

EMC TEST REPORT

Applicant	Sengled Co.,Ltd.
FCC ID	2AGN8-W71N15
Product	Sengled smart Wifi bulb
Brand	Sengled
Model	W71-N15; W71-N11; W71-N11DL
Report No.	R2409A1417-E1
Issue Date	November 4, 2024

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2023)/ ANSI C63.4-2014**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion
1	Radiated Emission	FCC Part15.109, ANSI C63.4-2014	PASS
2	Conducted Emission	FCC Part15.107, ANSI C63.4-2014	NA ^{Note 1}
Date of Testing: October 24, 2024			
Date of Sample Received: September 25, 2024			
<p>Note:</p> <ol style="list-style-type: none"> The equipment is not connected to the public network, so test items do not apply. All indications of Pass/Fail in this report are opinions expressed by Eurofins TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. <p>Measurement Uncertainties were not taken into account and are published for informational purposes only.</p>			

Testing location

Test Items	Test location
Radiated Emission	<p>BTL INC. (SHANGHAI)</p> <p>No. 29, Jintang Road, Tangzhen Industry Park</p> <p>Pudong New Area, shanghai 201210 People's</p> <p>Republic of China</p> <p>A2LA (Certificate Number: 7136.01)</p>

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **Eurofins TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Test Facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

A2LA (Certificate Number: 3857.01)

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

1.3 Testing Location

Company:	Eurofins TA Technology (Shanghai) Co., Ltd.
Address:	Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
City:	Shanghai
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E-mail:	Kain.Xu@cpt.eurofinscn.com

2 General Description of Equipment Under Test

2.1 Applicant and Manufacturer Information

Applicant	Sengled Co.,Ltd.
Applicant address	Room 103/02-B, Floor 1, Building 1, No. 498, Guoshoujing Road, Pilot Free Trade Zone Shanghai China
Manufacturer	Sengled Co.,Ltd.
Manufacturer address	Room 103/02-B, Floor 1, Building 1, No. 498, Guoshoujing Road, Pilot Free Trade Zone Shanghai China

2.2 General Information

EUT Description			
Device Type	Module Device		
Model	W71-N15; W71-N11; W71-N11DL		
Lab internal SN	R2409A1417/S01		
Hardware Version	V1		
SW Version	1.0.0		
Power Rating	AC 120V		
Connecting I/O Port(s)	Please refer to the User's Manual.		
Antenna Type	PCB Antenna		
Frequency	Band	Tx (MHz)	Rx (MHz)
	Bluetooth LE	2400 ~ 2483.5	2400 ~ 2483.5
	Wi-Fi 2.4G	2400 ~ 2483.5	2400 ~ 2483.5
<p>Note:</p> <p>1. The EUT is sent from the applicant to Eurofins TA and the information of the EUT is declared by the applicant.</p> <p>2. The customer declares that W71-N15; W71-N11; and W71-N11DL are the same except for different models. This report only tests W71-N15.</p>			

2.3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

FCC Code CFR47 Part15B (2023)

ANSI C63.4-2014

2.4 Test Mode

Test Mode	
Mode 1	External Power supply + EUT Working

Test Type	Test Mode	Worst Mode
Radiated Emission	Mode 1	Mode 1
Conducted Emission	/	/
After technical evaluation or/and preliminary test, the test data of the worst-case condition was recorded in this report.		

3 Test Case Results

3.1 Radiated Emission

Ambient Condition

Temperature	Relative humidity
15°C ~ 35°C	30% ~ 60%

Methods of Measurement

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.

Set the spectrum analyzer in the following:

Below 1GHz:

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz:

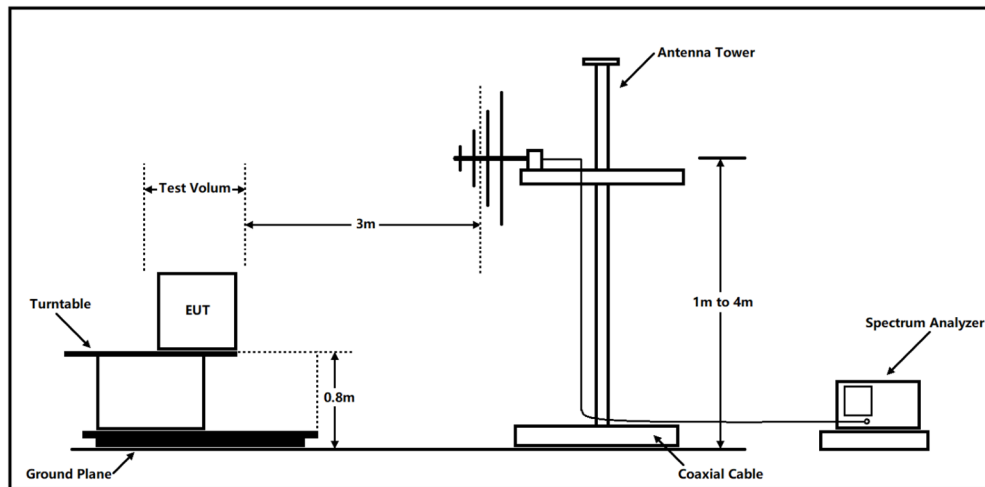
(a) PEAK Detector: RBW=1MHz / VBW=3MHz / Sweep=AUTO

(b) AVERAGE Detector: RBW=1MHz / VBW=3MHz / Sweep=AUTO

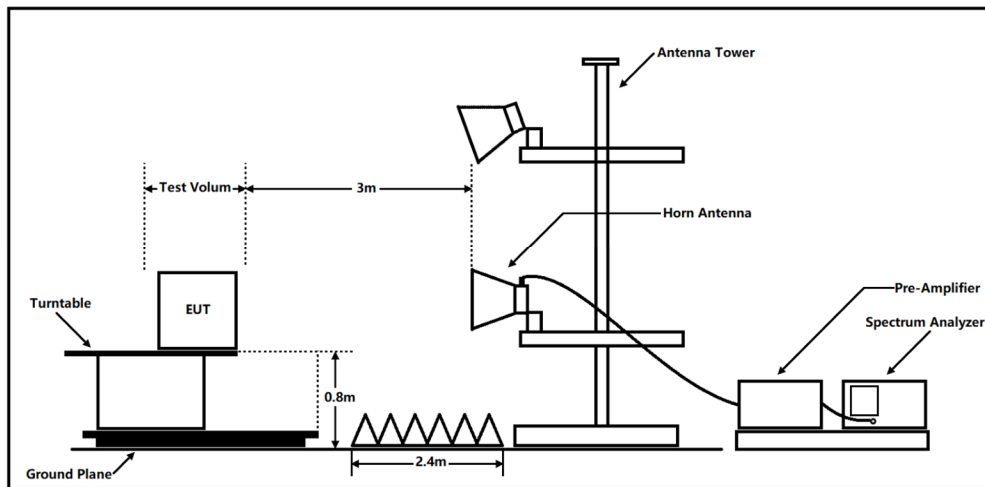
The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

Test Setup

Below 1GHz



Above 1GHz



Note: Area side: 2.4mX3.6m

Antenna Tower meets ANSI C63.4 requirements for measurements above 1 GHz by keeping the antenna aimed at the EUT during the antenna's ascent/ descent along the antenna mast.

Limits

Class B

Frequency (MHz)	Field Strength (dB μ V/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5 th harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

Frequency range of radiated measurements

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

Test Results

Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier.

The following graphs display the maximum values of horizontal and vertical by software.

For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

Site SH-CB01

Limit: FCC Class B 3m Radiation

M/N: /

Note:

Polarization: *Horizontal*

Power: AC 120V/60Hz

Distance: 3m

Mode: FULL SYSTEM

Temperature: 23 (C)

Humidity: 43 %

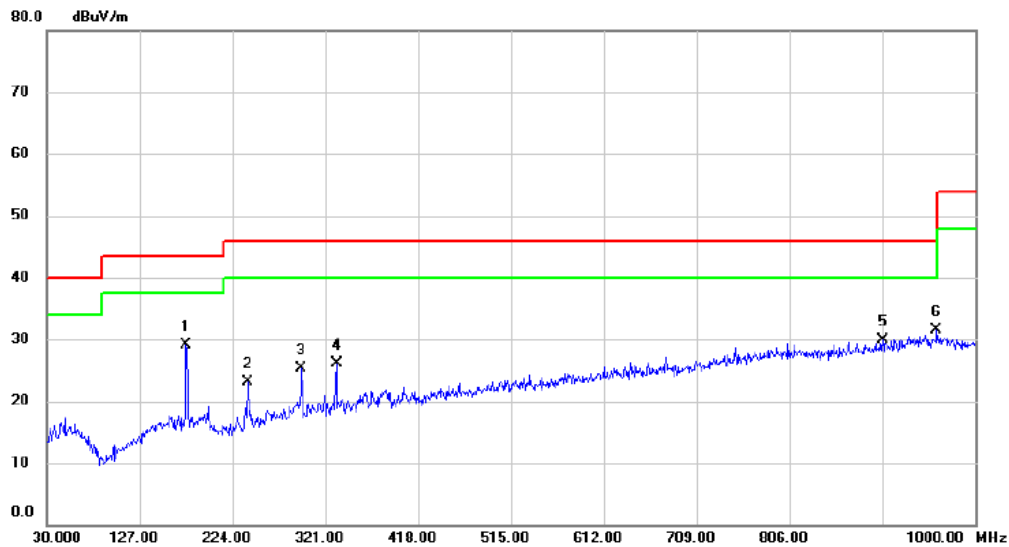
Radiated Emission Measurement

File :20241024-RAD-L-FCC

Data :#2

Date: 2024/10/24

Time: 21:51:53



No. Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
	MHz	dBuV		dBuV/m	dBuV/m	dB	Detector	Comment
1 *	175.9850	45.28	-16.21	29.07	43.50	-14.43	QP	
2	240.0050	40.05	-16.94	23.11	46.00	-22.89	QP	
3	296.2650	40.10	-14.79	25.31	46.00	-20.69	QP	
4	333.1250	40.03	-13.91	26.12	46.00	-19.88	QP	
5	903.0000	33.80	-3.80	30.00	46.00	-16.00	QP	
6	959.7450	34.65	-3.20	31.45	46.00	-14.55	QP	

Site: SH-CB01

Polarization: **Horizontal**

Temperature: 23 (C)

Limit: FCC above 1G ClassB 3m Radiation(peak)

Power: AC 120V/60Hz

Humidity: 43 %

Distance: 3m

M/N: /

Mode: FULL SYSTEM

Note:

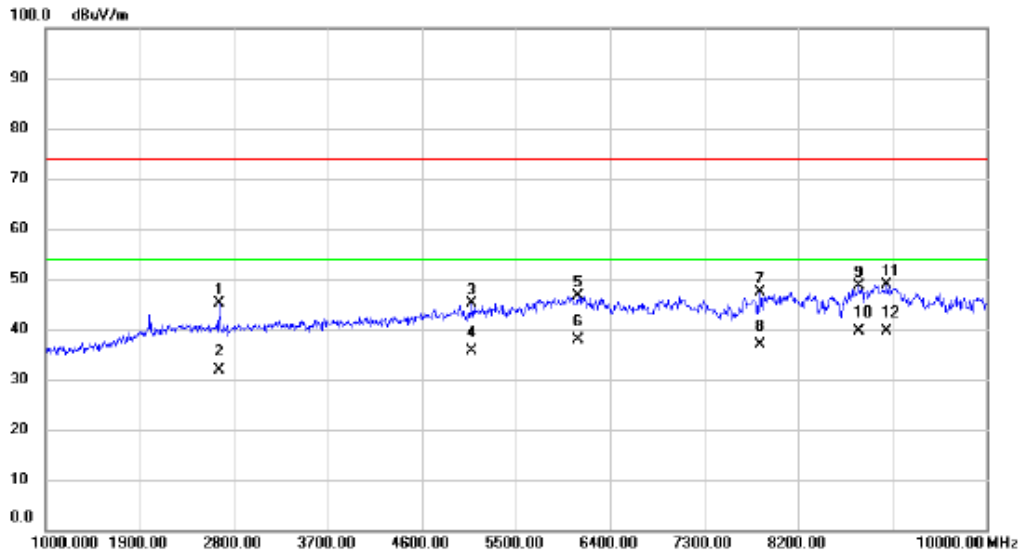
Radiated Emission Measurement

File :20241024-RAD-H-FCC

Data :#2

Date: 2024/10/24

Time: 22:36:22



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV		dBuV/m	dBuV/m	dB	Detector	Comment
1		2665.000	57.76	-12.71	45.05	74.00	-28.95	peak	
2		2665.000	44.63	-12.71	31.92	54.00	-22.08	AVG	
3		5077.000	51.92	-6.85	45.07	74.00	-28.93	peak	
4		5077.000	42.56	-6.85	35.71	54.00	-18.29	AVG	
5		6089.500	50.51	-3.92	46.59	74.00	-27.41	peak	
6		6089.500	41.76	-3.92	37.84	54.00	-16.16	AVG	
7		7835.500	48.99	-1.60	47.39	74.00	-26.61	peak	
8		7835.500	38.41	-1.60	36.81	54.00	-17.19	AVG	
9		8785.000	48.15	0.60	48.75	74.00	-25.25	peak	
10		8785.000	38.94	0.60	39.54	54.00	-14.46	AVG	
11		9046.000	47.24	1.72	48.96	74.00	-25.04	peak	
12	*	9046.000	37.96	1.72	39.68	54.00	-14.32	AVG	

Site: SH-CB01

Limit: FCC above 1G ClassB 3m Radiation(peak)

M/N: /

Note:

Polarization: **Horizontal**

Power: AC 120V/60Hz

Distance: 3m

Mode: FULL SYSTEM

Temperature: 23 (C)

Humidity: 43 %

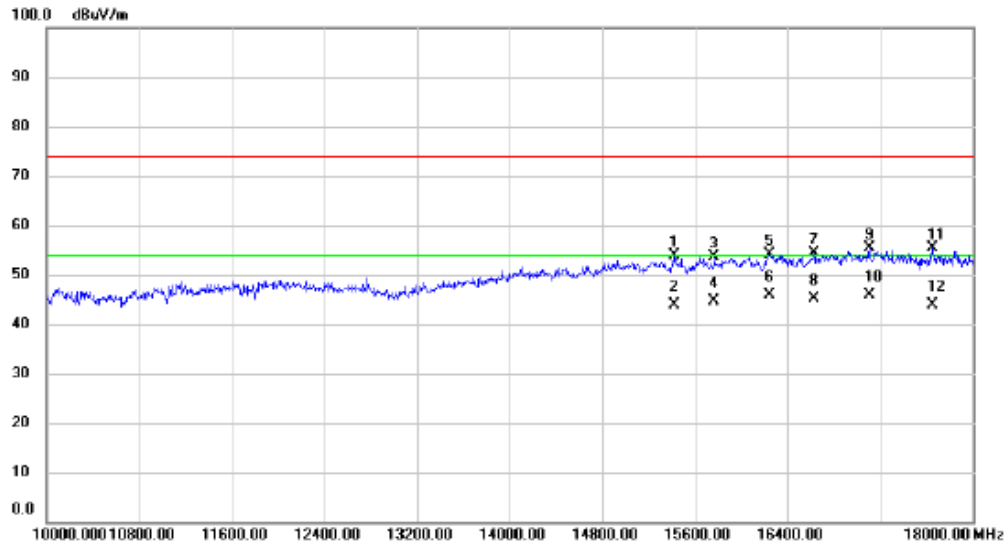
Radiated Emission Measurement

File :20241024-RAD-H-FCC

Data :#3

Date: 2024/10/24

Time: 22:41:17



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV		dBuV/m	dBuV/m	dB	Detector	Comment
1		15420.000	45.05	8.82	53.87	74.00	-20.13	peak	
2		15420.000	35.07	8.82	43.89	54.00	-10.11	AVG	
3		15768.000	44.11	9.58	53.69	74.00	-20.31	peak	
4		15768.000	35.12	9.58	44.70	54.00	-9.30	AVG	
5		16248.000	43.77	10.32	54.09	74.00	-19.91	peak	
6	*	16248.000	35.57	10.32	45.89	54.00	-8.11	AVG	
7		16624.000	43.77	10.64	54.41	74.00	-19.59	peak	
8		16624.000	34.46	10.64	45.10	54.00	-8.90	AVG	
9		17104.000	44.53	10.88	55.41	74.00	-18.59	peak	
10		17104.000	35.01	10.88	45.89	54.00	-8.11	AVG	
11		17652.000	45.25	10.15	55.40	74.00	-18.60	peak	
12		17652.000	33.62	10.15	43.77	54.00	-10.23	AVG	

Site: SH-CB01

Polarization: *Vertical*

Temperature: 23 (C)

Limit: FCC Class B 3m Radiation

Power: AC 120V/60Hz

Humidity: 43 %

Distance: 3m

M/N: /

Mode: FULL SYSTEM

Note:

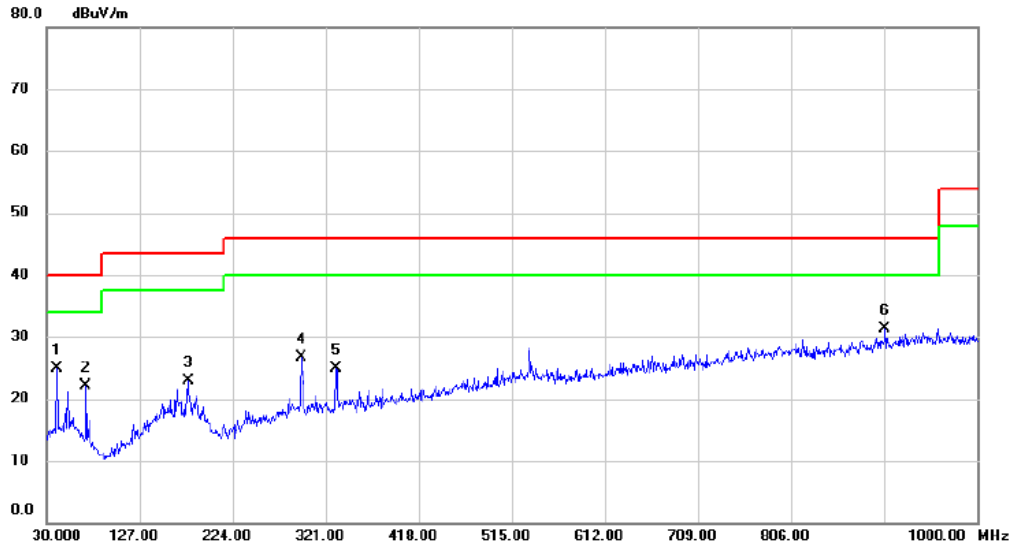
Radiated Emission Measurement

File :20241024-RAD-L-FCC

Data :#1

Date: 2024/10/24

Time: 21:49:21



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		40.6700	42.10	-17.15	24.95	40.00	-15.05	QP	
2		70.7400	40.56	-18.36	22.20	40.00	-17.80	QP	
3		177.9250	39.36	-16.41	22.95	43.50	-20.55	QP	
4		296.2650	41.55	-14.79	26.76	46.00	-19.24	QP	
5		331.6700	38.90	-13.93	24.97	46.00	-21.03	QP	
6	*	903.9700	35.01	-3.79	31.22	46.00	-14.78	QP	

Site SH-CB01

Polarization: **Vertical**

Temperature: 23 (C)

Limit: FCC above 1G ClassB 3m Radiation(peak)

Power: AC 120V/60Hz

Humidity: 43 %

Distance: 3m

M/N: /

Mode: FULL SYSTEM

Note:

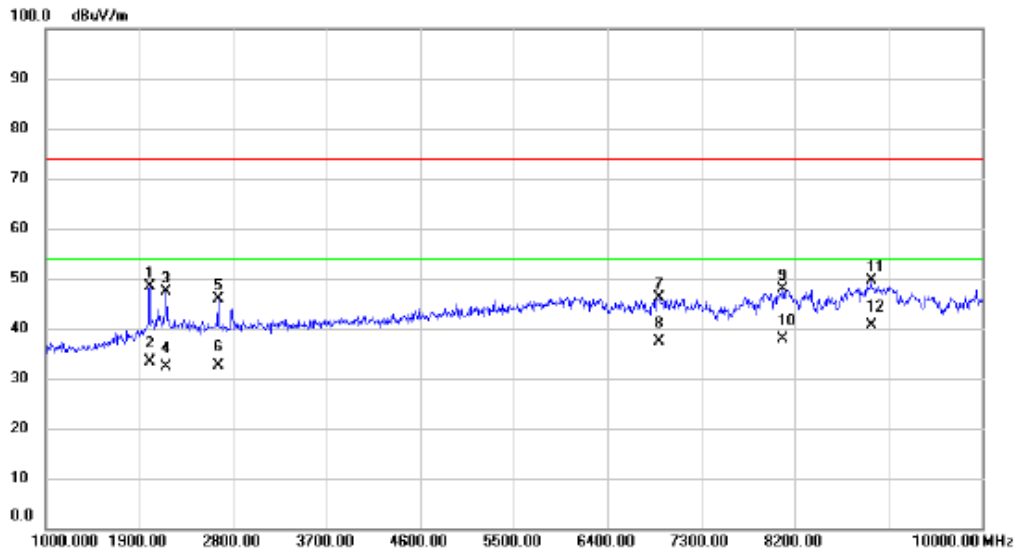
Radiated Emission Measurement

File :20241024-RAD-H-FCC

Data :#1

Date: 2024/10/24

Time: 22:30:47



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV		dBuV/m	dBuV/m	dB	Detector	Comment
1		1999.000	62.55	-14.22	48.33	74.00	-25.67	peak	
2		1999.000	47.63	-14.22	33.41	54.00	-20.59	AVG	
3		2161.000	61.25	-13.80	47.45	74.00	-26.55	peak	
4		2161.000	46.18	-13.80	32.38	54.00	-21.62	AVG	
5		2660.500	58.59	-12.71	45.88	74.00	-28.12	peak	
6		2660.500	45.26	-12.71	32.55	54.00	-21.45	AVG	
7		6895.000	49.90	-3.67	46.23	74.00	-27.77	peak	
8		6895.000	41.04	-3.67	37.37	54.00	-16.63	AVG	
9		8083.000	48.30	-0.31	47.99	74.00	-26.01	peak	
10		8083.000	38.27	-0.31	37.96	54.00	-16.04	AVG	
11		8933.500	48.18	1.54	49.72	74.00	-24.28	peak	
12	*	8933.500	38.97	1.54	40.51	54.00	-13.49	AVG	

Site: SH-CB01

Limit: FCC above 1G ClassB 3m Radiation(peak)

M/N: /

Note:

Polarization: **Vertical**

Power: AC 120V/60Hz

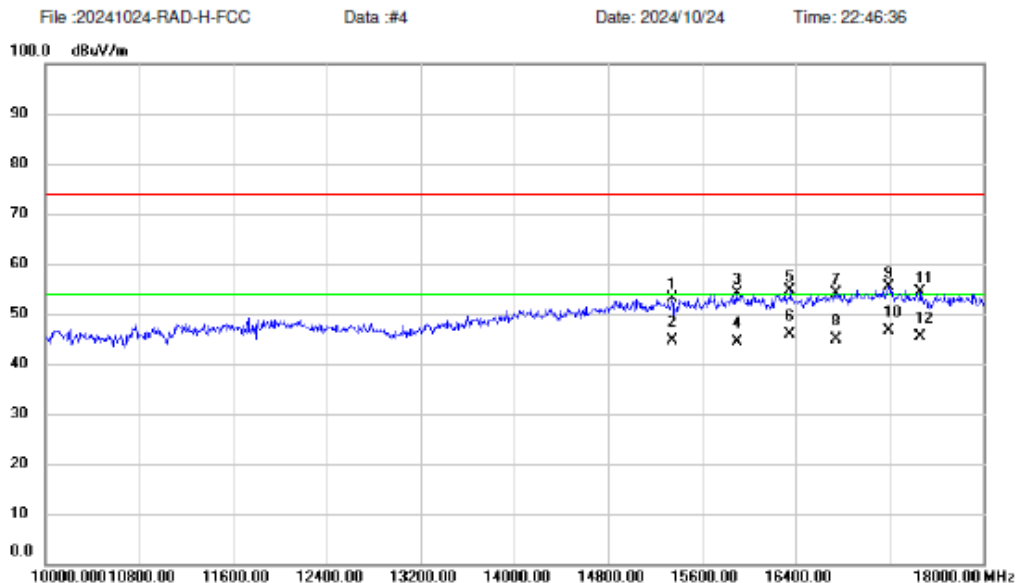
Distance: 3m

Mode: FULL SYSTEM

Temperature: 23 (C)

Humidity: 43 %

Radiated Emission Measurement



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		15348.000	44.40	8.74	53.14	74.00	-20.86	peak	
2		15348.000	35.89	8.74	44.63	54.00	-9.37	AVG	
3		15900.000	44.14	9.90	54.04	74.00	-19.96	peak	
4		15900.000	34.59	9.90	44.49	54.00	-9.51	AVG	
5		16356.000	44.31	10.40	54.71	74.00	-19.29	peak	
6		16356.000	35.38	10.40	45.78	54.00	-8.22	AVG	
7		16748.000	43.33	10.76	54.09	74.00	-19.91	peak	
8		16748.000	34.13	10.76	44.89	54.00	-9.11	AVG	
9		17196.000	44.61	10.76	55.37	74.00	-18.63	peak	
10	*	17196.000	35.77	10.76	46.53	54.00	-7.47	AVG	
11		17464.000	43.99	10.37	54.36	74.00	-19.64	peak	
12		17464.000	34.89	10.37	45.26	54.00	-8.74	AVG	

3.2 Conducted Emission

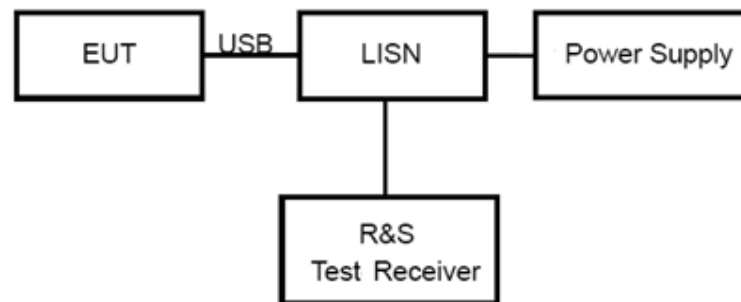
Ambient Condition

Temperature	Relative humidity
15°C ~ 35°C	30% ~ 60%

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage 120V/60Hz.

Limits

Frequency (MHz)	Class A (dBμV)		Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 to 56 *	56 to 46*
0.5 - 5	73	60	56	46
5 - 30	73	60	60	50
*: Decreases with the logarithm of the frequency.				

Test Results

The equipment is not connected to the public network, so test items do not apply.

4 Uncertainty Measurement

Case	Uncertainty	Factor k
Radiated Emission 30MHz – 200MHz	4.17 dB	1.96
Radiated Emission 200MHz – 1GHz	4.84 dB	1.96
Radiated Emission 1GHz – 18GHz	4.35 dB	1.96

5 Main Test Instruments

Name of Equipment	Manufacturer	Type/Model	Serial Number	Calibration Date	Expiration Time
Radiated Emission					
SH-E-290	Antenna	VULB 9168	1467	2024-05-13	2025-05-12
SH-E-004	Pre-Amplifier	EMC9135	980401	2024-02-03	2025-02-02
SH-E-024	MXE EMI Receiver	N9038A	MY56400088	2024-02-03	2025-02-02
SH-E-147	Double-Ridged Waveguide Horn Antenna	BBHA 9120D	9120D-1817	2024-05-13	2025-05-12
SH-E-222	Pre-Amplifier	EMC051845SE	980725	2024-07-13	2025-07-12
SH-E-021	EXA Spectrum Analyzer	N9010A	MY56480579	2024-02-03	2025-02-02
SH-C-55	Test Cable	EMC104-SM-SM-7000	181020	2024-05-21	2025-05-20
SH-C-57	Test Cable	RWP50-4.6A-SMSM-1M	20200928 002	2024-05-21	2025-05-20
SH-C-13	Test Cable	EMC104-SM-SM-2500	170618	2024-05-21	2025-05-20
SH-K-02	Measurement Software	EZ-EMC Ver.NB-03A1	N/A	N/A	N/A

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.

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