

Prüfbericht-Nr.: Test report no.:	60440573-001	Auftrags-Nr.: Order no.:	23870506 030	Seite 1 von 6 Page 1 of 6
Kunden-Referenz-Nr.: Client reference no.:	-	Auftragsdatum: Order date:	2021.02.10	
Auftraggeber: Client:	Brainlit AB			
Prüfgegenstand: Test item:	Alven Global			
Bezeichnung / Typ-Nr.: Identification / Type no.:	Contains FCC ID: VPYLBEE5HY1MW			
Auftrags-Inhalt: Order content:	RF Exposure Evaluation			
Prüfgrundlage: Test specification:	FCC 47 CFR 2.1091 IEEE Std. C95.1:2005			
Wareneingangsdatum: Date of sample receipt:	N/A			
Prüfmuster-Nr.: Test sample no.:	N/A			
Prüfzeitraum: Testing period:	N/A -			
Ort der Prüfung: Place of testing:	Lund, Sweden			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland Sweden			
Prüfergebnis*: Test result*:	Siehe Sonstiges / See Other			
überprüft von: reviewed by:	genehmigt von: authorized by:			
Datum: 2021.05.26 Date:	Datum: 2021.05.26 Date:			
Stellung / Position:	Senior Technical Expert	Stellung / Position:	Lab Manager	
Sonstiges / Other:	See details below			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable
5 = mangelhaft N/T = nicht getestet 5 = poor N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts.</i>				

V05

Revision History60440573-00160440573-001

Revision	Date	Remarks	Author
001	2021.05.26	First release	Niall Forrester
Note: Latest revision report will replace all previous reports			
This report based on RF Exposure FCC 47CR 2-1091 IEEE C95 Template version 1.1			

Statement of Compliance

Evaluation was performed based on FCC 47 CFR 2.1091 and IEEE C95.1:2005, together with the “General Population / Uncontrolled” requirements set out in FCC 47 CFR 1.1310 Table 1 (B)

The calculations below show that the “Alven Global” device is compliant with these requirements at a distance of 20cm for all supported wireless transmitter technologies.

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1. GENERAL INFORMATION

1.1 Test Site

Test Facility:	TÜV Rheinland Sweden AB
Address:	Mobilvägen 10
	223 62 Lund
	Sweden
Swedac Registration Number:	10325
FCC Test Firm Registration Number:	517458
ISED Test Site Registration Number:	24753

1.2 Client Information

Company Name:	Brainlit AB
Address:	Scheelevägen 34
	223 63 Lund
	Sweden
Contact Person:	Johan Frogner
Contact e-Mail / Telephone	Johan.frogner@brainlit.com / +46 (0) 708 300 439

2. PRODUCT INFORMATION

2.1 General Description

Model name:	Alven Global
Manufacturer:	Brainlit AB
Model number / Marketing name:	Alven Global / 100023
FCC ID:	N/A (Contains approved module with FCC ID: VPYLBEE5HY1MW)
Description:	Free Standing LED Luminaire
Ancillary Equipment:	N/A

2.2 Device Usage and Evaluation Distance

The Brainlit Alven Global is a freestanding LED luminaire with built-in Wifi and Bluetooth low Energy. An evaluation distance of 20cm has been selected.

2.3 Wireless Technologies and Bands Supported by the EUT

Technology	Band	Frequency Range (Tx)	Evaluation Performed*
Bluetooth LE (LBEE5HY1MW)	2.4 GHz	2402 MHz – 2480 MHz	YES
WiFi 802.11b/g/n (LBEE5HY1MW)	2.4 GHz	2412 MHz – 2462 MHz	YES

2.4 Simultaneous Transmission Configurations

No simultaneous transmission configurations are supported by the device.

2.5 Conducted Power and Antenna Gain

Technology	Band	Max. Conducted Output Power (dBm)	Max. Time-Averaged Output Power (dBm)*	Antenna Gain (dBi)
Bluetooth LE (LBEE5HY1MW)	2.4 GHz	5.11	5.11	0.10
WiFi 802.11b/g/n (LBEE5HY1MW)	2.4 GHz	23.83	23.83	0.10

3. TEST METHODS

3.1 Test Standards

Testing was performed according to the following standards / references

Standard	Version	Description
47 CFR 2.1091	-	Radiofrequency radiation exposure evaluation: mobile devices.

3.2 Additional references

Standard	Version	Description
IEEE Std. C95.1	2005	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz

3.3 Limits

Extract from 47 CFR 1.1310 - Radiofrequency radiation exposure limits

Table 1B

Limits for Maximum Permissible Exposure (MPE)
(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)
0.3 - 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 - 1500	-	-	f/1500	30
1500 - 10000	-	-	1.0	30

Notes:

1. f = frequency in MHz
2. * = Plane-wave equivalent power density

4. EVALUATION DETAILS

4.1 Power Density (S) at 20cm Distance for Each Band and Technology

The Power Density at 20cm separation distance has been calculated for each of the transmitter technologies supported by the device according to a re-arrangement of the Friis formula, as below:

$$S = \frac{P * G}{4\pi * r^2}$$

Where:

- “S” is power density in mW/cm²
- “P” is maximum avg. conducted power (incl. tolerances) in mW according to data from the manufacturer
- “G” is the peak antenna gain (numerical) according to data from the manufacturer
- “r” is the separation distance (20 cm)

Technology	Band	Freq* (MHz)	Power (dBm)	P (mW)	Gain (dBi)	G (Num.)	r (cm)	S (mW/cm ²)	Limit ** (mW/cm ²)
Bluetooth LE (LBEE5HY1MW)	2.4 GHz	2402	5.11	3.24	0.10	1.02	20	0.0007	1.0
WiFi 802.11b/g/n (LBEE5HY1MW)	2.4 GHz	2412	23.83	241.55	0.10	1.02	20	0.0492	1.0

*The lowest frequency in each band has been chosen, to give the most conservative limit

**The limits listed are from FCC 47 CFR 1.1310 Table 1 (B): “Limits for General Population/Uncontrolled”

From 1500MHz to 100000MHz, the limit is 1.0 mW/cm²