

RF Exposure Evaluation Declaration

Product Name : freeRAN IoT Base Station

Brand Name : UBIIK

Model No. : BS1AL-EO9100-US

FCC ID : 2AXTDBS1ALEO9100US

Applicant : Ubiik Inc.

Address : 19F., No. 17, Sec. 1, Chengde Rd., Datong Dist., Taipei City
103, Taiwan (R.O.C.)

Date of Receipt : Dec. 21, 2022

Issued Date : Mar. 15, 2023

Report No. : 22C0676R-RFUSV17S-A

Report Version : V2.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

The test report shall not be reproduced except in full without the written approval of DEKRA Testing and Certification Co., Ltd.



Product Name : freeRAN IoT Base Station
Applicant : Ubiik Inc.
Address : 19F., No. 17, Sec. 1, Chengde Rd., Datong Dist., Taipei City 103,
Taiwan (R.O.C.)
Manufacturer : Ubiik Inc.
Address : 19F., No. 17, Sec. 1, Chengde Rd., Datong Dist., Taipei City 103,
Taiwan (R.O.C.)
Brand Name : UBIIK
Model No. : BS1AL-EO9100-US
FCC ID : 2AXTDBS1ALEO9100US
EUT Voltage : DC 56V (PoE)
Applicable Standard : FCC 47 CFR Part 2.1091 Radiofrequency radiation exposure
evaluation: mobile devices.
Laboratory Name : DEKRA Testing and Certification Co., Ltd.
Address : Hsin Chu Laboratory
Address : No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu
County 310, Taiwan, R.O.C.
Test Result : Complied

Documented By : Hailey Peng
(Hailey Peng / Senior Engineer)

Approved By : Rueyyan Lin
(Rueyyan Lin / Supervisor)

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and Certification Co., Ltd.

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Mar. 03, 2023
V2.0	Changing the FCC ID to "2AXTDBS1ALEO9100US".	Mar. 15, 2023

1. General Information

1.1. EUT General Information

RF General Information		
Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
902 ~ 928	926.3	OFDMA 16QAM

The EUT contains a WWAN module and the detail as below.

Brand Name	Model	FCC ID	Bands	Operating Frequency Range (MHz)	Function
UBIIK	RC7611-1	2AXTDRC76B	LTE Band 2	Uplink: 1850 ~ 1910 Downlink: 1930 ~ 1990	QPSK / 16QAM
			LTE Band 4	Uplink: 1710 ~ 1755 Downlink: 2110 ~ 2115	
			LTE Band 13	Uplink: 777 ~ 787 Downlink: 746 ~ 756	

Note: The above EUT information is declared by the manufacturer.

1.2. Test Facility

Laboratory Information

USA : **FCC Registration Number: TW3024**

Canada **CAB identifier : TW3024**

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: <http://www.dekra.com.tw>

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	<ol style="list-style-type: none"> 1. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 2. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	<ol style="list-style-type: none"> 1. +886-3-582-8001 2. +886-3-582-8001
Fax number	<ol style="list-style-type: none"> 1. +886-3-582-8958 2. +886-3-582-8958
E mail address	info.tw@dekra.com
Website	http://www.dekra.com.tw
Note: Test site number for address 1 includes HC-SR02. Test site number for address 2 includes HC-CB02, HC-CB03, HC-CB04, HC-SR10 and HC-SR12.	

2. RF Exposure Evaluation

2.1. Test Limit

(A) Test Limit for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	*(100)	<6
3.0-30	1842/f	4.89/f	*(900/f ²)	<6
30-300	61.4	0.163	1.0	<6
300-1500	-	-	f/300	<6
1500-100,000	-	-	5	<6

(B) Test Limit for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (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
1500-100,000	-	-	1.0	<30

Note: f = frequency in MHz; *Plane-wave equivalent power density

Power Density (S) is calculated by the following formula:

$$S = (P \cdot G) / 4\pi R^2$$

where:

S = power density (in appropriate units, e.g. mW/ cm²)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

π = 3.1416

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

2.2. Test Result of RF Exposure Evaluation

Exposure Environment: General Population / Uncontrolled Exposure

Evaluation Mode	E.I.R.P (dBm)	E.I.R.P (mW)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Test Result (PASS/FAIL)
926.3 MHz	32.130	1633.052	0.325	1.000	PASS
LTE Band 2	25.800	380.189	0.076	1.000	PASS
LTE Band 4	24.600	288.403	0.057	1.000	PASS
LTE Band 13	25.400	346.737	0.069	0.518	PASS

Distance (cm): 20 for Maximum Permissible Exposure.

Co-location
Conclusion:
The formula of calculated the MPE is:
CPD1 / LPD1 + CPD2 / LPD2 +etc. < 1
CPD = Calculation power density
LPD = Limit of power density
926.3 MHz + WWAN LTE function = 0.325 + 0.133 = 0.458, therefore the maximum calculations of above situations are less than the "1" limit.

Note:

1. The above EUT information is declared by the manufacturer.
2. The results are evaluated using the maximum power.