



# TEST REPORT

REPORT NUMBER: I23W00004-EMC-Rev2

ON

**Type of Equipment:** Tracker  
**Type of Designation:** PT102A  
**Brand Name:** Prime  
**Manufacturer:** Micron Electronics LLC.  
**FCC ID:** ZKQ-PT102A

ACCORDING TO

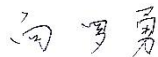
Subpart B, PART 15, RADIO FREQUENCY DEVICES

**Chongqing Academy of Information and Communications Technology**

*Month date, year*

Mar,20, 2023

*Signature*



**Xiang Luoyong**

**Director**

**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 Chongqing Academy of Information and Communications Technology.



**Report No.: I23W00004-EMC-Rev2**

**Revision Version**

| <b>Report Number</b> | <b>Revision</b> | <b>Date</b> | <b>Memo</b>                     |
|----------------------|-----------------|-------------|---------------------------------|
| I23W00004-EMC        | 00              | 2023-03-13  | Initial creation of test report |
| I23W00004-EMC-Rev1   | Rev1            | 2023-03-20  | --                              |
| I23W00004-EMC-Rev2   | Rev2            | 2023-03-22  | --                              |

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**CONTENTS**

|                                                                  |    |
|------------------------------------------------------------------|----|
| 1. Test Laboratory .....                                         | 4  |
| 1.1. Testing Location .....                                      | 4  |
| 1.2. Testing Environment .....                                   | 4  |
| 1.3. Project data .....                                          | 4  |
| 1.4. Signature .....                                             | 4  |
| 2. Client Information .....                                      | 5  |
| 2.1. Applicant Information .....                                 | 5  |
| 2.2. Manufacturer Information .....                              | 5  |
| 3. Equipment under Test (EUT) and Ancillary Equipment (AE) ..... | 6  |
| 3.1. About EUT .....                                             | 6  |
| 3.2. Internal Identification of EUT used during the test .....   | 6  |
| 3.3. Internal Identification of AE used during the test .....    | 6  |
| 4. Reference Documents .....                                     | 7  |
| 4.1. Reference Documents for testing .....                       | 7  |
| 5. Test Equipments Utilized .....                                | 8  |
| 6. Test Results .....                                            | 9  |
| 6.1. Summary of Test Results .....                               | 9  |
| 7. Test Results .....                                            | 10 |
| 7.1. Radiated Emission .....                                     | 10 |
| Annex A EUT Photos .....                                         | 18 |
| ANNEX B Deviations from Prescribed Test Methods .....            | 19 |

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## 1. Test Laboratory

### 1.1. Testing Location

|                          |                                                                                                 |
|--------------------------|-------------------------------------------------------------------------------------------------|
| Name:                    | Chongqing Academy of Information and Communications Technology                                  |
| FCC Registration Number: | CN1239                                                                                          |
| Address:                 | No.19 East Road, Xiantao Big-data Valley, Yubei District, Chongqing, People's Republic of China |
| Postal Code:             | 401336                                                                                          |
| Telephone:               | 0086-23-88069965                                                                                |
| Fax:                     | 0086-23-88608777                                                                                |

### 1.2. Testing Environment

|                     |             |
|---------------------|-------------|
| Normal Temperature: | 21.1-26.5°C |
| Relative Humidity:  | 53-60%RH    |

### 1.3. Project data

|                     |            |
|---------------------|------------|
| Testing Start Date: | 2023-02-21 |
| Testing End Date:   | 2023-02-22 |

### 1.4. Signature



2023-03-22

**Li Quan**  
(Prepared this test report)

**Date**



2023-03-22

**Xiao Yu**  
(Reviewed this test report)

**Date**



2023-03-22

**Xiang Luoyong** Director of the  
laboratory (Approved this test report)

**Date**

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## 2. Client Information

### 2.1. Applicant Information

|                 |                                                        |
|-----------------|--------------------------------------------------------|
| Company name:   | Micron Electronics LLC.                                |
| Address /Post:  | 1001 Yamato Road, Suite 400, Boca Raton, FL 33431, USA |
| City:           | Boca Raton                                             |
| Country:        | USA                                                    |
| Telephone:      | +1 888 538 3489                                        |
| Fax:            | --                                                     |
| Email:          | pcheng@micron-electronics.com                          |
| Contact Person: | Ping Cheng                                             |

### 2.2. Manufacturer Information

|                 |                                                        |
|-----------------|--------------------------------------------------------|
| Company Name:   | Micron Electronics LLC.                                |
| Address /Post:  | 1001 Yamato Road, Suite 400, Boca Raton, FL 33431, USA |
| City:           | Boca Raton                                             |
| Country:        | USA                                                    |
| Telephone:      | +1 888 538 3489                                        |
| Fax:            | --                                                     |
| Email:          | pcheng@micron-electronics.com                          |
| Contact Person: | Ping Cheng                                             |

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

#### 3.1. About EUT

|                      |                             |
|----------------------|-----------------------------|
| EUT Description      | Tracker                     |
| Model name           | PT102A                      |
| Brand name           | Prime                       |
| LTE Frequency Band   | 2/4/12                      |
| Type of modulation   | QPSK/16QAM                  |
| USB port             | DC 5V 1A                    |
| Battery power supply | Model:PT102<br>Voltage:3.8V |

Note: Photographs of EUT are shown in ANNEX B of this test report.

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

| EUT ID | SN or IMEI      | HW Version | SW Version         | Date of receipt |
|--------|-----------------|------------|--------------------|-----------------|
| S4     | 861475037108778 | PT102_V2   | PT102V03.01B07.I01 | 2023-02-15      |

\*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 | Instrument | Manufacturer         | Model | PN    |
|-------|------------|----------------------|-------|-------|
| AE1   | Adapter    | SHENZHEN<br>CHENGGUO | CD112 | 50714 |

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

AE Information is provided by the customer..

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## 4. Reference Documents

### 4.1. Reference Documents for testing

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

| Reference                   | Title                   | Version |
|-----------------------------|-------------------------|---------|
| FCC CFR Part 15, Subpart B, | RADIO FREQUENCY DEVICES | --      |

## 5. Test Equipments Utilized

| No. | Equipment                           | Model     | SN         | HW Version | SW Version | Manufacture | Cal.Due Date |
|-----|-------------------------------------|-----------|------------|------------|------------|-------------|--------------|
| 1   | Test Receiver                       | ESR3      | 102477     | --         | --         | R&S         | 2023-06-29   |
| 2   | LISN                                | ENV216    | 102368     | --         | --         | R&S         | 2023-04-29   |
| 3   | Test Receiver                       | ESU40     | 100350     | 01         | 4.43 SP3   | R&S         | 2023-06-29   |
| 4   | Ultra-wideband Log Periodic Antenna | VULB 9163 | 9163-586   | --         | --         | Schwarzbeck | 2024-10-28   |
| 5   | Double Ridged Guide Antenna         | 9120D     | 9120D-1103 | --         | --         | Schwarzbeck | 2024-05-05   |
| 6   | Test Receiver                       | ESW26     | 101382     | --         | --         | R&S         | 2023-06-29   |
| 7   | Amplifier1                          | SCU-08F1  | 8320027    | --         | --         | R&S         | 2023-06-29   |
| 8   | Amplifier2                          | SCU-18F   | 180093     | --         | --         | R&S         | 2023-06-29   |

### Test software

| No. | Name  | version   | SN | Manufacture |
|-----|-------|-----------|----|-------------|
| 1   | EMC32 | V9.26.01  | -- | R&S         |
| 2   | EMC32 | V10.20.01 | -- | R&S         |

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## 6. Test Results

### 6.1. Summary of Test Results

| FCC Rules                       | Name of Test       | Result |
|---------------------------------|--------------------|--------|
| 15.109                          | Radiated Emission  | Pass   |
| 15.107                          | Conducted Emission | Pass   |
| Note: N/A means not applicable. |                    |        |

## 7. Test Results

### 7.1. Radiated Emission

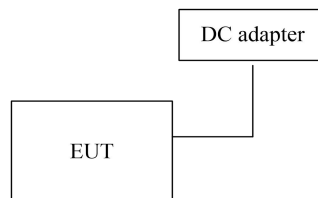
|                          |                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------|
| <b>Specifications:</b>   | 15.109                                                                                |
| <b>Date of Tests:</b>    | 2023-02-21                                                                            |
| <b>DUT Serial Number</b> | S4:861475037108778                                                                    |
| <b>Test conditions:</b>  | Ambient Temperature:21.6-26.5°C<br>Relative Humidity:53-55%RH<br>Air pressure:99.7kPa |
| <b>Operation Mode</b>    | Normal                                                                                |
| <b>Test Results:</b>     | Pass                                                                                  |

#### Limit Level Construction(Except for Class A digital devices):

| Frequency Range (MHz) | Quasi-Peak (dBuV/m) |
|-----------------------|---------------------|
| 30-88                 | 40                  |
| 88-216                | 43.5                |
| 216-960               | 46                  |
| Above 960             | 54                  |

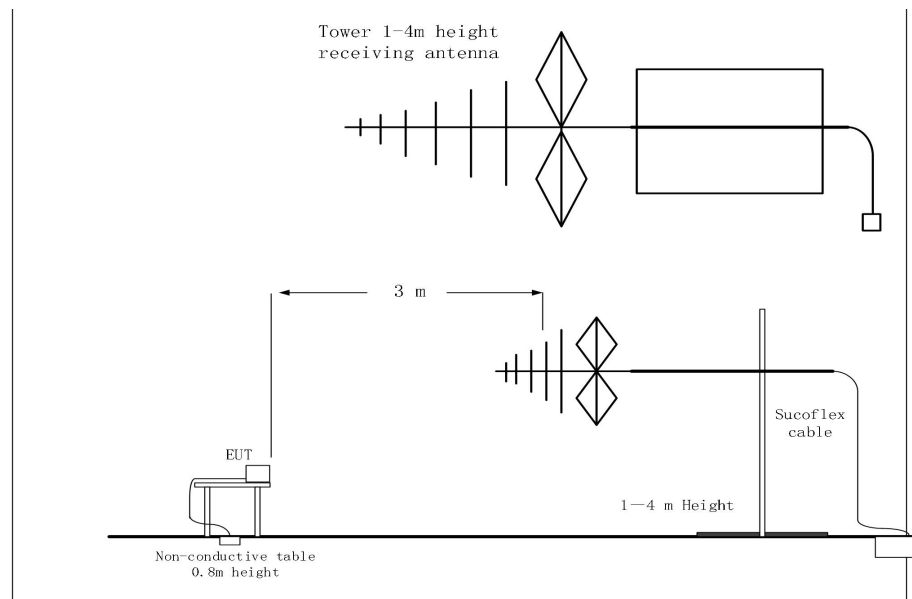
| Frequency Range (MHz) | Peak (dBuV/m) | Average (dBuV/m) |
|-----------------------|---------------|------------------|
| Above 1000            | 74            | 54               |

#### EUT Setup:



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#### Test Method:

For 30-1000MHz, the EUT was placed on the top of a rotating 0.8m table above the ground at a semi-anechoic chamber. The distance between the EUT and the received antenna was 3 meters. The table was rotated 360 degree and the received antenna mounted on a variable-height antenna tower was varied from 1m to 4m to find the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement. Tested in accordance with the procedures of ANSI C63.4-2014, section 8.3.

For 1000-18000MHz, the maximal emission value was acquired by adjusting the antenna height, and the table was rotated 360 degree to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement.

#### Test Result:

A “reference path loss” is established and Corr is the attenuation of “reference path loss”, and including the factor of receive antenna, the gain of the preamplifier, the cable loss.

The measurement results are obtained as described below:

$$\text{Corr (dB/m)} = \text{Cable loss (dB)} + \text{Antenna Factor(dB/m)} - \text{Preamplifier gain (dB)}$$

$$\text{Result (dB } \mu \text{ V/m)} = \text{PMea (dB } \mu \text{ V)} + \text{Corr (dB/m)}$$

#### Uncertainty Measurement:

The measurement uncertainty (30MHz-1000MHz) is 4.09 dB(MAX) (k=2).

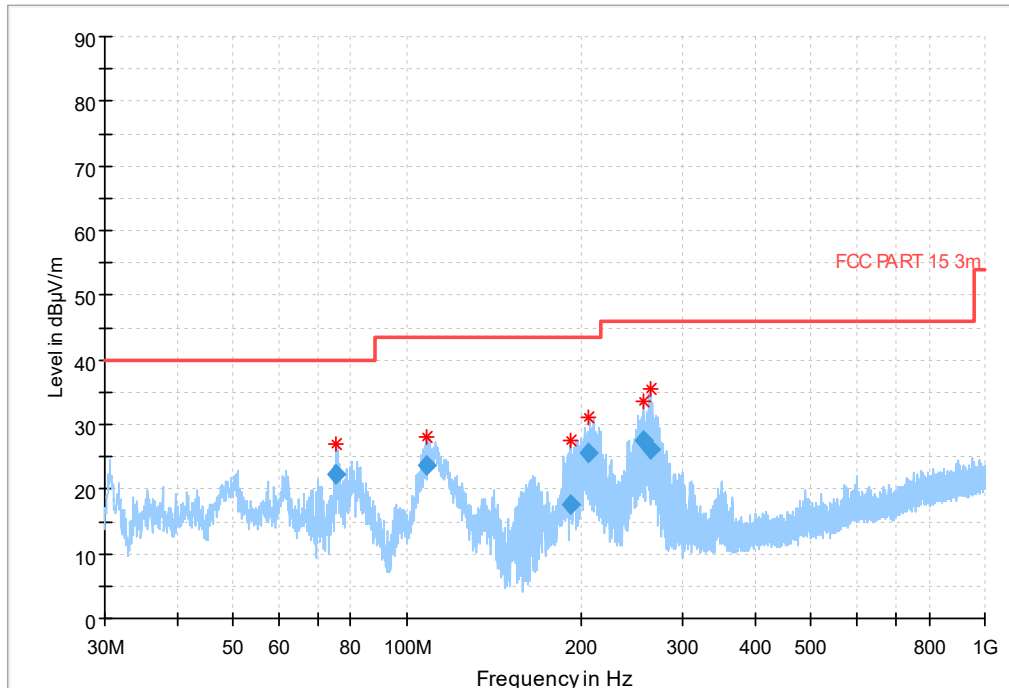
The measurement uncertainty (1000MHz-6000MHz) is 4.84 dB (k=2).

The measurement uncertainty (6000MHz-18000MHz) is 4.52 dB (k=2).

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## Test Data



RE 30MHz-1GHz

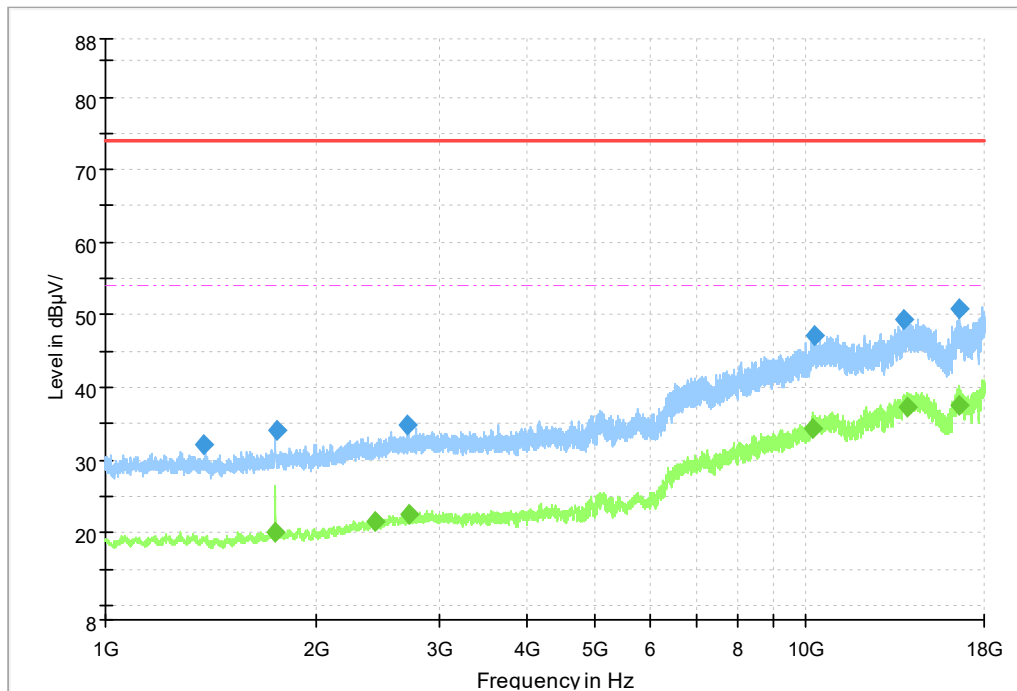
## Final\_Result

| Frequency (MHz) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Measurement Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Correction (dB) |
|-----------------|--------------------|----------------|-------------|-----------------------|-----------------|-------------|-----|---------------|-----------------|
| 75.561000       | 22.37              | 40.00          | 17.63       | 1000.                 | 120.00          | 394.0       | V   | 164.0         | -23.3           |
| 108.010000      | 23.61              | 43.50          | 19.89       | 1000.                 | 120.00          | 350.0       | H   | 170.0         | -18.6           |
| 191.290500      | 17.70              | 43.50          | 25.80       | 1000.                 | 120.00          | 150.0       | H   | 71.0          | -19.2           |
| 206.631000      | 25.58              | 43.50          | 17.92       | 1000.                 | 120.00          | 150.0       | H   | 107.0         | -18.6           |
| 255.966500      | 27.42              | 46.00          | 18.58       | 1000.                 | 120.00          | 110.0       | H   | 257.0         | -16.9           |
| 263.812500      | 26.16              | 46.00          | 19.84       | 1000.                 | 120.00          | 105.0       | H   | 87.0          | -16.7           |

Note: Radiated H and V are tested together.,The test is maximum hold. Therefore, the result is only one set of data.

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RE 1GHz-18GHz

## Final Result 1

| Frequency<br>(MHz) | MaxPeak<br>(dBμV/m) | Average<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Meas.<br>Time<br>(ms) | Bandwidth<br>(kHz) | Height<br>(cm) | Pol | Azimuth<br>(deg) | Corr.<br>(dB) |
|--------------------|---------------------|---------------------|-------------------|----------------|-----------------------|--------------------|----------------|-----|------------------|---------------|
| 1384.542500        | 32.01               | ---                 | 74.00             | 41.99          | 50.0                  | 1000.000           | 150.0          | H   | 214.0            | -13.0         |
| 1751.000000        | ---                 | 20.07               | 54.00             | 33.93          | 50.0                  | 1000.000           | 150.0          | V   | 45.0             | -12.0         |
| 1759.245000        | 34.04               | ---                 | 74.00             | 39.96          | 50.0                  | 1000.000           | 150.0          | V   | 45.0             | -11.9         |
| 2423.500000        | ---                 | 21.47               | 54.00             | 32.53          | 50.0                  | 1000.000           | 150.0          | H   | 121.0            | -9.8          |
| 2705.962500        | 34.87               | ---                 | 74.00             | 39.13          | 50.0                  | 1000.000           | 150.0          | H   | 258.0            | -8.7          |
| 2709.000000        | ---                 | 22.45               | 54.00             | 31.55          | 50.0                  | 1000.000           | 150.0          | H   | 121.0            | -8.7          |
| 10247.700000       | ---                 | 34.33               | 54.00             | 19.67          | 50.0                  | 1000.000           | 150.0          | H   | 178.0            | 9.8           |
| 10271.760000       | 47.10               | ---                 | 74.00             | 26.90          | 50.0                  | 1000.000           | 150.0          | V   | 134.0            | 9.9           |
| 13828.335500       | 49.25               | ---                 | 74.00             | 24.75          | 50.0                  | 1000.000           | 150.0          | H   | 59.0             | 14.3          |
| 13988.400000       | ---                 | 37.29               | 54.00             | 16.71          | 50.0                  | 1000.000           | 150.0          | H   | 243.0            | 14.7          |
| 16532.759500       | 50.73               | ---                 | 74.00             | 23.27          | 50.0                  | 1000.000           | 150.0          | V   | 309.0            | 15.5          |
| 16593.600000       | ---                 | 37.65               | 54.00             | 16.35          | 50.0                  | 1000.000           | 150.0          | H   | 117.0            | 15.2          |

Note: Radiated H and V are tested together.,The test is maximum hold. Therefore, the result is only one set of data.

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## 7.2. Conducted Emission

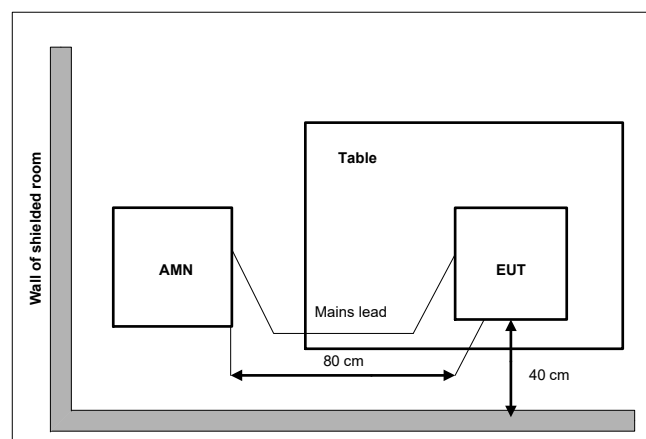
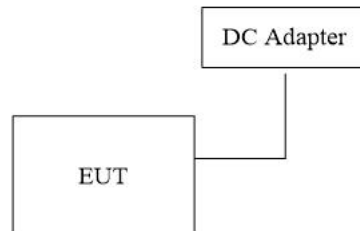
|                           |                                                                             |
|---------------------------|-----------------------------------------------------------------------------|
| <b>Specifications:</b>    | 15.107                                                                      |
| <b>DUT Serial Number:</b> | S4:861475037108778                                                          |
| <b>Date of Tests</b>      | 2023-02-22                                                                  |
| <b>Test conditions:</b>   | Ambient Temperature:21.1℃<br>Relative Humidity:60%<br>Air pressure: 99.8kPa |
| <b>Operation Mode</b>     | Normal                                                                      |
| <b>Test Results:</b>      | Pass                                                                        |

### Limit Level Construction:

| Frequency Range (MHz) | Conducted Limit (dBuV) |           |
|-----------------------|------------------------|-----------|
|                       | 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

### EUT Setup:



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**Test Method:**

For equipment that is designed to be connected to the public utility (DC) power line, the radio frequency voltage that is conducted back onto the DC power line on any frequency or frequencies with the band 150 kHz to 30MHz shall not exceed the limits. Both lines of the power mains connected to the EUT were checked for maximum conducted interference. Tested in accordance with the procedures of ANSI C63.4-2014, section 7.3

**Test results:**

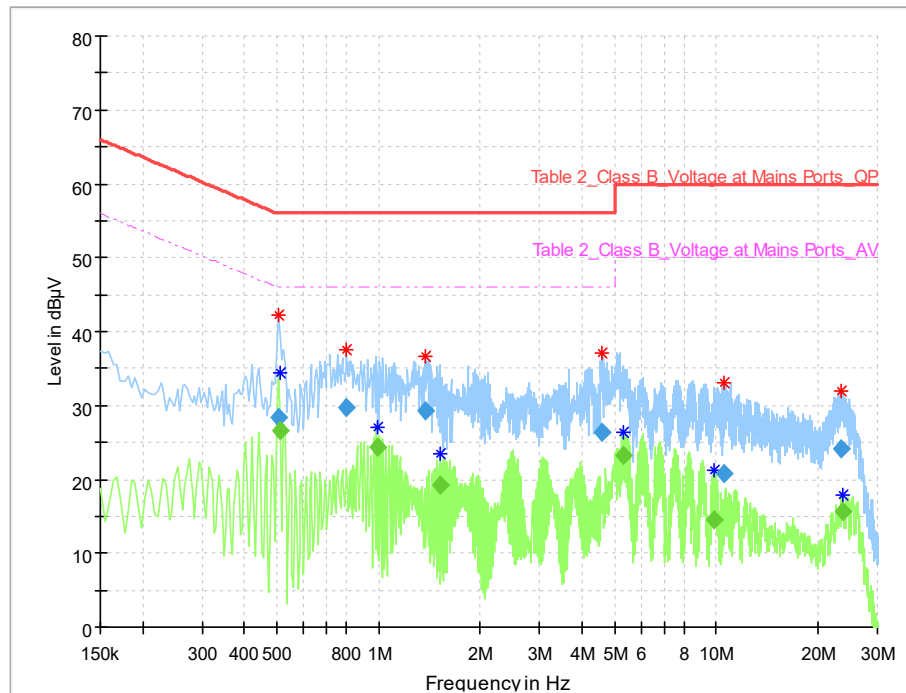
Emission level(quasi-peak or Average peak)(dB $\mu$ V)=Raw value by receiver(dB $\mu$ V) + Corr(Insertion loss+ cable loss) (dB)

The raw value is used to calculate by software which is not shown in the sheet. Margin (dB) =limit value(dB $\mu$ V) – emission level(dB $\mu$ V).

**Uncertainty Measurement:**

The measurement uncertainty is 1.97 dB (k=2).

## Test Data



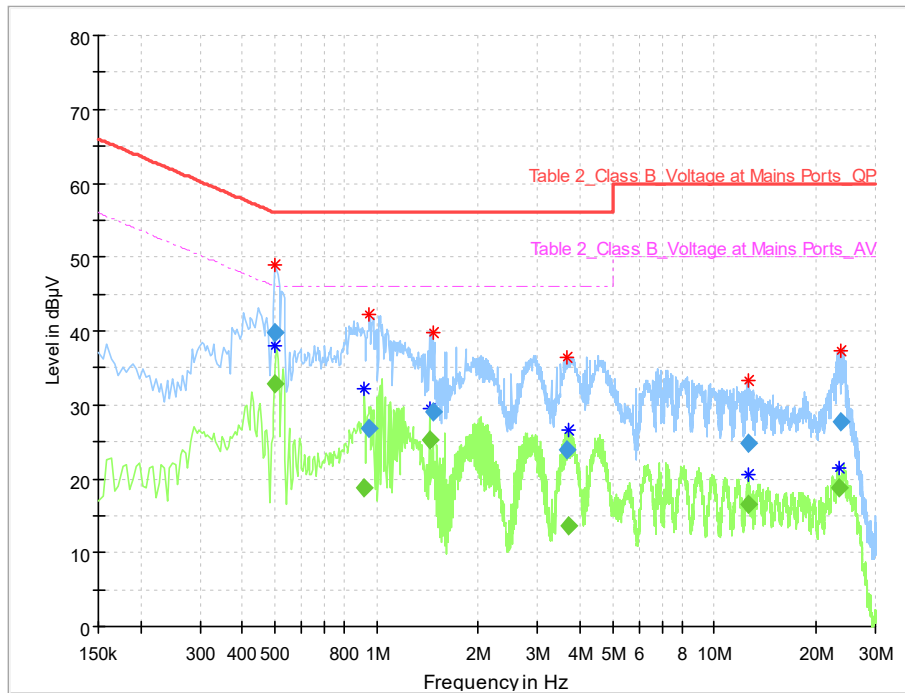
CE-150KHz-30MHz-L

## Final Result

| Frequency<br>(MHz) | QuasiPeak<br>(dBμV) | CAverage<br>(dBμV) | Limit<br>(dBμV) | Margin<br>(dB) | Meas. Time<br>(ms) | Bandwidth<br>(kHz) | Line | Filter | Corr.<br>(dB) |
|--------------------|---------------------|--------------------|-----------------|----------------|--------------------|--------------------|------|--------|---------------|
| 0.505500           | 28.47               | ---                | 56.00           | 27.53          | 1000.0             | 9.000              | L1   | ON     | 9.9           |
| 0.510000           | ---                 | 26.57              | 46.00           | 19.43          | 1000.0             | 9.000              | L1   | ON     | 9.9           |
| 0.798000           | 29.70               | ---                | 56.00           | 26.30          | 1000.0             | 9.000              | L1   | ON     | 9.8           |
| 0.991500           | ---                 | 24.27              | 46.00           | 21.73          | 1000.0             | 9.000              | L1   | ON     | 9.8           |
| 1.369500           | 29.26               | ---                | 56.00           | 26.74          | 1000.0             | 9.000              | L1   | ON     | 9.9           |
| 1.522500           | ---                 | 19.25              | 46.00           | 26.75          | 1000.0             | 9.000              | L1   | ON     | 9.9           |
| 4.609500           | 26.32               | ---                | 56.00           | 29.68          | 1000.0             | 9.000              | L1   | ON     | 10.0          |
| 5.334000           | ---                 | 23.15              | 50.00           | 26.85          | 1000.0             | 9.000              | L1   | ON     | 10.0          |
| 9.847500           | ---                 | 14.47              | 50.00           | 35.53          | 1000.0             | 9.000              | L1   | ON     | 10.0          |
| 10.491000          | 20.83               | ---                | 60.00           | 39.17          | 1000.0             | 9.000              | L1   | ON     | 10.0          |
| 23.527500          | 24.18               | ---                | 60.00           | 35.82          | 1000.0             | 9.000              | L1   | ON     | 10.2          |
| 23.635500          | ---                 | 15.69              | 50.00           | 34.31          | 1000.0             | 9.000              | L1   | ON     | 10.2          |

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## Final Result

| Frequency<br>(MHz) | QuasiPeak<br>(dBμV) | CAverage<br>(dBμV) | Limit<br>(dBμV) | Margin<br>(dB) | Meas. Time<br>(ms) | Bandwidth<br>(kHz) | Line | Filter | Corr.<br>(dB) |
|--------------------|---------------------|--------------------|-----------------|----------------|--------------------|--------------------|------|--------|---------------|
| 0.501000           | 39.83               | ---                | 56.00           | 16.17          | 1000.0             | 9.000              | N    | ON     | 9.9           |
| 0.501000           | ---                 | 32.86              | 46.00           | 13.14          | 1000.0             | 9.000              | N    | ON     | 9.9           |
| 0.915000           | ---                 | 18.66              | 46.00           | 27.34          | 1000.0             | 9.000              | N    | ON     | 9.8           |
| 0.946500           | 26.90               | ---                | 56.00           | 29.10          | 1000.0             | 9.000              | N    | ON     | 9.8           |
| 1.432500           | ---                 | 25.32              | 46.00           | 20.68          | 1000.0             | 9.000              | N    | ON     | 9.8           |
| 1.468500           | 29.15               | ---                | 56.00           | 26.85          | 1000.0             | 9.000              | N    | ON     | 9.8           |
| 3.664500           | 23.87               | ---                | 56.00           | 32.13          | 1000.0             | 9.000              | N    | ON     | 10.0          |
| 3.691500           | ---                 | 13.55              | 46.00           | 32.45          | 1000.0             | 9.000              | N    | ON     | 10.0          |
| 12.561000          | 24.79               | ---                | 60.00           | 35.21          | 1000.0             | 9.000              | N    | ON     | 10.2          |
| 12.601500          | ---                 | 16.50              | 50.00           | 33.50          | 1000.0             | 9.000              | N    | ON     | 10.2          |
| 23.379000          | ---                 | 18.66              | 50.00           | 31.34          | 1000.0             | 9.000              | N    | ON     | 10.2          |
| 23.613000          | 27.64               | ---                | 60.00           | 32.36          | 1000.0             | 9.000              | N    | ON     | 10.2          |

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**Report No.: I23W00004-EMC-Rev2**

## **Annex A EUT Photos**

See the document "I23W00004-External Photos".

See the document "I23W00004-Internal Photos".

Test photo See the document "I23W00004\_ Test Setup Photos".

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## **ANNEX B Deviations from Prescribed Test Methods**

No deviation from Prescribed Test Methods.

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