

TEST REPORT

REPORT NUMBER: I21W00014-EMC_Rev1

ON

Type of Equipment: Tracker
Type of Designation: PA31
Manufacturer: Micron Electronics LLC.

ACCORDING TO
Subpart B, PART 15, RADIO FREQUENCY DEVICES

Chongqing Academy of Information and Communication Technology

Month date, year
Jun 17, 2021

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 Communication Technology.



Report No.: I21W00014-EMC_Rev1

Revision Version

| Report Number | Revision | Date | Memo |
|--------------------|----------|------------|---------------------------------|
| I21W00014-EMC | 00 | 2021-06-17 | Initial creation of test report |
| I21W00014-EMC_Rev1 | 01 | 2021-07-13 | -- |

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Report No.: I21W00014-EMC_Rev1

FCC ID: ZKQ-CM911

Report Date: 2021-06-17

Test Firm Name: Chongqing Academy of Information and Communication
Technology

FCC Registration Number: CN1239

Statement

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 15B. The sample tested was found to comply with the requirements defined in the applied rules.

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CONTENTS

| | |
|--|-----------|
| 1 GENERAL INFORMATION | 4 |
| 1.1 NOTES | 4 |
| 1.2 TESTERS | 5 |
| 1.3 TESTING LABORATORY INFORMATION | 6 |
| 1.4 DETAILS OF APPLICANT OR MANUFACTURER | 7 |
| 2 TEST ITEM | 8 |
| 2.1 GENERAL INFORMATION..... | 8 |
| 2.2 OUTLINE OF EUT | 8 |
| 2.3 MODIFICATIONS INCORPORATED IN EUT..... | 8 |
| 2.4 EQUIPMENT CONFIGURATION | 8 |
| 2.5 OTHER INFORMATION..... | 8 |
| 3 SUMMARY OF TEST RESULTS..... | 9 |
| 4.TEST EQUIPMENT AND TEST SOFTWARE..... | 9 |
| 5 TEST RESULTS | 10 |
| 5.1 RADIATED EMISSION | 10 |
| 5.2 CONDUCTED EMISSION | 14 |
| ANNEX A EXTERNAL PHOTOS | 17 |
| ANNEX B INTERNAL PHOTOS..... | 17 |
| ANNEX C DEVIATIONS FROM PRESCRIBED TEST METHODS | 17 |

1 General Information

1.1 Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part15B.

The test results of this test report relate exclusively to the item(s) tested as specified in section 2.

The following deviation from, additions to, or exclusions from the test specifications have been made. See Annex C.

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1.2 Testers

Name: Chen Xin
Position: Engineer
Department: Department of EMC test
Date: 2021-06-17
Signature:



Editor of this test report:

Name: Xiao Yu
Position: Engineer
Department: Department of EMC test
Date: 2021-06-17
Signature:



Technical responsibility for area of testing:

Name: Xiang Luoyong
Position: Manager
Department: Department of EMC test
Date: 2021-06-17
Signature:



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1.3 Testing Laboratory information**1.3.1 Location**

Name: Chongqing Academy of Information and Communications
Address: Building B, Technology Innovation Center, No.8, Yuma
Road, Chayuan New Area, Nan'an District, Chongqing,
People's Republic of China, 401336
Tel: +86 23 88069965
Fax: +86 23 88608777
Email: liqiao@caict.ac.cn

1.3.2 Details of accreditation status

Accredited by: --
Registration number: --
Standard: --

1.3.3 Test location, where different from section 1.3.1

Name: --
Address: --

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1.4 Details of applicant or manufacturer**1.4.1 Applicant**

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

1.4.2 Manufacturer (if different from applicant in section 1.4.1)

Name: Micron Electronics LLC.
Address: 1001 Yamato Road, Suite 400, Boca Raton, FL 33431, USA
Country: USA

2 Test Item

2.1 General Information

Manufacturer: Micron Electronics LLC.
Name: Tracker
Model Number: PA31
Serial Number: P4L52904010040
IMEI: 866884045657848
Production Status: Product
Receipt date of test item: 2021-06-01

2.2 Outline of EUT

The EUT PA31 is a Product supporting CAT M1 Band 2/4/5/12/13 and PCS1900.

2.3 Modifications Incorporated in EUT

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

2.4 Equipment Configuration

Equipment configuration list:

| Item | Generic Description | Manufacturer | Type | Serial No. | Remarks |
|------|---------------------|-------------------------|------|--------------------|---------|
| A | Product | Micron Electronics LLC. | PA31 | P4L52904010 040 | None |

2.5 Other Information

--

3 Summary of Test Results

A brief summary of the tests carried out is shown as following.

| Configuration1 | | |
|----------------------|--------------------------|--------|
| Specification Clause | Name of Test | Result |
| 15.107 | Conducted limits | P |
| 15.109 | Radiated Emission limits | P |

4. Test equipment and Test software

| Test equipment Used: | | | | | | | |
|----------------------|-----------------------------|--------------|----------------|---------------|------------|------------|--------|
| Number | Description | Manufacturer | Model Number | Serial Number | Cal. Date | Cal Due | State |
| 1 | Test Receiver | R&S | ESU 40 | 100350 | 2021-05-12 | 2022-06-11 | Normal |
| 2 | Trilog Antenna | Schwarzbeck | VULB9163 | 9163-586 | 2020-10-12 | 2021-11-11 | Normal |
| 3 | Double Ridged Guide Antenna | Schwarzbeck | BBHA 9120D | 9120D-1083 | 2021-05-12 | 2022-06-11 | Normal |
| 4 | Fully-Anechoic Chamber | TDK | FAC | -- | 2020-12-23 | 2024-01-22 | Normal |
| 5 | AMN | R/S | ENV216 | 101128 | 2021-05-12 | 2022-06-11 | Normal |
| 6 | EMI Test Receiver | R/S | ESCI 9KHz-3GHZ | 101214 | 2021-05-12 | 2022-06-11 | Normal |

| Test software Used: | | | | |
|---------------------|--------------------|--------------------|--------------|----------|
| Number | Test item | Test software name | Manufacturer | Version: |
| 1 | Radiated Emission | EMC32 | R/S | V9.01.00 |
| 2 | Conducted Emission | EMC32 | R/S | V8.51.0 |

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5 Test Results

5.1 Radiated Emission

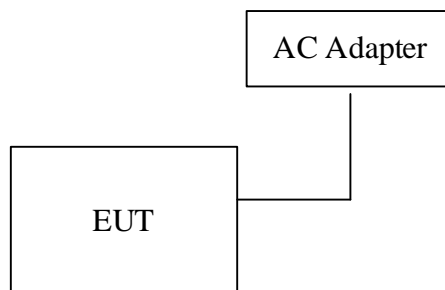
| | |
|------------------|---|
| Specifications: | 15.109 |
| Date of Tests | 2021-06-02 |
| Test conditions: | Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa |
| Operation Mode | Normal |
| Test Results: | Pass |

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:



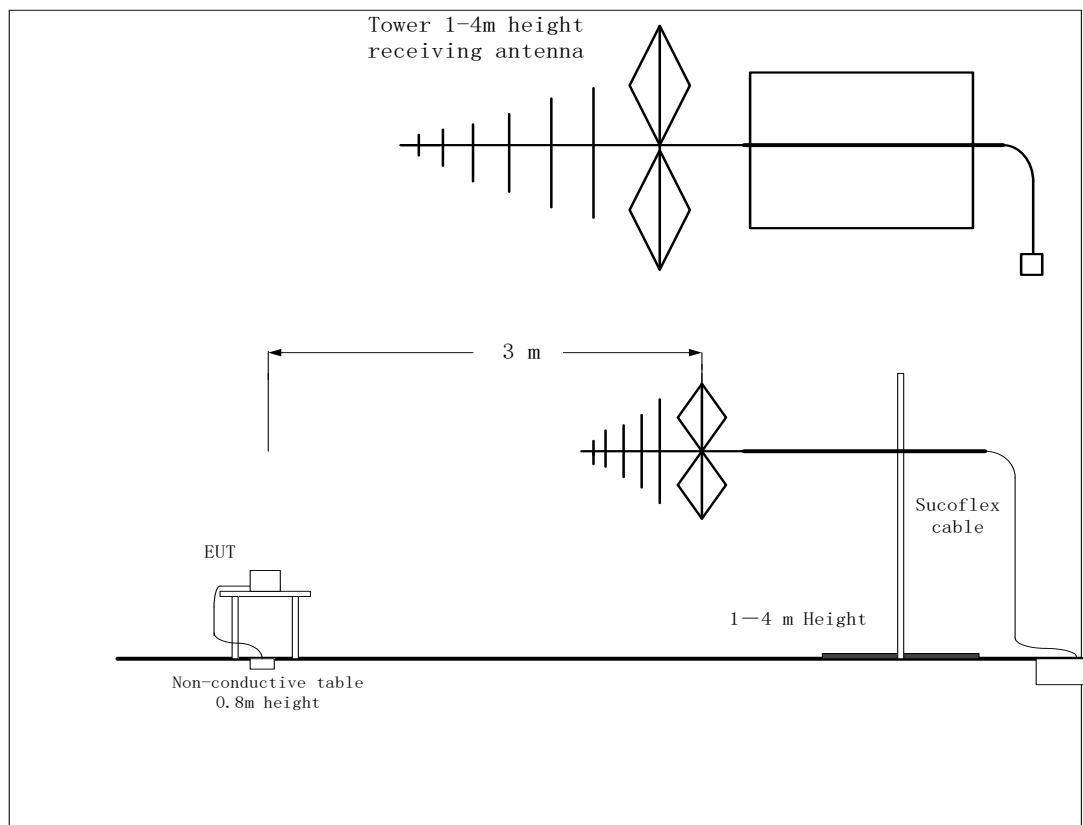
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Test Setup:



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.

Uncertainty Measurement:

The measurement uncertainty (30MHz-1000MHz) is 3.97 dB ($k=2$).

The measurement uncertainty (1000MHz-6000MHz) is 3.29 dB ($k=2$).

The measurement uncertainty (6000MHz-18000MHz) is 3.91 dB ($k=2$).

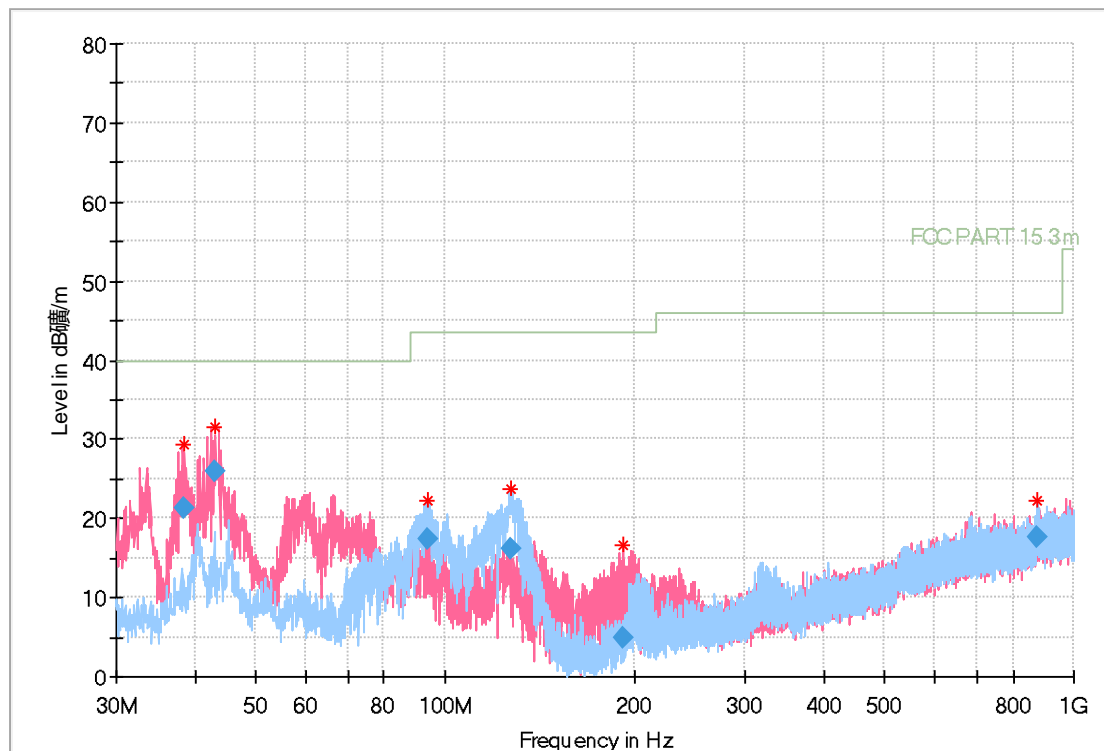
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Test Data



RE 30M-1G

| Frequency (MHz) | QuasiPeak (dB 磁/m) | Limit (dB 磁/m) | Margin (dB) | Meas. Time | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) |
|--------------------|-----------------------|-------------------|----------------|---------------|--------------------|----------------|-----|------------------|---------------|
| 38.373500 | 21.33 | 40.00 | 18.67 | 1000.0 | 120.000 | 155.0 | V | 307.0 | -20.0 |
| 42.936000 | 26.04 | 40.00 | 13.96 | 1000.0 | 120.000 | 100.0 | V | 87.0 | -18.8 |
| 93.951000 | 17.40 | 43.50 | 26.10 | 1000.0 | 120.000 | 341.0 | H | -22.0 | -21.6 |
| 126.851000 | 16.15 | 43.50 | 27.35 | 1000.0 | 120.000 | 241.0 | H | 176.0 | -23.5 |
| 192.272500 | 4.83 | 43.50 | 38.67 | 1000.0 | 120.000 | 105.0 | V | 149.0 | -21.3 |
| 874.830000 | 1 Q7.56 | 46.00 | 28.44 | 1000.0 | 120.000 | 370.0 | H | 239.0 | -7.1 |

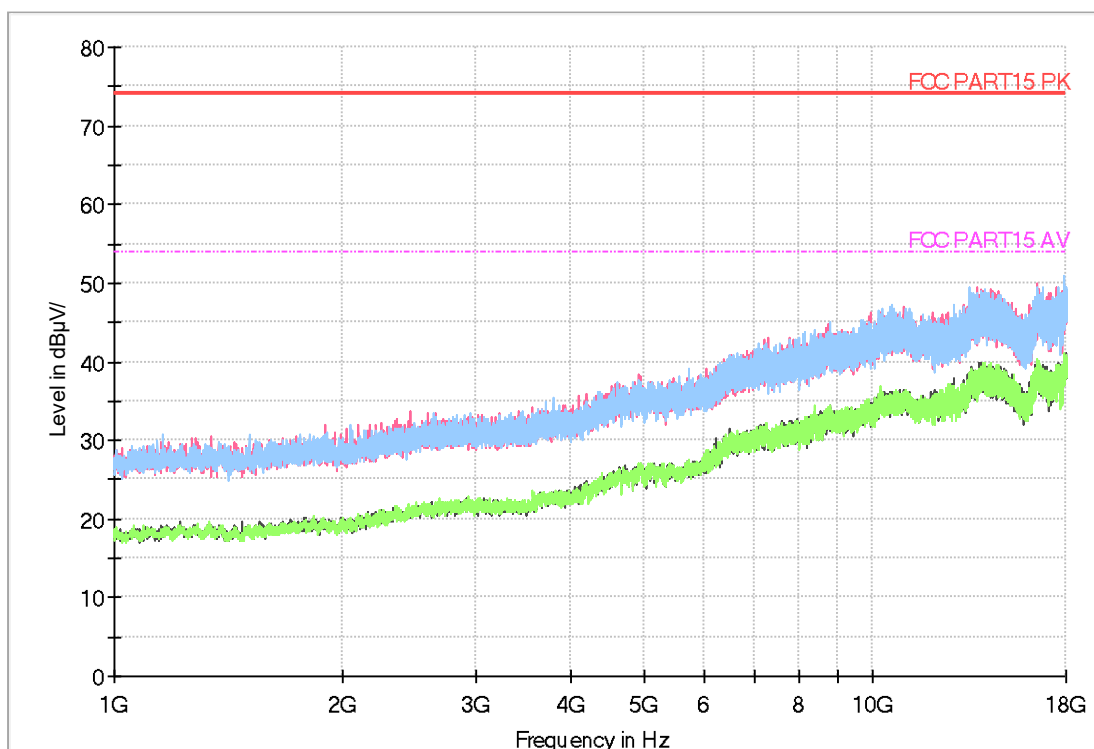
Note: The red curve represents V polarization, the blue curve represents V polarization.

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RE 1-18G

5.2 Conducted Emission

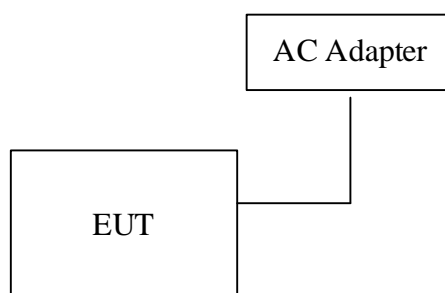
| | |
|-------------------------|---|
| Specifications: | 15.107 |
| Date of Tests | 2021-06-17 |
| Test conditions: | Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa |
| Operation Mode | Normal |
| Test Results: | Pass |

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:



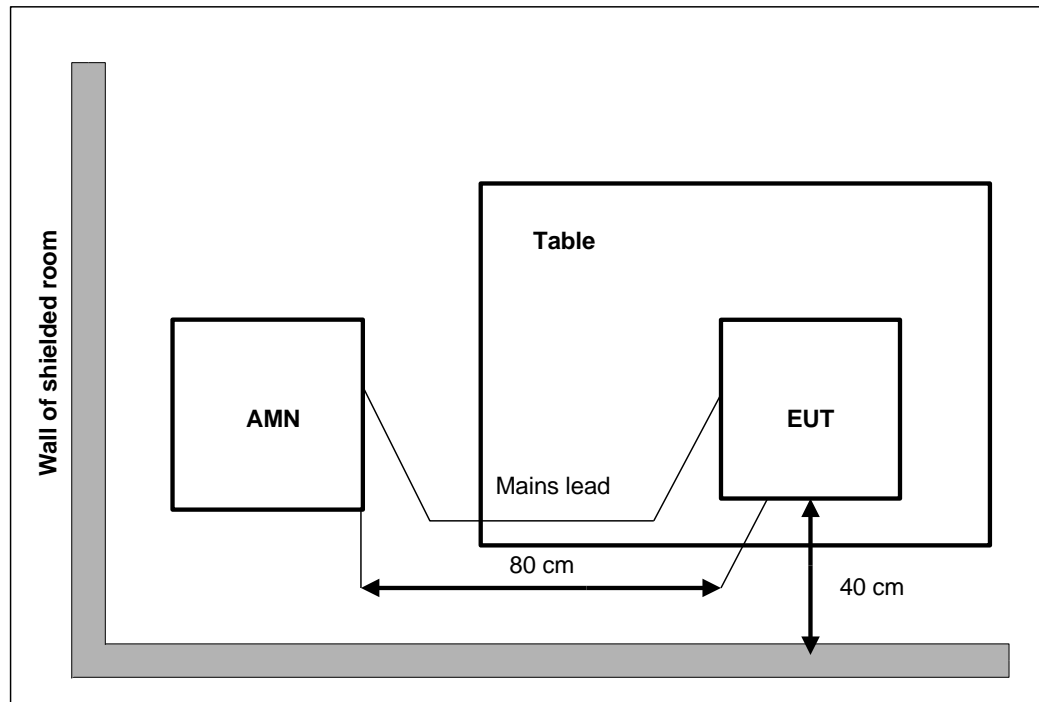
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Test Setup:



Test Method:

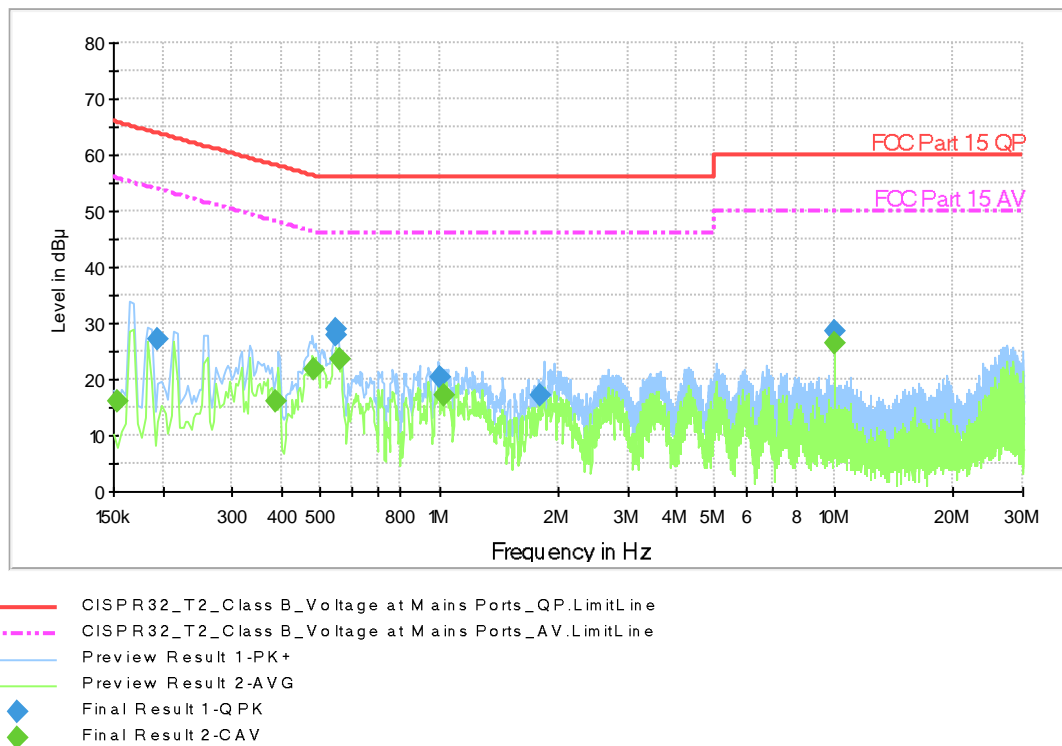
For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies with the band 150 kHz to 30MHz shall not exceed the limits. Both lines of the power mains connected to the EUT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

Uncertainty Measurement:

The measurement uncertainty is 1.83 dB (k=2).

Test Data

CISPR N&L1 Voltage 150k to 30MHz-Class B



L&N 150KHz-30MHz

Final Result 1

| Frequency (MHz) | QuasiPeak (dB μ V) | Meas. Time | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) |
|-----------------|--------------------|------------|-----------------|--------|------|------------|-------------|----------------|
| 0.194000 | 27.0 | 1000.0 | 9.000 | On | N | 9.7 | 36.8 | 63.9 |
| 0.547244 | 27.9 | 1000.0 | 9.000 | On | L1 | 9.7 | 28.1 | 56.0 |
| 0.548350 | 28.8 | 1000.0 | 9.000 | On | N | 9.7 | 27.2 | 56.0 |
| 1.010994 | 20.3 | 1000.0 | 9.000 | On | N | 9.7 | 35.7 | 56.0 |
| 1.801719 | 17.0 | 1000.0 | 9.000 | On | N | 9.7 | 39.0 | 56.0 |
| 9.998500 | 28.6 | 1000.0 | 9.000 | On | L1 | 9.9 | 31.4 | 60.0 |

Final Result 2

| Frequency (MHz) | CAverage (dB μ V) | Meas. Time | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) |
|-----------------|-------------------|------------|-----------------|--------|------|------------|-------------|----------------|
| 0.154000 | 16.0 | 1000.0 | 9.000 | On | N | 9.5 | 39.8 | 55.8 |
| 0.386831 | 16.2 | 1000.0 | 9.000 | On | N | 9.7 | 32.0 | 48.1 |
| 0.482531 | 21.9 | 1000.0 | 9.000 | On | N | 9.7 | 24.4 | 46.3 |
| 0.559244 | 23.4 | 1000.0 | 9.000 | On | N | 9.7 | 22.6 | 46.0 |
| 1.023500 | 17.1 | 1000.0 | 9.000 | On | N | 9.7 | 28.9 | 46.0 |
| 9.998500 | 26.3 | 1000.0 | 9.000 | On | L1 | 9.9 | 23.7 | 50.0 |

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Test photo

See the Pic1~3 in document” I21W00014 _EMC Test Setup Photos”.

Annex A External Photos

See the document” I21W00014 -External Photos_Rev1”.

Annex B Internal Photos

See the document” I21W00014 -Internal Photos_Rev1”.

ANNEX C Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

_____ **The End of this Report** _____

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