



# TEST REPORT

## No. I18Z61163-EMC01

for

**TCL Communication Ltd.**

**Tablet PC**

**Model Name: 9027W**

**FCC ID: 2ACCJBT13**

with

**Hardware Version: 02**

**Software Version: AS2**

**Issued Date: 2018-07-24**



**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](mailto:ctl_terminals@caict.ac.cn), website: [www.caict.ac.cn](http://www.caict.ac.cn)



## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I18Z61163-EMC01	Rev.0	1 <sup>st</sup> edition	2018-07-24



## **CONTENTS**

<b>1. TEST LABORATORY .....</b>	<b>4</b>
<b>1.1. TESTING LOCATION .....</b>	<b>4</b>
<b>1.2. TESTING ENVIRONMENT .....</b>	<b>4</b>
<b>1.3. PROJECT DATA .....</b>	<b>4</b>
<b>1.4. SIGNATURE.....</b>	<b>4</b>
<b>2. CLIENT INFORMATION .....</b>	<b>5</b>
<b>2.1. CERTIFICATION INFORMATION.....</b>	<b>5</b>
<b>2.2. APPLICANT INFORMATION.....</b>	<b>5</b>
<b>2.3. MANUFACTURER INFORMATION.....</b>	<b>5</b>
<b>3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) .....</b>	<b>6</b>
<b>3.1. ABOUT EUT.....</b>	<b>6</b>
<b>3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST .....</b>	<b>6</b>
<b>3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST.....</b>	<b>6</b>
<b>3.4. EUT SET-UPS .....</b>	<b>7</b>
<b>4. REFERENCE DOCUMENTS.....</b>	<b>8</b>
<b>4.1. REFERENCE DOCUMENTS FOR TESTING.....</b>	<b>8</b>
<b>5. LABORATORY ENVIRONMENT.....</b>	<b>9</b>
<b>6. SUMMARY OF TEST RESULTS.....</b>	<b>10</b>
<b>7. TEST EQUIPMENTS UTILIZED.....</b>	<b>11</b>
<b>ANNEX A: MEASUREMENT RESULTS .....</b>	<b>12</b>
<b>ANNEX B: PERSONS INVOLVED IN THIS TESTING .....</b>	<b>23</b>

## **1. Test Laboratory**

### **1.1. 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

### **1.2. Testing Environment**

Normal Temperature: 15-35°C

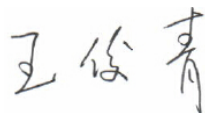
Relative Humidity: 20-75%

### **1.3. Project data**

Testing Start Date: 2018-07-09

Testing End Date: 2018-07-18

### **1.4. Signature**



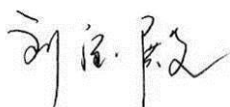
---

**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. Certification Information**

Company Name: TCL Communication Ltd.  
7/F, Block F4, TCL Communication Technology Building, TCL  
Address /Post: International E City, Zhong Shan Yuan Road, Nanshan District,  
Shenzhen, Guangdong, P.R. China 518052  
Contact Person: Danni Yu  
Contact Email: danniyu@tcl.com  
Telephone: 0755 33038371  
Fax: /

### **2.2. Applicant Information**

Company Name: TCL Communication Ltd.  
7/F, Block F4, TCL Communication Technology Building, TCL  
Address /Post: 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: /

### **2.3. Manufacturer Information**

Company Name: TCL Communication Ltd.  
7/F, Block F4, TCL Communication Technology Building, TCL  
Address /Post: 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	Tablet PC
Model Name	9027W
FCC ID	2ACCJBT13
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	015263000000270	02	AS2

\*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	/	18TCT-CH-0515/0516
AE3	Charger	/	18TCT-CH-0531/0535
AE4	USB Cable	/	18TCT-DC-0209/0217
AE5	USB Cable	/	18TCT-DC-0223/0226

##### AE1

Model	TLp040J1
Manufacturer	BYD
Capacitance	4000mAh
Nominal voltage	3.85V

##### AE2

Model	CBA0059AGDC7
Manufacturer	Chenyang
Length of cable	/

##### AE3

Model	CBA0059AGDC5
Manufacturer	PUAN
Length of cable	/

##### AE4

Model	CDA0000024C8
Manufacturer	/
Length of cable	cm

##### AE5

Model	CDA0000024C2
Manufacturer	/
Length of cable	cm



\*AE ID: is used to identify the test sample in the lab internally.  
Note: The USB cables are shielded.

### **3.4. EUT set-ups**

<b>EUT set-up No.</b>	<b>Combination of EUT and AE</b>	<b>Remarks</b>
Set.1	EUT1+ AE1+ AE2+ AE4/AE5	Charger
Set.2	EUT1+ AE1+ AE3+ AE4/AE5	Charger
Set.3	EUT1+ AE1+ AE4/AE5	USB mode

## **4. Reference Documents**

### **4.1. Reference Documents for testing**

The following documents listed in this section are referred for testing.

<b>Reference</b>	<b>Title</b>	<b>Version</b>
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	2019-03-31	1 year
3	Test Receiver	ESC13	100344	R&S	2019-02-28	1 year
4	Universal Radio Communication Tester	CMW500	143008	R&S	2018-12-26	1 year
5	Universal Radio Communication Tester	CMW500	116588	R&S	2018-11-26	1 year
6	LISN	ENV216	101200	R&S	2019-04-15	1 year
7	EMI Antenna	VULB 9163	9163-302	Schwarzbeck	2020-02-27	3 years
8	EMI Antenna	3115	0067250	ETS-Lindgren	2020-05-21	3 years
9	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A	N/A
10	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
11	Keyboard	L100	CN0RH6596589 07ATOI40	DELL	N/A	N/A
12	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 ( $\mu\text{V}/\text{m}$ )		
	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

$G_{\text{PL}}$ : Path Loss

$P_{\text{Mea}}$ : 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 $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Antenna Pol. (H/V)
17985.267	40.5	-25.5	43.4	22.602	H
17992.633	40.1	-25.5	43.4	22.202	H
17984.133	40.0	-25.5	43.4	22.102	V
17980.733	40.0	-25.5	43.4	22.102	H
17866.267	40.0	-25.7	43.4	22.342	H
17978.467	40.0	-25.5	43.4	22.102	H

##### Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Antenna Pol. (H/V)
17992.633	51.6	-25.5	43.4	33.702	H
17994.333	51.5	-25.5	43.4	33.602	H
17975.633	51.3	-25.5	43.4	33.402	V
17990.933	51.3	-25.5	43.4	33.402	H
17993.200	51.2	-25.5	43.4	33.302	H
17995.467	51.2	-25.5	43.4	33.302	H

**Measurement results for Set.2:**

**Charging Mode/Average detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Antenna Pol. (H/V)
17979.033	40.6	-25.5	43.4	22.702	H
17969.967	40.4	-25.5	43.4	22.502	H
17986.967	40.3	-25.5	43.4	22.402	V
17972.800	40.3	-25.5	43.4	22.402	H
17992.633	40.2	-25.5	43.4	22.302	H
17992.067	40.1	-25.5	43.4	22.202	H

**Charging Mode/Peak detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Antenna Pol. (H/V)
17992.067	52.0	-25.5	43.4	34.102	H
17985.267	51.6	-25.5	43.4	33.702	H
17759.167	51.6	-25.7	43.4	33.942	V
17858.333	51.5	-25.7	43.4	33.842	H
17973.933	51.2	-25.5	43.4	33.302	H
17936.533	51.2	-25.5	43.4	33.302	H

**Measurement results for Set.3:**

**USB Mode/Average detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Antenna Pol. (H/V)
17979.600	40.5	-25.5	43.4	22.602	H
17974.500	40.4	-25.5	43.4	22.502	H
17985.267	40.4	-25.5	43.4	22.502	V
17983.567	40.4	-25.5	43.4	22.502	H
17990.933	40.4	-25.5	43.4	22.502	H
17987.533	40.3	-25.5	43.4	22.402	H

**Charging Mode/Peak detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Antenna Pol. (H/V)
1493.000	54.0	-39.8	23.3	70.482	H
1492.433	53.2	-39.8	23.3	69.682	H
1494.133	53.2	-39.8	23.3	69.682	V
1493.567	53.0	-39.8	23.3	69.482	H
17980.167	53.0	-25.5	43.4	35.102	H
1495.267	53.0	-39.8	23.3	69.482	H

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, Set.1

Full Spectrum

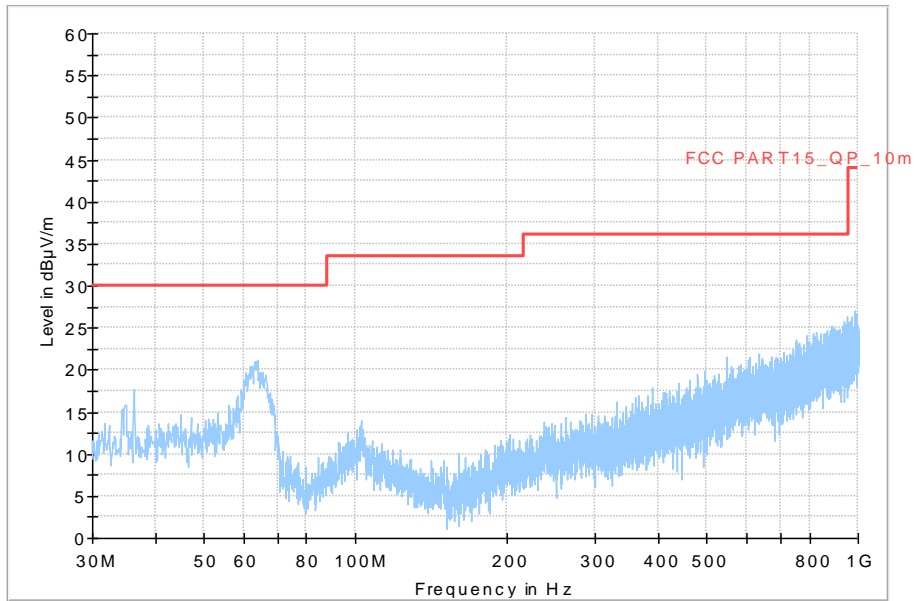


Fig A.1 Radiated Emission from 30MHz to 1GHz

Full Spectrum

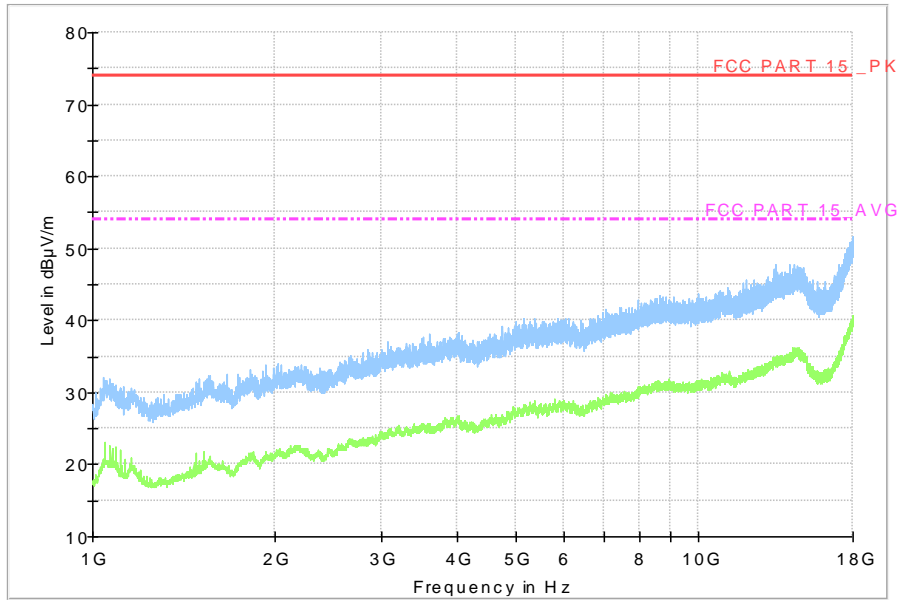


Fig A.2 Radiated Emission from 1GHz to 18GHz



Charging Mode, Set.2

Full Spectrum

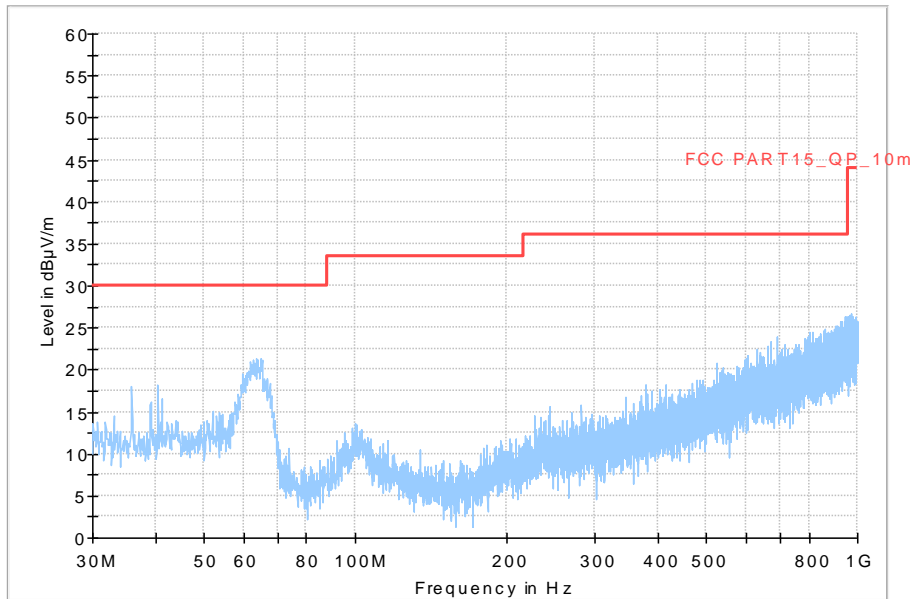


Fig A.3 Radiated Emission from 30MHz to 1GHz

Full Spectrum

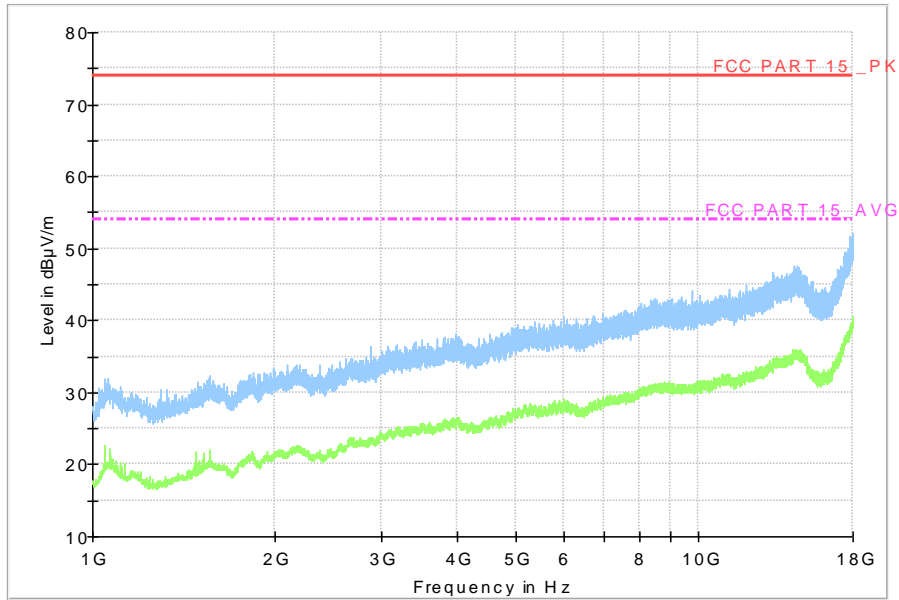


Fig A.4 Radiated Emission from 1GHz to 18GHz

USB Mode, Set.3

Full Spectrum

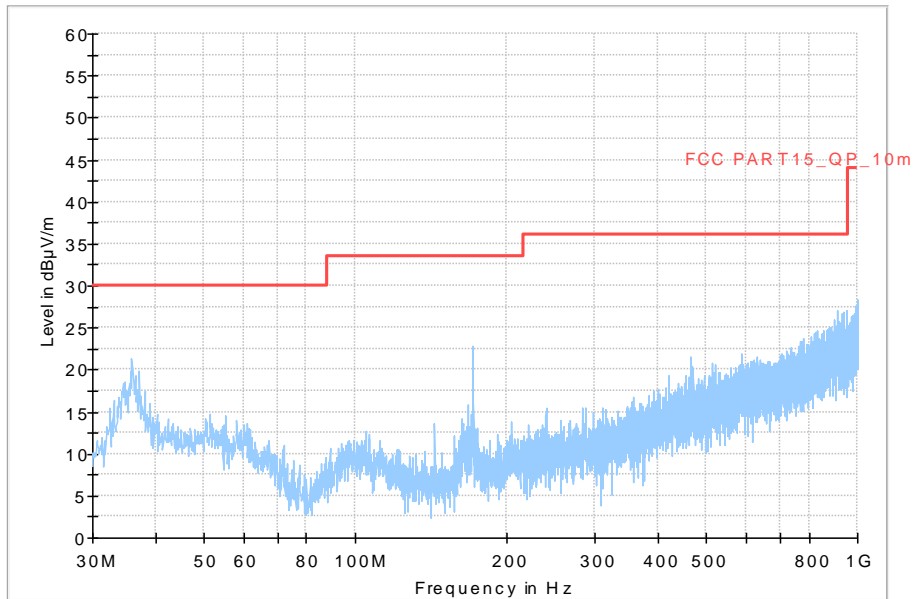


Fig A.5 Radiated Emission from 30MHz to 1GHz

Full Spectrum

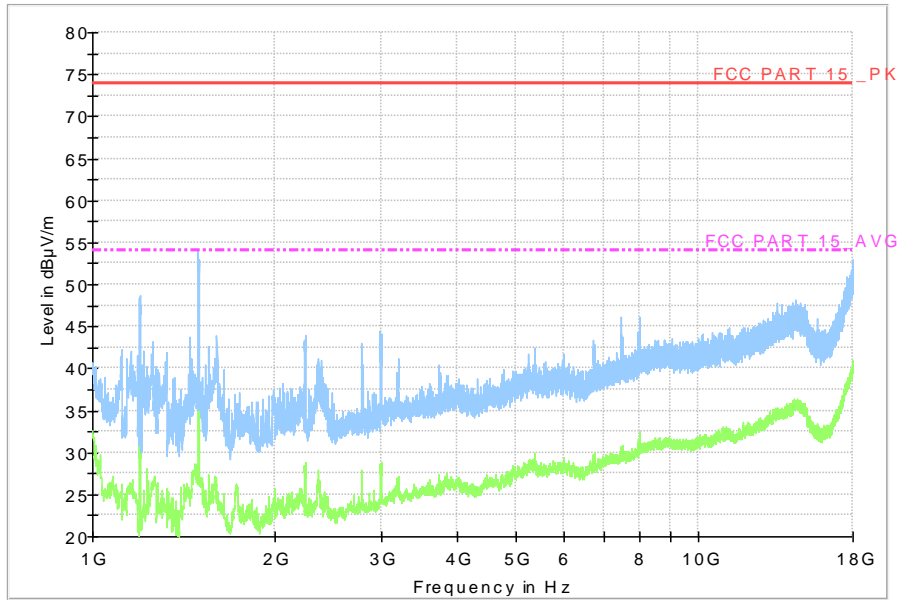


Fig A.6 Radiated Emission from 1GHz to 18GHz

## 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 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 $\mu$ 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

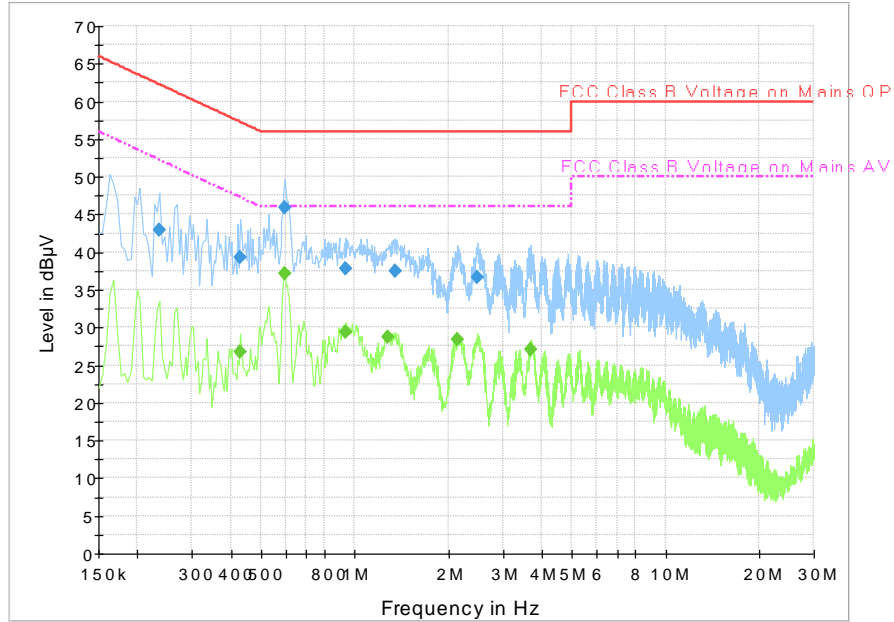


Fig A.7 Conducted Emission

#### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.235500	42.9	2000.0	9.000	On	L1	19.8	19.4	62.3	
0.429000	39.3	2000.0	9.000	On	L1	19.9	18.0	57.3	
0.595500	45.9	2000.0	9.000	On	L1	19.8	10.1	56.0	
0.933000	37.8	2000.0	9.000	On	L1	19.6	18.2	56.0	
1.351500	37.4	2000.0	9.000	On	N	19.6	18.6	56.0	
2.481000	36.7	2000.0	9.000	On	L1	19.7	19.3	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	26.8	2000.0	9.000	On	L1	19.9	20.5	47.3	
0.595500	37.2	2000.0	9.000	On	L1	19.8	8.8	46.0	
0.933000	29.4	2000.0	9.000	On	L1	19.6	16.6	46.0	
1.275000	28.7	2000.0	9.000	On	L1	19.6	17.3	46.0	
2.134500	28.4	2000.0	9.000	On	L1	19.7	17.6	46.0	
3.678000	27.1	2000.0	9.000	On	L1	19.6	18.9	46.0	

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

Charging Mode, Set.2

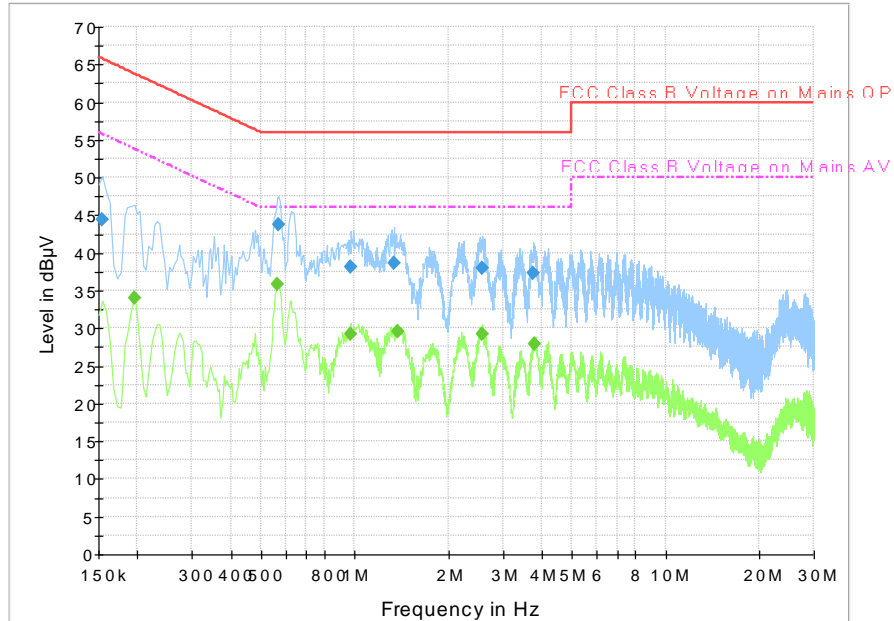


Fig A.8 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.154500	44.3	2000.0	9.000	On	L1	20.0	21.4	65.8	
0.568500	43.8	2000.0	9.000	On	L1	19.9	12.2	56.0	
0.973500	38.2	2000.0	9.000	On	L1	19.6	17.8	56.0	
1.338000	38.6	2000.0	9.000	On	L1	19.6	17.4	56.0	
2.575500	38.0	2000.0	9.000	On	L1	19.7	18.0	56.0	
3.768000	37.4	2000.0	9.000	On	L1	19.6	18.6	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	34.0	2000.0	9.000	On	N	19.8	19.8	53.8	
0.564000	35.8	2000.0	9.000	On	N	19.9	10.2	46.0	
0.973500	29.3	2000.0	9.000	On	L1	19.6	16.7	46.0	
1.374000	29.6	2000.0	9.000	On	L1	19.6	16.4	46.0	
2.571000	29.3	2000.0	9.000	On	L1	19.7	16.7	46.0	
3.790500	27.9	2000.0	9.000	On	L1	19.6	18.1	46.0	

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

USB Mode, Set.3

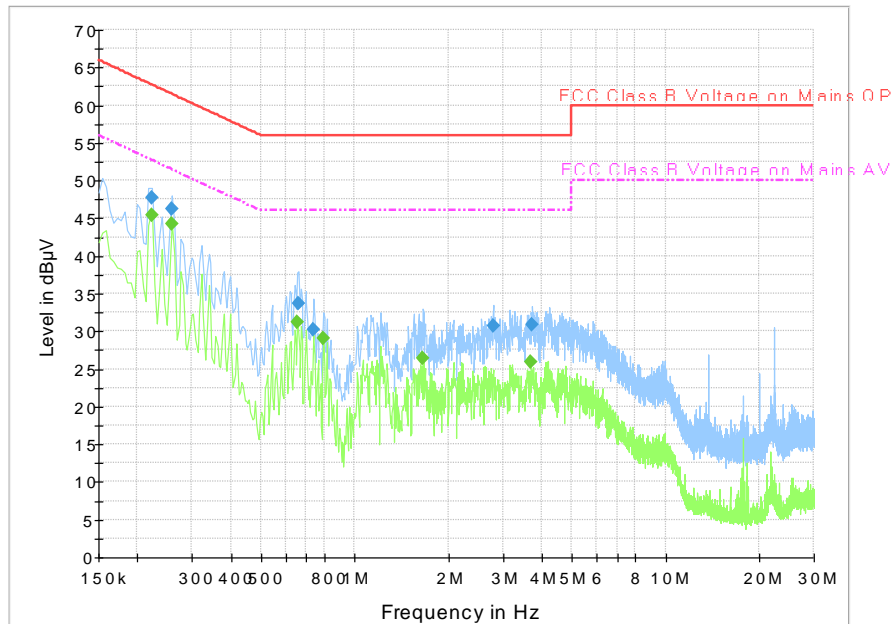


Fig A.9 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.222000	47.7	2000.0	9.000	On	N	19.8	15.1	62.7	
0.258000	46.2	2000.0	9.000	On	N	19.8	15.3	61.5	
0.658500	33.6	2000.0	9.000	On	N	19.9	22.4	56.0	
0.739500	30.2	2000.0	9.000	On	N	19.9	25.8	56.0	
2.787000	30.7	2000.0	9.000	On	N	19.6	25.3	56.0	
3.732000	30.8	2000.0	9.000	On	N	19.7	25.2	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.222000	45.5	2000.0	9.000	On	N	19.8	7.3	52.7	
0.258000	44.3	2000.0	9.000	On	N	19.8	7.2	51.5	
0.654000	31.3	2000.0	9.000	On	N	19.9	14.7	46.0	
0.793500	29.1	2000.0	9.000	On	N	19.8	16.9	46.0	
1.662000	26.4	2000.0	9.000	On	N	19.6	19.6	46.0	
3.691500	25.9	2000.0	9.000	On	N	19.7	20.1	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
Conducted Continuous Emission	Shi Suolan
Radiated Continuous Emission	Shi Suolan

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