TEST REPORT

REPORT NUMBER: I23W00016-EMC-Rev3

ON

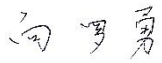
Type of Equipment:	Tracker
Type of Designation:	Bolt-2
Brand Name:	Prime
Manufacturer:	Micron Electronics LLC.
FCC ID:	ZKQ-G601

ACCORDING TO

Subpart B, PART 15, RADIO FREQUENCY DEVICES

Chongqing Academy of Information and Communications Technology

Month date, year
Jun, 15, 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.

Revision Version

Report Number	Revision	Date	Memo
I23W00016-EMC	00	2023-05-24	Initial creation of test report
I23W00016-EMC-Rev1	Rev1	2023-05-30	--
I23W00016-EMC-Rev2	Rev2	2023-06-11	--
I23W00016-EMC-Rev3	Rev3	2023-06-15	--

CONTENTS

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 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:	15-35℃
Relative Humidity:	30-60%

1.3. Project data

Testing Start Date:	2023-04-19
Testing End Date:	2023-06-11

1.4. Signature

	2023-06-15
Tan Haoyue **(Prepared this test report)**	**Date**
	2023-06-15
Xiao Yu **(Reviewed this test report)**	**Date**
	2023-06-15
Xiang LuoyongDirector of the laboratory(Approved this test report)	**Date**

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

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

3.1. About EUT

EUT Description	Tracker
Model name	Bolt-2
Brand name	Prime
CaT-M Frequency Band	2/4/12/13
Type of modulation	QPSK/16QAM
Operation Frequency	433.92MHz
Modulation	OOK
Extreme Temperature	-20/+60℃
Battery Voltage	7.2VDC
Adapter power supply	12VDC

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
S2	IMEI:866238066366773	G601-V1	G601V02.01B03.I01	2023-05-24

*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	Instrument	Manufacturer	Model	SN
Adapter	--	XING YUAN ELECTRONICS CO.LTD	XY36SC-120300VQ-UW Input：AC 100-240V 0.9A Output：DC 12V 3A	--

*AE ID: is used to identify the test sample in the lab internally.
AE Information is provided by the customer..

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	Ultra-wideband Log Periodic Antenna	VULB 9163	01392	--	--	Schwarzbeck	2024-05-04
3	Double Ridged Guide Antenna	HF907	100357	--	--	Schwarzbeck	2025-03-25
4	Universal Radio Communication Tester	CMW500	164483	--	--	R&S	2023-06-29
5	Amplifier2	SCU 18	10141	--	--	R&S	--
6	Amplifier1	150A	1429	--	--	Beehive	2023-06-18
7	Test Receiver	ESCI	101214	--	--	R&S	2023-06-29
8	LISN	ENV216	101128	--	--	R&S	2024-05-27
9	Test Receiver	ESU40	100350	01	4.43 SP3	R&S	2023-06-29
10	Double Ridged Guide Antenna	9120D	9120D-1103	--	--	Schwarzbeck	2024-05-05

Test software

No.	Name	version	SN	Manufacture
1	EMC32	V 8.51.0	--	R&S
2	EMC32	V9.26.01	--	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

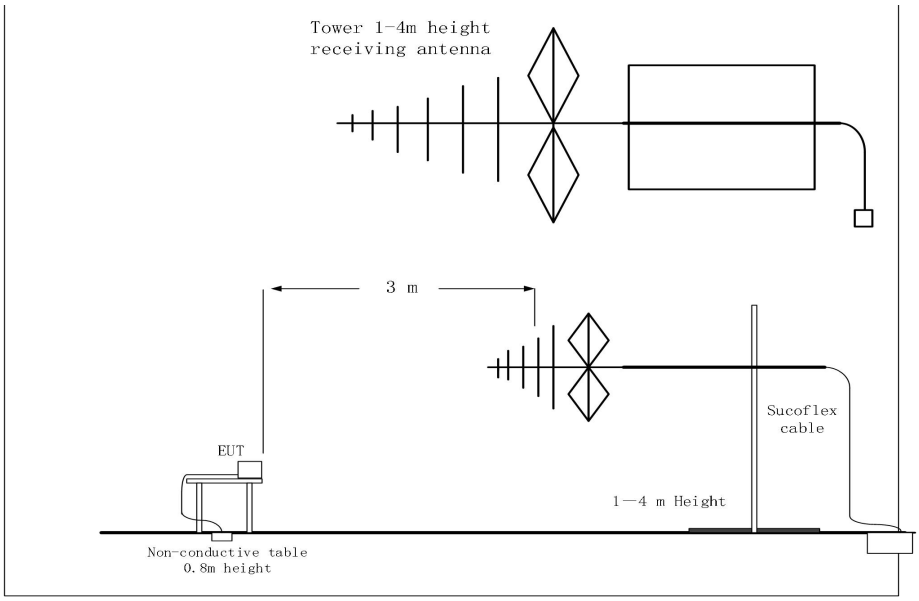
7.1. Radiated Emission

Specifications:	15.109
DUT Serial Number:	S2:866238066366773
Date of Tests	2023-05-09-2023-06-11
Test conditions:	Ambient Temperature:15-35℃ Relative Humidity:30-60%RH
Operation Mode	1、Charging +Normal working 2、Normal working
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



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:

Corr（dB/m）= Cable loss（dB）+ Antenna Factor(dB/m)-Preamplifier gain（dB）

Result（dBμV/m）=PMea（dBμV）+ Corr（dB/m）

Uncertainty Measurement:

The measurement uncertainty (30MHz-150MHz) is 3.79 dB (k=2).

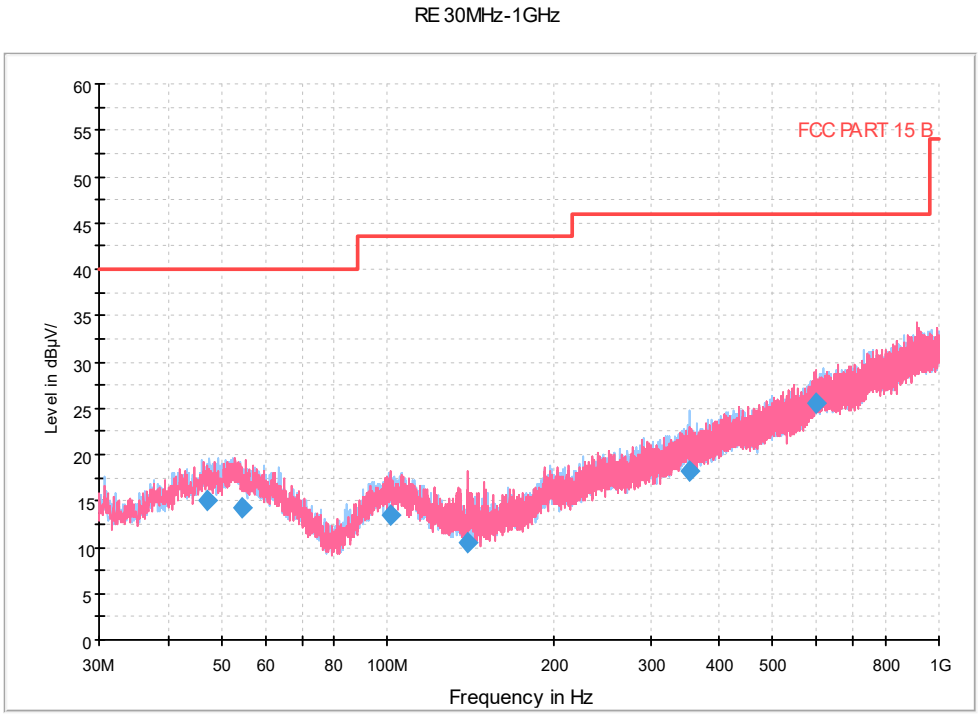
The measurement uncertainty (150MHz-1000MHz) is 3.51dB (k=2).

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

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

Test mode：ALL modes，Only the worst case test data was reported.

Test Data



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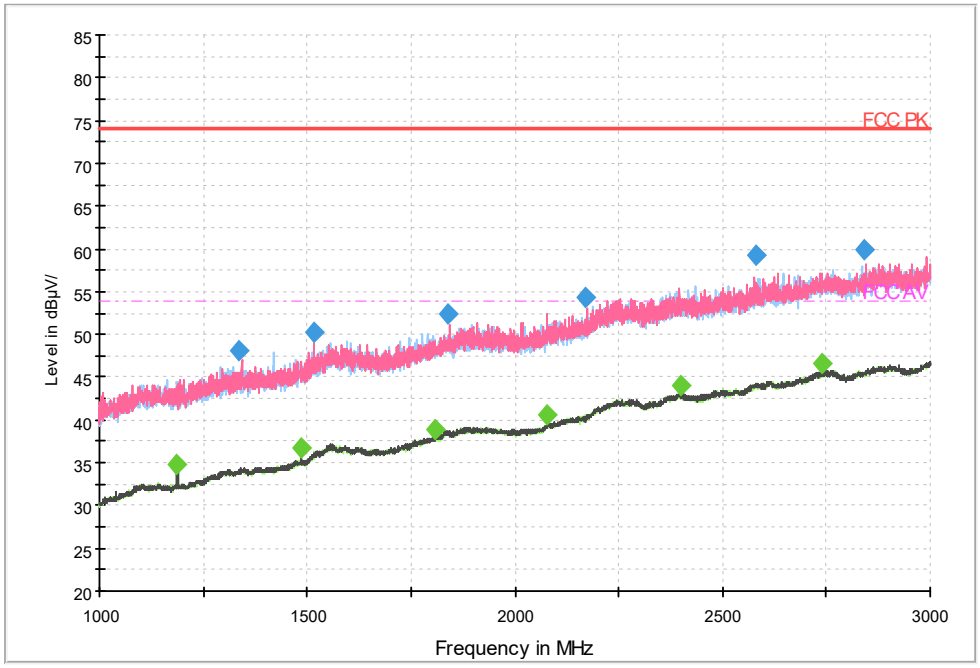
RE 30MHz-1GHz

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
47.154000	15.0	5000.0	120.000	315.0	H	80.0	-9.4	25.0	40.0
54.717000	14.2	5000.0	120.000	115.0	V	260.0	-9.8	25.8	40.0
101.240500	13.5	5000.0	120.000	200.0	V	280.0	-11.2	30.0	43.5
139.716000	10.4	5000.0	120.000	300.0	V	100.0	-14.8	33.1	43.5
352.613000	18.2	5000.0	120.000	300.0	H	280.0	-6.0	27.8	46.0
600.020500	25.5	5000.0	120.000	400.0	V	80.0	-0.9	20.5	46.0

Note: 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 1GHz-3GHz



RE 1GHz-3GHz

Final_Result 1

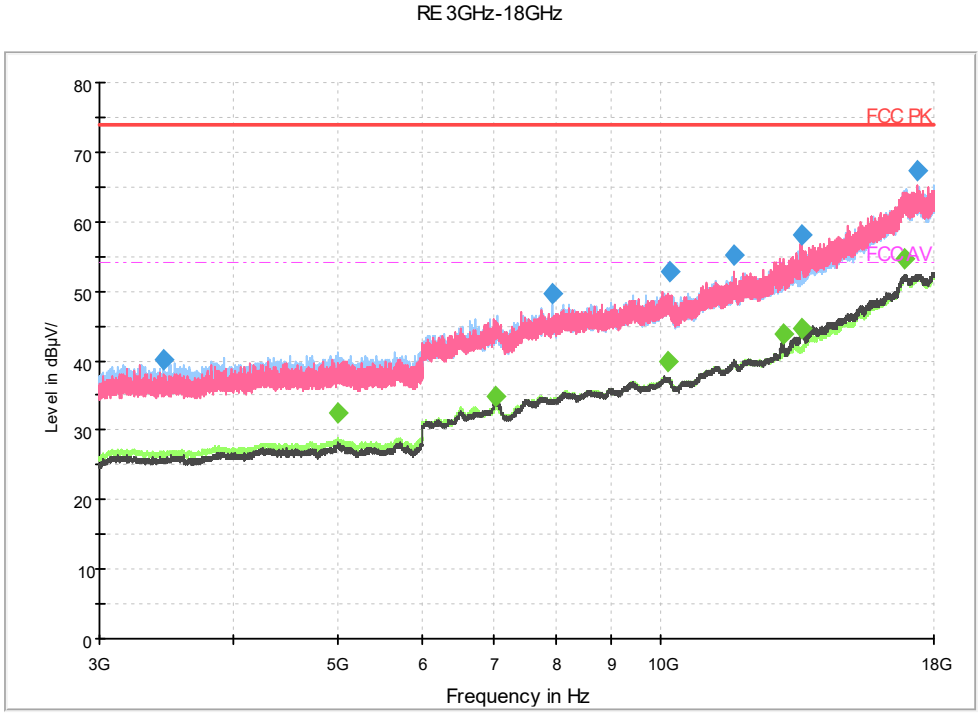
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1337.400000	48.2	1500.0	1000.000	100.0	V	174.0	7.7	25.8	74.0
1518.000000	50.3	1500.0	1000.000	100.0	V	-15.0	9.2	23.7	74.0
1838.200000	52.4	1500.0	1000.000	100.0	V	90.0	11.7	21.6	74.0
2167.800000	54.4	1500.0	1000.000	100.0	V	263.0	13.2	19.6	74.0
2580.000000	59.2	1500.0	1000.000	100.0	V	-15.0	17.3	14.8	74.0
2841.800000	59.8	1500.0	1000.000	100.0	V	270.0	19.1	14.2	74.0

Note: 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

Final_Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1187.600000	34.7	1500.0	1000.000	100.0	V	180.0	5.9	19.3	54.0
1484.800000	36.7	1500.0	1000.000	100.0	H	274.0	8.5	17.3	54.0
1807.400000	38.9	1500.0	1000.000	100.0	H	255.0	11.2	15.1	54.0
2079.200000	40.5	1500.0	1000.000	100.0	V	90.0	12.4	13.5	54.0
2397.400000	44.0	1500.0	1000.000	100.0	H	195.0	16.0	10.0	54.0
2739.000000	46.7	1500.0	1000.000	100.0	H	-7.0	19.1	7.3	54.0

Note: 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

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
3438.400000	40.3	1500.0	1000.000	100.0	H	15.0	1.0	33.7	74.0
7927.100000	49.7	1500.0	1000.000	100.0	H	0.0	9.8	24.3	74.0
10192.375000	52.9	1500.0	1000.000	100.0	V	15.0	13.3	21.1	74.0
11712.525000	55.2	1500.0	1000.000	100.0	V	15.0	15.7	18.8	74.0
13534.100000	58.0	1500.0	1000.000	100.0	V	15.0	18.3	16.0	74.0
17381.750000	67.4	1500.0	1000.000	100.0	V	15.0	28.1	6.6	74.0

Note: 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

Final_Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4999.200000	32.5	1500.0	1000.000	100.0	H	15.0	5.0	21.5	54.0
7014.125000	35.0	1500.0	1000.000	100.0	V	0.0	7.6	19.0	54.0
10162.025000	40.0	1500.0	1000.000	100.0	H	-5.0	13.3	14.0	54.0
13009.300000	43.8	1500.0	1000.000	100.0	V	15.0	17.2	10.2	54.0
13532.575000	44.7	1500.0	1000.000	100.0	V	-5.0	18.3	9.3	54.0
16882.075000	54.7	1500.0	1000.000	100.0	V	0.0	28.2	-0.7	54.0

Note: 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

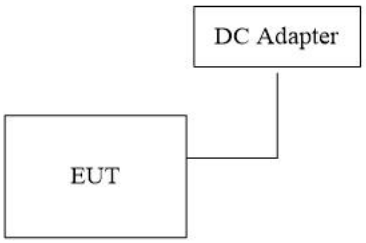
7.2. Conducted Emission

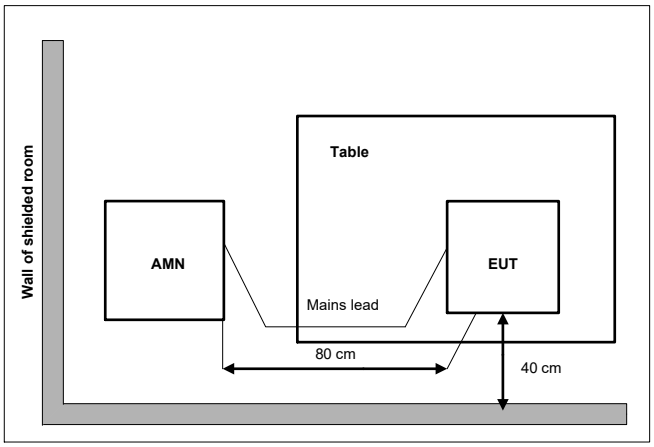
Specifications:	15.107
DUT Serial Number:	S2:866238066366773
Date of Tests	2023-05-13
Test conditions:	Ambient Temperature:17.0℃ Relative Humidity:52% Air pressure: 99.1kPa
Operation Mode	Charging +Normal working
Test Results:	Pass

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:





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)(dBμV)=Raw value by receiver(dBμV) + Corr(Insertion loss+ cable loss)（dB）

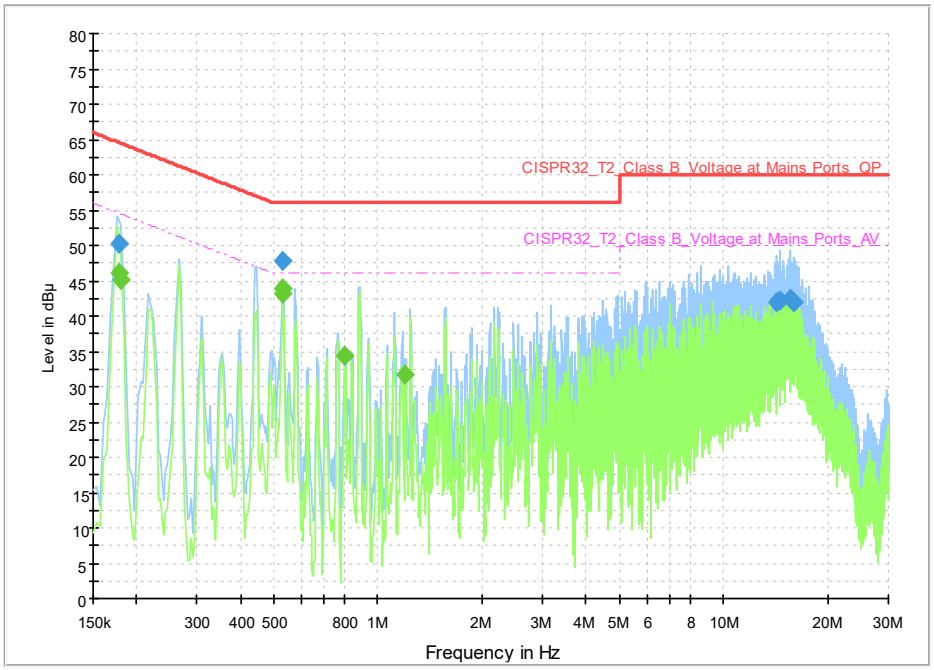
The raw value is used to calculate by software which is not shown in the sheet. Margin（dB）=limit value(dBμV) – emission level(dBμV).

Uncertainty Measurement:

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

Test Data

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



CE-150KHz-30MHz-L

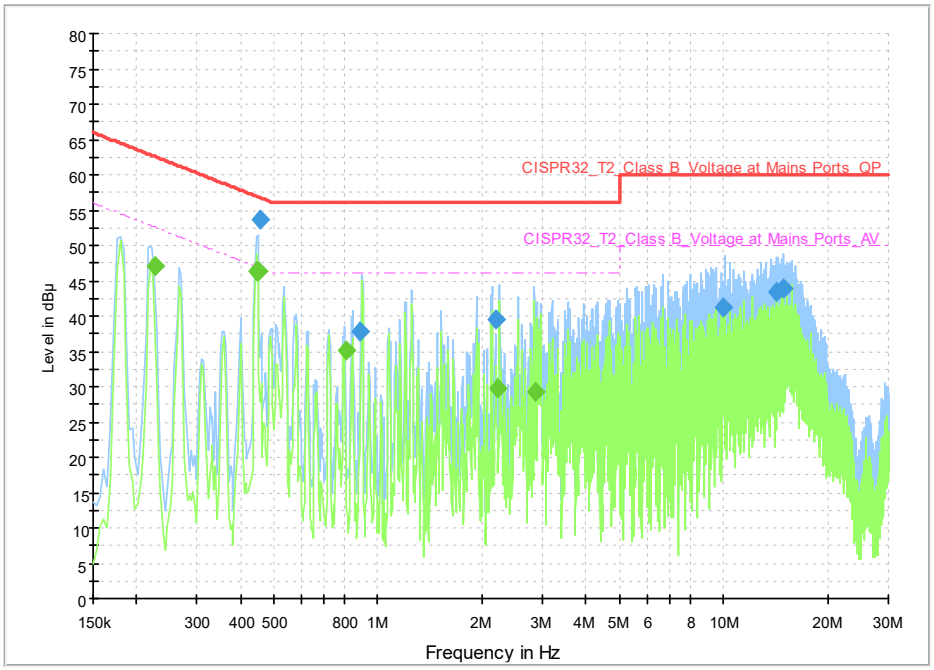
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.178000	50.3	1000.0	9.000	On	L1	9.9	14.3	64.6
0.526769	47.9	1000.0	9.000	On	L1	9.8	8.1	56.0
14.187588	41.8	1000.0	9.000	On	L1	10.0	18.2	60.0
14.550656	42.1	1000.0	9.000	On	L1	10.0	17.9	60.0
15.571138	42.5	1000.0	9.000	On	L1	10.0	17.5	60.0
15.970081	41.9	1000.0	9.000	On	L1	10.0	18.1	60.0

Final Result 2

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.178000	46.2	1000.0	9.000	On	L1	9.9	8.4	54.6
0.179669	45.2	1000.0	9.000	On	L1	9.9	9.3	54.5
0.530769	43.1	1000.0	9.000	On	L1	9.8	2.9	46.0
0.532588	44.0	1000.0	9.000	On	L1	9.8	2.0	46.0
0.799056	34.4	1000.0	9.000	On	L1	9.8	11.6	46.0
1.201256	31.7	1000.0	9.000	On	L1	9.8	14.3	46.0

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



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.454500	53.6	1000.0	9.000	On	N	9.8	3.2	56.8
0.889981	37.8	1000.0	9.000	On	N	9.8	18.2	56.0
2.184694	39.6	1000.0	9.000	On	N	9.9	16.4	56.0
10.006738	41.1	1000.0	9.000	On	N	9.9	18.9	60.0
14.263050	43.4	1000.0	9.000	On	N	10.0	16.6	60.0
14.984525	43.8	1000.0	9.000	On	N	10.0	16.2	60.0

Final Result 2

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.226000	47.1	1000.0	9.000	On	N	9.8	5.5	52.6
0.448319	46.4	1000.0	9.000	On	N	9.8	0.5	46.9
0.450769	46.3	1000.0	9.000	On	N	9.8	0.6	46.9
0.809981	35.1	1000.0	9.000	On	N	9.8	10.9	46.0
2.208694	29.8	1000.0	9.000	On	N	9.9	16.2	46.0
2.862500	29.4	1000.0	9.000	On	N	9.9	16.6	46.0

Annex A EUT Photos

See the document" I23W00016-External Photos".
See the document" I23W00016-Internal Photos ".
Test photo See the document"I23W00016_EMC Test Setup Photos".

ANNEX B Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

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