195000	31.1	2000.0	9.000	On	L1	19.8	22.7	53.8	
0.258000	28.0	2000.0	9.000	On	L1	19.8	23.5	51.5	
0.586500	31.1	2000.0	9.000	On	L1	19.9	14.9	46.0	
1.009500	24.6	2000.0	9.000	On	L1	19.6	21.4	46.0	
1.302000	22.8	2000.0	9.000	On	L1	19.6	23.2	46.0	
2.422500	20.4	2000.0	9.000	On	L1	19.7	25.6	46.0	

USB Mode, Set.3

Fig A.9 Conducted Emission
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.429000	39.9	2000.0	9.000	On	N	19.9	17.4	57.3	
0.474000	45.0	2000.0	9.000	On	N	19.9	11.4	56.4	
0.802500	33.7	2000.0	9.000	On	L1	19.7	22.3	56.0	
1.360500	41.8	2000.0	9.000	On	L1	19.6	14.2	56.0	
2.130000	38.9	2000.0	9.000	On	L1	19.7	17.1	56.0	
4.452000	35.9	2000.0	9.000	On	N	19.7	20.1	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.429000	35.8	2000.0	9.000	On	N	19.9	11.5	47.3	
0.469500	41.1	2000.0	9.000	On	N	19.9	5.5	46.5	
1.167000	30.3	2000.0	9.000	On	L1	19.6	15.7	46.0	
1.369500	31.9	2000.0	9.000	On	L1	19.6	14.1	46.0	
2.134500	25.9	2000.0	9.000	On	L1	19.7	20.1	46.0	
3.610500	24.4	2000.0	9.000	On	N	19.7	21.6	46.0	

ANNEX B: Persons involved in this testing

Test Item	Tester
Conducted Continuous Emission	Li Jinpeng
Radiated Continuous Emission	Yan Hancheng

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