

TEST REPORT

LABORATORY MEASUREMENTS

Pursuant to 47 CFR Part 15 [10-01-19 Edition] and ANSI C63.4:2014

Report No.:	20111052HKG-003
Applicant:	IKEA of Sweden AB Box 702, SE-343 81 Älmhult, SWEDEN
Equipment Under Test (EUT):	
Product Description:	Bathroom Lamp
Model:	T1914 Barlast
Brand Name:	
Equipment Type:	Class B Digital Device / Unintentional Radiator
Sample Receipt Date:	November 23, 2020
Test Conducted Date:	November 23, 2020 to November 30, 2020
Issue Date:	March 31, 2021
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:

Signed on File
Lai Siu Ming, Henry/jc
Engineer

Approved by:



Digitally signed by Lawrence
Chow
DN: cn=Lawrence Chow,
o=Intertek Testing Services Hong
Kong Limited, ou,
email=lawrence.chow@intertek.
com, c=HK

Chow Hin Chung, Lawrence
Assistant Manager

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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.: T1914 Barlast
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

1.5 Decision Rule

Decision Rule for compliance: For FCC/IC standard, the measured value must be within the limits of applicable standard without accounting for the measurement uncertainty. For EN/IEC/HKTA/HKTC standard, conformity rules will be used as per standard directly excepted EN/IEC 61000-3-2, EN/IEC 61000-3-3, HKTA1004, HKCA1008, HKTA1019, HKTA1020, HKTA1041 and HKTA1044. For these excepted or not mentioned standards, Cl 4.2.2 of ILAC-G8:09/2019 decision rules will be reference and guard band will be equal to our measurement uncertainty with 95% confidence level ($k=2$). In case, the measured value is within guard band region, undetermined decision will be used.

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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. 20111052HKG-001 dated December 01, 2020.

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.

Enclosed please find the FCC Labelling and Instruction Manual Requirements.

For all external photos and setup photos, please refer to the 20111052HKG-003 (ANNEX) document.

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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 [10-01-19 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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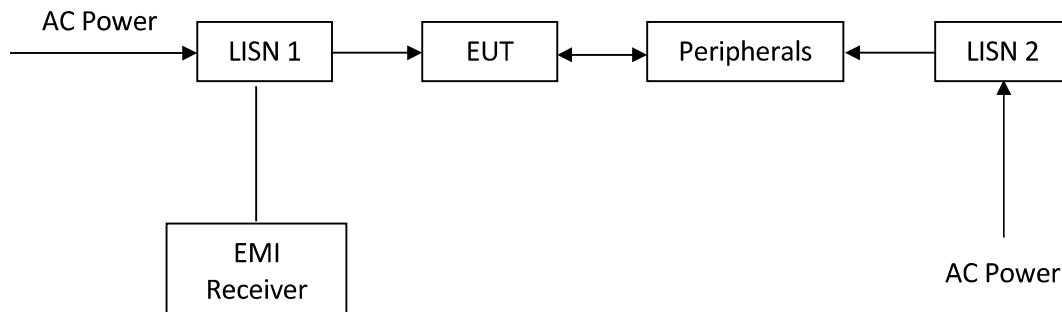
4. CONDUCTED EMISSION MEASUREMENTS (SECTION 15.107 OF 47 CFR PART 15)

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) $\times$ 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-2500	EMI Test Receiver	R&S	ESCI	100847
EW-2501	Artificial Mains Network	R&S	ENV-216	100483
EW-2451	RF Cable 80cm (RG142)	RADIALL	bnc m st/ 142/ bnc m st 80cm	Nil

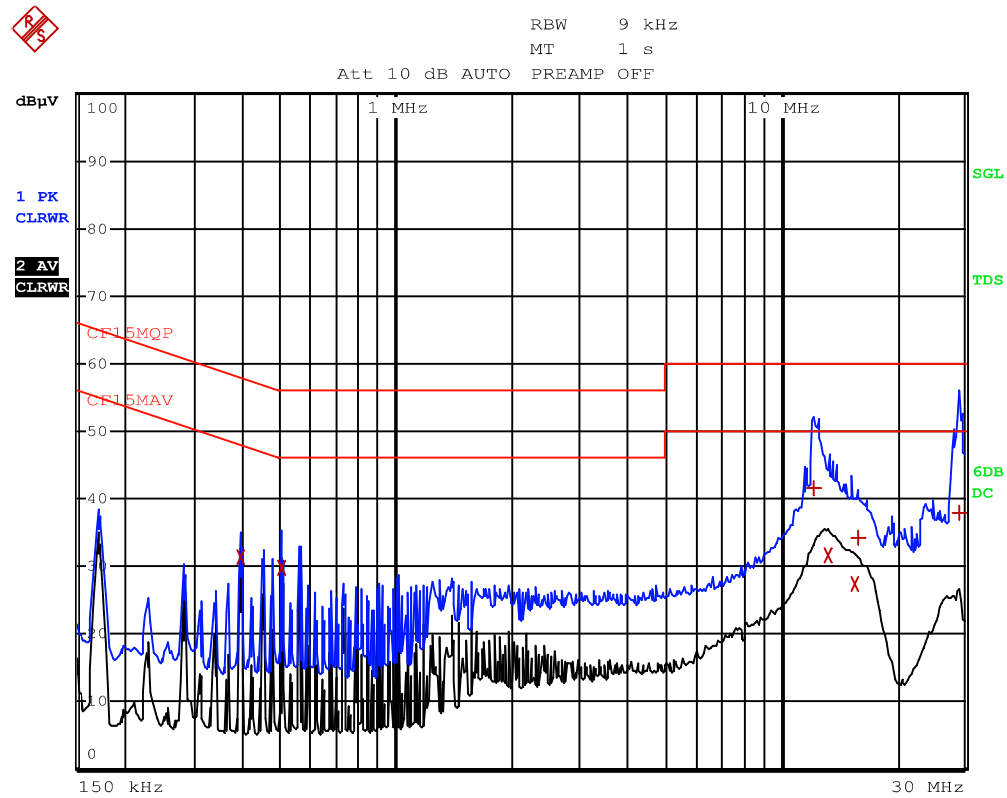
4.4 Conducted Emission Limits

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

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4.5 Conducted Emission Test Data

Phase: Live / Neutral
Model No.: T1914 Barlast
Worst Case: Light On



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Phase: Live / Neutral
Model No.: T1914 Barlast
Worst Case: Light On

EDIT PEAK LIST (Final Measurement Results)					
Trace1:	CF15MQP				
Trace2:	CF15MAV				
Trace3:	---				
TRACE	FREQUENCY	LEVEL	dB μ V	DELTA	LIMIT dB
2 CISPR Average	393 kHz	31.32	L1	-16.67	
2 CISPR Average	505.5 kHz	29.83	N	-16.17	
1 Quasi Peak	12.228 MHz	41.56	N	-18.43	
2 CISPR Average	13.218 MHz	31.62	L1	-18.37	
2 CISPR Average	15.5085 MHz	27.51	L1	-22.48	
1 Quasi Peak	15.8955 MHz	34.35	L1	-25.64	
1 Quasi Peak	29.058 MHz	37.99	N	-22.01	

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

5.1 Operating Environment

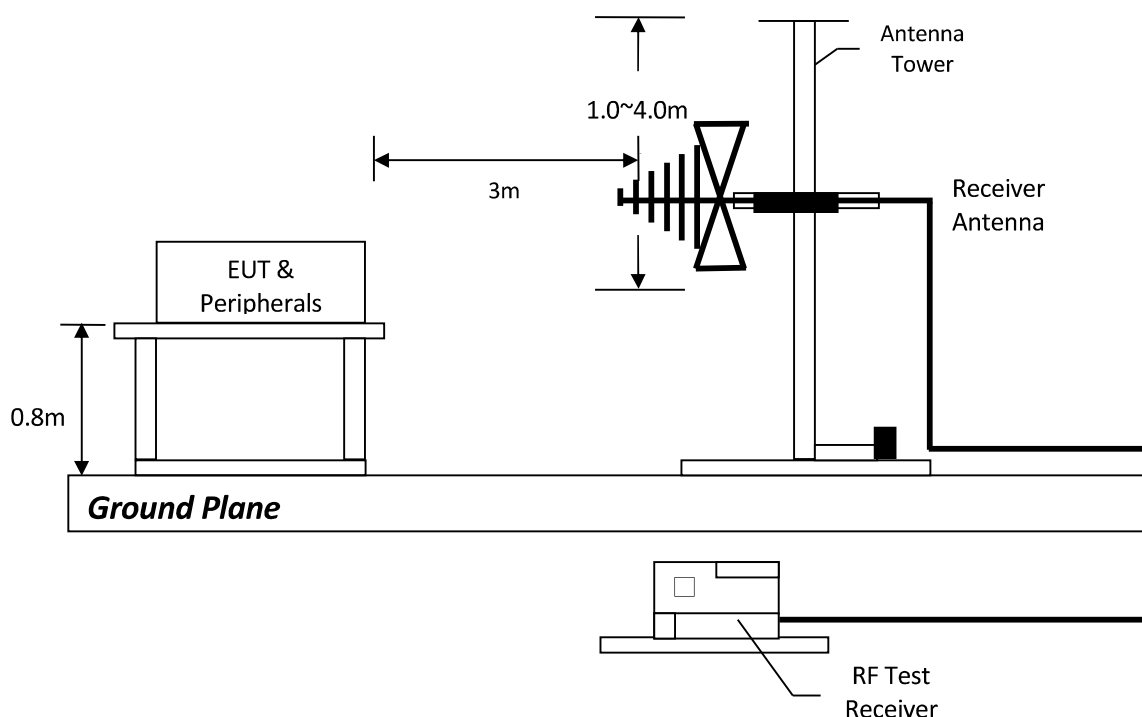
Temperature: $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$

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-2500	EMI Test Receiver	ROHDESCHWARZ	ESCI	100847
EW-3016	Spectrum Analyzer	ROHDESCHWARZ	FSV40	32840
EW-0571	Biconical Antenna	EMCO	3104C	9504-4685
EW-1042	Log Periodic Antenna	EMCO	3148	0001-1109
EW-0194	Double Ridged Guide Antenna	EMCO	3115	9208-3911
EW-2505	14m Double Shield RF Cable (20MHz - 6GHz)	RADIAL	nm / br5d / sma 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 (dBμV/m)
30-88	40.0
88-216	43.5
216-960	46.0
Above 960	54.0

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5.5 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + \text{Corr. (AF \& CF)}$$

Where FS = Field Strength in dBmV/m

RA = Receiver Amplitude (including preamplifier) in dBmV

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

Corr. = Cable Attenuation Factor + Antenna Factor in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + \text{Corr.}$$

Example

Assume a receiver reading of 23.0 dBmV is obtained. The Corr. factor of 9 dB is added. The net field strength for comparison to the appropriate emission limit is 32.0 dBmV/m. This value in dBmV/m is converted to its corresponding level in mV/m.

$$RA = 23.0 \text{ dBmV}$$

$$\text{Corr.} = 9 \text{ dB}$$

$$FS = 23 + 9 = 32.0 \text{ dBmV/m}$$

$$\text{Level in mV/m} = \text{Common Antilogarithm } [(32.0 \text{ dBmV/m})/20] = 39.8 \text{ mV/m}$$

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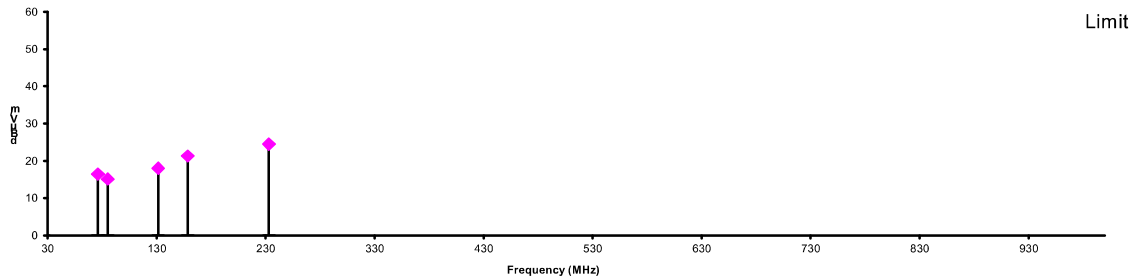
5.6 Radiated Emission Test Data

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

Polarity: Horizontal / Vertical

Model No.: T1914 Barlast

Worst Case: Light On



Polarization	Frequency (MHz)	Corr. Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	26.341	19.2	23.8	40.0	-16.2
V	76.188	8.5	16.5	40.0	-23.5
V	85.084	8.6	15.1	40.0	-24.9
V	131.397	10.0	18.0	43.5	-25.5
V	158.575	12.2	21.3	43.5	-22.2
H	233.041	14.5	24.6	46.0	-21.4

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