# FCC 15B TEST REPORT

# No. I22Z60100-EMC01

**for**

**TCL Communication Ltd.**

**LINKKEY LTE Cat4 USB Dongle**

**Model Name: IK42U1**

**FCC ID: 2ACCJB173**

**with**

**Hardware Version: V01**

**Software Version: IK42_ZZ_02.00_06**

**Issued Date: 2022-03-23**

**Note:**

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**Test Laboratory:**


**CTTL-Telecommunication Technology Labs, CAICT**

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# REPORT HISTORY

| Report Number | Revision | Description | Issue Date |
|---|---|---|---|
| I22Z60100-EMC01 | Rev.0 | 1st edition | 2022-03-14 |
| I22Z60100-EMC01 | Rev.1 | Spot check as chapter 3.4 | 2022-03-23 |

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

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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 (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

## 1.2. Testing Location

**Location 1: CTTL(huayuan North Road)**

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

## 1.3. Testing Environment

Normal Temperature: 15-35℃

Relative Humidity: 20-75%

## 1.4. Project data

Testing Start Date: 2021-12-15

Testing End Date: 2022-03-22

## 1.5. Signature

**Zhang Ying**

**(Prepared this test report)**

**An Hui**

**(Reviewed this test report)**

**Zhang Xia**

**(Approved this test report)**

# 2. Client Information

## 2.1. Applicant Information

| | |
|---|---|
| Company Name: | TCL Communication Ltd. |
| Address /Post: | 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong |
| City: | Hong Kong |
| Postal Code: | / |
| Country: | China |
| Contact Person | Peter yang |
| Contact Email | peter.yang@tcl.com |
| Telephone: | +86 755 3664 5759 |
| Fax: | +86 755 3661 2000-81722 |

## 2.2. Manufacturer Information

| | |
|---|---|
| Company Name: | TCL Communication Ltd. |
| Address /Post: | 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong |
| City: | Hong Kong |
| Postal Code: | / |
| Country: | China |
| Contact Person | Peter yang |
| Contact Email | peter.yang@tcl.com |
| Telephone: | +86 755 3664 5759 |
| Fax: | +86 755 3661 2000-81722 |

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

## 3.1. About EUT

| | |
|---|---|
| Description | LINKKEY LTE Cat4 USB Dongle |
| Model Name | IK42U1 |
| FCC ID | 2ACCJB173 |

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL,Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT.

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

| EUT ID* | SN or IMEI | HW Version | SW Version |
|---|---|---|---|
| EUT4 | / | / | / |
| EUT5 | | V01 | IK42_ZZ_02.00_06 |

*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 | charger | / | / |
| AE2 | PC | / | / |
| AE3 | Keyboard | / | / |
| AE4 | Mouse | / | / |
| AE5 | Printer | / | / |

AE1

| | |
|---|---|
| Model | / |
| Manufacturer | / |

AE2

| | |
|---|---|
| Model | / |
| Manufacturer | / |

AE3

| | |
|---|---|
| Model | / |
| Manufacturer | / |

AE4

| | |
|---|---|
| Model | / |
| Manufacturer | / |

AE5

| | |
|---|---|
| Model | / |
| Manufacturer | / |

*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 | EUT4 + AE1 | Charging with power adapter |
| Set.2 | EUT4 + PC+ Keyboard + Mouse + Printer | Charging with PC |
| Set.11 | EUT5 + AE1 | Charging with power adapter |
| Set.12 | EUT5 + PC+ Keyboard + Mouse + Printer | Charging with PC |

Note: LINKKEY LTE Cat4 USB Dongle manufactured by TCL Communication Ltd. IK42U1 is a variant model based on IK42UC. According to the declaration of changes, the following test was performed:

| Test Item | Function | Setup |
|---|---|---|
| Radiated Emission | LTE band 12 idle Charging with power adapter; GSM850MHz idle Charging with PC | Set.11 and Set.12 |
| Conducted Emission | GSM850MHz idle Charging with power adapter; GSM850MHz idle Charging with PC | Set.11 and Set.12 |

The other results are cited from the initial model. The report number for initial model is I21Z60362-EMC01.

# 4. Reference Documents

## 4.1. Documents supplied by applicant

EUT parameters, referring to chapter 3 for detailed information, are supplied by the client or manufacturer, which is the basis of testing.

## 4.2. 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 | 10-1-20 Edition |
| ANSI C63.4 | American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz | 2014 |

Note: The test methods have no deviation with standards.

# 5. LABORATORY ENVIRONMENT

**Semi-anechoic chamber SAC-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;<br>1MHz - 1000MHz, >90dB. |
| Electrical insulation | > 2 M |
| Ground system resistance | < 4 |
| Normalised site attenuation (NSA) | < ±4 dB, 10 m 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 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;<br>1MHz－1000MHz, >90dB. |
| Electrical insulation | > 2 M |
| Ground system resistance | < 4 |

# 6. SUMMARY OF TEST RESULTS

| Abbreviations used in this clause: | | |
|---|---|---|
| Verdict Column | P | Pass |
| | NA | Not applicable |
| | F | Fail |
| Location Column | 1/2/4 | The test is performed in test location 1/2/4 which is described in section 1.1 of this report |

| Items | Test Name | Clause in FCC rules | Section in this report | Verdict | Test Location |
|---|---|---|---|---|---|
| 1 | Radiated Emission | 15.109(a) | A.1 | P | 1 |
| 2 | Conducted Emission | 15.107(a) | A.2 | P | 1 |

## 7. Test Equipments Utilized

| NO. | Description | TYPE | SERIES NUMBER | MANUFACTURE | CAL DUE DATE | CALIBRATION INTERVAL |
|---|---|---|---|---|---|---|
| 1 | Test Receiver | ESCI 3 | 100344 | Rohde & Schwarz | 2023-02-21 | 1 year |
| 2 | LISN | ENV216 | 101200 | Rohde & Schwarz | 2022-05-30 | 1 year |
| 3 | EMI Antenna | 3115 | 00167250 | ETS-Lindgren | 2022-07-01 | 1 year |
| 4 | Test Receiver for Radiated Emission | ESW44 | 103023 | R&S | 2022-10-26 | 1 year |
| 5 | EMI Antenna for Radiated Emission (<1GHz) | VULB9163 | 9163-1223 | Schwarzbeck | 2022-03-22 | 1 year |
| 6 | Universal Radio Communication Tester | CMW500 | 116588 | R&S | 2022-12-20 | 1 year |

| Test Item | Test Software and Version | Software Vendor |
|---|---|---|
| Radiated Continuous Emission | EMC32 V9.01.0 | 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 (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 charging mode. During the test MS had two mode:

1. MS is connected to a PC;
2. MS is connected to a charger.

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.

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.

**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.

Limit(10m) = limit(3m) + 20(log(3/10))

### 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): 30MHz-1GHz：5.18dB, 1GHz-18GHz：5.54dB, *k*=2.

**Measurement results for Set.1**:

**Charger + GSM 850 idle QP detector**

| Frequency (MHz) | QP (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) |
|---|---|---|---|---|---|---|
| 45.617000 | 10.07 | 29.54 | 19.47 | 188.0 | V | 120.0 |
| 49.012000 | 9.65 | 29.54 | 19.89 | 200.0 | V | 240.0 |
| 99.064000 | 7.62 | 33.06 | 25.44 | 335.0 | V | 120.0 |
| 140.580000 | 9.08 | 33.06 | 23.98 | 100.0 | V | 300.0 |
| 172.008000 | 5.35 | 33.06 | 27.71 | 310.0 | V | 0.0 |
| 778.161000 | 18.55 | 35.56 | 17.01 | 335.0 | V | 80.0 |

**Charger + GSM 850 idle PK detector**

| Frequency (MHz) | Result(dBμV/m) | $G_{PL}$ (dB) | $G_A$ (dB/m) | $P_{Mea}$(dB μ V/m) | Limit (dBμV/m) | Margin (dB) | Polarity |
|---|---|---|---|---|---|---|---|
| 17887.800 | 55.5 | -29.5 | 46.0 | 39.1 | 74.000 | 18.500 | H |
| 17827.733 | 55.3 | -29.7 | 46.0 | 39.0 | 74.000 | 18.700 | H |
| 17838.500 | 55.2 | -29.7 | 46.0 | 38.9 | 74.000 | 18.800 | V |
| 17891.200 | 55.0 | -29.5 | 46.0 | 38.6 | 74.000 | 19.000 | H |
| 17866.833 | 54.8 | -29.4 | 46.0 | 38.2 | 74.000 | 19.200 | H |
| 17920.667 | 54.2 | -29.4 | 46.7 | 36.9 | 74.000 | 19.800 | H |

**Charger + GSM 850 idle AV detector**

| Frequency (MHz) | Result(dBμV/m) | $G_{PL}$ (dB) | $G_A$ (dB/m) | $P_{Mea}$(dB μ V/m) | Limit (dBμV/m) | Margin (dB) | Polarity |
|---|---|---|---|---|---|---|---|
| 17964.867 | 46.0 | -29.1 | 46.7 | 28.4 | 54.000 | 8.000 | V |
| 17962.033 | 45.7 | -29.1 | 46.7 | 28.1 | 54.000 | 8.300 | H |
| 17547.800 | 45.6 | -29.5 | 44.4 | 30.7 | 54.000 | 8.400 | H |
| 17589.167 | 45.3 | -29.7 | 45.2 | 29.7 | 54.000 | 8.700 | V |
| 17937.100 | 45.3 | -29.4 | 46.7 | 28.0 | 54.000 | 8.700 | H |
| 17157.367 | 45.3 | -29.9 | 42.4 | 32.8 | 54.000 | 8.700 | H |

**Measurement results for Set.1**:

**Charger + WCDMA 850 idle QP detector**

| Frequency (MHz) | QP (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) |
|---|---|---|---|---|---|---|
| 48.430000 | 9.58 | 29.54 | 19.96 | 107.0 | V | 30.0 |
| 55.317000 | 10.48 | 29.54 | 19.06 | 101.0 | V | 240.0 |
| 110.510000 | 7.74 | 33.06 | 25.32 | 118.0 | V | -29.0 |
| 192.378000 | 7.41 | 33.06 | 25.65 | 300.0 | V | 251.0 |
| 398.406000 | 12.47 | 35.56 | 23.09 | 118.0 | V | 152.0 |
| 797.173000 | 18.33 | 35.56 | 17.23 | 125.0 | V | 191.0 |

**Charger + WCDMA 850 idle PK detector**

| Frequency (MHz) | Result(dBμV/m) | $G_{PL}$ (dB) | $G_A$ (dB/m) | $P_{Mea}$(dB μ V/m) | Limit (dBμV/m) | Margin (dB) | Polarity |
|---|---|---|---|---|---|---|---|
| 16444.500 | 55.0 | -29.9 | 39.3 | 45.5 | 74.000 | 19.000 | H |
| 17977.333 | 54.8 | -29.1 | 46.7 | 37.2 | 74.000 | 19.200 | V |
| 17633.933 | 54.6 | -29.4 | 45.2 | 38.8 | 74.000 | 19.400 | V |
| 17917.833 | 54.6 | -29.3 | 46.7 | 37.3 | 74.000 | 19.400 | H |
| 17941.633 | 54.6 | -28.9 | 46.7 | 36.9 | 74.000 | 19.400 | H |
| 17850.967 | 54.4 | -29.3 | 46.0 | 37.8 | 74.000 | 19.600 | H |

**Charger + WCDMA 850 idle AV detector**

| Frequency (MHz) | Result(dBμV/m) | $G_{PL}$ (dB) | $G_A$ (dB/m) | $P_{Mea}$(dB μ V/m) | Limit (dBμV/m) | Margin (dB) | Polarity |
|---|---|---|---|---|---|---|---|
| 17964.867 | 46.7 | -29.1 | 46.7 | 29.1 | 54.000 | 7.300 | V |
| 17941.633 | 46.0 | -28.9 | 46.7 | 28.3 | 54.000 | 8.000 | V |
| 17952.400 | 45.8 | -28.9 | 46.7 | 28.1 | 54.000 | 8.200 | H |
| 17822.067 | 45.7 | -29.7 | 46.0 | 29.4 | 54.000 | 8.300 | H |
| 17992.633 | 45.6 | -29.1 | 46.7 | 28.0 | 54.000 | 8.400 | V |
| 17939.933 | 45.5 | -29.4 | 46.7 | 28.2 | 54.000 | 8.500 | H |

**Measurement results for Set.1**:

**Charger + LTE BAND 5 idle QP detector**

| Frequency (MHz) | QP (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) |
|---|---|---|---|---|---|---|
| 50.079000 | 9.71 | 29.54 | 19.83 | 324.0 | V | 211.0 |
| 57.063000 | 9.46 | 29.54 | 20.08 | 276.0 | V | 30.0 |
| 102.071000 | 8.27 | 33.06 | 24.79 | 101.0 | V | 120.0 |
| 108.376000 | 7.98 | 33.06 | 25.08 | 101.0 | V | 30.0 |
| 377.551000 | 12.06 | 35.56 | 23.50 | 225.0 | V | 30.0 |
| 886.413000 | 20.12 | 35.56 | 15.44 | 180.0 | V | 150.0 |

**Charger + LTE BAND 5 idle PK detector**

| Frequency (MHz) | Result(dBμV/m) | $G_{PL}$ (dB) | $G_A$ (dB/m) | $P_{Mea}$(dB μ V/m) | Limit (dBμV/m) | Margin (dB) | Polarity |
|---|---|---|---|---|---|---|---|
| 17921.233 | 55.0 | -29.4 | 46.7 | 37.7 | 74.000 | 19.000 | H |
| 17942.200 | 54.7 | -28.9 | 46.7 | 37.0 | 74.000 | 19.300 | H |
| 17901.967 | 54.4 | -29.3 | 46.0 | 37.8 | 74.000 | 19.600 | V |
| 17873.633 | 54.3 | -29.4 | 46.0 | 37.7 | 74.000 | 19.700 | V |
| 17950.133 | 54.3 | -28.9 | 46.7 | 36.6 | 74.000 | 19.700 | H |
| 17943.333 | 54.2 | -28.9 | 46.7 | 36.5 | 74.000 | 19.800 | V |

**Charger + LTE BAND 5 idle AV detector**

| Frequency (MHz) | Result(dBμV/m) | $G_{PL}$ (dB) | $G_A$ (dB/m) | $P_{Mea}$(dB μ V/m) | Limit (dBμV/m) | Margin (dB) | Polarity |
|---|---|---|---|---|---|---|---|
| 17942.200 | 45.8 | -28.9 | 46.7 | 28.1 | 54.000 | 8.200 | V |
| 17939.933 | 45.8 | -29.4 | 46.7 | 28.5 | 54.000 | 8.200 | V |
| 17539.867 | 45.8 | -29.3 | 44.4 | 30.8 | 54.000 | 8.200 | H |
| 17990.367 | 45.8 | -29.1 | 46.7 | 28.2 | 54.000 | 8.200 | H |
| 17988.667 | 45.7 | -29.1 | 46.7 | 28.1 | 54.000 | 8.300 | H |
| 17860.033 | 45.5 | -29.4 | 46.0 | 28.9 | 54.000 | 8.500 | V |

**Measurement results for Set.1**:

**Charger + LTE BAND 12 idle QP detector**

| Frequency (MHz) | QP (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) |
|---|---|---|---|---|---|---|
| 55.220000 | 10.01 | 29.54 | 19.53 | 225.0 | H | 62.0 |
| 98.773000 | 7.48 | 33.06 | 25.58 | 225.0 | V | 62.0 |
| 114.681000 | 15.00 | 33.06 | 18.06 | 95.0 | V | -30.0 |
| 126.515000 | 9.52 | 33.06 | 23.54 | 95.0 | V | -27.0 |
| 170.747000 | 7.04 | 33.06 | 26.02 | 103.0 | V | -7.0 |
| 343.989000 | 11.68 | 35.56 | 23.88 | 125.0 | V | -29.0 |

**Charger + LTE BAND 12 idle PK detector**

| Frequency (MHz) | Result(dBμV/m) | $G_{PL}$ (dB) | $G_A$ (dB/m) | $P_{Mea}$(dB μ V/m) | Limit (dBμV/m) | Margin (dB) | Polarity |
|---|---|---|---|---|---|---|---|
| 17953.760 | 40.0 | -28.9 | 46.7 | 22.283 | 74.0 | 34.0 | H |
| 17540.320 | 39.9 | -29.5 | 44.4 | 25.034 | 74.0 | 34.1 | V |
| 17784.440 | 39.9 | -29.9 | 46.0 | 23.832 | 74.0 | 34.1 | V |
| 17986.400 | 39.8 | -29.1 | 46.7 | 22.198 | 74.0 | 34.2 | V |
| 17962.260 | 39.8 | -29.1 | 46.7 | 22.201 | 74.0 | 34.2 | H |
| 17990.140 | 39.8 | -29.1 | 46.7 | 22.198 | 74.0 | 34.2 | V |

**Charger + LTE BAND 12 idle AV detector**

| Frequency (MHz) | Result(dBμV/m) | $G_{PL}$ (dB) | $G_A$ (dB/m) | $P_{Mea}$(dB μ V/m) | Limit (dBμV/m) | Margin (dB) | Polarity |
|---|---|---|---|---|---|---|---|
| 17612.060 | 51.7 | -29.5 | 45.2 | 35.972 | 54.0 | 2.3 | H |
| 17950.700 | 51.6 | -28.9 | 46.7 | 33.883 | 54.0 | 2.4 | H |
| 17968.380 | 51.3 | -29.1 | 46.7 | 33.701 | 54.0 | 2.7 | V |
| 17930.300 | 51.3 | -29.4 | 46.7 | 34.039 | 54.0 | 2.7 | H |
| 17644.020 | 51.3 | -29.6 | 45.2 | 35.653 | 54.0 | 2.7 | V |
| 17967.360 | 51.3 | -29.1 | 46.7 | 33.701 | 54.0 | 2.7 | H |

**Measurement results for Set.2**:

**PC + GSM 850 idle QP detector**

| Frequency (MHz) | QP (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) |
|---|---|---|---|---|---|---|
| 54.638000 | 16.18 | 29.54 | 13.36 | 325.0 | V | 190.0 |
| 83.156000 | 17.63 | 29.54 | 11.91 | 125.0 | V | 60.0 |
| 111.189000 | 20.91 | 33.06 | 12.15 | 125.0 | V | 81.0 |
| 157.846000 | 15.76 | 33.06 | 17.30 | 125.0 | V | 171.0 |
| 215.949000 | 18.38 | 33.06 | 14.68 | 95.0 | V | 210.0 |
| 347.093000 | 19.72 | 35.56 | 15.84 | 95.0 | V | -29.0 |

**PC + GSM 850 idle PK detector**

| Frequency (MHz) | Result(dBμV/m) | $G_{PL}$ (dB) | $G_A$ (dB/m) | $P_{Mea}$(dB μ V/m) | Limit (dBμV/m) | Margin (dB) | Polarity |
|---|---|---|---|---|---|---|---|
| 17964.980 | 40.2 | -29.1 | 46.7 | 22.601 | 74.0 | 33.8 | H |
| 17887.460 | 40.2 | -29.5 | 46.0 | 23.780 | 74.0 | 33.8 | H |
| 17976.200 | 40.0 | -29.1 | 46.7 | 22.401 | 74.0 | 34.0 | V |
| 17968.720 | 40.0 | -29.1 | 46.7 | 22.401 | 74.0 | 34.0 | H |
| 17849.040 | 39.9 | -29.3 | 46.0 | 23.282 | 74.0 | 34.1 | H |
| 17954.100 | 39.9 | -28.9 | 46.7 | 22.183 | 74.0 | 34.1 | V |

**PC + GSM 850 idle AV detector**

| Frequency (MHz) | Result(dBμV/m) | $G_{PL}$ (dB) | $G_A$ (dB/m) | $P_{Mea}$(dB μ V/m) | Limit (dBμV/m) | Margin (dB) | Polarity |
|---|---|---|---|---|---|---|---|
| 17955.8 | 52.5 | -28.9 | 46.7 | 34.783 | 54.0 | 1.5 | V |
| 17608.7 | 51.7 | -29.5 | 45.2 | 35.972 | 54.0 | 2.3 | V |
| 17958.9 | 51.6 | -28.9 | 46.7 | 33.883 | 54.0 | 2.4 | V |
| 17583.2 | 51.5 | -29.7 | 45.2 | 35.949 | 54.0 | 2.5 | H |
| 17858.9 | 51.5 | -29.3 | 46.0 | 34.882 | 54.0 | 2.5 | V |
| 17208.1 | 51.4 | -29.5 | 42.4 | 38.527 | 54.0 | 2.6 | H |

Sample calculation: AV detector, 17955.8MHz

Result =$P_{Mea}$ (34.783dBμV)+ $G_A$ (46.7dB/m)+ $G_{PL}$(-28.9dB) =52.5dBμV/m

**Charger + GSM 850MHz idle, Set.1**

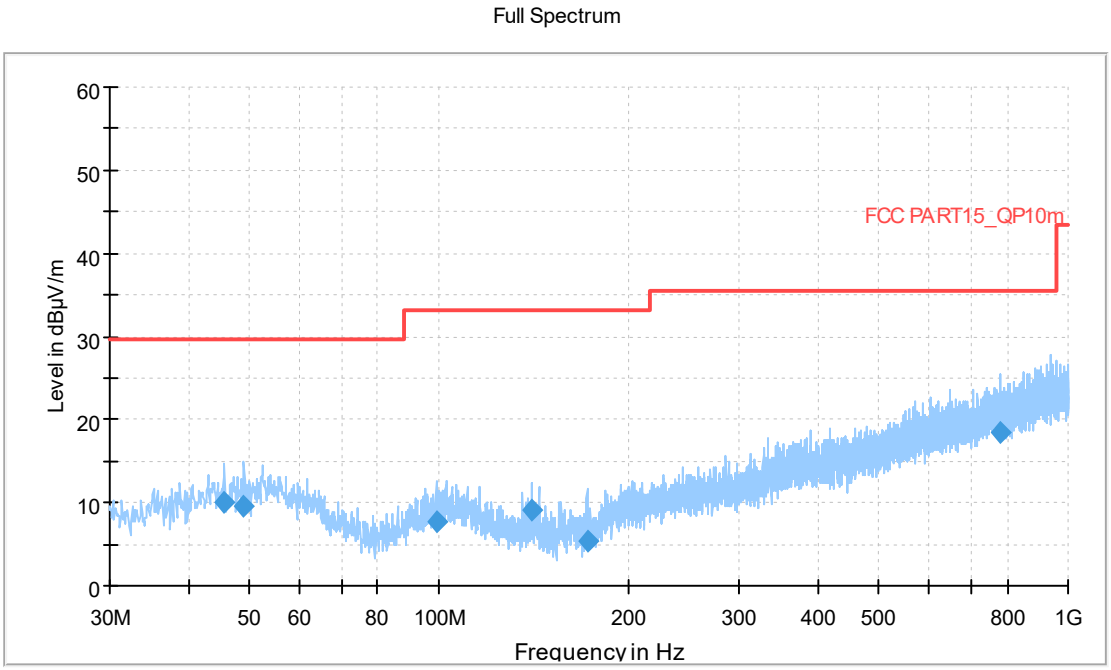


**Figure A.1 Radiated Emission from 30MHz to 1GHz**

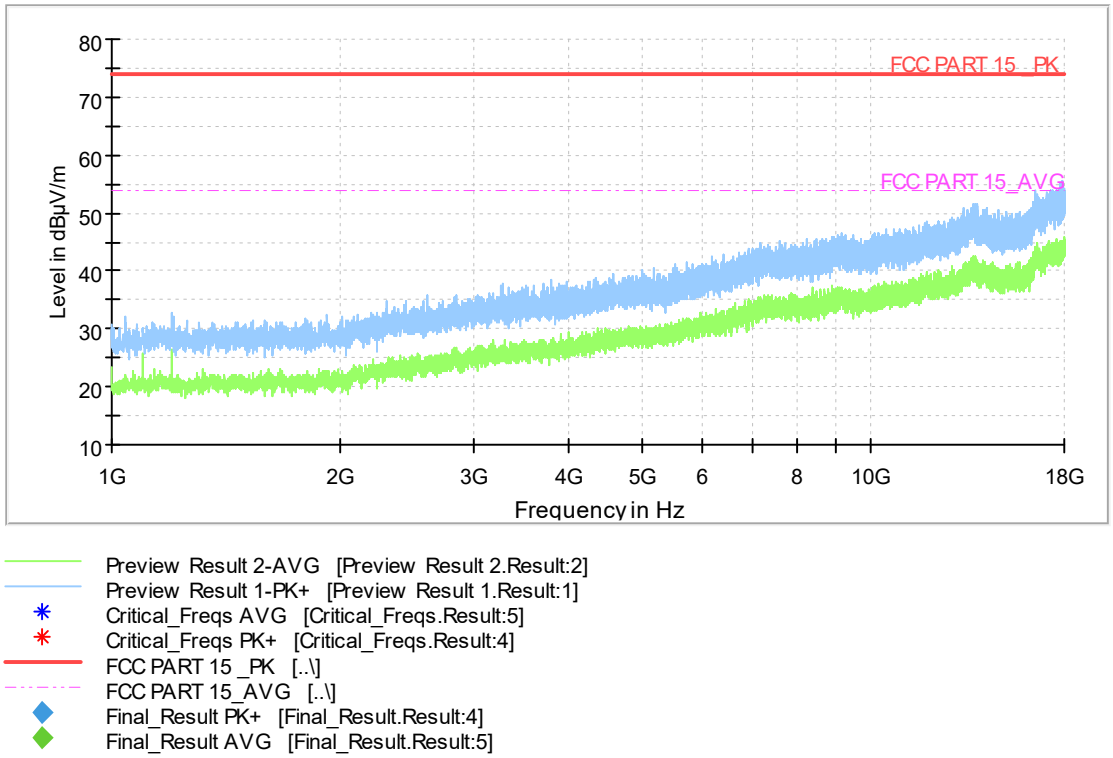


**Figure A.2 Radiated Emission from 1GHz to 18GHz**

**Charger + WCDMA 850MHz idle, Set.1**

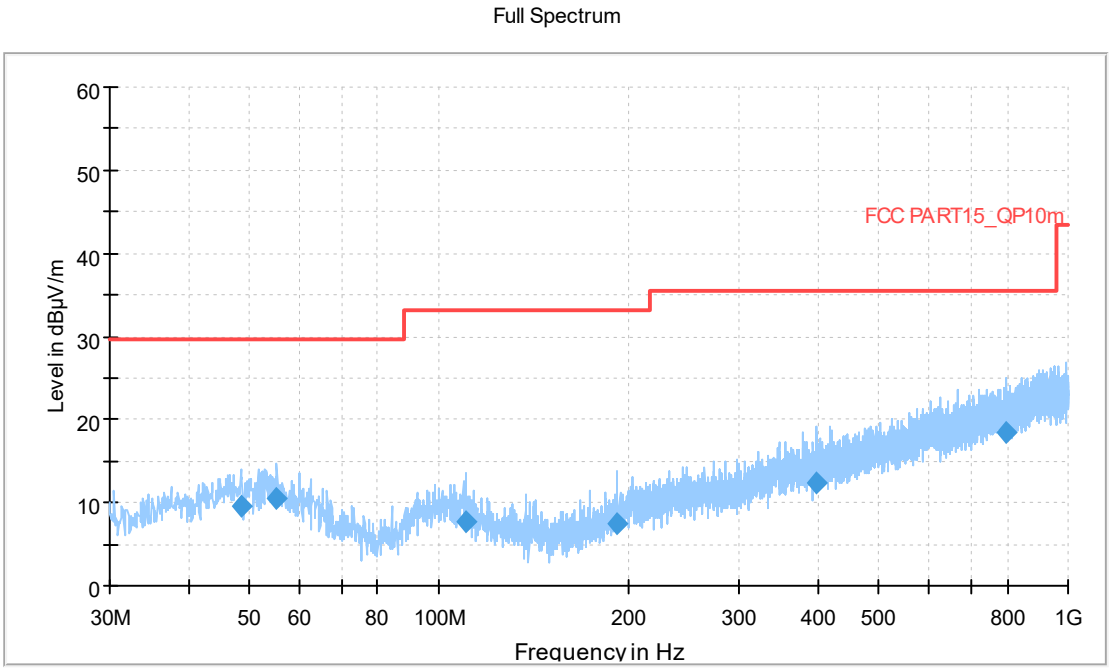


**Figure A.3 Radiated Emission from 30MHz to 1GHz**

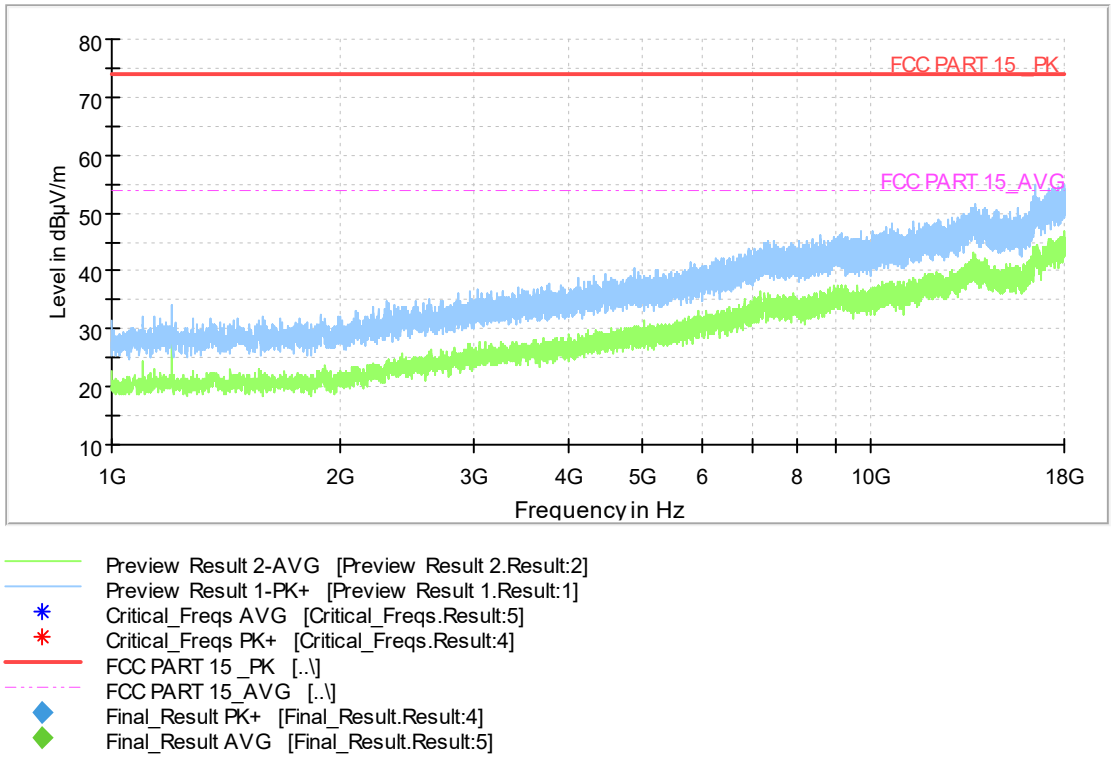


**Figure A.4 Radiated Emission from 1GHz to 18GHz**

**Charger + LTE band 5 idle, Set.1**

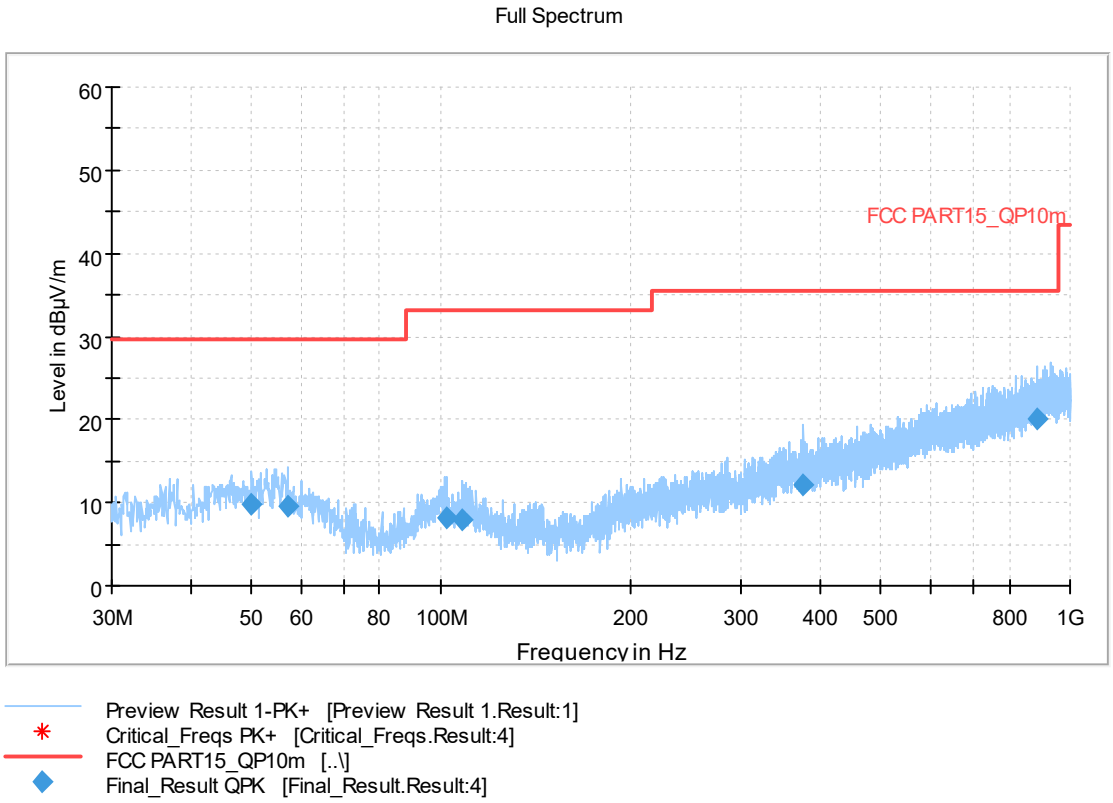


**Figure A.5 Radiated Emission from 30MHz to 1GHz**

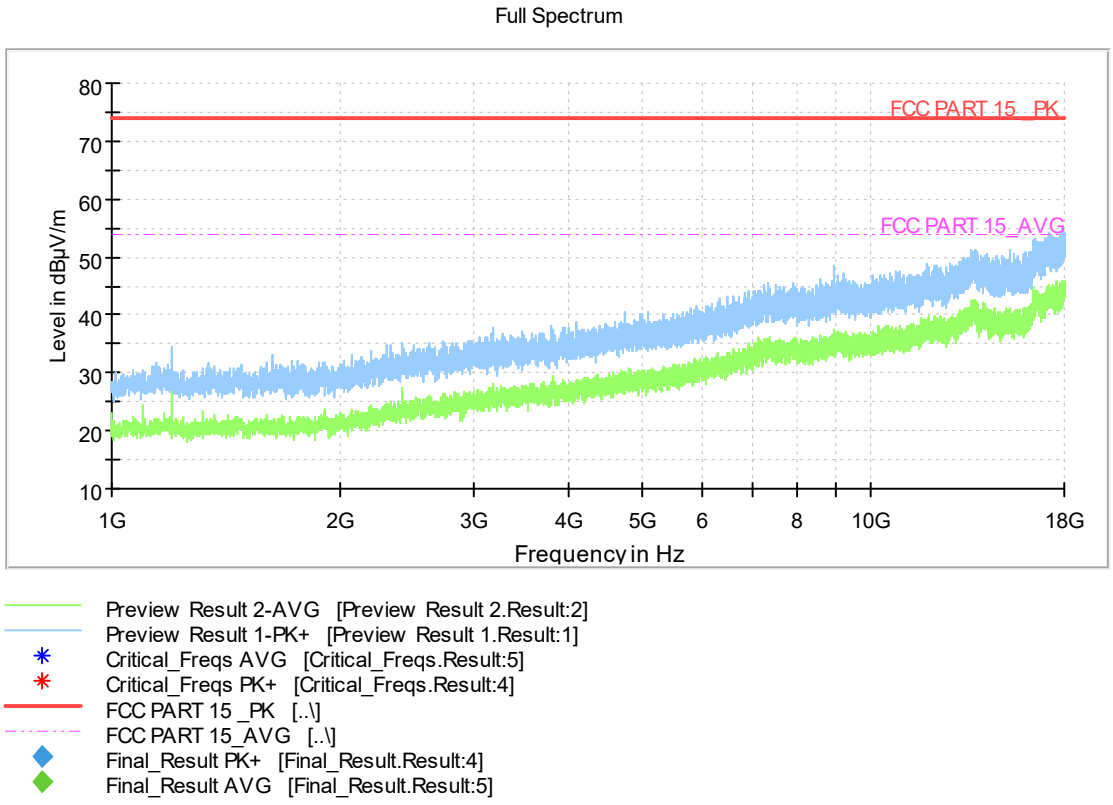


**Figure A.6 Radiated Emission from 1GHz to 18GHz**

**Charger + LTE band 12 idle, Set.1**

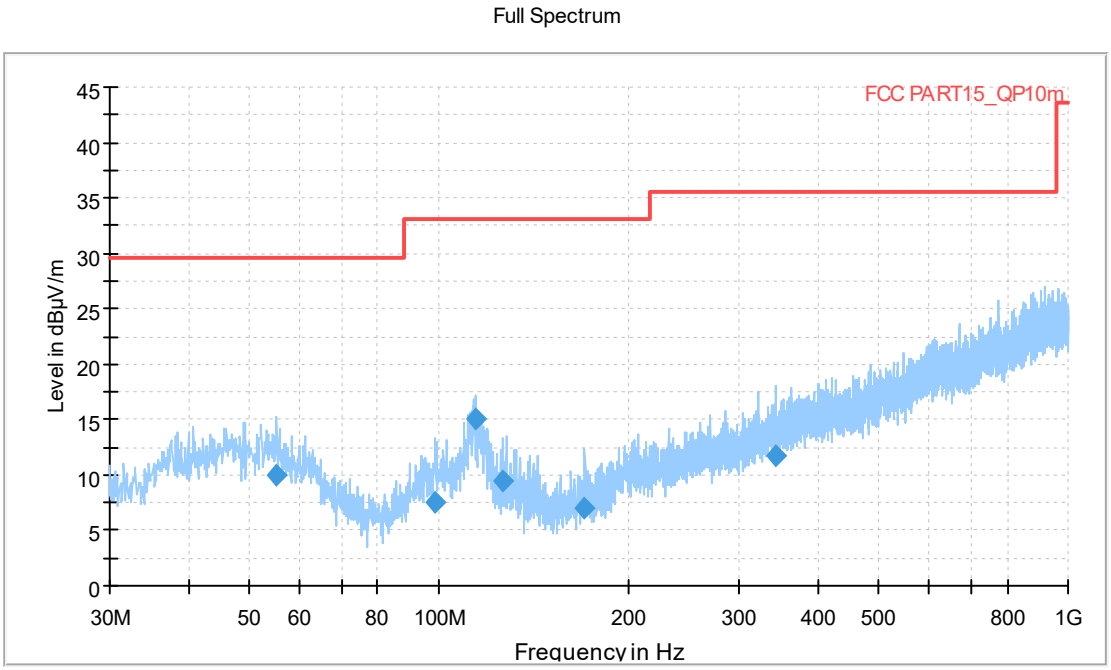


**Figure A.7 Radiated Emission from 30MHz to 1GHz**

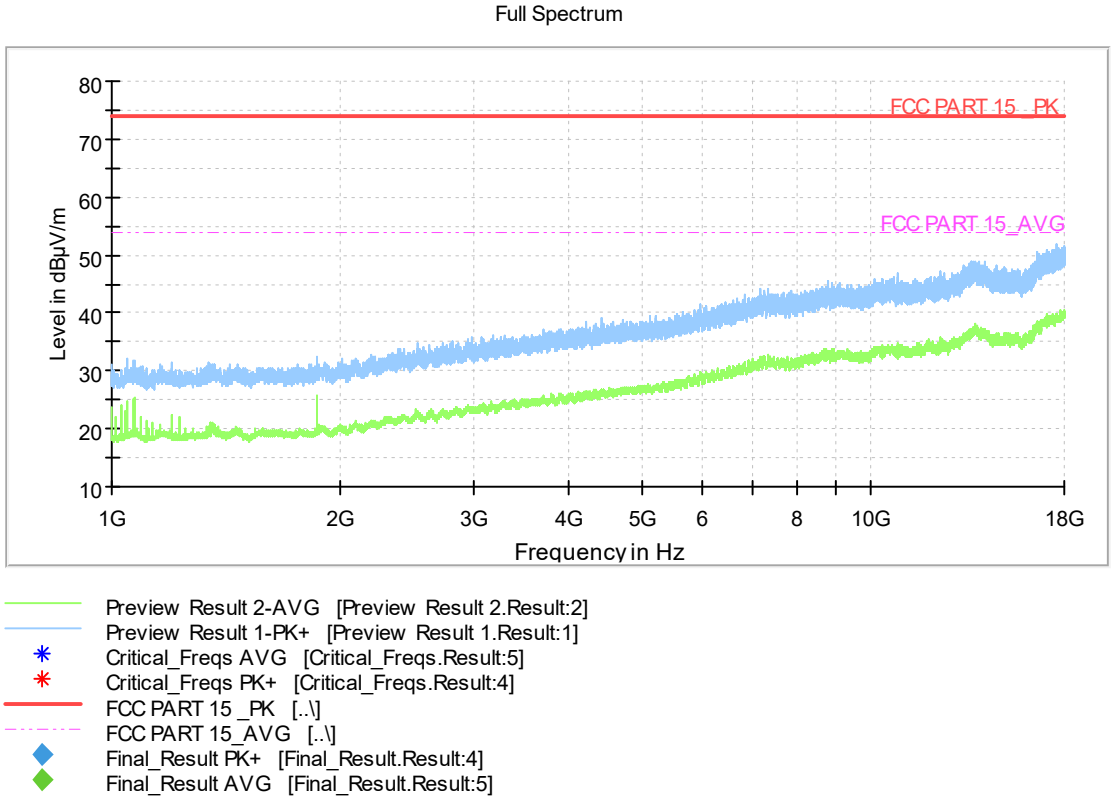


**Figure A.8 Radiated Emission from 1GHz to 18GHz**

**PC + GSM 850 idle, Set.2**

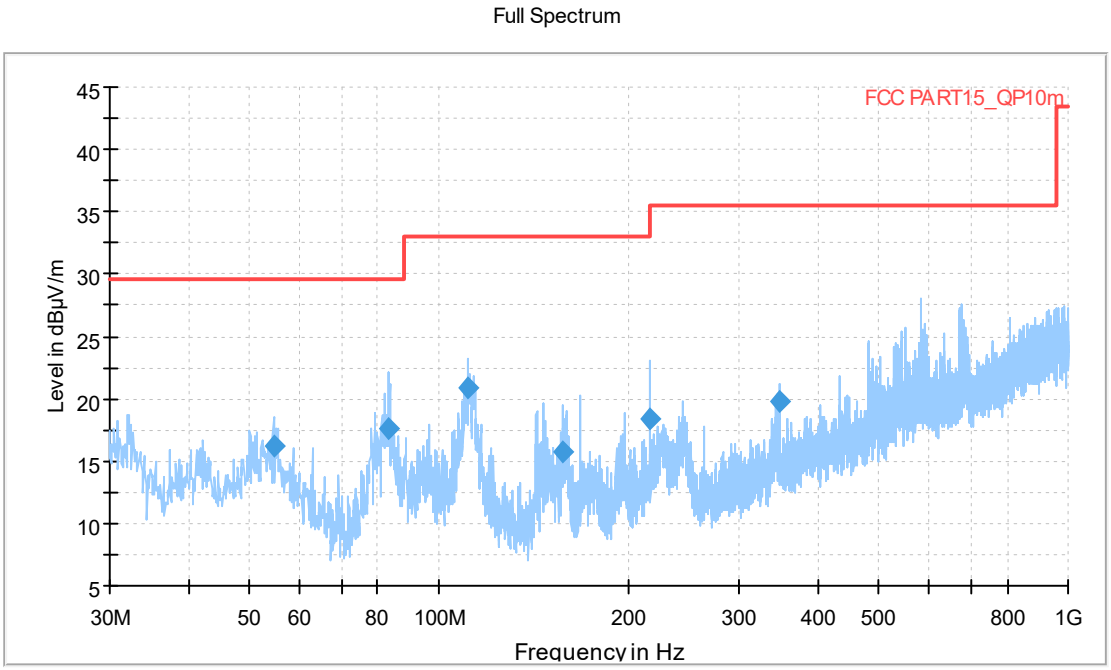


**Figure A.17 Radiated Emission from 30MHz to 1GHz**

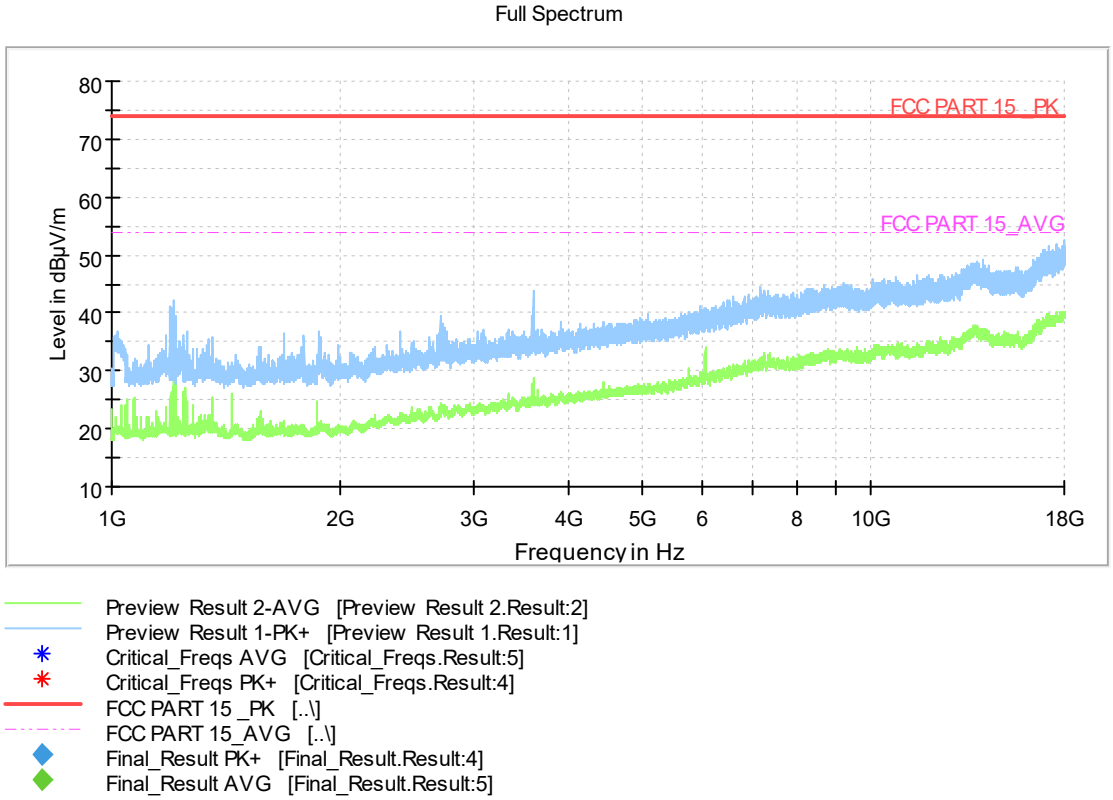


**Figure A.18 Radiated Emission from 1GHz to 18GHz**

**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 charging mode. During the test MS had two modes:

1. MS is connected to a PC;
2. MS is connected to a charger.

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.

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

**Charger + GSM 850MHz idle, Set.1**

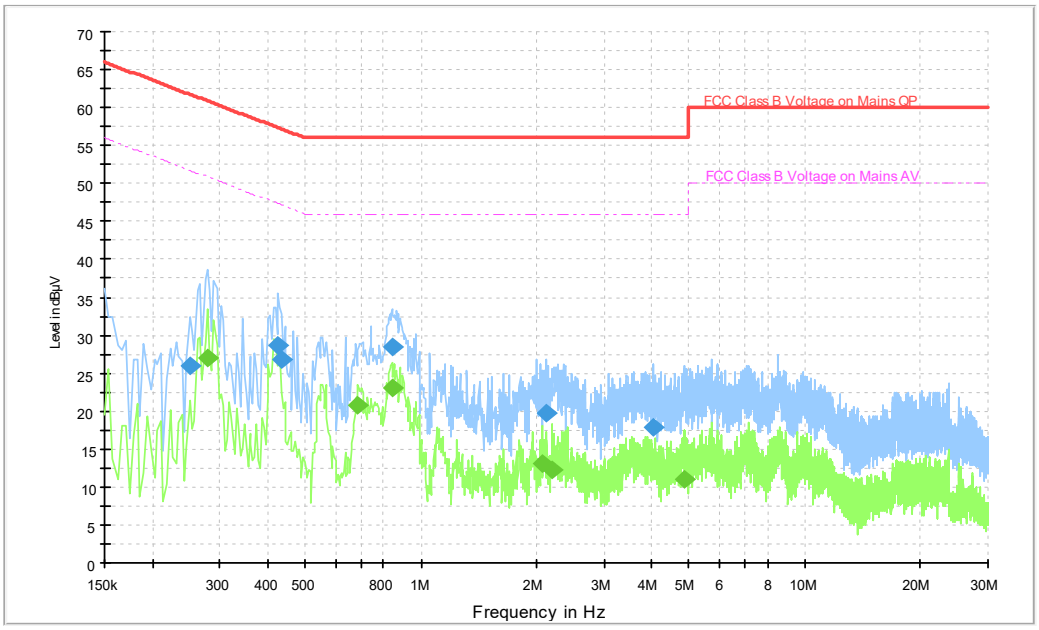


**Figure A.13 Conducted Emission**

**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBµV) | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|---|---|---|---|---|---|
| 0.250000 | 25.9 | L1 | 20.0 | 35.8 | 61.8 |
| 0.426000 | 28.7 | L1 | 19.9 | 28.6 | 57.3 |
| 0.434000 | 26.8 | N | 19.9 | 30.4 | 57.2 |
| 0.842000 | 28.5 | L1 | 19.6 | 27.5 | 56.0 |
| 2.118000 | 19.8 | L1 | 19.5 | 36.2 | 56.0 |
| 4.042000 | 18.0 | L1 | 19.6 | 38.0 | 56.0 |

**Final Result 2**

| Frequency (MHz) | CAverage (dBµV) | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|---|---|---|---|---|---|
| 0.278000 | 27.0 | L1 | 20.0 | 23.9 | 50.9 |
| 0.686000 | 20.8 | L1 | 19.7 | 25.2 | 46.0 |
| 0.842000 | 23.0 | L1 | 19.6 | 23.0 | 46.0 |
| 2.078000 | 13.0 | L1 | 19.5 | 33.0 | 46.0 |
| 2.202000 | 12.3 | L1 | 19.5 | 33.7 | 46.0 |
| 4.846000 | 11.0 | L1 | 19.6 | 35.0 | 46.0 |

**PC + GSM 850MHz idle, Set.2**

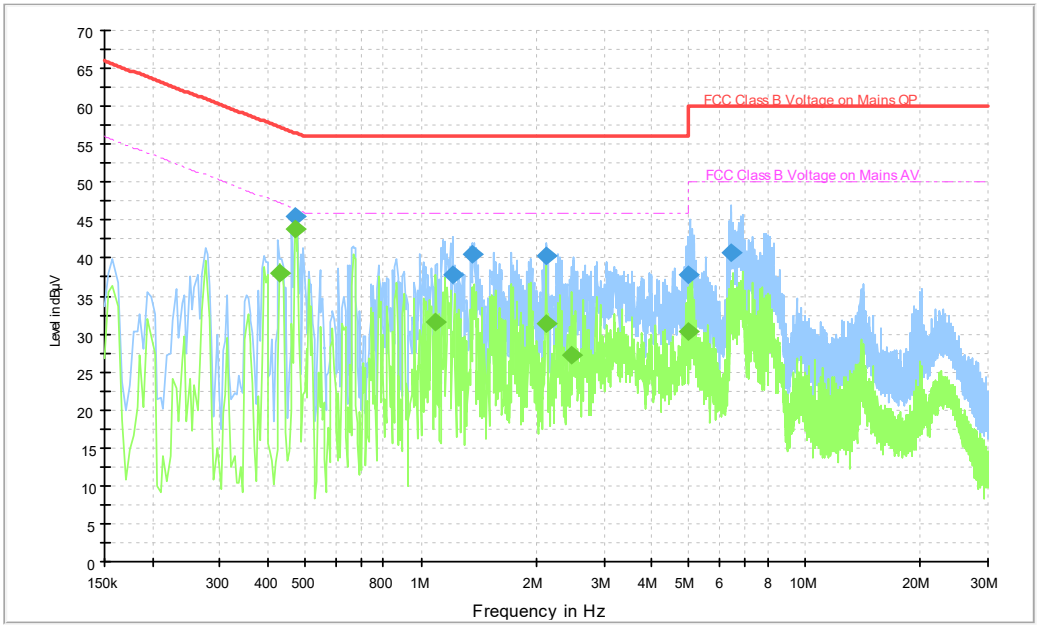


**Figure A.14 Conducted Emission**

**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBµV) | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|---|---|---|---|---|---|
| 0.470000 | 45.4 | N | 20.0 | 11.1 | 56.5 |
| 1.210000 | 37.9 | N | 19.8 | 18.1 | 56.0 |
| 1.362000 | 40.6 | N | 19.8 | 15.4 | 56.0 |
| 2.126000 | 40.3 | N | 19.8 | 15.7 | 56.0 |
| 4.954000 | 37.9 | N | 19.7 | 18.1 | 56.0 |
| 6.442000 | 40.8 | N | 19.7 | 19.2 | 60.0 |

**Final Result 2**

| Frequency (MHz) | CAverage (dBµV) | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|---|---|---|---|---|---|
| 0.430000 | 37.9 | L1 | 19.9 | 9.3 | 47.3 |
| 0.470000 | 43.9 | N | 20.0 | 2.6 | 46.5 |
| 1.094000 | 31.6 | L1 | 19.5 | 14.4 | 46.0 |
| 2.110000 | 31.4 | L1 | 19.5 | 14.6 | 46.0 |
| 2.462000 | 27.3 | L1 | 19.5 | 18.7 | 46.0 |
| 4.982000 | 30.3 | N | 19.7 | 15.7 | 46.0 |

## ANNEX B: Persons involved in this testing

| Test Item | Tester |
|---|---|
| Conducted Continuous Emission | Meng Qingbo & Li Pengfei |
| Radiated Continuous Emission | Yan Hanchen |

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