

RF Exposure Report

Report No.: SA200508C22

FCC ID: COF-AS01

Test Model: AS-01

Received Date: May. 08, 2020

Test Date: May 27 ~ May 29, 2020

Issued Date: Jun. 03, 2020

Applicant: UNIVERSAL GLOBAL SCIENTIFIC INDUSTRIAL CO., LTD

Address: 141, Lane 351, Sec.1, Taiping Road, Tsautuen, Nantou, 54261, Taiwan

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City
33383, TAIWAN

FCC Registration / 788550 / TW0003
Designation Number:



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Release Control Record

Issue No.	Description	Date Issued
SA200508C22	Original release.	Jun. 03, 2020

1 Certificate of Conformity

Product: Azure Sphere Module

Brand: 

Test Model: AS-01

Sample Status: Engineering sample

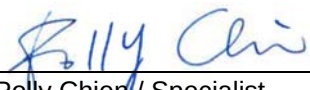
Applicant: UNIVERSAL GLOBAL SCIENTIFIC INDUSTRIAL CO., LTD

Test Date: May 27 ~ May 29, 2020

Standards: FCC Part 2 (Section 2.1091)
IEEE C95.3 -2002

References Test Guidance: KDB 447498 D01 General RF Exposure Guidance v06

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by :  , **Date:** Jun. 03, 2020
Polly Chien / Specialist

Approved by :  , **Date:** Jun. 03, 2020
Bruce Chen / Senior Project Engineer

2 RF Exposure

2.1 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

2.2 MPE Calculation Formula

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

r = distance between observation point and center of the radiator in cm

2.3 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 Calculation Result of Maximum Conducted Power

Frequency Band (MHz)	Max. AV Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
EUT with WiFi onboard ANT					
WLAN 2412~2462	16.42	0.19	20	0.009	1
WLAN 5180~5240	13.33	3.27	20	0.009	1
WLAN 5260~5320	13.41	3.27	20	0.009	1
WLAN 5500~5720	13.44	3.27	20	0.009	1
WLAN 5745~5825	13.31	3.27	20	0.009	1
EUT with WiFi external ANT					
WLAN 2412~2462	16.24	3.22	20	0.018	1
WLAN 5180~5240	13.39	3.43	20	0.010	1
WLAN 5260~5320	13.44	3.43	20	0.010	1
WLAN 5500~5720	13.42	3.43	20	0.010	1
WLAN 5745~5825	13.45	3.43	20	0.010	1
EUT with BT ANT					
BT LE 2402~2480	3.80	3.00	20	0.0005	1

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

*The BT could transmit simultaneously either with WLAN 2.4GHz or 5GHz at the same time.

The formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

EUT with WiFi onboard ANT + BT ANT:

1. WLAN 2.4GHz + BT LE = $0.009 / 1 + 0.0005 / 1 = 0.0095$
2. WLAN 5GHz + BT LE = $0.009 / 1 + 0.0005 / 1 = 0.0095$

EUT with WiFi external ANT + BT ANT:

1. WLAN 2.4GHz + BT LE = $0.018 / 1 + 0.0005 / 1 = 0.0185$
2. WLAN 5GHz + BT LE = $0.010 / 1 + 0.0005 / 1 = 0.0105$

Therefore the maximum calculations of above situations are less than the "1" limit.

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