

RF Exposure Evaluation Report

Product : Rais2.1 Base Station
Trade mark : N/A
Model/Type reference : Rais2.1
Serial Number : N/A
Report Number : EED32P80467602
FCC ID : 2AVOR-BASE423
Date of Issue : Jun. 08, 2023
Test Standards : 47 CFR Part 1.1307
47 CFR Part 1.1310
47 CFR Part 2.1091
47 CFR Part 2.1093
447498 D04 Interim General RF
Exposure Guidance v01
Test result : PASS

Prepared for:

Retail Aware, Inc**808 Conagra Dr ; Ste 401 ; Omaha, Ne 68102**

Prepared by:

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Date of issue:

Jun. 08, 2023

Check No.: 8012060423



2 Version

Version No.	Date	Description
00	Jun. 08, 2023	Original

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4 General Information

4.1 Client Information

Applicant:	Retail Aware, Inc
Address of Applicant:	808 Conagra Dr ; Ste 401 ; Omaha, Ne 68102
Manufacturer:	Retail Aware, Inc
Address of Manufacturer:	808 Conagra Dr ; Ste 401 ; Omaha, Ne 68102
Factory:	Retail Aware, Inc
Address of Factory:	808 Conagra Dr ; Ste 401 ; Omaha, Ne 68102

4.2 General Description of EUT

Product Name:	Rais2.1 Base Station
Model No.(EUT):	Rais2.1
Trade Mark:	N/A

4.3 Product Specification subjective to this standard

Product Name:	Rais2.1 Base Station		
Mode No.(EUT):	Rais2.1		
Trade mark:	N/A		
Product Type:	☐ Mobile ☐ Portable ☒ Fix Location		
Device Type:	DTS		
Operation Frequency:	902 MHz~928MHz		
Center Frequency:	914.88 MHz		
Number of Channel:	1		
Antenna Type:	External antenna		
Antenna Gain:	5.0dBi		
Power Supply:	Adapter:	AC 100-240V~50/60Hz 0.25A	
Sample Received Date:	Apr. 06, 2023		
Sample tested Date:	Apr. 06, 2023 to Apr. 22, 2023		
Remark: Company Name and Address shown on Report, the sample(s) and sample Information were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.			

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1).

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

The 1 mW Blanket Exemption of § 1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

5.1.3 EUT RF Exposure Evaluation

For Stand alone:

(1)914.88 MHz:

Frequency (MHz)	Separation distance(cm)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (mW)	Limit (mW)	MPE Ratio	Result
914.88	20	13.20	5.0	18.2	16.05	40.272	1866.355	0.02	PASS

Note:

- ①EIRP=conducted power+antenna gain;
- ②ERP=EIRP-2.15
- ③The test data please refer to the report No.:EED32P80467601.

(2)2.4G WiFi:

Frequency (MHz)	Separation distance(cm)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (mW)	Limit (mW)	MPE Ratio	Result
2437	20	15.53	3.74	19.27	17.12	51.523	3060	0.02	PASS

Note:

- ①EIRP=conducted power+antenna gain;
- ②ERP=EIRP-2.15
- ③The test data please refer to the ESP-WROOM-02D module(FCC ID: 2AC7Z-ESPWROOM02D), report No.:RXA1709-0323RF02R3,and only the worst case data was recorded in the report.

(3)IOT module:

Band	Separation distance(cm)	Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (mW)	Limit (mW)	MPE Ratio	Result
Narrow Band 1	20	821.5	23.38	1.41	24.79	22.64	183.654	1683.204	0.11	PASS
LTE Band 25	20	1882.5	23.38	2.13	25.51	23.36	216.770	3840.300	0.06	PASS
NB IOT Band 25	20	1850.2	23.38	2.13	25.51	23.36	216.770	3774.408	0.06	PASS

Note:

①EIRP=conducted power+antenna gain;

②ERP=EIRP-2.15

③The test data please refer to the nRF9160 IOT module(FCC ID: 2ANPO00NRF9160), report No.:NIE:64610RRF.001A1,report No.:NIE: 64610RRF.002,report No.:NIE: 64610RRF.003A2 and report No.:NIE: 64610RRF.004A1,and only the worst case data was recorded in the report.

For Simultaneous Transmission:

As MPE ratio (914.88 MHz+2.4G WiFi+IOT module)=0.02+0.02+0.11=0.15 < 1, it's deemed to fulfil the RF exposure requirement.

Remark: For nRF9160 IOT module, Narrow band 1 is the worst case, only the worst case is recorded.

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*** End of Report ***