

# TEST REPORT No. I18Z60588-EMC01

for

**TCL Communication Ltd.** 

**Tablet PC** 

Model Name: 8067/8068

FCC ID: 2ACCJBT12

with

**Hardware Version: V1.2** 

Software Version: E1H

Issued Date: 2018-05-10



#### 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:**

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## **REPORT HISTORY**

| Report Number   | Revision | Description             | Issue Date |
|-----------------|----------|-------------------------|------------|
| I18Z60588-EMC01 | Rev.0    | 1 <sup>st</sup> edition | 2018-05-08 |
| I18Z60588-EMC01 | Rev.1    | Adding the different on | 2018-05-10 |
|                 |          | both models in P6       |            |



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## 1. Test Laboratory

#### 1.1. Testing Location

CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,

P. R. China 100191

1.2. <u>Testing Environment</u>

Normal Temperature:  $15-35^{\circ}$ C Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2018-04-23 Testing End Date: 2018-04-24

1.4. Signature

张 。

**Zhang Ying** 

(Prepared this test report)

Wang Junqing

(Reviewed this test report)

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**Deputy Director of the laboratory** 

(Approved this test report)



## 2. Client Information

#### 2.1. Applicant Information

Company Name: TCL Communication Ltd.

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#### 2.2. Manufacturer Information

Company Name: TCL Communication Ltd.

7/F, Block F4, TCL Communication Technology Building, TCL

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City: Guangdong
Postal Code: 518052
Country: China

Telephone: 0086-755-36611722

Fax: /



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

#### 3.1. About EUT

Description Tablet PC
Model Name 8067/8068
FCC ID 2ACCJBT12

Extreme vol. Limits 3.4VDC to 4.4VDC (nominal: 3.9VDC)

Note: Components list, please refer to documents of the manufacturer; it is also included in the

original test record of CTTL, CTTL, Telecommunication Technology Labs, CAICT.

Note: The change between 8067 and 8068 is that the 8068 shut off GPS. The 8067 is under

testing.

#### 3.2. Internal Identification of EUT used during the test

| EUT ID* | SN or IMEI      | <b>HW Version</b> | SW Version |
|---------|-----------------|-------------------|------------|
| EUT11   | 7YLC03CQPGB0027 | V1.2              | E1H        |

<sup>\*</sup>EUT ID: is used to identify the test sample in the lab internally.

#### 3.3. <u>Internal Identification of AE used during the test</u>

|   | AE ID*    | Description    | SN            | Remarks       |
|---|-----------|----------------|---------------|---------------|
|   | AE1       | battery        | /             | /             |
|   |           |                |               |               |
|   | AE2       | Travel charger | /             | 18TCT-CH-0201 |
|   | AE3       | Travel charger | /             | 18TCT-CH-0213 |
|   | AE4       | Travel charger | /             | No test       |
|   | AE5       | Travel charger | /             | No test       |
|   | AE6       | Travel charger | /             | No test       |
|   | AE7       | Travel charger | /             | No test       |
|   | AE12      | Travel charger | /             | 18TCT-CH-0200 |
|   | AE13      | Travel charger | /             | 18TCT-CH-0219 |
|   |           |                |               |               |
|   | AE8       | USB Cable      | /             | 18TCT-DC-0070 |
|   | AE9       | USB Cable      | /             | 18TCT-DC-0082 |
|   | AE10      | USB Cable      | /             | /             |
|   | AE11      | USB Cable      | /             | /             |
| Δ | Æ1        |                |               |               |
|   | Model     |                | TLp025F7(CAC2 | 580038C7)     |
|   | Manufactu | urer           | VEKEN         |               |
|   | Capacitar | nce            | 2580 mAh      |               |
|   | Nominal v | oltage         | 3.8V          |               |
|   |           |                |               |               |
| Δ | E2, AE12  |                |               |               |
|   | Model     |                | CBA0058AGAC5  | 5             |
|   | Manufactu | urer           | PUAN          |               |
|   | Length of | cable          | /             |               |
|   |           |                |               |               |



AE3, AE13

Model CBA0058AGAC7
Manufacturer CHENGYANG

Length of cable /

AE4

Model CBA0058AAAC5

Manufacturer PUAN

Length of cable

AE5

Model CBA0058AKAC5

Manufacturer PUAN

Length of cable

AE6

Model CBA0058ACAC5

Manufacturer PUAN

Length of cable

AE7

Model CBA0058AAAC7 Manufacturer CHENGYANG

Length of cable

AE8

Model CDA3122005C2
Manufacturer SHENGHUA

Length of cable 1m

AE9

Model CDA3122005C8

Manufacturer PUAN Length of cable /

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 + AE8    | Charger  |
| Set.2          | EUT1 + AE1 + AE3 + AE9    | Charger  |
| Set.3          | EUT1 + AE1 + AE8          | USB mode |
| Set.4          | EUT1 + AE1 + AE9          | USB mode |

<sup>\*</sup>AE ID: is used to identify the test sample in the lab internally.



## 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                    | 2014    |
|                        | Methods of Measurement of Radio-                  |         |
|                        | Noise Emissions from Low-Voltage                  |         |
|                        | Electrical and Electronic Equipment               |         |
|                        | in the Range of 9 kHz to 40 GHz                   |         |

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:

| S S   |   |
|---|---|
| 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 <sub>VSWR</sub> ) | 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: |    |                |
|------------------------------------|----|----------------|
|                                    | Р  | Pass           |
| Verdict Column                     | NA | Not applicable |
|                                    | F  | Fail           |

| Items | Test Name             | Clause in FCC rules | Section in this report | Verdict | Test<br>Location       |
|-------|-----------------------|---------------------|------------------------|---------|------------------------|
| 1     | Radiated<br>Emission  | 15.109(a)           | B.1                    | Р       | CTTL(Huayuan<br>North) |
| 2     | Conducted<br>Emission | 15.107(a)           | B.2                    | Р       | CTTL(Huayuan<br>North) |



## 7. Test Equipments Utilized

| NO. | Description   | TYPE            | SERIES<br>NUMBER         | MANUFACTURE  | CAL DUE<br>DATE | CALIBRA<br>TION<br>INTERVA<br>L |
|-----|---------------|-----------------|--------------------------|--------------|-----------------|---------------------------------|
| 1   | Test Receiver | ESU26           | 100235                   | R&S          | 2019-03-31      | 1 year                          |
| 2   | Test Receiver | ESCI 7          | 100344                   | R&S          | 2019-02-28      | 1 year                          |
| 5   | LISN          | ENV216          | 101200                   | R&S          | 2019-04-15      | 1 year                          |
| 6   | EMI Antenna   | VULB 9163       | 9163-301                 | Schwarzbeck  | 2019-02-03      | 1 year                          |
| 7   | EMI Antenna   | 3115            | 0067250                  | ETS-Lindgren | 2018-12-31      | 1 year                          |
| 8   | PC            | OPTIPLEX<br>380 | 2X1YV2X                  | DELL         | N/A             | N/A                             |
| 9   | Printer       | P1606dn         | VNC3L52122               | HP           | N/A             | N/A                             |
| 10  | Keyboard      | L100            | CN0RH6596589<br>07ATOI40 | 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 FUT was placed on a non-conductive table. The measurement antenna was placed at a

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 | Field strength limit (μV/m) |      |      |  |  |  |
|-----------------|-----------------------------|------|------|--|--|--|
| (MHz)           | Quasi-peak                  | 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

GA: Antenna factor of receive antenna

G<sub>PL</sub>: Path Loss

P<sub>Mea</sub>: Measurement result on receiver.

Measurement uncertainty (worst case): U = 4.3 dB, k=2.

The W of antenna 3115 is 177 cm for 1-7GHz, the height of antenna is 1.5m.

The W of antenna 3115 is 47 cm for 7-18GHz, the height of antenna is 1.5m.

#### Measurement results for Set.1:

#### **Charging Mode/Average detector**

| Fraguency | Measurement | Cable | Antenna | Receiver | Limit    | Antenna |
|-----------|-------------|-------|---------|----------|----------|---------|
| Frequency | Result      | loss  | Factor  | Reading  |          | Pol.    |
| (MHz)     | (dBµV/m)    | (dB)  | (dB/m)  | (dBμV)   | (dBμV/m) | (H/V)   |
| 17875.333 | 38.1        | -18.5 | 45.6    | 11.0     | 54.0     | Н       |
| 17400.467 | 37.6        | -19.2 | 41.5    | 15.3     | 54.0     | Н       |
| 17390.833 | 37.6        | -19.2 | 41.5    | 15.3     | 54.0     | V       |
| 17473.567 | 37.6        | -19.2 | 41.5    | 15.3     | 54.0     | Н       |
| 17386.867 | 37.5        | -19.5 | 41.5    | 15.5     | 54.0     | Н       |
| 17892.900 | 37.5        | -18.5 | 45.6    | 10.4     | 54.0     | Н       |

#### **Charging Mode/Peak detector**

| Frequency<br>(MHz) | Measurement<br>Result<br>(dBμV/m) | Cable<br>loss<br>(dB) | Antenna<br>Factor<br>(dB/m) | Receiver<br>Reading<br>(dBµV) | Limit<br>(dBµV/m) | Antenna<br>Pol.<br>(H/V) |
|--------------------|-----------------------------------|-----------------------|-----------------------------|-------------------------------|-------------------|--------------------------|
| 17784.100          | 50.2                              | -18.5                 | 45.6                        | 23.1                          | 74.0              | Н                        |
| 17783.533          | 49.5                              | -18.5                 | 45.6                        | 22.4                          | 74.0              | Н                        |
| 17810.167          | 49.3                              | -18.5                 | 45.6                        | 22.2                          | 74.0              | V                        |
| 17344.933          | 49.1                              | -19.5                 | 41.5                        | 27.1                          | 74.0              | Н                        |
| 17444.100          | 49.1                              | -19.2                 | 41.5                        | 26.8                          | 74.0              | Н                        |
| 17879.867          | 49.0                              | -18.5                 | 45.6                        | 21.9                          | 74.0              | Н                        |



## Measurement results for Set.2: Charging Mode/Average detector

| Frequency<br>(MHz) | Measurement<br>Result<br>(dBµV/m) | Cable<br>loss<br>(dB) | Antenna<br>Factor<br>(dB/m) | Receiver<br>Reading<br>(dBμV) | Limit<br>(dBµV/m) | Antenna<br>Pol.<br>(H/V) |
|--------------------|-----------------------------------|-----------------------|-----------------------------|-------------------------------|-------------------|--------------------------|
| 17892.900          | 37.9                              | -18.5                 | 45.6                        | 10.8                          | 54.0              | Н                        |
| 17452.600          | 37.6                              | -19.2                 | 41.5                        | 15.3                          | 54.0              | Н                        |
| 17488.867          | 37.6                              | -19.2                 | 41.5                        | 15.3                          | 54.0              | V                        |
| 17392.533          | 37.6                              | -19.2                 | 41.5                        | 15.3                          | 54.0              | Н                        |
| 17474.700          | 37.6                              | -19.2                 | 41.5                        | 15.3                          | 54.0              | Н                        |
| 17445.800          | 37.6                              | -19.2                 | 41.5                        | 15.3                          | 54.0              | Н                        |

#### **Charging Mode/Peak detector**

| <u> </u>           | on oak actoolo |       |         |          |          |         |
|--------------------|----------------|-------|---------|----------|----------|---------|
| Fraguancy          | Measurement    | Cable | Antenna | Receiver | Limit    | Antenna |
| Frequency<br>(MHz) | Result         | loss  | Factor  | Reading  |          | Pol.    |
| (IVITIZ)           | (dBµV/m)       | (dB)  | (dB/m)  | (dBμV)   | (dBμV/m) | (H/V)   |
| 17490.000          | 49.7           | -19.2 | 41.5    | 27.4     | 74.0     | Н       |
| 17881.000          | 49.6           | -18.5 | 45.6    | 22.5     | 74.0     | Н       |
| 17399.333          | 49.5           | -19.2 | 41.5    | 27.2     | 74.0     | V       |
| 17411.233          | 49.4           | -19.2 | 41.5    | 27.1     | 74.0     | Н       |
| 17935.967          | 49.3           | -17.7 | 45.6    | 21.4     | 74.0     | Н       |
| 17856.067          | 49.2           | -18.5 | 45.6    | 22.1     | 74.0     | Н       |



## Measurement results for Set.3: Charging Mode/Average detector

| Frequency<br>(MHz) | Measurement<br>Result<br>(dBμV/m) | Cable<br>loss<br>(dB) | Antenna<br>Factor<br>(dB/m) | Receiver<br>Reading<br>(dBμV) | Limit<br>(dBµV/m) | Antenna<br>Pol.<br>(H/V) |
|--------------------|-----------------------------------|-----------------------|-----------------------------|-------------------------------|-------------------|--------------------------|
| 17787.500          | 37.9                              | -18.5                 | 45.6                        | 10.8                          | 54.0              | Н                        |
| 17385.167          | 37.8                              | -19.5                 | 41.5                        | 15.8                          | 54.0              | Н                        |
| 17850.400          | 37.8                              | -18.5                 | 45.6                        | 10.7                          | 54.0              | V                        |
| 17861.733          | 37.8                              | -18.5                 | 45.6                        | 10.7                          | 54.0              | Н                        |
| 17474.133          | 37.8                              | -19.2                 | 41.5                        | 15.5                          | 54.0              | Н                        |
| 17802.800          | 37.7                              | -18.5                 | 45.6                        | 10.6                          | 54.0              | Н                        |

#### **Charging Mode/ Peak detector**

| onal ging mou      | ci i can acteore | <b>^-</b> |         |          |          |         |
|--------------------|------------------|-----------|---------|----------|----------|---------|
| Fraguency          | Measurement      | Cable     | Antenna | Receiver | Limit    | Antenna |
| Frequency<br>(MHz) | Result           | loss      | Factor  | Reading  |          | Pol.    |
| (IVITZ)            | (dBµV/m)         | (dB)      | (dB/m)  | (dBμV)   | (dBμV/m) | (H/V)   |
| 17918.400          | 50.1             | -17.7     | 45.6    | 22.2     | 74.0     | Н       |
| 17478.667          | 50.0             | -19.2     | 41.5    | 27.7     | 74.0     | Н       |
| 17793.167          | 49.7             | -18.5     | 45.6    | 22.6     | 74.0     | V       |
| 17383.467          | 49.5             | -19.5     | 41.5    | 27.5     | 74.0     | Н       |
| 17361.933          | 49.4             | -19.5     | 41.5    | 27.4     | 74.0     | Н       |
| 17850.400          | 49.2             | -18.5     | 45.6    | 22.1     | 74.0     | Н       |



#### **Measurement results for Set.4:**

#### **USB Mode/Average detector**

| Eroguonov | Measurement | Cable | Antenna | Receiver | Limit    | Antenna |
|-----------|-------------|-------|---------|----------|----------|---------|
| Frequency | Result      | loss  | Factor  | Reading  |          | Pol.    |
| (MHz)     | (dBμV/m)    | (dB)  | (dB/m)  | (dBμV)   | (dBμV/m) | (H/V)   |
| 17405.000 | 37.9        | -19.2 | 41.5    | 15.6     | 54.0     | Н       |
| 17902.533 | 37.8        | -18.5 | 45.6    | 10.7     | 54.0     | Н       |
| 17880.433 | 37.8        | -18.5 | 45.6    | 10.7     | 54.0     | V       |
| 17886.667 | 37.7        | -18.5 | 45.6    | 10.6     | 54.0     | Н       |
| 17391.400 | 37.7        | -19.2 | 41.5    | 15.4     | 54.0     | Н       |
| 17397.067 | 37.6        | -19.2 | 41.5    | 15.3     | 54.0     | Н       |

#### **USB Mode/ Peak detector**

| Fraguancy          | Measurement | Cable | Antenna | Receiver | Limit    | Antenna |
|--------------------|-------------|-------|---------|----------|----------|---------|
| Frequency<br>(MHz) | Result      | loss  | Factor  | Reading  |          | Pol.    |
| (IVITIZ)           | (dBµV/m)    | (dB)  | (dB/m)  | (dBμV)   | (dBμV/m) | (H/V)   |
| 17808.467          | 49.5        | -18.5 | 45.6    | 22.4     | 74.0     | Н       |
| 17888.933          | 49.3        | -18.5 | 45.6    | 22.2     | 74.0     | Н       |
| 17388.000          | 49.2        | -19.2 | 41.5    | 26.9     | 74.0     | V       |
| 17778.433          | 49.1        | -18.5 | 45.6    | 22.0     | 74.0     | Н       |
| 17862.867          | 49.1        | -18.5 | 45.6    | 22.0     | 74.0     | Н       |
| 17439.000          | 49.1        | -19.2 | 41.5    | 26.8     | 74.0     | Н       |

Note: The measurement results of Set.1, Set.2, Set.3 and Set.4 showed here are worst cases of the combinations of different USB cables.



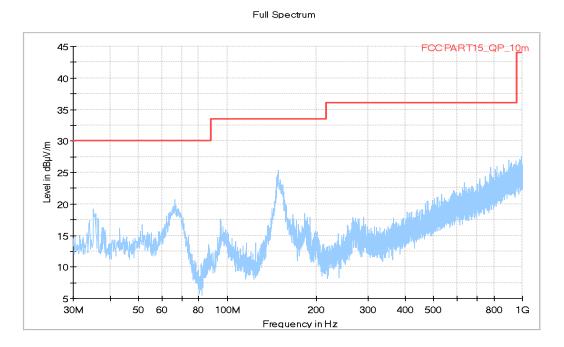


Fig A.1 Radiated Emission from 30MHz to 1GHz

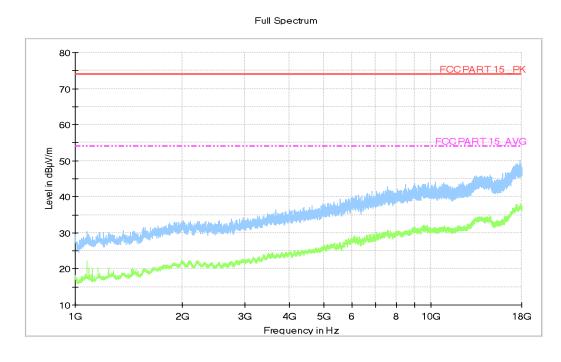


Fig A.2 Radiated Emission from 1GHz to 18GHz



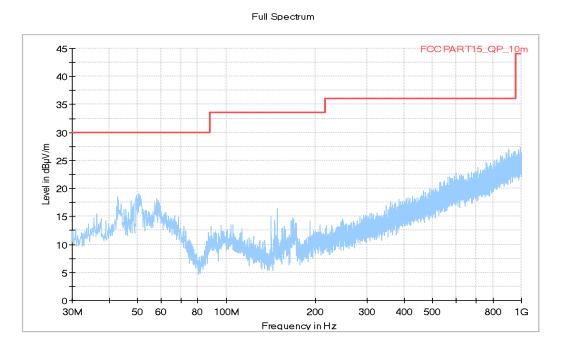


Fig A.3 Radiated Emission from 30MHz to 1GHz

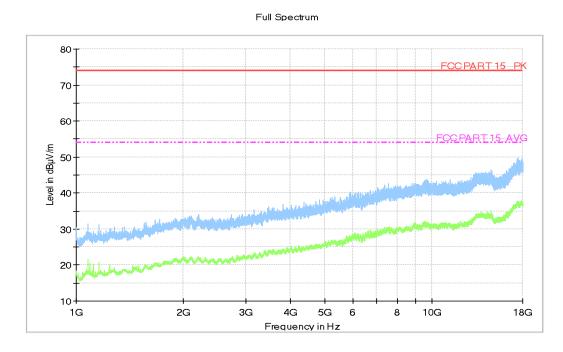


Fig A.4 Radiated Emission from 1GHz to 18GHz



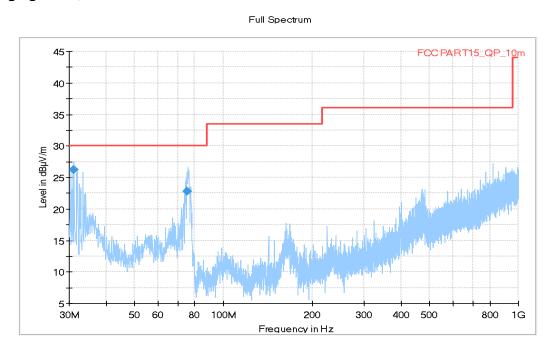


Fig A.5 Radiated Emission from 30MHz to 1GHz

#### **Final Result 1**

| Frequency | QuasiPeak | Limit   | Margin | Height | Pol | Azimuth |
|-----------|-----------|---------|--------|--------|-----|---------|
| (MHz)     | (dB礦/m)   | (dB礦/m) | (dB)   | (cm)   |     | (deg)   |
| 31.104000 | 26.19     | 30.00   | 3.81   | 211.0  | ٧   | 210.0   |
| 75.558000 | 22.74     | 30.00   | 7.26   | 225.0  | V   | 106.0   |

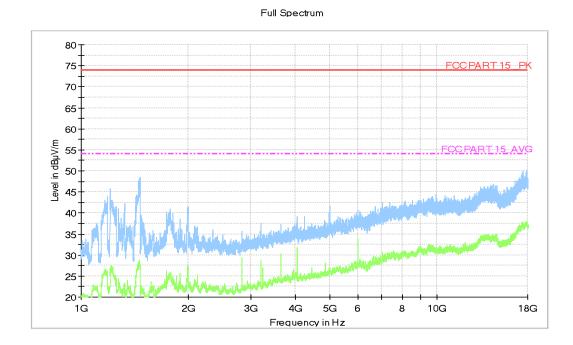


Fig A.6 Radiated Emission from 1GHz to 18GHz



#### **USB Mode, Set.4**

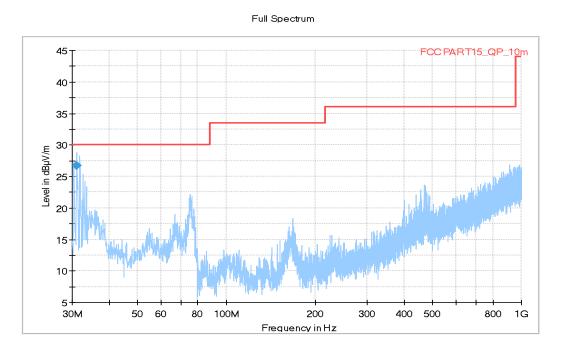


Fig A.7 Radiated Emission from 30MHz to 1GHz

Full Spectrum

#### Final\_Result

| Frequency | QuasiPeak | Limit   | Margin | Height | Pol | Azimuth |
|-----------|-----------|---------|--------|--------|-----|---------|
| (MHz)     | (dB礦/m)   | (dB礦/m) | (dB)   | (cm)   |     | (deg)   |
| 31.067000 | 26.75     | 30.00   | 3.25   | 100.0  | ٧   | 210.0   |

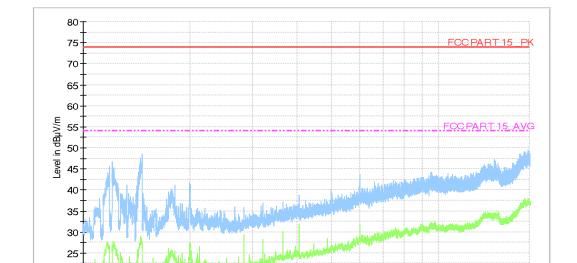


Fig A.8 Radiated Emission from 1GHz to 18GHz

Frequency in Hz

18G



## 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

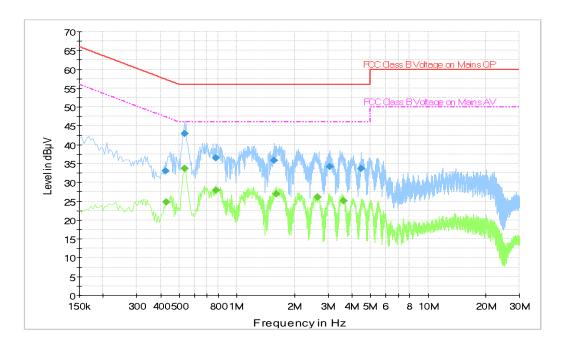


Fig A.9 Conducted Emission

#### **Final Result 1**

| Frequency | QuasiPeak | Line | Corr. | Margin | Limit  |
|-----------|-----------|------|-------|--------|--------|
| (MHz)     | (dBµV)    |      | (dB)  | (dB)   | (dBµV) |
| 0.424500  | 33.0      | L1   | 19.9  | 24.3   | 57.4   |
| 0.532500  | 42.9      | L1   | 19.9  | 13.1   | 56.0   |
| 0.780000  | 36.6      | L1   | 19.7  | 19.4   | 56.0   |
| 1.572000  | 35.9      | L1   | 19.7  | 20.1   | 56.0   |
| 3.075000  | 34.2      | L1   | 19.7  | 21.8   | 56.0   |
| 4.461000  | 33.7      | L1   | 19.6  | 22.3   | 56.0   |

#### Final Result 2

| Frequency | Average | Line | Corr. | Margin | Limit  |
|-----------|---------|------|-------|--------|--------|
| (MHz)     | (dBµV)  |      | (dB)  | (dB)   | (dBµV) |
| 0.429000  | 24.8    | L1   | 19.9  | 22.5   | 47.3   |
| 0.532500  | 33.6    | L1   | 19.9  | 12.4   | 46.0   |
| 0.780000  | 28.0    | L1   | 19.7  | 18.0   | 46.0   |
| 1.617000  | 26.9    | L1   | 19.7  | 19.1   | 46.0   |
| 2.643000  | 26.1    | L1   | 19.7  | 19.9   | 46.0   |
| 3.610500  | 25.2    | L1   | 19.6  | 20.8   | 46.0   |

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



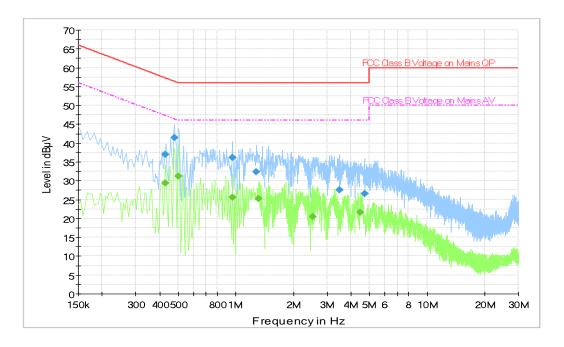


Fig A.10 Conducted Emission

#### **Final Result 1**

| F         | O:D!-     |      | 0     | Manada | 1 : :- |
|-----------|-----------|------|-------|--------|--------|
| Frequency | QuasiPeak | Line | Corr. | Margin | Limit  |
| (MHz)     | (dBµV)    |      | (dB)  | (dB)   | (dBµV) |
| 0.429000  | 36.9      | L1   | 19.9  | 20.3   | 57.3   |
| 0.478500  | 41.4      | N    | 19.9  | 15.0   | 56.4   |
| 0.960000  | 36.1      | L1   | 19.6  | 19.9   | 56.0   |
| 1.279500  | 32.3      | N    | 19.6  | 23.7   | 56.0   |
| 3.471000  | 27.6      | N    | 19.7  | 28.4   | 56.0   |
| 4.704000  | 26.5      | N    | 19.7  | 29.5   | 56.0   |

#### Final Result 2

| Frequency | Average | Line | Corr. | Margin | Limit  |
|-----------|---------|------|-------|--------|--------|
| (MHz)     | (dBµV)  |      | (dB)  | (dB)   | (dBµV) |
| 0.429000  | 29.4    | L1   | 19.9  | 17.8   | 47.3   |
| 0.501000  | 31.3    | L1   | 19.9  | 14.7   | 46.0   |
| 0.960000  | 25.7    | L1   | 19.6  | 20.3   | 46.0   |
| 1.320000  | 25.2    | L1   | 19.6  | 20.8   | 46.0   |
| 2.535000  | 20.4    | L1   | 19.7  | 25.6   | 46.0   |
| 4.456500  | 21.5    | L1   | 19.6  | 24.5   | 46.0   |

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



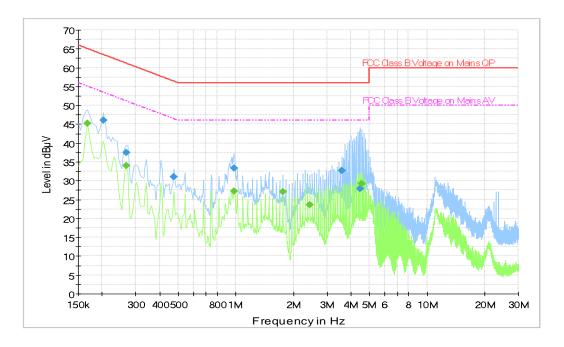


Fig A.11 Conducted Emission

#### **Final Result 1**

| Frequency | QuasiPeak | Line | Corr. | Margin | Limit  |
|-----------|-----------|------|-------|--------|--------|
| (MHz)     | (dBµV)    |      | (dB)  | (dB)   | (dBµV) |
| 0.204000  | 46.1      | L1   | 19.8  | 17.3   | 63.4   |
| 0.267000  | 37.4      | L1   | 19.8  | 23.8   | 61.2   |
| 0.474000  | 31.0      | L1   | 19.9  | 25.4   | 56.4   |
| 0.978000  | 33.3      | L1   | 19.6  | 22.7   | 56.0   |
| 3.597000  | 32.7      | N    | 19.7  | 23.3   | 56.0   |
| 4.474500  | 27.9      | N    | 19.7  | 28.1   | 56.0   |

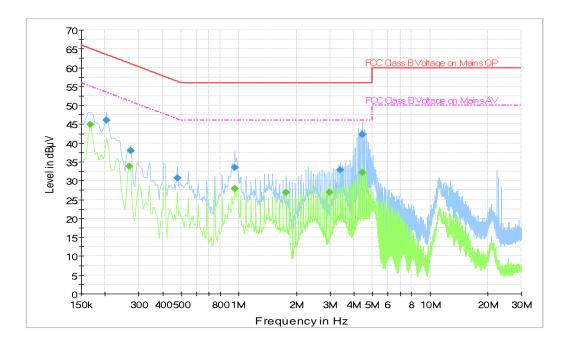
#### Final Result 2

| Frequency | Average | Line | Corr. | Margin | Limit  |
|-----------|---------|------|-------|--------|--------|
| (MHz)     | (dBµV)  |      | (dB)  | (dB)   | (dBµV) |
| 0.168000  | 45.3    | N    | 19.8  | 9.8    | 55.1   |
| 0.267000  | 34.0    | L1   | 19.8  | 17.3   | 51.2   |
| 0.982500  | 27.3    | L1   | 19.6  | 18.7   | 46.0   |
| 1.765500  | 27.0    | N    | 19.6  | 19.0   | 46.0   |
| 2.440500  | 23.7    | L1   | 19.7  | 22.3   | 46.0   |
| 4.546500  | 29.3    | N    | 19.7  | 16.7   | 46.0   |

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



#### **USB Mode, Set.4**



#### **Final Result 1**

| Frequency | QuasiPeak | Line | Corr. | Margin | Limit  |
|-----------|-----------|------|-------|--------|--------|
| (MHz)     | (dBµV)    |      | (dB)  | (dB)   | (dBµV) |
| 0.204000  | 46.1      | L1   | 19.8  | 17.4   | 63.4   |
| 0.271500  | 37.9      | L1   | 19.8  | 23.1   | 61.1   |
| 0.478500  | 30.6      | L1   | 19.9  | 25.7   | 56.4   |
| 0.951000  | 33.5      | N    | 19.7  | 22.5   | 56.0   |
| 3.403500  | 32.9      | N    | 19.7  | 23.1   | 56.0   |
| 4.425000  | 42.3      | N    | 19.7  | 13.7   | 56.0   |

#### Final Result 2

| Frequency | Average | Line | Corr. | Margin | Limit  |
|-----------|---------|------|-------|--------|--------|
| (MHz)     | (dBµV)  |      | (dB)  | (dB)   | (dBµV) |
| 0.168000  | 45.0    | L1   | 19.8  | 10.1   | 55.1   |
| 0.267000  | 33.9    | L1   | 19.8  | 17.3   | 51.2   |
| 0.955500  | 27.8    | N    | 19.7  | 18.2   | 46.0   |
| 1.770000  | 27.0    | N    | 19.6  | 19.0   | 46.0   |
| 2.994000  | 26.9    | L1   | 19.7  | 19.1   | 46.0   |
| 4.425000  | 32.1    | N    | 19.7  | 13.9   | 46.0   |

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

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