Vista Labs
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FCC RF Exposure Evaluation Report

Test Report Number	SUB-23071961-LC-FCC-MPE
FCC ID	2AS4H-BLINC2
Applicant	Subeca, Inc.
Applicant Address	4514 Cole Avenue Suite 600, Dallas, TX 75205
Product Name	Subeca BLINC
Model (s)	BLINC
Date of Receipt	08/15/2023
Date of Test	08/15/2023- 08/21/2023
Report Issue Date	02/27/2024
Test Standards	47 CFR §1.1307(b), 47 CFR §1.1310
Test Result	**PASS**

Issued by:

Vista Compliance Laboratories
1261 Puerta Del Sol, San Clemente, CA 92673 USA
www.vista-compliance.com

Devin Tai (Test Engineer)

David Zhang (Technical Manager)

REVISION HISTORY

Report Number	Version	Description	Issued Date
SUB-23071961-LC-MPE	01	Initial report	02/27/2024

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1 General Information

1.1 Applicant

Applicant	Subeca, Inc.
Applicant address	4514 Cole Avenue Suite 600, Dallas, TX 75205
Manufacturer	Subeca, Inc.
Manufacturer Address	4514 Cole Avenue Suite 600, Dallas, TX 75205

1.2 Product information

Product Name	Subeca BLINC
Product Description	Subeca BLINC
Model Number	BLINC
Family Models	N/A
Serial Number	N/A
Frequency Band	BLE: 2402-2480MHz LoRA: 902.3-914.9MHz
Type of modulation	GFSK (BLE), LoRA
Equipment Class	DTS, DSS
Antenna Information	FPC Antenna: WPANT10148-S1A (BLE anenna), peak gain: 2 dBi WPANT10144-S2A (LoRA antenna), peak gain: -1 dBi WPANT10129-S1A (LoRA antenna), peak gain: 2 dBi
Clock Frequencies	N/A
Input Power	DC 3.7V
Power Adapter Manufacturer/Model	N/A
Power Adapter SN	N/A
Hardware version	N/A
Software version	N/A
Simultaneous Transmission	BLE and LoRa can transmit simultaneously
Additional Info	N/A

1.3 Test standard and method

Test standard	47 CFR §1.1307(b), 47 CFR §1.1310
Test method	47 CFR §1.1307(b), 47 CFR §1.1310

2 Test Site Information

Lab performing tests	Vista Laboratories, Inc.
Lab Address	1261 Puerta Del Sol, San Clemente, CA 92673 USA
Phone Number	+1 (949) 393-1123
Website	www.vista-compliance.com

Test Condition	Temperature	Humidity	Atmospheric Pressure
RF Testing	23.5°C	55.1%	996 mbar
Radiated Emission Testing	23.5°C	55.1%	996 mbar

3 Test Results

3.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
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
1500-100,000	…	…	1.0	30

f = Frequency in MHz; *Plane-wave equivalent power density

3.2 MPE Calculation Formula

Equation: $S = PG / 4\pi R^2$ or $R = \sqrt{PG / 4\pi S}$

Where, S = Power Density

P = Power Input to Antenna

G = Antenna Gain

R = distance to the center of radiated antenna in cm

3.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as Mobile Device.

3.4 Antenna Gain

EUT has two removable FPC antennas which connect to the main board through unique U.FL RF connectors. One for BLE and one for LoRa.

WPANT10148-S1A (BLE anenna), peak gain: 2 dBi
WPANT10144-S2A (LoRA antenna), peak gain: -1 dBi
WPANT10129-S1A (LoRA antenna), peak gain: 2 dBi

4 Test Results

Radio	Frequency (MHz)	Conducted Output Power (dBm)	Antenna Gain (dBi)	Separation distance (cm)	Power Density (mW/ cm^2)	MPE Limit (mW/ cm^2)
BLE	2402	5.67	2	20	0.0012	1
LoRA	908.5	19.56	2	20	0.0285	0.606

The above results show that the device complies with the MPE requirement.

The BLE is able to transmit simultaneously with LoRA.

The ratio = 0.0012/1 + 0.0285/0.606 = 0.0482 < 1.0

The above results show that the device complies with the simultaneous transmission MPE requirement.

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