

EN 55015:2006+A1:2007+A2:2009
EN 61547:2009

EMC MEASUREMENT AND TEST REPORT

For

Epstar Optoelectronics (HK) Co., LTD

Unit A, (Rm26) 3/F, Cheong Sun Tower, 116-118 Wing Lok Street, Sheung Wan, HK

Report Concerns: Original Report	Equipment Type: Car LED Light (Auto LED Lamps)
Model No.:	<u>HSUN-BA15S 19LED SMD5050 Canbus</u>
Covered Model(s):	HSUN-T10 5LED SMD5050, HSUN-T10 5LED SMD5050 Canbus, HSUN-T10 8LED SMD1210 Canbus, HSUN-BA9S 5LED SMD5050 Canbus, HSUN-C5W 3LED SMD5050 Canbus(36MM), HSUN-C5W 6LED SMD5050 Sink Canbus(36MM), HSUN-PCB 12LED SMD5050, HSUN-9005 18LED SMD5050 T10 Series, BA9S BAX9S BAY9S Series, C5W festoon Series, BA15S/BAU15S/BAY15D/7440/7443/3156/317 Series, G4 Series, PCB Series, H1/H3/H4/H7/9004/9005/9006/9007/H8/H10/H11/H13/H16/P13W/PY24WSeries
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1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

The product that is produced by **HSUN Lighting Co., LTD.** Test model: HSUN-BA15S 19LED SMD5050 Canbus, the "EUT" as referred to in this report, is a Car LED Light (Auto LED Lamps).

Application model:

HSUN-T10 5LED SMD5050, HSUN-T10 5LED SMD5050 Canbus,
HSUN-T10 8LED SMD1210 Canbus, HSUN-BA9S 5LED SMD5050 Canbus,
HSUN-C5W 3LED SMD5050 Canbus(36MM),
HSUN-C5W 6LED SMD5050 Sink Canbus(36MM) , HSUN-BA15S 19LED SMD5050 Canbus,
HSUN-PCB 12LED SMD5050, HSUN-9005 18LED SMD5050
T10 Series, BA9S BAX9S BAY9S Series, C5W festoon Series,
BA15S/BAU15S/BAY15D/7440/7443/3156/317 Series, G4 Series, PCB Series,
H1/H3/H4/H7/9004/9005/9006/9007/H8/H10/H11/H13/H16/P13W/PY24WSeries

The photographs of EUT see the appendix.

General Description of E.U.T

Items	Description
EUT Description	Car LED Light (Auto LED Lamps)
Trade Names	HSUN, Epstar
Model No.	HSUN-BA15S 19LED SMD5050 Canbus
Rated Voltage	12VDC
Current	233mA
Power consumption	2.8W
For more information refer to the circuit diagram form and the user's manual.	

1.2 Objective

In order to meet the EMC requirements approved by CENELEC, the following standards will be cited:

EN 55015:2006+A1:2007+A2:2009 - Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment.

EN 61547:2009 - Equipment for general lighting purposes - EMC immunity requirements.

Test Model: HSUN-BA15S 19LED SMD5050 Canbus

1.3 Equipment Modifications

No modification to the EUT was made by China Ceprei (Sichuan) Laboratory to make sure the EUT comply with applicable limits.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

2 - SUMMARY OF TEST RESULTS

Test Standards	Description of Test Items	Result
EN 55015 §4.4 Emission Test Requirement	Radiated Electromagnetic Disturbances	PASS
EN 61547 §5.2 Immunity Test Requirement	Electrostatic Discharges	PASS
EN 61547 §5.3 Immunity Test Requirement	Radio Frequency Electromagnetic Fields	PASS

Test Model: HSUN-BA15S 19LED SMD5050 Canbus

3. RADIATED ELECTROMAGNETIC DISTURBANCES

3.1 Measurement Uncertainty

Base on NIS81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is $\pm 3.0\text{dB}$.

3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESi26	838786/013	2011-1-26	2012-1-25
Triple Loop Antenna	Schwarzbeck	HXYZ9170	9124	2011-1-26	2012-1-25

3.3 Test Procedure

Test is conducted under the description of EN 55015:2006+A1:2007+A2:2009, According to Clause 4.4.

Environmental Conditions

Temperature:	26°C
Relative Humidity:	55%
ATM Pressure:	1022 mbar

3.4 Test Result

Testing according to limit table 3b and the emissions below 10dB are not report.

Test Result: Pass

Please refer to the plots:

Test Model: HSUN-BA15S 19LED SMD5050 Canbus

Plot of Radiated Electromagnetic Disturbances

Radiated Electromagnetic Disturbances

EUT: Car LED Light (Auto LED Lamps)

M/N: HSUN-BA15S 19LED SMD5050 CANBUS

Test condition: ON

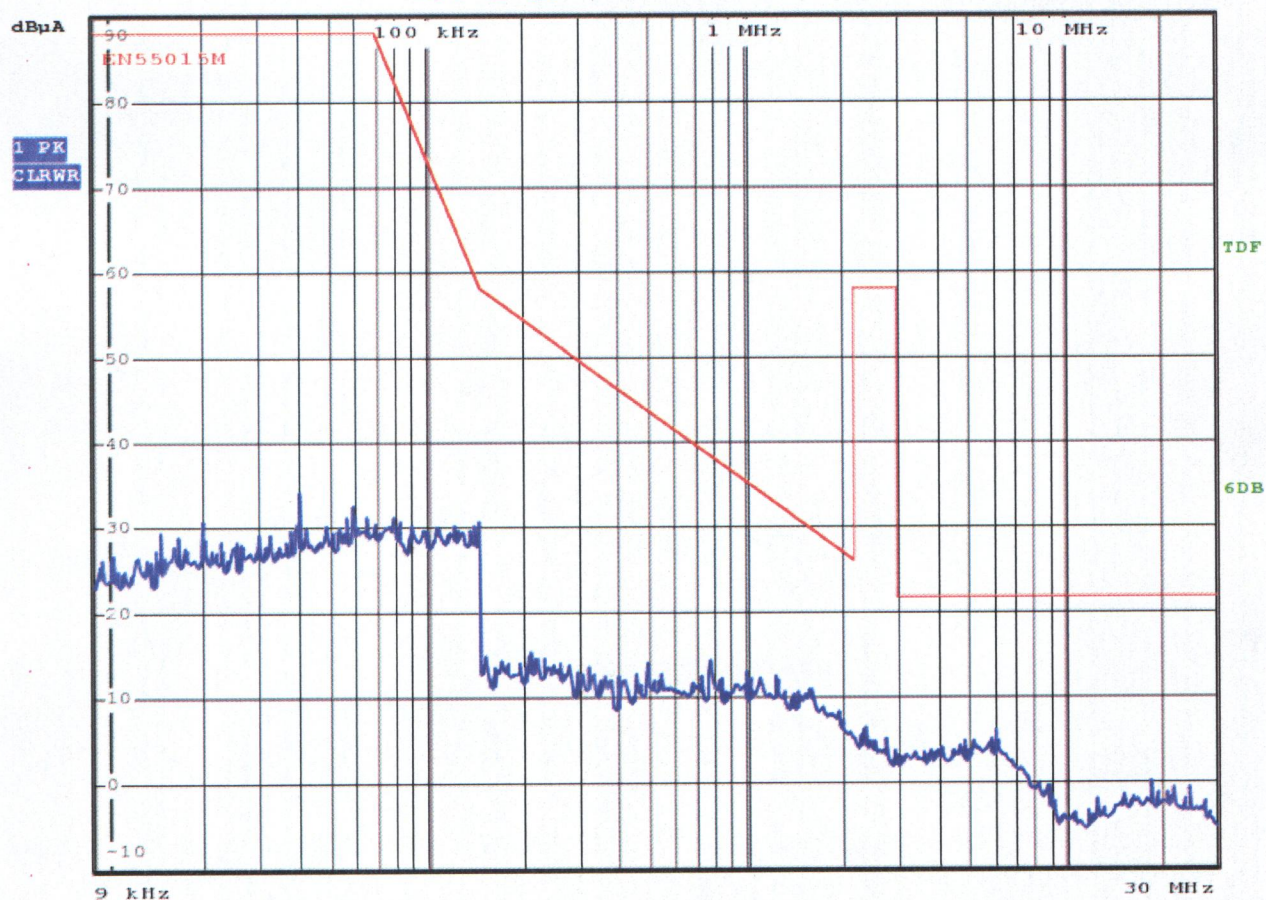
Operating Spec: X

Comment: DC12V



RBW 200 Hz
MT 50 ms

Att 50 dB



Test Model: HSUN-BA15S 19LED SMD5050 Canbus

Plot of Radiated Electromagnetic Disturbances

Radiated Electromagnetic Disturbances

EUT: Car LED Light (Auto LED Lamps)

M/N: HSUN-BA15S 19LED SMD5050 CANBUS

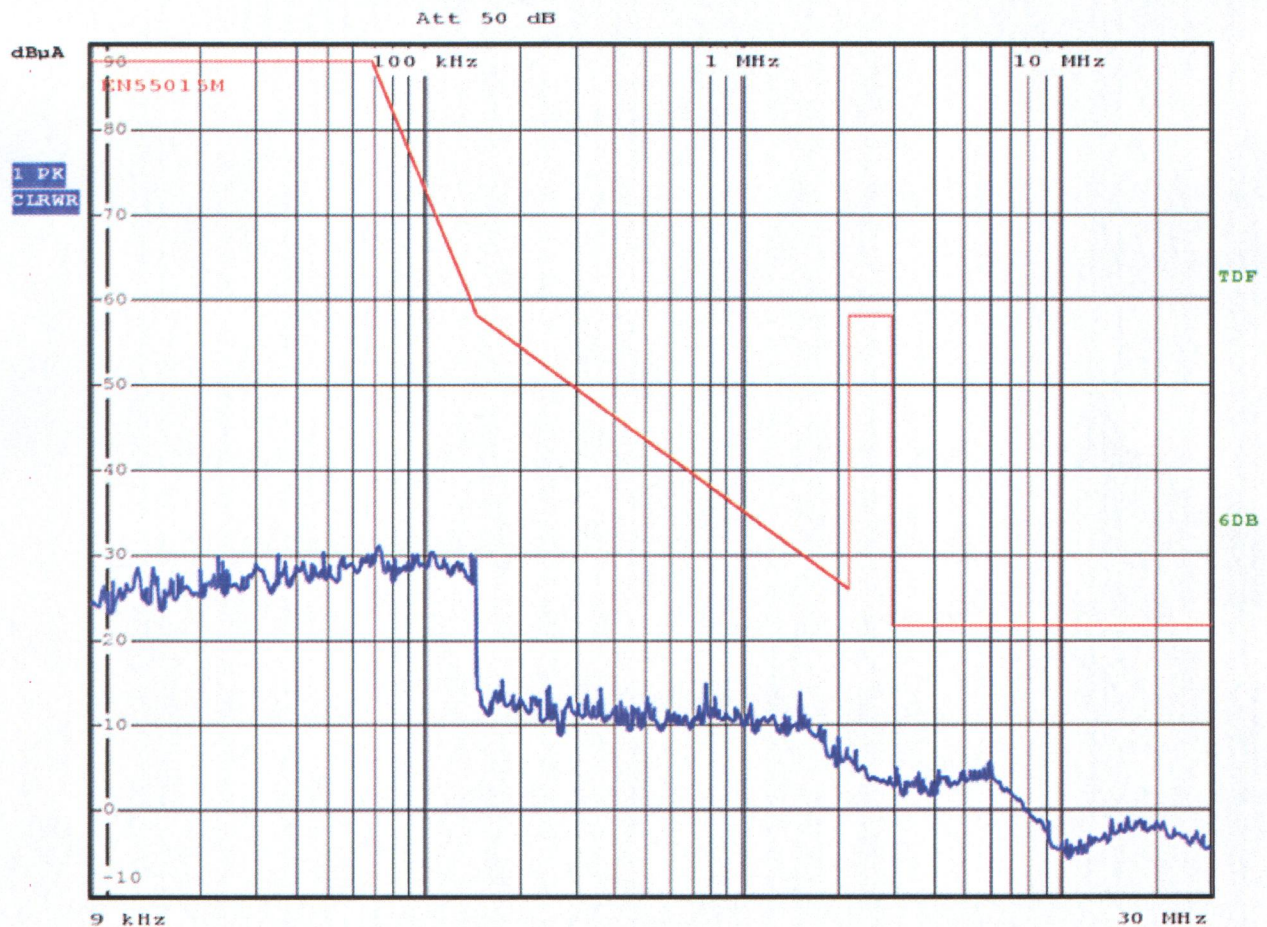
Test condition: ON

Operating Spec: Y

Comment: DC12V



RBW 200 Hz
MT 50 ms



Test Model: HSUN-BA15S 19LED SMD5050 Canbus

Plot of Radiated Electromagnetic Disturbances

Radiated Electromagnetic Disturbances

EUT: Car LED Light (Auto LED Lamps)

M/N: HSUN-BA15S 19LED SMD5050 CANBUS

Test condition: ON

Operating Spec: Z

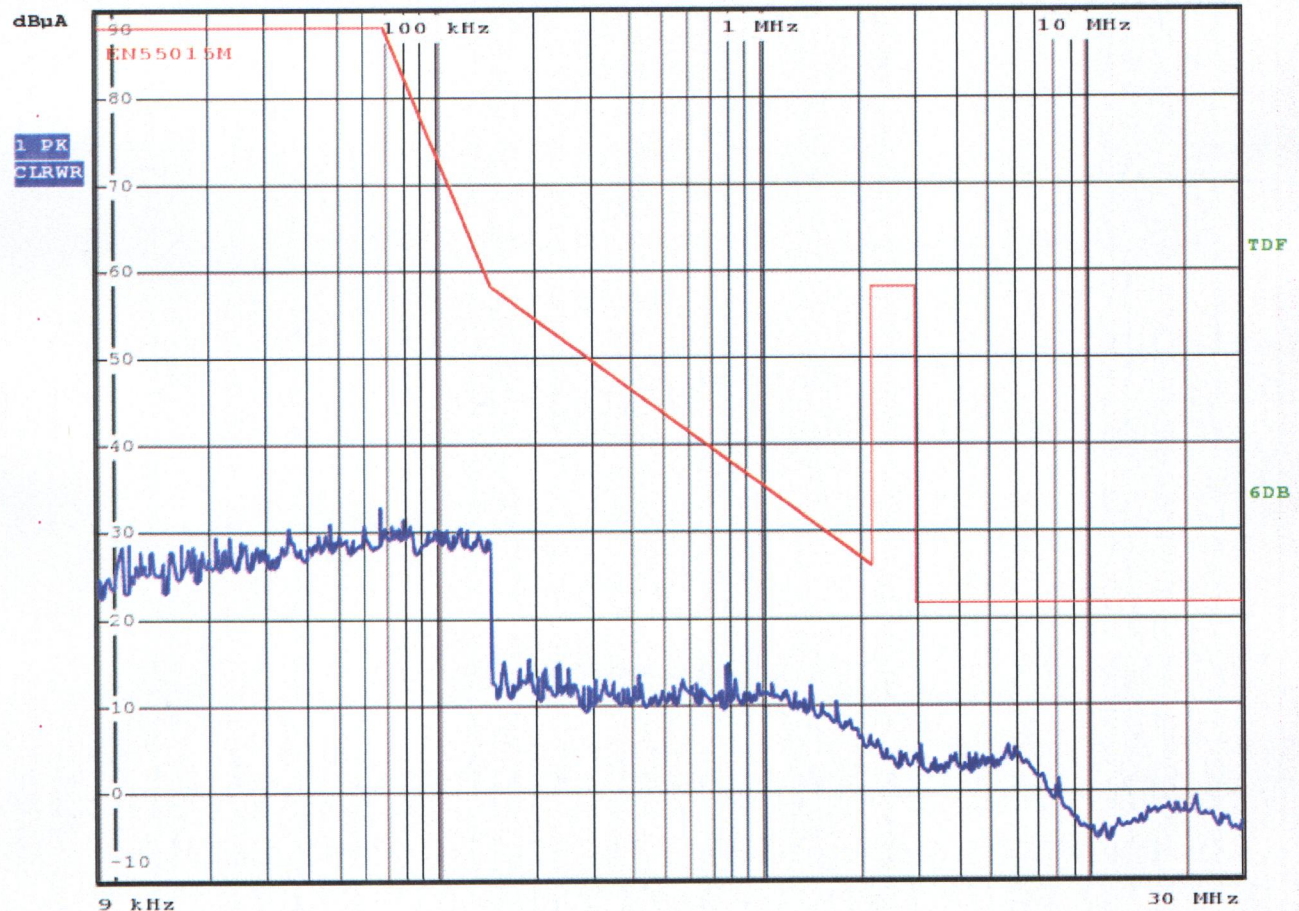
Comment: DC12V



RBW 200 Hz

MT 50 ms

Att 50 dB



Test Model: HSUN-BA15S 19LED SMD5050 Canbus

4. Electrostatic Discharge Immunity (ESD)

4.1 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
NOISEKEN	ESD GENERATOR	ESS-200AX	H467644	2011-1-26	2012-1-25

4.2 Test Procedure

Test is conducting under the description of IEC 61000-4-2.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	26°C
Relative Humidity:	60%
ATM Pressure:	1022 mbar

4.3 EN61000-4-2: Electrostatic Discharge Immunity test Data

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
N/A	/	/	/	/	/	/	/	/		

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Metal parts	A	A	B	B						

Test Model: HSUN-BA15S 19LED SMD5050 Canbus

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

EN61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

EN61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Test Result: Pass

5. RADIO FREQUENCY ELECTROMAGNETIC FIELDS

5.1 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Signal Generator	Rohde & Schwarz	SMT03	100059	2011-1-26	2012-1-25
Voltage Probe	Rohde & Schwarz	URV5-Z2	100013	2011-1-26	2012-1-25
Power Amplifier	AR	150W1000	300999	2011-1-26	2012-1-25
Power Amplifier	AR	25S1G4AM1	305993	2011-1-26	2012-1-25
Bilog Antenna	Chase	CBL6111C	2576	2011-1-26	2012-1-25
Anechoic Chamber	Albatross Projects	MCDC	----	2011-1-26	2012-1-25

5.2 Test Procedure

Test is conducting under the description of IEC 61000-4-3.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	26°C
Relative Humidity:	60%
ATM Pressure:	1022 mbar

5.3 EN61000-4-3: Continuous Radiated Disturbances Test Data

Frequency Range (MHz)	Front (3 V/m)		Rear (3 V/m)		Left Side (3 V/m)		Right Side (3 V/m)	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	A	A	A	A	A	A	A	A

Test Result: Pass

APPENDIX A – EUT PHOTOGRAPHS



HSUN-BA15S 19LED SMD5050 canbus

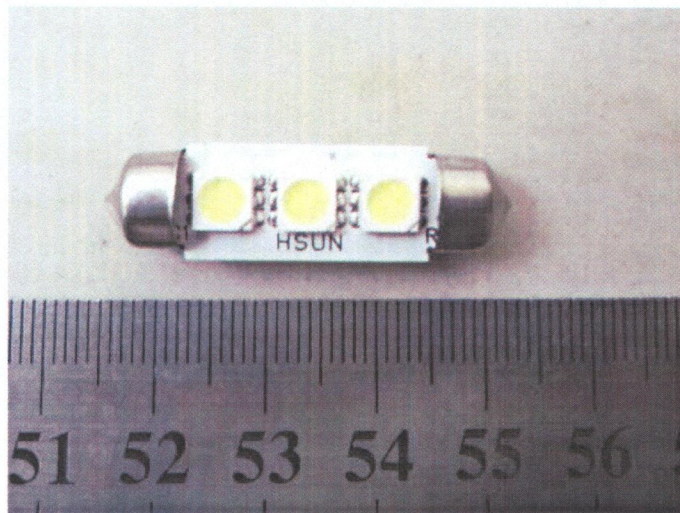


HSUN-9005 18LED SMD5050

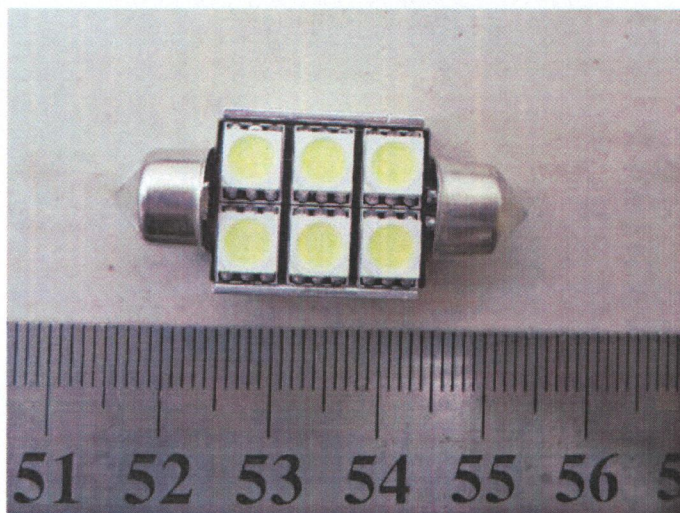


HSUN-BA9S 5LED SMD5050 canbus

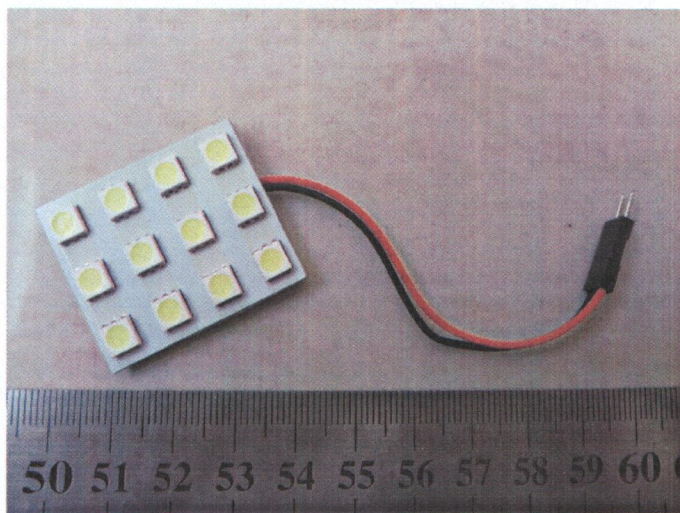
APPENDIX A – EUT PHOTOGRAPHS



HSUN-C5W 3LED SMD5050 canbus(36MM)

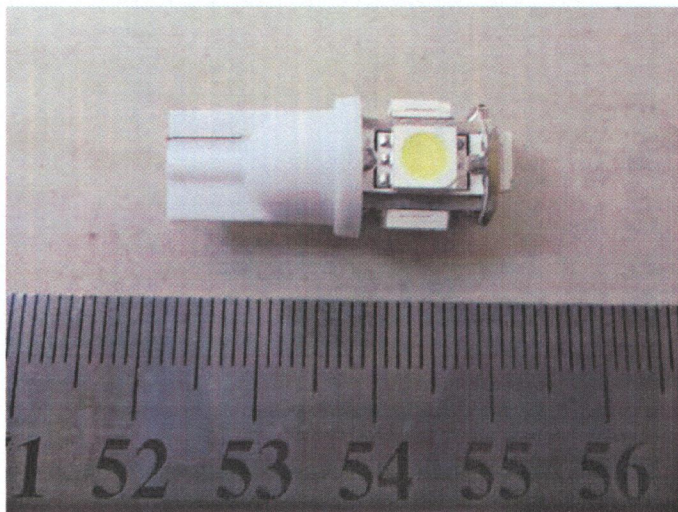


HSUN-C5W 6LED SMD5050 Sink canbus(36MM)

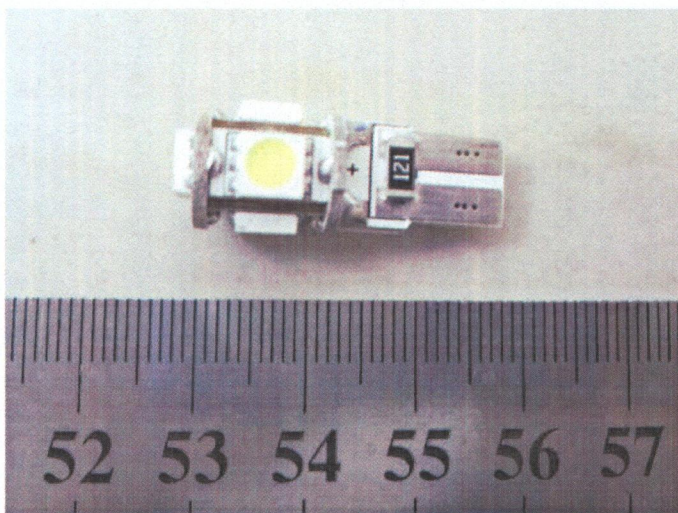


HSUN-PCB 12LED SMD5050

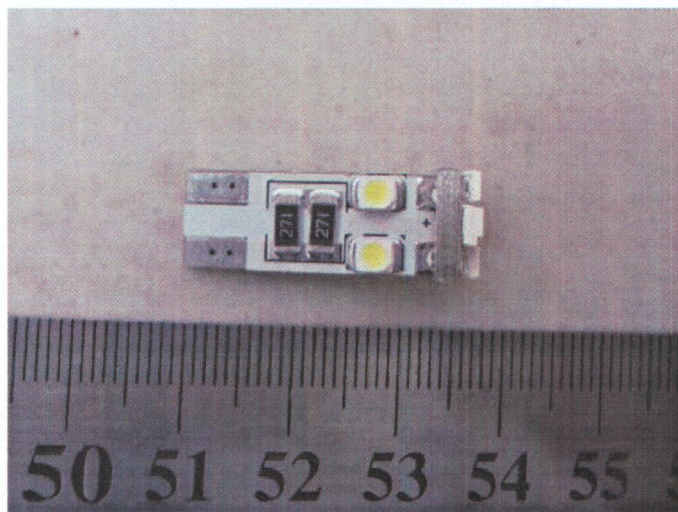
APPENDIX A – EUT PHOTOGRAPHS



HSUN-T10 5LED SMD5050



HSUN-T10 5LED SMD5050 Canbus



HSUN-T10 8LED SMD1210 canbus