



TEST REPORT

REPORT NUMBER: I23W00017-EMC-Rev2

ON

Type of Equipment:	Tracker
Type of Designation:	AT Plus 4G2
Brand Name:	Prime
Manufacturer:	Micron Electronics LLC.
FCC ID:	ZKQ-ATP4GA2

ACCORDING TO

Subpart B, PART 15, RADIO FREQUENCY DEVICES

Chongqing Academy of Information and Communications Technology

Month date, year

Jun 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.: I23W00017-EMC-Rev2

Revision Version

Report Number	Revision	Date	Memo
I23W00017-EMC	00	2023-05-31	Initial creation of test report
I23W00017-EMC-Rev1	01	2023-06-16	First change of test report
I23W00017-EMC-Rev2	01	2023-06-20	Second change of test report

Chongqing Academy of Information and Communication Technology

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1. Test Laboratory

1.1. Testing Location

Name:	Chongqing Academy of Information and Communications Technology
FCC Registration Number:	CN1239
Address:	Building C, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People's Republic of China
Postal Code:	401336
Telephone:	0086-23-88069965
Fax:	0086-23-88608777

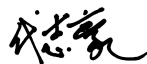
1.2. Testing Environment

Normal Temperature:	21.9-24.1°C
Relative Humidity:	55.0-57.0%

1.3. Project data

Testing Start Date:	2023-04-28
Testing End Date:	2023-06-15

1.4. Signature



2023-06-20

Dai Zhihao
(Prepared this test report)

Date

2023-06-20

Xiao Yu
(Reviewed this test report)

Date

2023-06-20

**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:	USA
Country:	Boca Raton
Telephone:	18885383489
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:	USA
Country:	Boca Raton
Telephone:	18885383489
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	AT Plus 4G2
Brand name	PRIME
CATM Frequency Band	2/4/12/13
Type of modulation	QPSK/16QAM
Extreme Temperature	-20/+55°C
Power rating	DC 3.7V from battery, DC 5V for USB port

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	IMEI:35681310138037	A502_V1	P51AEV02.01B22. I01	2023-04-24

*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	Info
Adapter	TPA-46B050100UU	SZTY

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

dB*: is provided 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	ESU26	100367	01	4.43 SP3	R&S	2023-06-29
2	Test Receiver	ESCI	101214	00	4.42 SP2	R&S	2023-06-29
3	Ultra-wideband Log Periodic Antenna	VULB 9163	01392	--	--	Schwarzbeck	2024-05-04
4	Double Ridged Guide Antenna	HF907	100357	--	--	R&S	2025-03-25
5	Artificial Main Network	ENV 216	101128	--	--	R&S	2024-05-27
6	anechoic chamber	FACT3-2	--	--	--	ETS	2025-04-29
7	Amplifier1	150A	1429	--	--	Beehive	--
8	Amplifier2	SCU 18	10141	--	--	R&S	--

Test software

No.	Name	version	SN	Manufacture
1	EMC32	V 8.51.00	--	R&S

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

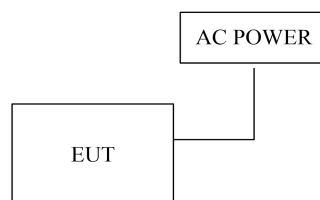
Specifications:	15.109
Date of Tests	2023-04-28, 2023-06-15
Test conditions:	Ambient Temperature:21.9-24.1℃ Relative Humidity:55.0%-57.0%RH Air pressure:97.4kPa-98.4kPa
Operation Mode	Charging + Normal operation
Test Results:	Pass
Test location:	Building C, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People' s Republic of China

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

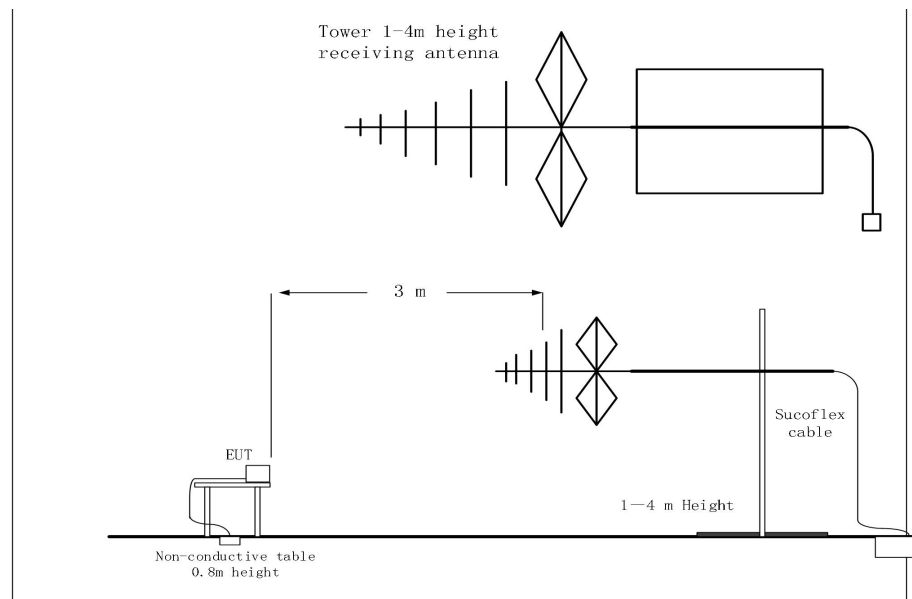
Frequency Range (MHz)	Peak (dBuV/m)	Average (dBuV/m)
Above 1000	74	54

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 gain 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-150MHz) is 3.79dB(k=2).

The measurement uncertainty(150MHz-1000MHz) is 3.51dB(k=2).

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

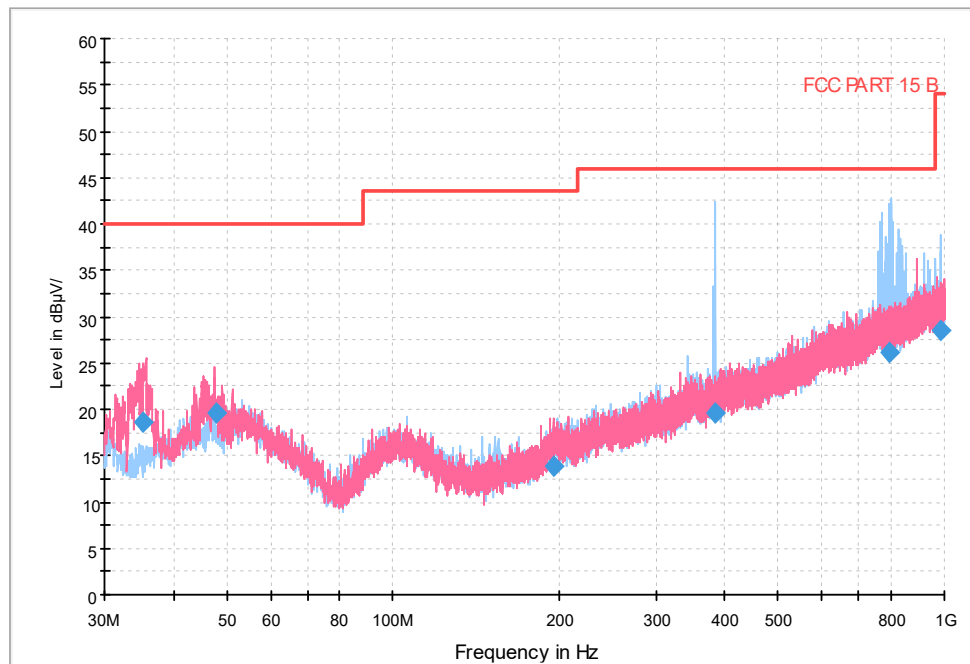
The measurement uncertainty(6000MHz-18000MHz) is 4.84dB(k=2).

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Test Data

RE 30MHz-1GHz



Final_Result

RE 30MHz-1GHz

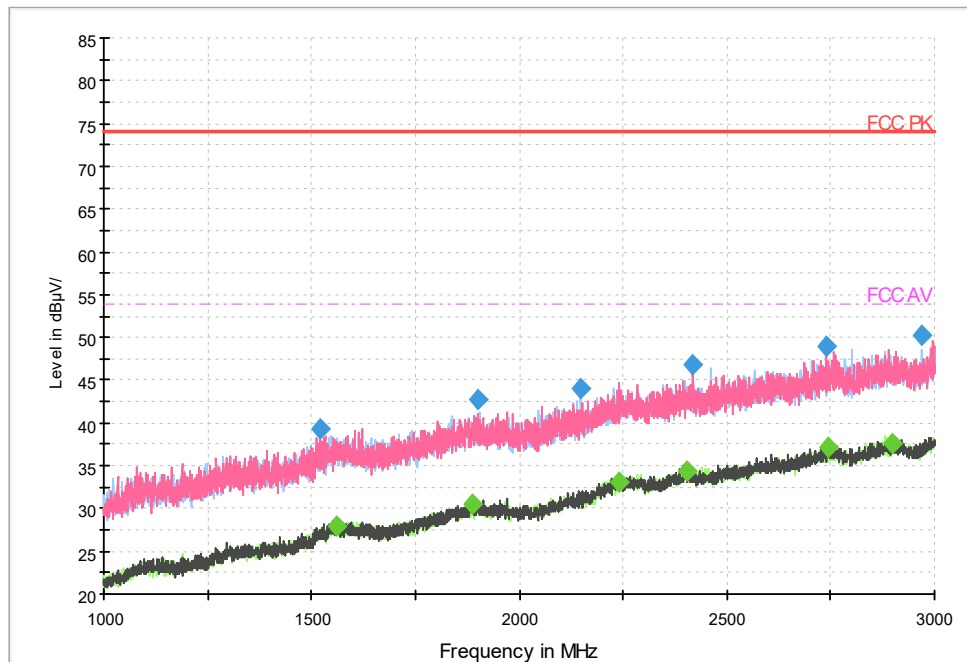
Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polariza tion	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
35.174500	18.5	5000.0	120.000	115.0	V	10.0	-12.8	21.5	40.0
47.857000	19.6	5000.0	120.000	100.0	V	260.0	-9.6	20.4	40.0
195.933500	13.9	5000.0	120.000	100.0	H	280.0	-10.7	29.6	43.5
384.068000	19.5	5000.0	120.000	100.0	H	190.0	-5.7	26.5	46.0
796.991000	26.1	5000.0	120.000	115.0	H	190.0	1.5	19.9	46.0
986.147000	28.5	5000.0	120.000	115.0	H	190.0	3.5	25.5	46.0

Note:1.Both H polarization and V polarization are tested. The figure shows the blue value of H polarization and the red value of V polarization synthesis.

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RE 1GHz-3GHz



Final_Result 1

RE 1GHz-3GHz

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB/m)	Margin (dB)	Limit (dB μ V/m)
1521.200000	39.3	1500.0	1000.000	100.0	V	105.0	9.3	34.7	74.0
1901.800000	42.7	1500.0	1000.000	100.0	H	264.0	12.3	31.3	74.0
2149.400000	44.0	1500.0	1000.000	100.0	H	195.0	13.0	30.0	74.0
2418.600000	46.9	1500.0	1000.000	100.0	V	93.0	16.0	27.1	74.0
2739.800000	49.1	1500.0	1000.000	100.0	V	75.0	19.1	24.9	74.0
2969.400000	50.3	1500.0	1000.000	100.0	H	105.0	19.4	23.7	74.0

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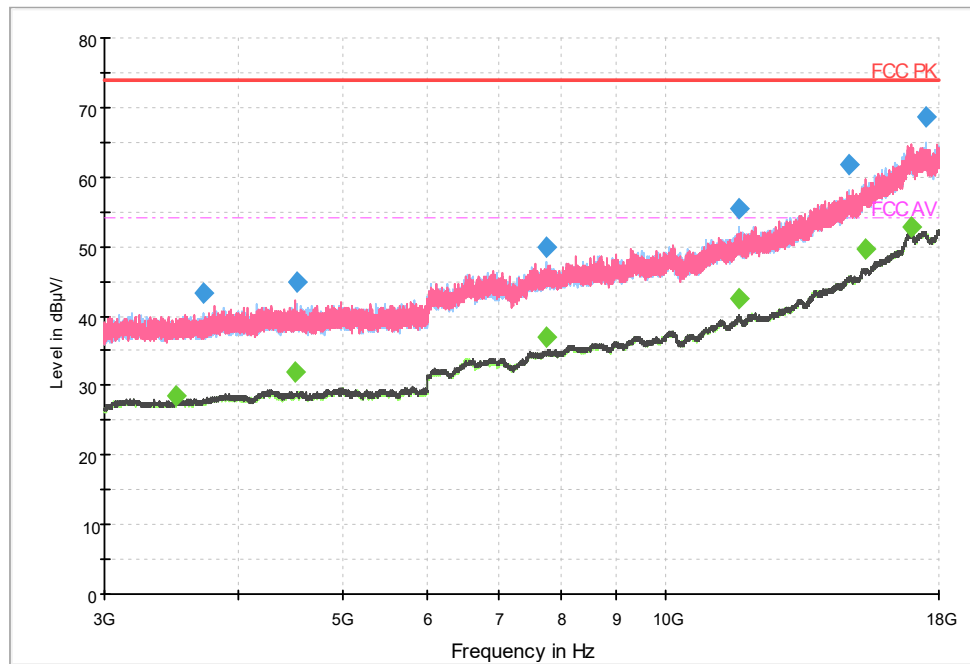
Final_Result 2

RE 1GHz-3GHz

Frequency (MHz)	Average (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB/m)	Margin (dB)	Limit (dB μ V/m)
1561.600000	28.0	1500.0	1000.000	100.0	V	105.0	10.0	26.0	54.0
1887.400000	30.4	1500.0	1000.000	100.0	H	165.0	12.2	23.6	54.0
2239.800000	33.1	1500.0	1000.000	100.0	H	180.0	14.5	20.9	54.0
2403.000000	34.5	1500.0	1000.000	100.0	H	285.0	16.1	19.5	54.0
2744.400000	37.2	1500.0	1000.000	100.0	H	180.0	19.2	16.8	54.0
2900.200000	37.6	1500.0	1000.000	100.0	H	285.0	19.6	16.4	54.0

Note:1.Both H polarization and V polarization are tested. The figure shows the blue value of H polarization and the red value of V polarization synthesis.

RE 3GHz-18GHz



Final_Result 1

RE 3GHz-18GHz

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB/m)	Margin (dB)	Limit (dB μ V/m)
3707.600000	43.3	1500.0	1000.000	100.0	H	6.0	1.7	30.7	74.0
4532.400000	45.0	1500.0	1000.000	100.0	H	15.0	4.0	29.0	74.0
7740.100000	50.0	1500.0	1000.000	100.0	H	6.0	9.8	24.0	74.0
11715.875000	55.5	1500.0	1000.000	100.0	H	15.0	15.7	18.5	74.0
14868.850000	61.8	1500.0	1000.000	100.0	H	0.0	21.8	12.2	74.0
17509.125000	68.7	1500.0	1000.000	100.0	H	15.0	28.1	5.3	74.0

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Final_Result 2

RE 3GHz-18GHz

Frequency (MHz)	Average (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB/m)	Margin (dB)	Limit (dB μ V/m)
3492.000000	28.4	1500.0	1000.000	100.0	H	15.0	1.0	25.6	54.0
4525.100000	32.0	1500.0	1000.000	100.0	H	15.0	3.9	22.0	54.0
7738.400000	36.9	1500.0	1000.000	100.0	H	5.0	9.8	17.1	54.0
11704.700000	42.4	1500.0	1000.000	100.0	H	-6.0	15.6	11.6	54.0
15390.550000	49.7	1500.0	1000.000	100.0	H	15.0	23.3	4.3	54.0
16954.450000	52.7	1500.0	1000.000	100.0	H	0.0	28.3	1.3	54.0

Note:1.Both H polarization and V polarization are tested. The figure shows the blue value of H polarization and the red value of V polarization synthesis.

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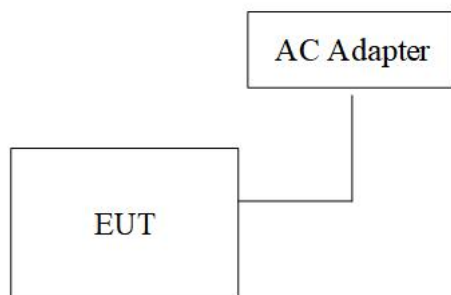
7.2. Conducted Emission

Specifications:	15.107
Date of Tests	2023-06-14
Test conditions:	Ambient Temperature:21.9°C Relative Humidity:53.0% Air pressure: 98.0kPa
Operation Mode	Charging + Normal operation
Test Results:	Pass
Test location:	Building C, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People' s Republic of China
Note: --	

Limit Level Construction:

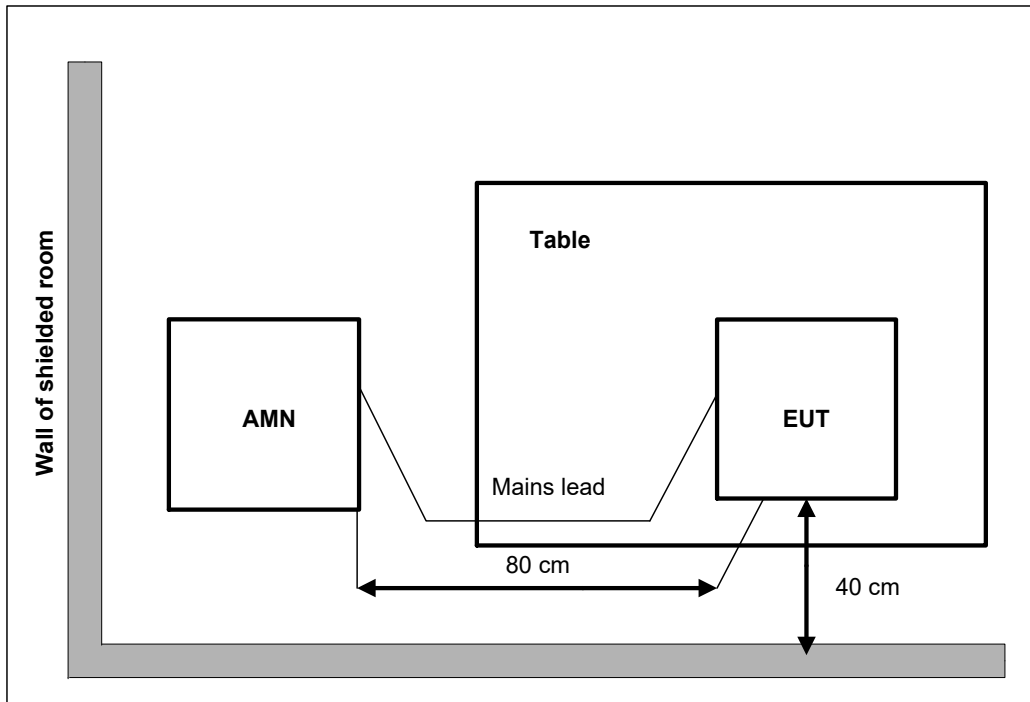
Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency		

EUT Setup:



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Test Method:

For equipment that is designed to be connected to the public utility (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).

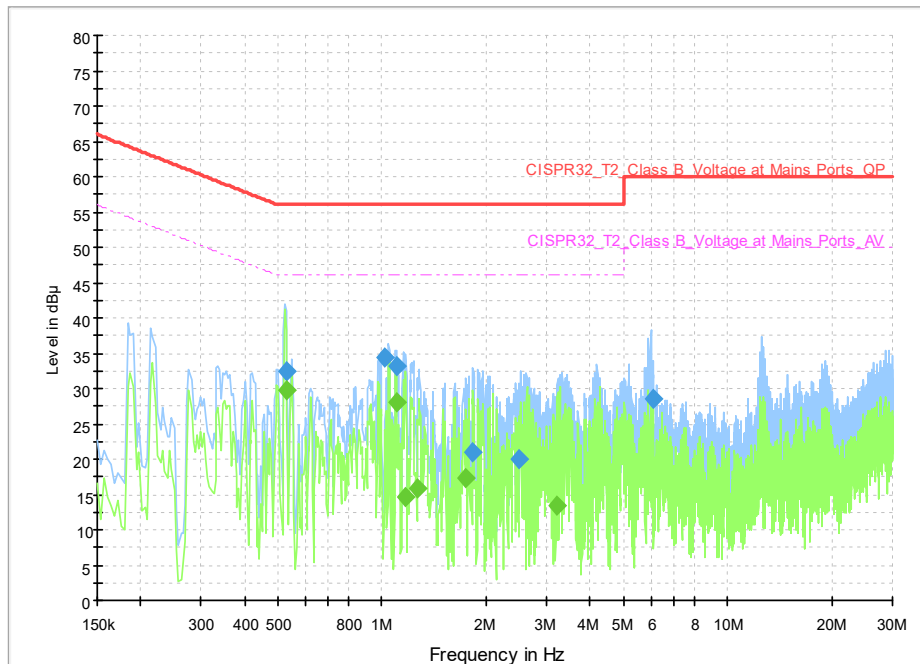
Test Data

Emission level(quasi-peak or Average peak)(dB μ V)=Raw value by receiver(dB μ 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 μ V) – emission level(dB μ V).

Copy of Test of CISPR L1 Voltage 150k to 30MHz-Class B



Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.529125	32.5	1000.0	9.000	On	L1	9.8	23.5	56.0
1.023500	34.4	1000.0	9.000	On	L1	9.9	21.6	56.0
1.103706	33.1	1000.0	9.000	On	L1	9.9	22.9	56.0
1.834525	20.9	1000.0	9.000	On	L1	10.1	35.1	56.0
2.497612	20.0	1000.0	9.000	On	L1	10.2	36.0	56.0
6.059406	28.5	1000.0	9.000	On	L1	11.7	31.5	60.0

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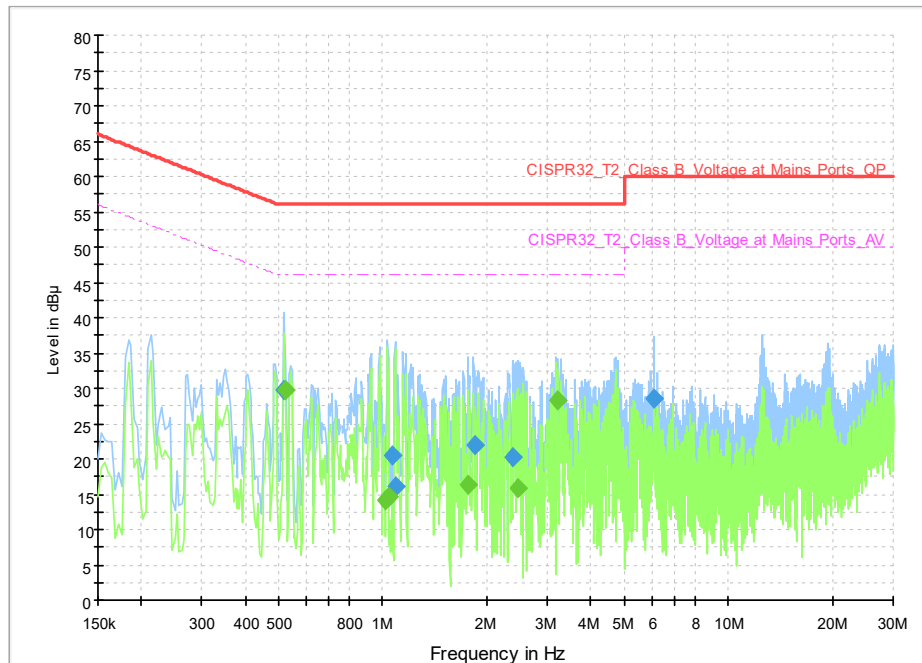
Final Result 2

Frequency (MHz)	Average (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.529125	29.7	1000.0	9.000	On	L1	9.8	16.3	46.0
1.099231	28.1	1000.0	9.000	On	L1	9.9	17.9	46.0
1.167738	14.7	1000.0	9.000	On	L1	9.9	31.3	46.0
1.262362	15.8	1000.0	9.000	On	L1	9.9	30.2	46.0
1.746525	17.3	1000.0	9.000	On	L1	10.0	28.7	46.0
3.203056	13.4	1000.0	9.000	On	L1	10.5	32.6	46.0

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Copy of Test of CISPR N Voltage 150k to 30MHz-Class B



Emission level(quasi-peak or Average peak)(dB μ V)=Raw value by receiver(dB μ 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 μ V) – emission level(dB μ V).

Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.517662	29.7	1000.0	9.000	On	N	10.1	26.3	56.0
1.064306	20.4	1000.0	9.000	On	N	10.2	35.6	56.0
1.094631	16.1	1000.0	9.000	On	N	10.2	39.9	56.0
1.839362	22.0	1000.0	9.000	On	N	10.4	34.0	56.0
2.375288	20.4	1000.0	9.000	On	N	10.5	35.6	56.0
6.067881	28.6	1000.0	9.000	On	N	12.2	31.4	60.0

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Final Result 2

Frequency (MHz)	Average (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.525394	29.8	1000.0	9.000	On	N	10.1	16.2	46.0
1.020544	14.2	1000.0	9.000	On	N	10.2	31.8	46.0
1.044306	14.8	1000.0	9.000	On	N	10.2	31.2	46.0
1.771362	16.3	1000.0	9.000	On	N	10.4	29.7	46.0
2.470388	15.8	1000.0	9.000	On	N	10.6	30.2	46.0
3.215388	28.2	1000.0	9.000	On	N	10.8	17.8	46.0

Note: Test location: Building C, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People' s Republic of China

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ANNEX A EUT Photos

See the document” I23W00017-External Photos”.

See the document” I23W00017-Internal Photos ”.

Test photo See the document”I23W00017_EMC Test Setup Photos”.

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ANNEX B Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

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