



PSE TEST REPORT

For

Kaisen Electric Ltd.

LED Module

Test Model: KM-T4-W

Additional Models : Please Refer To Page 9 Model List

Prepared for : Kaisen Electric Ltd.
Address : 99A-31 Kalvariju str., 08219, Vilnius, Lithuania

Prepared by : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.
Address : 101-201, No.39 Building, Xialang Industrial Zone, Heshuikou
Community, Matian Street, Guangming District, Shenzhen,
China

Tel : (+86)755-29871520
Fax : (+86)755-29871521
Web : www.LCS-cert.com
Mail : webmaster@LCS-cert.com

Date of receipt of test sample : March 06, 2020
Number of tested samples : 1
Serial number : Prototype
Date of Test : March 06, 2020 ~ March 16, 2020
Date of Report : March 16, 2020



PSE TEST REPORT**J55015 (H29)**

Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

Report Reference No : LCS200306021BE**Date Of Issue** : March 16, 2020**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 Location/ Procedure** ... : Full application of Harmonised standards
Partial application of Harmonised standards
Other standard testing method **Applicant's Name** : **Kaisen Electric Ltd.****Address** : 99A-31 Kalvariju str., 08219, Vilnius, Lithuania**Test Specification:****Standard** : J55015 (H29)**Test Report Form No.**..... : LCSEMC-1.0**TRF Originator** : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.**Master TRF** : Dated 2016-08**Shenzhen Southern LCS Compliance Testing Laboratory Ltd. All rights reserved.**

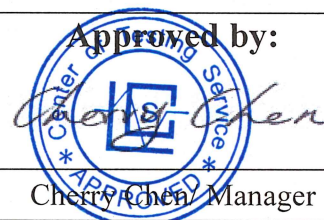
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Test Item Description..... : **LED Module****Trade Mark** : KAISEN ELECTRIC**Test Model**..... : KM-T4-W**Power Supply**..... : DC12V, 0.33A, 4W**Results** : **PASS****Compiled by:**

Aimee Yang

Supervised by:

Dm Gu

Approved by:


Aimee Yang/ File administrators

Dm Gu/Technique principal

Cherry Chen/ Manager

PSE - TEST REPORT

Test Report No. : LCS200306021BE	<u>March 16, 2020</u> Date of issue
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EUT.....: LED Module

Test Model.....: KM-T4-W

Applicant: **Kaisen Electric Ltd.**

Address

Telephone

Fax

Manufacturer: **Kaisen Electric Ltd.**

Address

Telephone

Fax

Factory: **Kaisen Electric Ltd.**

Address

Telephone

Fax

Test Result according to the standards on page 6: **PASS**

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.

Revision History

Revision	Issue Date	Revisions	Revised By
00	March 16, 2020	Initial Issue	Cherry Chen

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1. REPORT INFORMATION DESCRIPTION

1.1 Summary of Standards and Results

1.1.1 Description of Standards and Results

EMISSION			
Description of Test Item	Test Standard	Limits	Results
Conducted Disturbance at Mains Terminals	J55015 (H29)	-----	PASS
Conducted Disturbance at Load Terminals	J55015 (H29)	-----	N/A
Conducted Disturbance at Control Terminals	J55015 (H29)	-----	N/A
Radiated Disturbance (9kHz to 30MHz)	J55015 (H29)	-----	PASS
Radiated Disturbance (30MHz to 300MHz)	J55015 (H29)	-----	PASS

Note : N/A is an abbreviation for Not Applicable.

1.2 Product Information

1.2.1 Electrical parameter description

EUT : LED Module
Trade Mark : KAISEN ELECTRIC
Test Model : KM-T4-W
Additional Models : See page 9 model list
Power Supply : See page 9 model list

1.2.2 Test Modes

Lighting : EUT was test with power on, to get the status ‘Lighting’

1.2.3 Test Auxiliary Equipment

Configuration	Model	Rating	Manufacturer

1.2.4 General Product Information

The EUTs are general luminaires for illumination purpose. detailed differences shown in below.

Model list:

Model	Rating
KM-P0-W	DC12V, 0.03A, 0.36W, IP67, ta45 °C, Class III
KM-P1-W	DC12V, 0.042A, 0.5W, IP67, ta45 °C, Class III
KM-P1-R	DC12V, 0.042A, 0.5W, IP67, ta45 °C, Class III
KM-P1-G	DC12V, 0.042A, 0.5W, IP67, ta45 °C, Class III
KM-P1-B	DC12V, 0.042A, 0.5W, IP67, ta45 °C, Class III
KM-P2-W	DC12V, 0.083A, 1W, IP67, ta45 °C, Class III
KM-P2-R	DC12V, 0.083A, 1W, IP67, ta45 °C, Class III
KM-P2-G	DC12V, 0.06A, 0.72W, IP67, ta45 °C, Class III
KM-P2-B	DC12V, 0.06A, 0.72W, IP67, ta45 °C, Class III
KM-P3-W	DC12V, 0.125A, 1.5W, IP67, ta45 °C, Class III
KM-P3-R	DC12V, 0.125A, 1.5W, IP67, ta45 °C, Class III
KM-P3-G	DC12V, 0.1A, 1.2W, IP67, ta45 °C, Class III
KM-P3-B	DC12V, 0.1A, 1.2W, IP67, ta45 °C, Class III
KM-P4-W	DC12V, 0.166A, 2W, IP67, ta45 °C, Class III
KM-T0-W	DC12V, 0.042A, 0.5W, IP67, ta45 °C, Class III
KM-T1-W	DC12V, 0.1A, 1.2W, IP67, ta45 °C, Class III
KM-T2-W	DC12V, 0.166A, 2W, IP67, ta45 °C, Class III
KM-T3-W	DC12V, 0.25A, 3W, IP67, ta45 °C, Class III
KM-T4-W	DC12V, 0.33A, 4W, IP67, ta45 °C, Class III
KM-DS15-W	DC12V, 0.125A, 1.5W, IP67, ta45 °C, Class III
KM-DS20-W	DC12V, 0.166A, 2W, IP67, ta45 °C, Class III
KM-A1-75K	DC12V, 0.05A, 0.6W, IP67, ta45 °C, Class III
KM-A2-75K	DC12V, 0.1A, 1.2W, IP67, ta45 °C, Class III
KM-A3-75K	DC12V, 0.15A, 1.8W, IP67, ta45 °C, Class III
KM-N1-7500C2	DC12V, 0.03A, 0.36W, IP67, ta45 °C, Class III
KM-N2-7500C2	DC12V, 0.06A, 0.72W, IP67, ta45 °C, Class III
KM-MINI3-04W-65K	DC12V, 0.033A, 0.4W, IP67, ta45 °C, Class III
KM-MINI3-07W-65K	DC12V, 0.06A, 0.7W, IP67, ta45 °C, Class III

1.3 Description of Test Facility

EMC Lab. : TUV RH Registration Number. is UA 50418075 0001.
UL Registration Number. is 100571-492.
NVLAP Registration Code is 600112-0.

Test Facilities : Shenzhen Southern LCS Compliance Testing Laboratory Ltd.
101-201, No.39 Building, Xialang Industrial Zone, Heshuikou
Community, Matian Street, Guangming District, Shenzhen, China.

RF Field Strength : Shenzhen LCS Compliance Testing Laboratory Ltd.
Susceptibility 101, 201 Building A and 301 Building C, Juji Industrial Park,
Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, Guangdong,
China

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 acc. 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 acc. 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.

Test	Parameters	Expanded uncertainty (U_{lab})	Expanded uncertainty (U_{cispr})
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 1.40 dB ± 2.80 dB	± 4.0 dB ± 3.6 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.46 dB	N/A
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.12 dB	N/A
Radiated Emission	Level accuracy (30MHz to 200MHz)	± 4.66 dB	± 5.2 dB
Radiated Emission	Level accuracy (200MHz to 1000MHz)	± 4.64 dB	± 5.0 dB
Mains Harmonic	Voltage	$\pm 0.640\%$	N/A
Voltage Fluctuations & Flicker	Voltage	$\pm 0.530\%$	N/A

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) 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.	Due Date.
1	EMI Test Receiver	R&S	ESCI	101142	2020-06-20
2	10dB Attenuator	SCHWARZBECK	VTSD9561-F	9561-F159	2020-06-20
3	Artificial Mains	SCHWARZBECK	NSLK8127	8127716	2020-06-20
4	EMI Test Software	EZ	EZ EMC	N/A	2020-06-20
5	ISN CAT6	SCHWARZBECK	NTFM 8158	NTFM 8158#120	2020-06-20
6	Voltage Probe	SCHWARZBECK	KT 9420	9420401	2020-06-20

Radiated Disturbance(9kHz to 30MHz)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	EMI Test Receiver	R&S	ESPI	101142	2020-06-20
2	Triple-loop Antenna	EVERFINE	LLA-2	9161	2020-06-20
3	EMI Test Software	EZ	EZ EMC	N/A	2020-06-20

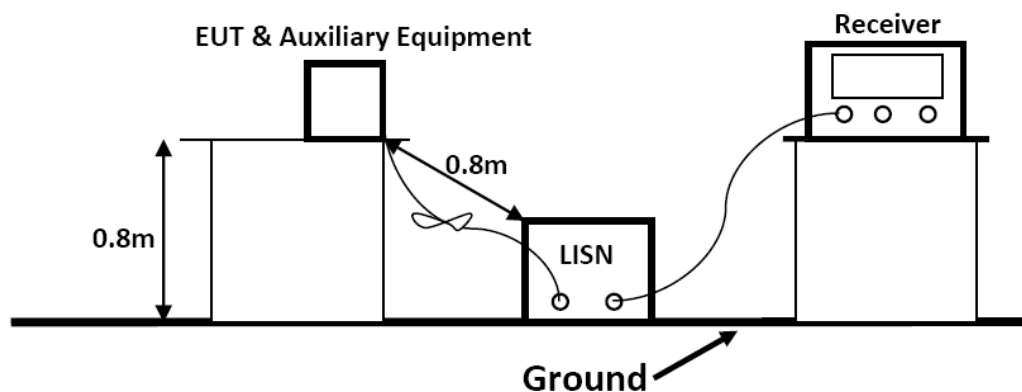
Radiated Disturbance(30MHz to 300MHz)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2021-08-05
2	EMI Test Receiver	R&S	ESCI	101010	2020-06-20
3	Log per Antenna	SCHWARZBECK	VULB9163	5094	2020-06-23
4	EMI Test Software	AUDIX	E3	N/A	2020-06-20
5	Positioning Controller	MF	BK8807-4A-2T	2016-0808-008	2020-06-20

4. TEST DETAILS

4.1 Conducted Disturbance at Mains Terminals

4.1.1 Block Diagram of Test Setup



4.1.2 Test Standard

J55015 (H29)

4.1.3 Limits

Disturbance voltage limits at the Mains Terminals		
Frequency range	Limits (dB V)	
	Quasi-peak	Average
9kHz to 50kHz	110	--
50kHz to 150kHz	90 ~ 80*	--
150kHz to 0.5MHz	66 ~ 56*	56 ~ 46*
0.5MHz to 5.0MHz	56	46
5.0MHz to 30MHz	60	50

1. At the transition frequency the lower limit applies.
2. * The limit decreases linearly with the logarithm of the frequency in the ranges 50 kHz to 150 kHz and 150 kHz to 0,5 MHz.

4.1.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3

4.1.5 Test Procedure Description

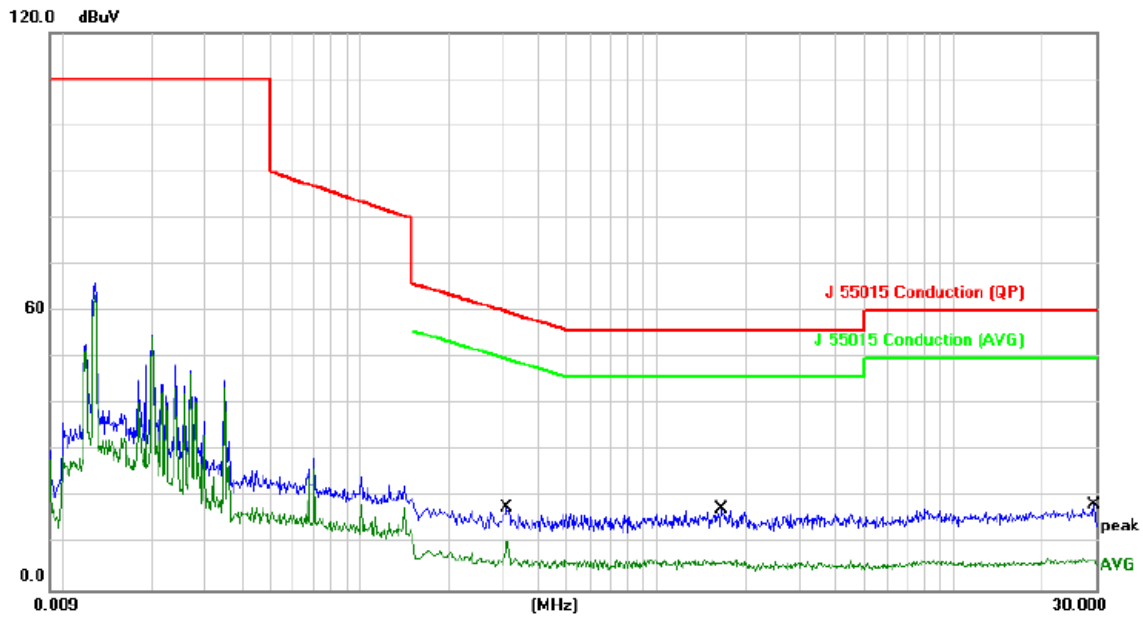
The EUT is put on the table which is 0.8 meter high above the ground and connected to the AC mains through a Line Impedance Stabilization Network (L.I.S.N.). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission according to the CISPR 15 regulations during conducted emission measurement. And the voltage probe had been used for the load terminals measurement according to the CISPR 15 standard.

The bandwidth of the test receiver is set at 200Hz in 9k~150kHz range and 9kHz in 150k~30MHz range.

4.1.6 Test Results: PASS

Environmental Conditions:	23.9°C, 53% RH
Test Voltage:	DC 12V
Test Model:	KM-T4-W
Test Mode:	Lighting
Test Engineer:	Zom Zhang
Pol:	Line

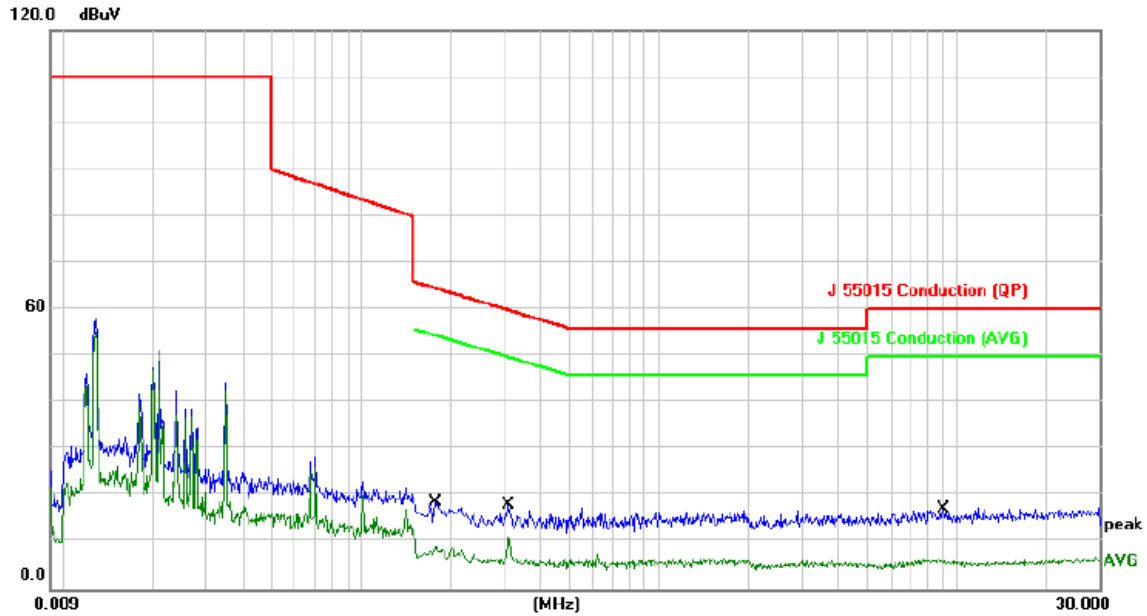
Detailed results are shown below



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.3181	18.84	10.20	29.04	59.75	-30.71	QP	
2		0.3181	15.71	10.20	25.91	49.75	-23.84	AVG	
3		1.6607	18.14	10.20	28.34	56.00	-27.66	QP	
4	*	1.6607	15.32	10.20	25.52	46.00	-20.48	AVG	
5		29.5393	19.81	10.20	30.01	60.00	-29.99	QP	
6		29.5393	15.16	10.20	25.36	50.00	-24.64	AVG	

Environmental Conditions:	23.9°C, 53% RH
Test Voltage:	DC 12V
Test Model:	KM-T4-W
Test Mode:	Lighting
Test Engineer:	Zom Zhang
Pol:	Neutral

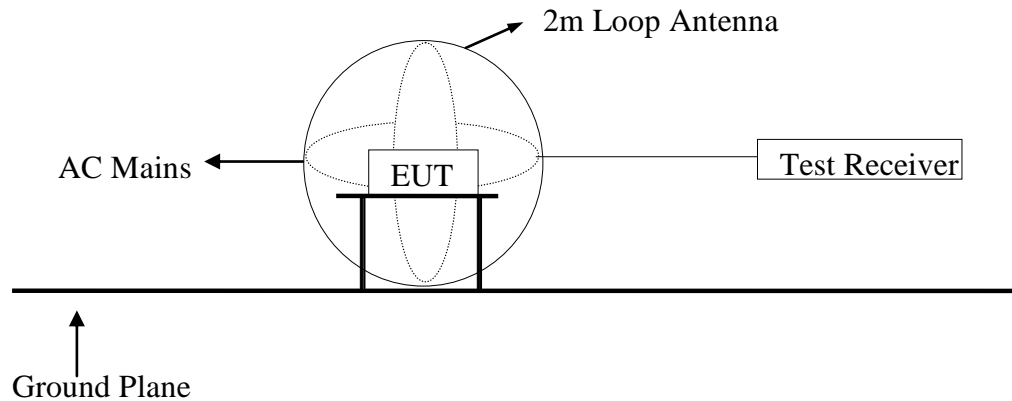
Detailed results are shown below



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1787	19.64	10.23	29.87	64.54	-34.67	QP	
2		0.1787	16.55	10.23	26.78	54.54	-27.76	AVG	
3		0.3185	18.67	10.20	28.87	59.74	-30.87	QP	
4	*	0.3185	15.71	10.20	25.91	49.74	-23.83	AVG	
5		8.9458	19.54	10.20	29.74	60.00	-30.26	QP	
6		8.9458	14.90	10.20	25.10	50.00	-24.90	AVG	

4.2 Radiated Disturbance (9kHz to 30MHz)

4.2.1 Block Diagram of Test Setup



4.2.2 Test Standard

J55015 (H29)

4.2.3 Limits

Radiated Disturbance limits (9KHz-30MHz)	
Frequency range	Limits for loop diameter (dB A)
	2m
9kHz to 70kHz	88
70kHz to 150kHz	88 to 58*
150kHz to 3.0MHz	58 to 22*
3.0MHz to 30MHz	22

1. At the transition frequency the lower limit applies.
- 2.* Decreasing linearly with logarithm of the frequency.

4.2.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3

4.2.5 Test Procedure

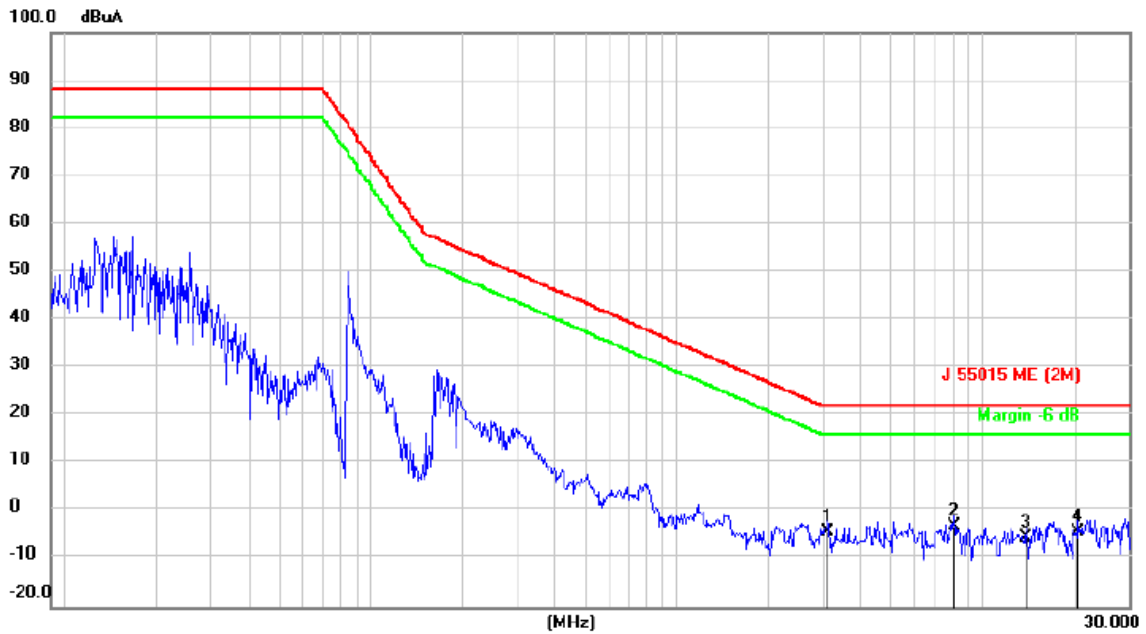
The EUT is placed on a wood table in the center of a loop antenna. The induced current in the loop antenna is measured by means of a current probe and the test receiver. Three field components are checked by means of a coaxial switch.

The frequency range from 9kHz to 30MHz is investigated. The receiver is measured with the quasi-peak detector. For frequency band 9kHz to 150kHz, the bandwidth of the field strength meter is set at 200Hz. For frequency band 150kHz to 30MHz, the bandwidth is set at 9kHz.

4.2.6 Test Results: PASS

Environmental Conditions:	23.9°C, 53% RH
Test Voltage:	DC 12V
Test Model:	KM-T4-W
Test Mode:	Lighting
Test Engineer:	Zom Zhang
Pol:	X

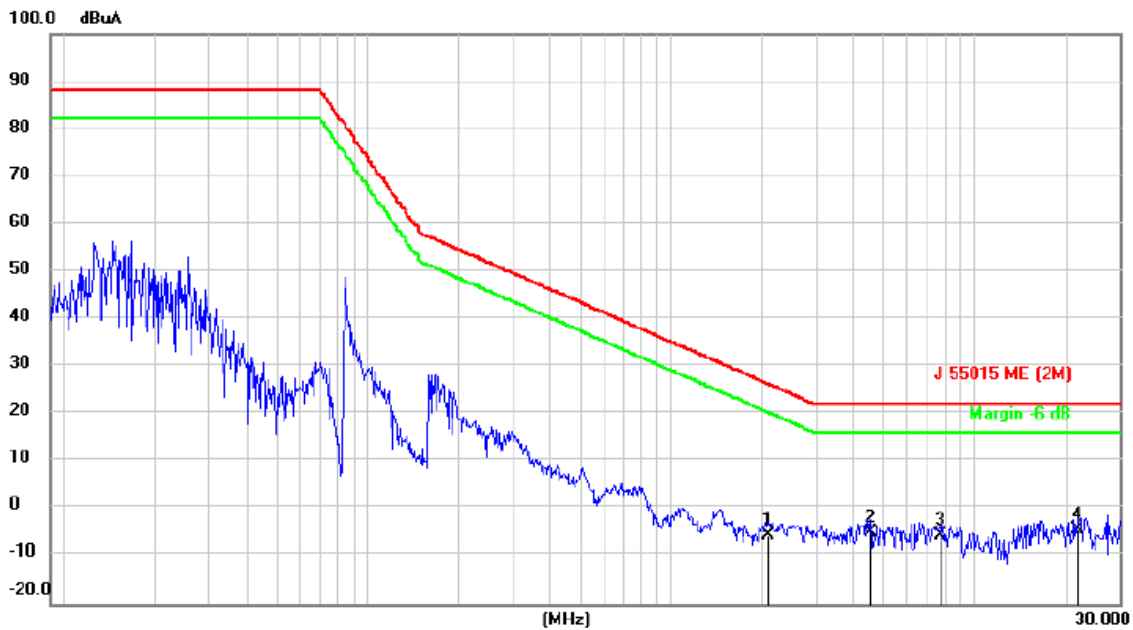
Detailed results are shown below



No.	Mk.	Freq. MHz	Reading Level dBuA	Correct Factor dB	Measure- ment dBuA	Limit dBuA	Over dB	Detector	Comment
1		3.1206	11.21	-15.58	-4.37	22.00	-26.37	QP	
2	*	8.0615	13.63	-16.74	-3.11	22.00	-25.11	QP	
3		13.7697	19.74	-25.07	-5.33	22.00	-27.33	QP	
4		20.4902	25.81	-30.15	-4.34	22.00	-26.34	QP	

Environmental Conditions:	23.9°C, 53% RH
Test Voltage:	DC 12V
Test Model:	KM-T4-W
Test Mode:	Lighting
Test Engineer:	Zom Zhang
Pol:	Y

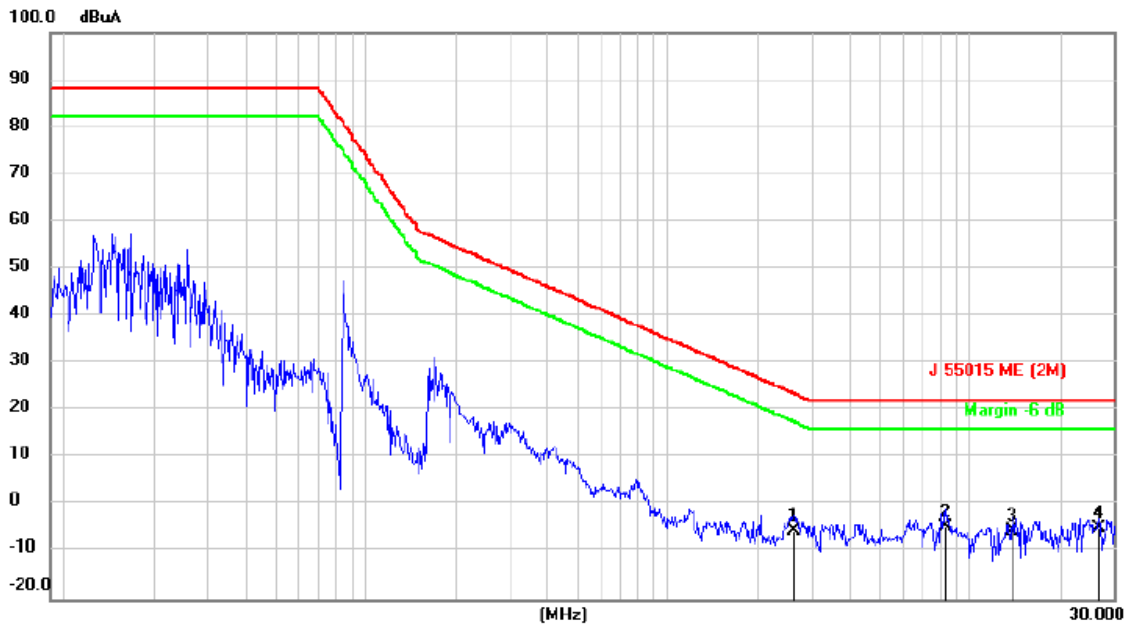
Detailed results are shown below



No.	Mk.	Freq. MHz	Reading Level dBuA	Correct Factor dB	Measure- ment dBuA	Limit dBuA	Over dB	Detector	Comment
1		2.0800	10.83	-16.16	-5.33	26.40	-31.73	QP	
2		4.5319	10.38	-15.15	-4.77	22.00	-26.77	QP	
3		7.6783	10.99	-16.39	-5.40	22.00	-27.40	QP	
4	*	21.8640	28.91	-33.11	-4.20	22.00	-26.20	QP	

Environmental Conditions:	23.9°C, 53% RH
Test Voltage:	DC 12V
Test Model:	KM-T4-W
Test Mode:	Lighting
Test Engineer:	Zom Zhang
Pol:	Z

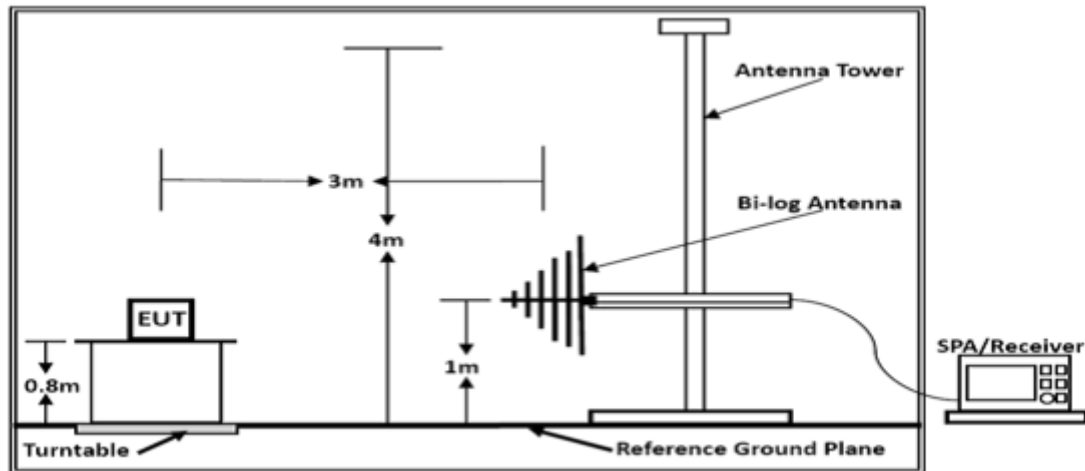
Detailed results are shown below



No.	Mk.	Freq. MHz	Reading Level dBuA	Correct Factor dB	Measure- ment dBuA	Limit dBuA	Over dB	Detector	Comment
1		2.6105	10.42	-15.86	-5.44	23.67	-29.11	QP	
2	*	8.3268	12.74	-17.35	-4.61	22.00	-26.61	QP	
3		13.7697	19.58	-25.07	-5.49	22.00	-27.49	QP	
4		26.7789	30.21	-35.13	-4.92	22.00	-26.92	QP	

4.3 Radiated Disturbance (30MHz to 300MHz)

4.3.1 Block Diagram of Test Setup



4.3.2 Test Standard

J55015 (H29)

4.3.3 Limits

Radiated Disturbance Limits at a measuring distance of 3m (30MHz-300MHz)	
Frequency range (MHz)	Quasi-Peak Limits(dB V/m)
30 ~ 230	40
230 ~ 300	47

- 1, At the transition frequency, the lower limit applies.
- 2, Distance refers to the distance in meters between the measuring instrument antenna geometric center and the closed point of any part of the EUT.

4.3.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.

The CISPR 15 regulations test method must be used to find the maximum emission during radiated emission measurement.

4.3.5 Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. 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. By-log antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

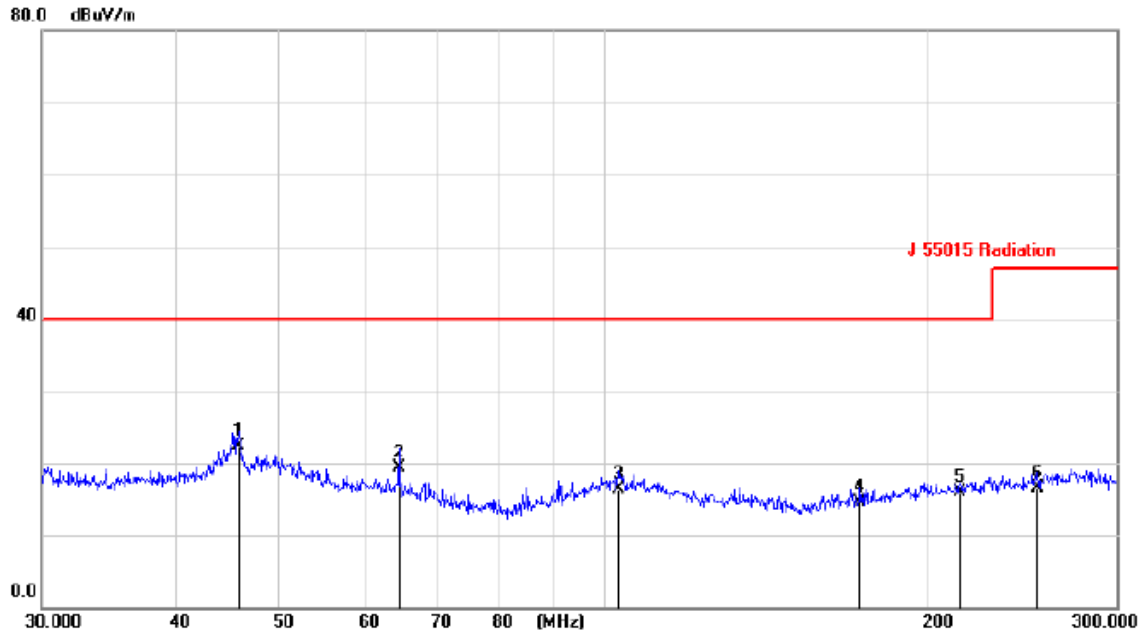
The bandwidth of the Receiver is set at 120kHz; The frequency range from 30MHz to 300MHz is investigated.

4.3.6 Test Results: PASS

The test result please refer to the next page.

Environmental Conditions:	23.7°C, 61% RH
Test Voltage:	DC 12V
Test Model:	KM-T4-W
Test Mode:	Lighting
Test Engineer:	Zom Zhang
Pol:	Vertical

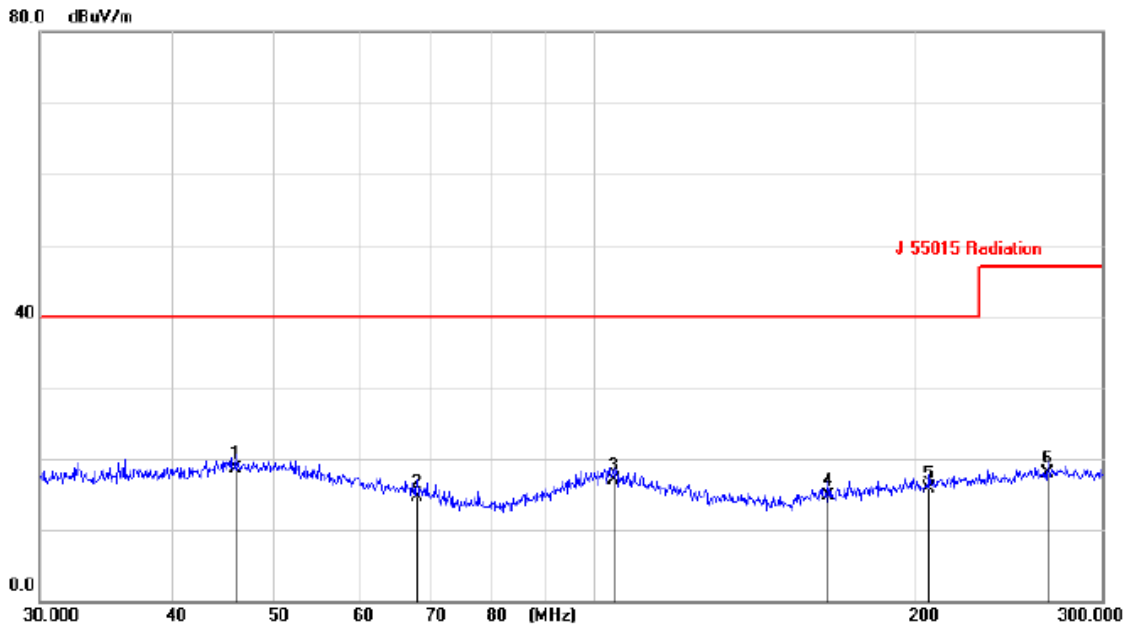
Detailed results are shown below



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Margin dB	Antenna Height cm	Table Degree	Comment
1	*	45.7611	9.05	13.22	22.27	40.00	-17.73	QP		
2		64.5277	7.11	12.15	19.26	40.00	-20.74	QP		
3		103.4538	5.18	11.09	16.27	40.00	-23.73	QP		
4		173.1296	3.33	11.24	14.57	40.00	-25.43	QP		
5		214.7194	6.38	9.60	15.98	40.00	-24.02	QP		
6		253.3648	5.26	11.31	16.57	47.00	-30.43	QP		

Environmental Conditions:	23.7°C, 61% RH
Test Voltage:	DC 12V
Test Model:	KM-T4-W
Test Mode:	Lighting
Test Engineer:	Zom Zhang
Pol:	Horizontal

Detailed results are shown below



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Margin dB	Antenna Height cm	Table Degree degree	Comment
1	*	45.8798	3.74	14.68	18.42	40.00	-21.58	QP		
2		67.9589	3.57	11.02	14.59	40.00	-25.41	QP		
3		104.0810	3.76	13.12	16.88	40.00	-23.12	QP		
4		165.8140	4.44	10.21	14.65	40.00	-25.35	QP		
5		206.5362	3.84	11.86	15.70	40.00	-24.30	QP		
6		266.6068	4.79	13.16	17.95	47.00	-29.05	QP		

5. TEST PHOTOGRAPH

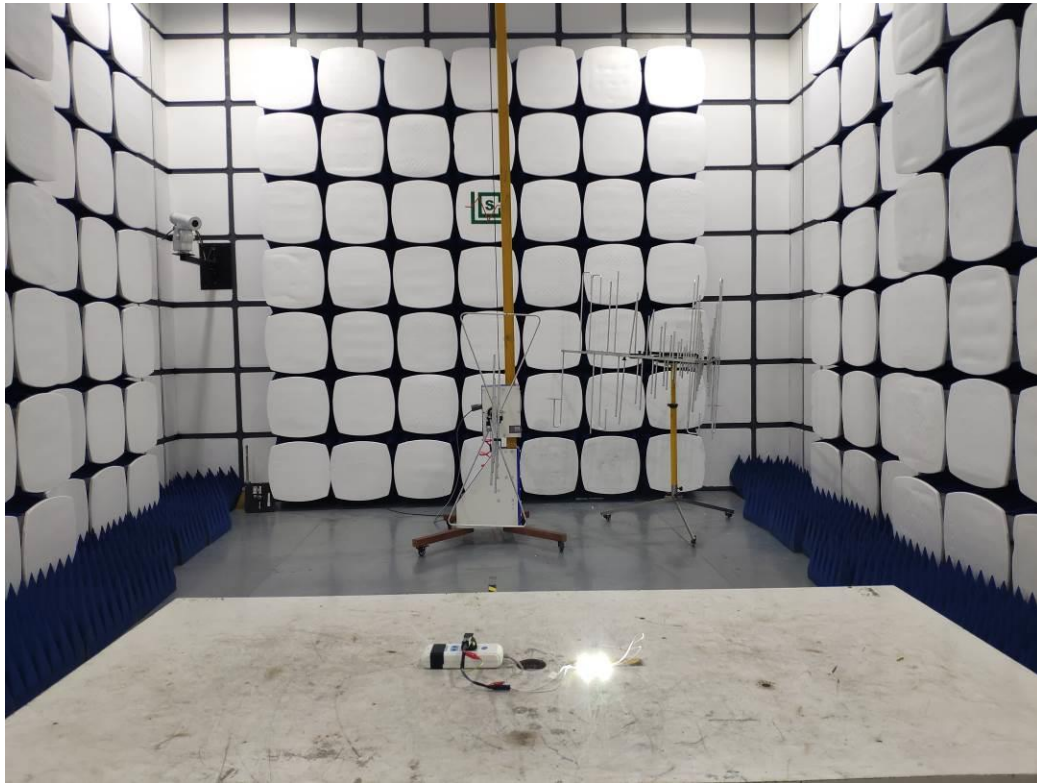
5.1 Photo of Conducted Disturbance at Mains Terminals



5.2 Photo of Radiated Disturbance(9kHz to 30MHz)



5.3 Photo of Radiated Disturbance(30MHz to 300MHz)



6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT



Figure. 1

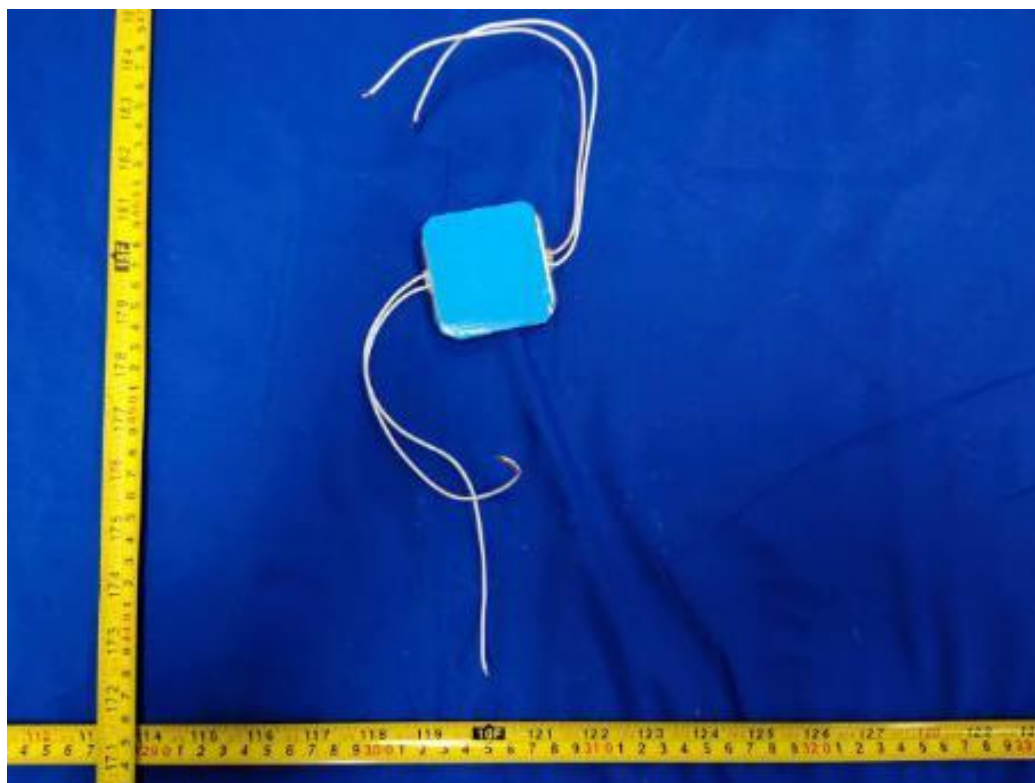


Figure. 2

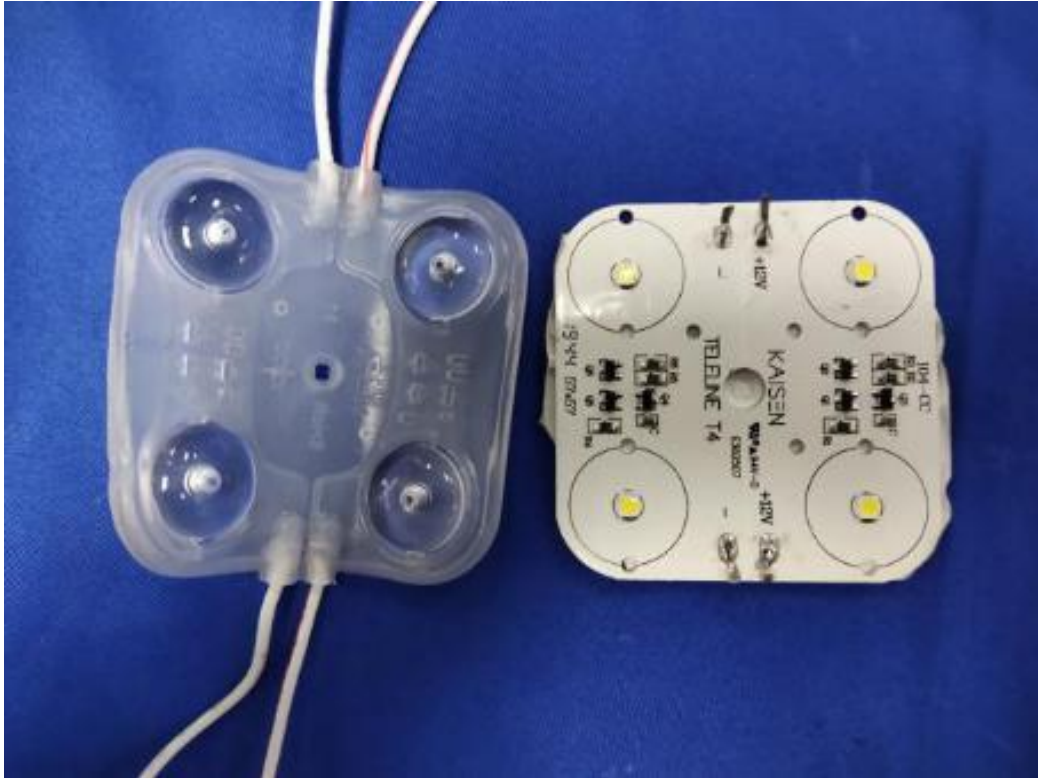


Figure. 3



Figure. 4

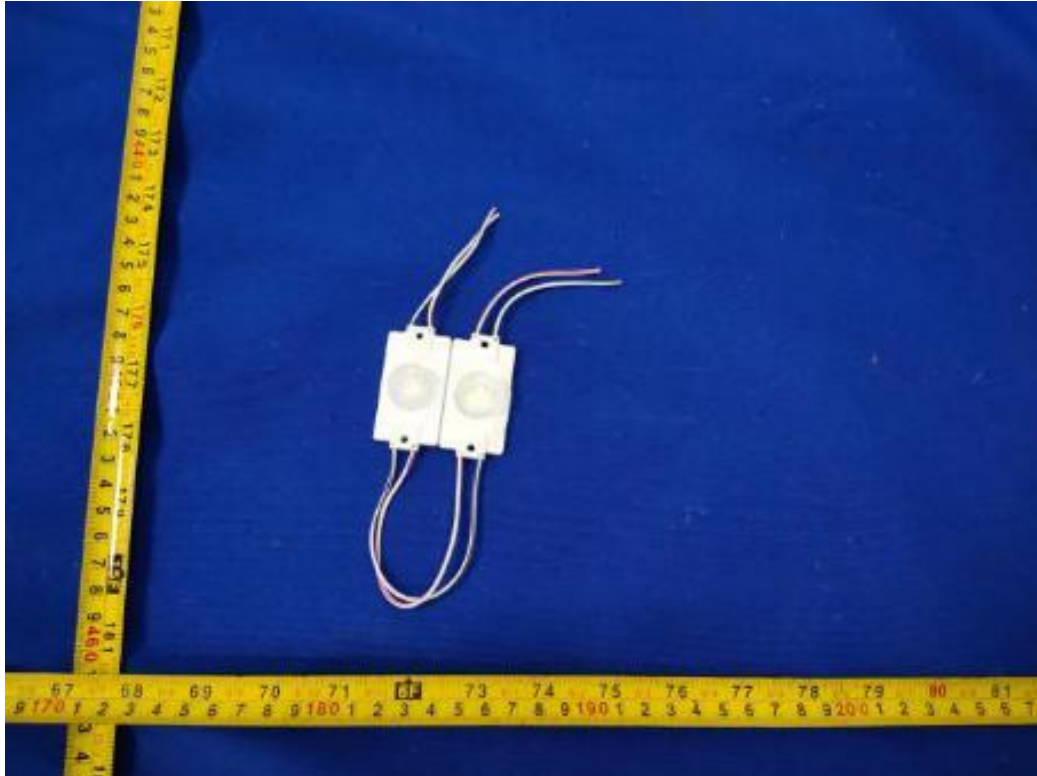


Figure.5

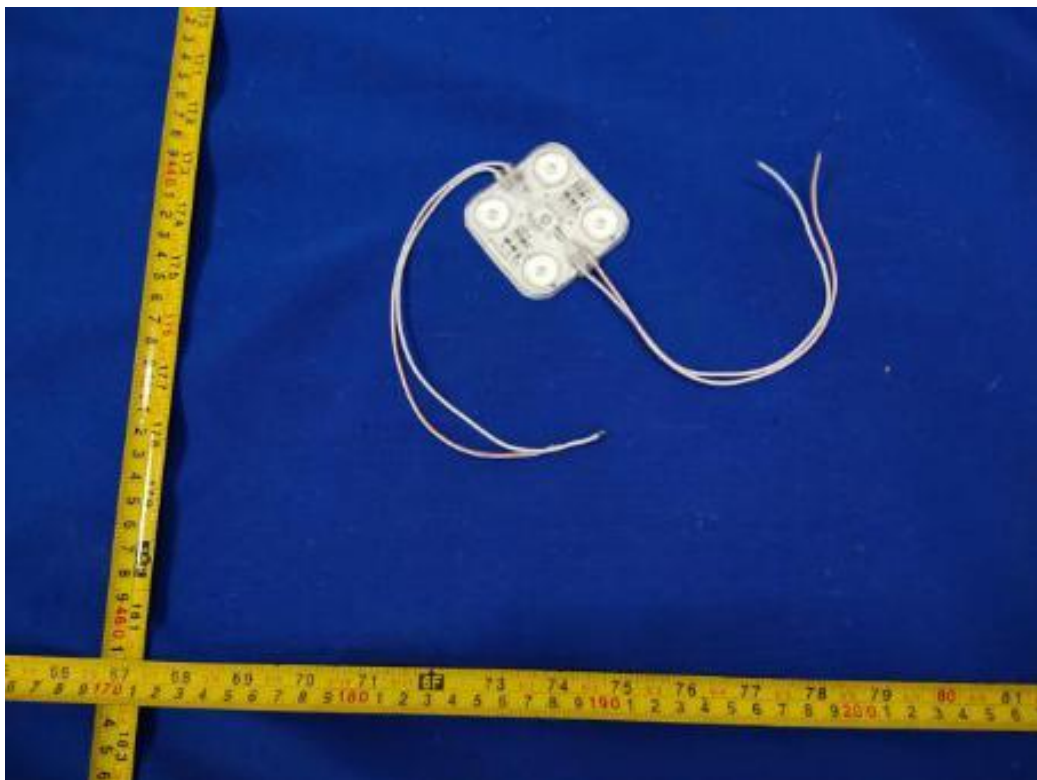


Figure.6



Figure.7



Figure.8

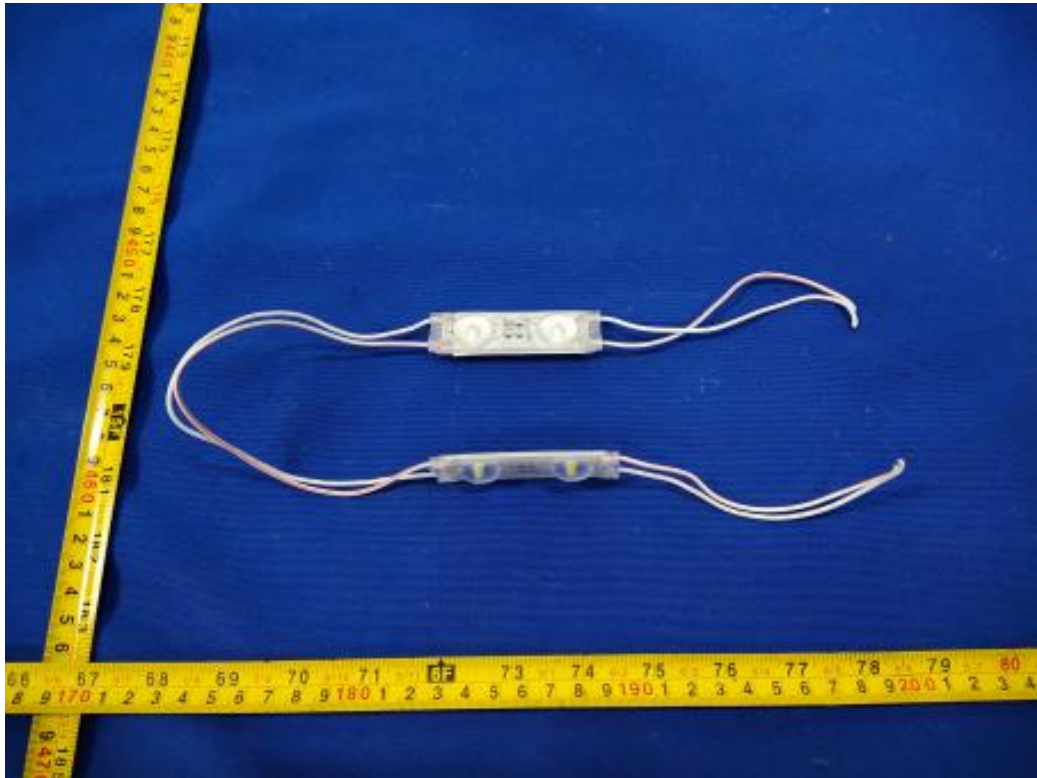


Figure.9

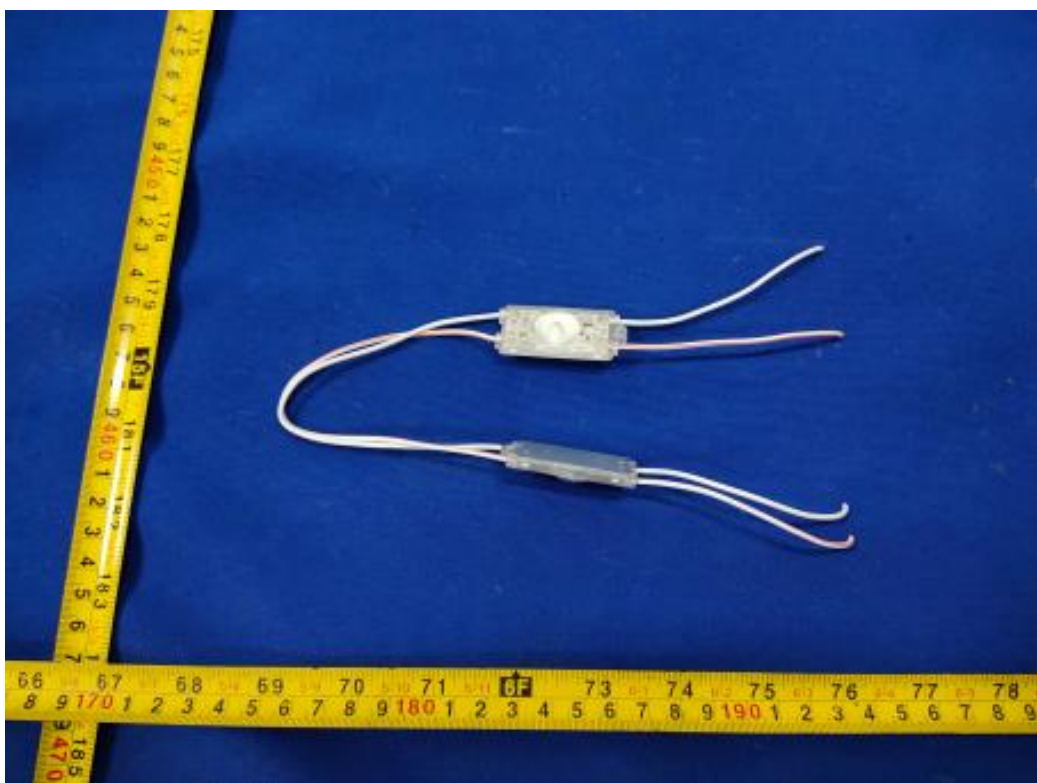


Figure.10

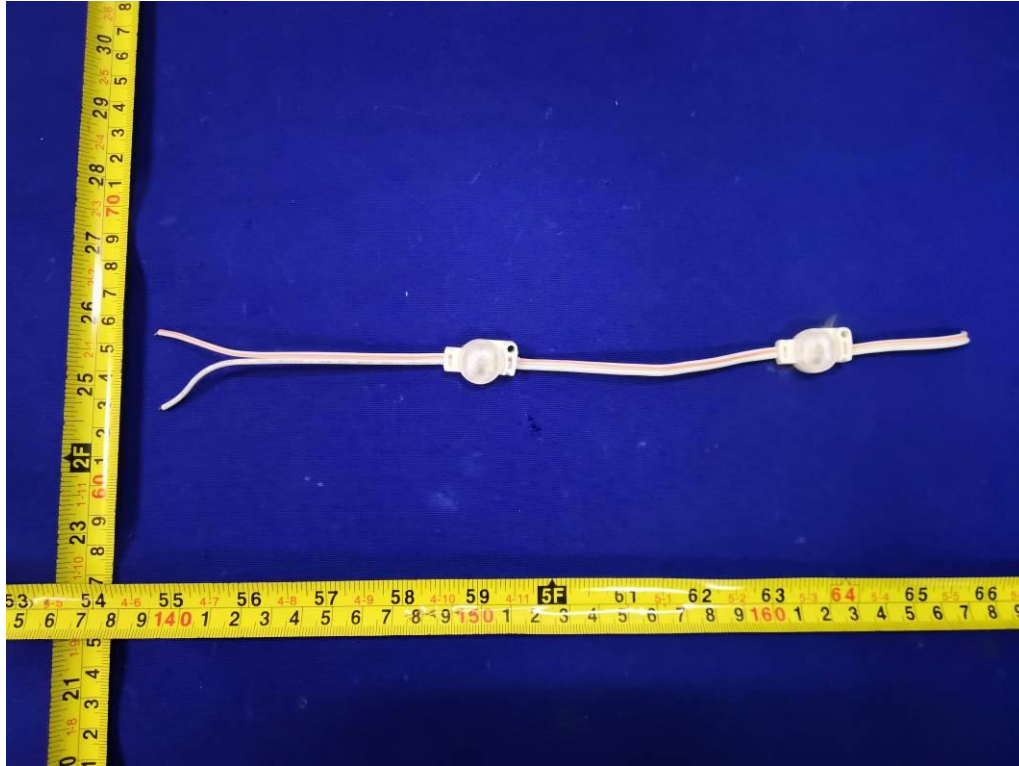


Figure.11

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