# EMC TEST REPORT

| | |
|---|---|
| **Report No.:** | 20240917G17912X-W1 |
| **Product Name:** | Cloud digital signage, Ultra High Brightness Window Displays, LCD DIGITAL DISPLAY, LCD digital display, Commercial LCD display, High gloss window display sign, LCD multimedia display, Intelligent multimedia display, Interactive LCD display, Digital signage display |
| **Main Model No. :** | M65SAR |
| **Series Model No. :** | See Page 6 |
| **FCC ID:** | 2AVB8-0010010043963 |
| **Applicant:** | Shanghai Goodview Electronics Technology Co., Ltd. |
| **Address:** | Room 118, 1st Floor, No. 2, Lane 3999, Xiupu Road, Pudong District, Shanghai |
| **Received Date:** | 2024.09.10 |
| **Dates of Testing:** | 2024.09.30~2024.10.15 |
| **Issued by:** | CCIC Southern Testing Co., Ltd. |
| **Lab Location:** | Electronic Testing Building, No.43, Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China.<br>**Tel:** 86-755-26627338 **E-Mail:** manager@ccic-set.com |

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# Test Report

| | |
|---|---|
| **Product Name .....** | Cloud digital signage, Ultra High Brightness Window Displays, LCD DIGITAL DISPLAY, LCD digital display, Commercial LCD display, High gloss window display sign, LCD multimedia display, Intelligent multimedia display, Interactive LCD display, Digital signage display |
| **Model No. .....** | M65SAR |
| **Trade name** | Goodview |
| **Applicant.....** | Shanghai Goodview Electronics Technology Co., Ltd. |
| **Applicant Address .....** | Room 118, 1st Floor, No. 2, Lane 3999, Xiupu Road, Pudong District, Shanghai |
| **Manufacturer.....** | Shanghai Goodview Electronics Technology Co., Ltd. |
| **Manufacturer Address .....** | Room 118, 1st Floor, No. 2, Lane 3999, Xiupu Road, Pudong District, Shanghai |
| **Test Standards .....** | 47 CFR Part 15 Subpart B |
| **Test Result.....** | PASS |

| | | |
|---|---|---|
| **Tested by .....** | Sun Jiaohui | |
| | Sun Jiaohui, Test Engineer | 2024.10.18 |
| **Reviewed by .....** | Chris You | |
| | Chris You, Senior Engineer | 2024.10.18 |
| **Approved by .....** | Wang Shijie | |
| | Wang Shijie, Manager | 2024.10.18 |

# TABLE OF CONTENTS



| Change History | | |
|---|---|---|
| Issue | Date | Reason for change |
| 1.0 | 2024.10.18 | First edition |
| | | |
| | | |

# 1. GENERAL INFORMATION

## 1.1 EUT Description

| | |
|---|---|
| EUT Name ..... .: | Cloud digital signage, Ultra High Brightness Window Displays, LCD DIGITAL DISPLAY, LCD digital display, Commercial LCD display, High gloss window display sign, LCD multimedia display, Intelligent multimedia display, Interactive LCD display, Digital signage display |
| Model name | M43SAR, UHB43HD9, M43********, M55SAR, UHB55HD9, M55********, M65SAR, UHB65HD9, M65********, UHB********, OM********(where "*" can be represented by 0-9, A-Z, or a blank space to differentiate between different sales regions and channels, which does not affect the product's safety and electromagnetic compatibility) |
| Trade Name……: | Goodview |
| Brand Name……: | Goodview |
| Power supply……..: | AC 100 – 240V, 50/60Hz, 6.0A |

*Note1*: The EUT is a display;

*Note2*: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

## 1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart B:

| No. | Identity | Document Title |
|---|---|---|
| 1 | 47 CFR Part 15<br>Subpart B | Radio Frequency Devices |

Test detailed items/section required by FCC rules and results are as below:

| No. | Section | Description | Result |
|---|---|---|---|
| 1 | 15.107 | Conducted Emission | PASS |
| 2 | 15.109 | Radiated Emission | PASS |

NOTE:

（1）The EUT has been tested according to 47 CFR Part 15 Subpart B, Class B. The test procedure is according to ANSI C63.4:2014.

## 1.3 Facilities and Accreditations

### 1.3.1 Facilities

**FCC-Registration No.: CN1283**

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN1283, valid time is until Jun 30, 2025.

**ISED Registration: 11185A-1**

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until Jun 30, 2025.

**A2LA Code: 5721.01**

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

### 1.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

| | |
|---|---|
| Temperature ( ℃): | 15 ℃ - 35 ℃ |
| Relative Humidity (%): | 25% -75% |
| Atmospheric Pressure (kPa): | 86kPa-106kPa |

### 1.3.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

| | |
|---|---|
| Uncertainty of Conducted Emission: | Uc = 3.2 dB (k=2) |
| Uncertainty of Radiated Emission: (30MHz~1GHz) | Uc = 5.8 dB (k=2) |
| Uncertainty of Radiated Emission: (1~6GHz) | Uc = 5.1 dB (k=2) |
| Uncertainty of Radiated Emission: (6~18GHz) | Uc = 5.5 dB (k=2) |

# 2. TEST CONDITIONS SETTING

## 2.1 Test Peripherals

The following is a listing of the EUT and peripherals utilized during the performance of EMC test:

**Support Equipment:**

| Description | Brand name | Model | Serial No. | FCCID |
|---|---|---|---|---|
| Notebook | Lenovo | ThinkPad E14 | / | / |
| Mouse | DELL | MOC5UO | / | / |
| Keyboard | Logitech | K120 | / | / |

**Support Cable：**

| Description | Shield Type | Ferrite Core | Length |
|---|---|---|---|
| AC Power Cable | Un- shielding | / | 1.2m |

## 2.2 Test Mode

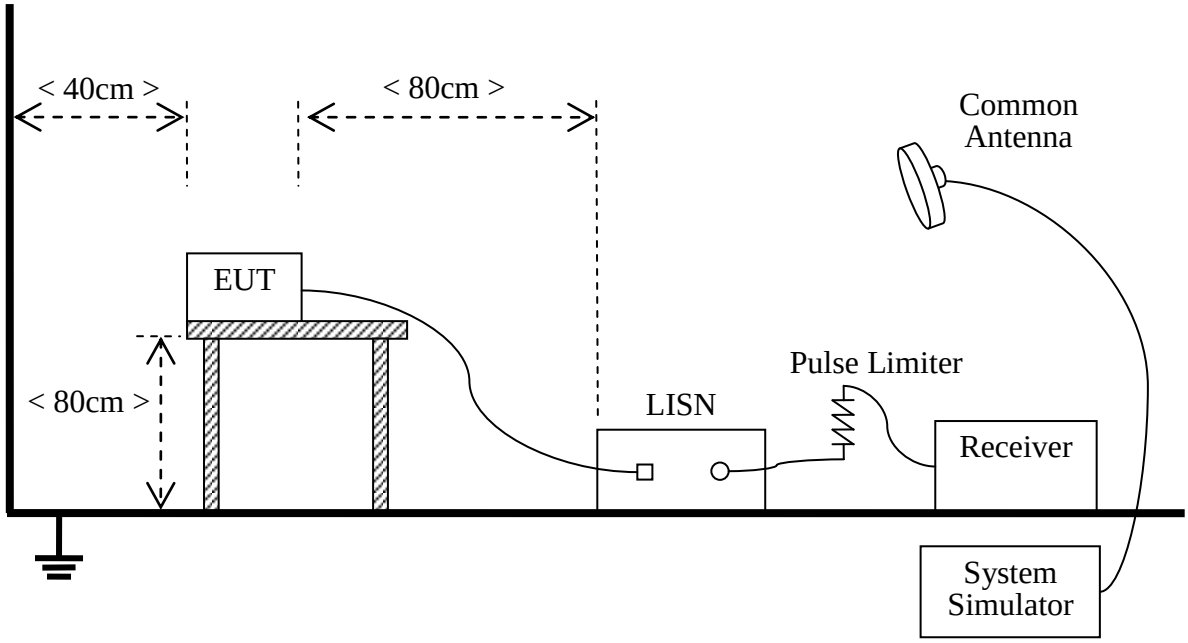
*Note 1:* The EUT have the following typical setups during the test:
Setup1: WIFI link+ (HDMI in) + charger;
Setup2: EUT + LAN Port Traffic + charger;

*Note 2:* Only the worst test patterns are recorded in the report.

## 2.3 Test Setup and Equipment List

### 2.3.1 Conducted Emission

**A. Test Setup:**




The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. The Common Antenna is used for the call between the EUT and the System Simulator (SS). A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

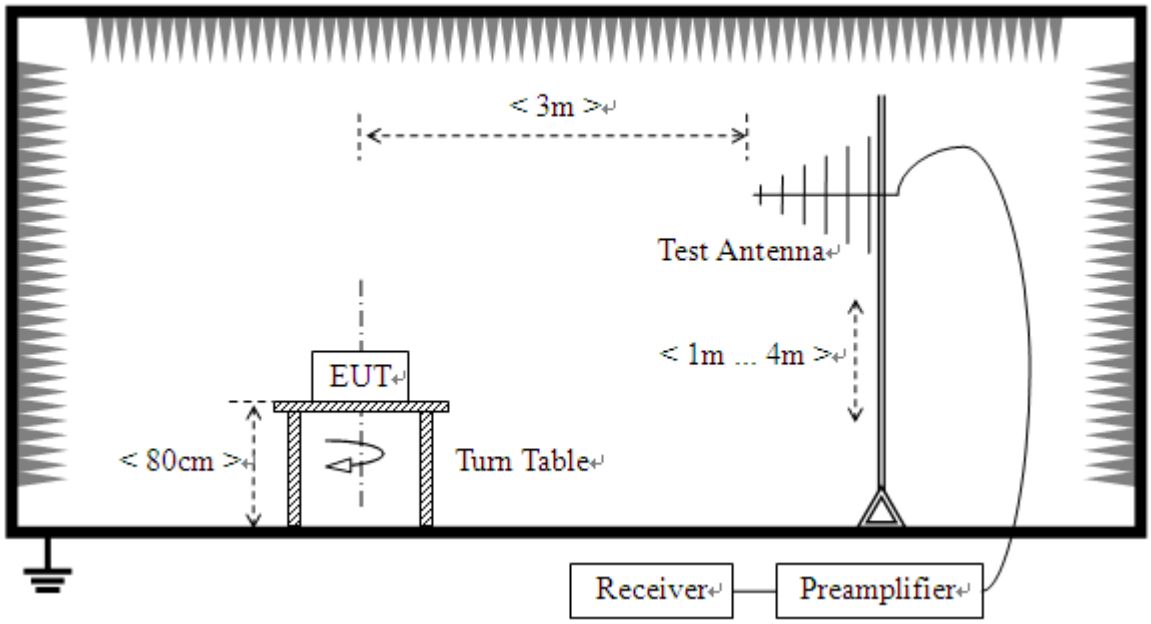
**B. Equipments List:**

| Description | Manufacturer | Model | Serial No. | Calibration Date | Calibration Due. Date |
|---|---|---|---|---|---|
| Test Receiver | ROHDE&SCHWARZ | N9038A | A141202036 | 2024.06.05 | 2025.06.04 |
| LISN | ROHDE&SCHWARZ | ENV216 | A140701847 | 2024.05.23 | 2025.05.22 |
| Cable | MATCHING PAD | W7 | / | 2024.08.02 | 2025.08.01 |

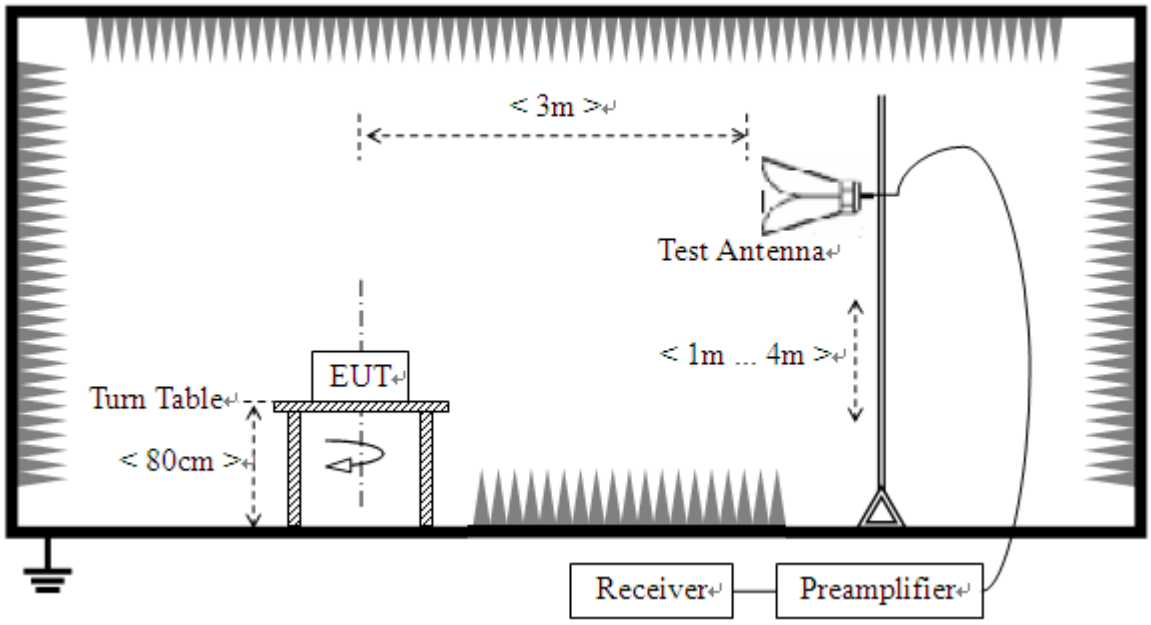
### 2.3.2 Radiated Emission

**A. Test Setup:**

1) For radiated emissions from 30MHz to1GHz




2) For radiated emissions above 1GHz



**B. Test Procedure**

The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

1) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

**C. Equipments List:**

| Description | Manufacturer | Model | Serial No. | Calibration Date | Calibration Due. Date |
|---|---|---|---|---|---|
| EMI Test Receiver | ROHDE&SCHWARZ | ESIB7 | A0501375 | 2024.02.29 | 2025.02.28 |
| Broadband Ant. | ETC | MCTD2786 | A150402239 | 2024.06.01 | 2025.05.31 |
| 3M Anechoic Chamber | Albatross | SAC-3MAC 9*6*6m | A0412375 | 2024.02.28 | 2027.02.27 |
| EMI Test Receiver | ROHDE&SCHWARZ | ESW26 | A180502935 | 2024.05.24 | 2025.05.23 |
| 5M Anechoic Chamber | Albatross | SAC-5MAC 12.8x6.8x6.4m | A0304210 | 2024.06.08 | 2027.06.07 |
| EMI Horn Ant. | ROHDE&SCHWARZ | HF906 | A0304225 | 2024.04.11 | 2025.04.10 |

# 3. 47 CFR PART 15B REQUIREMENTS

## 3.1 Conducted Emission

### 3.1.1 Requirement

According to FCC section 15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

| Frequency range (MHz) | Conducted Limit (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 - 0.50 | 66 to 56 | 56 to 46 |
| 0.50 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

**Note:**

a) The limit subjects to the Class B digital device.

b) The lower limit shall apply at the band edges.

c) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

### 3.1.2 Test Description

See section 2.3.1 of this report.

### 3.1.3 Test Result

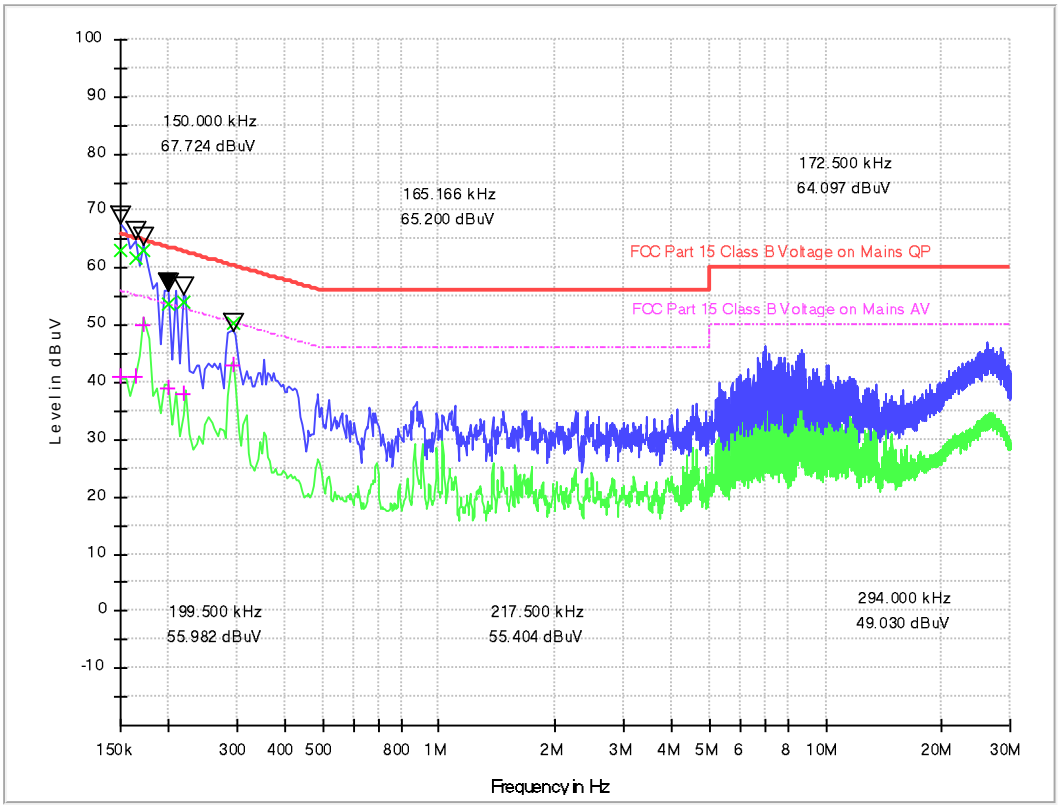
The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

**Note:**

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a Nominal 120V AC, 50/60Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

**Test voltage and frequency (120V AC, 60Hz)**

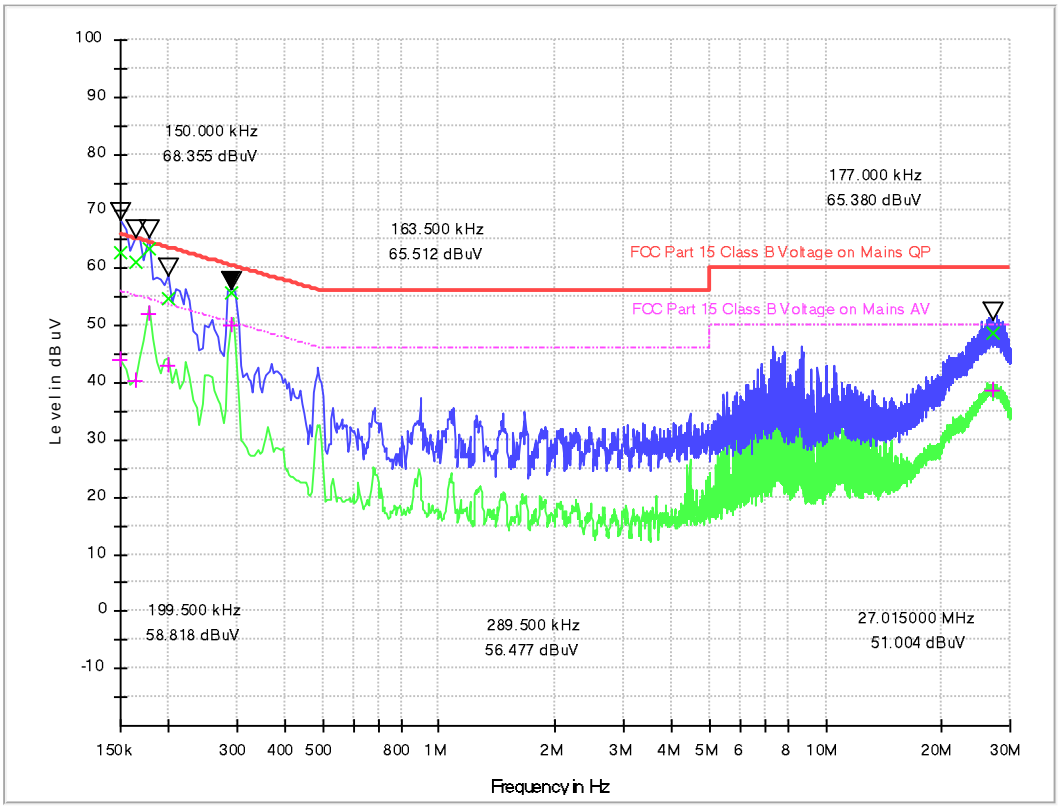
## A. Mains terminal disturbance voltage, L phase, Setup 1




(Plot A: L Phase)

| Frequency (MHz) | QuasiPeak (dB µ V) | CAverage (dB µ V) | Cabel Loss (dB) | Corr. (dB) | Margin - QPK | Limit - QPK | Margin - AV | Limit - AV (dB µ V) |
|---|---|---|---|---|---|---|---|---|
| 0.150000 | 63.00 | 41.06 | 0.1 | 10.1 | 3.00 | 66.0 | 14.94 | 56.0 |
| 0.163500 | 61.70 | 40.98 | 0.1 | 10.1 | 3.58 | 65.3 | 14.30 | 55.3 |
| 0.172500 | 63.22 | 49.92 | 0.1 | 10.1 | 1.62 | 64.8 | 4.92 | 54.8 |
| 0.199500 | 53.86 | 38.88 | 0.1 | 10.1 | 9.77 | 63.6 | 14.75 | 53.6 |
| 0.217500 | 54.16 | 37.86 | 0.1 | 10.1 | 8.75 | 62.9 | 15.06 | 52.9 |
| 0.294000 | 50.28 | 43.16 | 0.1 | 10.1 | 10.13 | 60.4 | 7.26 | 50.4 |

## B. Mains terminal disturbance voltage, N phase, Setup 1




(Plot B: N Phase)

| Frequency (MHz) | QuasiPeak | CAverage (dBµV) | Cabel Loss (dB) | Corr. (dB) | Margin - QPK | Limit - QPK | Margin - AV | Limit - AV (dBµV) |
|---|---|---|---|---|---|---|---|---|
| 0.150000 | 62.92 | 43.96 | 0.1 | 10.1 | 3.08 | 66.0 | 12.04 | 56.0 |
| 0.163500 | 61.23 | 40.18 | 0.1 | 10.1 | 4.06 | 65.3 | 15.10 | 55.3 |
| 0.177000 | 63.38 | 52.07 | 0.1 | 10.1 | 1.24 | 64.6 | 2.56 | 54.6 |
| 0.199500 | 54.89 | 42.98 | 0.1 | 10.1 | 8.74 | 63.6 | 10.65 | 53.6 |
| 0.289500 | 55.68 | 49.96 | 0.1 | 10.1 | 4.86 | 60.5 | 0.58 | 50.5 |
| 27.015000 | 48.66 | 38.67 | 0.5 | 10.5 | 11.34 | 60.0 | 11.33 | 50.0 |

## 3.2 Radiated Emission

### 3.2.1 Requirement

According to FCC section 15.109, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

| Frequency range (MHz) | Field Strength | | Field Strength Limitation at 3m Measurement Dist | |
|---|---|---|---|---|
| | μV/m | Dist | (uV/m) | (dBuV/m) |
| 30.0 - 88.0 | 100 | 3m | 100 | 20log 100 |
| 88.0 - 216.0 | 150 | 3m | 150 | 20log 150 |
| 216.0 - 960.0 | 200 | 3m | 200 | 20log 200 |
| Above 960.0 | 500 | 3m | 500 | 20log 500 |

a) For frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

b) Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

c) For below 1G: QP detector RBW 120kHz ,VBW 300kHz.

For Above 1G: PK detector RBW 1MHz, VBW 3MHz for PK value; AV detector RBW 1MHz, VBW 10Hz for AV value.

**Note:**

1) The tighter limit shall apply at the boundary between two frequency range.
2) Limitation expressed in dBuV/m is calculated by 20log Emission Level(uV/m).
3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of $Ld1 = Ld2 * (d2/d1)^{2.}$
   Example:
   F.S Limit at 30m distance is 30uV/m, then F.S Limitation at 3m distance is adjusted as
   $Ld1 = L1 = 30uV/m * (10)^2 = 100 * 30uV/m.$

### 3.2.2 Test Description

See section 2.3.2 of this report.

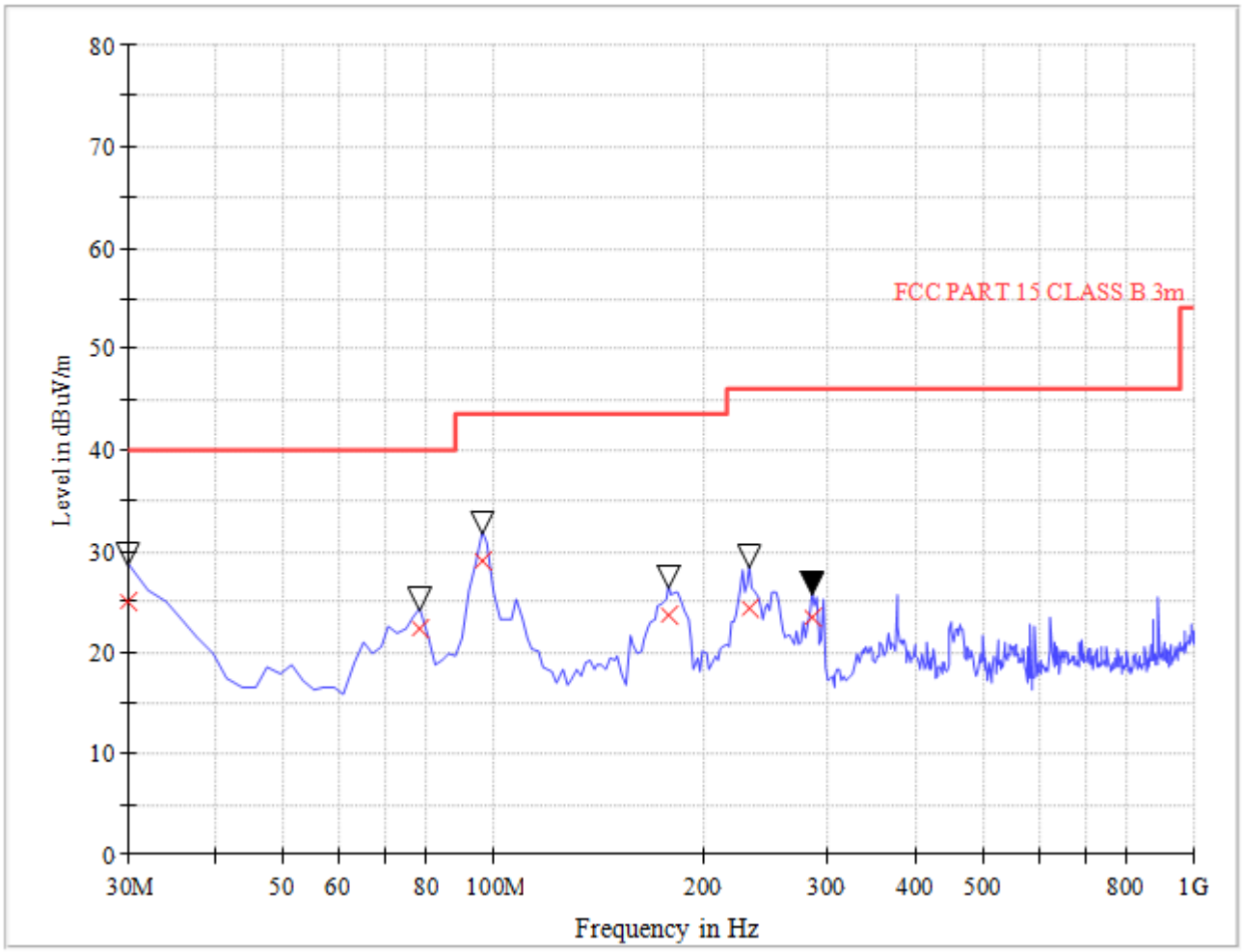
### 3.2.3 Test Result

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.

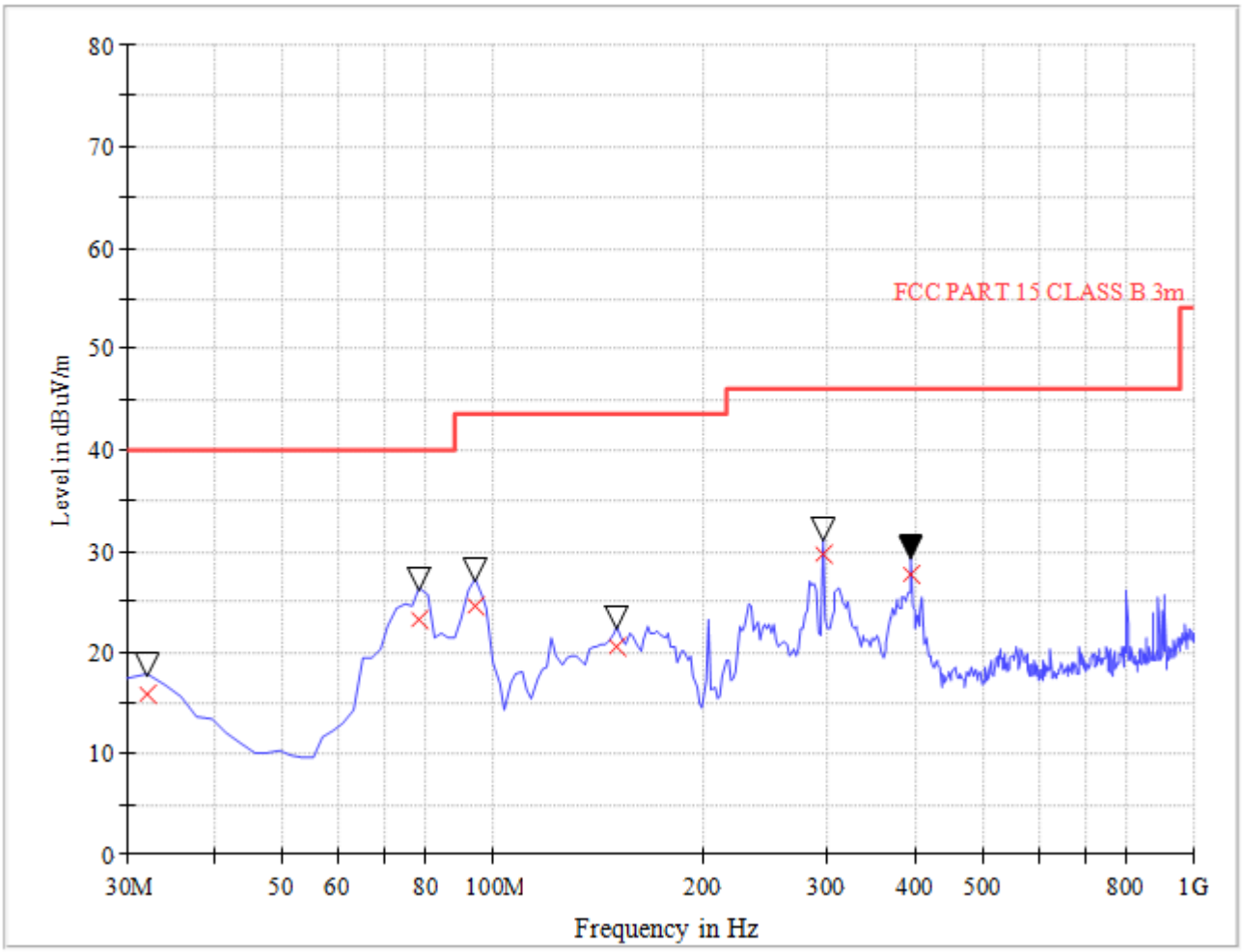
**A. Radiation disturbances, antenna polarization: Vertical, Setup1**




(Plot C: Test Antenna Vertical 30M - 1G)

| Frequency (MHz) | QuasiPeak (dBµV/m) | Bandwidth (kHz) | Antenna height (cm) | Limit (dBµV/m) | Margin (dB) | Antenna | Cable Loss(dB) | ANT. Factor(dB) | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| 30.00 | 25.02 | 120.000 | 104 | 40.0 | 14.98 | Vertical | 0.5 | 18.8 | Pass |
| 78.60 | 22.28 | 120.000 | 103 | 40.0 | 17.72 | Vertical | 0.8 | 7.5 | Pass |
| 96.08 | 29.11 | 120.000 | 109 | 43.5 | 14.39 | Vertical | 0.8 | 9.6 | Pass |
| 177.72 | 23.77 | 120.000 | 102 | 43.5 | 19.73 | Vertical | 1.2 | 10.0 | Pass |
| 232.16 | 24.45 | 120.000 | 105 | 46.0 | 21.55 | Vertical | 1.2 | 10.6 | Pass |
| 284.64 | 23.48 | 120.000 | 103 | 46.0 | 22.52 | Vertical | 1.2 | 13.9 | Pass |

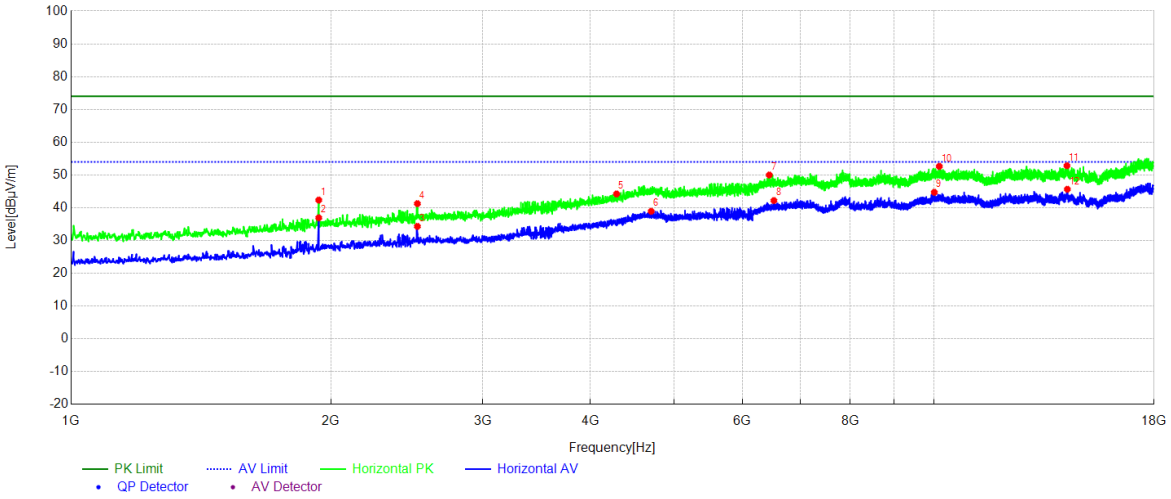
**B. Radiation disturbances, antenna polarization: Horizontal, Setup1**




(Plot D: Test Antenna Horizontal 30M - 1G)

| Frequency (MHz) | QuasiPeak (dBµV/m) | Bandwidth (kHz) | Antenna height (cm) | Limit (dBµV/m) | Margin (dB) | Antenna | Cable Loss(dB) | ANT. Factor(dB) | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| 31.96 | 15.86 | 120.000 | 106 | 40.0 | 24.14 | Horizontal | 0.5 | 18.2 | Pass |
| 78.60 | 23.27 | 120.000 | 103 | 40.0 | 16.73 | Horizontal | 0.8 | 7.5 | Pass |
| 94.16 | 24.65 | 120.000 | 104 | 43.5 | 18.85 | Horizontal | 0.8 | 9.4 | Pass |
| 150.52 | 20.61 | 120.000 | 101 | 43.5 | 22.89 | Horizontal | 1.1 | 11.4 | Pass |
| 296.32 | 29.73 | 120.000 | 107 | 46.0 | 16.27 | Horizontal | 1.3 | 14.2 | Pass |
| 395.44 | 27.74 | 120.000 | 106 | 46.0 | 18.26 | Horizontal | 1.4 | 16.2 | Pass |

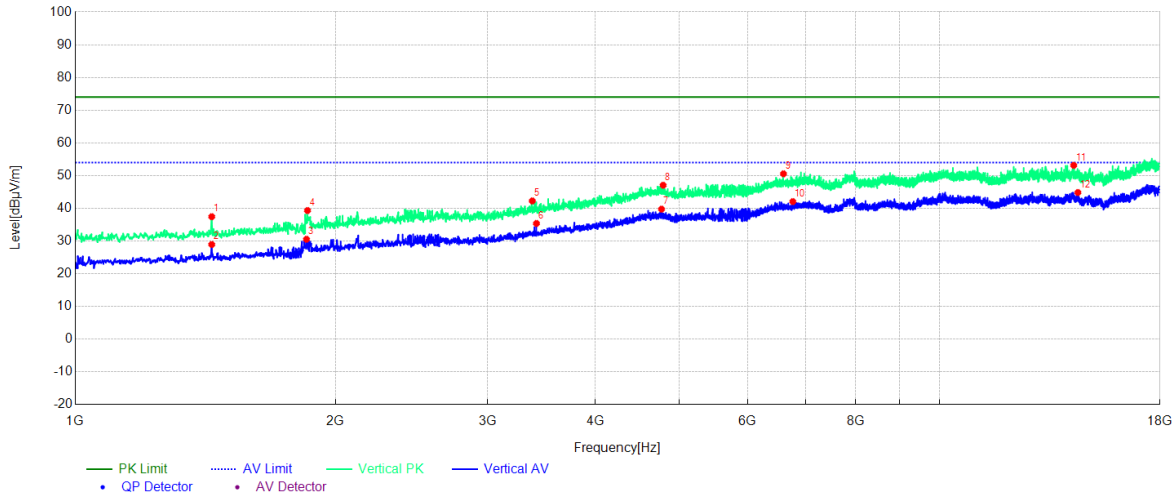
## A. Radiation disturbances, antenna polarization: Horizontal, Setup1




(Plot M: Test Antenna Horizontal 1G – 18G)

| NO. | Freq. [MHz] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin[dB µV/m] | Trace | Height [cm] | Angle [°] | Polarity |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1936.79 | 42.35 | -11.41 | 74.00 | 31.65 | PK | 104 | 297 | Horizontal |
| 2 | 1936.79 | 36.94 | -11.41 | 54.00 | 17.06 | AV | 108 | 292 | Horizontal |
| 3 | 2519.95 | 34.32 | -9.32 | 54.00 | 19.68 | AV | 103 | 86 | Horizontal |
| 4 | 2519.95 | 41.25 | -9.32 | 74.00 | 32.75 | PK | 107 | 85 | Horizontal |
| 5 | 4288.13 | 44.21 | -2.04 | 74.00 | 29.79 | PK | 106 | 73 | Horizontal |
| 6 | 4702.97 | 38.92 | 0.36 | 54.00 | 15.08 | AV | 102 | 77 | Horizontal |
| 7 | 6445.64 | 49.98 | 3.20 | 74.00 | 24.02 | PK | 108 | 182 | Horizontal |
| 8 | 6525.55 | 42.20 | 3.47 | 54.00 | 11.80 | AV | 104 | 244 | Horizontal |
| 9 | 10012.60 | 44.72 | 7.27 | 54.00 | 9.28 | AV | 103 | 103 | Horizontal |
| 10 | 10146.91 | 52.63 | 7.24 | 74.00 | 21.37 | PK | 105 | 75 | Horizontal |
| 11 | 14264.73 | 52.82 | 10.03 | 74.00 | 21.18 | PK | 101 | 108 | Horizontal |
| 12 | 14280.03 | 45.64 | 10.12 | 54.00 | 8.36 | AV | 106 | 41 | Horizontal |

**B. Radiation disturbances, antenna polarization: Vertical, Setup1**




(Plot N: Test Antenna Vertical 1G – 18G)

| NO. | Freq. [MHz] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin[dBµV/m] | Trace | Height [cm] | Angle [°] | Polarity |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1438.64 | 37.45 | -14.05 | 74.00 | 36.55 | PK | 105 | 176 | Vertical |
| 2 | 1438.64 | 28.95 | -14.05 | 54.00 | 25.05 | AV | 107 | 177 | Vertical |
| 3 | 1851.79 | 30.55 | -11.88 | 54.00 | 23.45 | AV | 106 | 360 | Vertical |
| 4 | 1856.89 | 39.32 | -11.86 | 74.00 | 34.68 | PK | 103 | 335 | Vertical |
| 5 | 3380.24 | 42.26 | -6.32 | 74.00 | 31.74 | PK | 109 | 161 | Vertical |
| 6 | 3417.64 | 35.38 | -6.14 | 54.00 | 18.62 | AV | 101 | 15 | Vertical |
| 7 | 4769.28 | 39.75 | 0.40 | 54.00 | 14.25 | AV | 105 | 76 | Vertical |
| 8 | 4789.68 | 47.05 | 0.42 | 74.00 | 26.95 | PK | 103 | 53 | Vertical |
| 9 | 6600.36 | 50.55 | 3.72 | 74.00 | 23.45 | PK | 105 | 117 | Vertical |
| 10 | 6766.98 | 42.05 | 3.81 | 54.00 | 11.95 | AV | 107 | 226 | Vertical |
| 11 | 14303.83 | 53.13 | 10.20 | 74.00 | 20.87 | PK | 106 | 251 | Vertical |
| 12 | 14463.65 | 44.83 | 9.98 | 54.00 | 9.17 | AV | 102 | 35 | Vertical |

-----End of Report-----