

Altacogni AB

MPE ASSESSMENT REPORT

Report Type:

FCC MPE assessment report

Model:

VAI1-0004

REPORT NUMBER:

220101921SHA-001

ISSUE DATE:

Sep 2, 2022

DOCUMENT CONTROL NUMBER:

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Applicant: Altacogni AB
Altacogni AB, Arenavagen 27, C/O Nordomatic, Johanneshov
12177,Sweden

Manufacturer: Altacogni AB
Altacogni AB, Arenavagen 27, C/O Nordomatic, Johanneshov
12177,Sweden

FCC ID: 2AE7LVA11-0004

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

447498 D04 Interim General RF Exposure Guidance v01

FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b)

PREPARED BY:

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Reviewer
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Revision History

Report No.	Version	Description	Issued Date
220101921SHA-001	Rev. 01	Initial issue of report	Sep 2, 2022

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	Wireless radio module
Type/Model:	VAI1-0004
Description of EUT:	It is a Dual Band Radio Module IEEE 802.15.4, 2.4GHz & IEEE 802.15.4g 914 MHz, it has only one model.
Rating:	DC 2.3V to 5.2V
Category of EUT:	Class B
EUT type:	☒ Table top ☐ Floor standing
Software Version:	/
Hardware Version:	/
Sample received date:	May 23, 2022
Date of test:	June 20, 2022

1.2 Technical Specification

Frequency Range:	Zigbee: 2405-2480 MHz; Sub-GHz: 906-922 MHz
Support Standards:	IEEE 802.15.4 & IEEE 802.15.4g
Type of Modulation:	QPSK, 2-GFSK
Channel Number:	Zigbee: 16 channels; Sub-GHz: 5 channels
Antenna Information:	Zigbee: 2.2dBi, chip antenna Sub-GHz: 1.4dBi, external antenna

1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN1175
	IC Registration Lab Registration code No.: 2042B-1
	VCCI Registration Lab Registration No.: R-4243, G-845, C-4723, T-2252
	NVLAP Accreditation Lab NVLAP LAB CODE: 200849-0
	A2LA Accreditation Lab Certificate Number: 3309.02

TEST REPORT

2 MPE Assessment

Test result: Pass

2.1 MPE Test Exclusion Limit

General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table B.1 to support an exemption from further evaluation from 300 kHz through 100 GHz.

TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES
SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

RF Source Frequency			Minimum Distance			Threshold ERP
f_L MHz		f_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W
0.3	–	1.34	159 m	–	35.6 m	$1,920 R^2$
1.34	–	30	35.6 m	–	1.6 m	$3,450 R^2/f^2$
30	–	300	1.6 m	–	159 mm	$3.83 R^2$
300	–	1,500	159 mm	–	31.8 mm	$0.0128 R^2 f$
1,500	–	100,000	31.8 mm	–	0.5 mm	$19.2 R^2$
Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.						

The table applies to any RF source (i.e., single fixed, mobile, and portable transmitters) and specifies power and distance criteria for each of the five frequency ranges used for the MPE limits. These criteria apply at separation distances from any part of the radiating structure of at least $\lambda/2\pi$. The thresholds are based on the general population MPE limits with a single perfect reflection, outside of the reactive near-field, and in the main beam of the radiator.

For mobile devices that are not exempt per Table B.1 at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP_{20cm} in Formula (B.1)

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

2.2 Assessment Results

As we can see from the test report 220523057SZN-001 & 220523057SZN-002:

Mode	Power	Antenna Gain	EIRP	Exclusion Limits @20cm
	dBm	dBi	mW	mW
Zigbee	1.13	2.2	2.15	3060
Sub-GHz	10.24	1.4	14.59	1864

Zigbee & Sub-GHz can simultaneous transmitting,the sum of the MPE ratios is:
 $2.15/3060 + 14.59/1864 = 0.00853 < 1.0$

Therefore, the MPE requirement is deemed to be satisfied without test.

Appendix I

Definition below must be outlined in the User Manual:

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.

To ensure compliance, operations at closer than this distance is not recommended.

***** END *****