



FCC Supplier's Declaration of Conformity (SDoC) Test Report

For

ZBL(SZ)TECHNOLOGY COMPANY LTD

LED STRIP

Test Model: 2835

Additional Models : 3014, 5050, 3528, 2216, 2110, 5730, 3838, 3030, 3535 and COB (5V/12/24V)

Prepared for : ZBL(SZ)TECHNOLOGY COMPANY LTD
Address : B-2F No.F6 Xin Wei Forth Industrial Zone Gong Ming Town
Guangming New Area Shenzhen Guangdong 518106 CHINA

Prepared by : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample : March 08, 2022
Number of tested samples : 1
Serial number : Prototype
Date of Test : March 08, 2022 - March 14, 2022
Date of Report : March 14, 2022



**FCC SDoC TEST REPORT****CFR47 FCC Part 15 Subpart B**

Radio Frequency Devices - Unintentional Radiators

Report Reference No : **LCS220308074BE**

Date of Issue..... : March 14, 2022

Testing Laboratory Name..... : **Shenzhen Southern LCS Compliance Testing Laboratory Ltd.**

Address : 101-201, No.39 Building,Xialang Industrial Zone, Heshuikou Community, Matian Street,Guangming District, Shenzhen, China.

Testing Procedure : Full application of Harmonised standards
Partial application of Harmonised standards
Other standard testing method **Applicant's Name**..... : **ZBL(SZ)TECHNOLOGY COMPANY LTD**Address : B-2F No.F6 Xin Wei Forth Industrial Zone Gong Ming Town
Guangming New Area Shenzhen Guangdong 518106 CHINA.**Test Specification:**Standard : CFR47 FCC Part 15 Subpart B
ANSI C63.4-2014

Test Report Form No. : SLCSEMC-2.3

TRF Originator : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

Master TRF : Dated 2016-08

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Equipment Under Test : **LED STRIP**

Trademark : Sunvillia

Test Model/Type : 2835

Rating : DC 24V

Results : **PASS****Compiled by:***Aimee Yang*

Aimee yang / Engineer

Supervised by:*Cherry Chen*

Cherry Chen / Technique Director

Approved by:*Dm Gu*

Dm Gu / Manager



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FCC SDoC - TEST REPORT

Test Report No.....: LCS220308074BE

Applicant.....:	ZBL(SZ)TECHNOLOGY COMPANY LTD
Address.....:	B-2F No.F6 Xin Wei Forth Industrial Zone Gong Ming Town Guangming New Area Shenzhen Guangdong 518106 CHINA
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Address.....:	B-2F No.F6 Xin Wei Forth Industrial Zone Gong Ming Town Guangming New Area Shenzhen Guangdong 518106 CHINA
Telephone.....:	/
Fax.....:	/

The applicant and manufacturer information, product name, model, trademark and other information in this report are all provided by the applicant, and this laboratory is not responsible for verifying its authenticity.

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.





ENVIRONMENTAL CONDITIONS

The climatic conditions during the test are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. the climatic conditions during the test were in the following Limits:

Ambient temperature	15°C - 30°C
Relative Humidity air	30% - 75%
Atmospheric pressure	86 kPa - 106 kPa

Climate values will be recorded and recorded separately if specifically required in the base standard or application product/product series standard.

POSSIBLE TEST CASE VERDICTS

Test cases does not apply to test object	N/A
Test object does meet requirement	P(Pass) / PASS
Test object does not meet requirement	F(Fail) / FAIL
Not measured	N/M

DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

<input checked="" type="checkbox"/> Indicate that the conditions, standards or equipment listed is applicable to this report / test / EUT.
<input type="checkbox"/> Indicate that the conditions, standards or equipment listed is not applicable to this report / test / EUT.

REVISION HISTORY

Revision	Issue Date	Revision Content	Revised by
000	March 14, 2022	Initial Issue	-

Remark:
000) : “---”





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1. GENERAL INFORMATION

1.1. GENERAL DESCRIPTION OF THE ITEM(S)

Equipment Under Test	LED STRIP
Test Model/Type	2835
Additional Models/Type	3014, 5050, 3528, 2216, 2110, 5730, 3838, 3030, 3535 and COB (5V/12/24V)
Description of Model difference	-
Rating	DC 24V
Mounting position	<input checked="" type="checkbox"/> Table top equipment <input type="checkbox"/> Floor standing equipment <input type="checkbox"/> Rack mounted <input type="checkbox"/> Hand-held equipment <input type="checkbox"/> Other
Classification of device	<input type="checkbox"/> Class A <input checked="" type="checkbox"/> Class B





1.2. OPERATING MODE(S) USED OF TESTS

During the tests, the following operating mode(s) has(have) been used.

Operating Mode	Operating Mode description	Used for testing
1	Normal operation	<input checked="" type="checkbox"/>
2	Bluetooth	<input type="checkbox"/>
3	HDMI	<input type="checkbox"/>
4	Full load	<input type="checkbox"/>

1.3. SUPPORT / AUXILIARY EQUIPMENT FOR THE EUT

EUT has been tested using the following auxiliary equipment :

Auxeq	Model/Type	Manufacturer	Supplied by
--			

1.4. DESCRIPTION OF TEST FACILITY

Test Location	Shenzhen Southern LCS Compliance Testing Laboratory Ltd. 101-201, No.39 Building,Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China. CNAS Registration Number is L10160.
Date of receipt of test item	March 08, 2022
Date(s) of performance of test	March 08, 2022 - March 14, 2022





2. STATEMENT OF THE MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods - Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system according to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Measurement	Uncertainty (U_{lab})	Uncertainty (U_{CISPR})
Conducted disturbance (9kHz - 150kHz)	± 1.40 dB	± 4.0 dB
Conducted disturbance (150kHz - 30MHz)	± 2.80 dB	± 3.6 dB
Radiated disturbance (30MHz - 200MHz)	± 4.66 dB	± 5.2 dB
Radiated disturbance (200MHz - 1GHz)	± 4.64 dB	± 5.0 dB

Supplementary information:

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.





3. MEASURING DEVICES AND TEST EQUIPMENT

CONDUCTED DISTURBANCE						
Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Receiver	R&S	ESCI	101142	2021-06-08	2022-06-08
2	10dB Attenuator	SCHWARZBECK	VTSD9561-F	9561-F159	2021-06-08	2022-06-08
3	Artificial Mains Network	SCHWARZBECK	NSLK8127	8127716	2021-06-08	2022-06-08
4	EMI Test Software	EZ	EZ_EMG	N/A	/	/
5	Asymmetric Artificial Network	SCHWARZBECK	NTFM 8158	NTFM8158#120	2021-06-08	2022-06-08
6	Voltage Probe	SCHWARZBECK	KT 9420	9420401	2021-06-08	2022-06-08
7	No. 2 shielded Room	CHENGYU	843	/	2020-06-16	2023-06-16

RADIATED DISTURBANCE						
Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2021-06-15	2024-06-15
2	EMI Test Receiver	R&S	ESCI3	101010	2021-06-08	2022-06-08
3	Spectrum Analyzer	Agilent	N9020A	MY49100699	2021-06-08	2022-06-08
4	Log-periodic Antenna	SCHWARZBECK	VULB9163	5094	2019-06-23	2022-06-23
5	Horn Antenna	ETS-LINDGREN	3115	00034771	2019-06-23	2022-06-23
6	EMI Test Software	EZ	EZ_EMG	N/A	/	/
7	Positioning Controller	MF	BK8807-4A-2T	2016-0808-008	/	/



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4. VERDICT SUMMARY SECTION

This chapter present an overview of the standards and results. Refer the next chapter for details of measured test results and applied test levels.

4.1. STANDARD(S)

CFR47 FCC Part 15 Subpart B - Radio frequency devices Subpart B - Unintentional radiators.

ANSI C63.4-2014 - American national standard for methods of measurement of radio noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.

4.2. OVERVIEW OF RESULTS

EMISSION TESTS - CFR47 FCC Part 15 Subpart B		
Requirement - Test case	Limit	Verdict
Conducted Disturbance	Clause 15.107	PASS
Radiated Disturbance	Clause 15.109	PASS

Supplementary information : ---



5. EMISSION TESTS

5.1. CONDUCTED DISTURBANCE

Standard	CFR47 FCC Part 15 Subpart B
Referenced Standard(s)	ANSI C63.4-2014

Disturbance voltage limits at AC power ports of Class B equipment

Frequency range [MHz]	Limit: Quasi-peak [dB(μV)]	Limit: Average [dB(μV)]	IF BW
0,15 - 0,5	66 - 56	56 - 46	9 kHz
0,5 - 5,0	56	46	
5,0 - 30	60	50	

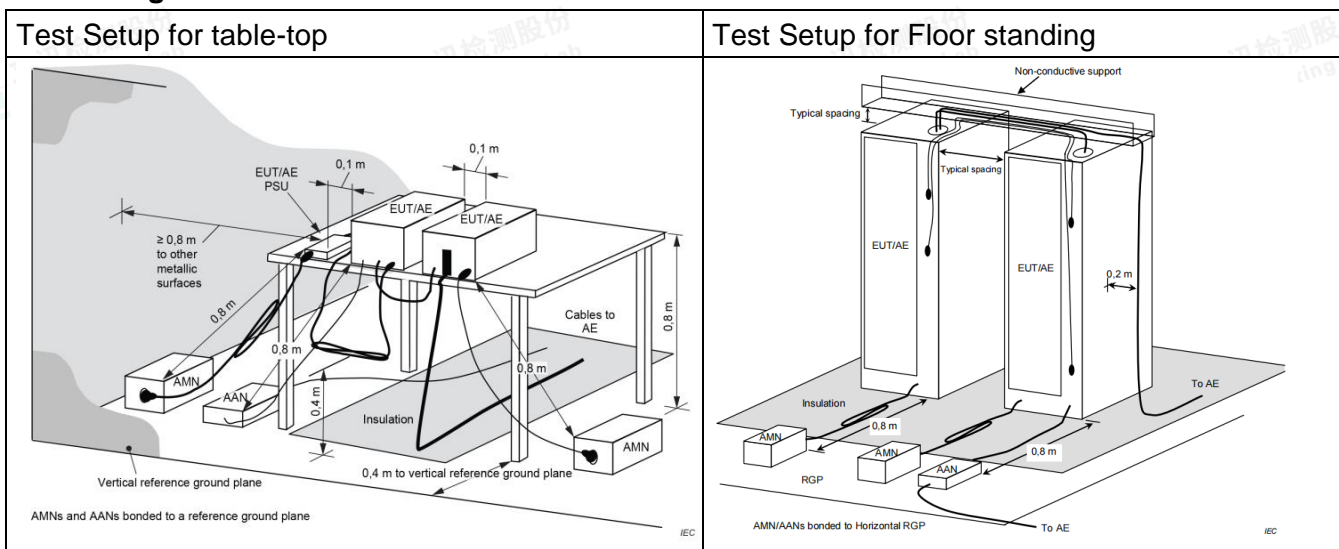
1) At the transition frequency, the lower limit applies.

Disturbance voltage limits at AC power ports of Class A equipment

Frequency range [MHz]	Limit: Quasi-peak [dB(μV)]	Limit: Average [dB(μV)]	IF BW
0,15 - 0,5	79	66	9 kHz
0,5 - 30	73	60	

1) At the transition frequency, the lower limit applies.

Test configuration



Test Procedure Description

For Table-top, EUT shall be placed at $(0,8 \pm 0,05)$ m above the reference plane of the test site selected for measurement. for Floor standing, EUT shall be placed at $(0,12 \pm 0,04)$ m above the reference plane of the test site selected for measurement. and connected to the AC mains through artificial mains network (LISN). EUT is powered by V-type artificial power network, and the distance from LISN or is 0,8m. the part of the EUT power cord exceeding 0,8m folds in parallel to form a 0,3-0,4 m eights harness.

Test Results refer to Annex A.1



5.2. RADIATED DISTURBANCE

Standard	CFR47 FCC Part 15 Subpart B
Referenced Standard(s)	ANSI C63.4-2014
Test method	Semi Anechoic Chamber (SAC)

SAC Radiated disturbance limit for Class B equipment (3 m distance)

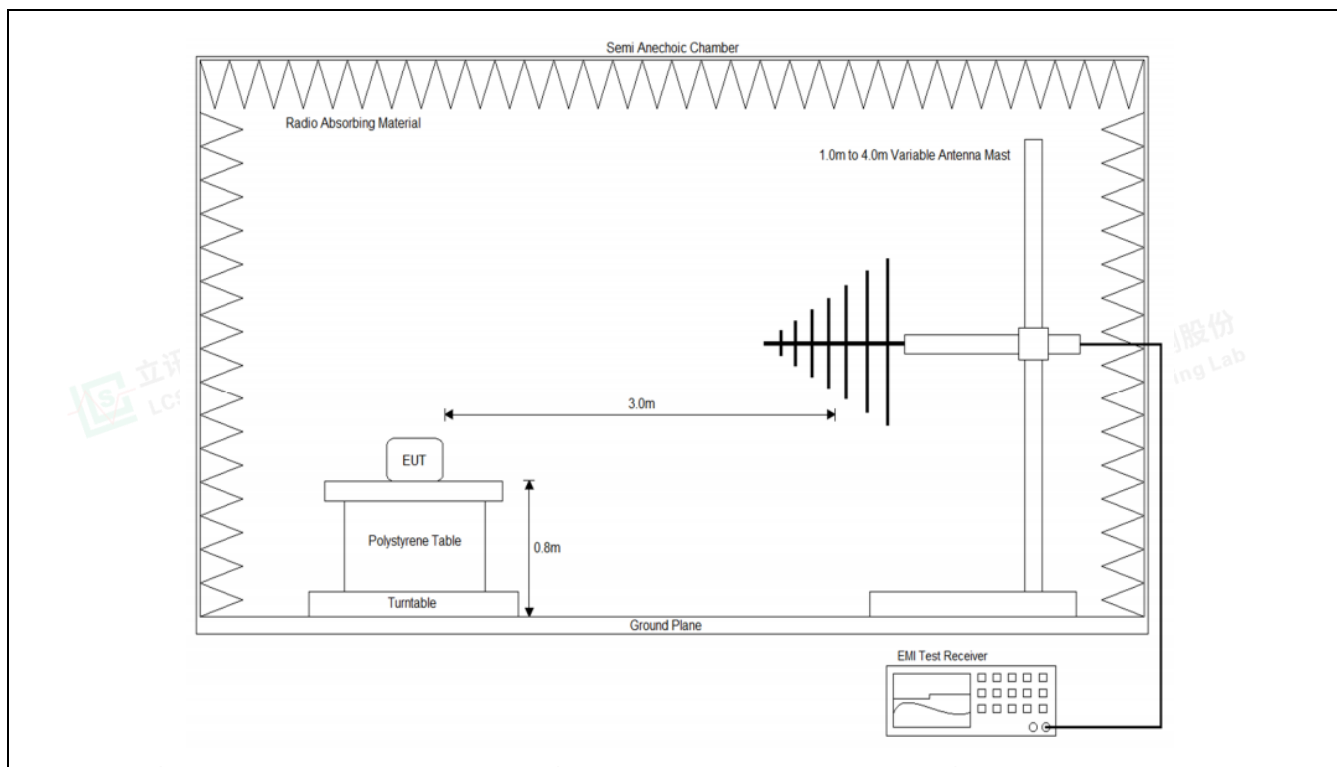
Frequency range [MHz]	Limit: Quasi-peak		IF BW
	[$\mu\text{V}/\text{m}$]	[dB($\mu\text{V}/\text{m}$)]	
30 - 88	100	40	120 KHz
88 - 216	150	43.5	
216 - 960	200	46	
960 - 1000	500	54	

SAC Radiated disturbance limit for Class A equipment (10 m distance)

Frequency range [MHz]	Limit: Quasi-peak		IF BW
	[$\mu\text{V}/\text{m}$]	[dB($\mu\text{V}/\text{m}$)]	
30 - 88	90	39	120 KHz
88 - 216	150	43.5	
216 - 960	210	46.5	
960 - 1000	300	49.5	

- 1) At the transition frequency, the lower limit applies.
- 2) Emission level (dB) μV = 20 log Emission level $\mu\text{V}/\text{m}$.

Test configuration





Test Procedure Description

Radiated Emissions were measured 3 metres away from the EUT in the Semi Anechoic Chamber facility, which is an ANSI C63.4 compliant semi-anechoic chamber with ground plane. The EUT was placed on a non-conductive table, at a height of 0.8m above the ground plane. the turntable can rotate 360 degrees to determine the position of the maximum emission level. the EUT is set 3 meters away from the receiving antenna, which is mounted on an antenna tower. the antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Log-periodic antenna or horn antenna is used as a receiving antenna. both horizontal and vertical polarization of the antenna is set on test.

Test Results refer to Annex A.2



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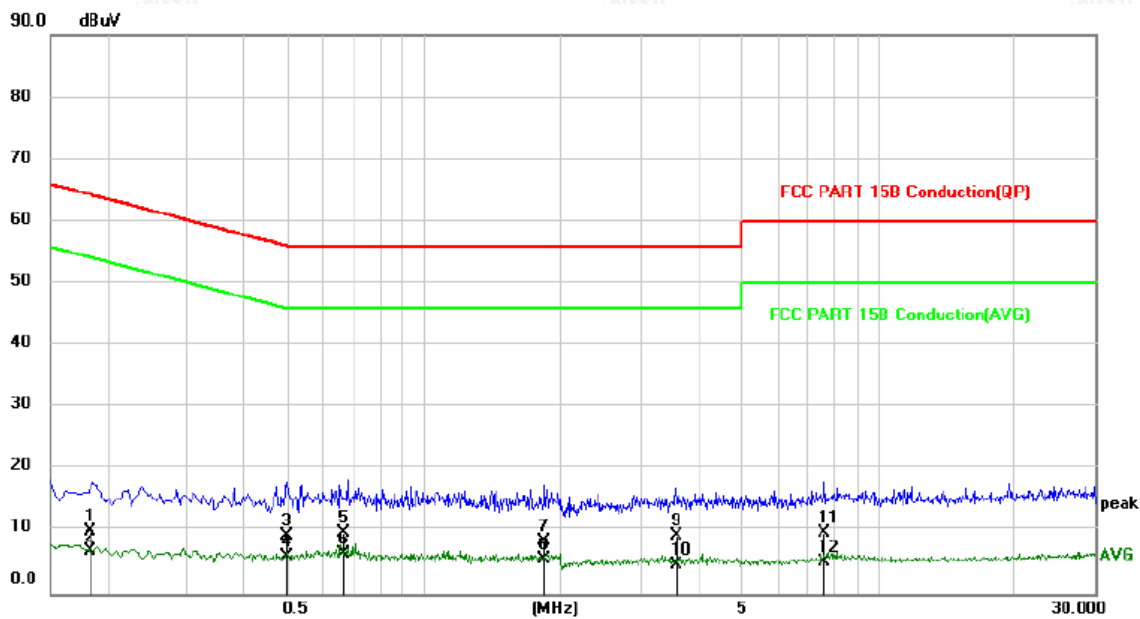
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ANNEX A - TEST RESULTS

A.1. CONDUCTED DISTURBANCE TEST RESULTS

Environmental Conditions	23.9°C, 53% RH
Model	2835
Operating mode	Mode 1 (worst case)
Test voltage	DC 24V
Test engineer	Peng Dong
Pol	Line

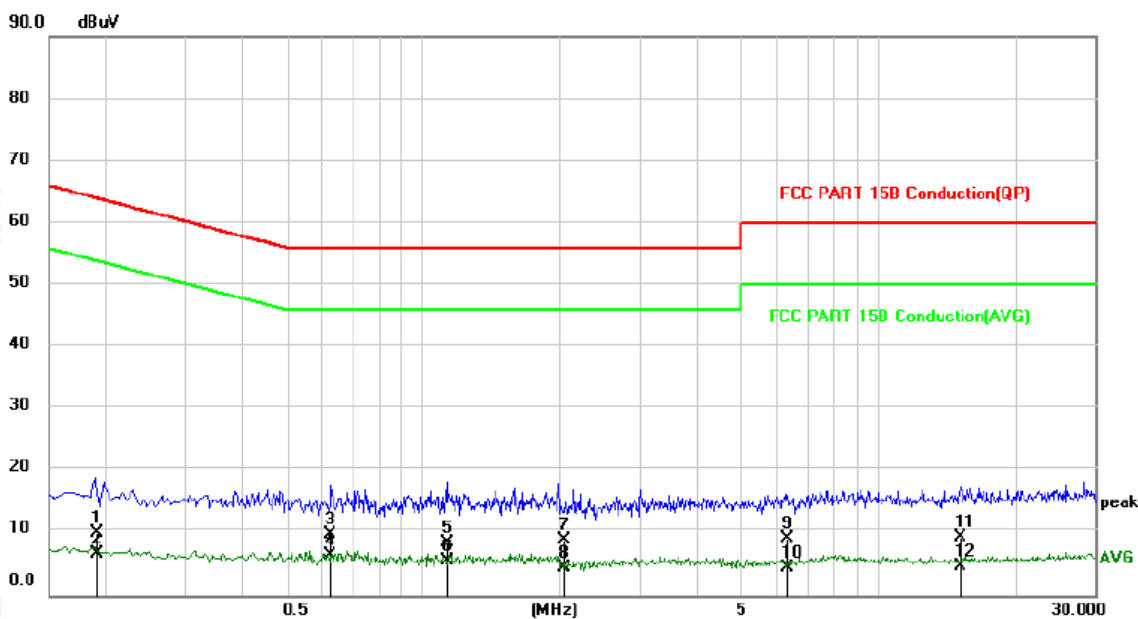


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1830	-0.13	10.23	10.10	64.35	-54.25	QP	
2		0.1830	-3.41	10.23	6.82	54.35	-47.53	AVG	
3		0.4984	-0.91	10.20	9.29	56.03	-46.74	QP	
4		0.4984	-4.24	10.20	5.96	46.03	-40.07	AVG	
5		0.6648	-0.51	10.20	9.69	56.00	-46.31	QP	
6	*	0.6648	-3.70	10.20	6.50	46.00	-39.50	AVG	
7		1.8326	-1.77	10.20	8.43	56.00	-47.57	QP	
8		1.8326	-4.64	10.20	5.56	46.00	-40.44	AVG	
9		3.6056	-0.86	10.20	9.34	56.00	-46.66	QP	
10		3.6056	-5.51	10.20	4.69	46.00	-41.31	AVG	
11		7.5690	-0.46	10.20	9.74	60.00	-50.26	QP	
12		7.5690	-5.07	10.20	5.13	50.00	-44.87	AVG	





Environmental Conditions	23.9°C, 53% RH
Model	2835
Operating mode	Mode 1 (worst case)
Test voltage	DC 24V
Test engineer	Peng Dong
Pol	Neutral



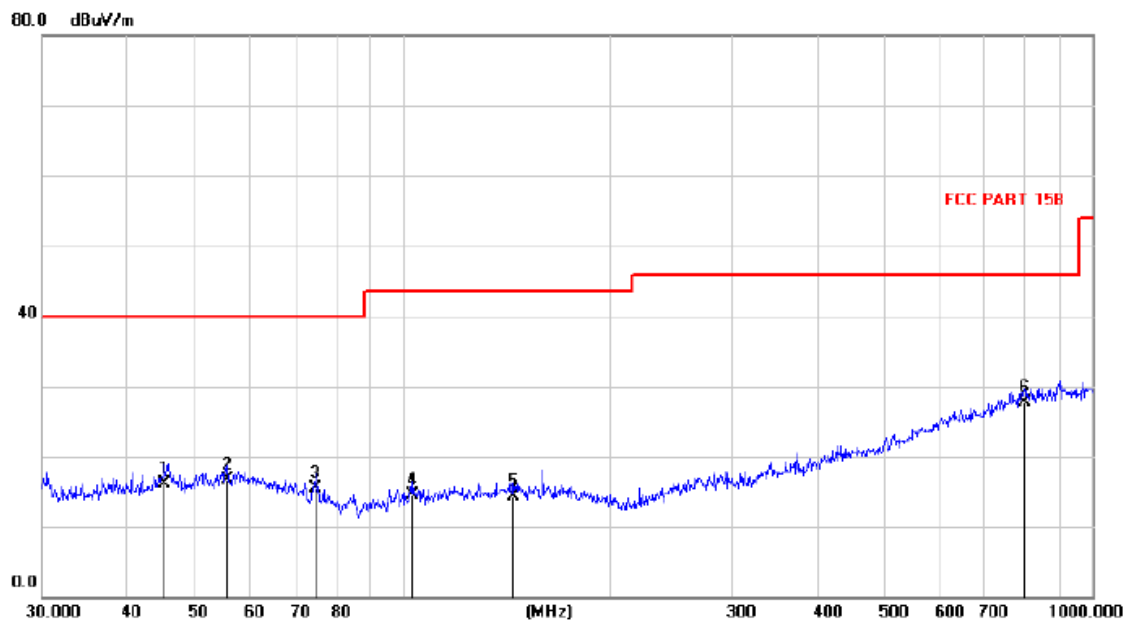
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1916	-0.28	10.23	9.95	63.97	-54.02	QP	
2		0.1916	-3.57	10.23	6.66	53.97	-47.31	AVG	
3		0.6251	-0.51	10.20	9.69	56.00	-46.31	QP	
4	*	0.6251	-3.84	10.20	6.36	46.00	-39.64	AVG	
5		1.1242	-1.86	10.20	8.34	56.00	-47.66	QP	
6		1.1242	-4.73	10.20	5.47	46.00	-40.53	AVG	
7		2.0530	-1.23	10.20	8.97	56.00	-47.03	QP	
8		2.0530	-5.74	10.20	4.46	46.00	-41.54	AVG	
9		6.3223	-1.12	10.20	9.08	60.00	-50.92	QP	
10		6.3223	-5.76	10.20	4.44	50.00	-45.56	AVG	
11		15.2079	-0.91	10.20	9.29	60.00	-50.71	QP	
12		15.2079	-5.51	10.20	4.69	50.00	-45.31	AVG	





A.2. RADIATED DISTURBANCE TEST RESULTS

Environmental Conditions	24.2°C, 50% RH
Model	2835
Operating mode	Mode 1 (worst case)
Test voltage	DC 24V
Test engineer	Peng Dong
Pol	Vertical

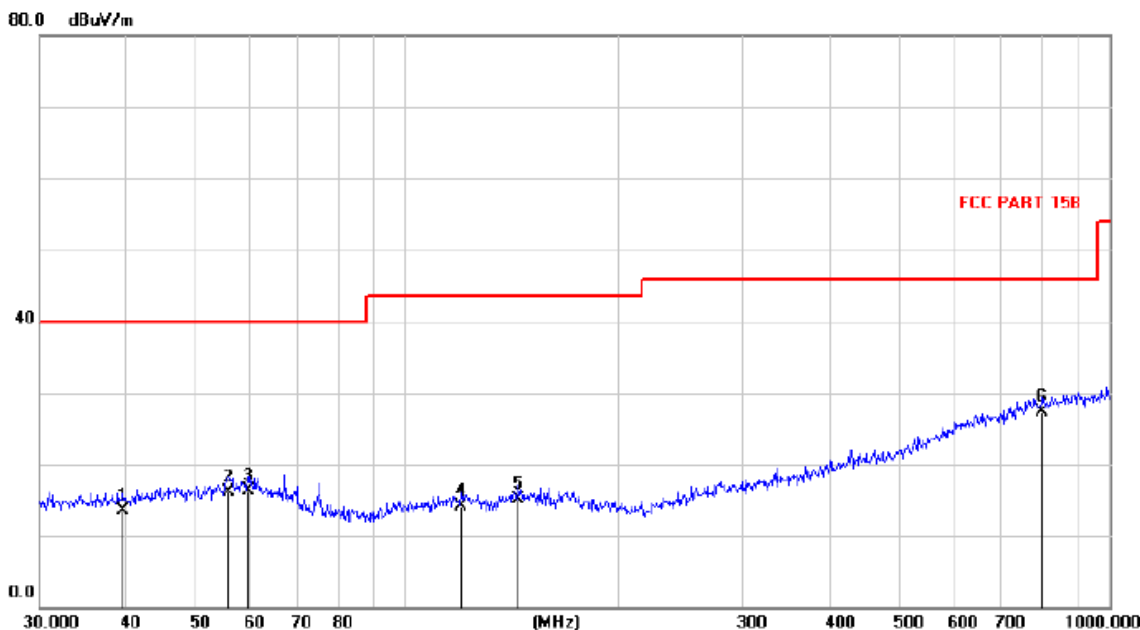


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree degree	Detector	Comment
1		45.3356	3.92	12.10	16.02	40.00	-23.98			QP	
2		55.6337	4.10	12.61	16.71	40.00	-23.29			QP	
3		74.9520	5.14	10.33	15.47	40.00	-24.53			QP	
4		103.8055	3.85	10.74	14.59	43.50	-28.91			QP	
5		145.1595	2.86	11.53	14.39	43.50	-29.11			QP	
6	*	796.8812	4.04	23.62	27.66	46.00	-18.34			QP	





Environmental Conditions	24.2°C, 50% RH
Model	2835
Operating mode	Mode 1 (worst case)
Test voltage	DC 24V
Test engineer	Peng Dong
Pol	Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		39.5237	0.29	13.30	13.59	40.00	-26.41	QP			
2		55.6581	2.81	13.21	16.02	40.00	-23.98	QP			
3		59.5971	4.05	12.30	16.35	40.00	-23.65	QP			
4		119.6981	3.53	10.49	14.02	43.50	-29.48	QP			
5		144.0188	5.94	9.07	15.01	43.50	-28.49	QP			
6	*	802.4895	5.44	21.94	27.38	46.00	-18.62	QP			

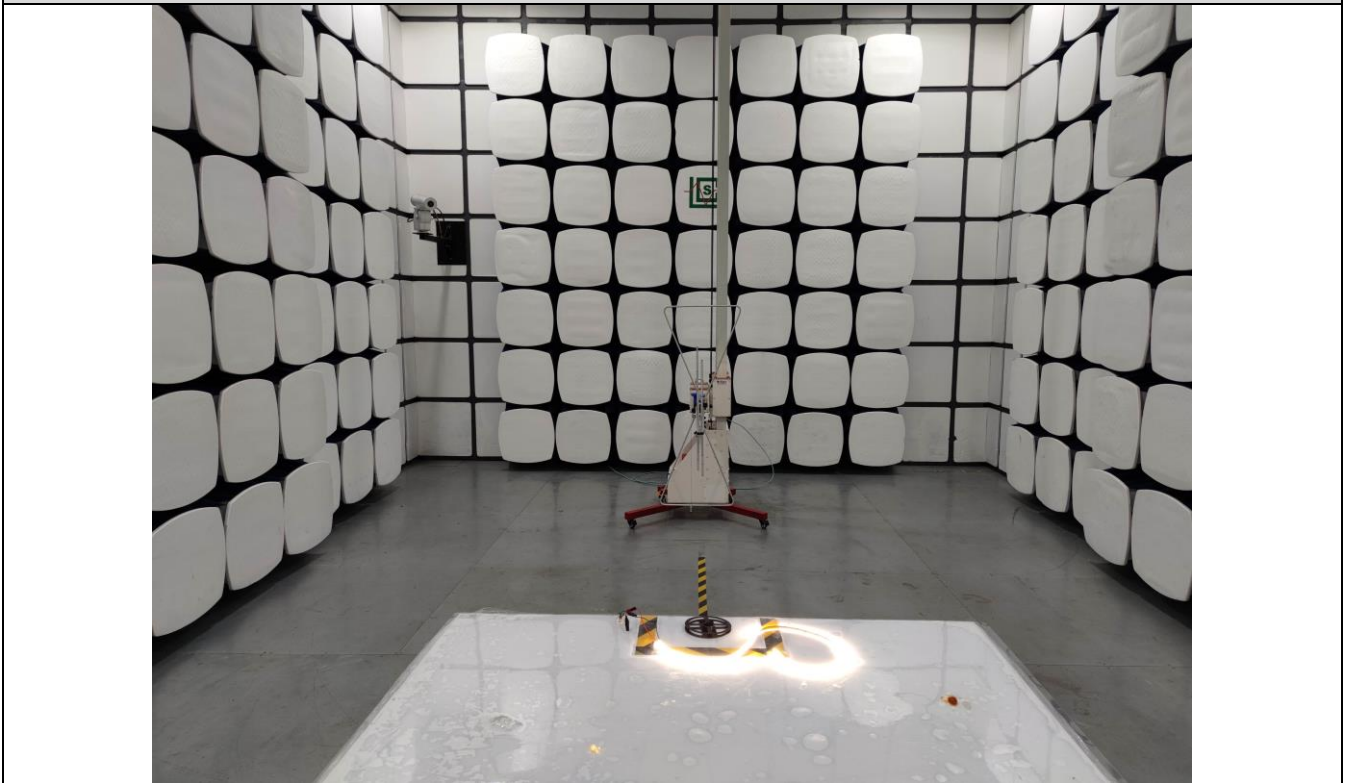


ANNEX B - TEST PHOTOS

B.1. Conducted Disturbance



B.2. Radiated Disturbance



ANNEX C - EXTERNAL AND INTERNAL PHOTOS OF THE EUT

The photographs show the equipment under test.

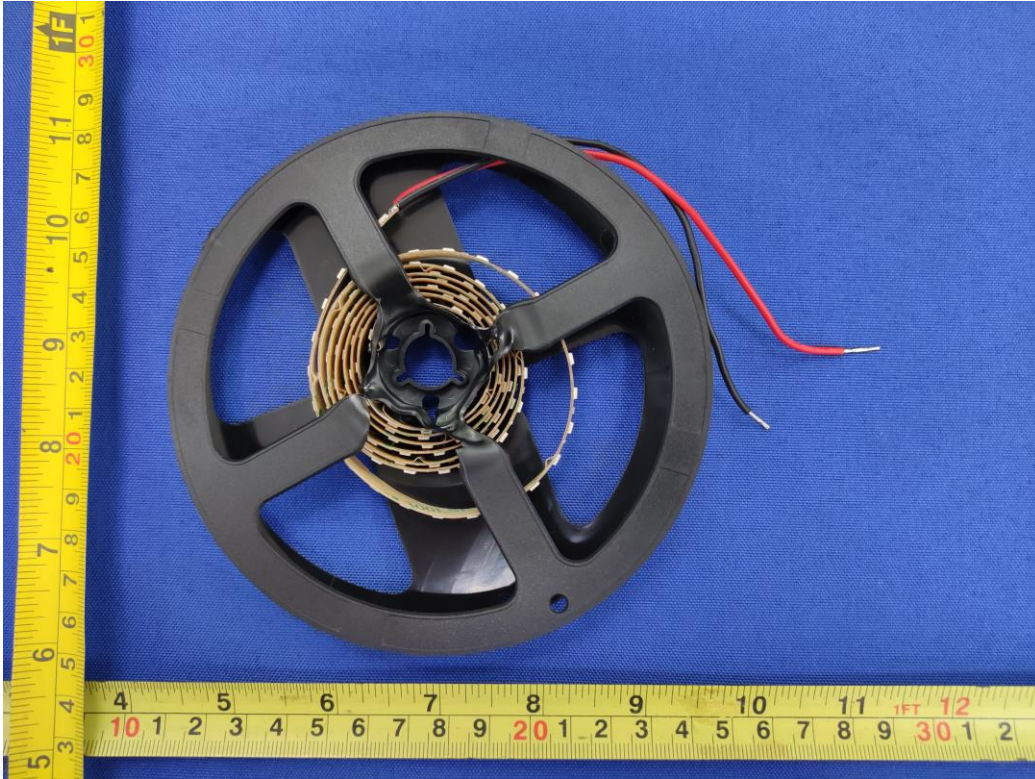


Figure. 1 (2835)



Figure. 2



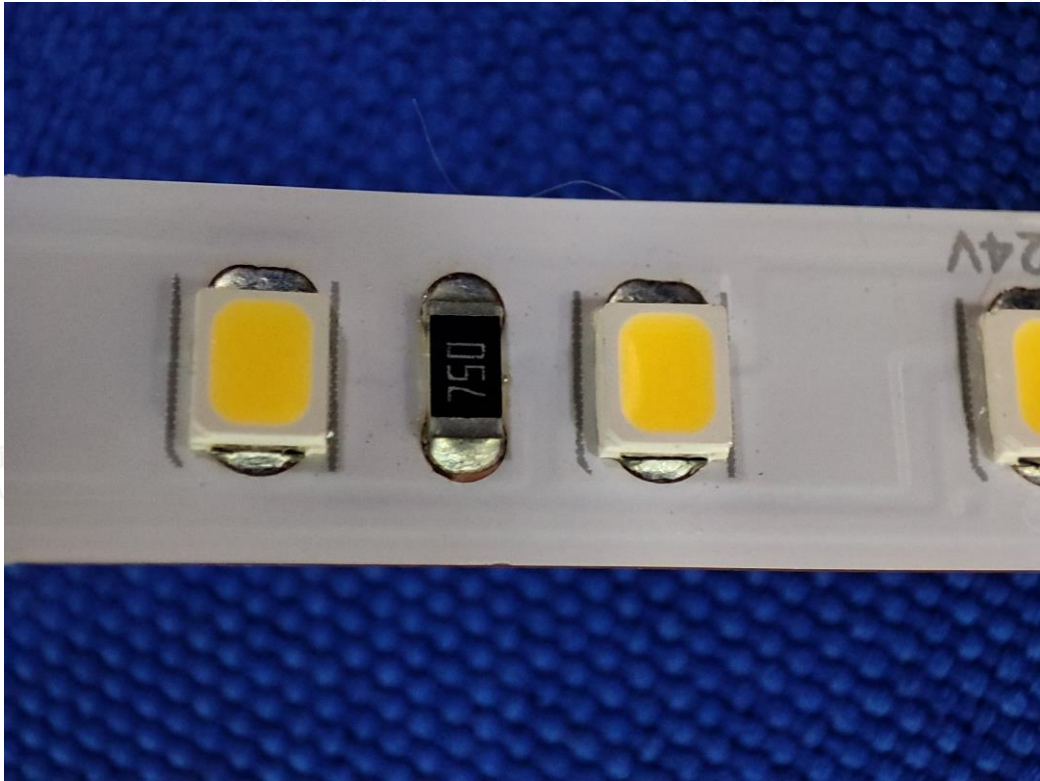


Figure. 3



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