FCC RADIO EXPOSURE TEST REPORT

FCC ID	:	2AWNEKDE20104
Equipment	:	Home Entertainment Hub
Brand Name	:	E1 by Ericsson
Model Name	:	KDE20104
Applicant	:	Ericsson AB 21-23 Torshamnsgatan Stockholm, 16480 Sweden
Manufacturer	:	CyberTAN Technology Inc. No. 99, Park Avenue III Science-based Industrial Park Hsinchu Taiwan 308
Standard	:	47 CFR Part 2.1091

The product was received on Jan. 21, 2021, and testing was started from Jan. 21, 2021 and completed on Feb. 22, 2021. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 2.1091 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

Table of Contents

History of this test report

Report No.	Version	Description	Issued Date
FA031633-01	01	Initial issue of report	Feb. 26, 2021

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2	-	Exposure evaluation	PASS	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Vicky Huang

1 General Description

1.1 EUT General Information

For AX Module:

RF General Information			
Evaluation Mode	**Frequency Range (MHz)**	**Operating Frequency (MHz)**	**Modulation Type**
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5700 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Bluetooth	2400-2483.5	2402-2480	BR / EDR: FHSS (GFSK / π/4-DQPSK / 8DPSK) LE: GFSK

For AI Module:

RF General Information			
Evaluation Mode	**Frequency Range (MHz)**	**Operating Frequency (MHz)**	**Modulation Type**
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
Zigbee	2400-2483.5	2405-2475	O-QPSK

1.2 The EUT Support Function Information

Module	Function
AX (Contain module FCC ID: PD9AX200NG)	WLAN 2.4GHz, WLAN 5GHz and Bluetooth
AI	WLAN 2.4GHz, Zigbee

1.3 Antenna Information

For AX Module:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)		
					WLAN 2.4GHz	WLAN 5GHz	Bluetooth
1	Airgain	N2420DSRH-T6-PK1-B320 U4LI	PCB Antenna	I-PEX	1.1	3.3	1.1
2	Airgain	N2420DSRJ-T6-PK1-W110 U4LIR1	PCB Antenna	I-PEX	1.1	3.6	-

Note: Certified AX module (module FCC ID: PD9AX200NG)

For AI module:

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	
						WLAN 2.4GHz	Zigbee
1	1	Airgain	N2415GB	PCB Antenna	I-PEX	3.2	-
2	1	Airgain	N2420ZB	PCB Antenna	I-PEX	-	1.4

Note: The above information was declared by manufacturer.

Only Port 1 can be used as transmitting/receiving antenna.

1.4 Accessories

Power	Brand	Model	Rating	DC Power cable length
Adapter	FSP	FSP100-A1AR3	Input: 100-240V ~ 50-60Hz, 1.4A Output: 5V, 3A / 9V, 3A 12V, 3A / 15V, 3A 20V, 5.0A 100W MAX.	Non-Shielded 1.6m
Others				
HDMI cable*1: Shielded, 1.5m USB-C to USB-A cable*1: Shielded, 0.1m Power cable*1: Non-Shielded, 1m				

1.5 Testing Location

Testing Location			
☐	HWA YA	ADD :	No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)
		TEL :	886-3-327-3456 FAX : 886-3-327-0973
☒	JHUBEI	ADD :	No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302, Taiwan (R.O.C.)
		TEL :	886-3-656-9065 FAX : 886-3-656-9085

Test site Designation No. TW0006 with FCC.
Test site registered number IC 4086D with Industry Canada.

2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	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) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	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

2.2 MPE Calculation Method

The MPE was calculated at 35 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

E (V/m) = $\frac{\sqrt{30 \times P \times G}}{d}$ Power Density: *Pd* (W/m²) = $\frac{E^2}{377}$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

Pd = $\frac{30 \times P \times G}{377 \times d^2}$

2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm^2)	S Limit (mW/cm^2)
AI Module (WLAN 2.4GHz)	3.20	15.27	18.47	0.50	18.97	0.07889	35	0.00512	1.00000
AI Module (Zigbee)	1.40	21.39	22.79	0.50	23.29	0.21330	35	0.01386	1.00000

1. AX module (WLAN 2.4GHz + Bluetooth) + AI module (WLAN 2.4GHz + Zigbee)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm^2)	S Limit (mW/cm^2)	Ratio (S/Limit)
AX Module (WLAN 2.4GHz)	1.10	29.95	31.05	0.50	31.55	1.42889	35	0.09282	0.55093	0.16848
AX Module (Bluetooth)	1.10	10.79	11.89	0.50	12.39	0.01734	35	0.00113	1.00000	0.00113
AI Module (WLAN 2.4GHz)	3.20	15.27	18.47	0.50	18.97	0.07889	35	0.00512	1.00000	0.00512
AI Module (Zigbee)	1.40	21.39	22.79	0.50	23.29	0.21330	35	0.01386	1.00000	0.01386
									Sum Ratio	0.18859
									Ratio Limit	1

2. AX module (WLAN 5GHz + Bluetooth) + AI module (WLAN 2.4GHz + Zigbee)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm^2)	S Limit (mW/cm^2)	Ratio (S/Limit)
AX Module (WLAN 5GHz)	3.60	23.14	26.74	0.50	27.24	0.52966	35	0.03441	0.51967	0.06622
AX Module (Bluetooth)	1.10	10.79	11.89	0.50	12.39	0.01734	35	0.00113	1.00000	0.00113
AI Module (WLAN 2.4GHz)	3.20	15.27	18.47	0.50	18.97	0.07889	35	0.00512	1.00000	0.00512
AI Module (Zigbee)	1.40	21.39	22.79	0.50	23.29	0.21330	35	0.01386	1.00000	0.01386
									Sum Ratio	0.08633
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

———THE END———