CE EMC Test Report

(Declaration of Conformity)

For

Electromagnetic Interference

Of

Product: LED sensor & Emergency ceiling light

Trade Name: LOKOLED

Model Number: Safeway-LL-04-12W4K-ES, Safeway-LL-04-8W65K-E, Safeway-LL-04-12W4K-E

Prepared for

LOKOLED

Kitmanstraat 14, 1812 PM Alkmaar, The Netherlands

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.

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TEST RESULT CERTIFICATION

Applicant's name	:	LOKOLED
Address	:	Kitmanstraat 14, 1812 PM Alkmaar, The Netherlands
Manufacturer's Name	:	LOKOLED
Address	:	1304 Block 26A, Ya Ju Le Garden, DaLiang District, FoShan City, GuangDong Province China
Product description		
Product name	:	LED sensor & Emergency ceiling light
Model and/or type reference	:	Safeway-LL-04-12W4K-ES, Safeway-LL-04-8W65K-E, Safeway-LL-04-12W4K-E
Standards	:	EN 55015:2013+A1:2015 EN 61547:2009 EN 61000-3-2:2014 EN 61000-3-3:2013

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Date of Test	:	
Date (s) of performance of tests	:	15 Oct. 2014 ~25 Jul. 2016
Date of Issue	:	25 Jul. 2016
Test Result	:	**Pass**

Note: All test data of this report are based on the original test report 2014NT1015588E, dated by 2014-10-15.

Testing Engineer : Korha.Lin
(Korha Lin)

Technical Manager : Jane Lv
(Jane Lv)

Authorized Signatory : Sam.Chen
(Sam Chen)

APPROVED

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1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
EN 55015:2013+A1:2015	Conducted Emission	------	PASS	
	Radiated Emission	------	PASS	
EN 61000-3-2:2014	Harmonic Current Emission	Class C	PASS	
EN 61000-3-3:2013	Voltage Fluctuations & Flicker	------	PASS	
EMC Immunity				
Section EN 61547:2009	Test Item	Performance Criteria	Judgment	Remark
EN 61000-4-2	Electrostatic Discharge	B	PASS	
EN 61000-4-3	RF electromagnetic field	A	PASS	
EN 61000-4-4	Fast transients	B	PASS	
EN 61000-4-5	Surges	B **NOTE(4)**	PASS	
EN 61000-4-6	Injected Current	A	PASS	
EN 61000-4-8	Power Frequency Magnetic Field	A	PASS	
EN 61000-4-11	Volt. Interruptions Volt. Dips	B / C **NOTE (2)**	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

(2) Voltage dip: 100% reduction – Performance Criteria **B**

Voltage dip: 30% reduction – Performance Criteria **C**

(3) For client's request and manual description, the test will not be executed.

(4) The test sample has the function of emergency.

1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd.
Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.
FCC Registration Number: 238937; IC Registration Number: 9270A-1
CNAS Registration Number: L5516

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
NTEKC01	ANSI	9 KHz ~ 30MHz	3.6	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
NTEKA01	ANSI	30MHz ~ 1000MHz	4.8	
		1GHz ~6GHz	4.5	

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	LED sensor & Emergency ceiling light
Model Name.	Safeway-LL-04-12W4K-ES
Additional Model Number(s)	Safeway-LL-04-8W65K-E, Safeway-LL-04-12W4K-E
Model Difference	E represents with emergency function, ES represents emergency function with induction.
Product Description	The EUT is a LED sensor & Emergency ceiling light. Operating frequency: N/A Connecting I/O port: N/A Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as a Lighting Device. More details of EUT technical specifications, please refer to the User's Manual.
Power Source	AC Voltage
Power Rating	Input: AC 100-240V, 50/60Hz Output: DC 36V, 480mA, 20W

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Lighting & Charging
Mode 2	Emergency

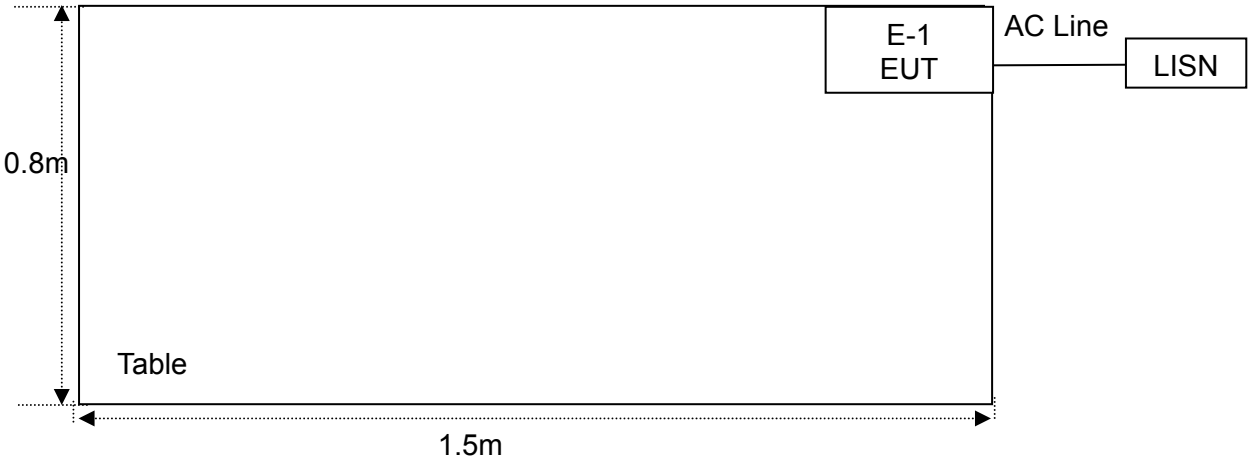
For Conducted Test	
Final Test Mode	Description
Mode 1	Lighting & Charging

For Radiated Test	
Final Test Mode	Description
Mode 1	Lighting & Charging
Mode 2	Emergency

For EMS Test	
Final Test Mode	Description
Mode 1	Lighting & Charging
Mode 2	Emergency

2.3 DESCRIPTION OF TEST SETUP

Mode CE: Lighting & Charging



2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	LED sensor & Emergency ceiling light	LOKOLED	Safeway-LL-04-12 W4K-ES	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” means “shielded” “with core”; “NO” means “unshielded” “without core”.

2.5 MEASUREMENT INSTRUMENTS LIST

2.5.1 CONDUCTED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	LISN	R&S	ENV216	101313	Jul. 06, 2014	Jul. 06, 2015	1 year
2	LISN	R&S	ENV216	111315	Jul. 06, 2014	Jul. 06, 2015	1 year
3	50Ω Switch	ANRITSU CORP	MP59B	6200983704	Jun. 16, 2014	Jun. 15, 2015	1 year
4	Test Cable	N/A	C01	N/A	Jun. 16, 2014	Jun. 15, 2015	1 year
5	Test Cable	N/A	C02	N/A	Jun. 16, 2014	Jun. 15, 2015	1 year
6	Test Cable	N/A	C03	N/A	Jun. 16, 2014	Jun. 15, 2015	1 year
7	EMI Test Receiver	R&S	ESCI	101160	Jun. 16, 2014	Jun. 15, 2015	1 year
8	Triple-Loop Antenna	EVERFINE	LIA-2	11020003	Jun. 18, 2014	Jun. 17, 2015	1 year
9	Absorbing Clamp	R&S	MDS-21	100423	Jun. 16, 2014	Jun. 15, 2015	1 year

2.5.2 RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Bilog Antenna	TESEQ	CBL6111D	31216	Jun. 16, 2014	Jun. 15, 2015	1 year
2	Test Cable	N/A	R-01	N/A	Jun. 16, 2014	Jun. 15, 2015	1 year
3	Test Cable	N/A	R-02	N/A	Jun. 16, 2014	Jun. 15, 2015	1 year
4	EMI Test Receiver	R&S	ESCI-7	101318	Jun. 16, 2014	Jun. 15, 2015	1 year
5	Antenna Mast	EM	SC100_1	N/A	N/A	N/A	N/A
6	Turn Table	EM	SC100	060531	N/A	N/A	N/A
7	50Ω Switch	Anritsu Corp	MP59B	6200983705	Jun. 16, 2014	Jun. 15, 2015	1 year
8	Spectrum Analyzer	Aglient	E4407B	MY45108040	Jun. 16, 2014	Jun. 15, 2015	1 year
9	Horn Antenna	EM	EM-AH-10180	2011071402	Jun. 16, 2014	Jun. 15, 2015	1 year
10	BBV9718 Broadband Preamplifier 0.15-18GHz	SCHWARZBECK	9718-218	N/A	Oct. 30, 2014	Oct. 29, 2015	1 year

2.5.3 HARMONICS AND FILCK

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Harmonic & Flicker	EM TEST	DPA500	0303-04	Jun. 18, 2014	Jun. 17, 2015	1 year
2	AC Power Source	EM TEST	ACS500	0203-01	Jun. 18, 2014	Jun. 17, 2015	1 year

2.5.4 ESD

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	ESD TEST GENERATOR	SCHAFFNER	NSG438	859	Jun. 16, 2014	Jun. 15, 2015	1 year

2.5.5 RS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Signal Generator	R&S	SMT 06	832080/007	Jul. 24, 2014	Jul. 23, 2015	1 year
2	Log-Bicon Antenna	Schwarzbeck	VULB9161	4022	Aug. 15, 2014	Aug. 14, 2015	1 year
3	Power Amplifier	AR	150W1000M1	320946	Sep. 21, 2014	Sep. 20, 2015	1 year
4	Microwave Horn Antenna	AR	AT4002A	321467	Jun. 11, 2014	Jun. 10, 2015	1 year
5	Power Amplifier	AR	25S1G4A	308598	Sep. 21, 2014	Sep. 20, 2015	1 year

2.5.6 SURGE, EFT/BURST, VOLTAGE INTERRUPTION/DIPS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Surge Generator	EVERFINE	EMS61000-5A	1101002	Jun. 16, 2014	Jun. 15, 2015	1 year
2	DIPS Generator	EVERFINE	EMS61000-11K	1011002	Jun. 16, 2014	Jun. 15, 2015	1 year
3	EFT/B Generator	EVERFINE	EMS61000-4A-V2	1012005	Jun. 16, 2014	Jun. 15, 2015	1 year

2.5.7 INJECTION CURRENT

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Power Amplifier 80W 150KHz-230 MHz	TESEQ	2023A	CBA 230M-080	Oct. 30, 2014	Oct. 29, 2015	1 year
2	Couppling and Decoupling Network	TESEQ	75A250AM1	CDN M016S	Oct. 30, 2014	Oct. 29, 2015	1 year
3	Attenuator	TESEQ	FCC-801-M2	ATN 6075	Oct. 30, 2014	Oct. 29, 2015	1 year
4	RF Cable	TESEQ	F-203I-23MM	RF Cable	Oct. 30, 2014	Oct. 29, 2015	1 year

2.5.8 MF

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Generator	EVERFINE	EMS61000-8K	1007001	Jun. 16, 2014	Jun. 15, 2015	1 year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 9KHz-30MHz)

FREQUENCY (MHz)	Limits(dBμV)	
	Quasi-peak	Average
0.009-0.05	110	/
0.05-0.15	90 - 80 *	/
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

3.1.2 LOAD TERMINAL CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Limits(dBμV)	
	Quasi-peak	Average
0.15 -0.5	80	70
0.50 -30.0	74	64

Note:

(1) The tighter limit applies at the band edges.

(2) Based on our laboratory conditions, this test is not performed.

3.1.3 CONTROL TERMINAL CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Limits(dBμV)	
	Quasi-peak	Average
0.15 -0.5	84 - 74*	74 - 64*
0.50 -30.0	74	64

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

(3) Based on our laboratory conditions, this test is not performed.

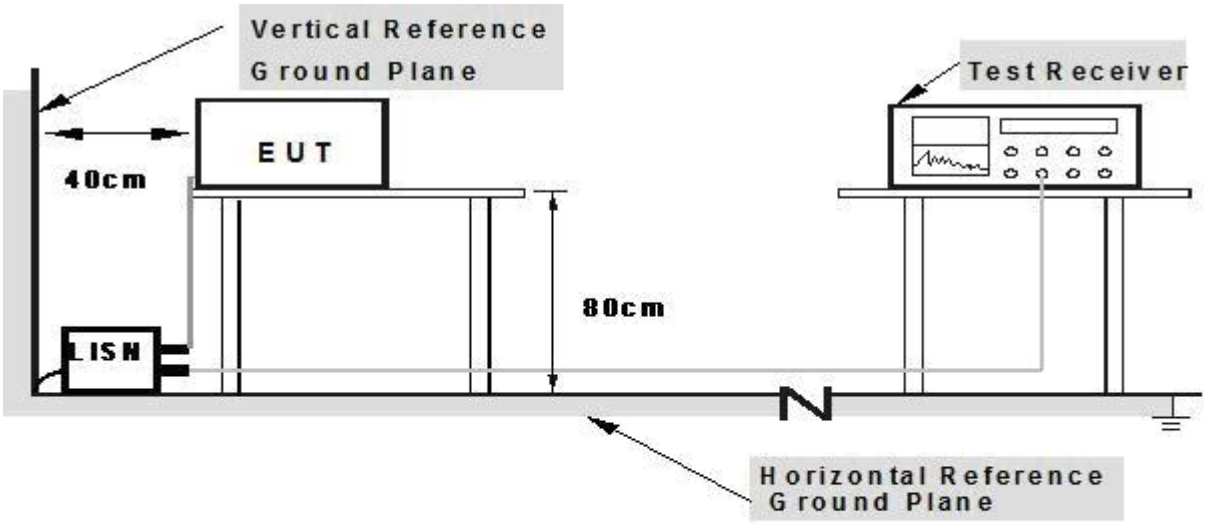
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.009 MHz
Stop Frequency	30 MHz
IF Bandwidth	200Hz and 9 KHz

3.1.4 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.6 EUT OPERATING CONDITIONS

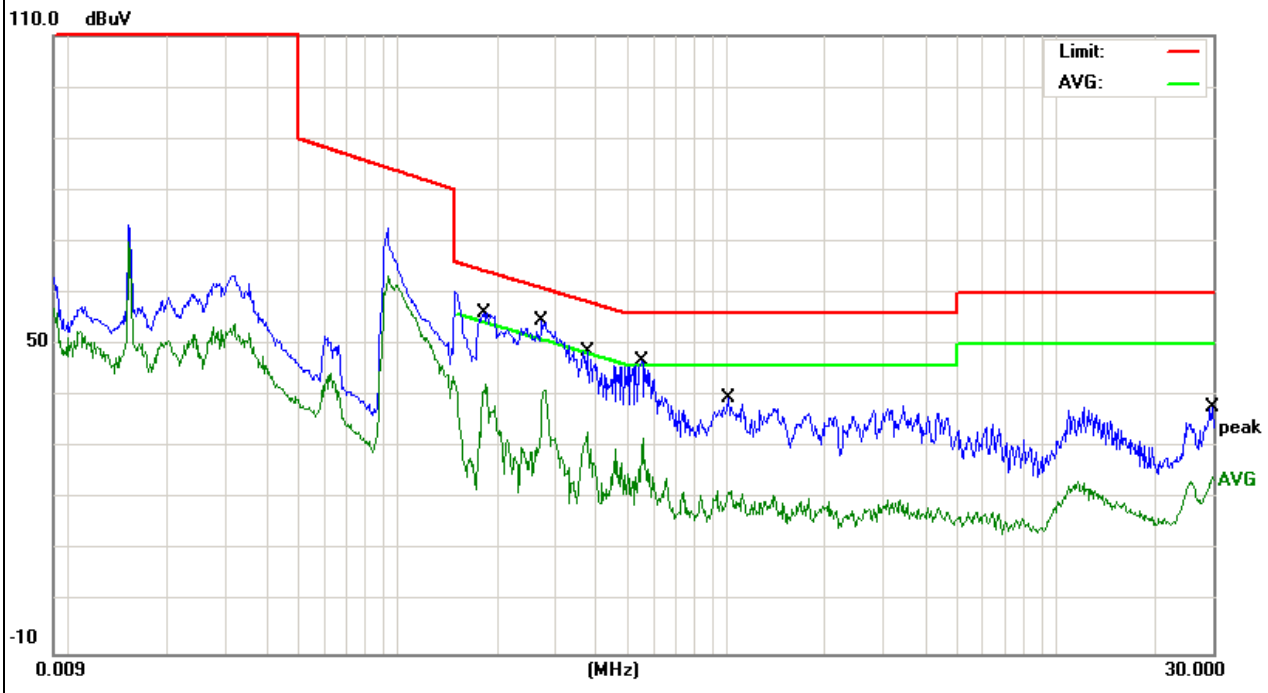
The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

3.1.7 TEST RESULTS

EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Lighting & Charging	Phase :	L
Test Voltage:	AC 230V/50Hz		

Freq. (MHz)	Reading (dBμV)	Factor (dB)	Measurement (dBμV)	Limit (dBμV)	Over (dB)	Detector
0.1824	46.52	9.54	56.06	64.37	-8.31	QP
0.1824	32.84	9.54	42.38	54.37	-11.99	AVG
0.2740	45.03	9.49	54.52	60.99	-6.47	QP
0.2740	31.68	9.49	41.17	50.99	-9.82	AVG
0.3780	39.17	9.50	48.67	58.32	-9.65	QP
0.3780	23.51	9.50	33.01	48.32	-15.31	AVG
0.5500	37.43	9.51	46.94	56.00	-9.06	QP
0.5580	22.44	9.51	31.95	46.00	-14.05	AVG
1.0180	30.11	9.53	39.64	56.00	-16.36	QP
1.0180	12.14	9.53	21.67	46.00	-24.33	AVG
29.8460	27.93	10.07	38.00	60.00	-22.00	QP
29.8460	14.15	10.07	24.22	50.00	-25.78	AVG

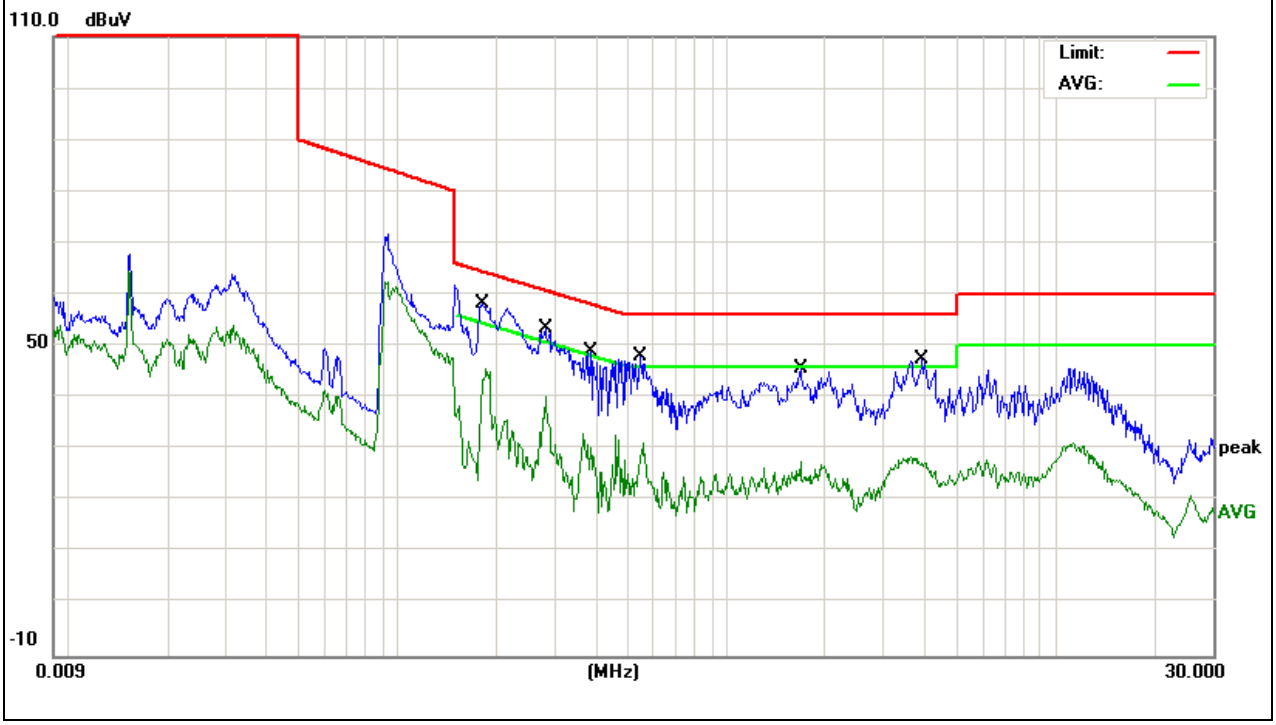
Remark:
Factor = Insertion Loss + Cable Loss.



EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Lighting & Charging	Phase :	N
Test Voltage:	AC 230V/50Hz		

Freq. (MHz)	Reading (dBμV)	Factor (dB)	Measurement (dBμV)	Limit (dBμV)	Over (dB)	Detector
0.1819	48.57	9.56	58.13	64.39	-6.26	QP
0.1819	36.10	9.56	45.66	54.39	-8.73	AVG
0.2818	44.00	9.51	53.51	60.76	-7.25	QP
0.2818	30.82	9.51	40.33	50.76	-10.43	AVG
0.3860	39.55	9.52	49.07	58.15	-9.08	QP
0.3860	23.62	9.52	33.14	48.15	-15.01	AVG
0.5460	38.56	9.53	48.09	56.00	-7.91	QP
0.5460	21.63	9.53	31.16	46.00	-14.84	AVG
1.6778	35.96	9.56	45.52	56.00	-10.48	QP
1.6778	18.10	9.56	27.66	46.00	-18.34	AVG
3.9260	37.87	9.59	47.46	56.00	-8.54	QP
3.9260	18.94	9.59	28.53	46.00	-17.47	AVG

Remark:
Factor = Insertion Loss + Cable Loss.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

FREQUENCY (MHz)	☒ 2m	☐ 3m	☐ 4m
	dB(μA)	dB(μA)	dB(μA)
9KHz~ 70KHz	88	81	75
70KHz ~ 150KHz	88 to 58	81 to 51	75 to 45
150KHz ~ 3MHz	58 to 22	51 to 15	45 to 9
3MHz ~ 30MHz	22	15 to 16	9 to 12

FREQUENCY (MHz)	☐At 10m	☒At 3m
	dBμV/m	dBμV/m
30 – 230	30	40
230 – 300	37	47

Notes:

(1) The limit for radiated test was performed according to as following: CISPR 15.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBμV/m)=20log Emission level (uV/m).

3.2.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

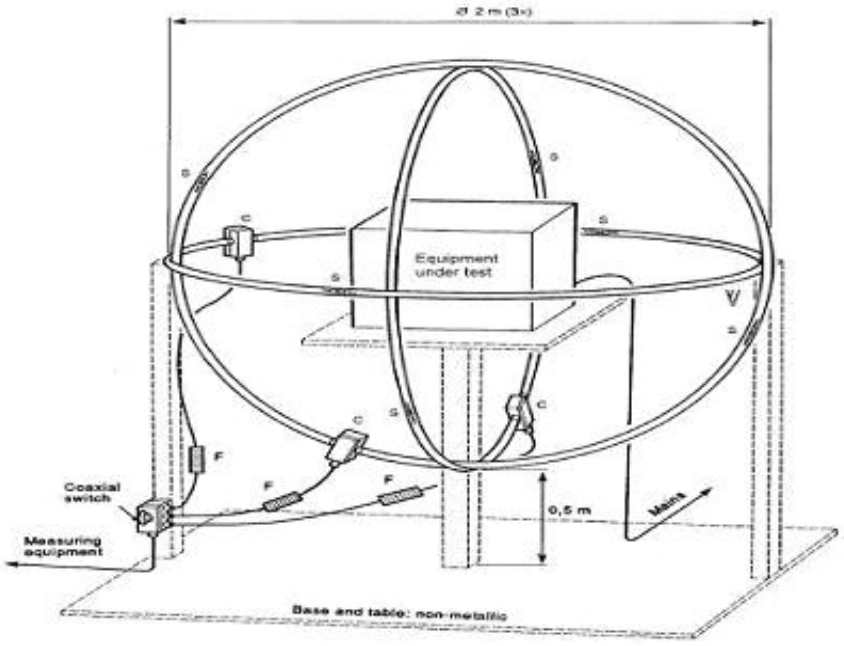
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.

e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.

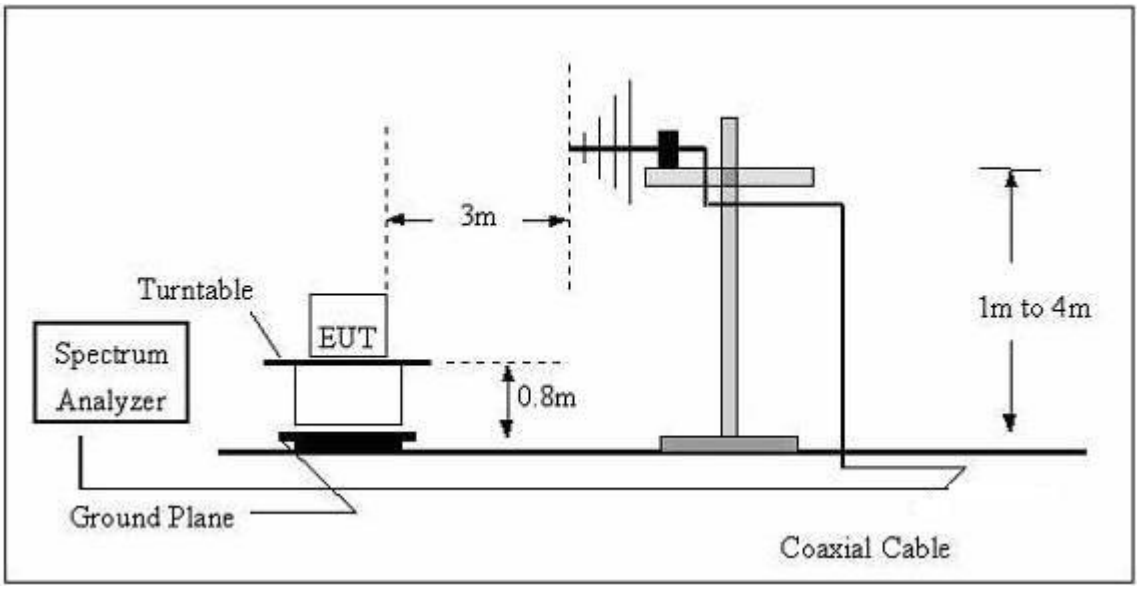
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 30 MHz



(B) Radiated Emission Test Set-Up Frequency Above 30 MHz



3.2.4 EUT OPERATING CONDITIONS

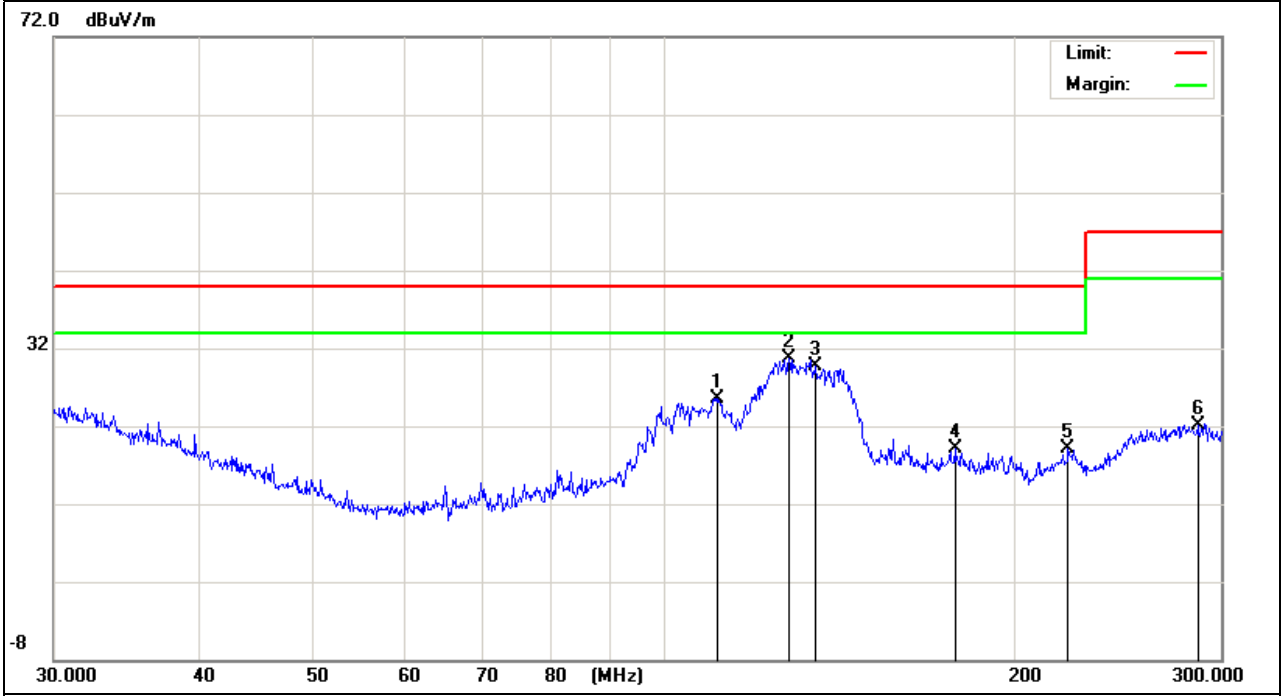
The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.5 TEST RESULTS(30MHz-300MHz)

EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	24℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Lighting & Charging	Polarization :	Horizontal
Test Voltage:	AC 230V/50Hz		

Freq. (MHz)	Reading (dBμV/m)	Factor (dB)	Measurement (dBμV/m)	Limit (dBμV/m)	Over (dB)	Detector
111.2042	13.86	11.71	25.57	40.00	-14.43	QP
127.9739	18.48	12.20	30.68	40.00	-9.32	QP
134.9340	17.52	12.25	29.77	40.00	-10.23	QP
177.4685	9.01	10.08	19.09	40.00	-20.91	QP
221.8814	8.59	10.50	19.09	40.00	-20.91	QP
286.4977	7.93	14.23	22.16	47.00	-24.84	QP

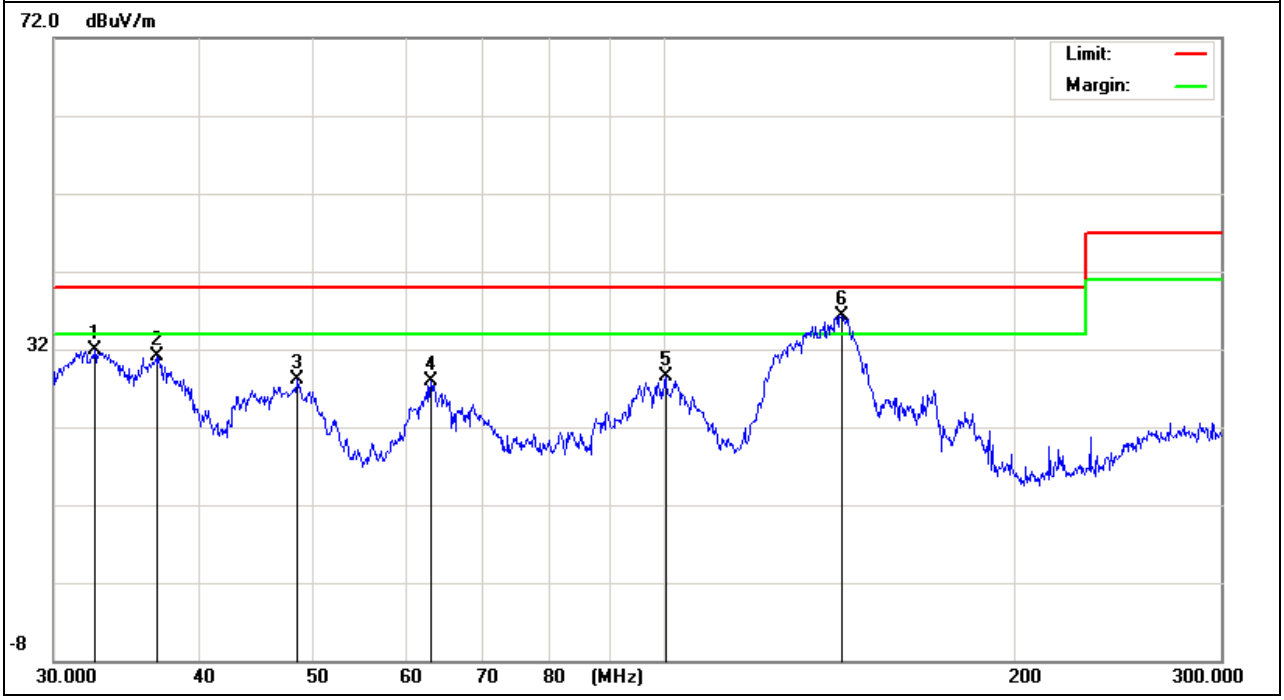
Remark:
Factor = Antenna Factor + Cable Loss.



EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	24℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Lighting & Charging	Polarization :	Vertical
Test Voltage:	AC 230V/50Hz		

Freq. (MHz)	Reading (dBμV/m)	Factor (dB)	Measurement (dBμV/m)	Limit (dBμV/m)	Over (dB)	Detector
32.5178	14.67	17.17	31.84	40.00	-8.16	QP
36.7385	16.00	15.01	31.01	40.00	-8.99	QP
48.5424	19.11	8.92	28.03	40.00	-11.97	QP
63.1134	22.43	5.38	27.81	40.00	-12.19	QP
100.2585	17.82	10.71	28.53	40.00	-11.47	QP
141.9454	24.24	12.11	36.35	40.00	-3.65	QP

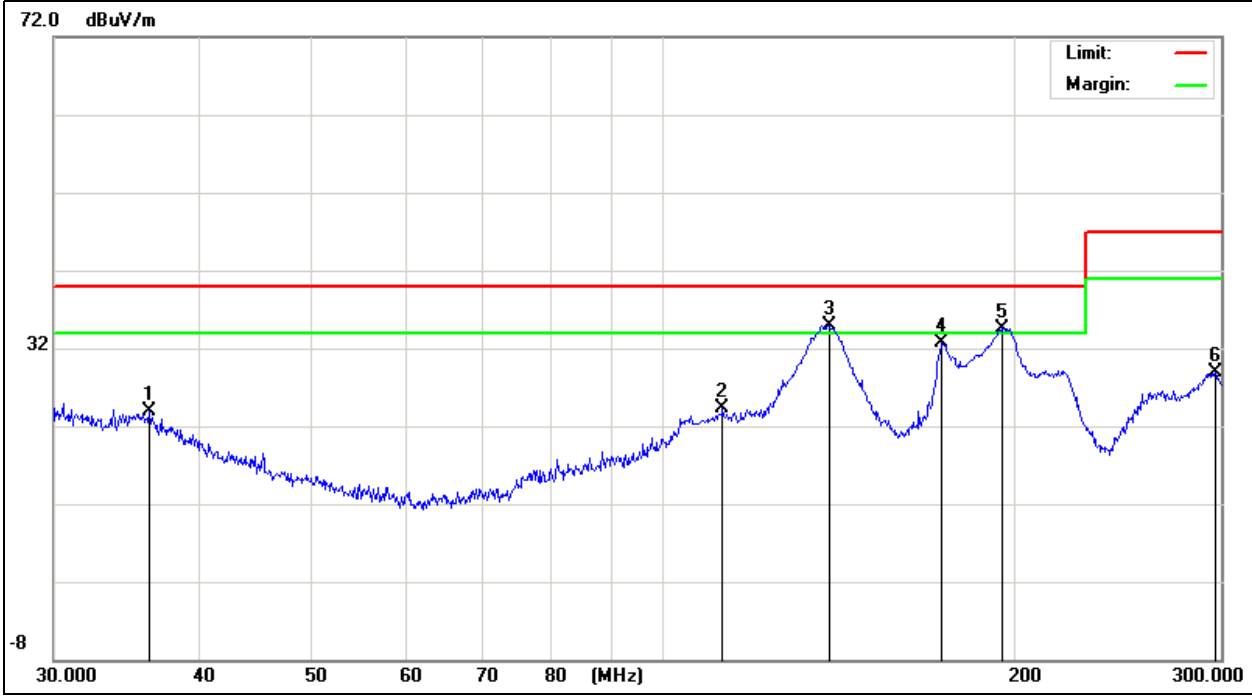
Remark:
Factor = Antenna Factor + Cable Loss.



EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	24℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Emergency	Polarization :	Horizontal
Test Voltage:	DC 9.6V by Battery		

Freq. (MHz)	Reading (dBμV/m)	Factor (dB)	Measurement (dBμV/m)	Limit (dBμV/m)	Over (dB)	Detector
36.2344	8.56	15.25	23.81	40.00	-16.19	QP
112.2330	12.50	11.77	24.27	40.00	-15.73	QP
138.3953	22.72	12.19	34.91	40.00	-5.09	QP
173.0299	22.45	10.21	32.66	40.00	-7.34	QP
195.0389	25.64	8.96	34.60	40.00	-5.40	QP
296.5658	14.20	14.69	28.89	47.00	-18.11	QP

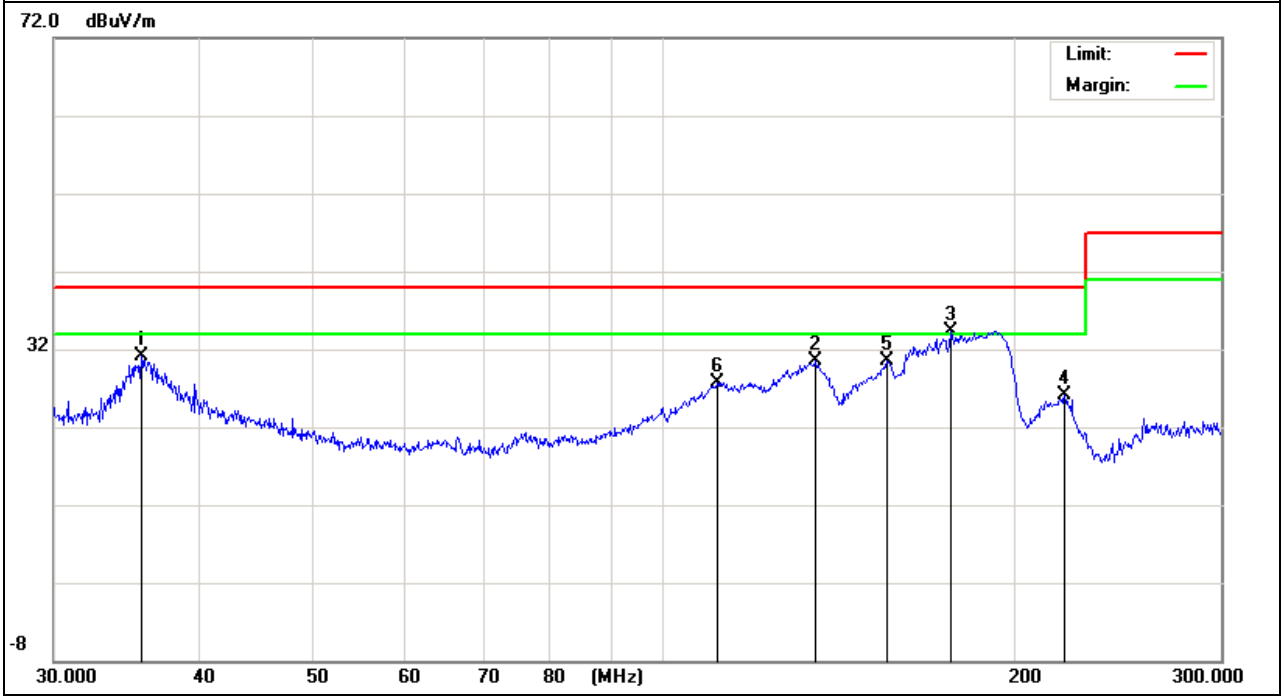
Remark:
Factor = Antenna Factor + Cable Loss.



EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	24℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Emergency	Polarization :	Vertical
Test Voltage:	DC 9.6V by Battery		

Freq. (MHz)	Reading (dBμV/m)	Factor (dB)	Measurement (dBμV/m)	Limit (dBμV/m)	Over (dB)	Detector
35.6550	15.47	15.54	31.01	40.00	-8.99	QP
134.9336	18.21	12.25	30.46	40.00	-9.54	QP
176.2468	24.31	10.08	34.39	40.00	-5.61	QP
220.3540	15.70	10.38	26.08	40.00	-13.92	QP
155.2820	18.99	11.44	30.43	40.00	-9.57	QP
111.2042	16.06	11.71	27.77	40.00	-12.23	QP

Remark:
Factor = Antenna Factor + Cable Loss.

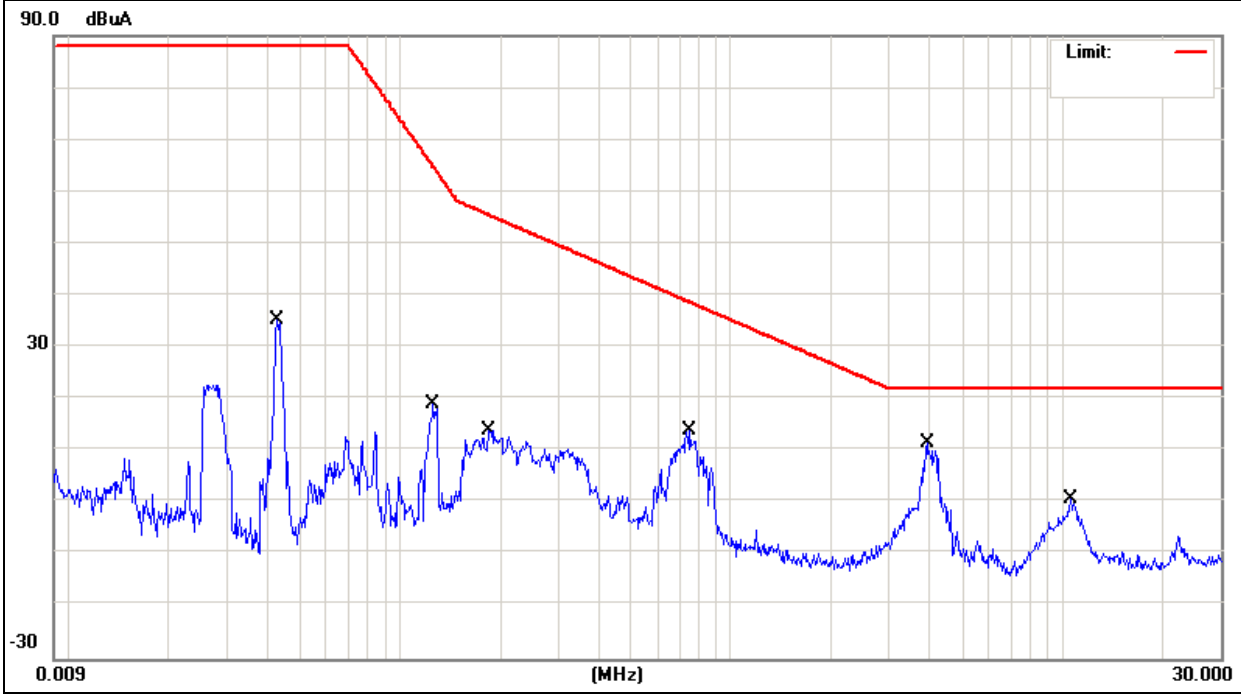


3.2.6 TEST RESULTS(0.009~30MHz)

EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	24℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Lighting & Charging	Polarization :	X
Test Voltage:	AC 230V/50Hz		

Freq. (MHz)	Reading (dBμA)	Factor (dB)	Measurement (dBμA)	Limit (dBμA)	Over (dB)	Detector
0.0424	5.12	30.19	35.31	88.00	-52.69	QP
0.1265	-7.92	27.02	19.10	64.69	-45.59	QP
0.1839	-12.47	26.39	13.92	55.54	-41.62	QP
0.7539	-9.61	23.51	13.90	38.59	-24.69	QP
3.8900	-1.66	13.23	11.57	22.00	-10.43	QP
10.5777	-16.31	17.05	0.74	22.00	-21.26	QP

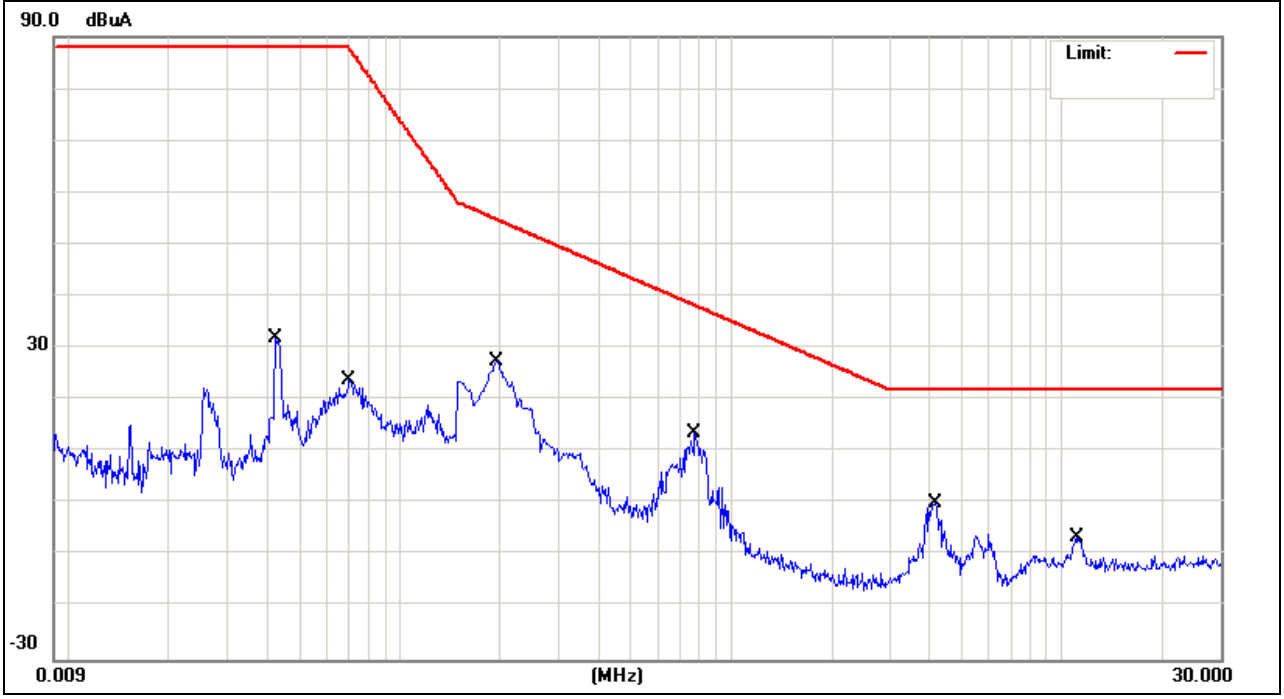
Remark:
Factor = Antenna Factor + Cable Loss - Amplifier.



EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	24℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Lighting & Charging	Polarization :	Y
Test Voltage:	AC 230V/50Hz		

Freq. (MHz)	Reading (dBμA)	Factor (dB)	Measurement (dBμA)	Limit (dBμA)	Over (dB)	Detector
0.0422	1.63	30.20	31.83	88.00	-56.17	QP
0.0703	-5.04	28.91	23.87	87.83	-63.96	QP
0.1947	1.12	26.27	27.39	54.86	-27.47	QP
0.7780	-9.78	23.35	13.57	38.22	-24.65	QP
4.1219	-12.95	13.03	0.08	22.00	-21.92	QP
11.0180	-23.58	17.03	-6.55	22.00	-28.55	QP

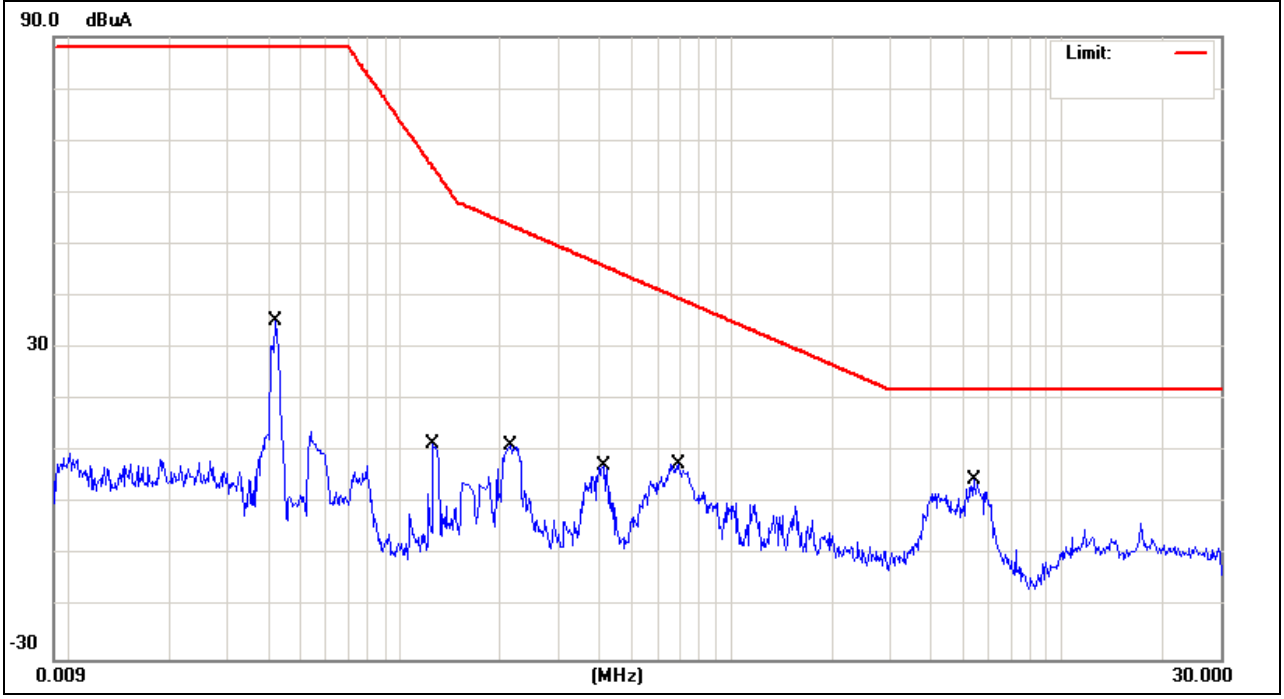
Remark:
Factor = Antenna Factor + Cable Loss - Amplifier.



EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	24℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Lighting & Charging	Polarization :	Z
Test Voltage:	AC 230V/50Hz		

Freq. (MHz)	Reading (dBμA)	Factor (dB)	Measurement (dBμA)	Limit (dBμA)	Over (dB)	Detector
0.0422	14.15	21.25	35.40	88.00	-52.60	QP
0.1265	-12.06	23.64	11.58	64.69	-53.11	QP
0.2146	-12.52	23.73	11.21	53.69	-42.48	QP
0.4138	-16.71	24.01	7.30	45.80	-38.50	QP
0.6935	-16.38	24.18	7.80	39.60	-31.80	QP
5.3738	-16.32	21.04	4.72	22.00	-17.28	QP

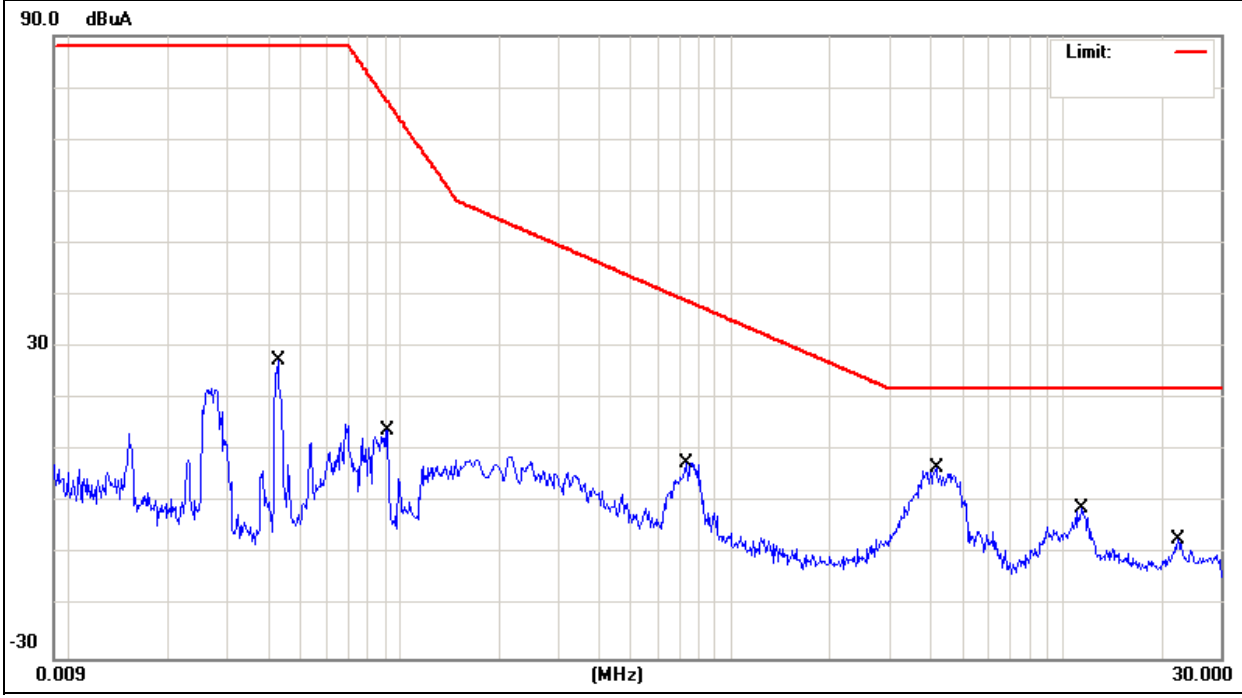
Remark:
Factor = Antenna Factor + Cable Loss - Amplifier.



EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	24℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Emergency	Polarization :	X
Test Voltage:	DC 9.6V by Battery		

Freq. (MHz)	Reading (dBμA)	Factor (dB)	Measurement (dBμA)	Limit (dBμA)	Over (dB)	Detector
0.0427	-2.61	30.17	27.56	88.00	-60.44	QP
0.0921	-13.72	27.82	14.10	77.19	-63.09	QP
0.7338	-15.93	23.63	7.70	38.92	-31.22	QP
4.1740	-6.30	13.00	6.70	22.00	-15.30	QP
11.4657	-17.90	16.85	-1.05	22.00	-23.05	QP
22.2973	-23.78	16.60	-7.18	22.00	-29.18	QP

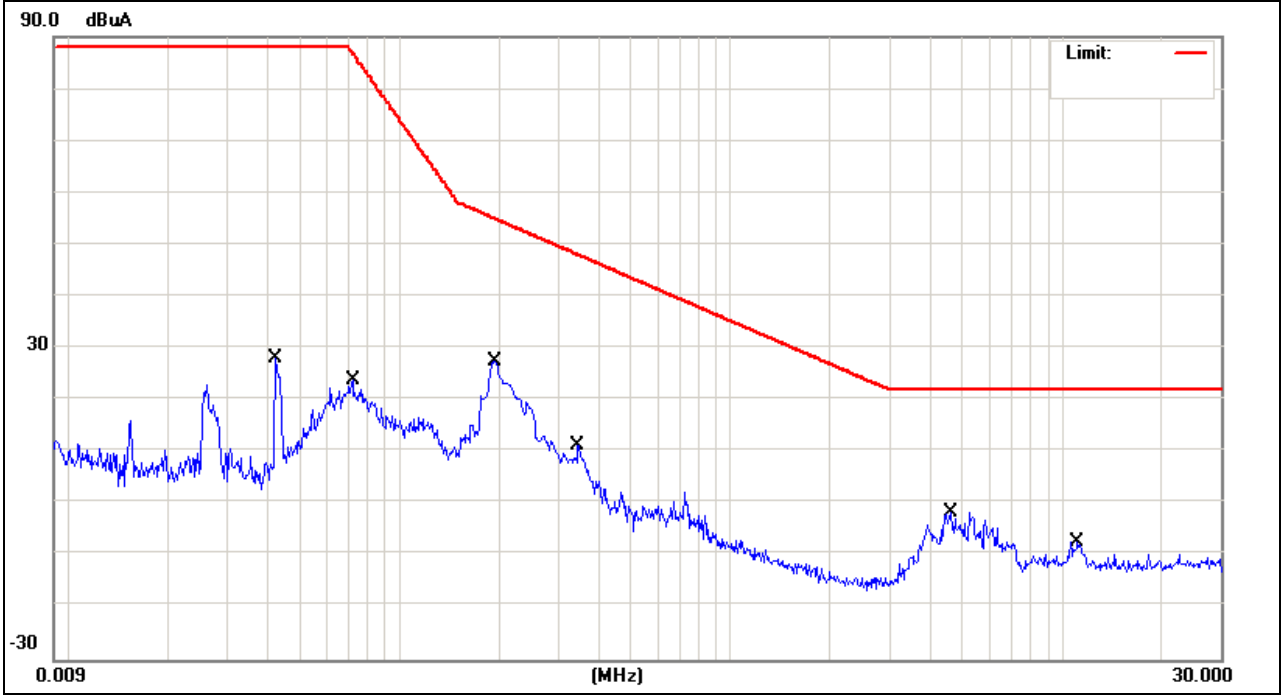
Remark:
Factor = Antenna Factor + Cable Loss - Amplifier.



EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	24℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Emergency	Polarization :	Y
Test Voltage:	DC 9.6V by Battery		

Freq. (MHz)	Reading (dBμA)	Factor (dB)	Measurement (dBμA)	Limit (dBμA)	Over (dB)	Detector
0.0422	-2.15	30.20	28.05	88.00	-59.95	QP
0.0719	-4.94	28.86	23.92	86.94	-63.02	QP
0.1940	1.28	26.28	27.56	54.90	-27.34	QP
0.3457	-14.55	25.84	11.29	47.96	-36.67	QP
4.5939	-14.34	12.74	-1.60	22.00	-23.60	QP
11.0700	-24.24	17.01	-7.23	22.00	-29.23	QP

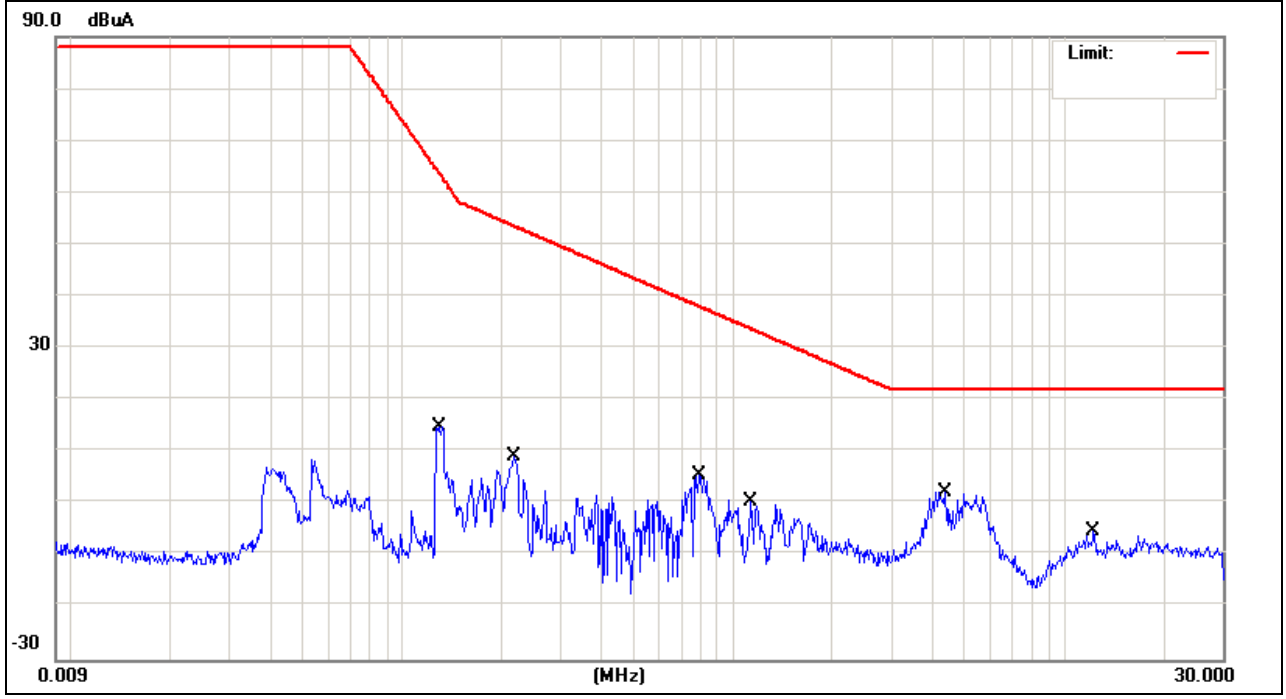
Remark:
Factor = Antenna Factor + Cable Loss - Amplifier.



EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	24℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Emergency	Polarization :	Z
Test Voltage:	DC 9.6V by Battery		

Freq. (MHz)	Reading (dBμA)	Factor (dB)	Measurement (dBμA)	Limit (dBμA)	Over (dB)	Detector
0.1297	-8.64	23.64	15.00	63.70	-48.70	QP
0.2179	-14.69	23.74	9.05	53.51	-44.46	QP
0.7860	-18.50	24.17	5.67	38.09	-32.42	QP
1.1294	-23.84	24.20	0.36	33.74	-33.38	QP
4.3540	-17.02	19.33	2.31	22.00	-19.69	QP
12.2217	-24.39	19.01	-5.38	22.00	-27.38	QP

Remark:
Factor = Antenna Factor + Cable Loss - Amplifier.



3.3 HARMONICS CURRENT

3.3.1 LIMITS OF HARMONICS CURRENT

Harmonic Current Test Limit (Class C)

Harmonic order (n)	**Maximum permissible harmonic current Expressed as a percentage of the input Current at the fundamental frequency %**
2	2
3	30.λ
5	10
7	7
9	5
15≤n≤39 (odd harmonics only)	3
Remark: λ is the circuit power factor	

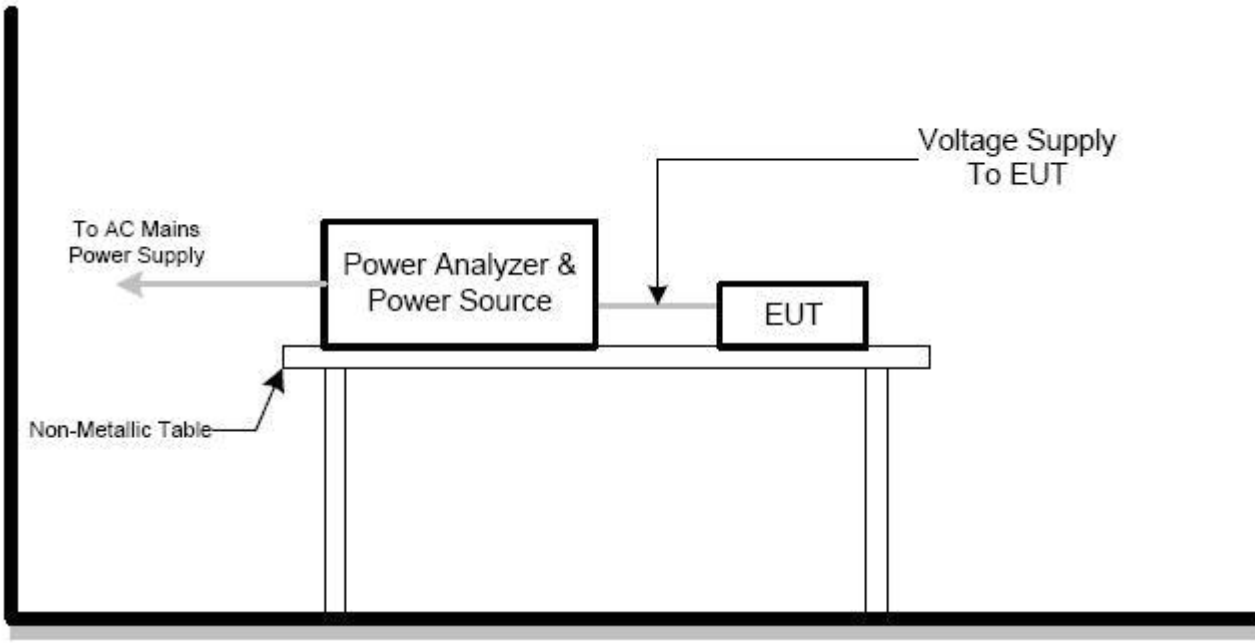
3.3.1.1TEST PROCEDURE

a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions.
b. The classification of EUT is according to section 5 of EN 61000-3-2. The EUT is classified as follows:
Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.
Class B: Portable tools. Portable tools.; Arc welding equipment which is not professional equipment.
Class C: Lighting equipment.
Class D: Equipment having a specified power less than or equal to 600W of the following types: Personal computers and personal computer monitors and television receivers.
c. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

3.3.1.2 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

3.3.1.3 TEST SETUP



3.3.2 TEST RESULTS

EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	25℃	Relative Humidity:	45%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Lighting & Charging		
Test Voltage:	AC 230V/50Hz		

E. U. T. Result

Harmonic(s) > 150%:	
Order (n):	None
Harmonic(s) with average > 100%:	
Order (n):	None

All Partial Odd Harmonics below partial limits.	
Harmonic(s) > 150%:	
Order (n):	None
Harmonic(s) with average > 150%:	
Order (n):	None

Power Source Result

First dataset out of limit:	
DS (time):	None
Harmonic(s) out of limit:	
Order (n):	None

Average harmonic current results

Hn	Ieff [A]	Ieff [%]	Limit [%]	Result
1	104.814E-3	99.465		
2	836.328E-6	0.794	2.00	PASS
3	6.085E-3	5.774	29.24	PASS
4	2.399E-3	2.277		PASS
5	4.435E-3	4.209	10.00	PASS
6	809.819E-6	0.768		PASS
7	4.195E-3	3.981	7.00	PASS
8	843.335E-6	0.800		PASS
9	2.303E-3	2.185	5.00	PASS
10	751.487E-6	0.713		PASS
11	1.126E-3	1.069	3.00	PASS
12	1.048E-3	0.994		PASS
13	1.953E-3	1.853	3.00	PASS
14	873.840E-6	0.829		PASS
15	1.718E-3	1.631	3.00	PASS
16	827.526E-6	0.785		PASS
17	2.115E-3	2.007	3.00	PASS
18	1.095E-3	1.039		PASS
19	1.052E-3	0.998	3.00	PASS
20	867.993E-6	0.824		PASS
21	888.170E-6	0.843	4.50	PASS
22	1.008E-3	0.957		PASS
23	1.097E-3	1.041	4.50	PASS
24	661.468E-6	0.628		PASS
25	687.202E-6	0.652	4.50	PASS
26	794.429E-6	0.754		PASS
27	1.329E-3	1.261	4.50	PASS
28	764.259E-6	0.725		PASS
29	1.181E-3	1.121	4.50	PASS
30	697.010E-6	0.661		PASS
31	966.520E-6	0.917	4.50	PASS
32	699.591E-6	0.664		PASS
33	696.902E-6	0.661	4.50	PASS
34	656.090E-6	0.623		PASS
35	885.639E-6	0.840	4.50	PASS
36	800.970E-6	0.760		PASS
37	799.768E-6	0.759	4.50	PASS
38	670.799E-6	0.637		PASS
39	856.074E-6	0.812	4.50	PASS
40	884.234E-6	0.839		PASS

Maximum harmonic current results

Hn	Ieff [A]	Ieff [%]	Limit [%]	Result
1	105.378E-3	100.000		
2	940.164E-6	0.892	3.00	PASS
3	6.338E-3	6.015	43.87	PASS
4	2.634E-3	2.499		PASS
5	4.532E-3	4.300	15.00	PASS
6	929.702E-6	0.882		PASS
7	4.305E-3	4.085	10.50	PASS
8	911.351E-6	0.865		PASS
9	2.521E-3	2.392	7.50	PASS
10	835.025E-6	0.792		PASS
11	1.229E-3	1.166	4.50	PASS
12	1.173E-3	1.113		PASS
13	2.044E-3	1.940	4.50	PASS
14	958.740E-6	0.910		PASS
15	1.830E-3	1.737	4.50	PASS
16	924.156E-6	0.877		PASS
17	2.233E-3	2.119	4.50	PASS
18	1.191E-3	1.130		PASS
19	1.180E-3	1.119	4.50	PASS
20	955.753E-6	0.907		PASS
21	951.484E-6	0.903	4.50	PASS
22	1.139E-3	1.081		PASS
23	1.192E-3	1.131	4.50	PASS
24	734.964E-6	0.697		PASS
25	780.107E-6	0.740	4.50	PASS
26	951.925E-6	0.903		PASS
27	1.405E-3	1.333	4.50	PASS
28	843.919E-6	0.801		PASS
29	1.265E-3	1.200	4.50	PASS
30	776.664E-6	0.737		PASS
31	1.110E-3	1.054	4.50	PASS
32	777.732E-6	0.738		PASS
33	833.351E-6	0.791	4.50	PASS
34	725.029E-6	0.688		PASS
35	1.023E-3	0.971	4.50	PASS
36	932.393E-6	0.885		PASS
37	871.739E-6	0.827	4.50	PASS
38	745.360E-6	0.707		PASS
39	927.416E-6	0.880	4.50	PASS
40	983.242E-6	0.933		PASS

Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	231.50	100.634		
2	77.61E-3	0.034	0.2	PASS
3	98.54E-3	0.043	0.9	PASS
4	18.13E-3	0.008	0.2	PASS
5	40.88E-3	0.018	0.4	PASS
6	11.97E-3	0.005	0.2	PASS
7	19.09E-3	0.008	0.3	PASS
8	12.50E-3	0.005	0.2	PASS
9	28.66E-3	0.012	0.2	PASS
10	10.73E-3	0.005	0.2	PASS
11	34.39E-3	0.015	0.1	PASS
12	11.77E-3	0.005	0.1	PASS
13	32.29E-3	0.014	0.1	PASS
14	10.87E-3	0.005	0.1	PASS
15	18.68E-3	0.008	0.1	PASS
16	12.03E-3	0.005	0.1	PASS
17	20.97E-3	0.009	0.1	PASS
18	10.70E-3	0.005	0.1	PASS
19	30.25E-3	0.013	0.1	PASS
20	12.14E-3	0.005	0.1	PASS
21	29.51E-3	0.013	0.1	PASS
22	10.68E-3	0.005	0.1	PASS
23	22.23E-3	0.010	0.1	PASS
24	12.18E-3	0.005	0.1	PASS
25	17.88E-3	0.008	0.1	PASS
26	9.91E-3	0.004	0.1	PASS
27	28.40E-3	0.012	0.1	PASS
28	9.71E-3	0.004	0.1	PASS
29	32.19E-3	0.014	0.1	PASS
30	10.15E-3	0.004	0.1	PASS
31	18.21E-3	0.008	0.1	PASS
32	8.13E-3	0.004	0.1	PASS
33	16.43E-3	0.007	0.1	PASS
34	10.01E-3	0.004	0.1	PASS
35	23.93E-3	0.010	0.1	PASS
36	9.10E-3	0.004	0.1	PASS
37	21.67E-3	0.009	0.1	PASS
38	8.93E-3	0.004	0.1	PASS
39	17.12E-3	0.007	0.1	PASS
40	8.57E-3	0.004	0.1	PASS

Harmonic current results - DS: 12

Hn	Ieff [A]	Ieff [%]	Limit [%]	Result
1	105.307E-3	99.933		
2	858.038E-6	0.814	2.00	PASS
3	6.176E-3	5.861	29.24	PASS
4	2.436E-3	2.312		PASS
5	4.427E-3	4.201	10.00	PASS
6	756.716E-6	0.718		PASS
7	4.171E-3	3.959	7.00	PASS
8	798.496E-6	0.758		PASS
9	2.450E-3	2.325	5.00	PASS
10	783.423E-6	0.743		PASS
11	1.089E-3	1.033	3.00	PASS
12	1.074E-3	1.020		PASS
13	2.022E-3	1.919	3.00	PASS
14	827.818E-6	0.786		PASS
15	1.700E-3	1.613	3.00	PASS
16	721.031E-6	0.684		PASS
17	2.181E-3	2.069	3.00	PASS
18	1.168E-3	1.109		PASS
19	1.103E-3	1.047	3.00	PASS
20	890.432E-6	0.845		PASS
21	866.265E-6	0.822	3.00	PASS
22	1.077E-3	1.022		PASS
23	1.124E-3	1.066	3.00	PASS
24	637.875E-6	0.605		PASS
25	762.962E-6	0.724	3.00	PASS
26	797.599E-6	0.757		PASS
27	1.360E-3	1.290	3.00	PASS
28	732.859E-6	0.695		PASS
29	1.259E-3	1.194	3.00	PASS
30	738.485E-6	0.701		PASS
31	966.649E-6	0.917	3.00	PASS
32	700.574E-6	0.665		PASS
33	672.244E-6	0.638	3.00	PASS
34	703.970E-6	0.668		PASS
35	971.998E-6	0.922	3.00	PASS
36	720.293E-6	0.684		PASS
37	788.768E-6	0.749	3.00	PASS
38	660.471E-6	0.627		PASS
39	882.736E-6	0.838	3.00	PASS
40	876.390E-6	0.832		PASS

Caution: Results related to the 100% limit values

Harmonic voltage results - DS: 12

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	231.49	100.629		
2	58.01E-3	0.025	0.2	PASS
3	79.44E-3	0.035	0.9	PASS
4	6.30E-3	0.003	0.2	PASS
5	25.70E-3	0.011	0.4	PASS
6	4.26E-3	0.002	0.2	PASS
7	5.62E-3	0.002	0.3	PASS
8	2.81E-3	0.001	0.2	PASS
9	19.92E-3	0.009	0.2	PASS
10	2.01E-3	0.001	0.2	PASS
11	24.21E-3	0.011	0.1	PASS
12	1.77E-3	0.001	0.1	PASS
13	21.86E-3	0.010	0.1	PASS
14	1.53E-3	0.001	0.1	PASS
15	11.48E-3	0.005	0.1	PASS
16	6.88E-3	0.003	0.1	PASS
17	14.40E-3	0.006	0.1	PASS
18	5.79E-3	0.003	0.1	PASS
19	20.28E-3	0.009	0.1	PASS
20	8.78E-3	0.004	0.1	PASS
21	25.21E-3	0.011	0.1	PASS
22	9.33E-3	0.004	0.1	PASS
23	16.46E-3	0.007	0.1	PASS
24	10.60E-3	0.005	0.1	PASS
25	8.59E-3	0.004	0.1	PASS
26	8.74E-3	0.004	0.1	PASS
27	21.50E-3	0.009	0.1	PASS
28	4.29E-3	0.002	0.1	PASS
29	27.04E-3	0.012	0.1	PASS
30	7.76E-3	0.003	0.1	PASS
31	14.63E-3	0.006	0.1	PASS
32	2.53E-3	0.001	0.1	PASS
33	9.65E-3	0.004	0.1	PASS
34	6.15E-3	0.003	0.1	PASS
35	19.99E-3	0.009	0.1	PASS
36	4.10E-3	0.002	0.1	PASS
37	15.99E-3	0.007	0.1	PASS
38	3.35E-3	0.001	0.1	PASS
39	10.88E-3	0.005	0.1	PASS
40	1.84E-3	0.001	0.1	PASS

Power and THD results - DS: 55

True power P:	24.41W	Apparent power S:	27.62VA
Reactiv power Q:	12.92var	Power factor:	0.884
THD (U):	0.001	THD (I):	0.424
Crest Factor (U):	1.414	Crest Factor (I):	3.164

3.4 VOLTAGE FLUCTUATION AND FLICKERS

3.4.1 LIMITS OF VOLTAGE FLUCTUATION AND FLICKERS

Tests	Limits		Descriptions
	IEC555-3	IEC/EN 61000-3-3	
Pst	≤ 1.0, Tp= 10 min.	≤ 1.0, Tp= 10 min.	Short Term Flicker Indicator
Plt	N/A	≤ 0.65, Tp=2 hr.	Long Term Flicker Indicator
dc	≤ 3%	≤ 3.3%	Relative Steady-State V-Chang
dmax	≤ 4%	≤ 4%	Maximum Relative V-change
d (t)	N/A	≤ 3.3% for > 500 ms	Relative V-change characteristic

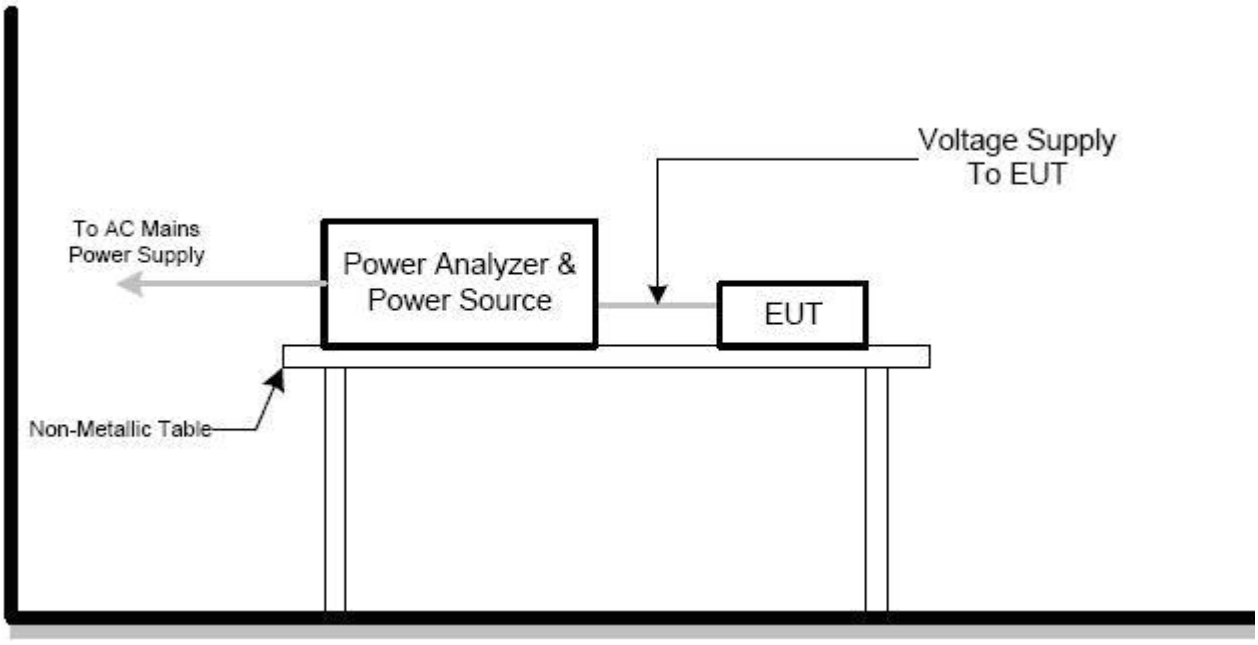
3.4.1.1TEST PROCEDURE

a. Harmonic Current Test:
Test was performed according to the procedures specified in Clause 5.0 of IEC555-2 and/or Sub-clause 6.2 of IEC/EN 61000-3-2 depend on which standard adopted for compliance measurement.
b. Fluctuation and Flickers Test:
Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 5.0/6.0 of IEC555-3 and/or Clause 6.0/4.0 of IEC/EN 61000-3-3 depend on which standard adopted for compliance measurement.
c. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

3.4.1.2 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

3.4.1.3 TEST SETUP



3.4.2 TEST RESULTS

EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	25℃	Relative Humidity:	45%
Pressure:	1010hPa	Test Date :	2014-10-26
Test Mode:	Lighting & Charging		
Test Voltage:	AC 230V/50Hz		

Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.011	3.30	PASS
dmax [%]	0.185	4.00	PASS
dt [s]	0.000	0.50	PASS

4. EMC IMMUNITY TEST

4.1 STANDARD COMPLIANCE/SERVRITY LEVEL/CRITERIA

Tests Standard No.	TEST SPECIFICATION Level	Test Mode Test Ports	Perform. Criteria
1. ESD IEC/EN 61000-4-2	8KV air discharge 4KV contact discharge	Direct Mode	B
	4KV HCP discharge 4KV VCP discharge	Indirect Mode	B
2. RS IEC/EN 61000-4-3	80 MHz to 1000 MHz 1000Hz, 80%, AM modulated	Enclosure	A
3. EFT/Burst IEC/EN 61000-4-4	5/50ns Tr/Th 5KHz Repetition Freq.	Power Supply Port	B
	5/50ns Tr/Th 5KHz Repetition Freq.	CTL/Signal Data Line Port	B
4. Surges IEC/EN 61000-4-5	1.2/50(8/20) Tr/Th us	L-N	B
	1.2/50(8/20) Tr/Th us	L-PE N-PE	B
5 Injected Current IEC/EN 61000-4-6	0.15 MHz to 80 MHz, 1000Hz 80％ , AM Modulated 150Ω source impedance	CTL/Signal Port	A
	0.15 MHz to 80 MHz, 1000Hz 80％ , AM Modulated 150Ω source impedance	AC Power Port	A
	0.15 MHz to 80 MHz, 1000Hz 80％ , AM Modulated 150Ω source impedance	DC Power Port	A
6. Power Frequency Magnetic Field IEC/EN 61000-4-8	50 Hz,	Enclosure	A
7. Volt. Interruptions Volt. Dips IEC/EN 61000-4-11	Voltage dip 100% Voltage dip 30%	AC Power Port	B C

4.2 GENERAL PERFORMANCE CRITERIA

According to **EN 61547** standard, the general performance criteria as following:

Criterion A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion B	After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.
Criterion C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

4.3 GENERAL PERFORMANCE CRITERIA TEST SETUP

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

4.4 ESD TESTING

4.4.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-2
Discharge Impedance:	330ohm / 150pF
Required Performance:	B
Discharge Voltage:	Air Discharge:2KV/4KV/8KV (Direct) Contact Discharge:2KV/4KV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: min. 20 times at each test point Contact Discharge: min. 20 times at each test point
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

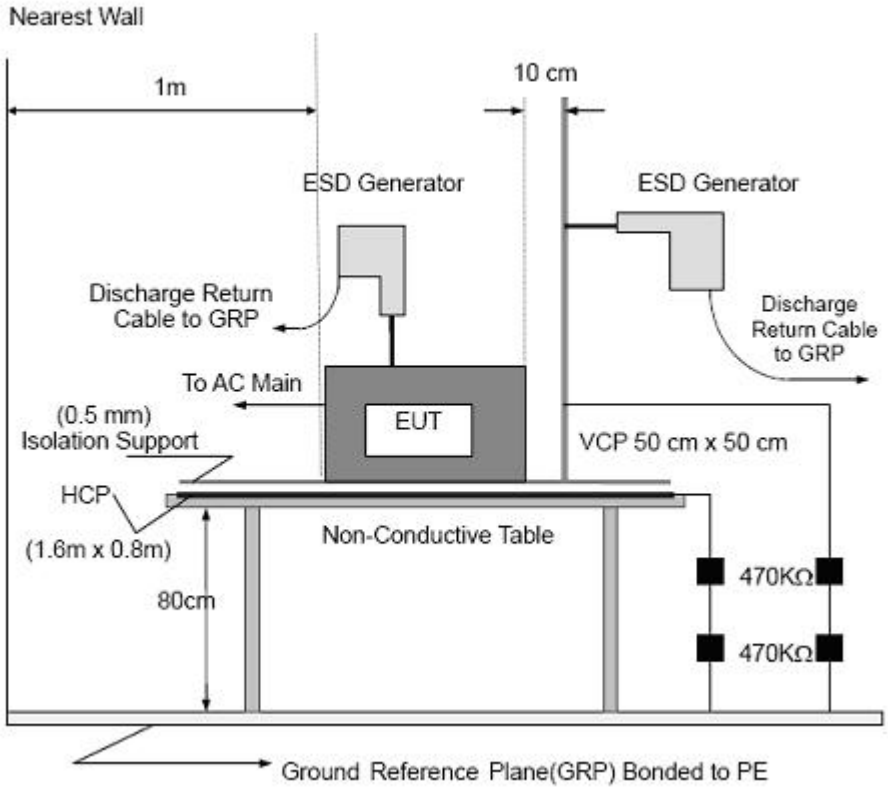
4.4.2 TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

a. Vertical Coupling Plane (VCP):
The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane. The four faces of the EUT will be performed with electrostatic discharge.
Horizontal Coupling Plane (HCP):
The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane. The four faces of the EUT will be performed with electrostatic discharge.

b. Air discharges at insulation surfaces of the EUT.
It was at least ten single discharges with positive and negative at the same selected point.

4.4.3 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k total impedance. The equipment under test, was installed in a representative system as described in section 7 of IEC /EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC/EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

4.4.4 TEST RESULTS

EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	25℃	Relative Humidity:	45%
Pressure:	1010hPa	Test Date :	2014-10-27
Test Mode:	Lighting & Charging/ Emergency		
Test Voltage:	AC 230V/50Hz/ DC 9.6V by Battery		

Mode	Contact Discharge (Indirect)								Criterion	Result
Test level (KV)	Test Point	2		4		6				
Test Location		+	-	+	-	+	-			
HCP	Front			P	P					
	Rear			P	P					
	Left			P	P					
	Right			P	P					
VCP	Front			P	P				B	Complies
	Rear			P	P					
	Left			P	P					
	Right			P	P					

Mode	Air Discharge								Contact Discharge								Criterion	Result
Test level (KV)	2		4		8		15		2		4		6		8			
Test Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-		
C1											P	P						
C2											P	P						
C3											P	P						
C4											P	P					B	Complies
C5											P	P						

Note:

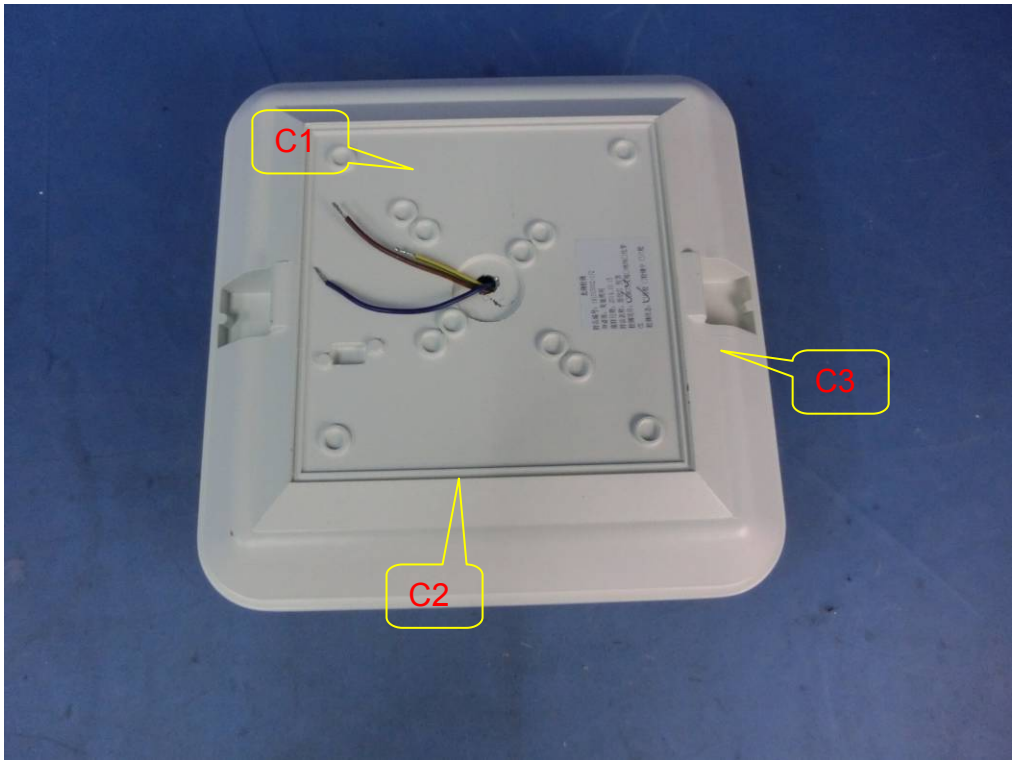
1) +/- denotes the Positive/Negative polarity of the output voltage.
2) Test location(s) in which discharge (Air and contact discharge) to be applied illustrated by photos shown in next page(s)
3) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.
4) Criteria A: Normal performance within limits specified by the manufacturer, requestor or purchaser.

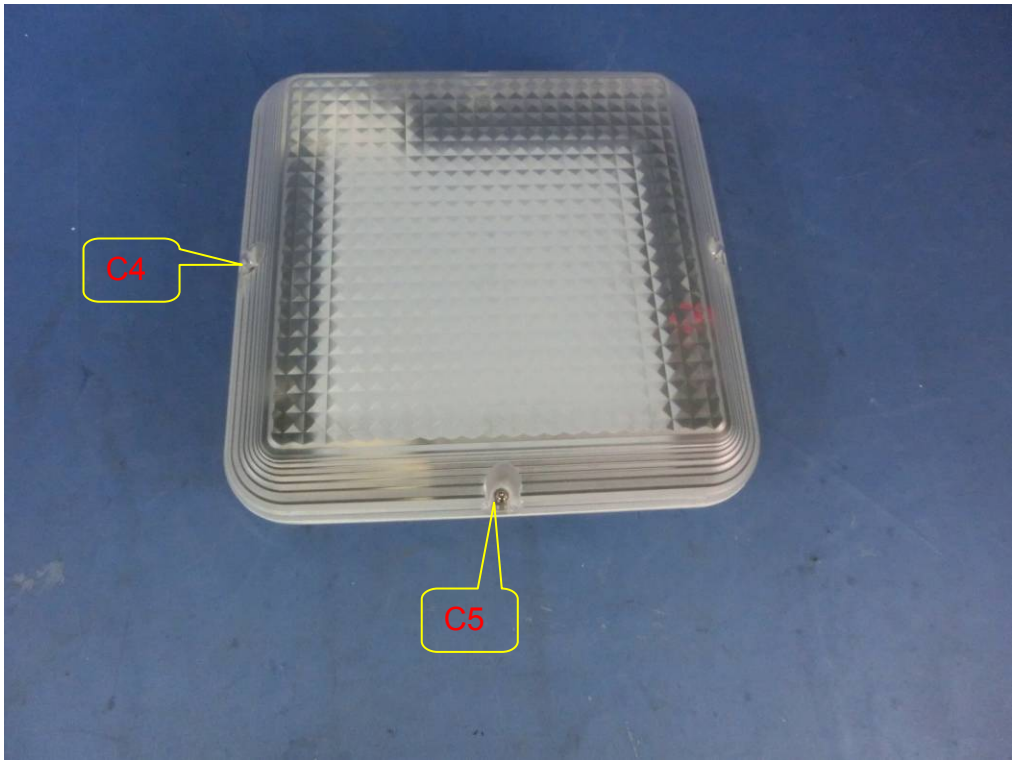
5) Criteria B: Temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the EUT recovers its normal performance, without operator intervention.

6) Criteria C: Temporary loss of function or degradation of performance, the correction of which requires operator intervention.

7) Criteria D: Loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data.

4.4.5 PHOTO(S) SHOWN THE LOCATION(S) OF ESD EVALUATED





4.5 RS TESTING

4.5.1 TEST SPECIFICATION

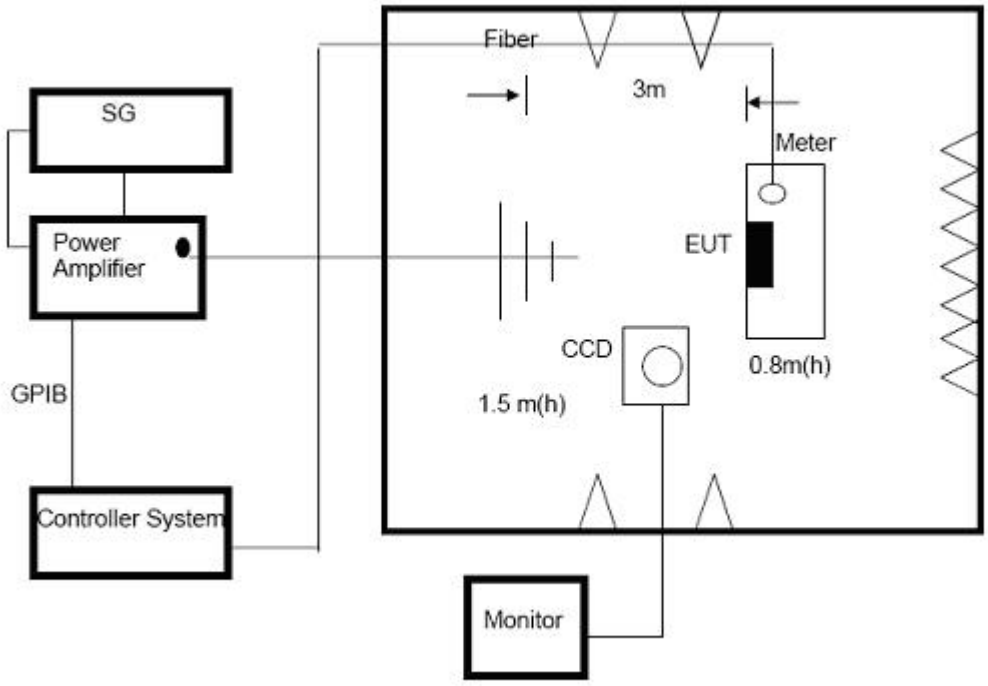
Basic Standard:	IEC/EN 61000-4-3
Required Performance	A
Frequency Range:	80 MHz - 1000 MHz
Field Strength:	3 V/m
Modulation:	1KHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Polarity of Antenna:	Horizontal and Vertical
Test Distance:	3 m
Antenna Height:	1.5 m
Dwell Time:	at least 3 seconds

4.5.2 TEST PROCEDURE

The EUT and support equipment, which are placed on a table that is 0.8 meter above ground and the testing was performed in a fully-anechoic chamber.
The testing distance from antenna to the EUT was 3 meters.
The other condition as following manner:

a. The frequency range is swept from 80 MHz to 1000 MHz, & 1400MHz - 2700MHz with the signal 80%amplitude modulated with a 1KHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
b. Sweep Frequency 900 MHz, with the Duty Cycle:1/8 and Modulation: Pulse 217 Hz(if applicable)
c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
d. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

4.5.3 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

4.5.4 TEST RESULTS

EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	25℃	Relative Humidity:	60%
Pressure:	1010hPa	Test Date :	2014-10-27
Test Mode:	Lighting & Charging		
Test Voltage:	AC 230V/50Hz		

Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimuth	Perform. Criteria	Results	Judgment
80MHz - 1000MHz	H / V	3 V/m (r.m.s) AM Modulated 1000Hz, 80%	Front	**A**	**P**	**Complies**
			Rear			
			Left			
			Right			

Note:

1) N/A - denotes test is not applicable in this test report.
2) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.
3) Criteria A: There was no change operated with initial operating during the test.
4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
5) Criteria C: The system shut down during the test.

4.6 EFT/BURST TESTING

4.6.1 TEST SPECIFICATION

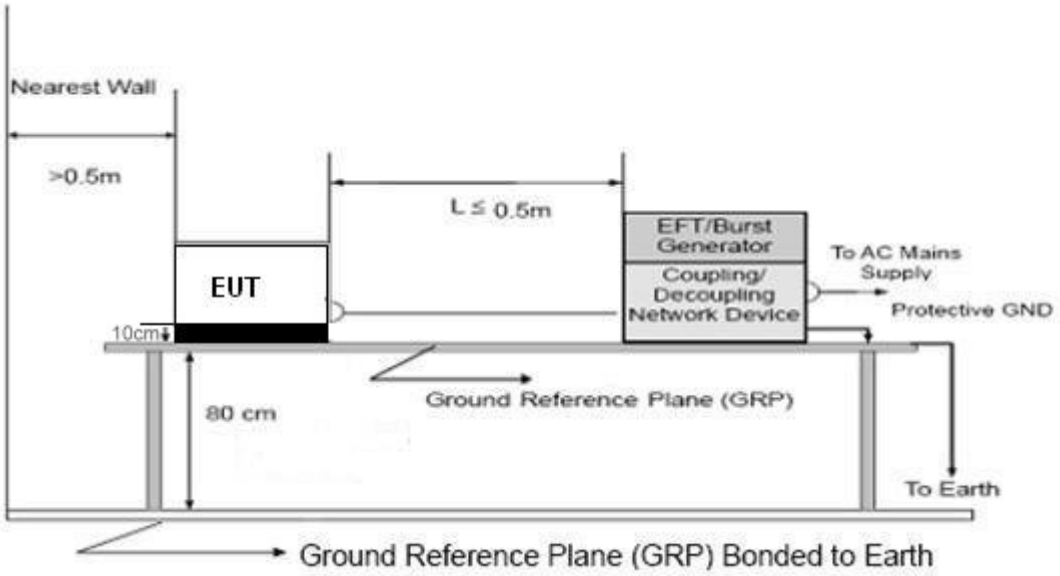
Basic Standard:	IEC/EN 61000-4-4
Required Performance:	B
Test Voltage:	Power Line:0.5 KV, 1 KV Signal/Control Line:0.5 KV
Polarity:	Positive & Negative
Impulse Frequency:	5 KHz
Impulse Wave shape :	5/50 ns
Burst Duration:	15 ms
Burst Period:	300 ms
Test Duration:	Not less than 1 min.

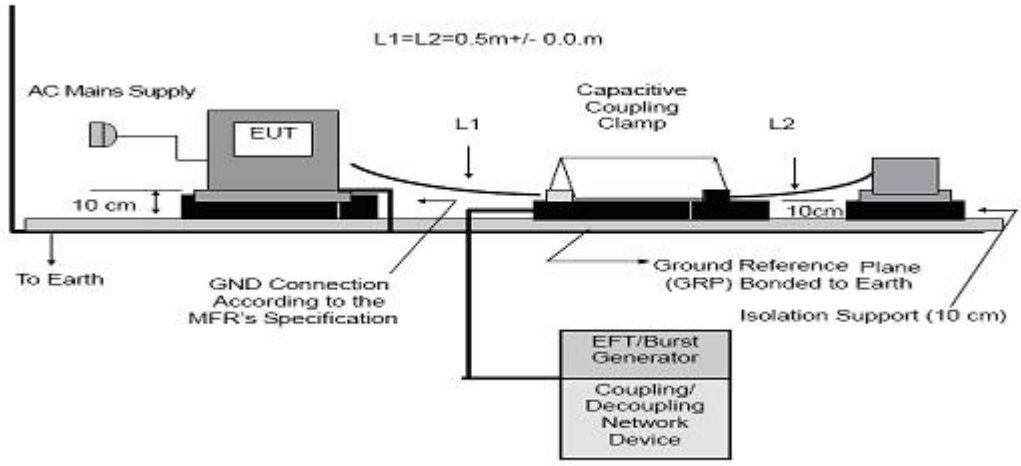
4.6.2 TEST PROCEDURE

The EUT and its simulators were placed on a ground reference plane and were insulated from it by a wood support 0.1m + 0.01m thick. The ground reference plane was 1m*1m metallic sheet with 0.65mm minimum thickness. The other condition as following manner:

a. The length of power cord between the coupling device and the EUT should not exceed 1 meter.
b. Both positive and negative polarity discharges were applied.
c. The duration time of each test sequential was 1 minute

4.6.3 TEST SETUP





Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table (0.8m high) standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system. A minimum distance of 0.5m was provided between the EUT and the walls of the laboratory or any other metallic structure.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-4 and its cables, were isolated from the Ground Reference Plane by an insulating support that is 0.1-meter thick. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system.

4.6.4 TEST RESULTS

EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	25℃	Relative Humidity:	60%
Pressure:	1010hPa	Test Date :	2014-10-27
Test Mode:	Lighting & Charging		
Test Voltage:	AC 230V/50Hz		

Coupling Line		Test level (KV)								Criterion	Result
		0.5		1		2		4			
		+	-	+	-	+	-	+	-		
AC line	L	P	P	P	P					B	Complies
	N	P	P	P	P						
	PE	P	P	P	P						
	L+N	P	P	P	P						
	L+PE	P	P	P	P						
	N+PE	P	P	P	P						
	L+N+PE	P	P	P	P						
DC Line											
Signal Line											

Note:

1) +/- denotes the Positive/Negative polarity of the output voltage.

2) N/A - denotes test is not applicable in this test report

3) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.

4) Criteria A: There was no change operated with initial operating during the test.

5) Criteria B: The EUT function loss during the test, but self-recoverable after the test.

6) Criteria C: The system shut down during the test.

4.7 SURGE TESTING

4.7.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-5
Required Performance:	C
Wave-Shape:	Combination Wave 1.2/50 us Open Circuit Voltage 8 /20 us Short Circuit Current
Test Voltage:	Power Line:0.5 KV, 1 KV, 2 KV
Surge Input/Output:	L-N, L-PE, N-PE
Generator Source:	2 ohm between networks
Impedance:	12 ohm between network and ground
Polarity:	Positive/Negative
Phase Angle:	90°/270°
Pulse Repetition Rate:	1 time / min. (maximum)
Number of Tests:	5 positive and 5 negative at selected points

4.7.2 TEST PROCEDURE

a. For EUT power supply:

The surge is to be applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks shall be 2meters in length (or shorter).

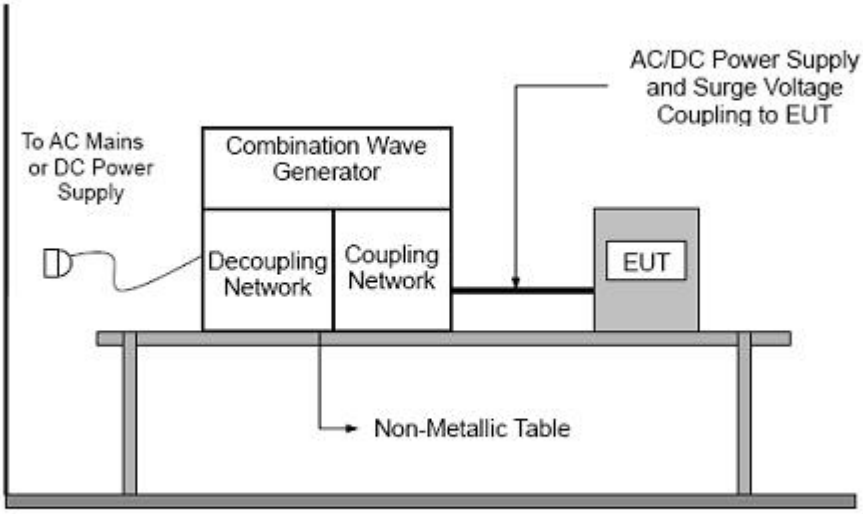
b. For test applied to unshielded unsymmetrically operated interconnection lines of EUT:

The surge is applied to the lines via the capacitive coupling. The coupling /decoupling networks shall not influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

c. For test applied to unshielded symmetrically operated interconnection /telecommunication lines of EUT:

d. The surge is applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor cannot be specified. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

4.7.3 TEST SETUP



4.7.4 TEST RESULTS

EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	25℃	Relative Humidity:	60%
Pressure:	1010hPa	Test Date :	2014-10-27
Test Mode:	Lighting & Charging		
Test Voltage:	AC 230V/50Hz		

Coupling Line			Test level								Criterion	Result
			0.5 KV		1 KV		2 KV		4 KV			
			+	-	+	-	+	-	+	-		
AC line	L-N	0°									B	**Complies**
		90°	P									
		180°										
		270°		P								
	L-PE	0°										**Complies**
		90°	P		P							
		180°										
		270°		P		P						
	N-PE	0°										**Complies**
		90°	P		P							
		180°										
		270°		P		P						
DC Line												
Signal Line												

Note:

1) Polarity and Numbers of Impulses:5 Pst / Ngt at each tested mode
2) N/A - denotes test is not applicable in this Test Report
3) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.
4) Criteria A: There was no change operated with initial operating during the test.
5) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
6) Criteria C: The system shut down during the test.

4.8 INJECTION CURRENT TESTING

4.8.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-6
Required Performance:	A
Frequency Range:	0.15 MHz - 80 MHz
Field Strength:	3 Vr.m.s.
Modulation:	1KHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Dwell Time:	at least 3 seconds

4.8.2 TEST PROCEDURE

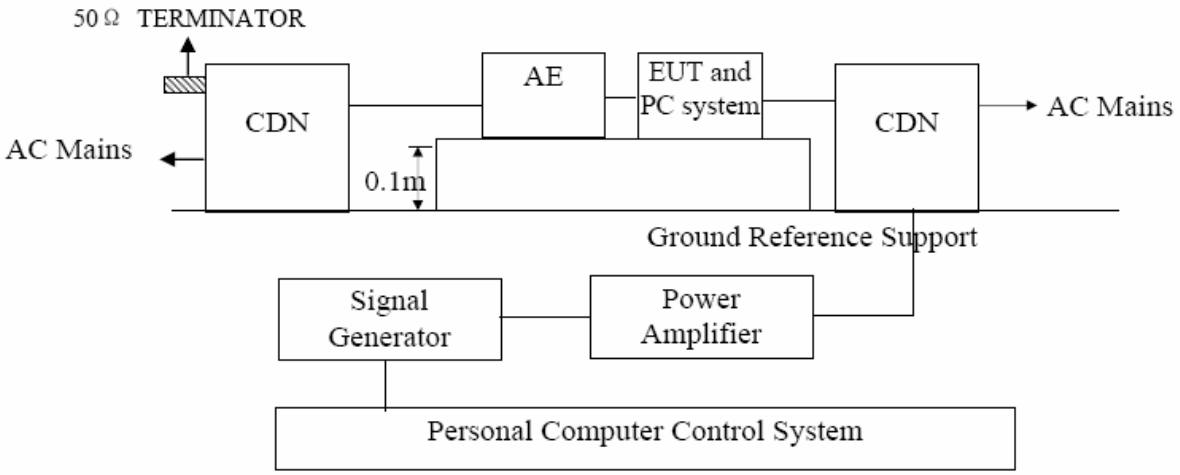
The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50mm (where possible). The disturbance signal described below is injected to EUT through CDN.

The other condition as following manner:

a. The frequency range is swept from 150 KHz to 80 MHz, with the signal 80%amplitude modulated with a 1KHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.

b. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.

4.8.3 TEST SETUP



NOTE:

FLOOR-STANDING EQUIPMENT

The equipment to be tested is placed on an insulating support of 0.1 meters height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 meters and 0.3 meters from the projected geometry of the EUT on the ground reference plane.

4.8.4 TEST RESULTS

EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	25℃	Relative Humidity:	60%
Pressure:	1010hPa	Test Date :	2014-10-27
Test Mode:	Lighting & Charging		
Test Voltage:	AC 230V/50Hz		

Test Ports (Mode)	Freq. Range MHz)	Field Strength	Perform. Criteria	Results	Judgment
Input/ Output AC. Power Port	0.15 ---80	3V(r.m.s) AM Modulated 1000Hz, 80%	**A**	**P**	**Complies**
Input/ Output DC. Power Port	0.15 --- 80		**A**	**N/A**	**N/A**
Signal Line	0.15 --- 80		**A**	**N/A**	**N/A**

Note:

1) N/A - denotes test is not applicable in this Test Report.
2) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.
3) Criteria A: There was no change operated with initial operating during the test.
4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
5) Criteria C: The system shut down during the test.

4.9 POWER FREQUENCY MAGNETIC FIELD TESTING

4.9.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-8
Required Performance:	A
Frequency Range:	50Hz
Field Strength:	3 A/m
Observation Time:	1 minute
Inductance Coil:	Rectangular type, 1mx1m

4.9.2 TEST PROCEDURE

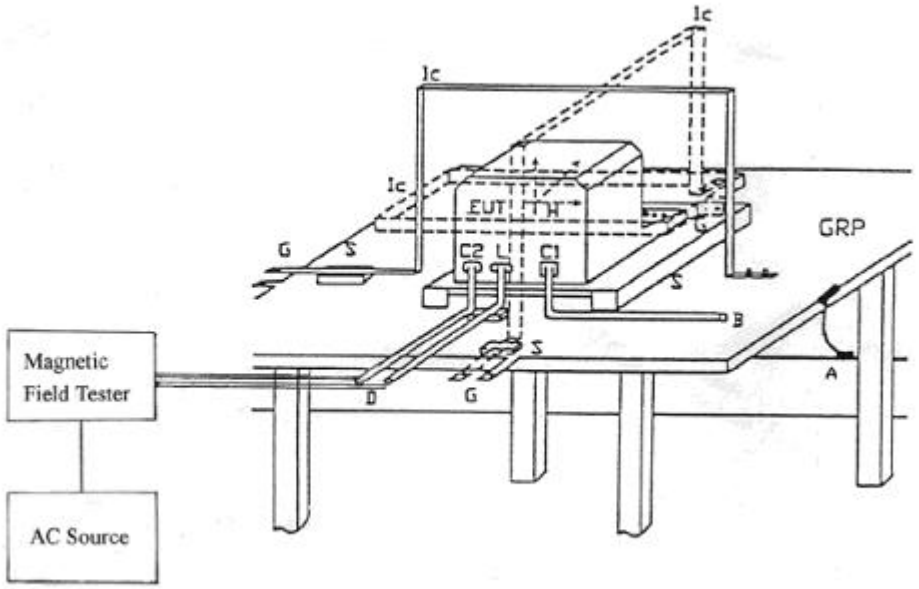
The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.

The other condition as following manner:

a. The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.

b. The cables supplied or recommended by the equipment manufacturer shall be used. 1 meter of all cables used shall be exposed to the magnetic field.

4.9.3 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The equipment shall be subjected to the test magnetic field by using the induction coil of standard dimension (1 m x 1 m). The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

FLOOR-STANDING EQUIPMENT

The equipment shall be subjected to the test magnetic field by using induction coils of suitable dimensions. The test shall be repeated by moving and shifting the induction coils, in order to test the whole volume of the EUT for each orthogonal direction. The test shall be repeated with the coil shifted to different positions along the side of the EUT, in steps corresponding to 50 % of the shortest side of the coil. The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

4.9.4 TEST RESULTS

EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	25℃	Relative Humidity:	60%
Pressure:	1010hPa	Test Date :	2014-10-27
Test Mode:	Lighting & Charging		
Test Voltage:	AC 230V/50Hz		

Test Mode	Test Level	Antenna aspect	Duration (s)	Perform Criteria	Results	Judgment
Enclosure	3 A/m	X	60 s	**A**	**P**	**Complies**
Enclosure	3 A/m	Y	60 s	**A**	**P**	
Enclosure	3 A/m	Z	60 s	**A**	**P**	

Note:

1) N/A - denotes test is not applicable in this test report
2) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.
3) Criteria A: There was no change operated with initial operating during the test.
4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
5) Criteria C: The system shut down during the test.

4.10 VOLTAGE INTERRUPTION/DIPS TESTING

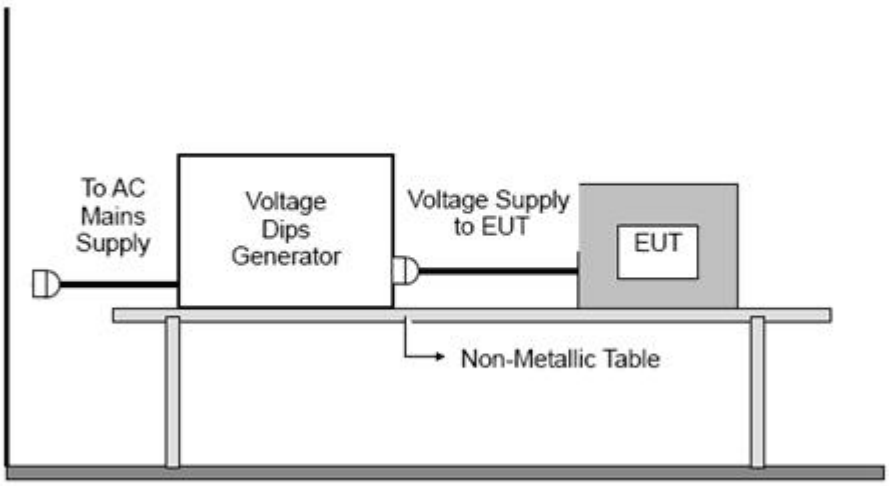
4.10.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-11
Required Performance:	B (For 100% Voltage Dips) C (For 30% Voltage Dips)
Test Duration Time:	Minimum three test events in sequence
Interval between Event:	Minimum ten seconds
Phase Angle:	0°/45°/90°/135°/180°/225°/270°/315°/360°
Test Cycle:	3 times

4.10.2 TEST PROCEDURE

The EUT shall be tested for each selected combination of test levels and duration with a sequence of three dips/interruptions with intervals of 10 s minimum (between each test event). Each representative mode of operation shall be tested. Abrupt changes in supply voltage shall occur at zero crossings of the voltage waveform.

4.10.3 TEST SETUP



4.10.4 TEST RESULTS

EUT:	LED sensor & Emergency ceiling light	Model Name:	Safeway-LL-04-12W4K-ES
Temperature:	25℃	Relative Humidity:	60%
Pressure:	1010hPa	Test Date :	2014-10-27
Test Mode:	Lighting & Charging		
Test Voltage:	AC 230V/50Hz		

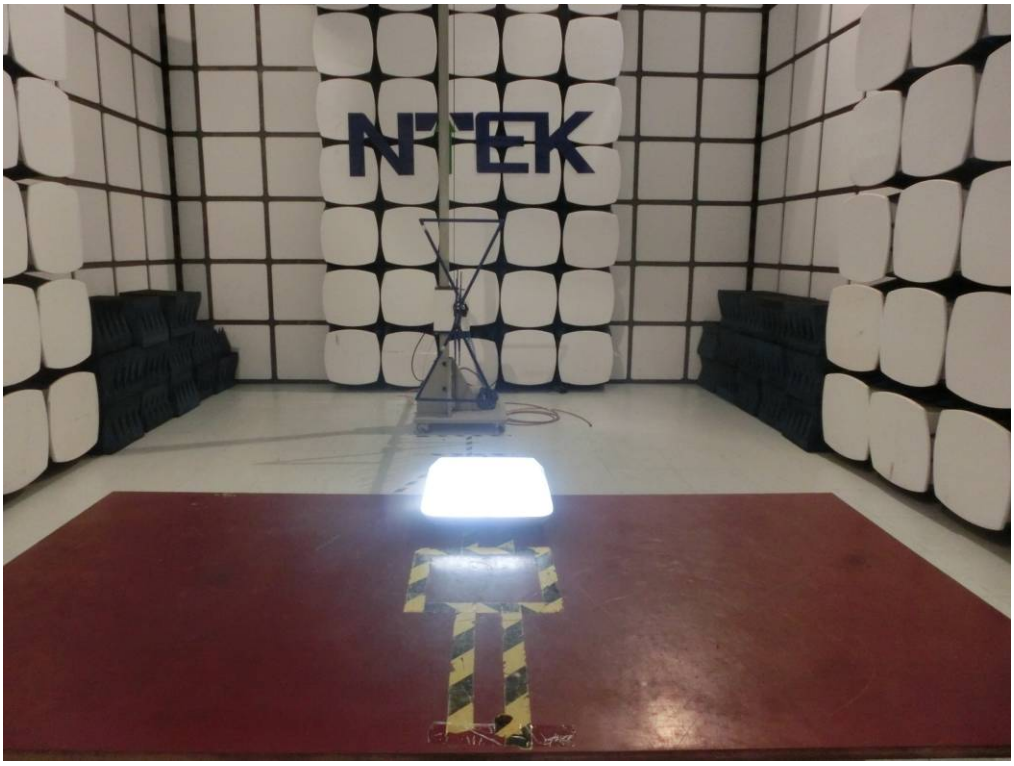
Interruption & Dips	Duration (T)	Perform Criteria	Results	Judgment
Voltage dip 100%	0.5	**B**	**P**	**Complies**
Voltage dip 30%	10	**C**	**P**	

Note:

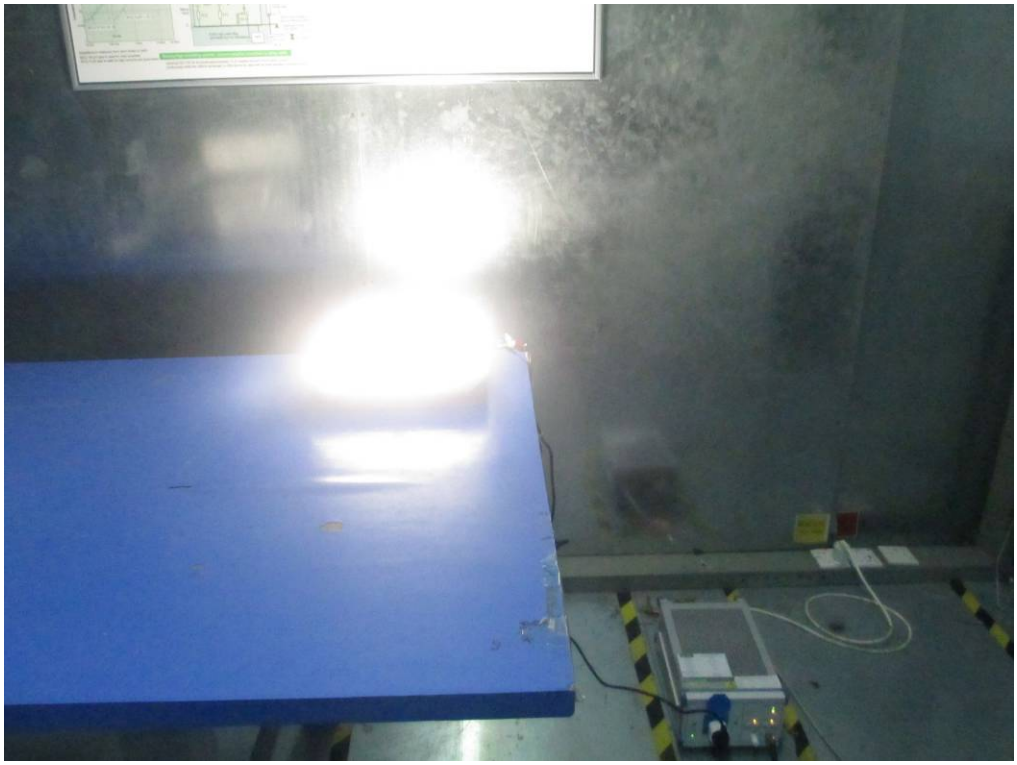
1). N/A - denotes test is not applicable in this test report.
2) In the table: ‘P’ represents ‘PASS’; ‘F’ represents ‘FAIL’.
3) Criteria A: There was no change operated with initial operating during the test.
4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
5) Criteria C: The system shut down during the test.

5. EUT TEST PHOTO

Radiated Measurement Photos



Conducted Measurement Photos



ATTACHMENT PHOTOGRAPHS OF EUT

Photo 1

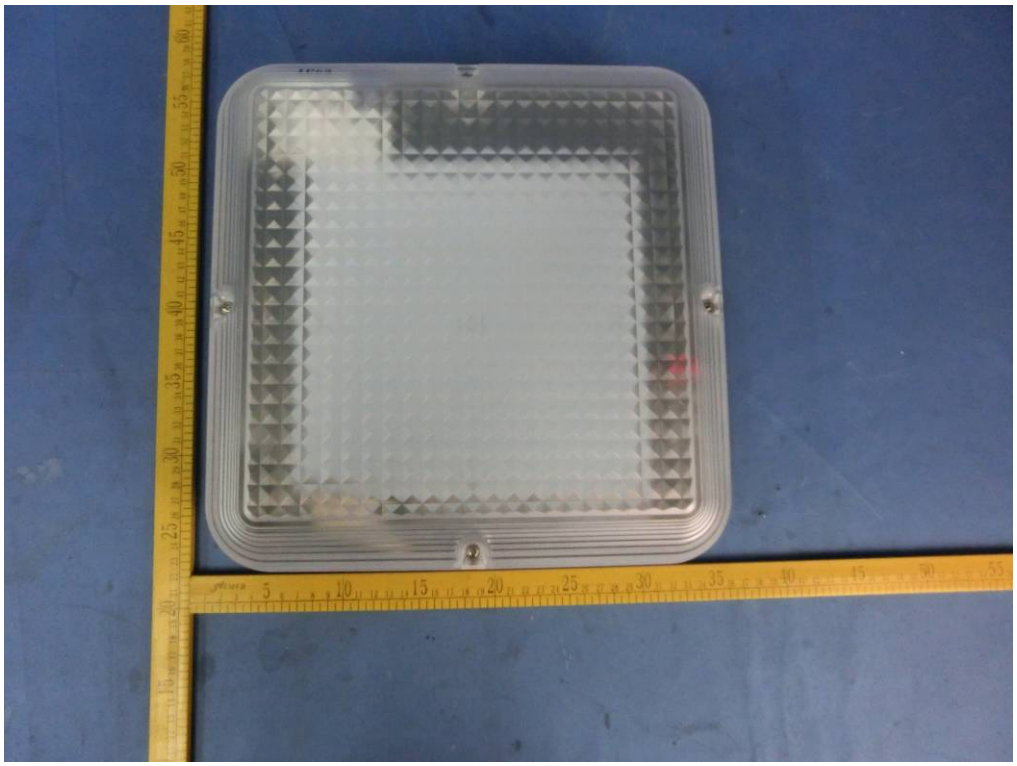


Photo 2

Photo 3

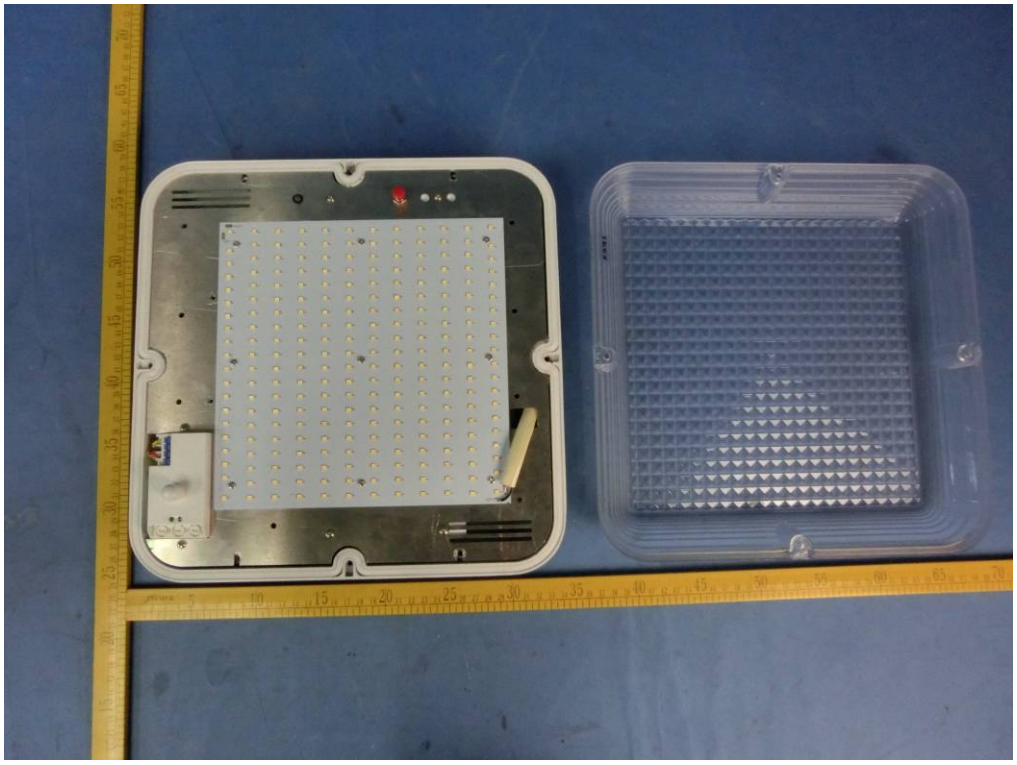


Photo 4

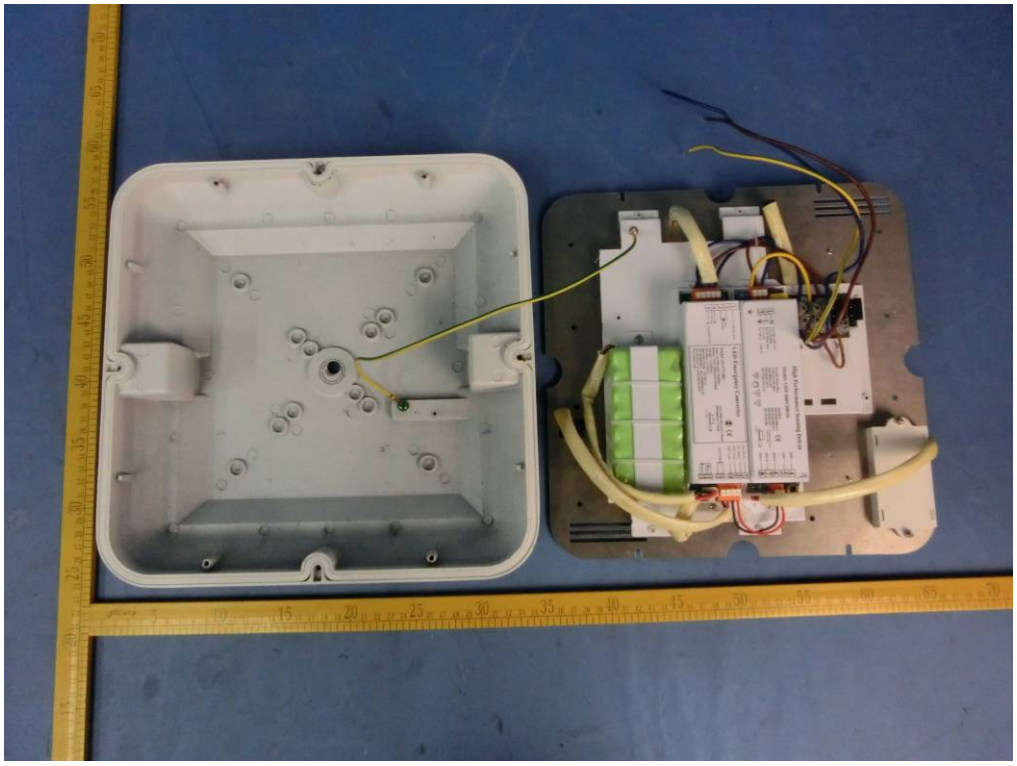


Photo 5

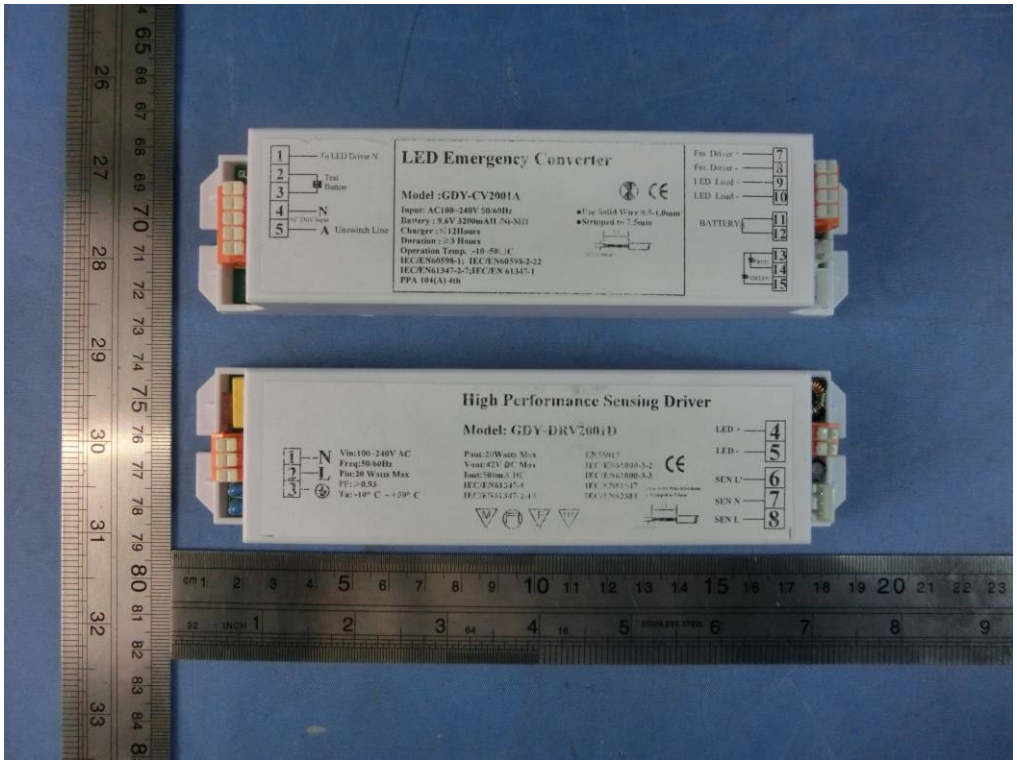


Photo 6

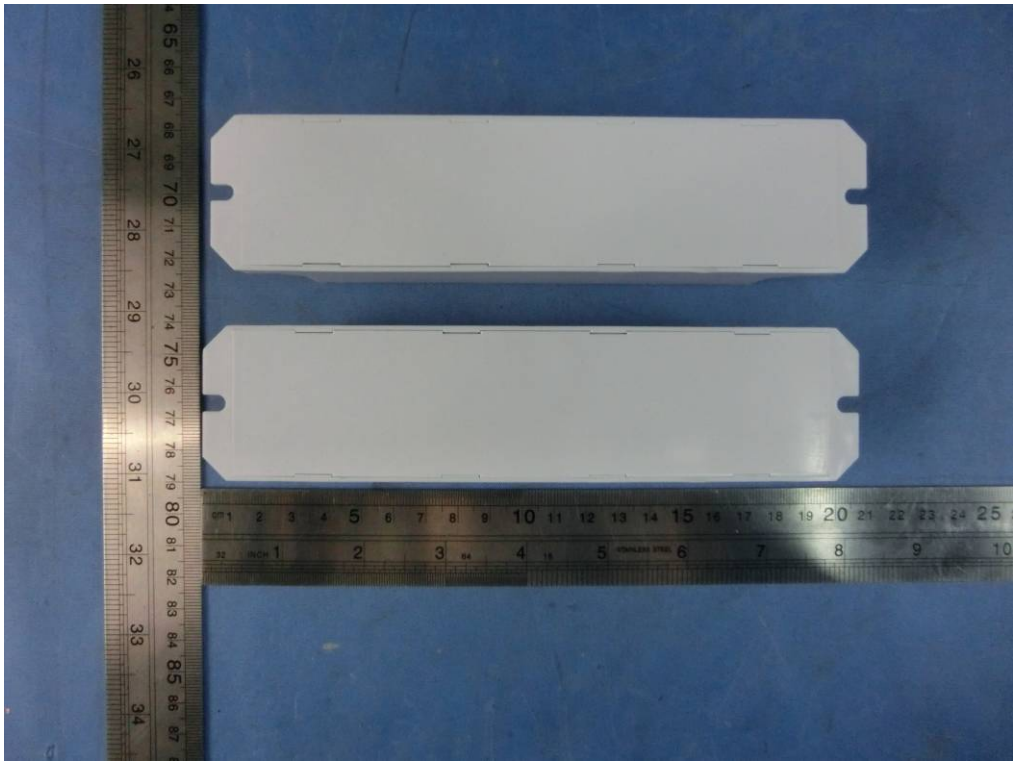


Photo 7

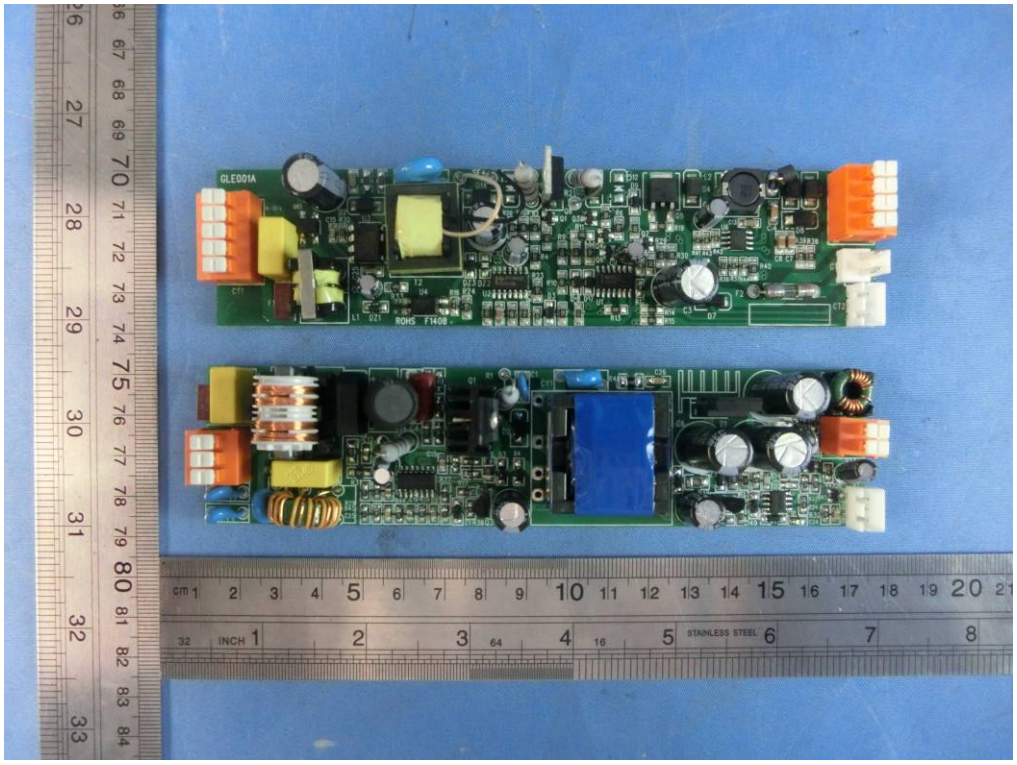


Photo 8

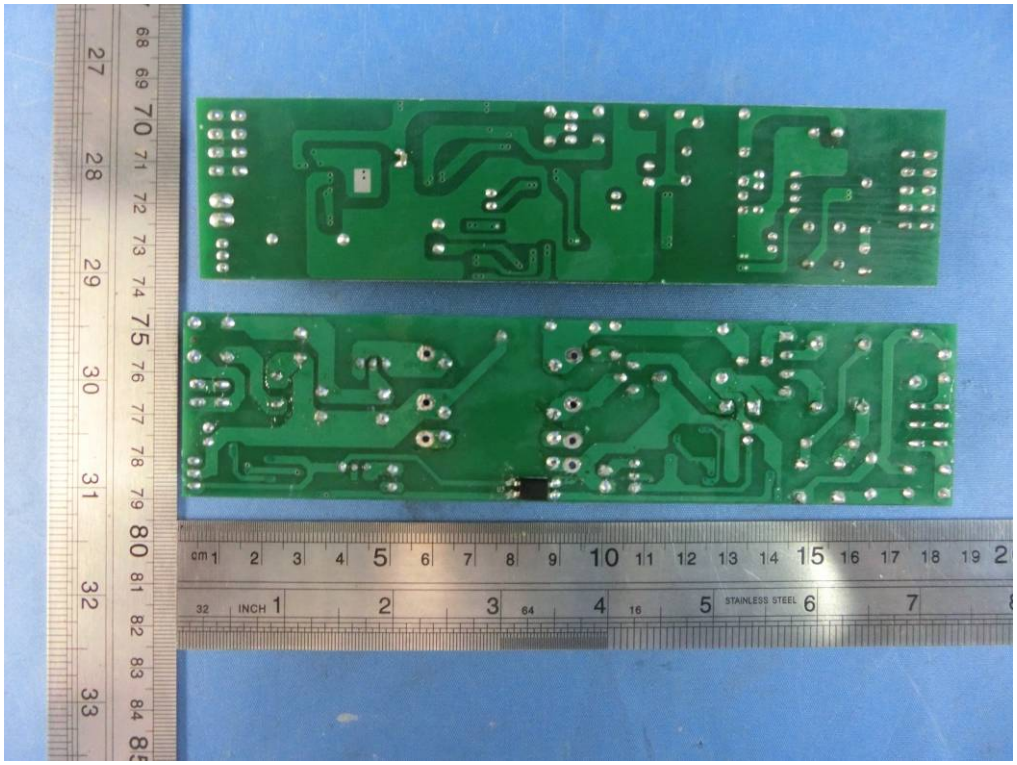


Photo 9

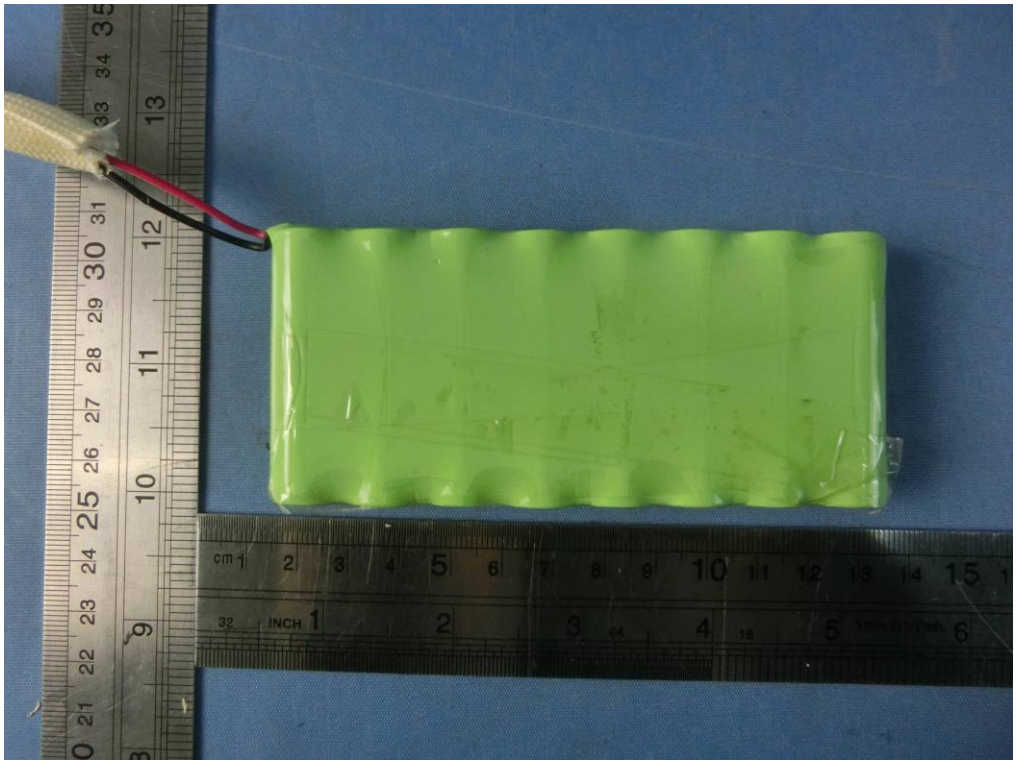


Photo 10

Photo 11

Photo 12

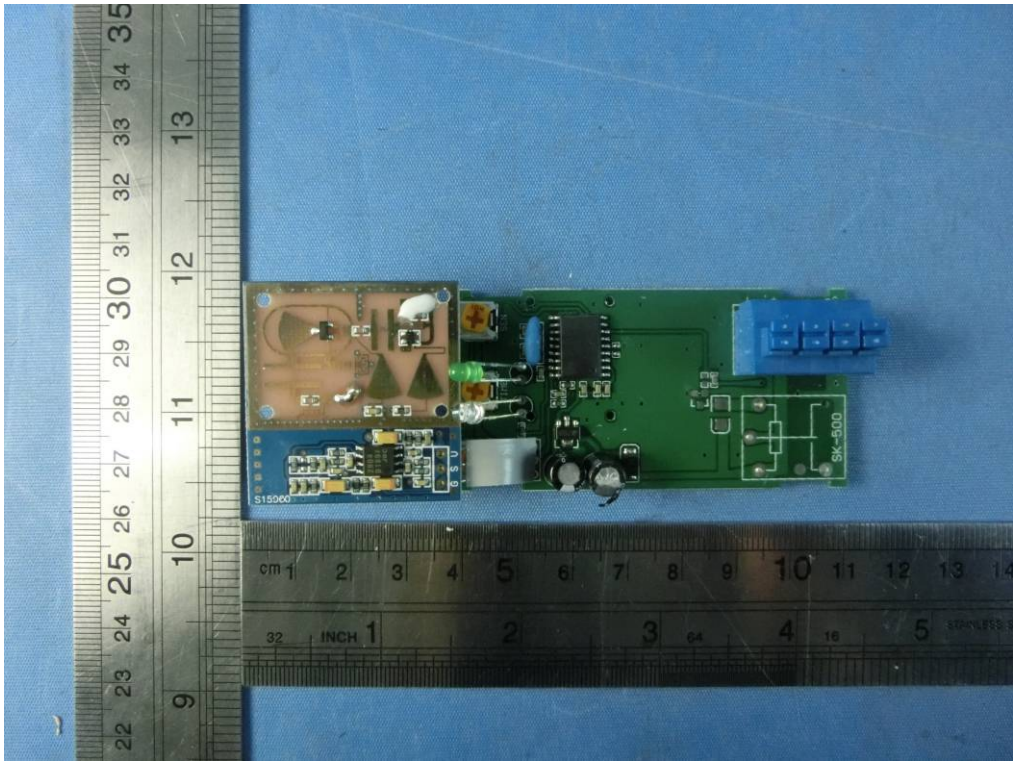


Photo 13

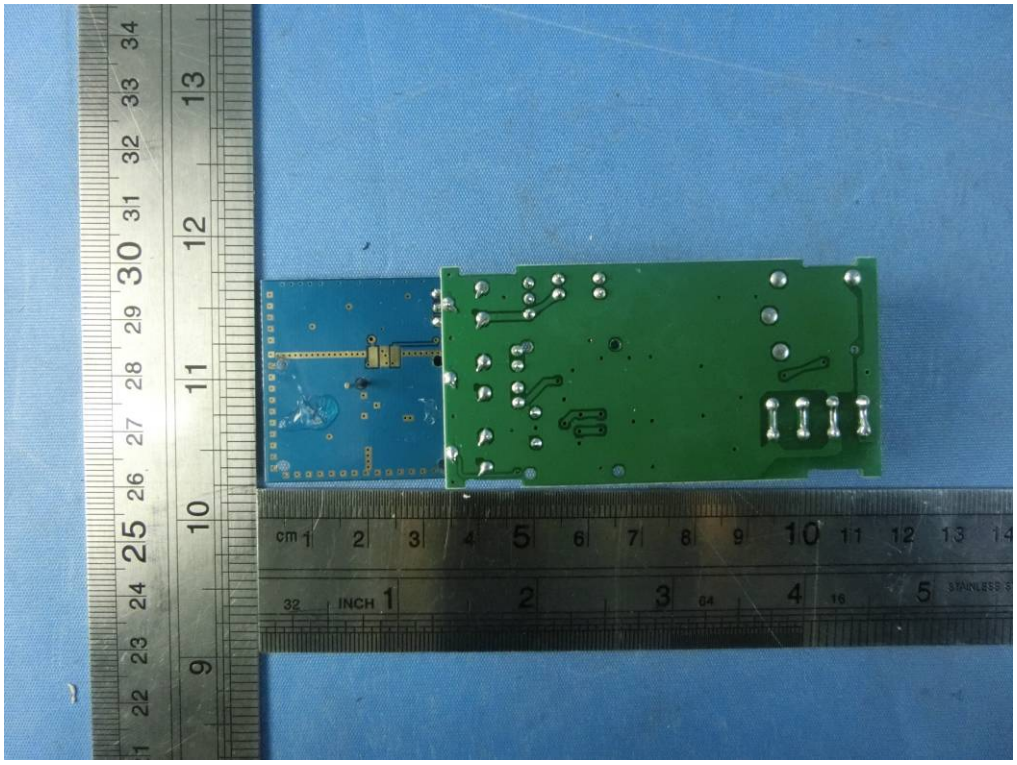


Photo 14

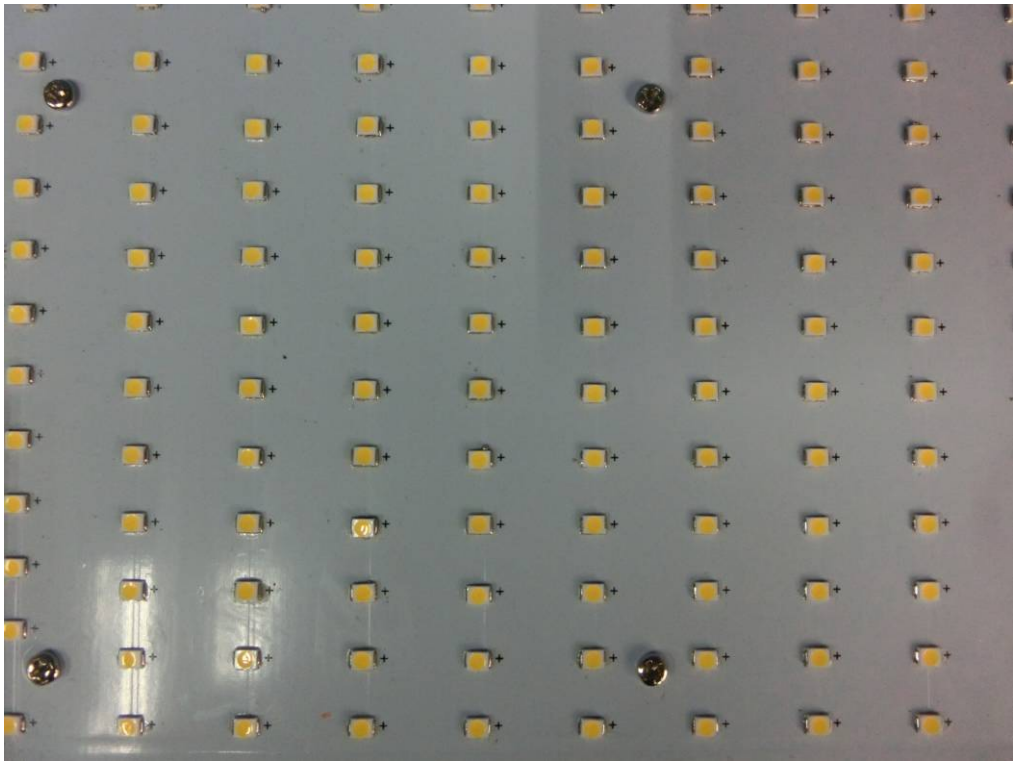


Photo 15

Photo 16