

SHENZHEN DAYBETTER OPTO- ELECTRONICS CO.,LTD

TEST REPORT

SCOPE OF WORK

FCC TESTING– TCF0223124G-JA02

REPORT NUMBER

260319083SZN-001

ISSUE DATE

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RF Test Report

Applicant: SHENZHEN DAYBETTER OPTO-ELECTRONICS CO.,LTD

Address of Applicant: 4F, BUILDING 2, ANTUOSHAN HI-TECH PARK BAOAN DISTRICT,
SHENZHEN, China

Equipment Under Test (EUT)

Product Name: Bluetooth LED Strip Lights

Model No.: TCF0223124G-JA02

Additional Model No.: Please Refer to Page 5-6

Trademark: N/A

FCC ID: 2A7WU-D52101B

Applicable Standards: FCC CFR Title 47 Part 15C (\$15.247)

Date of Test: Mar. 19, 2026 to Mar. 25, 2026

Test Result: PASS

Prepared and Checked by:



Tony Tang
Engineer

Approved by:



Johnny Wang
Project Engineer
Date: Apr. 07, 2026

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Intertek Testing Service Shenzhen Ltd. Longhua Branch

101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, Shenzhen.

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1 Revision History

Report No.	Version No.	Description	Issued Date
260319083SZN-001	01	Original	Apr. 07, 2026

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3 Summary of Test Result

TEST ITEM	FCC REFERENCE	RESULT
Minimum 6dB Bandwidth	15.247(a)(2)	Pass
Maximum Conducted Output Power	15.247(b)(3)	Pass
Power spectrum density	15.247(e)	Pass
Occupied bandwidth	-	Pass
Emission outside the frequency band	15.247(d)	Pass
Radiated Emission in restricted frequency bands	15.247(d), 15.205, 15.209	Pass
AC Power line conducted emission	15.207(a)	Pass
Antenna requirement	15.203	Pass

4 General Information

4.1 Client Information

Applicant:	SHENZHEN DAYBETTER OPTO-ELECTRONICS CO.,LTD
Address:	4F, BUILDING 2, ANTUOSHAN HI-TECH PARK BAOAN DISTRICT, SHENZHEN, China
Manufacturer:	SHENZHEN DAYBETTER OPTO-ELECTRONICS CO.,LTD
Address:	4F, BUILDING 2, ANTUOSHAN HI-TECH PARK BAOAN DISTRICT, SHENZHEN, China

4.2 Description of Equipment Under Test (EUT)

Product Name:	Bluetooth LED Strip Lights
Model No.:	TCF0223124G-JA02
Additional Model No.:	TC50725024G-JA03, BNB51325024G-TAEU, TC50727524G-JA03, TC50722024G-JA01, TC50721524G-TA01, TC50731524G-TA01, TI50717524G-JA01, TCF0211524G-JA02, TC50711024G-JA01, TC50721024G-TA01, TC50721024G-JA01, TC50717524G-JA01, TCF0212024G-JA03, TCF0211524G-JA03, TCF0223124G-JA03, TC50721524G-JA03, TC50711524G-JA03, TCF0221524G-JA03, TC50725024G-JA01, TC50727524G-TA01, TC50727524G-JA01, BNB50121024G-MAUK, TCF0213124G-JA02, TBF0221524G-JA01, TCF0211024G-JA03, TCF0213324G-JA02, TI50711524G-JA01, TCF0222024G-JA04, SCB50121024G-MAUS0, TCF0221024G-JA03, TC50725024G-JA02, TCF0212024G-JA02, TAF0211524G-JA02, TC50717524G-JA02, TC50727524G-JA02, TC50711024G-JA02, TAF0211524G-JA01, SCB50121024G-TAUS0, TCF0211024G-JA22, TCF0213124G-JA22, TCF0222024G-JA02, TCF0213324G-JA22, TC50721524G-JA02, TAF0211824G-JA01, TAF0212024G-JA01, TAF0221524G-JA01, TCF0212024G-JA22, DBL0362, TCF0222324G-JA03, TB50221524G-JA01, TC50711524G-JA01, TB50121024G-TA01, TB50111024G-JA01, BNB51315024G-TATH, TCF0211524G-JA01, TC50721524G-JA01, TIF0212024G-JA01, TA51310124G-BA01, BNB51325024G-TATH, TCF0232024G-JA01, TC50731524G-JA01, TIF0211824G-JA01, TCF0211824G-JA01, TC50721024G-JA02, BNA51311B24G-BAUS0, TIF0213124G-JA01, BNB50121024G-JAEU0, TAF0221524G-JA02, TCF0221824G-JA01, TCF0221524G-JA01, TCF0212024G-JA01, TIF0211524G-JA01, TB50121024G-JA01, TCF0222024G-JA01, TB51131024G-JA01, TB50315024G-TA01, TB50325024G-TA01, TCF0231524G-JA01, TB51345024G-JA01, TB51335024G-JA01, TB50111024G-MA01, TTGA001, TTGA002, TCF0222024G-JA03, TB50121024G-MA01, BDA50127524G-AA00_V1.0, TC50741524G-JA01, TB50211524G-JA01, TCF0233124G-JA01, TCF0243124G-JA01, TA51320D24G-BA01, TCF0241524G-JA01, TB50221524G-RA01, TCF0223124G-JA01, BDA50125024G-AA00_V1.0, TCF0221524G-JA02, TB51331024G-JA01, TC50712024G-JA01, TCF0213124G-JA01, TCF0223144R-JA02, TTGA003, TCF0213144R-RA02, TCF0221544R-RA01, H00020044R, DRF0362, PIR44K02, PIR44K01, TCF0211544R-RA02, TB51325044R-RA02, TCF0223144R-RA02, TCF0213344R-JA02, TCF0213144R-JA02, TCF0221544R-JA02, TCF0222044R-JA02, TB51315044R-RA03, TCF0211544R-JA02, TCF0233144R-JA01, TCF0243144R-JA01, TAF0221544R-JA02, TCF0222344R-JA03, TC50711544R-RA01, TB50121044R-RA01, TCS0222044R-JA02, TC50721544R-RA01, TAF0211544R-JA02, CWY012, CWY013, TCJ2611544R-JA01, TC50711044R-RA01, TCF0221044R-RA02, TCF0211044R-RA02, TCF0211544R-RA01, CWY014, SCB50121044R-RAUS0, TCF0223144R-JA01, TCF0223144R-RA01, TCF0213144R-JA01, TB51321044R-RA01, TB51335044R-RA01, TCF0213144R-RA01, TCF0231544R-RA01, TB50231544R-RA01, TB50325044R-RA01, TB51315044R-RA01, TB50111044R-RA01, TB51326044R-RA01, TB50211544R-RA01, TB51325044R-RA01, TB51329044R-RA01, TC50717544R-RA03, TC50727544R-RA03, TCF0222044R-RA02, TC50715044R-RA03, TC50721044R-RA01, TCF0222044R-RA01, TC50721544R-RA03, TC50725044R-RA03, TCF0221544R-RA02, TC50716044R-RA01, TC50726044R-RA01, TC50715044R-RA01, TC50725044R-RA01, TC50717544R-RA01, TC50722044R-RA01, TC50727544R-RA01, SGB50121044R-RAUS0, TCF0222024G-JA02, TCF0222024G, TCF0222024G-JA01, Y1-15IT-ICCI, FLSL2014012BRGBUS-V4, TCF0222024G-JA02, Y1-15IT-ICCI-V2, PHLSL130FT, TCF0222024G-JA01-AUS-V1, ACCF0222024G-JAUS0-V1, DCF0223124G-DAUS0, TCF0223124G-JA02, TCF0223124G-

	V4, DCF0223144W-DAUS0, DTCF0241524G, TCF0223124GD3, TCF0223124G, TCF0223124G-JA02-AUS-L1, TA2B1502415-3, TCF0223124G-JA02-AUS-H1, WFDS202215, P24RGBLSL0230, TCF0223124G-JA01-AUS-V1, ACCF0232044R-JAUS0-V1, P200BM18DEC, TCF0221524G, TCF0221524G-JA01-AUS-A1, TCF0221524G-JA02, FLSL50115B2, FLSL-DB-501115RGBUS, TA2B1502415-2, H-215WLG3012-CA, TCF0221524G-JA02-AUS-G2, PHRGB12D30M, BSL5030BCA, V-B3515NWF-02, PB5018215, TCF0211524G-JA02, TCF0211524G, FLSLB503275RGB-DBUS, DB50111524G-DAUS0D2, TA2B1502475-2, WFDS017, PB5018115, TCF0213344R-JA02, TCF0221824G-JA01, DBTC206160000, FLSLS2012WUS, AAC206160000-KWUS, KU-WFQA-UHY5
Model Declaration:	All models have the same PCB, schematic, hardware version, software version, structure, and internal photos - they are only named differently for marketing purposes.
Operation Frequency:	2402MHz - 2480MHz
Channel Numbers:	40
Channel Separation:	2MHz
Modulation Technology:	GFSK
Data Speed:	1Mbps
Antenna Type:	PCB Antenna
Antenna Gain:	3.34dBi (This information is provided by applicant, and the applicant is responsible for the authenticity of the provided information.)
Antenna transmit mode:	1TX, 1RX
Power Supply:	Input: DC 24.0V, 0.5A
AC Adapter:	Model: HS12Z-240050-BU Input: 100-240V~, 50/60Hz, 0.4A Max. Output: 24.0V=0.5A, 12.0W

Note:

- The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

4.3 Description of Test Facility

Name:	Intertek Testing Services Shenzhen Ltd. Longhua Branch
Address:	101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen.
The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L0327
	FCC Accredited Lab Designation Number: CN1188
	IC Registration Lab CAB identifier: CN0038

5 Test Specifications

5.1 Standards or Specification

FCC CFR 47 Part 15C

ANSI C63.10-2020

KDB 558074 D01 15.247 Meas Guidance v05r02

5.2 Channels List

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	11	2424	22	2446	33	2468
1	2404	12	2426	23	2448	34	2470
2	2406	13	2428	24	2450	35	2472
3	2408	14	2430	25	2452	36	2474
4	2410	15	2432	26	2454	37	2476
5	2412	16	2434	27	2456	38	2478
6	2414	17	2436	28	2458	39	2480
7	2416	18	2438	29	2460	/	/
8	2418	19	2440	30	2462	/	/
9	2420	20	2442	31	2464	/	/
10	2422	21	2444	32	2466	/	/

5.3 Test Channels

Test Mode	Test Channel	Frequency
LE 1M	CH 0(Low Channel), CH 19(MID Channel), CH 39(High Channel)	2402 MHz, 2440 MHz, 2480 MHz

The power setting parameter:

Test software and Power Setting parameter			
Test Software	FCC_Test_Tool V2.4.1		
Working Mode	BLE (1M)		
Frequency	2402MHz	2440MHz	2480MHz
Power Setting	Default	Default	Default

5.4 EUT TEST STATUS

Type of Modulation	Tx Function	Description
GFSK	1Tx	1. Keep the EUT in continuously transmitting with Modulation test single

5.5 Support Equipment List and Description

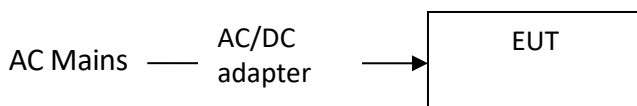
Description	Manufacturer	Model No.
Laptop	Dell	Dell 5420
Serial Port board.	YiCHiP	2017-020-V3-shaolu

5.6 Test environment condition:

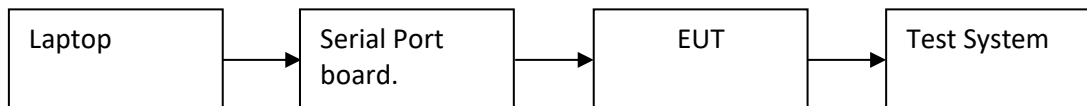
Environment Parameter	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
NT/NV	+15 to +35	120	20 to 75
Remark: 1) NV: Normal Voltage; NT: Normal Temperature			

5.7 Block Diagram Showing the Configuration of System Tested

Conducted Test & Radiated Test



Conducted Measurements Test



This example is connection diagram of EUT Test Setups.

For detail, please refer to test mode configuration and setup photographs for each test item.

5.8 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ182-02	RF Power Meter	Anritsu	ML2496A	1302005	2025-04-21	2026-04-21
SZ182-02-01	Pulse Power Sensor	Anritsu	MA2411B	1207429	2025-04-21	2026-04-21
SZ056-06	Signal Analyzer	R&S	FSV 40	101101	2025-12-01	2026-12-01
SZ061-13	BiConiLog Antenna	ETS	3142E	00217919	2025-05-29	2028-05-29
SZ061-08	Horn Antenna	ETS	3115	00092346	2024-09-13	2027-09-13
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	2024-05-05	2027-05-05
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	2025-09-11	2028-09-11
SZ185-03	EMI Receiver	R&S	ESR7	101975	2025-04-13	2026-04-13
SZ056-05	Signal Analyzer	R&S	FSV40	US40522113	2025-12-01	2026-12-01
SZ181-08	Microwave System Amplifier	keysight	83017A	MY57280108	2025-07-30	2026-07-30
SZ188-05	Anechoic Chamber	ETS	FACT 3-2.0	CT001880-Q13914102	2025-06-18	2028-06-18
SZ062-23	RF Cable	HUBER+SUHNER	SF104PE-1M	MY4262/4PE	2025-09-15	2026-09-15
SZ062-40	RF Cable	Talent Microwave	A50-3.5M3.5M-4.5M	22012932	2025-09-15	2026-09-15
SZ062-38	RF Cable	Talent Microwave	A50-3.5M3.5M-8M	21051695	2025-09-15	2026-09-15
SZ067-25	Notch Filter	Micro-Tronics	BRM50716	076	2025-02-22	2026-02-22
SZ067-04	Notch Filter	Micro-Tronics	BRM50702-02	015	2025-04-21	2026-04-21
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	2025-06-30	2026-06-30
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	2025-04-25	2026-04-25
SZ062-16	RF Cable	HUBER+SUHNER	CBL2-BN-1m	110127-2231000	2025-06-30	2026-06-30

Software Information			
Test Item	Software Name	Manufacturer	Version
Radiated Test	EMC32	R&S	V10.20.01
Conducted Test	EMC32	R&S	V10.60.20
Conducted RF	Tonscend RF TEST SYSTEM	Shenzhen JS tonscend co., Ltd	2.6.87.0615

5.9 Measurement uncertainty

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement Uncertainty	Uncertainty
Channel Bandwidth	±3.46%
RF Output Power	±0.31dB
Conducted Unwanted Emission	±0.55dB
Spurious emission (Above 18GHz)	±5.3dB
Spurious emission (6GHz to 18GHz)	±5.1dB
Radiated emission (1GHz to 6GHz)	±4.8dB
Radiated emission (Up to 1GHz)	±4.8dB
AC Conducted emission	±3.2 dB
Temperature	±1°C
Humidity	±5%

6 Antenna Requirement

6.1 Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the party responsible is used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

1. The antennas of the EUT are permanently attached.
2. There are no provisions for connection to an external antenna.

6.2 Conclusion:

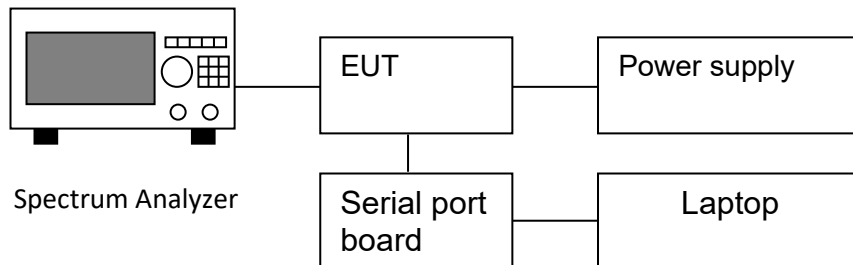
Therefore, this E.U.T complies with the requirement of Part 15.203

7 Minimum 6dB bandwidth

7.1 Limit

For systems using digital modulation techniques that may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz bands, the minimum 6 dB bandwidth shall be at least 500 kHz.

7.2 Test Setup



7.3 Test Procedure

ANSI C63.10-2020 Clause 11.8.1

The steps for the first option are as follows:

- Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Trace mode = max-hold.
- Sweep = No faster than coupled (auto) time.
- Allow the trace to stabilize.
- Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-6 dB down amplitude”. If a marker is below this “-6 dB down amplitude” value, then it shall be as close as possible to this value.

7.4 Test Results of Minimum 6dB bandwidth

Please refer the Appendix of 260319083SZN-001.

8 Maximum Conducted Output Power

8.1 Limit

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 W.

If the transmitting antenna of directional gain greater than 6dBi is used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. If there have a beam forming type, the limit should be the minimum of 30dBm and 30+ (6 –antenna gain-beam forming gain).

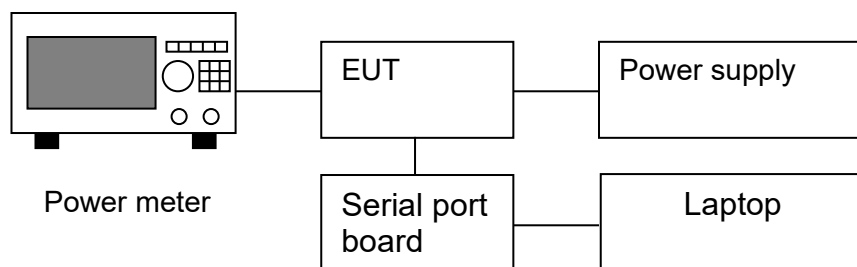
8.2 Test Procedure

ANSI C63.10-2020 – Section 11.9.1.2

PKPM1 Peak power meter method

The maximum peak conducted output power may be measured using a broadband peak RF power meter.

8.3 Test Setup



8.4 Test Results of Maximum conducted output power

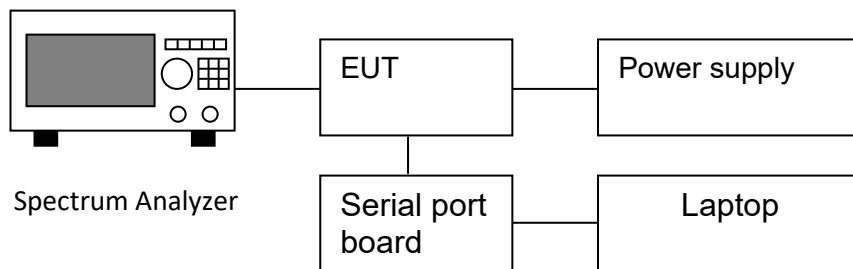
Please refer the Appendix of 260319083SZN-001.

9 Power spectrum density

9.1 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

9.2 Test Setup



9.3 Test Procedure

ANSI C63.10-2020 Clause 11.10.2

The following procedure shall be used if maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:

- Set analyzer center frequency to DTS channel center frequency.
- Set the span >1.5 times the DTS bandwidth.
- Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Sweep time = No faster than coupled (auto) time.
- Trace mode = max-hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.
- If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

9.4 Test Results of Power spectrum density

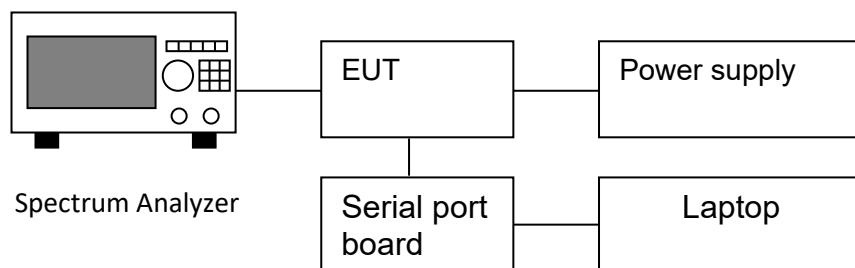
Please refer the Appendix of 260319083SZN-001.

10 Occupied Bandwidth

10.1 Limit

None, for reporting purposes only

10.2 Test Setup



10.3 Test Procedure

ANSI C63.10-2020 Section 6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

- The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.6.2.
- Step a) through step c) might require iteration to adjust within the specified range.
- Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

10.4 Test Results of Occupied Bandwidth

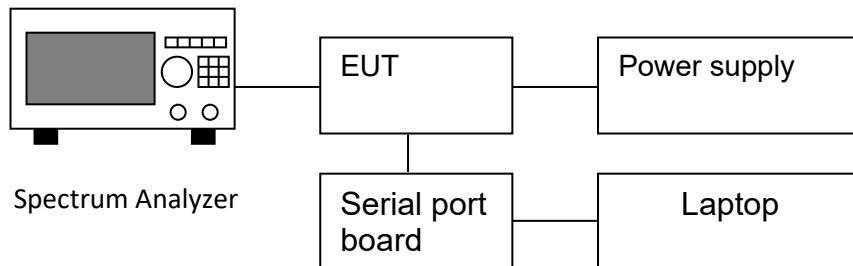
Please refer the Appendix of 260319083SZN-001.

11 Emission outside the frequency band

11.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

11.2 Test Setup



11.3 Test procedure and test setup

ANSI C63.10-2020 – Section 11.11

Reference level measurement

Establish a reference level by using the following procedure:

- Set instrument center frequency to DTS channel center frequency.
- Set the span to ≥ 1.5 times the DTS bandwidth.
- Set the RBW = 100 kHz.
- Set the VBW $\geq 3 \times$ RBW.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum PSD level.

Emission level measurement

Establish an emission level by using the following procedure:

- Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution.

NOTE—the number of points can also be increased for large spans to retain frequency resolution

- Set the RBW = 100 kHz.
- Set the VBW $\geq 3 \times$ RBW.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

11.4 Test Results of Emission outside the frequency band

Please refer the Appendix of 260319083SZN-001.

12 Radiated Emissions in restricted frequency bands

12.1 Limit

Part 15.247(d), Part 15.205, Part 15.209

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of Part 15.247 the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Part 15.209

Frequency (MHz)	FCC Limit (uV/m)	Measurement Distance (m)
0.009 – 0.490	2 400 / F (kHz)	300
0.490 – 1.705	24 000 / F (kHz)	30
1.705 – 30.0	30	30

Frequency (MHz)	FCC Limit (uV/m)	Measurement Distance (m)
30 ~ 88	100 **	3
88 ~ 216	150 **	3
216 ~ 960	200 **	3
Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §15.231 and 15.241.

FCC Restricted bands of operation refer to FCC §15.205 (a):

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
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	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			

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

² Above 38.6

12.2 Test Procedure

ANSI C63.10-2020 – Section 11.12

For Radiated emission below 30MHz:

- a) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. For the floor-standing devices, the EUT was placed on the top of a rotating table 0.1 meters above the ground at 3 meters chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c) Both X and Y axes of the antenna are set to make the measurement.
- d) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e) The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz).

For Radiated emission above 30MHz:

The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meters chamber room for test. For the floor-standing devices, the EUT was placed on the top of a rotating table 0.1 meters above the ground at 3 meters chamber room for test. 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 height of antenna 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 and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

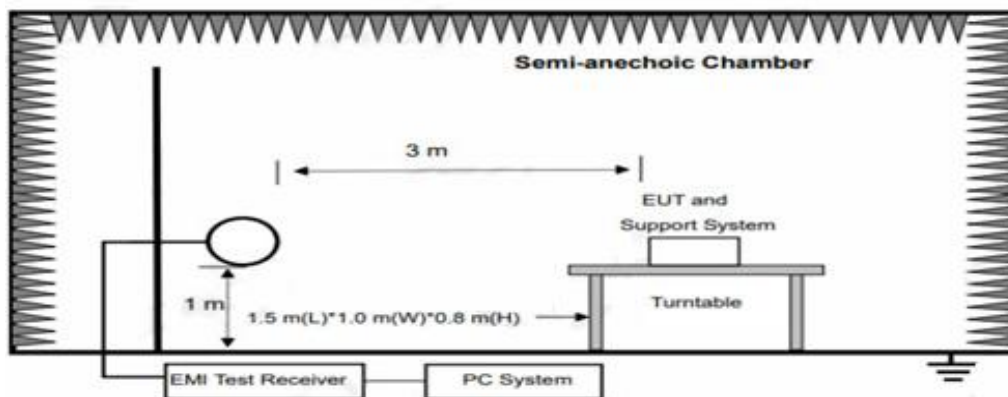
The test-receiver system was set to peak and average detector function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

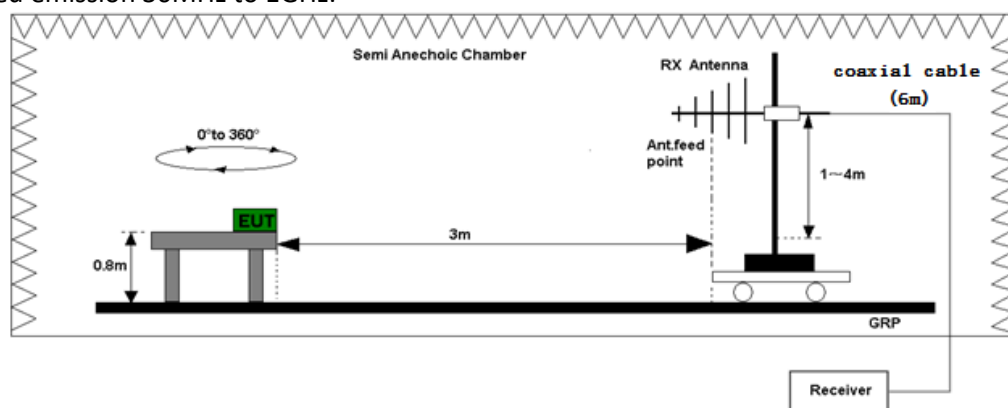
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 3 x RBW (Duty cycle $\geq$ 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes have been tested, but only the worst data was recorded in the report.

12.3 Test Setup

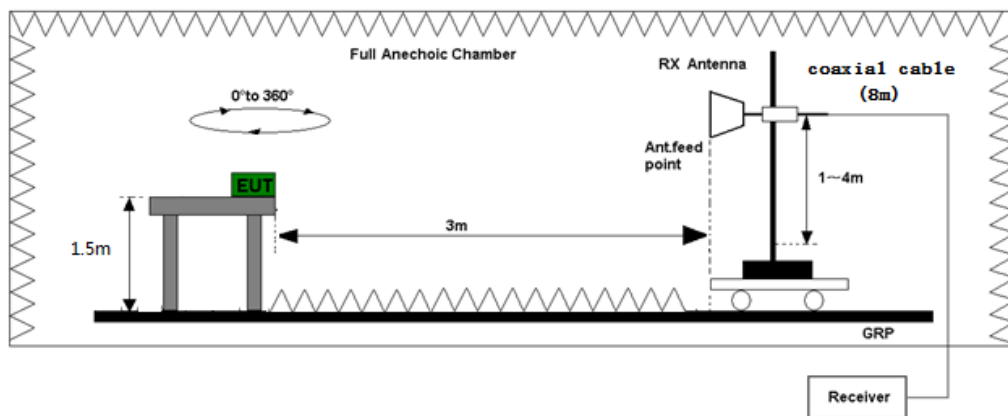
For Radiated emission below 30MHz:



For Radiated emission 30MHz to 1GHz:



For Radiated emission above 1GHz:

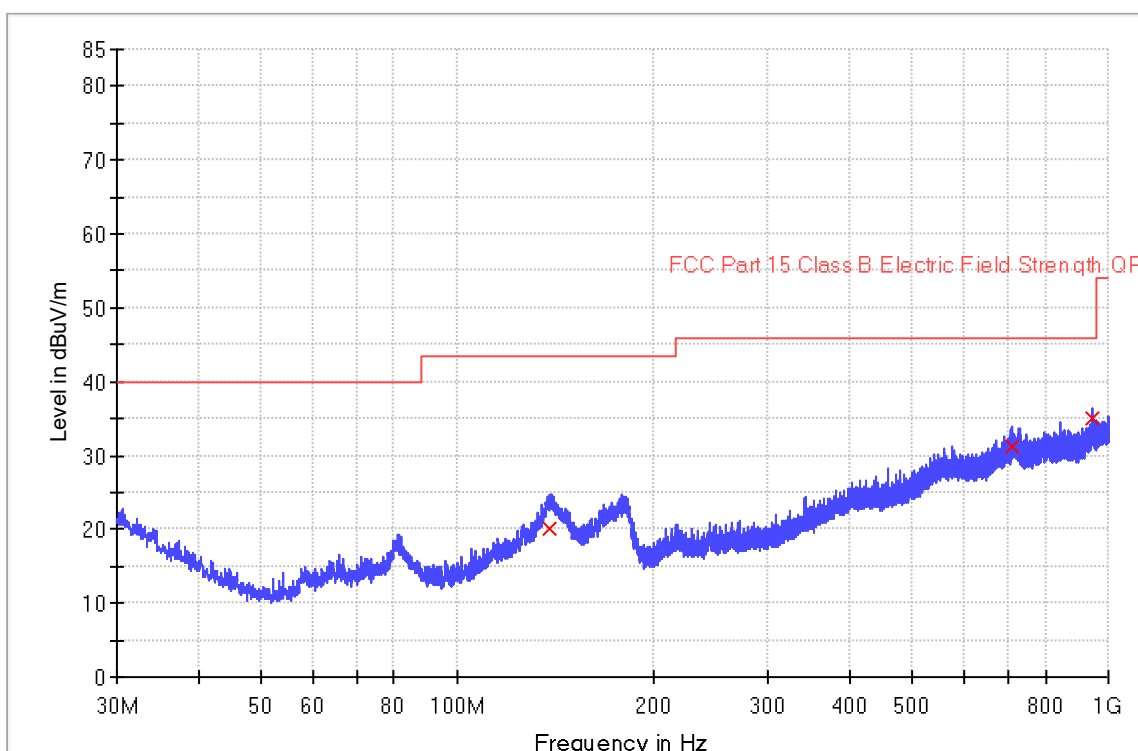


12.4 Test Results of Radiated Emissions

Below 1GHz:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

Product Name:	Bluetooth LED Strip Lights	Product Model:	TCF0223124G-JA02
Test By:	Tony Tang	Worst Test mode:	BLE TX mode (1Mbps)
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120V, 60Hz		



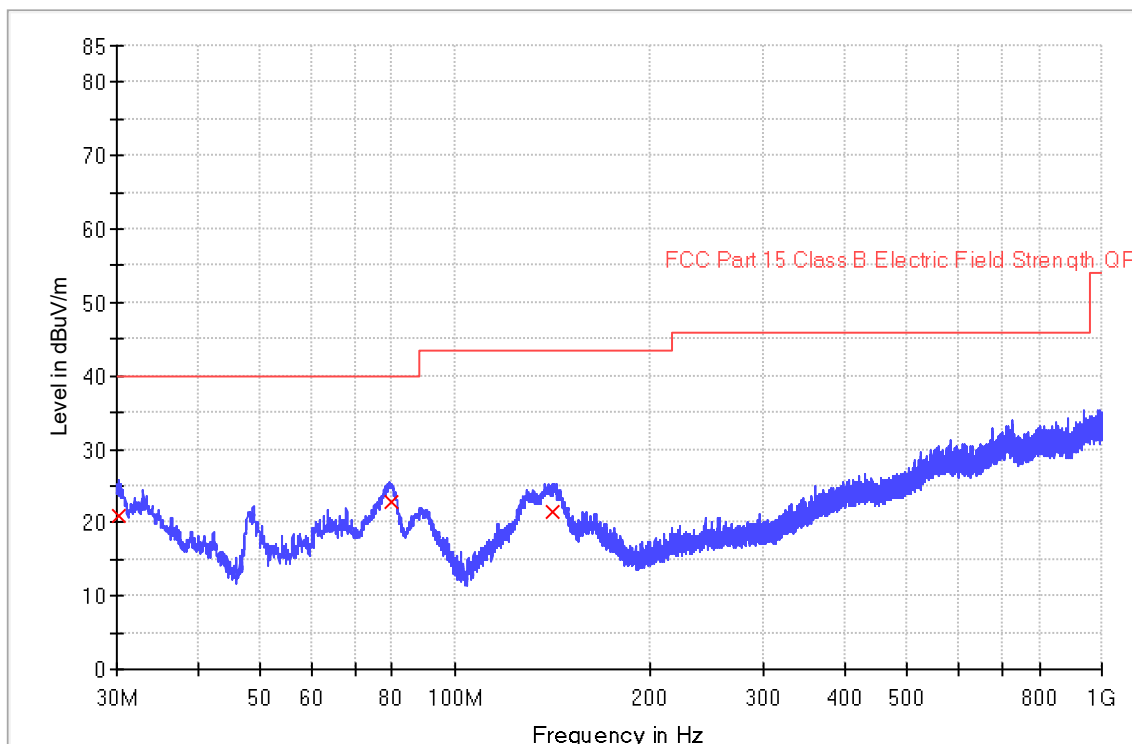
Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
138.478333	20.0	1000.0	120.000	H	15.2	23.5	43.5
709.258667	31.2	1000.0	120.000	H	31.2	14.8	46.0
944.354333	35.1	1000.0	120.000	H	33.7	10.9	46.0

Remark:

1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. Quasi Peak (dBμV/m) = Corr. (dB/m) + Read Level (dBμV)
3. Margin (dB) = Limit QPK (dBμV/m) – Quasi Peak (dBμV/m)

Product Name:	Bluetooth LED Strip Lights	Product Model:	TCF0223124G-JA02
Test By:	Tony Tang	Worst Test mode:	BLE TX mode (1Mbps)
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120V, 60Hz		



Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
30.161667	20.8	1000.0	120.000	V	22.2	19.2	40.0
79.825667	22.8	1000.0	120.000	V	13.4	17.2	40.0
141.291333	21.3	1000.0	120.000	V	15.5	22.2	43.5

Remark:

1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. Quasi Peak (dBμV/m) = Corr. (dB/m) + Read Level (dBμV)
3. Margin (dB) = Limit QPK (dBμV/m) – Quasi Peak (dBμV/m)

Above 1GHz:

Test channel: Lowest channel

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4804.000	63.3	36.8	33.5	60.0	74.0	-14.0
Horizontal	*2390.000	66.6	36.4	29.1	59.3	74.0	-14.7

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4804.000	55.2	36.8	33.5	51.9	54.0	-2.1
Horizontal	*2390.000	55.8	36.4	29.1	48.5	54.0	-5.5

Test channel: Middle channel

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4880.000	63.6	36.7	33.4	60.3	74.0	-13.7
Horizontal	*9760.000	55.4	36.6	35.8	54.6	74.0	-19.4

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4880.000	56.8	36.7	33.4	53.5	54.0	-0.5
Horizontal	*9760.000	47.2	36.6	35.8	46.4	54.0	-7.6

Test channel: Highest channel

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4960.000	63.7	36.8	33.3	60.2	74.0	-13.8
Horizontal	*9920.000	59.6	36.5	29.3	52.4	74.0	-21.6
Horizontal	*2483.500	66.6	36.4	29.3	59.5	74.0	-14.5

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*4960.000	54.6	36.8	33.3	51.1	54.0	-2.9
Horizontal	*9920.000	52.5	36.5	29.3	45.3	54.0	-8.7
Horizontal	*2483.500	55.7	36.4	29.3	48.6	54.0	-5.4

NOTES:

1. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna used for the emission over 1000MHz.
4. All modes have been tested, but only the worst data was recorded in the report.
5. Tests were conducted in both the horizontal and vertical directions, but only worst-case data record in report.
- * Emissions within restricted bands comply with applicable regulatory requirements. The corresponding limits are based on quasi-peak measurements for frequencies below 1000 MHz and average measurements for frequencies above 1000 MHz. Furthermore, for radio frequency emissions above 1 GHz, the measured peak level using a peak detector also meets the permitted limit, which is 20 dB above the average limit.

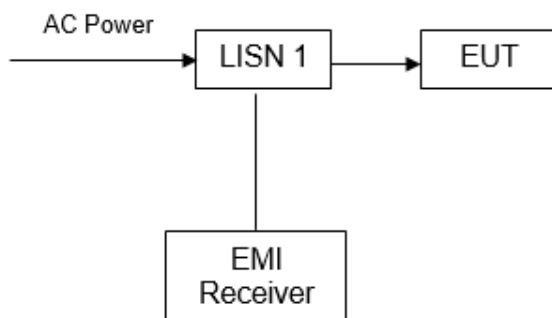
13 AC Power line Conducted Emissions

13.1 Limit

Freq. (MHz)	Conducted Limit (dB μ V)	
	Q.P.	Ave.
0.15~0.5	66 – 56*	56 – 46*
0.50~5.0	56	46
5.00~30.0	60	50

* Decreases with the logarithm of the frequency.

13.2 Test Setup

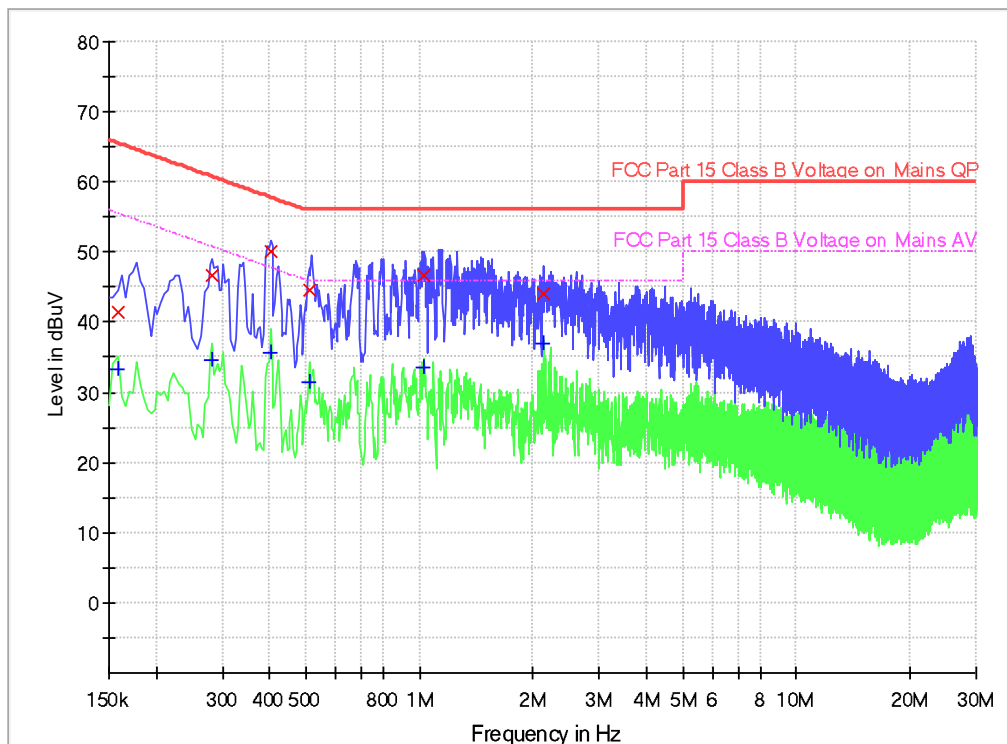


13.3 Test Procedure

The EUT is put on a table of non-conducting material that is 80 cm high. The vertical conducting wall of shielding is located 40 cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESCI) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9 kHz.

13.4 Test Results of AC Power line Conducted Emissions

Product Name:	Bluetooth LED Strip Lights	Product Model:	TCF0223124G-JA02
Test By:	Tony Tang	Worst Test mode:	BLE TX mode (1Mbps)
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120V, 60Hz		



Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.158000	41.4	9.000	L1	9.8	24.2	65.6
0.282000	46.8	9.000	L1	9.8	14.0	60.8
0.402000	50.0	9.000	L1	9.8	7.8	57.8
0.510000	44.7	9.000	L1	9.8	11.3	56.0
1.030000	46.7	9.000	L1	9.8	9.3	56.0
2.142000	44.2	9.000	L1	9.9	11.8	56.0

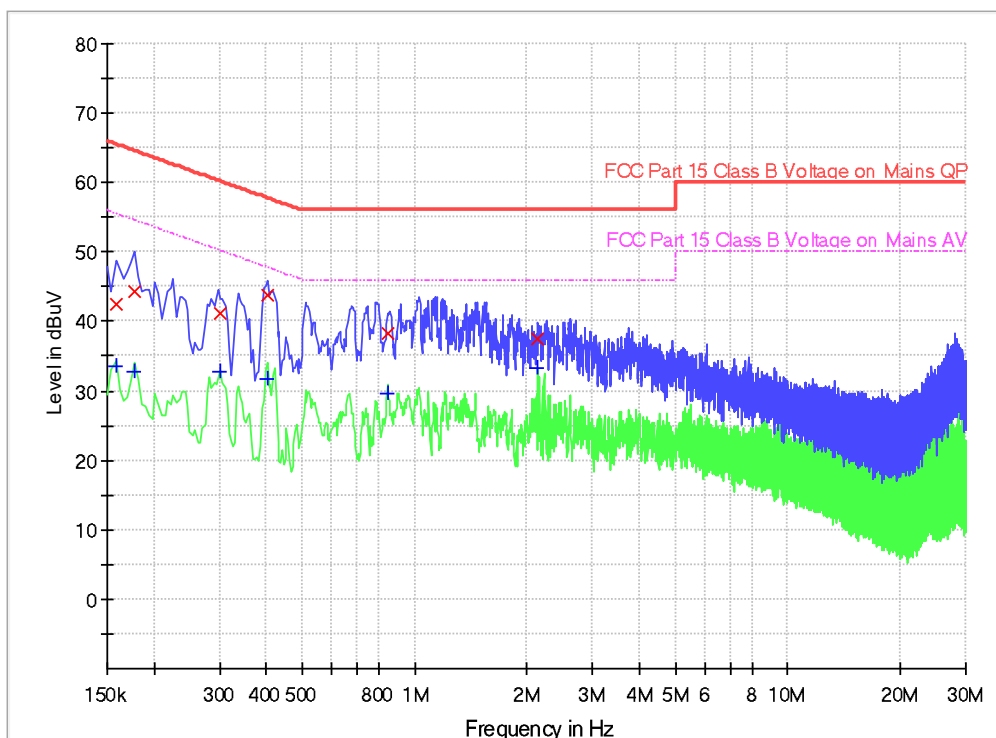
Limit and Margin AV

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	33.2	9.000	L1	9.8	22.4	55.6
0.282000	34.6	9.000	L1	9.8	16.2	50.8
0.402000	35.7	9.000	L1	9.8	12.1	47.8
0.510000	31.4	9.000	L1	9.8	14.6	46.0
1.030000	33.7	9.000	L1	9.8	12.3	46.0
2.142000	37.0	9.000	L1	9.9	9.0	46.0

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBμV) – Quasi Peak/Average (dBμV)

Product Name:	Bluetooth LED Strip Lights	Product Model:	TCF0223124G-JA02
Test By:	Tony Tang	Worst Test mode:	BLE TX mode (1Mbps)
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120V, 60Hz		



Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	42.4	9.000	N	9.7	23.2	65.6
0.178000	44.4	9.000	N	9.7	20.2	64.6
0.302000	41.3	9.000	N	9.7	18.9	60.2
0.402000	43.7	9.000	N	9.7	14.1	57.8
0.846000	38.2	9.000	N	9.6	17.8	56.0
2.142000	37.6	9.000	N	9.8	18.4	56.0

Limit and Margin AV

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	33.6	9.000	N	9.7	22.0	55.6
0.178000	32.7	9.000	N	9.7	21.9	54.6
0.302000	32.9	9.000	N	9.7	17.3	50.2
0.402000	31.8	9.000	N	9.7	16.0	47.8
0.846000	29.6	9.000	N	9.6	16.4	46.0
2.142000	33.3	9.000	N	9.8	12.7	46.0

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBμV) – Quasi Peak/Average (dBμV)

***** End of Report *****