TEST REPORT

Product	:	LED controller
Trade mark	:	N/A
Model/Type reference	:	MX-FOB
Serial Number	:	N/A
Report Number	:	EED32Q81030401
FCC ID	:	2BCKBMX-FOB
Date of Issue	:	Feb. 19, 2025
Test Standards	:	47 CFR Part 15 Subpart C
Test result	:	PASS

Prepared for:

XKGLOW Inc

2801 N Farmer Market Rd Springfield, IL, 62707 USA

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
Shenzhen, Guangdong, China
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Compiled by: Zhenxia Wen — Zhenxia Wen

Reviewed by: Frazer Li — Frazer Li

Approved by: Aaron Ma — Aaron Ma

Date: Feb. 19, 2025

Check No.: 1118170724

1 Version

Version No.	Date	Description
00	Feb. 19, 2025	Original

2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	N/A
Field Strength of the Fundamental Signal	47 CFR Part 15 Subpart C Section 15.249 (a)	ANSI C63.10-2013	PASS
Spurious Emissions	47 CFR Part 15 Subpart C Section 15.249 (a)/15.209	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15 Subpart C Section 15.249(a)/15.205	ANSI C63.10-2013	PASS
20dB Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.215 (c)	ANSI C63.10-2013	PASS

Remark:
N/A:The product is powered by battery of DC 3.0V.

3 Contents

4 General Information

4.1 Client Information

Applicant:	XKGLOW Inc
Address of Applicant:	2801 N Farmer Market Rd Springfield, IL, 62707 USA
Manufacturer:	Shenzhen Mage E-commerce Co.,Ltd
Address of Manufacturer:	A2003, Baifu Building, Dengliang Road,Nanshan District, Shenzhen, Guangdong, China

4.2 General Description of EUT

Product Name:	LED controller
Model No.:	MX-FOB
Test model No.:	MX-FOB
Trade mark:	N/A
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Frequency Range:	915MHz
Number of Channels:	1
Modulation type:	ASK
Antenna Type:	Internal Antenna
Test Software of EUT:	RF test
Test Power Grade:	Default
Power Supply:	DC 3.0V
Test Voltage:	DC 3.0V
Sample Received Date:	Jul. 23, 2024
Sample tested Date:	Jul. 23, 2024 to Aug. 27, 2024

Operation Frequency each of channel：	
Channel	Frequency(MHz)
CH1	915

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the only frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency(MHz)
CH1	915

4.3 Test Environment and Mode

Operating Environment:	
Temperature:	22~25.0 °C
Humidity:	50~55 % RH
Atmospheric Pressure:	1010mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with modulation.

4.4 Description of Support Units

The EUT has been tested independently.

4.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.6 Deviation from Standards

None.

4.7 Abnormalities from Standard Conditions

None.

4.8 Other Information Requested by the Customer

None.

4.9 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-18GHz)
3	Radiated Spurious emission test	3.3dB (9kHz-30MHz)
		4.3dB (30MHz-1GHz)
		4.5dB (1GHz-18GHz)
		3.4dB (18GHz-40GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

5 Equipment List

3M Semi-anechoic Chamber (2)- Radiated disturbance Test					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05/22/2022	05/21/2025
Receiver	R&S	ESCI7	100938-003	09/22/2023	09/21/2024
Spectrum Analyzer	R&S	FSV40	101200	07/18/2024	07/17/2025
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	9163-618	05/22/2022	05/21/2025
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04/16/2024	04/15/2025
Microwave Preamplifier	Tonscend	EMC051845SE	980380	12/14/2023	12/13/2024
Horn Antenna	A.H.SYSTEMS	SAS-574	374	07/02/2023	07/01/2026
Horn Antenna	ETS-LINGREN	BBHA 9120D	9120D-1869	04/16/2024	04/15/2025
Preamplifier	Agilent	11909A	12-1	03/22/2024	03/21/2025
Preamplifier	CD	PAP-1840-60	6041.6042	06/19/2024	06/18/2025
Test software	Fara	EZ-EMC	EMEC-3A1-Pre	---	---
Cable line	Fulai(7M)	SF106	5219/6A	05/22/2022	05/21/2025
Cable line	Fulai(6M)	SF106	5220/6A	05/22/2022	05/21/2025
Cable line	Fulai(3M)	SF106	5216/6A	05/22/2022	05/21/2025
Cable line	Fulai(3M)	SF106	5217/6A	05/22/2022	05/21/2025

3M full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
RSE Automatic test software	JS Tonscend	JS36-RSE	10166	---	---
Receiver	Keysight	N9038A	MY57290136	01-09-2024	01-08-2025
Spectrum Analyzer	Keysight	N9020B	MY57111112	01-19-2024	01-18-2025
Spectrum Analyzer	Keysight	N9030B	MY57140871	01-13-2024	01-12-2025
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-1148	04-28-2024	04-27-2025
Horn Antenna	Schwarzbeck	BBHA 9170	9170-832	04-16-2024	04-15-2025
Horn Antenna	ETS-LINDGREN	3117	57407	07-03-2024	07-02-2025
Preamplifier	Tonscend	EMC051845SE	980380	12-14-2023	12-13-2024
Preamplifier	EMCI	EMC001330	980563	03-08-2024	03-07-2025
Preamplifier	JS Tonscend	TAP-011858	AP21B806112	07-18-2024	07-17-2025
Communication test set	R&S	CMW500	102898	12-14-2023	12-13-2024
Temperature/ Humidity Indicator	biaozhi	GM1360	EE1186631	04-07-2024	04-06-2025
Fully Anechoic Chamber	TDK	FAC-3	---	01-09-2024	01-08-2027
Cable line	Times	SFT205-NMSM-2.50M	394812-0001	05/22/2022	05/21/2025
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	05/22/2022	05/21/2025
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	05/22/2022	05/21/2025
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	05/22/2022	05/21/2025
Cable line	Times	EMC104-NMNM-1000	SN160710	05/22/2022	05/21/2025
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	05/22/2022	05/21/2025
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	05/22/2022	05/21/2025
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	05/22/2022	05/21/2025
Cable line	Times	HF160-KMKM-3.00M	393493-0001	05/22/2022	05/21/2025

6 Test results and Measurement Data

6.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203
15.203 requirement: 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
EUT Antenna:	Please see Internal photos
The antenna is integrated on the main PCB and no consideration of replacement.	

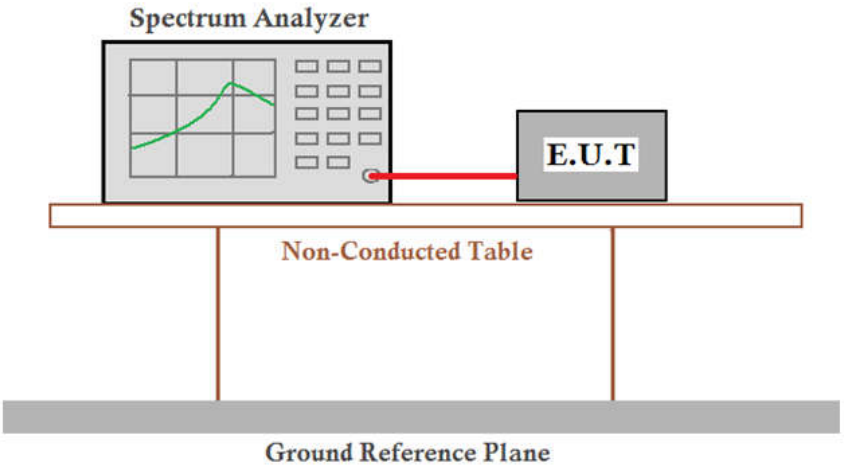
6.2 Radiated Spurious Emissions

6.2.1 Duty Cycle

Test Requirement: 47 CFR Part 15C Section 15.35 (c)

Test Method: ANSI C63.10:2013

Test Setup:



Limit: N/A

Test Mode: Transmitting mode

Test Results: Pass

The number of pulses of duration /1000ms	T on time (ms)/one burst	T on time (ms)/1000ms	T period (ms)	Duty cycle(%)
8	23	184	100	100

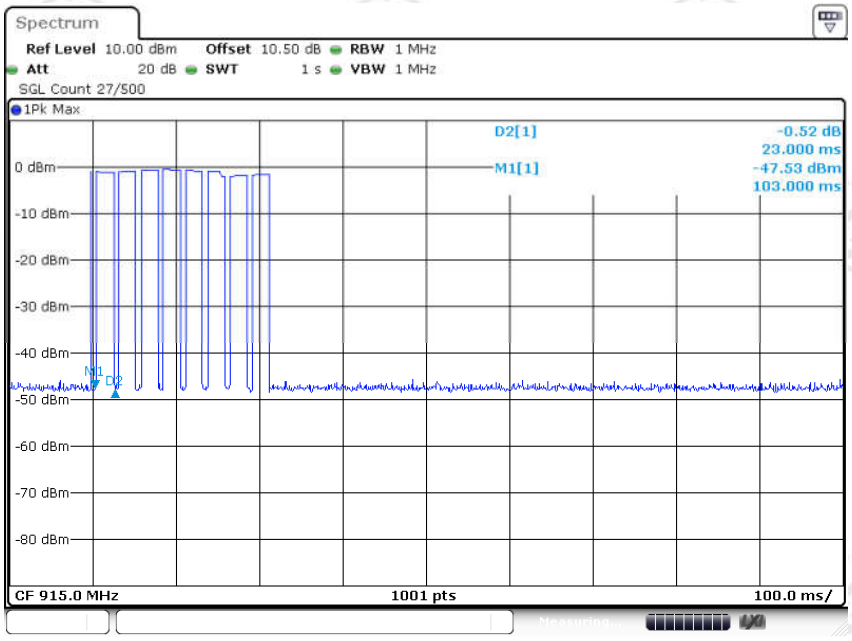
Note:

①T on time(ms)/1000ms=The number of pulses of duration/100ms*T on time(ms)/one burst;

②According to ANSI C63.10-2013 section 7.5,since T on time(ms)/1000ms is greater than 100ms, Duty is calculated in terms of 100ms;

Test plot as follows:

The number of pulses of duration/100ms: number is 8



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6.2.2 Radiated Spurious Emissions

Test Requirement: 47 CFR Part 15C Section 15.249 and 15.209 and 15.205

Test Method: ANSI C63.10

Test Site: Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10kHz	Average

Limit: (Spurious Emissions)

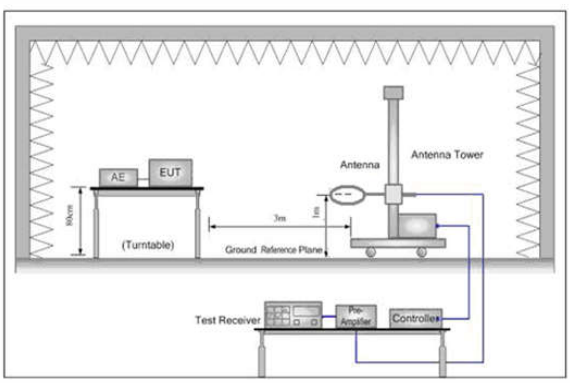
Frequency	Field strength (microvolt/meter)	Limit (dBμV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Limit: (Field strength of the fundamental signal)

Frequency	Limit (dBμV/m @3m)	Remark
911MHz-919MHz	94.0	Average Value
	114.0	Peak Value

Test Setup:



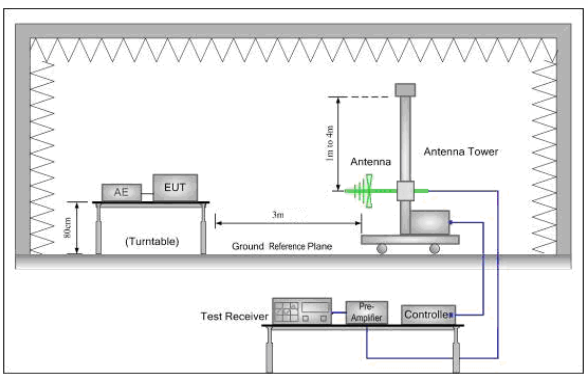


Figure 1. Below 30MHz

Figure 2. 30MHz to 1GHz

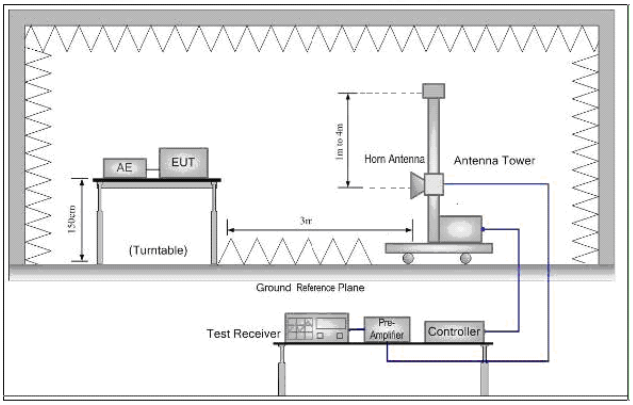


Figure 3. Above 1GHz

Test Procedure:

Below 1GHz test procedure as below:

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.

The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.

The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).

Test the EUT in the only channel .

The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.

Repeat above procedures until all frequencies measured was complete.

Test Mode: Transmitting mode

Test Results: Pass

Test data:

Field Strength of the Fundamental Signal:

Average value:	
Calculate Formula:	Average value=Peak value + PDCF
	PDCF=20*log(Duty cycle)
	Duty cycle= T on time / T period
Test data:	T on time =100ms
	T period =100ms
	PDCF= 0

Test channel:	CH1

Antenna polarization: Horizontal						
Frequency (MHz)	Read Level (dBuV)	Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
915	102.53	-35.27	67.26	114.00	-46.74	Peak
915	-	-	67.26	94.00	-26.74	Average

Antenna polarization: Vertical						
Frequency (MHz)	Read Level (dBuV)	Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
915	101.43	-35.27	66.16	114.00	-47.84	Peak
915	-	-	66.16	94.00	-27.84	Average

Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

Spurious Emissions

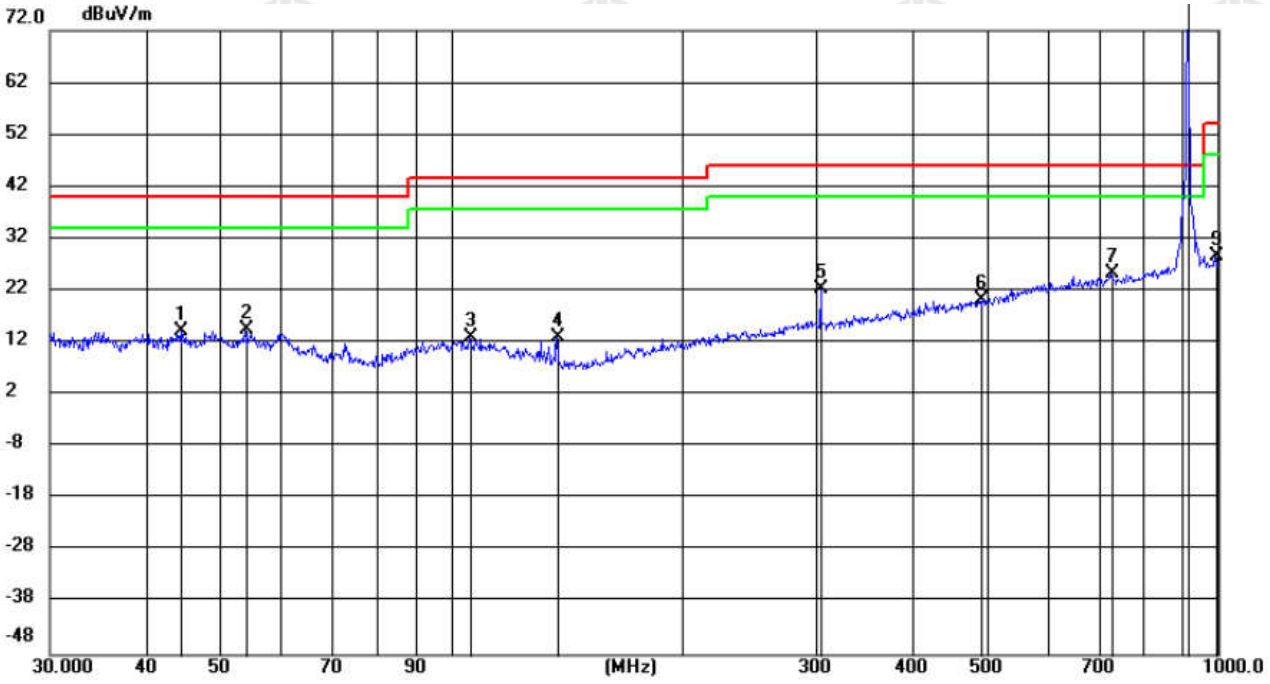
9KHz-30MHz:

9 kHz~30 MHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement
The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

30MHz-1GHz & Restricted bands:

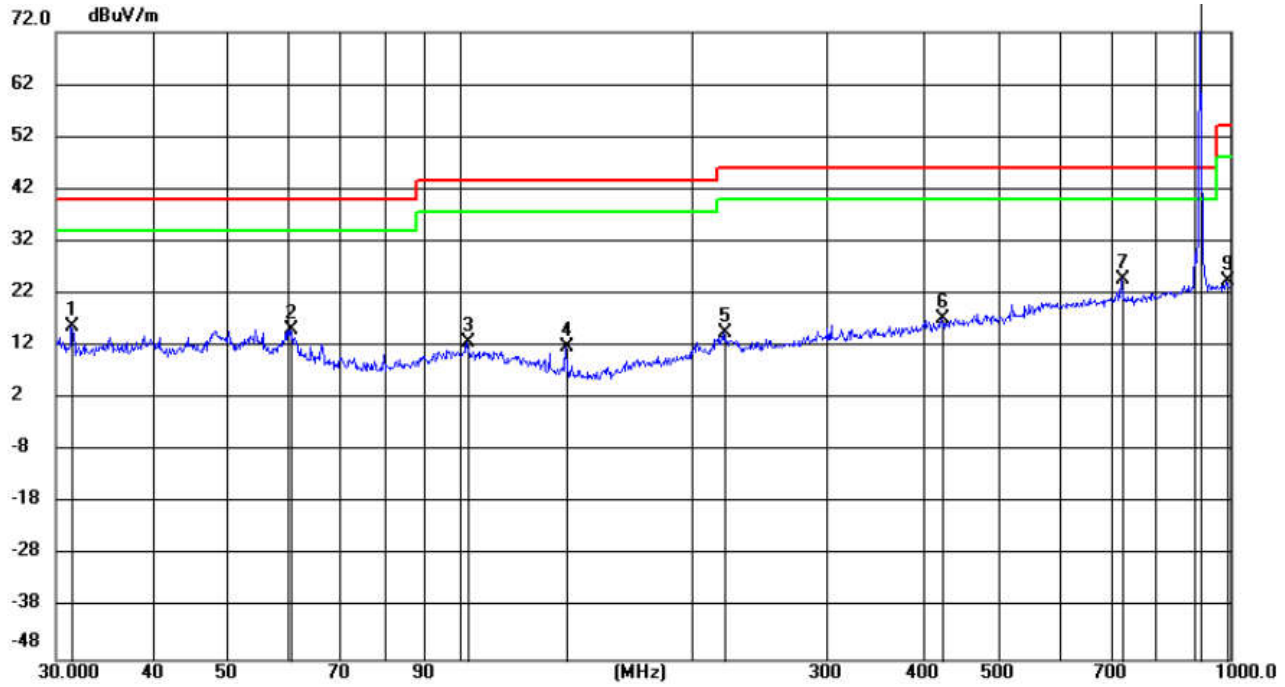
Test channel:	CH1

Horizontal:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		44.5633	0.62	13.59	14.21	40.00	-25.79	QP	200	7	
2		54.0426	1.17	13.30	14.47	40.00	-25.53	QP	200	7	
3		105.9197	0.08	13.02	13.10	43.50	-30.40	QP	100	1	
4		137.4684	3.67	9.33	13.00	43.50	-30.50	QP	100	352	
5		304.1830	6.18	16.23	22.41	46.00	-23.59	QP	200	7	
6		492.2957	0.40	19.70	20.10	46.00	-25.90	QP	200	279	
7		727.1876	1.82	23.41	25.23	46.00	-20.77	QP	200	132	
8	*	915.1055	79.70	26.01	105.71	46.00	59.71	QP	100	94	
9		995.6263	2.23	26.47	28.70	54.00	-25.30	QP	200	163	

Vertical:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		31.4929	3.76	12.09	15.85	40.00	-24.15	QP	200	311	
2		60.3118	2.92	12.22	15.14	40.00	-24.86	QP	100	7	
3		102.6112	0.61	12.02	12.63	43.50	-30.87	QP	200	177	
4		137.4924	3.89	8.10	11.99	43.50	-31.51	QP	200	0	
5		221.1206	2.83	11.60	14.43	46.00	-31.57	QP	100	7	
6		422.5760	1.04	16.24	17.28	46.00	-28.72	QP	100	348	
7		723.6265	4.48	20.38	24.86	46.00	-21.14	QP	200	352	
8	*	915.1055	70.68	22.68	93.36	46.00	47.36	QP	100	244	
9		991.6195	1.48	23.06	24.54	54.00	-29.46	QP	100	48	

Above 1GHz:

Test mode:					Transmitting (CH1)				
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1830.08	-22.58	83.04	60.46	74.00	13.54	PASS	Horizontal	PK
2	2744.97	-20.15	85.10	64.95	74.00	9.05	PASS	Horizontal	PK
3	3660.04	-16.75	80.24	63.49	74.00	10.51	PASS	Horizontal	PK
4	5490.16	-10.54	59.09	48.55	74.00	25.45	PASS	Horizontal	PK
5	6405.22	-6.45	58.31	51.86	74.00	22.14	PASS	Horizontal	PK
6	7320.28	-3.87	57.78	53.91	74.00	20.09	PASS	Horizontal	PK
7	1830.51	-22.57	56.84	34.27	54.00	19.73	PASS	Horizontal	AV
8	2743.86	-20.15	46.29	26.14	54.00	27.86	PASS	Horizontal	AV
9	3660.30	-16.72	53.63	36.91	54.00	17.09	PASS	Horizontal	AV
10	1829.88	-22.60	73.77	51.17	74.00	22.83	PASS	Vertical	PK
11	2745.17	-20.15	86.15	66.00	74.00	8.00	PASS	Vertical	PK
12	3660.04	-16.75	78.24	61.49	74.00	12.51	PASS	Vertical	PK
13	5490.16	-10.54	58.74	48.20	74.00	25.80	PASS	Vertical	PK
14	6405.22	-6.45	57.39	50.94	74.00	23.06	PASS	Vertical	PK
15	7320.28	-3.87	57.47	53.60	74.00	20.40	PASS	Vertical	PK
16	2744.64	-20.15	59.92	39.77	54.00	14.23	PASS	Vertical	AV
17	3659.82	-16.72	50.48	33.76	54.00	20.24	PASS	Vertical	AV
18	7319.59	-3.87	37.75	33.88	54.00	20.12	PASS	Vertical	AV

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
   Final Test Level =Receiver Reading + Correct Factor
   Correct Factor =Antenna Factor + Cable Factor - Preamplifier Factor

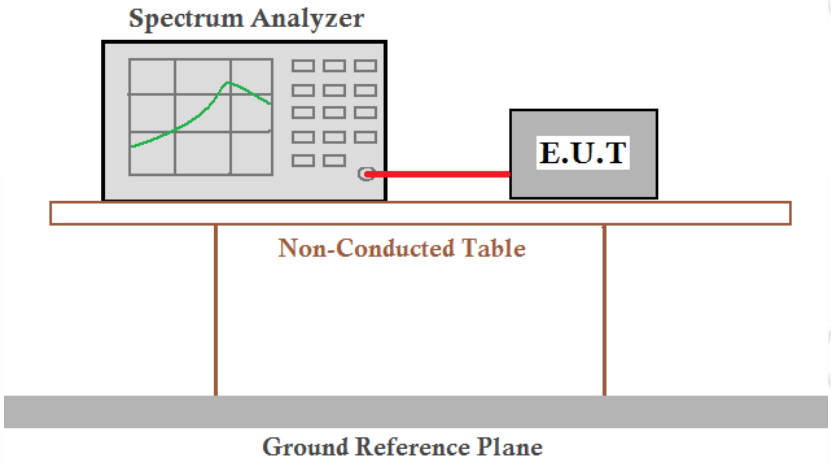
2) Scan from 9kHz to 18GHz, below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported .

6.2.3 20dB Bandwidth

Test Requirement: 47 CFR Part 15C Section 15.215

Test Method: ANSI C63.10: 2013

Test Setup:



Test Procedure:

Remark: Offset=Cable loss+ attenuation factor.

1) The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

2) Set to the maximum power setting and enable the EUT transmit continuously.

3) Use the following spectrum analyzer settings for 20dB Bandwidth measurement.

Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a test channel; 1%≤RBW ≤5% of the 20 dB bandwidth; VBW≥3RBW;

Sweep = auto; Detector function = peak; Trace = max hold.

4) Measure and record the results in the test report.

Limit: N/A

Test Mode: Transmitter mode

Test Results: Pass

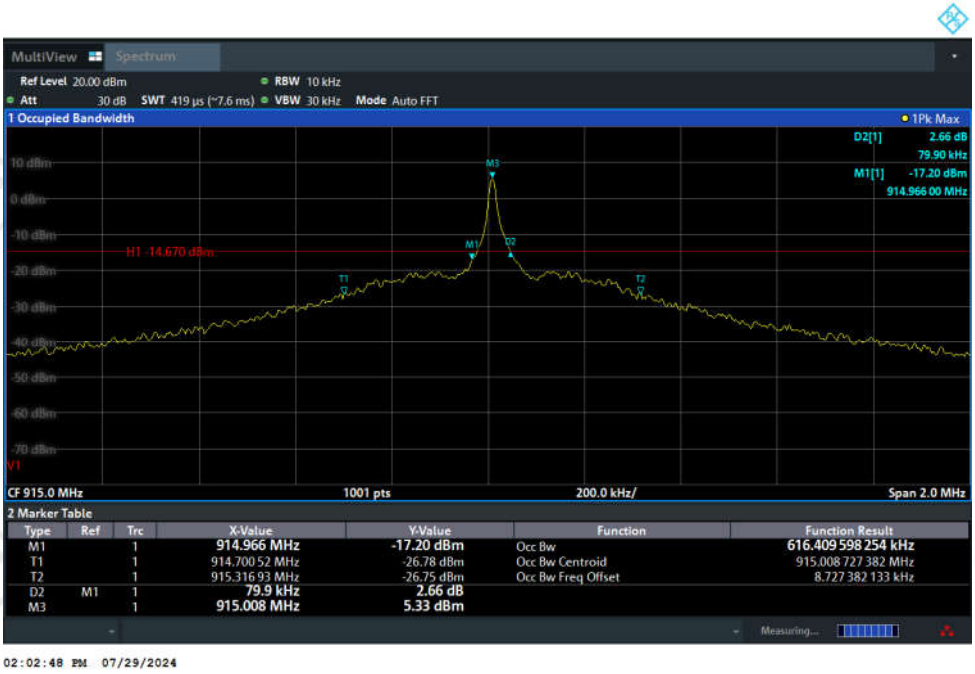
Measurement Data

Test Channel	Frequency Left (MHz)	Frequency Right (MHz)	20dB bandwidth (kHz)	Limit (kHz)	Results
CH1	914.9660	915.0459	79.90	N/A	Pass

Note:20dB bandwidth=Frequency Right-Frequency Left;

Test plot as follows:

Test channel:	CH1



Statement

1. This report is considered invalid without approved signature, special seal and the seal on the perforation;

2. The Company Name shown on Report and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified;

3. The result(s) shown in this report refer(s) only to the sample(s) tested;

4. Unless otherwise stated,the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule stated in ILAC-G8:09/2019/CNAS-GL015:2022;

5. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***