FCC CERTIFICATION TEST REPORT

Applicant	:	Magic Light Wand Co.
Address of Applicant	:	191 Highland Street, Memphis, TN 38111,USA
Manufacturer	:	Magic Light Wand Co.
Address of Manufacturer	:	191 Highland Street, Memphis, TN 38111,USA
Equipment under Test	:	Magic Light Wand
Model No.	:	MLW201
FCC ID	:	2BKDYMLW201
Test Standard(s)	:	FCC Rules and Regulations Part 15 Subpart C, ANSI C63.10:2013
Report No.	:	DDT-RE24073020-2E01
Issue Date	:	2024/10/11
Issue By	:	Guangdong Dongdian Testing Service Co., Ltd. Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808

REPORT

Table of Contents

1. Summary of Test Results 6
2. General Test Information 7
2.1. Description of EUT 7
2.2. Accessories of EUT 7
2.3. Block diagram of EUT configuration for test 7
2.4. Decision of final test mode 8
2.5. Deviations of test standard 8
2.6. Test environment conditions 8
2.7. Test laboratory 9
2.8. Measurement uncertainty 10
3. Equipment Used During Conductive Test 11
4. 20 dB Bandwidth 12
4.1. Block diagram of test setup 12
4.2. Limits 12
4.3. Test procedure 12
4.4. Test result 12
4.5. Test graphs 13
5. 99% Bandwidth 14
5.1. Block diagram of test setup 14
5.2. Limits 14
5.3. Test procedure 14
5.4. Test result 14
5.5. Test graphs 15
6. Antenna Requirements 16
6.1. Limit 16
6.2. Result 16
7. Radiated Emission 17
7.1. Test equipment 17
7.2. Block diagram of test setup 18
7.3. Limits 19
7.4. Assistant equipment used for test 20
7.5. Test procedure 20
7.6. Test result 22
7.7. Test data 23
8. Band Edge Compliance 32
8.1. Test equipment 32

8.2. Block diagram of test setup 33
8.3. Limits 33
8.4. Assistant equipment used for test 33
8.5. Test procedure 33
8.6. Test result 33
8.7. Test data 34
9. Test Setup Photograph 38
10. Photos of the EUT 40

Test Report Declare

Applicant	:	Magic Light Wand Co.
Address of Applicant	:	191 Highland Street, Memphis, TN 38111,USA
Equipment under Test	:	Magic Light Wand
Model No.	:	MLW201
Manufacturer	:	Magic Light Wand Co.
Address of Manufacturer	:	191 Highland Street, Memphis, TN 38111,USA

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C,
ANSI C63.10:2013

We Declare:

The equipment described above is tested by Guangdong Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Guangdong Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

Report No.:	DDT-RE24073020-2E01		
Date of Receipt:	2024/08/07	**Date of Test:**	2024/08/07~2024/10/11

Prepared By:	**Approved By:**
Ziqin Chen	Damon Hu
Ziqin Chen/Engineer	**Damon Hu/EMC Manager**

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Guangdong Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	2024/10/11	

1. Summary of Test Results

No.	Test Parameter	Clause No.	Condition	Result
1	20 dB Bandwidth	FCC Part 15: 15.215	/	Pass
2	99% Bandwidth	ANSI C63.10:2013	/	Pass
3	Radiated Emission	FCC Part 15: 15.209, FCC Part 15: 15.249	/	Pass
4	Band Edge Compliance	FCC Part 15: 15.205, FCC Part 15: 15.249	/	Pass
5	Antenna Requirement	FCC Part 15: 15.203	/	Pass
6	Power Line Conducted Emissions	FCC Part 15: 15.207(a)	/	N/A
Note: N/A is an abbreviation for Not Applicable, and means this item is not applicable for this device or no need to test according to standard.				

2. General Test Information

2.1. Description of EUT

EUT Name	:	Magic Light Wand
Model Number	:	MLW201
EUT Function Description	:	Please reference user manual of this device
Power Supply	:	DC 3V (1.5V/AA*2)

Note: This EUT support 2.4G SRD

Radio Specification	:	2.4G SRD
Operation Frequency	:	2420MHz、2440MHz、2470MHz
Modulation	:	GFSK

Antenna information		
Antenna Type	:	Integrated antenna
Max Antenna Gain(dBi)	:	-5.85

Channel	Frequency (MHz)
1	2420
2	2440
3	2470

Note: The above EUT information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications or User's Manual. The above Antenna information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

“☒” means to be chosen or applicable; “□” means don’t to be chosen or not applicable; This note applies to entire report.

2.2. Accessories of EUT

Accessories	Manufacturer	Model number	Description
/	/	/	/

2.3. Block diagram of EUT configuration for test

Configuration diagram
EUT

2.4. Decision of final test mode

According pre-test, the worst test modes were reported as below:

Test software: NA

The test software was used to control EUT work in Continuous Tx mode, and select test channel, wireless mode as below table.

The pathloss of external cable: 0.5 dB (According to the manufacturer's claims)

Mode	Setting Tx Power	Channel	Frequency (MHz)
	Ant1		
GFSK TX	Default	CH1	2420
	Default	CH2	2440
	Default	CH3	2470

2.5. Deviations of test standard

No deviation.

2.6. Test environment conditions

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

Temperature range:	+15℃ to +35 ℃
Humidity range:	20% to 75%
Pressure range:	86 kPa to106 kPa

Note: The specific temperature and humidity information of each test item refers to the temperature and humidity record in the corresponding test data.

2.7. Test laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Add.: Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808.

Tel.: +86-0769-38826678, http://www.dgddt.com, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

2.8. Measurement uncertainty

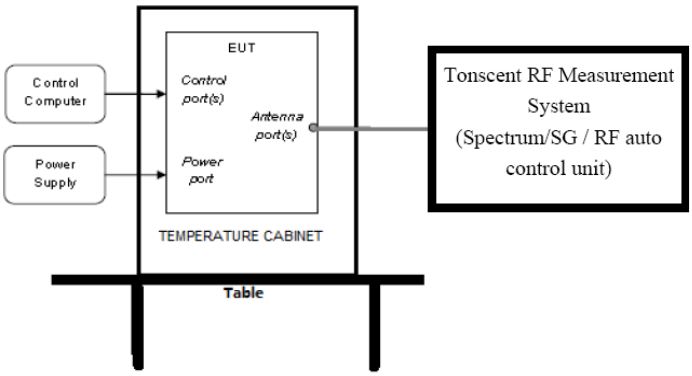
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Frequencies Stability	6.7 x 10^{-8} (Antenna couple method)
	5.5 x 10^{-8} (Conducted method)
Conducted spurious emissions	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.40 dB (3.6 GHz ≤ f < 8 GHz)
	1.66 dB (8 GHz ≤ f < 26.5 GHz)
Uncertainty for radio frequency (RBW < 20 kHz)	3×10^{-8}
Temperature	0.4 ℃
Humidity	2 %
Uncertainty for Radiation Emission test (9 kHz – 30 MHz)	3.44 dB
Uncertainty for Radiation Emission test (30 MHz - 1 GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1 GHz - 40 GHz)	4.10 dB (1 - 6 GHz)
	4.40 dB (6 GHz - 18 GHz)
	3.54 dB (18 GHz - 26 GHz)
	4.30 dB (26 GHz - 40 GHz)
Uncertainty for Power line conduction emission test	3.34dB (150KHz-30MHz)
	3.72dB (9KHz-150KHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3. Equipment Used During Conductive Test

☒RF Connected Test (RF Measurement System 3#)				
SIGNAL ANALYZER	R&S	FSV40	101407	2025/07/08
Wideband Radio Communication Tester	R&S	CMW500	117491	2025/03/31
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY62153058	2025/07/08
MXG Vector Signal Generator	Agilent	N5182A	MY48180912	2025/03/31
RF Control Unit	Tonscend	JS0806-2	20C8060230	2025/03/31
TEMP&HUMI Programmable Chamber	ZHIXIANG	ZXGDJS-150L	ZX170110-A	2025/04/22

4. 20 dB Bandwidth

4.1. Block diagram of test setup



4.2. Limits

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.3. Test procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Set the spectrum analyzer as follows:

RBW:	100 kHz
VBW:	300 kHz
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

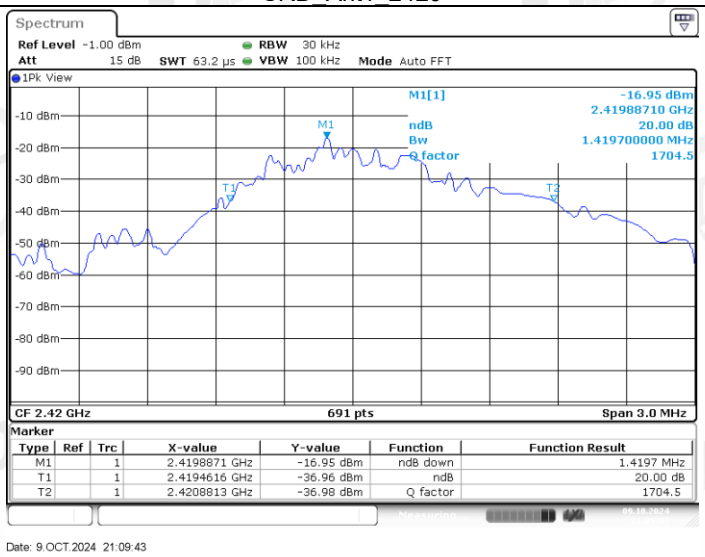
(3) Allow the trace to stabilize, measure the 20 dB bandwidth of signal.

4.4. Test result

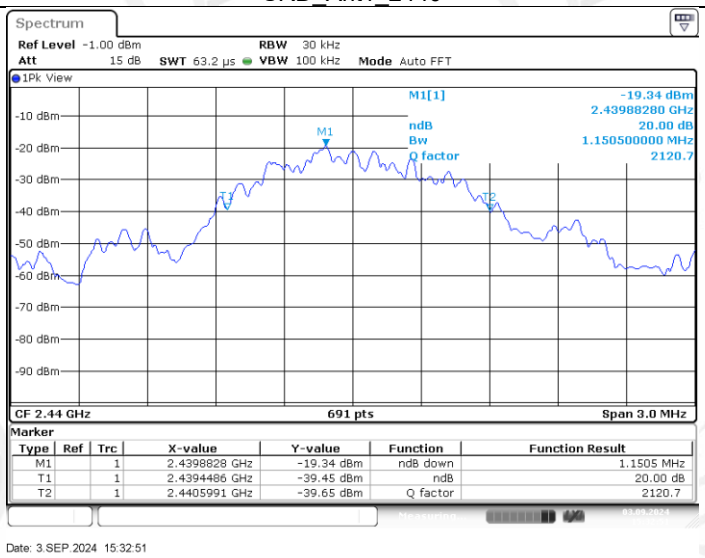
Test Mode	Antenna	Frequency [MHz]	20dB BW [MHz]	FL[MHz]	FH[MHz]	Limit [MHz]	Verdict
SRD	Ant1	2420	1.42	2419.46	2420.88	0.5	PASS
SRD	Ant1	2440	1.15	2439.45	2440.60	0.5	PASS
SRD	Ant1	2470	1.23	2469.40	2470.63	0.5	PASS

4.5. Test graphs

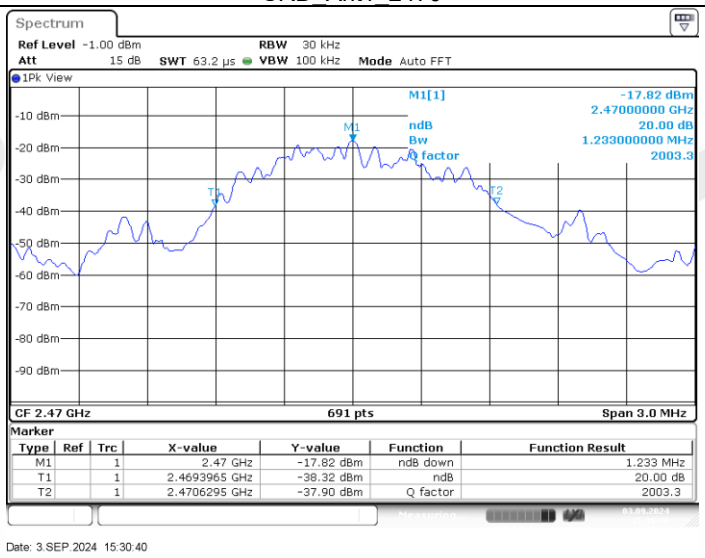
SRD_Ant1_2420



SRD_Ant1_2440

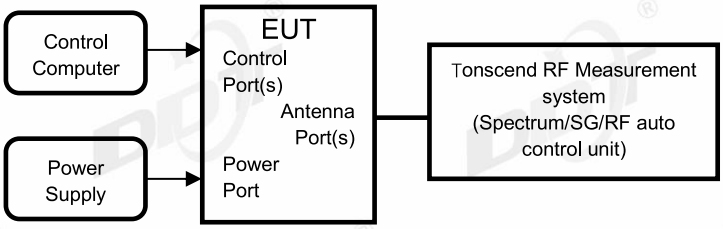


SRD_Ant1_2470



5. 99% Bandwidth

5.1. Block diagram of test setup



5.2. Limits

Just for Report.

5.3. Test procedure

(1) The test according to ANSI C63.10-2013 clause 6.9.3.
(2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results
(3) Set the EUT as maximum power setting and enable the EUT transmit continuously
(4) Use the following spectrum analyzer settings for the 99% Bandwidth:

RBW:	1% to 5% of the OBW
VBW:	approximately three times RBW
Span:	between 1.5 times and 5.0 times the OBW
Detector Mode:	Peak
Sweep time:	Auto
Trace mode	Max hold

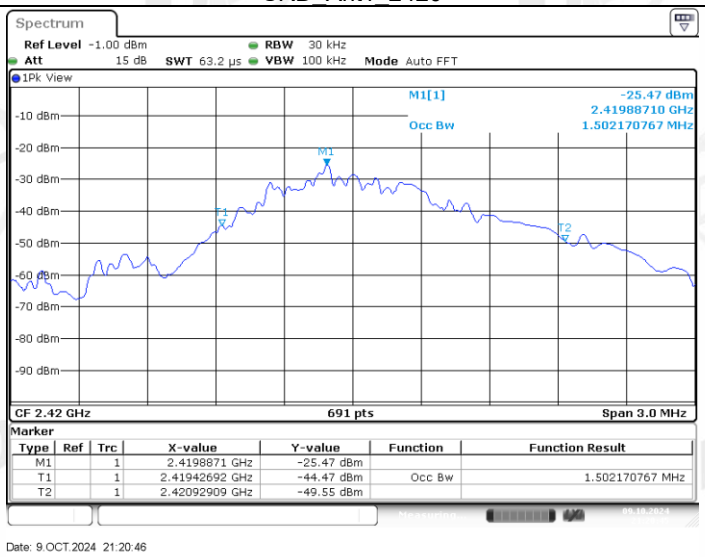
(5) Allow the trace to stabilize, measure the 99% bandwidth of signal, and record the results in the report.

5.4. Test result

Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit [MHz]	Verdict
SRD	Ant1	2420	1.502	2419.427	2420.929	---	---
		2440	1.150	2439.449	2440.599	---	---
		2470	1.203	2469.427	2470.630	---	---

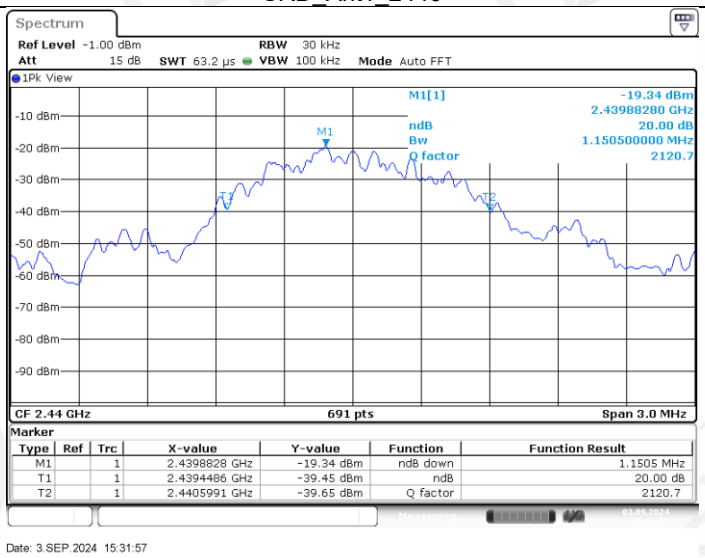
5.5. Test graphs

SRD_Ant1_2420



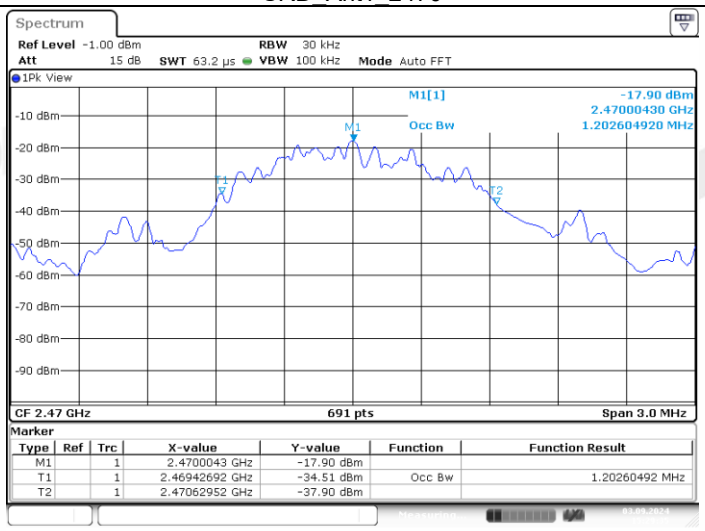
Date: 9.OCT.2024 21:20:46

SRD_Ant1_2440



Date: 3.SEP.2024 15:31:57

SRD_Ant1_2470



Date: 3.SEP.2024 15:29:35

6. Antenna Requirements

6.1. Limit

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

6.2. Result

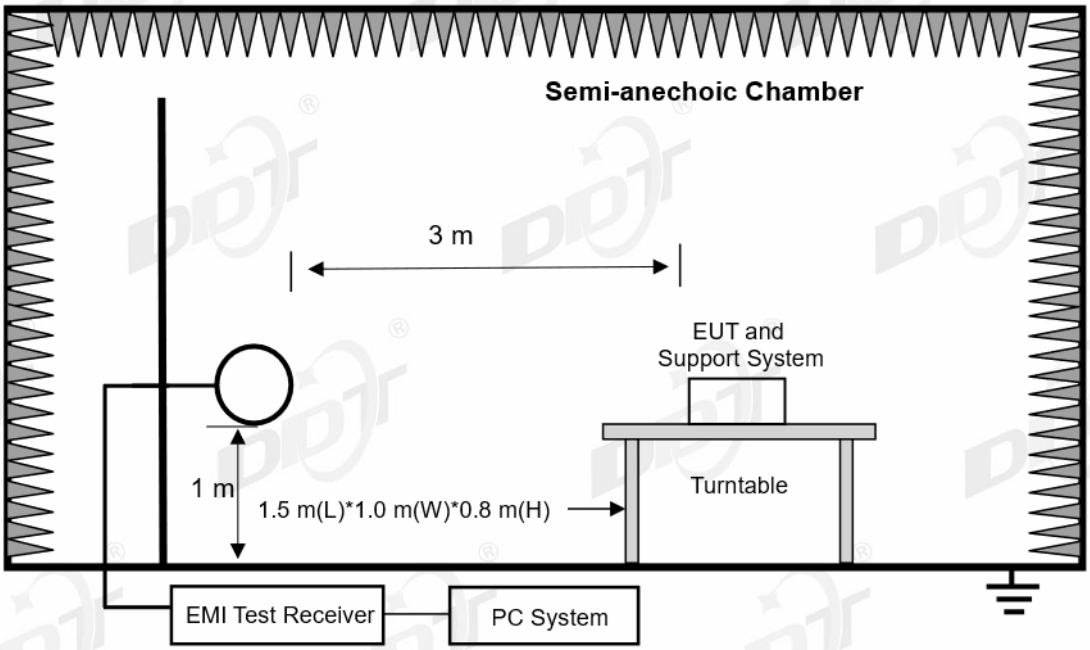
The antenna used for this product as Antenna information described in section 2.1 of the report, and there is no other antenna than that furnished by the responsible party shall be used with the device.

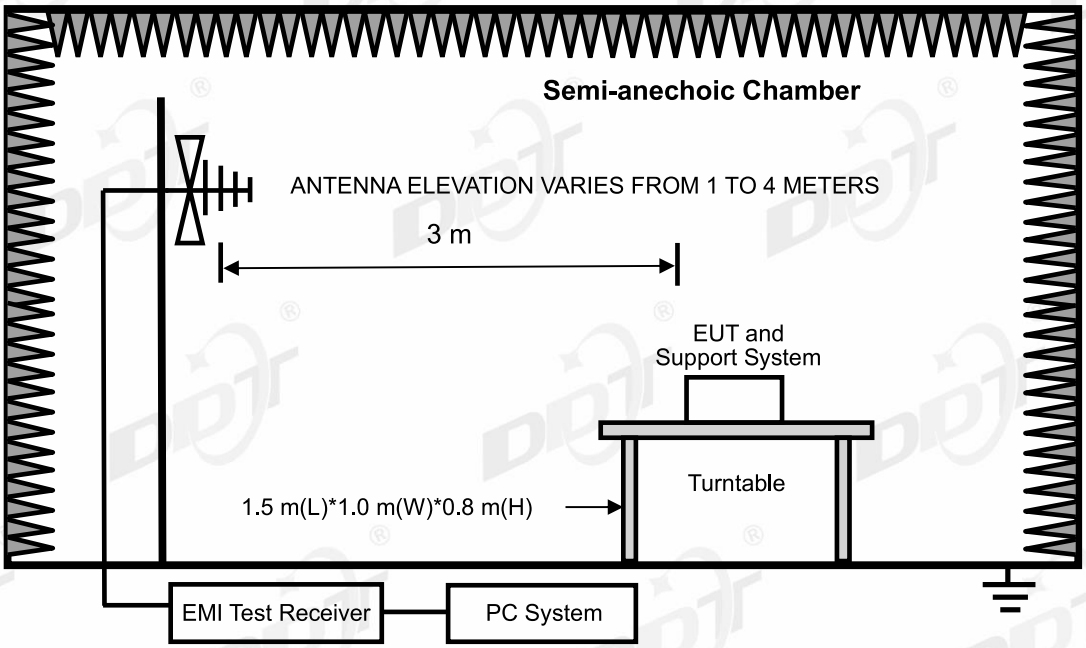
7. Radiated Emission

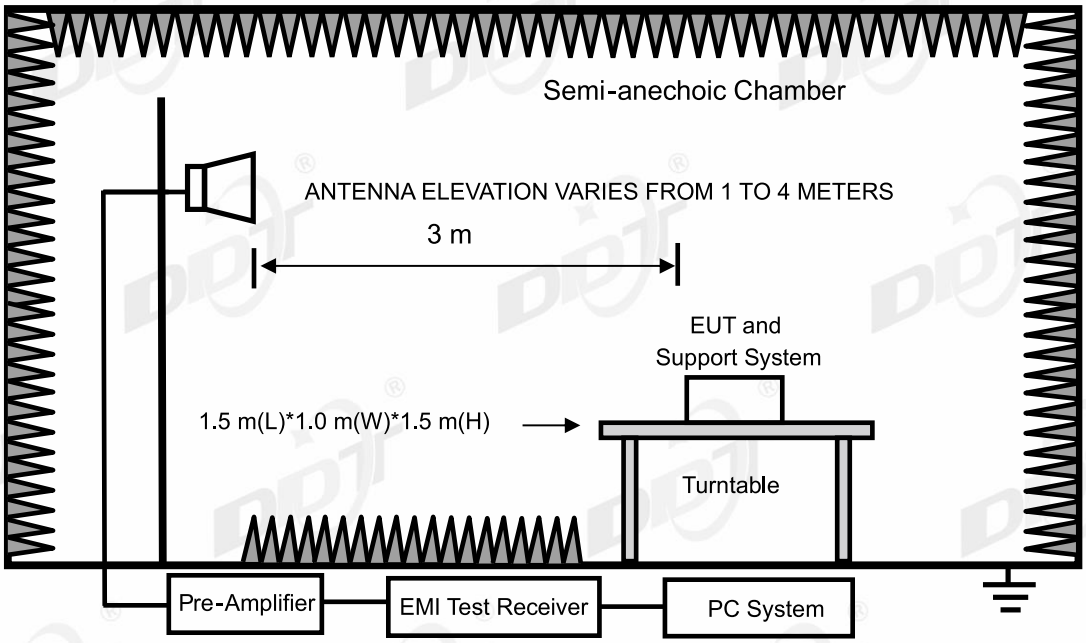
7.1. Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal Due To
Hochgewinn-Hornantenne	SCHWARZBECK	BBHA 9120 D	DDT-ZC02129	2025/09/18
Active Loop Antenna	Schwarzbeck	FMZB1519	DDT-ZC00524	2025/09/11
ELECTRIC AND MAGNETIC FIELD ANALYZER	Narda	EHP-200A	DDT-ZC01401	2024/09/20
PSA Series Spectrum Analyzer	Agilent	E4447A	DDT-ZC00517	2025/03/31
Micro-Tronics filters	REBES	BRM50702	DDT-ZC03242	/
RF cable	Zhongke Junchuang	JCT26S-NJ-NJ-1.5M	DDT-ZC02762	2025/03/31
RF cable	Yuhu Technology	ZT26S-SMAJ-SMAJ-1M	DDT-ZC02037	2025/03/31
Pre-amplifier	COM-POWER	PAM-118A	DDT-ZC01293	2025/07/08
High pass filter	Micro-Tronics	HPM50108	DDT-ZC00560	2025/04/22
Pre-amplifier	COM-POWER	PAM-840A	DDT-ZC01693	2025/03/31
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	DDT-ZC02050	2025/07/11
RF cable	Yuhu Technology	JCTB810-NJ-NJ-9M	DDT-ZC02538	2025/03/31
RF Cable	N/A	W24.02 HL-562	DDT-ZC04022	2025/03/31
RF Cable	N/A	W13.02 AP1-X2	DDT-ZC04023	2025/03/31
High Pass filter	Xi'an Xingbo	XBLBQ-GTA67	DDT-ZC02179	2025/04/22
High pass filter	Micro-Tronics	HPM50102	DDT-ZC00561	2025/04/22
Micro-Tronics filters	REBES	BRM50716	DDT-ZC03240	/
EMI TEST RECEIVER	R&S	ESU26	DDT-ZC01909	2025/03/31
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	DDT-ZC00506	2025/04/26

7.2. Block diagram of test setup







7.3. Limits

(1) FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.1772&4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.2072&4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

1Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2Above 38.6

(2) FCC 15.209 Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		mV/m	dB(mV)/m
0.009 ~ 0.490	300	2400/F(kHz)	67.6-20log(F)
0.490 ~ 1.705	30	24000/F(kHz)	87.6-20log(F)
1.705 ~ 30.0	30	30	29.54
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(mV)/m (Peak) 54.0 dB(mV)/m (Average)	

Note:

(1) The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9 - 90 kHz, 110 - 490 kHz and above 1000 MHz, radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30 MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$Limit_{3m}(dBuV/m)= Limit_{30m}(dBuV/m) + 40Log(30m/3m)$$

(3) Limit for this EUT

The emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20 dB below the fundamental emissions or comply with 15.209 limits.

7.4. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Description	other
/	/	/	/	/

7.5. Test procedure

(1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber for below 1G and 150 cm above the ground plane inside a fully-anechoic chamber for above 1G.

(2) Test antenna was located 3 m from the EUT on an adjustable mast, and the antenna used as below table.

Test frequency range	Test antenna used	Test antenna distance
9 kHz - 30 MHz	Active Loop antenna	3 m

30 MHz - 1 GHz	Trilog Broadband Antenna	3 m
1 GHz - 18 GHz	Double Ridged Horn Antenna(1 GHz-18 GHz)	3 m
18 GHz - 40 GHz	Horn Antenna(18 GHz-40 GHz)	1 m

According ANSI C63.10:2013 clause 6.4.6 and 6.5.3, for measurements below 30 MHz, Antenna was located 3 m from EUT, the loop antenna was positioned in three antenna orientations (parallel, perpendicular, and round-parallel), for each measurement antenna alignment, the EUT shall be rotated through 0° to 360° on a turntable, and the lowest height of the magnetic antenna shall be 1 m above the ground. For measurement above 30MHz, the trilog Broadband Antenna or Horn Antenna was located 3m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(3) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9 kHz to 25 GHz:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1 m to 4 m (Except loop antenna, it's fixed 1 m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Change power supply range from 85% to 115% of the rated supply voltage

(e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

Spectrum frequency from 9 kHz to 25 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 18 GHz to 25 GHz, so below final test was performed with frequency range from 9 kHz to 18 GHz.

(4) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.

(5) The emissions from 9 kHz to 1 GHz were measured based on CISPR QP detector except for the frequency bands 9 - 90 kHz, 110 - 490 kHz, for emissions from 9 kHz - 90 kHz,110 kHz - 490 kHz and above 1 GHz were measured based on average detector, for emissions above 1 GHz, peak emissions also be measured and need comply with Peak limit.

(6) The emissions from 9 kHz to 1 GHz, QP or average values were measured with EMI receiver with below RBW.

Frequency band	RBW
9 kHz - 150 kHz	200 Hz
150 kHz - 30 MHz	9 kHz
30 MHz - 1 GHz	120 kHz

(7) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3 MHz for Peak measure; According ANSI C63.10:2013 clause 4.1.4.2.2 procedure for average measure.

(8) For portable device, X axis, Y axis, Z axis are tested, and worse setup is reported.

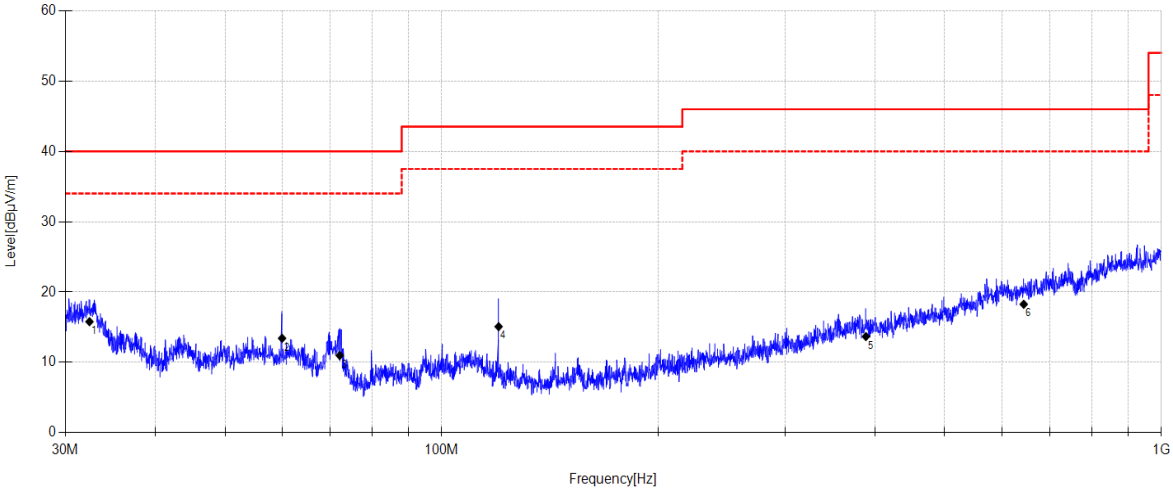
7.6. Test result

PASS. (See below detailed test result)

7.7. Test data

TR-4-E-009 Radiated Emission Test Result

Test Date:	2024-10-08	**Tested By**:	Zhong Nan
EUT:	Magic Light Wand	**Model Number**:	MLW201
Test Mode:	SRD TX	**Power Supply**:	Battery
Condition:	Temp:21.9°C;Humi:51.0%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2024 report data\Q24073020\FCC BELOW1G\20241008-214251_H		
Memo:	Sample Number:S24073020-001		

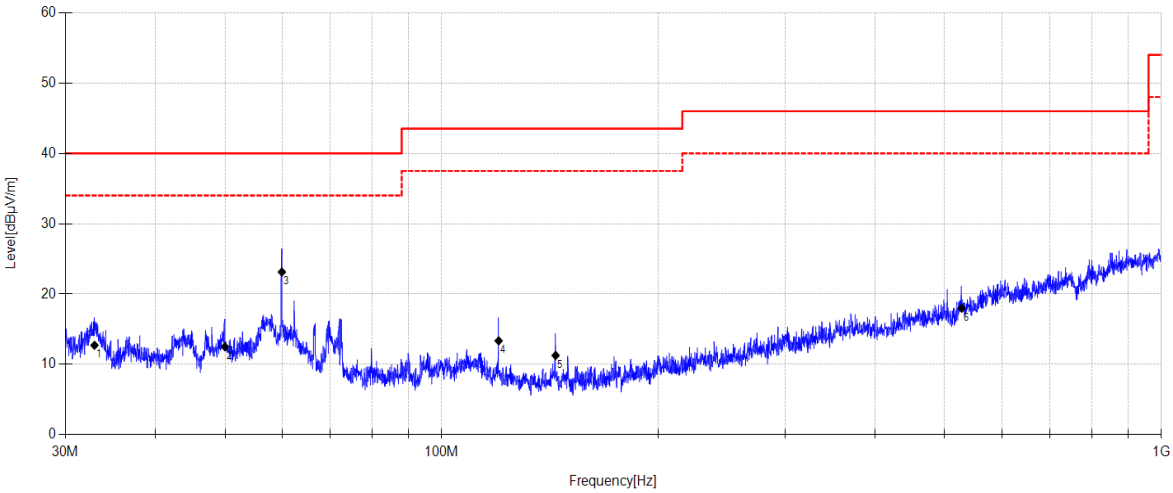


Data List									
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable Loss [dB]**	**Result [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	32.405	32.7	10.42	3.77	15.79	40.00	24.21	QP	Horizontal
2	60.019	27.78	12.79	3.96	13.43	40.00	26.57	QP	Horizontal
3	72.173	28.52	9.53	4.04	10.99	40.00	29.01	QP	Horizontal
4	119.991	31.88	10.00	4.33	15.09	43.50	28.41	QP	Horizontal
5	388.610	23.89	15.66	5.57	13.68	46.00	32.32	QP	Horizontal
6	643.820	24.3	18.96	6.51	18.27	46.00	27.73	QP	Horizontal

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2024-10-08	**Tested By**:	Zhong Nan
EUT:	Magic Light Wand	**Model Number**:	MLW201
Test Mode:	SRD TX	**Power Supply**:	Battery
Condition:	Temp:21.9°C;Humi:51.0%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2024 report data\Q24073020\FCC BELOW1G\20241008-214336_V		
Memo:	Sample Number:S24073020-001		



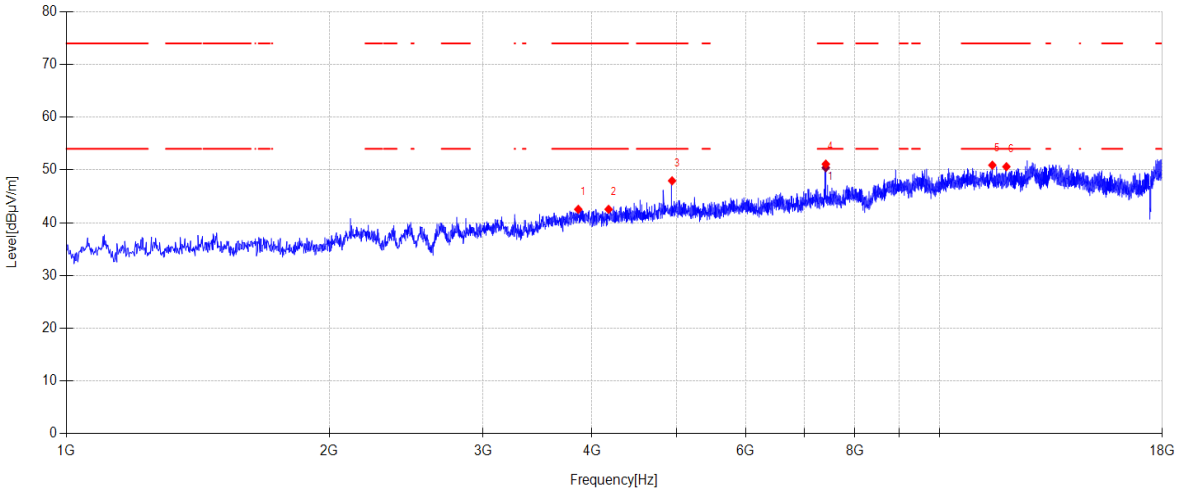
Data List									
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable Loss [dB]**	**Result [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	32.932	29.19	10.85	3.78	12.72	40.00	27.28	QP	Vertical
2	49.981	26.74	12.99	3.88	12.51	40.00	27.49	QP	Vertical
3	59.977	37.49	12.79	3.96	23.14	40.00	16.86	QP	Vertical
4	119.991	30.15	10.00	4.33	13.36	43.50	30.14	QP	Vertical
5	143.986	28.66	9.30	4.46	11.28	43.50	32.22	QP	Vertical
6	527.943	25.78	17.62	6.10	18.00	46.00	28.00	QP	Vertical

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2024-10-08	**Tested By**:	Zhong Nan
EUT:	Magic Light Wand	**Model Number**:	MLW201
Test Mode:	SRD TX 2470 MHz Mode	**Power Supply**:	Battery
Condition:	Temp:21.9°C;Humi:51.0%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2024 report data\Q24073020\FCC ABOVE1G\64		
Memo:	Sample Number:S24073020-001 Power Setting:NA		

Test Graph



Data List										
N O.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	3857.700	46.17	30.95	5.07	-39.65	42.54	74.00	31.46	PK	Horizontal
2	4179.000	45.85	31.20	5.16	-39.67	42.54	74.00	31.46	PK	Horizontal
3	4940.600	48.86	33.08	5.61	-39.60	47.95	74.00	26.05	PK	Horizontal
4	7410.700	48.40	36.68	6.66	-40.63	51.11	74.00	22.89	PK	Horizontal
5	11497.500	42.77	39.20	8.44	-39.50	50.91	74.00	23.09	PK	Horizontal
6	11931.000	42.84	38.99	8.72	-39.93	50.62	74.00	23.38	PK	Horizontal

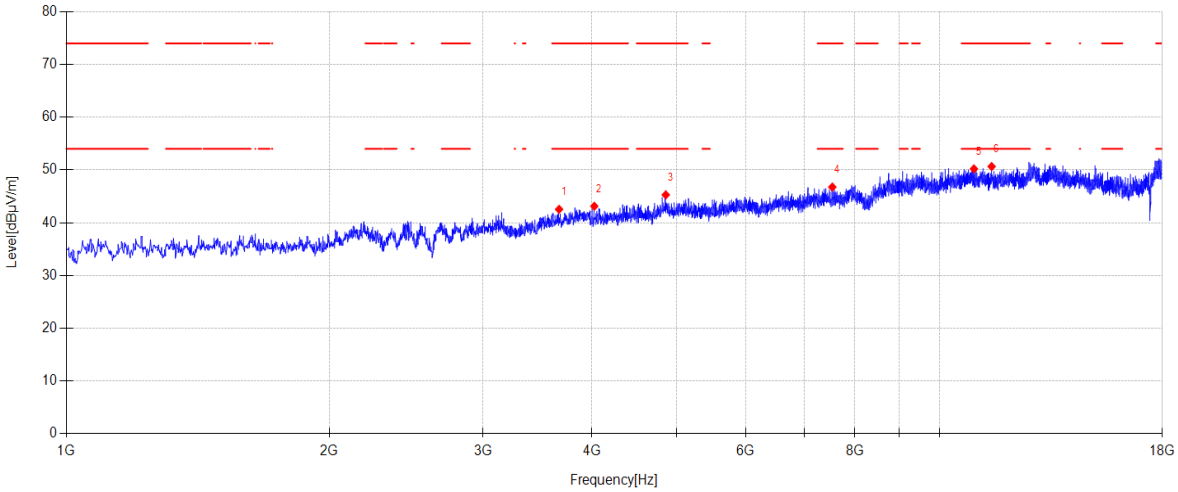
Data List									
N O.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	7409.420	47.71	36.68	6.66	50.42	54.00	3.58	AV	Horizontal

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2024-10-08	**Tested By**:	Zhong Nan
EUT:	Magic Light Wand	**Model Number**:	MLW201
Test Mode:	SRD TX 2470 MHz Mode	**Power Supply**:	Battery
Condition:	Temp:21.9°C;Humi:51.0%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2024 report data\Q24073020\FCC ABOVE1G\65		
Memo:	Sample Number:S24073020-001 Power Setting:NA		

Test Graph



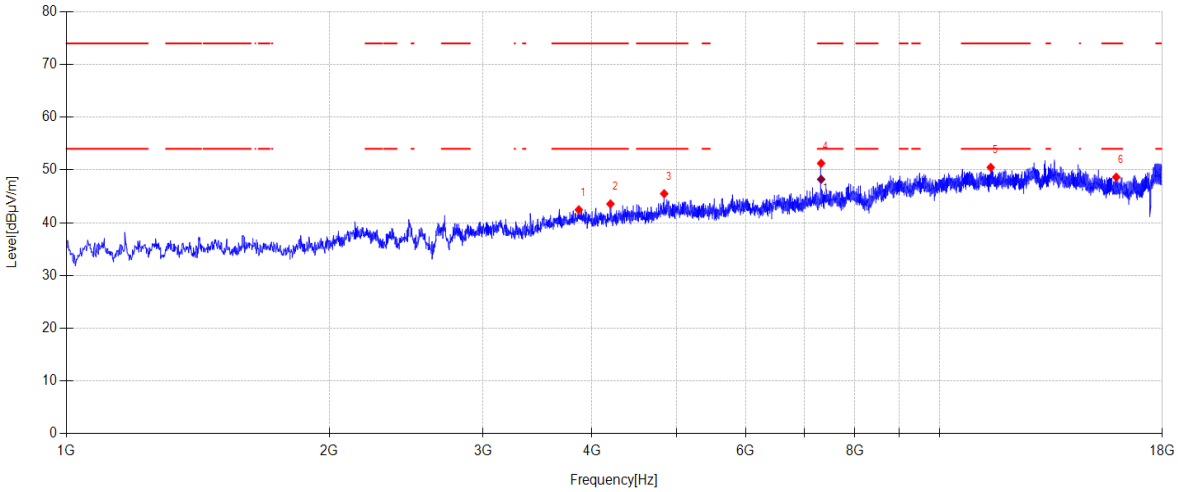
Data List										
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	3667.300	46.76	30.27	5.11	-39.60	42.54	74.00	31.46	PK	Vertical
2	4024.300	46.80	30.95	5.06	-39.68	43.13	74.00	30.87	PK	Vertical
3	4859.000	45.66	33.66	5.57	-39.61	45.28	74.00	28.72	PK	Vertical
4	7538.200	44.13	36.42	6.73	-40.52	46.76	74.00	27.24	PK	Vertical
5	10951.800	41.83	39.30	8.11	-39.03	50.21	74.00	23.79	PK	Vertical
6	11475.400	42.49	39.22	8.43	-39.48	50.66	74.00	23.34	PK	Vertical

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2024-10-08	**Tested By**:	Zhong Nan
EUT:	Magic Light Wand	**Model Number**:	MLW201
Test Mode:	SRD TX 2440 MHz Mode	**Power Supply**:	Battery
Condition:	Temp:21.9°C;Humi:51.0%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2024 report data\Q24073020\FCC ABOVE1G\66		
Memo:	Sample Number:S24073020-001 Power Setting:NA		

Test Graph



Data List										
N O.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	3862.800	46.06	30.98	5.07	-39.65	42.46	74.00	31.54	PK	Horizontal
2	4199.400	46.86	31.20	5.17	-39.66	43.57	74.00	30.43	PK	Horizontal
3	4838.600	46.06	33.50	5.55	-39.61	45.50	74.00	28.50	PK	Horizontal
4	7318.900	48.49	36.86	6.61	-40.71	51.25	74.00	22.75	PK	Horizontal
5	11448.200	42.27	39.25	8.41	-39.45	50.48	74.00	23.52	PK	Horizontal
6	15939.600	39.87	38.06	10.11	-39.40	48.64	74.00	25.36	PK	Horizontal

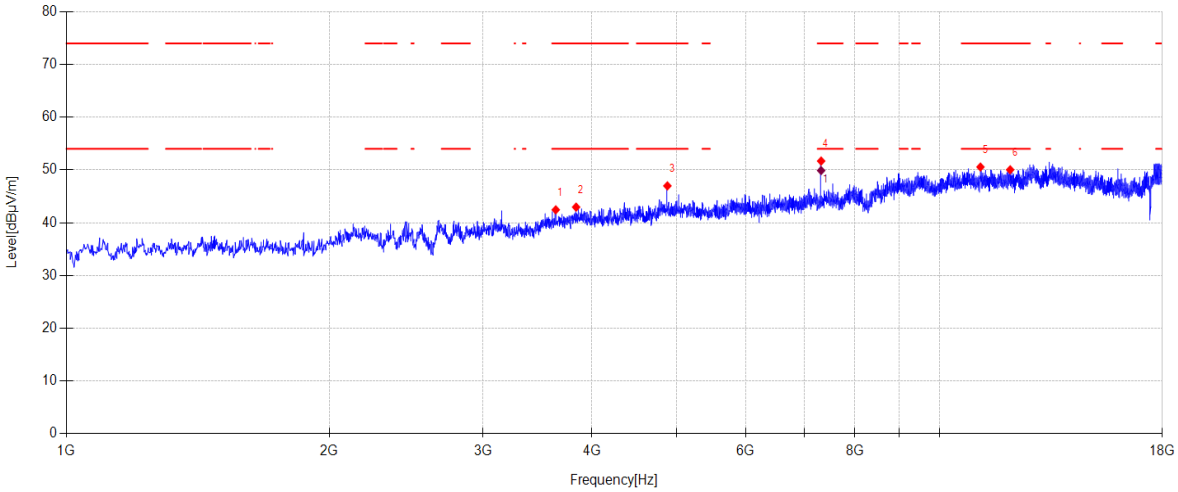
Data List									
N O.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	7319.755	45.47	36.86	6.61	48.23	54.00	5.77	AV	Horizontal

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2024-10-08	**Tested By**:	Zhong Nan
EUT:	Magic Light Wand	**Model Number**:	MLW201
Test Mode:	SRD TX 2440 MHz Mode	**Power Supply**:	Battery
Condition:	Temp:21.9°C;Humi:51.0%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2024 report data\Q24073020\FCC ABOVE1G\67		
Memo:	Sample Number:S24073020-001 Power Setting:NA		

Test Graph



Data List										
N O.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	3635.000	46.79	30.14	5.11	-39.59	42.45	74.00	31.55	PK	Vertical
2	3835.600	46.68	30.84	5.08	-39.64	42.96	74.00	31.04	PK	Vertical
3	4879.400	47.68	33.33	5.58	-39.61	46.98	74.00	27.02	PK	Vertical
4	7318.900	48.93	36.86	6.61	-40.71	51.69	74.00	22.31	PK	Vertical
5	11142.200	42.22	39.26	8.22	-39.14	50.56	74.00	23.44	PK	Vertical
6	12050.000	41.99	39.25	8.79	-39.99	50.04	74.00	23.96	PK	Vertical

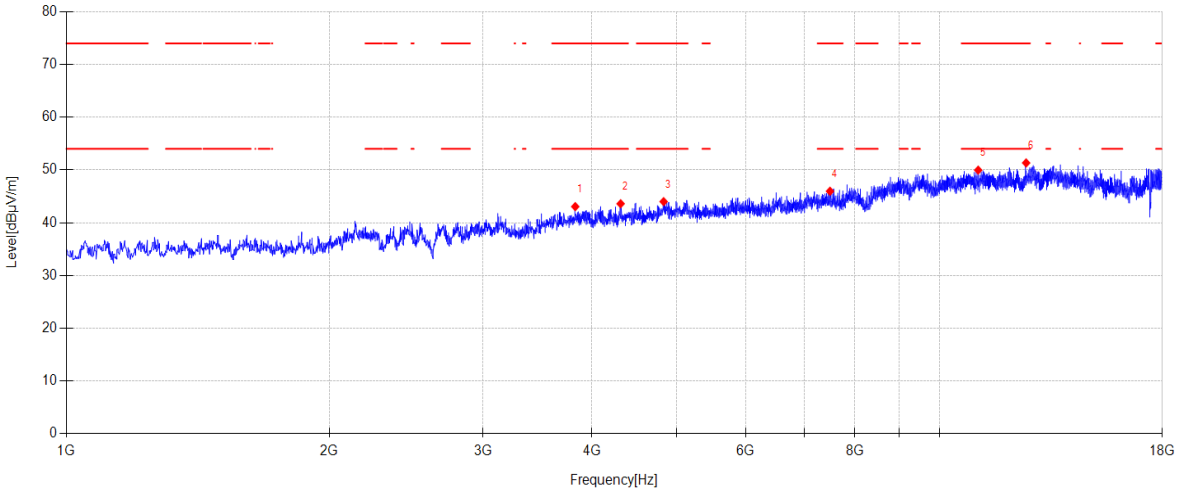
Data List									
N O.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	7319.275	47.13	36.86	6.61	49.89	54.00	4.11	AV	Vertical

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2024-10-08	**Tested By**:	Zhong Nan
EUT:	Magic Light Wand	**Model Number**:	MLW201
Test Mode:	SRD TX 2420 MHz Mode	**Power Supply**:	Battery
Condition:	Temp:21.9°C;Humi:51.0%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2024 report data\Q24073020\FCC ABOVE1G\68		
Memo:	Sample Number:S24073020-001 Power Setting:NA		

Test Graph



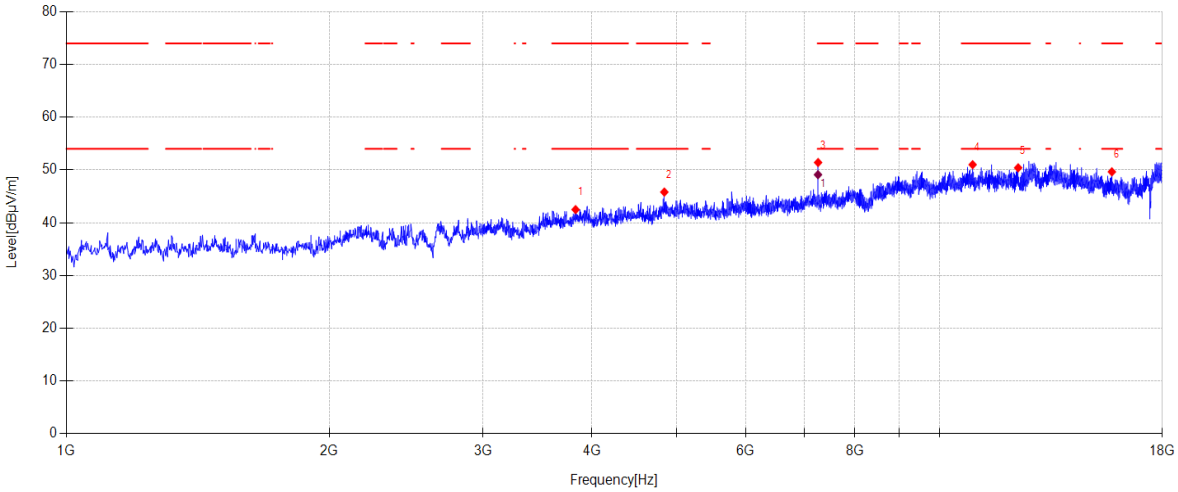
Data List										
N O.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	3827.100	46.80	30.81	5.08	-39.64	43.05	74.00	30.95	PK	Horizontal
2	4313.300	46.41	31.60	5.24	-39.65	43.60	74.00	30.40	PK	Horizontal
3	4831.800	44.73	33.33	5.55	-39.61	44.00	74.00	30.00	PK	Horizontal
4	7492.300	43.31	36.52	6.70	-40.56	45.97	74.00	28.03	PK	Horizontal
5	11075.900	41.57	39.30	8.18	-39.08	49.97	74.00	24.03	PK	Horizontal
6	12568.500	42.78	39.40	9.05	-39.89	51.34	74.00	22.66	PK	Horizontal

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2024-10-08	**Tested By**:	Zhong Nan
EUT:	Magic Light Wand	**Model Number**:	MLW201
Test Mode:	SRD TX 2420 MHz Mode	**Power Supply**:	Battery
Condition:	Temp:21.9°C;Humi:51.0%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2024 report data\Q24073020\FCC ABOVE1G\69		
Memo:	Sample Number:S24073020-001 Power Setting:NA		

Test Graph



Data List										
N O.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	3830.500	46.23	30.82	5.08	-39.64	42.49	74.00	31.51	PK	Vertical
2	4840.300	46.32	33.55	5.55	-39.61	45.81	74.00	28.19	PK	Vertical
3	7261.100	48.79	36.82	6.58	-40.77	51.42	74.00	22.58	PK	Vertical
4	10914.400	42.67	39.30	8.09	-39.05	51.01	74.00	22.99	PK	Vertical
5	12306.700	42.13	39.30	8.92	-39.94	50.41	74.00	23.59	PK	Vertical
6	15757.700	40.68	38.38	9.99	-39.40	49.65	74.00	24.35	PK	Vertical

Data List									
N O.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	7259.270	46.47	36.82	6.58	49.10	54.00	4.90	AV	Vertical

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

Field Strength of the Fundamental Signal

Freq. [MHz]	Reading [dBμV/m]	Antenna Factor [dB]	Cable loss [dB]	AMP [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Polarity
2420	57.38	27.34	3.59	0.00	88.31	114.00	25.69	PK	Horizontal
2420	61.89	27.34	3.59	0.00	92.82	114.00	21.18	PK	Vertical
2420	/	/	/	/	62.66	94.00	31.34	AV	Horizontal
2420	/	/	/	/	67.17	94.00	26.83	AV	Vertical
2440	56.84	27.38	3.60	0.00	87.82	114.00	26.18	PK	Horizontal
2440	60.34	27.38	3.60	0.00	91.32	114.00	22.68	PK	Vertical
2440	/	/	/	/	62.17	94.00	31.83	AV	Horizontal
2440	/	/	/	/	65.67	94.00	28.33	AV	Vertical
2470	55.86	27.48	3.61	0.00	86.95	114.00	27.05	PK	Horizontal
2470	61.46	27.48	3.61	0.00	92.55	114.00	21.45	PK	Vertical
2470	/	/	/	/	61.30	94.00	32.70	AV	Horizontal
2470	/	/	/	/	66.90	94.00	27.10	AV	Vertical

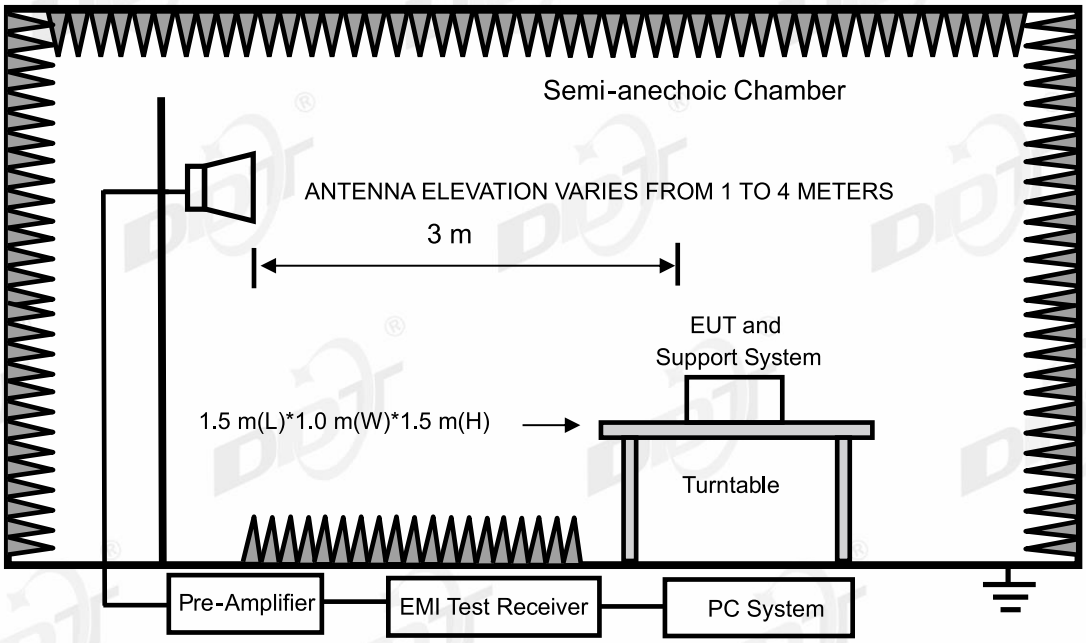
Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 4kHz, Sweep time: auto.
4.AVG Level=Peak level+20log（D）, D= Duty Cycle =5.22%,

8. Band Edge Compliance

8.1. Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal Due To
Hochgewinn-Hornantenne	SCHWARZBECK	BBHA 9120 D	DDT-ZC02129	2025/09/18
Active Loop Antenna	Schwarzbeck	FMZB1519	DDT-ZC00524	2025/09/11
ELECTRIC AND MAGNETIC FIELD ANALYZER	Narda	EHP-200A	DDT-ZC01401	2024/09/20
PSA Series Spectrum Analyzer	Agilent	E4447A	DDT-ZC00517	2025/03/31
Micro-Tronics filters	REBES	BRM50702	DDT-ZC03242	/
RF cable	Zhongke Junchuang	JCT26S-NJ-NJ-1.5M	DDT-ZC02762	2025/03/31
RF cable	Yuhu Technology	ZT26S-SMAJ-SMAJ-1M	DDT-ZC02037	2025/03/31
Pre-amplifier	COM-POWER	PAM-118A	DDT-ZC01293	2025/07/08
High pass filter	Micro-Tronics	HPM50108	DDT-ZC00560	2025/04/22
Pre-amplifier	COM-POWER	PAM-840A	DDT-ZC01693	2025/03/31
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	DDT-ZC02050	2025/07/11
RF cable	Yuhu Technology	JCTB810-NJ-NJ-9M	DDT-ZC02538	2025/03/31
RF Cable	N/A	W24.02 HL-562	DDT-ZC04022	2025/03/31
RF Cable	N/A	W13.02 AP1-X2	DDT-ZC04023	2025/03/31
High Pass filter	Xi'an Xingbo	XBLBQ-GTA67	DDT-ZC02179	2025/04/22
High pass filter	Micro-Tronics	HPM50102	DDT-ZC00561	2025/04/22
Micro-Tronics filters	REBES	BRM50716	DDT-ZC03240	/
EMI TEST RECEIVER	R&S	ESU26	DDT-ZC01909	2025/03/31
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	DDT-ZC00506	2025/04/26

8.2. Block diagram of test setup



8.3. Limits

All restriction band should comply with 15.209 limits, other emission should be at least 20 dB below the fundamental.

8.4. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Description	other
/	/	/	/	/

8.5. Test procedure

Same with Radiated Emission except change investigated frequency range.
Remark: All restriction band have been tested, and only the worst case is shown in report.

8.6. Test result

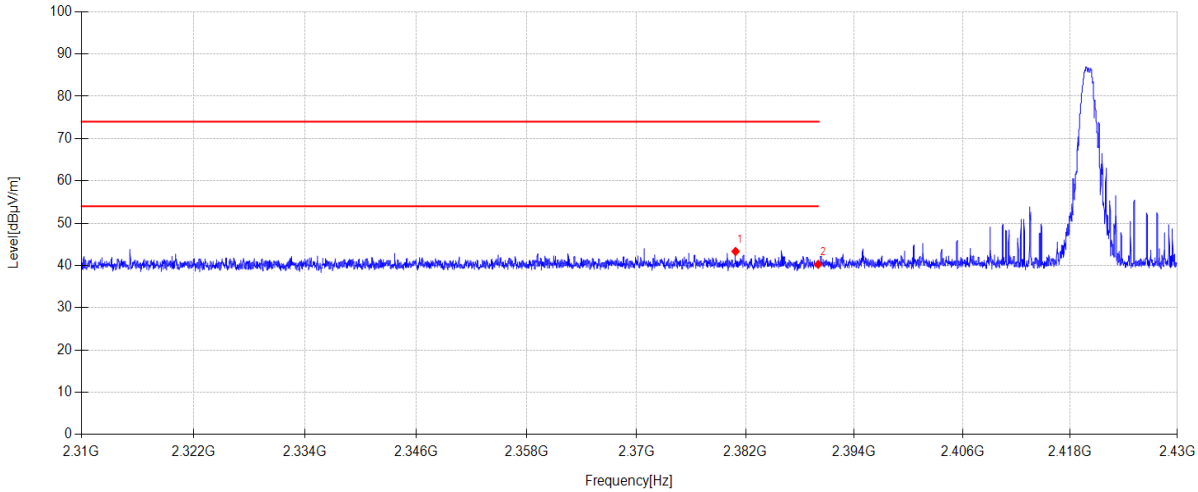
PASS. (See below detailed test result)

8.7. Test data

TR-4-E-009 Radiated Emission Test Result

Test Date:	2024-10-08	**Tested By**:	Zhong Nan
EUT:	Magic Light Wand	**Model Number**:	MLW201
Test Mode:	SRD TX 2420 MHz Mode	**Power Supply**:	Battery
Condition:	Temp:21.9°C;Humi:51.0%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2024 report data\Q24073020\FCC ABOVE1G\70		
Memo:	Sample Number:S24073020-001 Power Setting:NA		

Test Graph



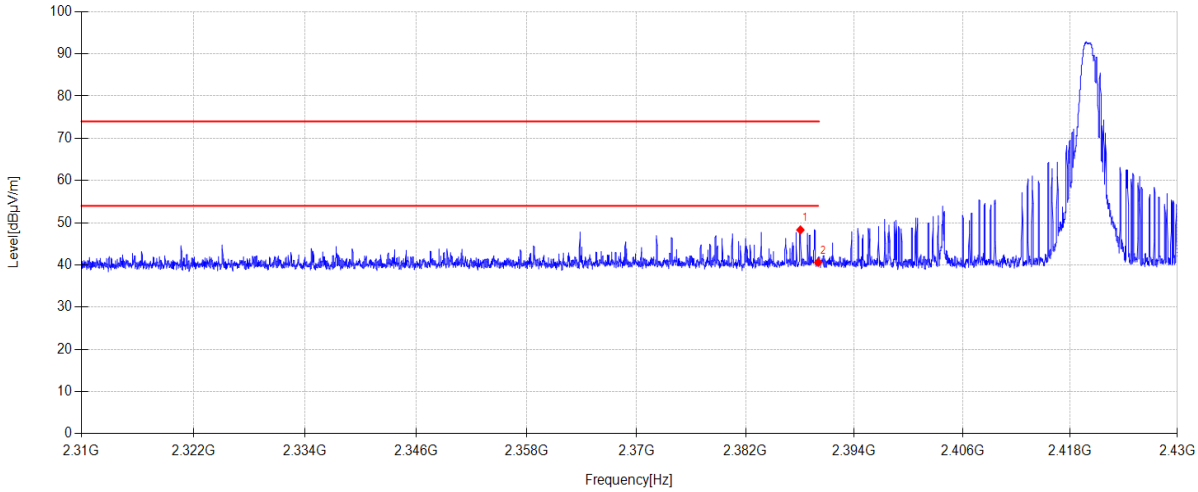
Data List										
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	2380.896	12.54	27.22	3.56	0.00	43.32	74.00	30.68	PK	Horizontal
2	2390.000	9.44	27.26	3.57	0.00	40.27	74.00	33.73	PK	Horizontal

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2024-10-08	**Tested By**:	Zhong Nan
EUT:	Magic Light Wand	**Model Number**:	MLW201
Test Mode:	SRD TX 2420 MHz Mode	**Power Supply**:	Battery
Condition:	Temp:21.9°C;Humi:51.0%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2024 report data\Q24073020\FCC ABOVE1G\71		
Memo:	Sample Number:S24073020-001 Power Setting:NA		

Test Graph



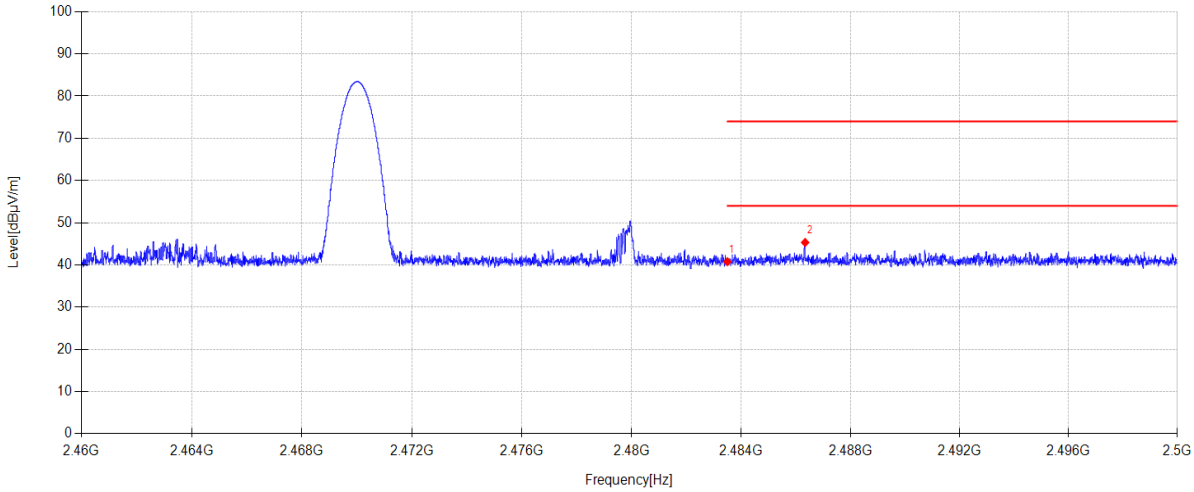
Data List										
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	2388.048	17.47	27.25	3.57	0.00	48.29	74.00	25.71	PK	Vertical
2	2390.000	9.78	27.26	3.57	0.00	40.61	74.00	33.39	PK	Vertical

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2024-10-08	**Tested By**:	Zhong Nan
EUT:	Magic Light Wand	**Model Number**:	MLW201
Test Mode:	SRD TX 2470 MHz Mode	**Power Supply**:	Battery
Condition:	Temp:21.9°C;Humi:51.0%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2024 report data\Q24073020\FCC ABOVE1G\72		
Memo:	Sample Number:S24073020-001 Power Setting:NA		

Test Graph



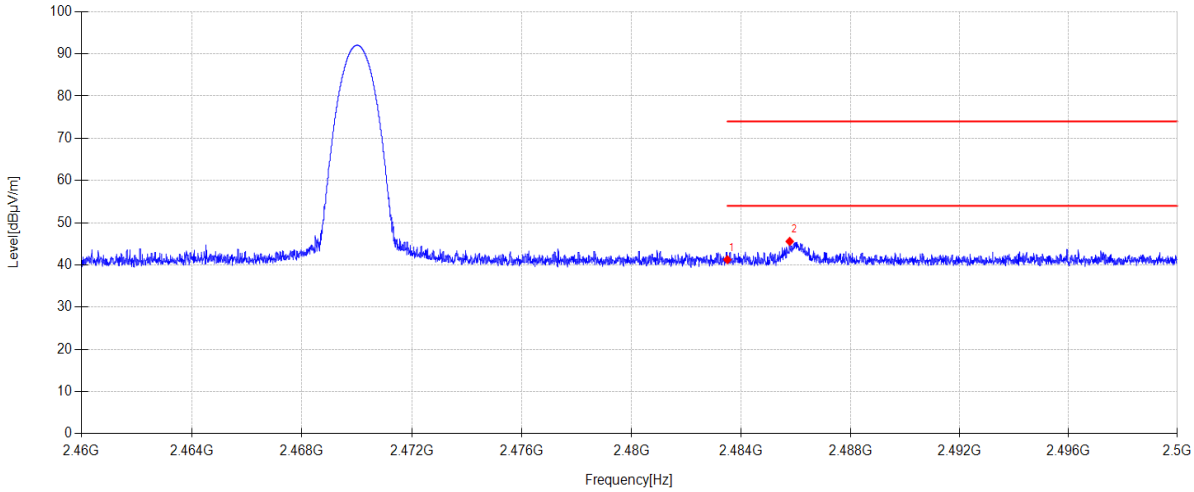
Data List										
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	2483.500	9.62	27.53	3.62	0.00	40.77	74.00	33.23	PK	Horizontal
2	2486.344	14.15	27.55	3.62	0.00	45.32	74.00	28.68	PK	Horizontal

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:	2024-10-08	**Tested By**:	Zhong Nan
EUT:	Magic Light Wand	**Model Number**:	MLW201
Test Mode:	SRD TX 2470 MHz Mode	**Power Supply**:	Battery
Condition:	Temp:21.9°C;Humi:51.0%	**Test Site**:	DDT 3# Chamber
File Path:	d:\ts\2024 report data\Q24073020\FCC ABOVE1G\73		
Memo:	Sample Number:S24073020-001 Power Setting:NA		

Test Graph



Data List										
NO.	**Freq. [MHz]**	**Reading [dBµV/m]**	**Antenna Factor [dB]**	**Cable loss [dB]**	**AMP [dB]**	**Level [dBµV/m]**	**Limit [dBµV/m]**	**Margin [dB]**	**Detector**	**Polarity**
1	2483.500	10.10	27.53	3.62	0.00	41.25	74.00	32.75	PK	Vertical
2	2485.780	14.41	27.54	3.62	0.00	45.57	74.00	28.43	PK	Vertical

Note:
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

10. Photos of the EUT

Please refer to DDT-Q24073020-1E appendix I

----------End Report----------