

# EMC TEST REPORT

No. 1910149STO-001, Ed. 1

## Electromagnetic disturbances

### EQUIPMENT UNDER TEST

Equipment: Table standing luminaire with LED  
Type/Model: B2009 Solskur  
Manufacturer: IKEA of Sweden AB  
Box 702  
343 81 Älmhult  
Sweden  
Tested by request of: IKEA of Sweden AB

### SUMMARY

Referring to the emission limits, and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards:

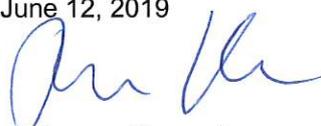
FCC 47 CFR Part 15: Radio frequency device, Subpart B: Unintentional radiators. Class B equipment.

ICES-005 Issue 5: Lighting Equipment, Class B. (2018)

For details, see clause 2 – 4.

Date of issue: June 12, 2019

Tested by:

  
Therese Kennerberg

Approved by:

  
Per Granberg

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**Revision History**

Edition	Date	Description	Changes
1	June 12, 2019	First release	

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## 2.2 Test set up and EUT photos

EUT photos and test set up photos are in separate document 1910149STO-001 Annex 1, Ed. 1.

## 2.3 Additional information about the EUT

The EUT was tested in a tabletop configuration.

The EUT consists of the following units:

Units	Type	Serial number
Luminaire	B2009 Solskur	-
LED-driver	ICPSW24-3-2	-

The EUT was equipped with the following cables:

Port	Type	Length [m]	Specifications
DC-power	Two-core, between LED-driver and luminaire	1.95	-

**3. TEST SPECIFICATIONS**

**3.1 Standards**

Requirements:

FCC 47 CFR Part 15: Radio frequency device, Subpart B: Unintentional radiators.

ICES-005 Issue 5: Lighting Equipment (2018).

Test methods:

ANSI C63.4: 2014: American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

**3.2 Test site**

Measurements were performed at:

Intertek Semko AB.  
Torshamnsgatan 43,  
P.O. Box 1103  
SE-164 22 Kista

Intertek Semko AB is a FCC listed test site with site registration number 90913  
Intertek Semko AB is a FCC accredited conformity assessment body with designation number SE0002  
Intertek Semko AB is an Industry Canada listed test facility with IC assigned code 2042G

Measurement chambers

Measurement Chamber	Type of chamber	IC Site filing #
STORA HALLEN	Semi-anechoic 10 m and 3 m	2042G-2

**3.3 Mode of operation during the test**

The EUT was tested with 120 V, 60 Hz.

The EUT was tested with light on.

### 3.4 Compliance

The EUT shall comply with the emission limits according to the standards as listed below

#### Conducted emission requirements:

The EUT shall meet the limits for the standards.

Reference: 47 CFR §15.107

ICES-005, section 5.5.2

#### Limits for conducted emission according to FCC and ICES-005

Class B

Frequency range [MHz]	Limits [dBµV]	
	Quasi-Peak	Average
0.15 – 0.50	66 – 56	56 – 46
0.50 – 5.00	56	46
5.00 – 30.0	60	50

#### Radiated Emission requirements:

The EUT shall meet the limits for the standards.

Reference: 47 CFR §15.109

ICES-005, section 5.5.3

#### Limits for radiated emission according to FCC

Class B

Frequency range [MHz]	Field strength at 3 m (dBµV/m)	Field strength at 10 m (dBµV/m)	Detector
30 – 88	40.0	29.5	Quasi Peak
88 – 216	43.5	33.0	Quasi Peak
216 – 960	46.0	35.5	Quasi Peak
960 – 1000	54.0	43.5	Quasi Peak
Above 1000	54.0 / 74.0	43.5 / 63.5	Average / Peak

The values for 10 m measuring distance are calculated by subtracting 10.5 dB from the 3 m limit. (i.e. an extrapolation factor of 20 dB/decade according to §15.31(f)(1))

#### Limits for radiated emission according to ICES-005

Class B

Frequency range [MHz]	Field strength at 3 m (dBµV/m)	Field strength at 10 m (dBµV/m)	Detector
30 – 88	40.0	29.5	Quasi Peak
88 – 216	43.5	33.1	Quasi Peak
216 – 1000	46.0	35.6	Quasi Peak

#### 4. TEST SUMMARY

The results in this report apply only to sample tested:

The measured value is within the measurement uncertainty interval to the limit.

Standard	Description	Result
	<b>Emission</b>	
<b>FCC Part 15 subpart B</b>  <b>ICES-005</b>	<b>Conducted continuous emission in the frequency range 0.150 – 30 MHz, AC Power input port</b>  The EUT complies with the Class B limits. The margin to the limit was at least 11.7 dB at 0.155 MHz See clause 5.4.	<b>PASS</b>
<b>FCC Part 15 subpart B</b>  <b>ICES-005</b>	<b>Radiated emission of electromagnetic fields in the frequency range 30 – 1000 MHz</b>  The EUT complies with the Class B limits. The margin to the limit was at least 3.9* dB at 48.370 MHz See clause 6.5. and 6.6  *The measured result is below the limit by a margin less than the measurement uncertainty.	<b>PASS</b>

**5. CONDUCTED CONTINUOUS DISTURBANCES  
in the frequency-range 0.15 – 30 MHz**

**5.1 Operating environment**

Date of test:	Temperature:	Relative Humidity:
June 5, 2019	24 [°C]	52 [%]

**5.2 Test setup and test procedure**

The test method is in accordance with ANSI C63.4.

The EUT was connected to the power via Artificial Mains Networks AMN.

The EUT was placed on an insulating support 0.8 m above the floor, 0.4 m from the vertical reference ground plane (RGP) and 0.8 m from the AMN/ISN.

Overview sweeps were performed for each lead.

During the tests the EUT was operated according to the mode of operation mentioned in clause 3.4.

**5.3 Measurement uncertainty**

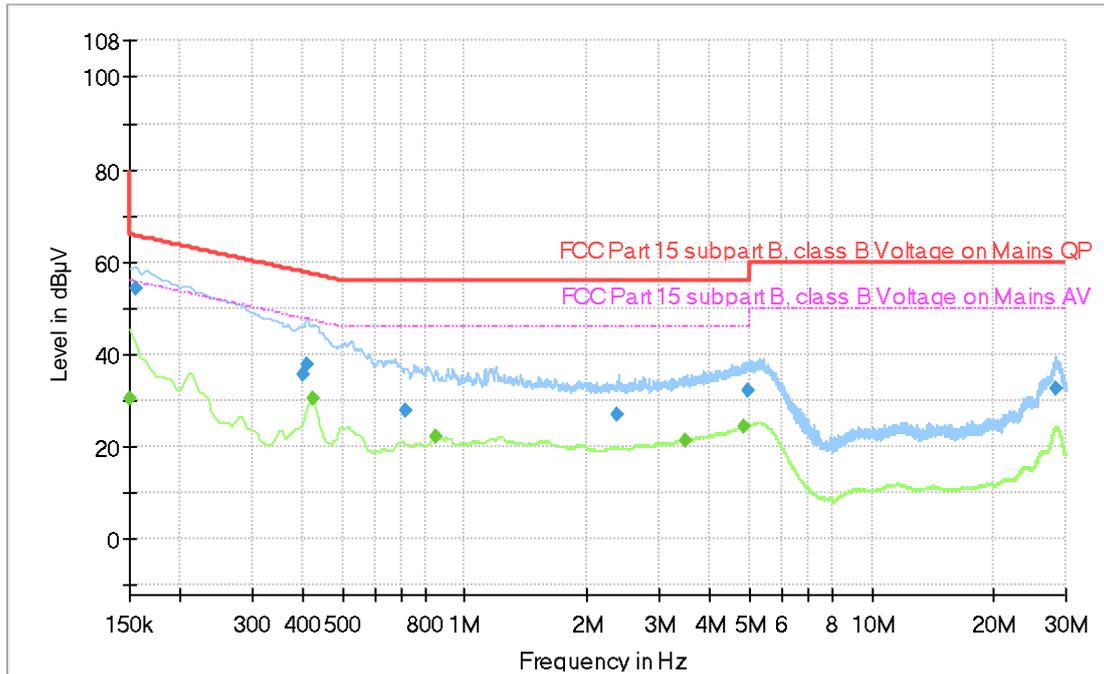
Continuous conducted disturbances with AMN  
in the frequency range 150 kHz to 30 MHz

± 3.3 dB

Measurement uncertainty is calculated in accordance with CISPR 16-4-2:2011.

The measurement uncertainty is given with a confidence of 95 %.

5.4 Test results, AC Power input port, Class B



Diagram, Peak and Average overview sweep

Measurement results, Quasi-peak, Class B

Frequency [MHz]	Result [dBµV]	Limit [dBµV]	Line L/N	Margin [dB]
0.155	54.1	65.8	L	11.7
0.398	35.6	57.9	N	22.3
0.411	37.6	57.6	L	20.0
0.713	28.1	56.0	L	27.9
2.375	27.1	56.0	N	28.9
4.970	32.2	56.0	N	23.8
28.291	32.7	60.0	L	27.3

Measurement results, Average, Class B

Frequency [MHz]	Result [dBµV]	Limit [dBµV]	Line L/N	Margin [dB]
0.150	30.3	56.0	L	25.7
0.422	30.2	47.4	L	17.2
0.845	22.0	46.0	N	24.0
3.471	21.3	46.0	N	24.7
4.873	24.4	46.0	N	21.6

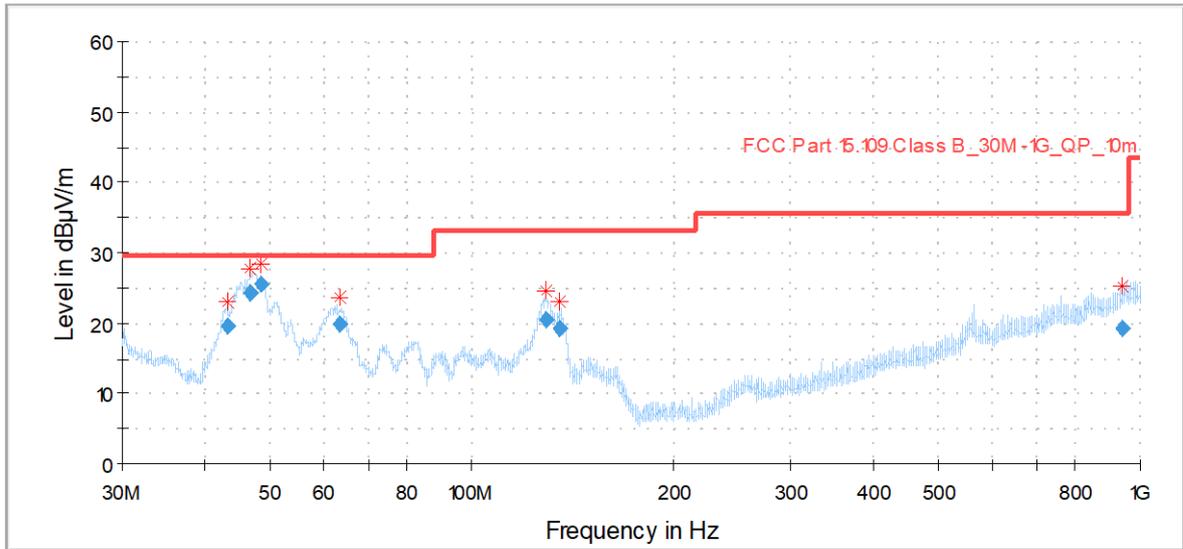
Result [dBµV] = Analyser reading [dBµV] + cable loss [dB] + LISN insertion loss [dB]

**5.5 Test equipment**

Equipment type	Manufacturer	Model	Inv. No.	Last Cal. date	Cal. interval
Measurement software	Rohde & Schwarz	EMC32 - V10.50.00	--	--	--
Receiver	Rohde & Schwarz	ESU 8	12866	07- 2018	1 year
AMN / LISN	Rohde & Schwarz	ESH3-Z5	2728	07- 2018	1 year
Attenuator	Rohde & Schwarz	ESH3-Z2	32455	07-2018	1 year
Cable	Huber & Suhner	RG 223/U	9815	07-2018	1 year
Cable	Suhner	G03232 D-01	9701	10-06-2018	1 year



6.5 Test results, 30 – 1000 MHz, FCC, Class B



Diagram, Peak overview sweep, 30 – 1000 MHz at 10 m distance.

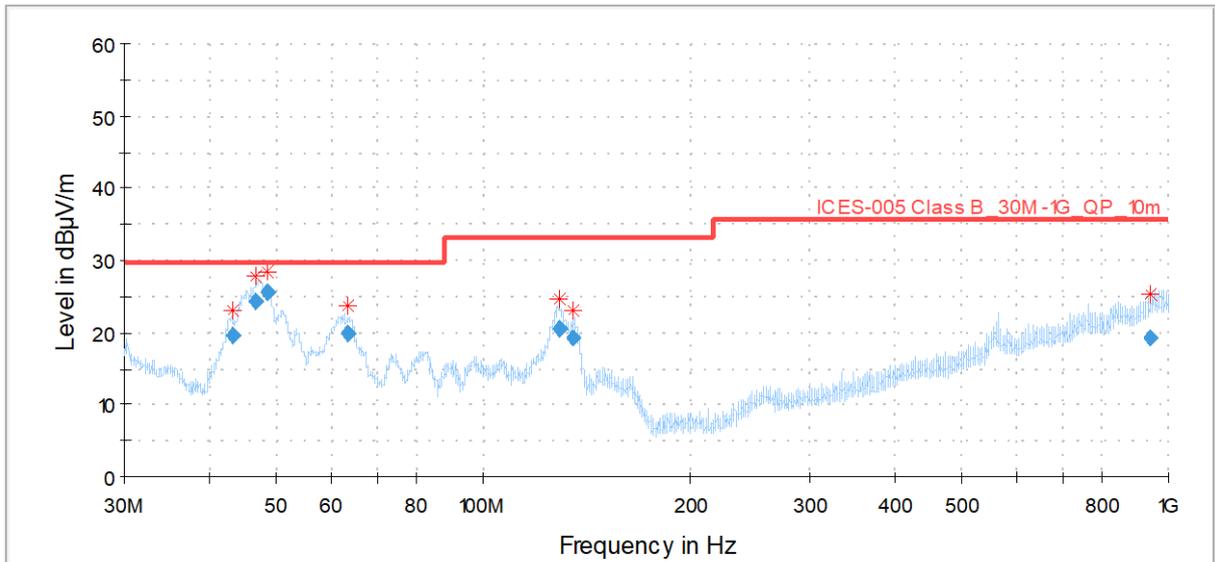
Measurement results, Quasi Peak, Class B

Frequency [MHz]	Result [dBµV/m]	Limit [dBµV/m]	Polarization H/V	Margin [dB]
43.072	19.5	29.5	V	10.0
46.714	24.3	29.5	V	5.2
48.370	25.6	29.5	V	3.9*
63.677	19.9	29.5	V	9.6
128.712	20.6	33.1	V	12.5
134.952	19.3	33.1	V	13.8
939.939	19.3	35.6	V	16.3

\*The measured result is below the limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95 % level of confidence. However, the result indicates that compliance is more probable than non-compliance with the specification limit.

Result [dBµV/m] = Analyser reading [dBµV] + Antenna factor [1/m] - Amplifier gain [dB] + Cable loss [dB]

6.6 Test results, 30 – 1000 MHz, ICES-005, Class B



Diagram, Peak overview sweep, 30 – 1000 MHz at 10 m distance.

Measurement results, Quasi Peak, Class B

Frequency [MHz]	Result [dBµV/m]	Limit [dBµV/m]	Polarization H/V	Margin [dB]
43.072	19.5	29.5	V	10.0
46.714	24.3	29.5	V	5.2
48.370	25.6	29.5	V	3.9*
63.677	19.9	29.5	V	9.6
128.712	20.6	33.1	V	12.5
134.952	19.3	33.1	V	13.8
939.939	19.3	35.6	V	16.3

\*The measured result is below the limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95 % level of confidence. However, the result indicates that compliance is more probable than non-compliance with the specification limit.

Result [dBµV/m] = Analyser reading [dBµV] + Antenna factor [1/m] - Amplifier gain [dB] + Cable loss [dB]

**6.7 Test equipment**

Equipment type	Manufacturer	Model	Inv. No.	Last Cal. date	Cal. interval
Measurement software	Rohde & Schwarz	EMC32 - V10.50.00	--	--	--
Measurement Receiver	Rohde & Schwarz	ESW 44	33890	02-2018	1,5 year
Antenna	Chase	CBL 6111A	971	09-2017	3 years
Preamplifier	SEMKO	AM1331	S7992	09-2019	1 year
Measurement cable	Suhner	RG214/U	9798	01-2019	1 year
Measurement cable	Rosenberger	LA5-S003-10000	39163	04-2019	1 year
Measurement cable	Rosenberger	LA5-S003-7000	39162	04-2019	1 year