

Dates of Tests: March 20, 2024
Test Report S/N: LR500112404B
Test Site : LTA CO., LTD.

CERTIFICATION OF COMPLIANCE

FCC ID.

2AZKWAIR-R21A

APPLICANT

ATEC IoT CO., LTD.

Equipment Class	:	Digital Transmission System (DTS)
Manufacturing Description	:	Electronic Shelf Label
Manufacturer	:	ATEC IoT CO., LTD.
Model name	:	AIR-R21A
Variant Model name	:	-
Test Device Serial No.:	:	Identical prototype
Rule Part(s)	:	FCC Part 15.247 Subpart C ; ANSI C63.10 - 2013
Frequency Range	:	2405 ~ 2480 MHz Zigbee
Max. Output Power	:	Max 4.60 dBm - Conducted
Data of issue	:	March 22, 2024

This test report is issued under the authority of:



Ja-Beom Koo, Manager

The test was supervised by:



Eun-Hwan Jung, Test Engineer

TABLE OF CONTENTS

1. GENERAL INFORMATION ----- 3

2. INFORMATION ABOUT TEST ITEM ----- 4

3. TEST REPORT ----- 5

 3.1 SUMMARY OF TESTS ----- 5

 3.2 RF EXPOSURE EVULATION----- 6

1. General information

1-1 Test Performed

Company name : LTA Co., Ltd.
Address : 243, Jubug-ri, Yangji-Myeon, Youngin-Si, Kyunggi-Do, Korea. 449-822
Web site : <http://www.ltalab.com>
E-mail : chahn@ltalab.com
Telephone : +82-31-323-6008
Facsimile : +82-31-323-6010

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

Agency	Country	Accreditation No.	Validity	Reference
RRA	KOREA	KR0049	-	EMC accredited Lab.
FCC	U.S.A	649054	2025-03-29	FCC CAB
VCCI	JAPAN	C-4948,	2026-09-10	VCCI registration
VCCI	JAPAN	T-2416,	2026-09-10	VCCI registration
VCCI	JAPAN	R-4483(10 m),	2026-10-15	VCCI registration
VCCI	JAPAN	G-847	2024-12-13	VCCI registration
IC	CANADA	5799A-1	2024-08-15	IC filing

2. Information about test item

2-1 Client & Manufacturer

Client Company name : ATEC IoT CO., LTD.

Address : 289, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

Tel / Fax : +82-31-696-9829 / +82-31-696-9899

Manufacturer : ATEC IoT CO., LTD.

Address : 289, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

Tel / Fax : +82-31-696-9829 / +82-31-696-9899

2-2 Equipment Under Test (EUT)

Model name : AIR-R21A

Serial number : Identical prototype

Date of receipt : February 27 ,2024

EUT condition : Pre-production, not damaged

Antenna type : Pattern Antenna (Gain : -0.54 dBi)

Frequency Range : 2405 ~ 2480 MHz

RF output power : Max 4.60 dBm – Conducted

Type of Modulation : GFSK, O-QPSK

Power Source : DC 3 V

2-3 Tested frequency

Bluetooth	LOW	MID	HIGH
Frequency (MHz)	2405	2440	2480

2-4 Ancillary Equipment

Equipment	Model No.	Serial No.	Manufacturer
Notebook	-	MS-1736	MSI

3. Test Report

3.1 Summary of tests

FCC Part Section(s)	Parameter	Limit	Test Condition	Status (note 1)
§ 1.1310 and §2.1091	RF EXPOSURE EVULATION	-	-	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

-

3.2 RF EXPOSURE EVULATION

1.1 Limit

According to §1.1310 and §2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures

Frequency range (MHz)	Electric field Strength	Magnetic field Strength	Power density (mW/cm ²)	Averaging time
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

1.2 MAXIMUM PERMISSIBLE EXPOSURE Prediction

Prediction of MPE limit at a given distance

Power density at the specific separation:

$S = PG/(4R^2\pi)$ $S = (2.88 * 0.88) / (4 * 20^2 * \pi)$ $S = 0.0005 \text{ mW/cm}^2$	Where, S = Maximum power density (mW/cm ²) P = Power input to the antenna (mW) G = Numeric power gain of the antenna R = Distance to the center of the radiation of the antenna (20 cm = limit for MPE)
--	--

1.3 MAXIMUM PERMISSIBLE EXPOSURE Prediction

- Calculated under the worst-case conditions of each mode.

(Measured power 3 dBm $\pm$ 0.5dB)

2.4GHz Mode

Max Peak output Power at antenna input terminal	4.60	dBm
Max Peak output Power at antenna input terminal	2.88	mW
Prediction distance	0.5	cm
Prediction frequency	2440	MHz
Antenna Gain(typical)	-0.54	dBi
Antenna Gain(numeric)	0.88	-

SAR Test exclusion thresholds for 100MHz to 6GHz at test separation distance $\leq$ 50 mm = **Used**

$[(\text{max.power of channel, including tune-up torelance, mW})/(\text{min. test separation distance, mm})] * [\sqrt{f}(\text{GHz})]$

$= [2.88 / 5] * [\sqrt{2.440}] = 0.900 \leq 3.0$, for 1g SAR

Thus, SAR for this device is not required.