

LABORATORY MEASUREMENTS

Pursuant to 47 CFR Part 15 [10-01-18 Edition] and ANSI C63.4:2014

Report No.:	20041180HKG-001
Applicant:	IKEA of Sweden AB Box 702, SE-343 81 Älmhult, SWEDEN
Equipment Under Test (EUT):	
Product Description:	Bathroom Lamp
Model:	T1828 GUNNARP
Brand Name:	
Equipment Type:	Class B Digital Device / Unintentional Radiator
Sample Receipt Date:	January 18, 2019
Test Conducted Date:	January 18, 2019 to January 30, 2019
Issue Date:	May 04, 2020
Test Site Location:	Workshop No. 3, G/F., World-Wide Industrial Centre, 43-47 Shan Mei Street, Fo Tan, ShaTin, New Territories, Hong Kong SAR, China.
Conclusion:	Test was conducted by client submitted sample. The submitted sample as received complied with the 47 CFR Part 15 requirement.

Prepared and Checked by:

Approved by:

Signed on File

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TEST REPORT

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1. GENERAL INFORMATION

1.1 Client Information

Applicant: IKEA of Sweden AB

1.2 General Description of EUT

Product Description: Bathroom Lamp
Model No.: T1828 GUNNARP
Serial No.: Not Labelled

1.3 Details of EUT

Rated Voltage: 120VAC 60Hz
Cables: Not Applicable

For more detail features, please refer to user's Manual.

1.4 Description of Peripherals

Not Applicable

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2. TEST SUMMARY

Test	Standard	Class	Result
Conducted Emission	Section 15.107 of 47 CFR Part 15	Class B	Pass
Radiated Emission	Section 15.109 of 47 CFR Part 15	Class B	Pass

Remark:

All technical data is referred to previous report no. 19010777HKG-001 dated January 31, 2019.

The EUT has been tested/evaluated and pass the 47 CFR Part 15 without modification.

The production units are required to conform to the initial sample as received when the units are placed on the market.

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3. TEST SPECIFICATIONS

3.1 Standards

Both conducted and radiated emission tests were performed according to the procedures in ANSI C63.4: 2014. Test results are in compliance with the requirements of 47 CFR Part 15 [10-01-18 Edition].

The EUT setup configuration please refers to the photo of test configuration in item.

3.2 Definition of Device Classification

Unintentional radiator:

A device which is not intended to emit RF energy by radiation or induction.

Class A Digital Device:

A digital device which is marketed for use in commercial or business environment.

Class B Digital Device:

A digital device which is marketed for use by the general public or in a residential environment.

Note:

A manufacturer may also qualify a device intended to be marketed in a commercial, business or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

3.3 EUT Operation Condition

The EUT was powered by 120VAC 60Hz and was running in accordance with the manufacturer's operation manual.

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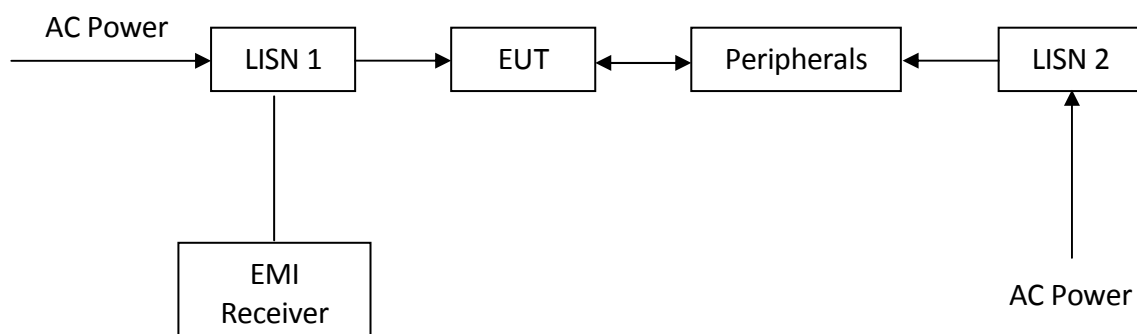
4. CONDUCTED EMISSION MEASUREMENTS (SECTION 15.107 OF 47 CFR PART 15)

4.1 Operating Environment

Temperature: $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$

Test Voltage: 120VAC

4.2 Test Setup and Procedure



The EUT along with its peripherals were placed on a 1.0m(W)×1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN), which provided 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. The excess power cable between the EUT and the LISN was bundled.

All connecting cables of EUT and peripherals were moved to find the maximum emission.

The EUT setup configuration please refers to the photo of test configuration in Appendix B1.

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4.3 Test Equipment

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.
EW-3095	EMI Test Receiver	R&S	ESCI	101430
EW-2874	Artificial Mains Network	R&S	ENV-216	101481
EW-2451	RF Cable 80cm (RG142)	RADIALL	bnc m st/ 142/ bnc m st 80cm	Nil

4.4 Conducted Emission Limits

Frequency (MHz)	Maximum RF Line Voltage			
	Class A (dB μ V)		Class B (dB μ V)	
	Q.P.	Ave.	Q.P.	Ave.
0.15~0.50	79	66	66~56	56~46
0.50~5.00	73	60	56	46
5.00~30.0	73	60	60	50

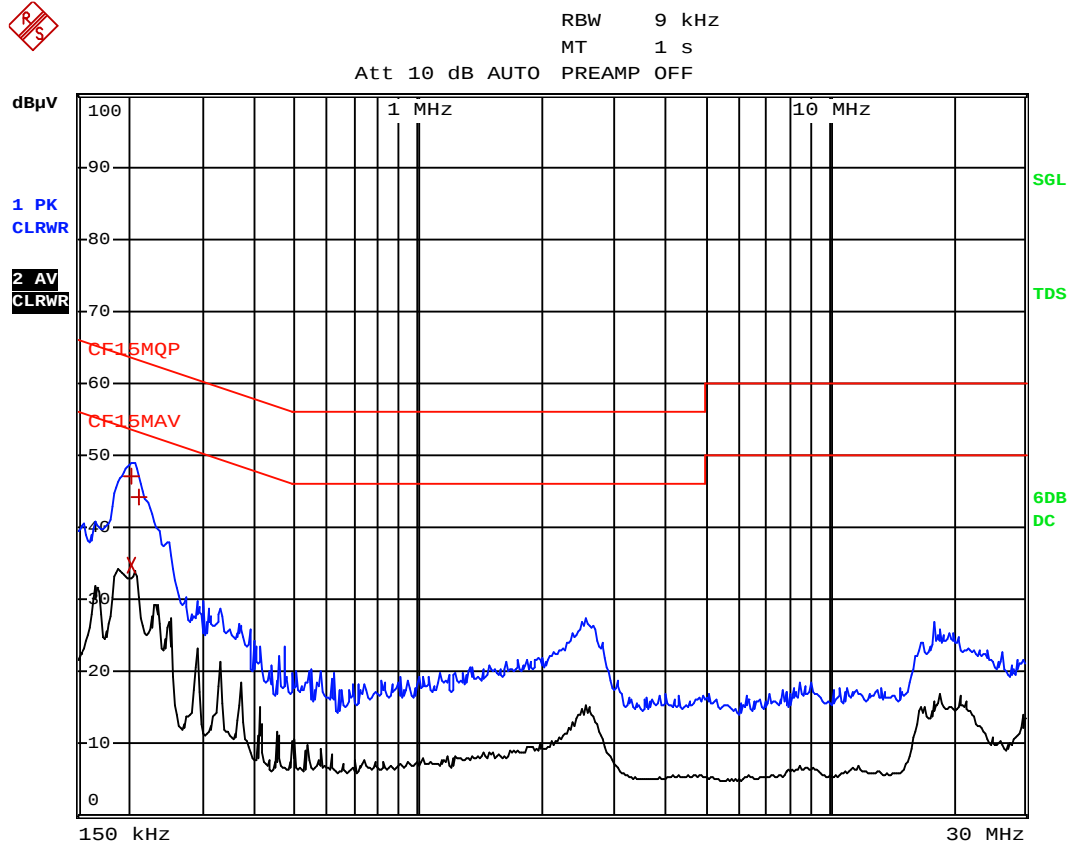
4.5 Uncertainty of Conducted Emission

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

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4.6 Conducted Emission Test Data

Phase: Live / Neutral
Model No.: T1828 GUNNARP
Worst Case: Light On



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Date: 29.JAN.2019 15:35:57

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Phase: Live / Neutral
Model No.: T1828 GUNNARP
Worst Case: Light On

EDIT PEAK LIST (Final Measurement Results)					
Trace1:		CF15MQP			
Trace2:		CF15MAV			
Trace3:		---			
	TRACE	FREQUENCY	LEVEL	dB μ V	DELTA LIMIT dB
1	Quasi Peak	204 kHz	47.19	N	-16.25
2	CISPR Average	204 kHz	34.75	L1	-18.69
1	Quasi Peak	213 kHz	44.33	N	-18.75

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5. RADIATED EMISSION MEASUREMENTS (SECTION 15.109 OF 47 CFR PART 15)

5.1 Operating Environment

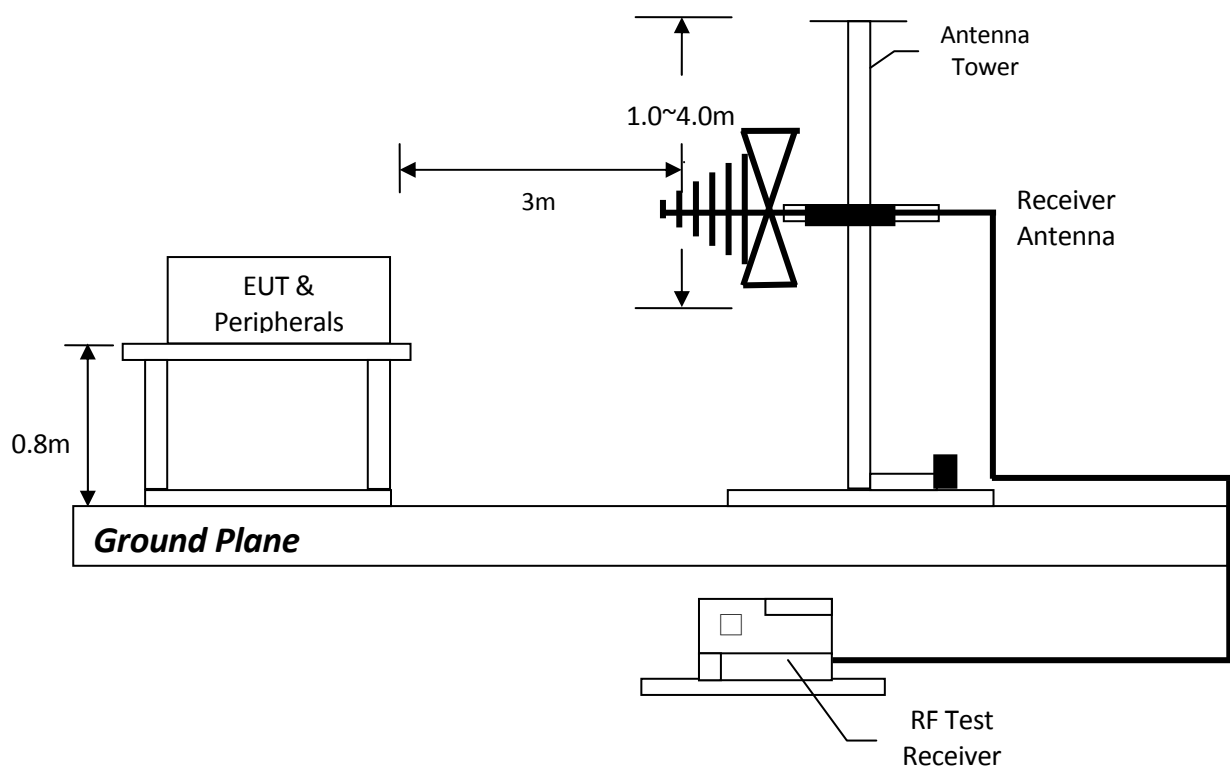
Temperature: $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$

Test Voltage: 120VAC

5.2 Test Setup and Procedure

The figure below shows the test setup, which is utilized to make these measurements.

The frequency spectrum from 30MHz to 1000MHz was investigated.



The equipment under test was placed on the top of rotation table 0.8 meter above ground plane.

The table was 360 degrees to determine the position of the highest radiation.

EUT is set 3 meters from the EMI receiving antenna, which is mounted on a variable height mast. The antenna height is varied between one meter and four meters above ground to find the maximum value of the field strength. Both horizontal polarization and vertical polarization of the antenna are set to make the measurement. The bandwidth was setting on the EMI meter 120kHz.

The levels are quasi peak value readings. The frequency spectrum from 30MHz to 1000MHz was investigated.

The EUT setup configuration please refers to the photo of test configuration in Appendix B2.

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5.3 Test Equipment

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.
EW-3095	EMI Test Receiver	R&S	ESCI	101430
EW-2249	Spectrum Analyzer	ROHDESCHWARZ	FSP30	100657
EW-0571	Biconical Antenna	EMCO	3104C	9504-4685
EW-0447	Log Periodic Antenna	EMCO	3146	9905-5218
EW-1133	Double Ridged Guide Antenna	EMCO	3115	0003-6091
EW-2074	14m Double Shield RF Cable (20MHz to 6GHz)	RADIAL	N(m)-RG142-BNC(m)L=14M	Nil

5.4 Radiated Emission Limits

According to Section 15.109 of 47 CFR Part 15, except for Class A digital device, the field strength of radiated emission from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Class B Radiated Emission Limits:

Frequency (MHz)	Field Strength (dB μ V/m)
30-88	40.0
88-216	43.5
216-960	46.0
Above 960	54.0

5.5 Uncertainty of Radiated Emission

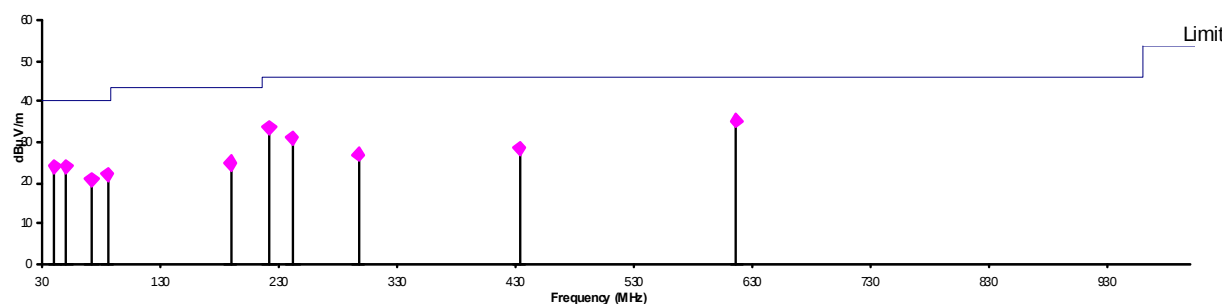
When determining the test conclusion, the Measurement Uncertainty of test has been considered.

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5.6 Radiated Emission Test Data

Pursuant to Section 15.109 of 47 CFR Part 15: Emissions Requirement

Polarity: Horizontal / Vertical
Model No.: T1828 GUNNARP
Worst Case: Light On



Polarization	Frequency (MHz)	Reading at 3m (dBμV/m)	Correction Factor	Calculated at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	40.910	6.6	-17.6	24.2	40.0	-15.8
V	51.059	3.1	-20.9	24.0	40.0	-16.0
V	72.198	0.6	-20.4	21.0	40.0	-19.0
V	85.760	1.6	-20.5	22.1	40.0	-17.9
H	189.775	8.0	-16.9	24.9	43.5	-18.6
H	222.171	18.2	15.4	33.6	46.0	-12.4
H	241.893	17.0	-14.3	31.3	46.0	-14.7
H	297.689	13.9	-13.1	27.0	46.0	-19.0
H	433.702	20.6	-8.0	28.6	46.0	-17.4
H	617.135	31.7	-3.7	35.4	46.0	-10.6

Note: Negative signs (–) in the margin column signify levels below the limit.