# FCC PART 15B
# TEST REPORT

## No. 23T04Z80619-06

**for**

**TCL Communication Ltd.**

**GSM/UMTS/LTE mobile phone**

**Model name: T509A**

**FCC ID: 2ACCJB216**

**with**

**Hardware Version: 05**

**Software Version: BL3F**

**Issued Date: 2023-12-29**

**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.

**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 |
|---|---|---|---|
| 23T04Z80619-06 | Rev.0 | 1st edition | 2023-12-29 |
| | | | |
| | | | |

Note: the latest revision of the test report supersedes all previous version.

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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. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

## 1.3. Project data

Testing Start Date: 2023-12-26

Testing End Date: 2023-12-28

## 1.4. Signature

**Wang Xue**

**(Prepared this test report)**

**Zhang Ying**

**(Reviewed this test report)**

**Zhang Xia**

**(Approved this test report)**

# 2. Client Information

## 2.1. Applicant Information

| | |
|---|---|
| Company Name: | TCL Communication Ltd. |
| Address: | 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong |
| Contact | Annie Jiang |
| Email | nianxiang.jiang@tcl.com |
| Tel. | +86 755 3661 1621 |
| Fax: | +86 755 3661 2000-81722 |

## 2.2. Manufacturer Information

| | |
|---|---|
| Company Name: | TCL Communication Ltd. |
| Address: | 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong |
| Contact | Annie Jiang |
| Email | nianxiang.jiang@tcl.com |
| Tel. | +86 755 3661 1621 |
| Fax: | +86 755 3661 2000-81722 |

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

## 3.1. About EUT

| | |
|---|---|
| Description | GSM/UMTS/LTE mobile phone |
| Model Name | T509A |
| FCC ID: | 2ACCJB216 |

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 |
|---|---|---|---|
| EUT1 | 358401410000754 | 05 | BL3F |

*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 | Model | Manufacture | Remark |
|---|---|---|---|---|
| AE1 | Battery | TLp049B8 | GanFeng | / |
| AE2 | Charger1 | CG10A0502000UU | Juwei | / |
| AE3 | Charger2 | UT-681A-5200ZCY | Baijunda | / |
| AE4 | Charger3 | CG10A0502000EU | Juwei | No test required |
| AE5 | Charger4 | UT-681E-5200ZCY | Baijunda | No test required |
| AE6 | Charger5 | UT-681B-5200ZCY | Baijunda | No test required |
| AE7 | Charger6 | UT-580S-5200ZY | Baijunda | No test required |
| AE8 | Charger7 | UT-580T-5200ZY | Baijunda | No test required |
| AE9 | USB Cable1 | JWUB1686-M01R | Juwei | / |
| AE10 | USB Cable2 | FKY-23-367 | Fukangyuan | / |
| AE11 | Headset | JWEP1295-M01R | Juwei | / |

*AE ID: is used to identify the test sample in the lab internally.

## 3.4. EUT set-ups

| EUT set-up No. | Combination of EUT and AE | Remarks |
|---|---|---|
| Set.1 | EUT1 + AE1 +AE2+AE13/AE14 | Charger1+MP3+F Camera +GSM 850 idle |
| Set.2 | EUT1 + AE1 +AE3+AE13/AE14 | Charger2+R Camera + WCDMA B5 idle |
| Set.3 | EUT1 + AE1 +AE13/AE14 | USB + FM + LTE B5 |
| Set.4 | EUT1 + AE1 + Cable + EUT | OTG |

Note:

Equipment Under Test (EUT) is a model of GSM/UMTS/LTE mobile phone.

It supports

| | |
|---|---|
| GSM Band | 850/900/1800/1900 |
| UMTS Band | FDD Band I(W2100) /FDD Band II(W1900) /FDD Band IV(W1700)/FDD V(W850) /FDD VIII(W900) |
| LTE Band | FDD Bands 1/2/3/4/5/7/8/12/13/17/26/28/66, TDD Bands 38/40/41 |

It has MP3, Camera, USB memory, Bluetooth 5.1, Wi-Fi (802.11a/b/g/n/ac, 802.11n supports

20MHz and 40MHz bandwidth, 802.11ac supports 20MHz, 40MHz and 80MHz bandwidth) and GNSS function.

The device contains receivers which tune and operate between 30MHz-960MHz in the following mode: GSM 850, WCDMA850, LTE Band 5/12/13/26, FM. All licensed band receivers that tune in the range of 30MHz-960MHz are investigated. Only the worst-case emissions are reported.

# 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 | 2019 |
| 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** 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;<br>1MHz - 1000MHz, >90dB. |
| Electrical insulation | > 2 MΩ |
| Ground system resistance | < 4Ω |
| Normalised site attenuation (NSA) | < ±4 dB, 3m 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 6000 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;<br>1MHz－1000MHz, >90dB. |
| Electrical insulation | > 2 MΩ |
| Ground system resistance | < 4Ω |

# 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 | ESW44 | 103023 | R&S | 2024-07-08 | 13 months |
| 2 | LISN | ENV216 | 101200 | R&S | 2024-06-05 | 13 months |
| 3 | Test Receiver | ESCI 7 | 100344 | R&S | 2024-02-21 | 13 months |
| 4 | EMI Antenna | VULB 9163 | 01222 | SCHWARZBECK | 2024-02-28 | 13 months |
| 5 | EMI Antenna | 3115 | 6914 | ETS-Lindgren | 2024-06-07 | 13 months |
| 6 | Signal Generator | SMBV100A | 260613 | R&S | 2024-03-14 | 13 months |
| 7 | Universal Communication Tester | CMW500 | 150344 | R&S | 2025-02-03 | 25 months |

| Test software information | | |
|---|---|---|
| Test Item | Software | Version |
| Radiated Emission | EMC32 | V11.50.00 |
| Conducted Emission | EMC32 | V8.53.0 |

# 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/OTG mode of MS and charging mode of MS) at distances of 3 meters 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, OTG 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 the other device for charging in OTG mode and is connected to a charger in the case of charging mode.

The EUT was tested while operating in licensed band Rx mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, are investigated. Only the worst case emissions are reported.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

The model of the PC is 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.

The EUT was tested while operating in licensed band Rx mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, are investigated. Only the worst case emissions are reported.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

**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/3MHz | 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): $U$ = 4.84 dB, $k$=2.

**Measurement results for Set.1**:

**Charing Mode/Average detector**

| Frequency (MHz) | Measurement Result (dBµV/m) | Cable loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBµV) | Limit (dBµV/m) | Margin (dB) | Antenna Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 17994.560 | 43.90 | -29.06 | 46.66 | 26.30 | 54.00 | 10.10 | H |
| 17985.040 | 43.90 | -29.06 | 46.66 | 26.30 | 54.00 | 10.10 | H |
| 17982.660 | 43.90 | -29.06 | 46.66 | 26.30 | 54.00 | 10.10 | V |
| 17956.820 | 43.80 | -28.94 | 46.66 | 26.08 | 54.00 | 10.20 | V |
| 17945.940 | 43.70 | -28.94 | 46.66 | 25.98 | 54.00 | 10.30 | H |
| 17995.920 | 43.70 | -29.06 | 46.66 | 26.10 | 54.00 | 10.30 | H |

**Charging Mode/Peak detector**

| Frequency (MHz) | Measurement Result (dBµV/m) | Cable loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBµV) | Limit (dBµV/m) | Margin (dB) | Antenna Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 17952.400 | 55.00 | -28.94 | 46.66 | 37.28 | 74.00 | 19.00 | V |
| 17927.580 | 54.80 | -29.40 | 46.66 | 37.54 | 74.00 | 19.20 | H |
| 17991.160 | 54.40 | -29.06 | 46.66 | 36.80 | 74.00 | 19.60 | V |
| 17945.940 | 54.20 | -28.94 | 46.66 | 36.48 | 74.00 | 19.80 | H |
| 17813.000 | 54.10 | -29.63 | 45.95 | 37.78 | 74.00 | 19.90 | H |
| 17975.520 | 54.00 | -29.06 | 46.66 | 36.40 | 74.00 | 20.00 | H |

**Measurement results for Set.2**:

**Charing Mode/Average detector**

| Frequency (MHz) | Measurement Result (dBμV/m) | Cable loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBμV) | Limit (dBμV/m) | Margin (dB) | Antenna Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 17989.800 | 43.90 | -29.06 | 46.66 | 26.30 | 54.00 | 10.10 | H |
| 17992.180 | 43.90 | -29.06 | 46.66 | 26.30 | 54.00 | 10.10 | V |
| 17984.020 | 43.90 | -29.06 | 46.66 | 26.30 | 54.00 | 10.10 | H |
| 17988.780 | 43.80 | -29.06 | 46.66 | 26.20 | 54.00 | 10.20 | V |
| 17973.480 | 43.70 | -29.06 | 46.66 | 26.10 | 54.00 | 10.30 | V |
| 17976.880 | 43.70 | -29.06 | 46.66 | 26.10 | 54.00 | 10.30 | H |

**Charging Mode/Peak detector**

| Frequency (MHz) | Measurement Result (dBμV/m) | Cable loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBμV) | Limit (dBμV/m) | Margin (dB) | Antenna Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 17981.980 | 55.00 | -29.06 | 46.66 | 37.40 | 74.00 | 19.00 | H |
| 17996.600 | 54.60 | -29.06 | 46.66 | 37.00 | 74.00 | 19.40 | H |
| 17990.140 | 54.50 | -29.06 | 46.66 | 36.90 | 74.00 | 19.50 | H |
| 17972.800 | 54.40 | -29.06 | 46.66 | 36.80 | 74.00 | 19.60 | V |
| 17997.960 | 54.30 | -29.06 | 46.66 | 36.70 | 74.00 | 19.70 | H |
| 17999.320 | 54.30 | -29.06 | 46.66 | 36.70 | 74.00 | 19.70 | H |

**Measurement results for Set.3**:

**USB Mode/Average detector**

| Frequency (MHz) | Measurement Result (dBμV/m) | Cable loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBμV) | Limit (dBμV/m) | Margin (dB) | Antenna Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 17975.520 | 45.00 | -29.06 | 46.66 | 27.40 | 54.00 | 9.00 | H |
| 17998.980 | 44.70 | -29.06 | 46.66 | 27.10 | 54.00 | 9.30 | V |
| 17889.840 | 44.60 | -29.53 | 45.95 | 28.18 | 54.00 | 9.40 | V |
| 17972.460 | 44.50 | -29.06 | 46.66 | 26.90 | 54.00 | 9.50 | H |
| 17994.220 | 44.40 | -29.06 | 46.66 | 26.80 | 54.00 | 9.60 | V |
| 17997.280 | 44.30 | -29.06 | 46.66 | 26.70 | 54.00 | 9.70 | H |

**USB Mode/Peak detector**

| Frequency (MHz) | Measurement Result (dBμV/m) | Cable loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBμV) | Limit (dBμV/m) | Margin (dB) | Antenna Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 17964.980 | 55.00 | -29.06 | 46.66 | 37.40 | 74.00 | 19.00 | H |
| 17964.640 | 55.00 | -29.06 | 46.66 | 37.40 | 74.00 | 19.00 | H |
| 17957.840 | 54.80 | -28.94 | 46.66 | 37.08 | 74.00 | 19.20 | H |
| 17994.900 | 54.70 | -29.06 | 46.66 | 37.10 | 74.00 | 19.30 | H |
| 17968.040 | 54.60 | -29.06 | 46.66 | 37.00 | 74.00 | 19.40 | V |
| 17998.300 | 54.60 | -29.06 | 46.66 | 37.00 | 74.00 | 19.40 | V |

**Measurement results for Set.4**:

**OTG Mode/Average detector**

| Frequency (MHz) | Measurement Result (dBμV/m) | Cable loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBμV) | Limit (dBμV/m) | Margin (dB) | Antenna Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 17987.760 | 44.20 | -29.06 | 46.66 | 26.60 | 54.00 | 9.80 | V |
| 17996.940 | 44.10 | -29.06 | 46.66 | 26.50 | 54.00 | 9.90 | H |
| 17949.680 | 44.00 | -28.94 | 46.66 | 26.28 | 54.00 | 10.00 | V |
| 17991.160 | 44.00 | -29.06 | 46.66 | 26.40 | 54.00 | 10.00 | V |
| 17979.940 | 44.00 | -29.06 | 46.66 | 26.40 | 54.00 | 10.00 | V |
| 17978.580 | 43.90 | -29.06 | 46.66 | 26.30 | 54.00 | 10.10 | V |

**OTG Mode/Peak detector**

| Frequency (MHz) | Measurement Result (dBμV/m) | Cable loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBμV) | Limit (dBμV/m) | Margin (dB) | Antenna Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 17918.060 | 54.60 | -29.33 | 46.66 | 37.27 | 74.00 | 19.40 | V |
| 17888.820 | 54.50 | -29.53 | 45.95 | 38.08 | 74.00 | 19.50 | V |
| 17988.100 | 54.50 | -29.06 | 46.66 | 36.90 | 74.00 | 19.50 | H |
| 17957.160 | 54.40 | -28.94 | 46.66 | 36.68 | 74.00 | 19.60 | V |
| 17958.860 | 54.30 | -28.94 | 46.66 | 36.58 | 74.00 | 19.70 | V |
| 17993.880 | 54.20 | -29.06 | 46.66 | 36.60 | 74.00 | 19.80 | V |

**Measurement results for Set.1:**

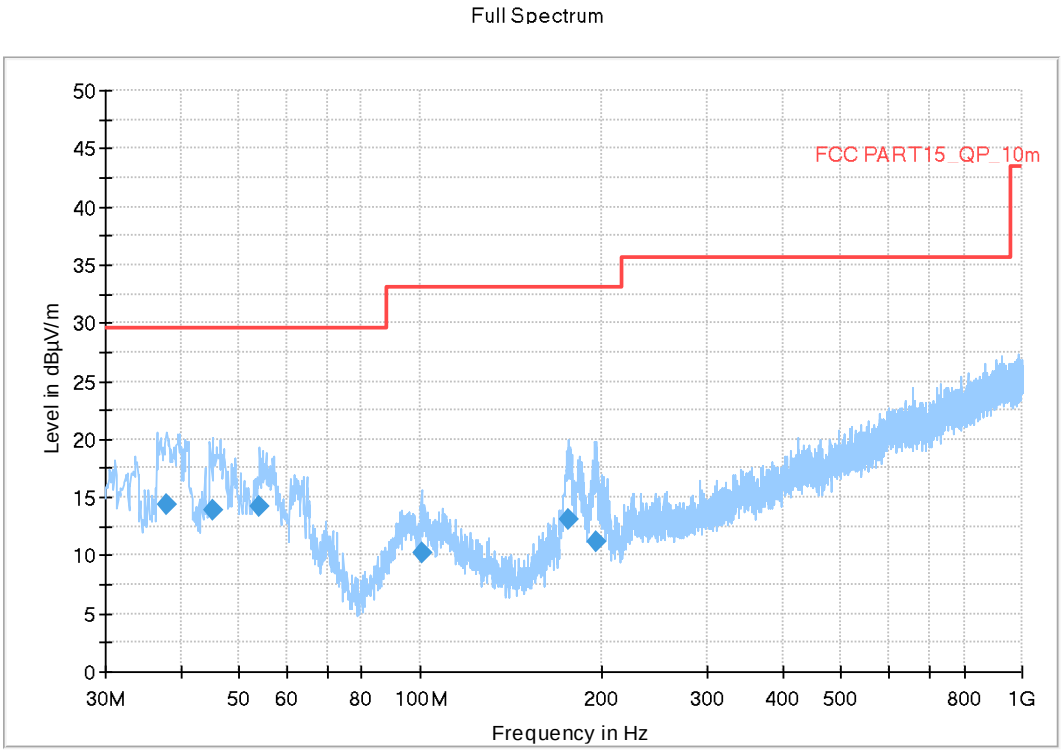


**Fig A.1 Radiated Emission from 30MHz to 1GHz**

## Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) |
|---|---|---|---|---|---|---|---|
| 37.857000 | 14.42 | 29.54 | 15.12 | 120.000 | 183.0 | V | 226.0 |
| 45.229000 | 13.93 | 29.54 | 15.61 | 120.000 | 283.0 | V | 225.0 |
| 54.153000 | 14.20 | 29.54 | 15.34 | 120.000 | 100.0 | V | 245.0 |
| 100.422000 | 10.15 | 33.06 | 22.91 | 120.000 | 100.0 | V | 283.0 |
| 176.470000 | 13.07 | 33.06 | 19.99 | 120.000 | 100.0 | V | 65.0 |
| 195.870000 | 11.13 | 33.06 | 21.93 | 120.000 | 100.0 | V | 46.0 |

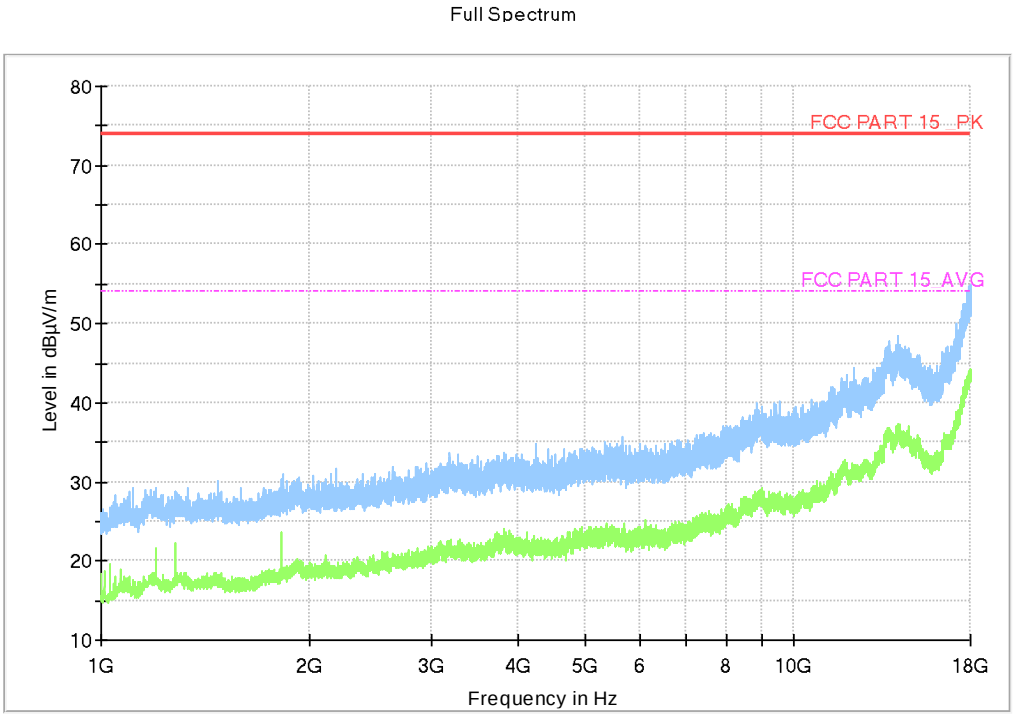


**Fig A.2 Radiated Emission from 1GHz to 18GHz**

**Measurement results for Set.2:**

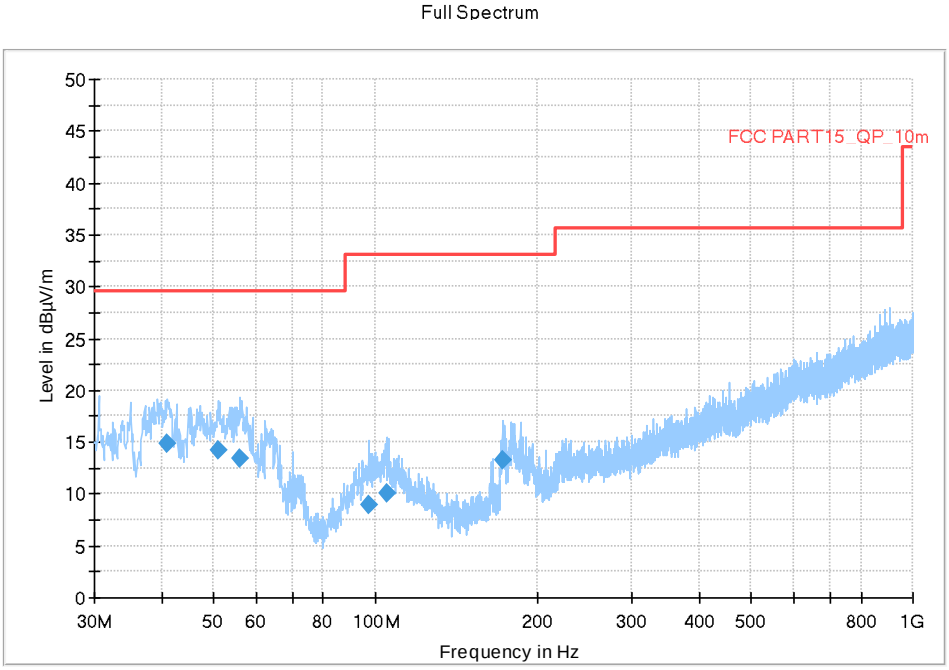


**Fig A.3 Radiated Emission from 30MHz to 1GHz**

## Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) |
|---|---|---|---|---|---|---|---|
| 41.058000 | 14.87 | 29.54 | 14.67 | 120.000 | 175.0 | V | 225.0 |
| 50.952000 | 14.24 | 29.54 | 15.30 | 120.000 | 100.0 | V | 225.0 |
| 55.996000 | 13.35 | 29.54 | 16.19 | 120.000 | 283.0 | V | 212.0 |
| 97.027000 | 9.01 | 33.06 | 24.05 | 120.000 | 224.0 | V | -45.0 |
| 105.466000 | 10.02 | 33.06 | 23.04 | 120.000 | 175.0 | V | 302.0 |
| 173.172000 | 13.34 | 33.06 | 19.72 | 120.000 | 100.0 | V | 65.0 |

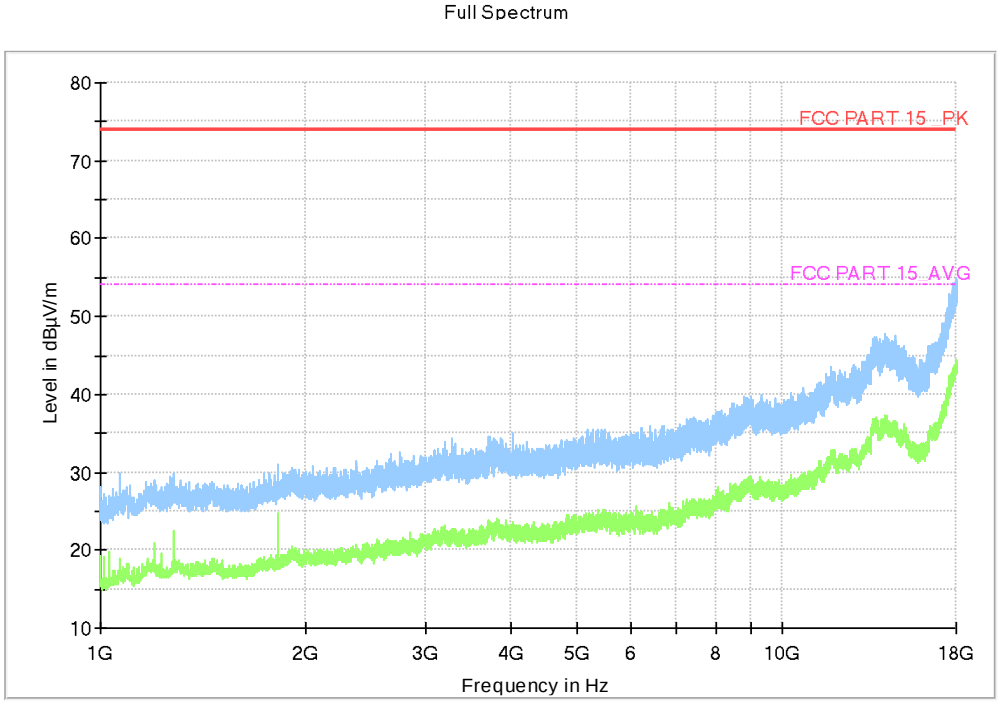


**Fig A.4 Radiated Emission from 1GHz to 18GHz**

**Measurement results for Set.3:**

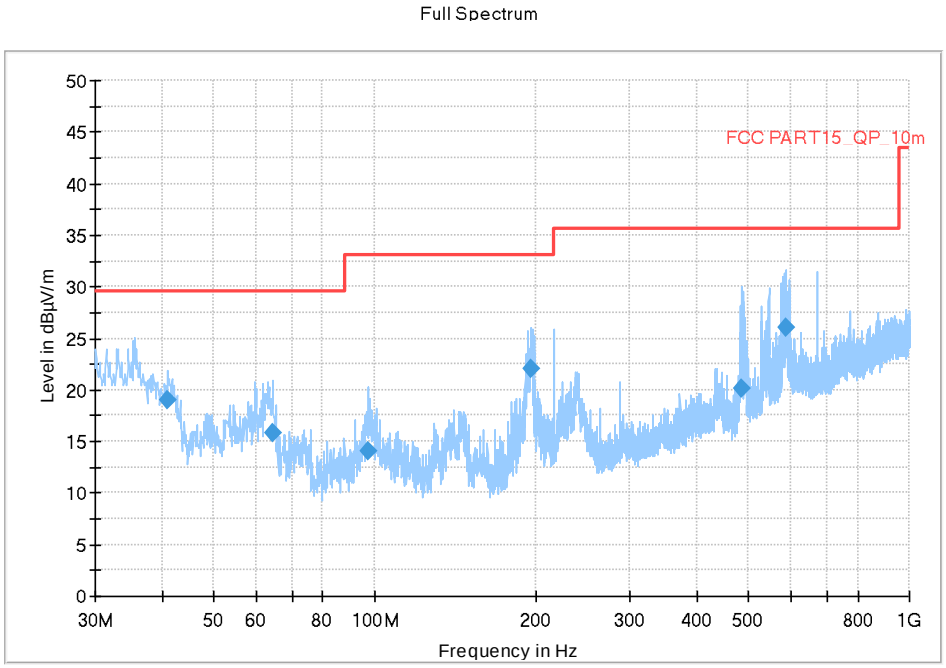


**Fig A.5 Radiated Emission from 30MHz to 1GHz**

## Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) |
|---|---|---|---|---|---|---|---|
| 40.961000 | 18.98 | 29.54 | 10.56 | 120.000 | 175.0 | V | 135.0 |
| 64.435000 | 15.74 | 29.54 | 13.80 | 120.000 | 211.0 | V | 103.0 |
| 97.415000 | 14.11 | 33.06 | 18.95 | 120.000 | 275.0 | V | 155.0 |
| 196.452000 | 22.11 | 33.06 | 10.95 | 120.000 | 100.0 | V | 174.0 |
| 484.736000 | 20.11 | 35.56 | 15.45 | 120.000 | 225.0 | V | 13.0 |
| 586.198000 | 25.96 | 35.56 | 9.60 | 120.000 | 211.0 | V | -6.0 |

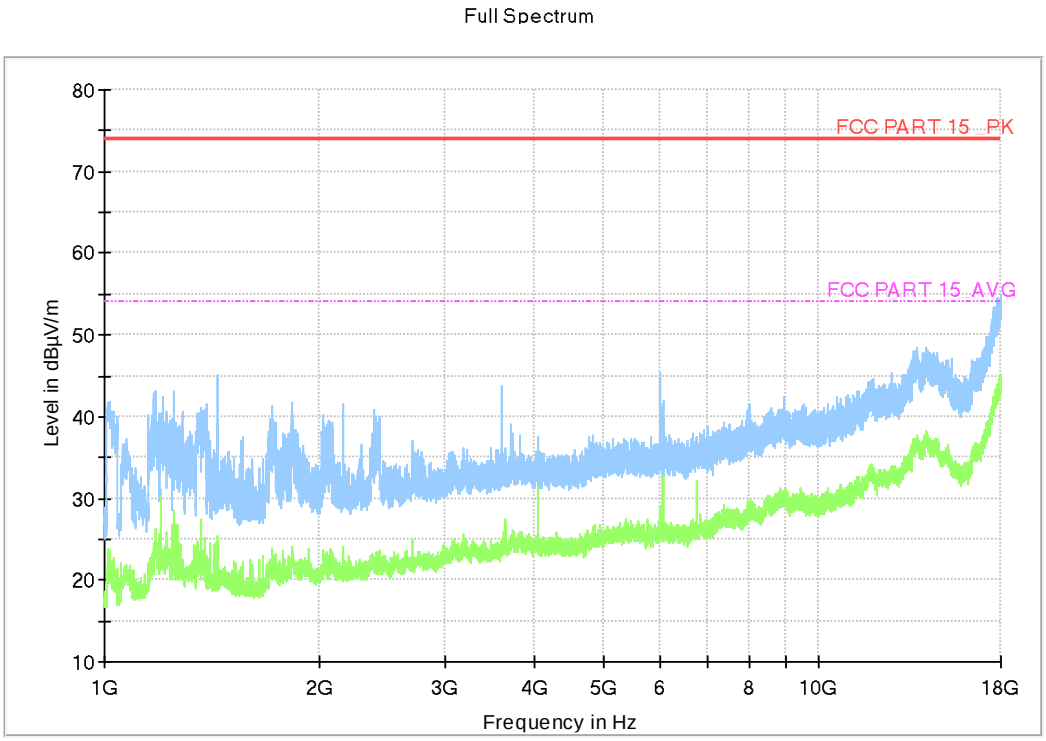


**Fig A.6 Radiated Emission from 1GHz to 18GHz**

**Measurement results for Set.4:**

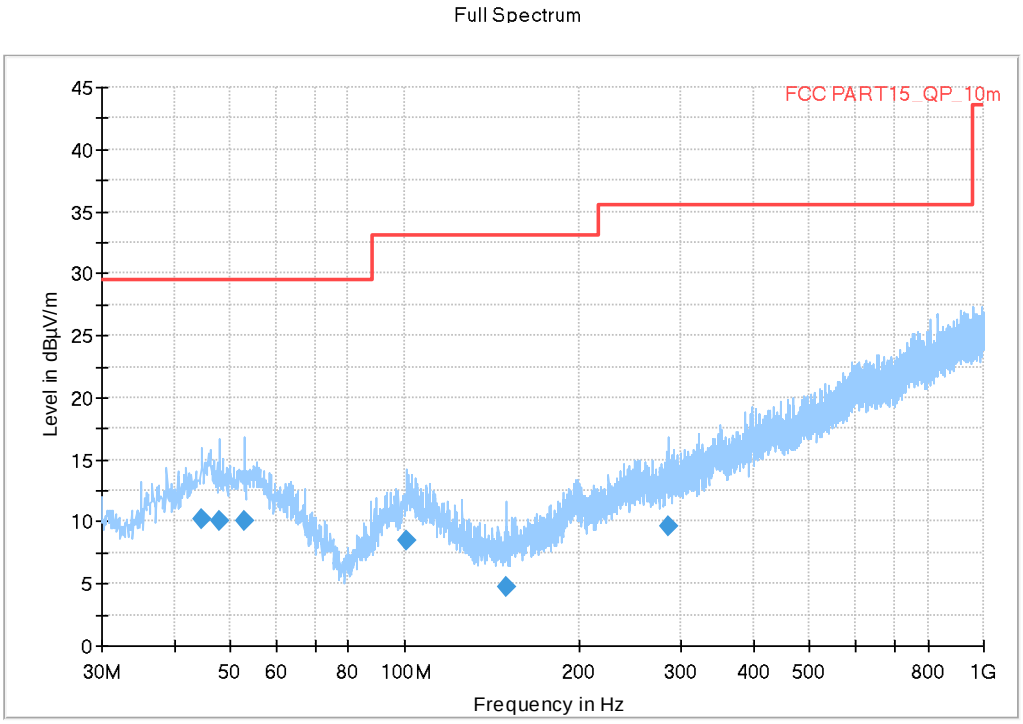


**Fig A.7 Radiated Emission from 30MHz to 1GHz**

## Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) |
|---|---|---|---|---|---|---|---|
| 44.550000 | 10.26 | 29.54 | 19.28 | 120.000 | 321.0 | H | -43.0 |
| 47.945000 | 10.11 | 29.54 | 19.43 | 120.000 | 125.0 | H | 212.0 |
| 52.795000 | 10.05 | 29.54 | 19.49 | 120.000 | 225.0 | H | 84.0 |
| 100.616000 | 8.48 | 33.06 | 24.58 | 120.000 | 125.0 | V | 45.0 |
| 149.892000 | 4.71 | 33.06 | 28.35 | 120.000 | 100.0 | V | 192.0 |
| 284.528000 | 9.65 | 35.56 | 25.91 | 120.000 | 107.0 | H | -6.0 |

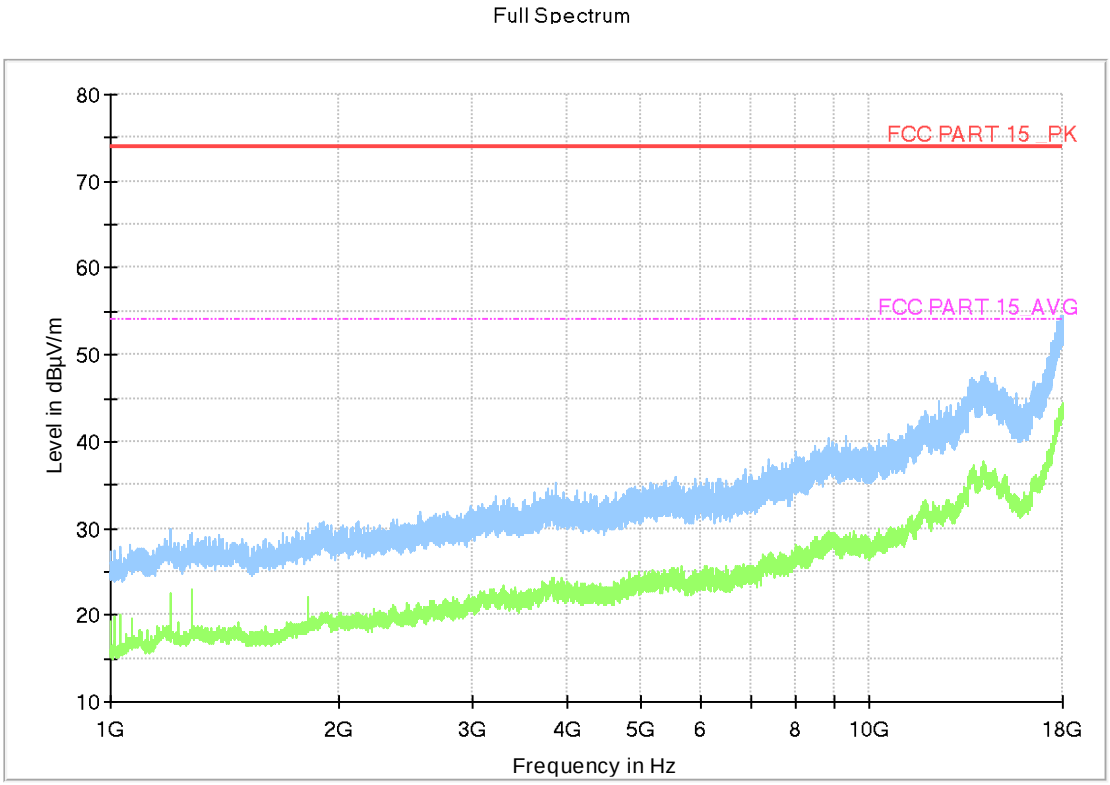


**Fig A.8 Radiated Emission from 1GHz to 18GHz**

**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 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 (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*= 3.08 dB, *k*=2.

**Charging Mode, Set.1:**

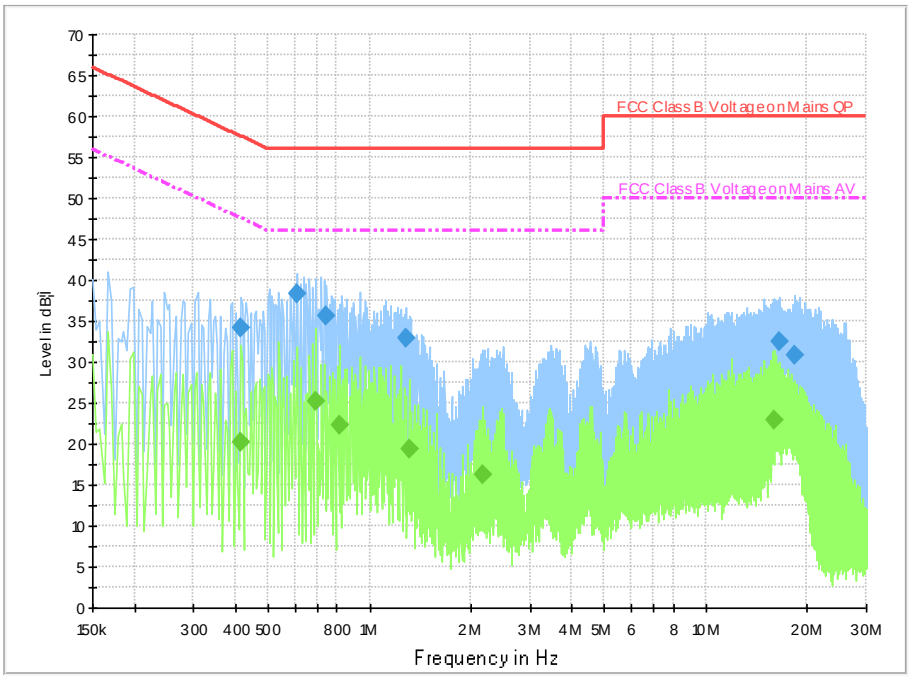


**Fig A.9 Conducted Emission from 150kHz to 30MHz**

**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBuV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBuV) | Comment |
|---|---|---|---|---|---|---|---|---|---|
| 0.414000 | 34.1 | 2000.0 | 9.000 | On | N | 19.7 | 23.4 | 57.6 | |
| 0.610000 | 38.3 | 2000.0 | 9.000 | On | L1 | 19.7 | 17.7 | 56.0 | |
| 0.746000 | 35.7 | 2000.0 | 9.000 | On | N | 19.7 | 20.3 | 56.0 | |
| 1.282000 | 32.9 | 2000.0 | 9.000 | On | N | 19.6 | 23.1 | 56.0 | |
| 16.470000 | 32.6 | 2000.0 | 9.000 | On | L1 | 19.7 | 27.4 | 60.0 | |
| 18.470000 | 30.9 | 2000.0 | 9.000 | On | L1 | 19.7 | 29.1 | 60.0 | |

**Final Result 2**

| Frequency (MHz) | Average (dBuV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBuV) | Comment |
|---|---|---|---|---|---|---|---|---|---|
| 0.414000 | 20.3 | 2000.0 | 9.000 | On | N | 19.7 | 27.3 | 47.6 | |
| 0.694000 | 25.2 | 2000.0 | 9.000 | On | L1 | 19.7 | 20.8 | 46.0 | |
| 0.814000 | 22.3 | 2000.0 | 9.000 | On | N | 19.7 | 23.7 | 46.0 | |
| 1.310000 | 19.3 | 2000.0 | 9.000 | On | N | 19.6 | 26.7 | 46.0 | |
| 2.182000 | 16.3 | 2000.0 | 9.000 | On | L1 | 19.6 | 29.7 | 46.0 | |
| 15.954000 | 22.8 | 2000.0 | 9.000 | On | L1 | 19.7 | 27.2 | 50.0 | |

**Charging Mode, Set.2:**

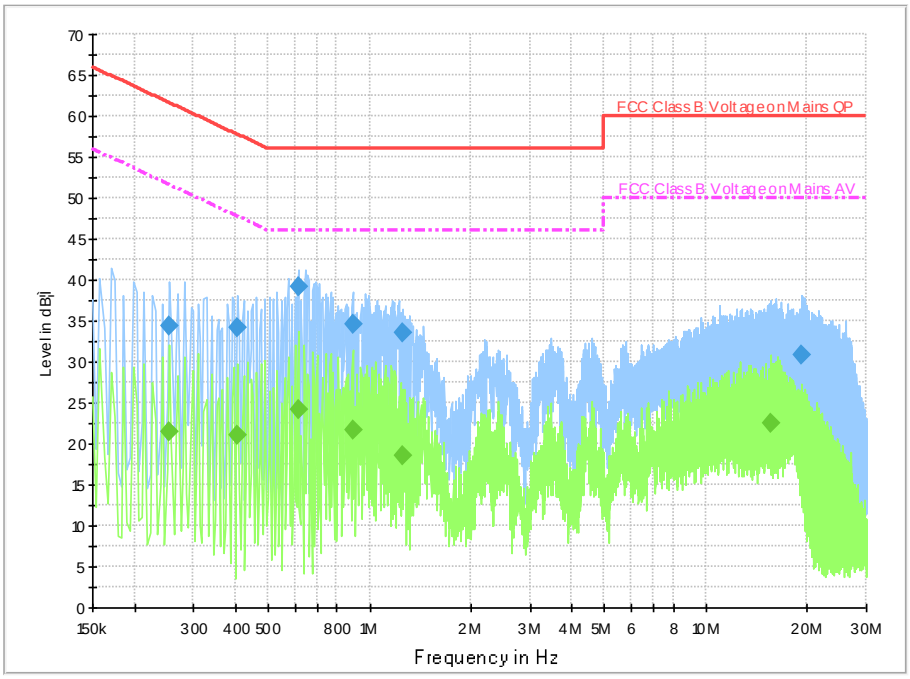


**Fig A.10 Conducted Emission from 150kHz to 30MHz**

**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBuV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBuV) | Comment |
|---|---|---|---|---|---|---|---|---|---|
| 0.254000 | 34.4 | 2000.0 | 9.000 | On | L1 | 19.7 | 27.3 | 61.6 | |
| 0.406000 | 34.1 | 2000.0 | 9.000 | On | N | 19.7 | 23.7 | 57.7 | |
| 0.614000 | 39.1 | 2000.0 | 9.000 | On | L1 | 19.7 | 16.9 | 56.0 | |
| 0.890000 | 34.5 | 2000.0 | 9.000 | On | N | 19.6 | 21.5 | 56.0 | |
| 1.262000 | 33.6 | 2000.0 | 9.000 | On | N | 19.6 | 22.4 | 56.0 | |
| 19.250000 | 30.8 | 2000.0 | 9.000 | On | L1 | 19.7 | 29.2 | 60.0 | |

**Final Result 2**

| Frequency (MHz) | Average (dBuV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBuV) | Comment |
|---|---|---|---|---|---|---|---|---|---|
| 0.254000 | 21.4 | 2000.0 | 9.000 | On | L1 | 19.7 | 30.2 | 51.6 | |
| 0.406000 | 21.0 | 2000.0 | 9.000 | On | L1 | 19.7 | 26.7 | 47.7 | |
| 0.614000 | 24.1 | 2000.0 | 9.000 | On | L1 | 19.7 | 21.9 | 46.0 | |
| 0.890000 | 21.6 | 2000.0 | 9.000 | On | N | 19.6 | 24.4 | 46.0 | |
| 1.262000 | 18.5 | 2000.0 | 9.000 | On | N | 19.6 | 27.5 | 46.0 | |
| 15.662000 | 22.5 | 2000.0 | 9.000 | On | L1 | 19.7 | 27.5 | 50.0 | |

**USB Mode, Set.3:**

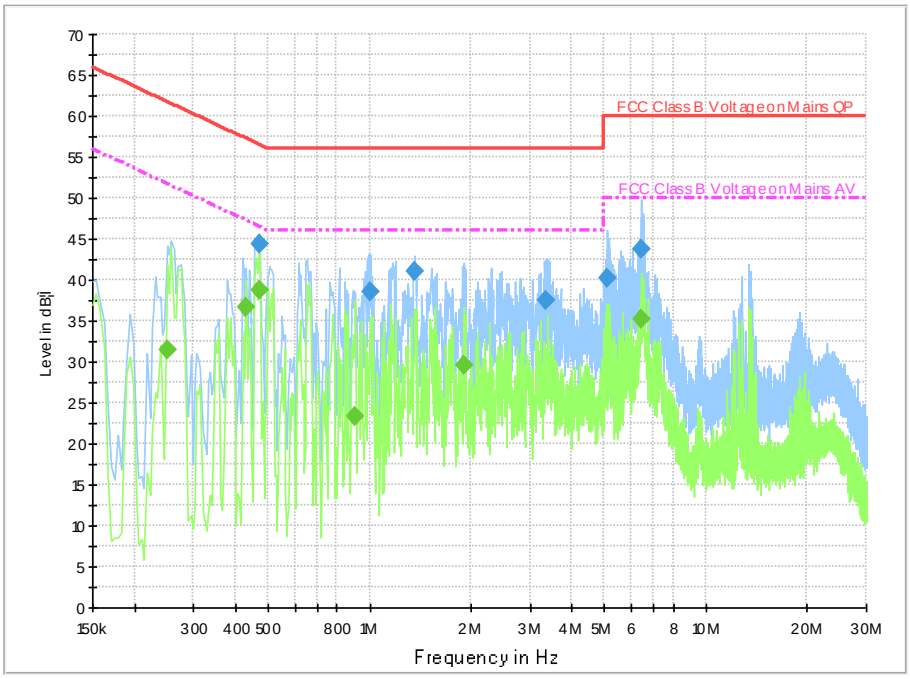


**Fig A.11 Conducted Emission from 150kHz to 30MHz**

**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBuV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBuV) | Comment |
|---|---|---|---|---|---|---|---|---|---|
| 0.470000 | 44.3 | 2000.0 | 9.000 | On | L1 | 19.7 | 12.2 | 56.5 | |
| 1.010000 | 38.6 | 2000.0 | 9.000 | On | N | 19.6 | 17.4 | 56.0 | |
| 1.358000 | 41.1 | 2000.0 | 9.000 | On | L1 | 19.6 | 14.9 | 56.0 | |
| 3.354000 | 37.5 | 2000.0 | 9.000 | On | L1 | 19.6 | 18.5 | 56.0 | |
| 5.090000 | 40.1 | 2000.0 | 9.000 | On | N | 19.6 | 19.9 | 60.0 | |
| 6.438000 | 43.8 | 2000.0 | 9.000 | On | N | 19.6 | 16.2 | 60.0 | |

**Final Result 2**

| Frequency (MHz) | Average (dBuV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBuV) | Comment |
|---|---|---|---|---|---|---|---|---|---|
| 0.250000 | 31.5 | 2000.0 | 9.000 | On | N | 19.7 | 20.3 | 51.8 | |
| 0.430000 | 36.7 | 2000.0 | 9.000 | On | L1 | 19.7 | 10.6 | 47.3 | |
| 0.470000 | 38.8 | 2000.0 | 9.000 | On | L1 | 19.7 | 7.8 | 46.5 | |
| 0.910000 | 23.3 | 2000.0 | 9.000 | On | L1 | 19.7 | 22.7 | 46.0 | |
| 1.910000 | 29.6 | 2000.0 | 9.000 | On | L1 | 19.6 | 16.4 | 46.0 | |
| 6.438000 | 35.2 | 2000.0 | 9.000 | On | N | 19.6 | 14.8 | 50.0 | |

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