

EMF TEST REPORT

No. 2010296STO-303

EQUIPMENT

Equipment: Work station luminaire for led lamp
Type/Model: A2001 Nymåne
Manufacturer: IKEA of Sweden AB
Tested by request of: IKEA of Sweden AB

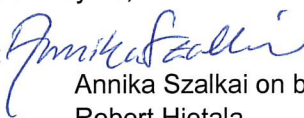
SUMMARY

All selected test cases specified in this report comply with the requirements according to the following standards:

RSS-216, Issue 2
RSS-102, Issue 5
ISED SPR-002, Issue 1
47 CFR §1.1310
KDB 680106

Date of issue: May 20, 2021

Tested by:


Annika Szalkai on behalf of
Robert Hietala

Approved by:


Björn Utermöhl

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Revision History

Test report number	Date	Description	Changes
2010296STO-302	June 02, 2020	First release	--
2010296STO-303	May 20, 2021	First release	Photos deleted

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1 CLIENT INFORMATION

The EUT has been tested by request of:

Company	IKEA of Sweden AB Box 702 343 81 Älmhult Sweden
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2 EQUIPMENT

2.1 Identification of the equipment

Equipment:	Work station luminaire for LED lamp
Type/Model:	A2001 Nymåne
Serial number:	--
Brand name:	IKEA
Manufacturer:	IKEA of Sweden AB
Frequency range:	112 – 148 kHz
Built-in wireless charger:	IKEA ICTD-5-BI-3 TORHEL

2.2 Peripheral equipment

Peripheral equipment is equipment needed for correct operation of the EUT, but not included as part of the testing and evaluation of the EUT.

Equipment	Type	Manufacturer	Comment
Wireless charger load	Prototype	IKEA of Sweden AB	Activates the charger during testing

3 TEST SPECIFICATIONS

3.1 Standards

RSS 216 Issue 2:	Wireless Power Transfer Devices
RSS 102 Issue 5:	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
ISED SPR-002, issue 1:	Supplementary Procedure for Assessing Compliance with RSS-102 Nerve Stimulation Exposure Limits
47 CFR §1.1310:	Radiofrequency radiation exposure limits.
KDB 680106:	RF Exposure Considerations for Low Power Consumer Wireless Power Transfer Applications

3.2 Test site

Measurements were performed at:

Intertek Semko AB
Torshamnsgatan 43
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 Innovation, Science and Economic Development Canada (ISED) listed test facility with ISED assigned code 2042G

3.3 Mode of operation during the test

The EUT was tested with 120 V, 60 Hz.

EUT was set up with a maximum load on the charger pad.

4 SUMMARY

The evaluation has been carried out at the Intertek Semko AB premises in Kista, Sweden.
The results in this report apply only to sample tested:

Test	Result	Margin
RF exposure magnetic field	PASS	4.16 A/m
RF exposure electric field	PASS	62.6 V/m

5 RF EXPOSURE

5.1 Test set-up and test procedure

The test was performed in a fully anechoic-room and the EUT was set up according to section 3.4.

Measurements are made with a magnetic field probe at a distance of 15 cm between the edge of the EUT and the center of the probe. Measurements are made at all four sides and the top of the EUT charger pad. Maximum RMS value of the magnetic flux density measured is recorded. Worst-case value is presented.

Electric field measurements were performed with an electric field probe.

5.2 Calculations

$$B = \mu H$$

B = Magnetic flux density (T)

μ = air permeability = $1.25663753 \times 10^{-6}$ (N/A²)

H = Magnetic field strength (A / m)

$$H = B/\mu$$

5.3 Test results

B [μT]	H [A/m]	E [V/m]	Limit reference	Limit at 148 kHz [A/m]	Limit at 200 kHz [V/m]	Result
0.95	0.77	20.4	RSS-102 Issue 5	4.93	83	PASS
			KDB 680106	1.63	614	PASS

5.4 Limits

Reference: RSS-102 Issue 5

Limits for General Population/Uncontrolled Exposure

Frequency range [MHz]	Electric field strength [V/m]	Magnetic field strength [A/m]	Power density [mW/cm ²]	Averaging time [minutes]
0.003 – 10	83	90	-	Instantaneous
0.1 – 10	-	0.73/ f	-	6
1.1 – 10	87/ $f^{0.5}$	-	-	6
10 – 20	27.46	0.0728	-2	6
20 – 48	58.07/ $f^{0.25}$	0.1540/ $f^{0.25}$	8.944/ $f^{0.5}$	6
48 – 300	22.06	0.05852	1.291	6
300 – 6 000	3.142 $f^{0.3417}$	0.008335 $f^{0.3417}$	0.02619 $f^{0.6834}$	6
6 000 – 15 000	61.4	0.163	10	6
15 000 – 150 000	61.4	0.163	10	616000/ $f^{1.2}$
150 000 – 300 000	0.158 $f^{0.5}$	4.21 x 10 ⁻⁴ $f^{0.5}$	6.67 x 10 ⁻⁵ f	616000/ $f^{1.2}$

Limits for Occupational/Controlled Exposure

Frequency range [MHz]	Electric field strength [V/m]	Magnetic field strength [A/m]	Power density [mW/cm ²]	Averaging time [minutes]
0.003 – 10	170	180	-	Instantaneous
0.1 – 10	-	1.6/ f	-	6
1.29 – 10	193/ $f^{0.5}$	-	-	6
10 – 20	61.4	0.163	-10	6
20 – 48	129.8/ $f^{0.25}$	0.3444/ $f^{0.25}$	44.72/ $f^{0.5}$	6
48 – 100	49.33	0.1309	6.455	6
100 – 6000	15.60 $f^{0.25}$	0.04138 $f^{0.25}$	0.6455 $f^{0.5}$	6
6000 – 15000	137	0.364	50	6
15000 – 150000	137	0.364	50	616000/ $f^{1.2}$
150000 – 300000	0.354 $f^{0.5}$	9.40 x 10 ⁻⁴ $f^{0.5}$	3.33 x 10 ⁻⁴ f	616000/ $f^{1.2}$

Reference: 47 CFR §1.1310, KDB 680106

Limits for General Population/Uncontrolled Exposure

Frequency range [MHz]	Electric field strength [V/m]	Magnetic field strength [A/m]	Power density [mW/cm ²]	Averaging time [minutes]
0.1 – 0.3	614	1.63	*100	30
0.3 – 1.34	614	1.63	*100	30
1.34 – 30	824/ f	2.19/ f	*180/ f^2	30
30 – 300	27.5	0.073	0.2	30
300 – 1 500	-	-	$f/1500$	30
1 500 – 100 000	-	-	1.0	30

Limits for Occupational/Controlled Exposure

Frequency range [MHz]	Electric field strength [V/m]	Magnetic field strength [A/m]	Power density [mW/cm ²]	Averaging time [minutes]
0.1 – 0.3	614	1.63	*100	6
0.3 – 3.0	614	1.63	*100	6
3.0 – 30	1842/ f	4.89/ f	*900/ f^2	6
30 – 300	61.4	0.163	1.0	6
300 – 1 500	-	-	$f/300$	6
1 500 – 100 000	-	-	5	6

6 TEST EQUIPMENT

Equipment	Manufacturer	Model	Inv. No.	Last Cal Date	Cal. interval
B-field sensor	NARDA	ELT-400	12730	05-2018	2 years
E-field sensor	ETS-Lindgren	HI-6122	32324	09-2019	2 years

7 MEASUREMENT UNCERTAINTY

The measurement uncertainty describes the overall uncertainty of the given measured value during operation of the EUT.

The measurement uncertainty is given with a confidence of 95 % (k=2).

Parameter	Uncertainty
H/B-field, 10 Hz – 400 kHz	± 19 %
E-field, 10 kHz – 1 GHz	± 0.9 dB