



FCC RADIO EXPOSURE TEST REPORT

FCC ID : 2AWNEKDU1370108
Equipment : E1 Gateway Router AX6000
Brand Name : E1 by Ericsson
Model Name : KDU1370108
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 Dec. 16, 2020, and testing was started from Dec. 17, 2020 and completed on Jan. 16, 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.)



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Report Template No.: CB-A1_1 Ver1.0



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: Sandy Chuang



1 General Description

1.1 EUT General Information

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) VHT: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
5GHz WLAN	5150-5250 5725-5850	5180-5240 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)

Evaluation Mode		Uplink Frequency Range (MHz)	Downlink Frequency Range (MHz)	Modulation Type
4G Band (LTE)	Band 2	1850~1910	1930~1990	QPSK, 16QAM, 64QAM, 256QAM
	Band 4	1710~1755	2110~2155	
	Band 5	824~849	869~894	
	Band 7	2500~2570	2620~2690	
	Band 12	698~716	729~746	
	Band 13	777~787	746~756	
	Band 14	788~798	758~768	
	Band 17	704~716	734~746	
	Band 25	1850~1915	1930~1995	
	Band 26	814~849	859~894	
	Band 30	2305~2315	2350~2360	
	Band 38	2570~2620		
	Band 41	2496~2690		
	Band 42	3400~3600		
	Band 48	3550~3700		
	Band 66	1710~1780	2110~2200	
	Band 71	663~698	617~652	
Evaluation Mode		Uplink Frequency Range (MHz)	Downlink Frequency Range (MHz)	DFT-s-OFDM (PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM) CP-OFDM (QPSK / 16QAM / 64QAM / 256QAM)
5G Band (NR)	n2	1850~1910	1930~1990	
	n5	824~849	869~894	
	n41	2496~2690		
	n66	1710~1780	2110~2200	
	n71	663~698	617~652	



1.2 Table for WWAN Module Information

The EUT was installed certified WWAN module, the WWAN module information and its correspond model name as below table:

WWAN Module	Brand Name	Model Name	FCC ID	Bands
1	Sierra	EM9190	N7NEM91	4G Band (LTE): 2,4,5,7,12,13,14,17,25,26,30,38,41,42,48,66,71 5G Band (NR): n2,n5,n41,n66,n71 5G Band (EN-DC): EN-DC_5A_n2A,EN-DC_12A_n2A,EN-DC_2A_n5A,EN-DC_7A_n5A, EN-DC_30A_n5A,EN-DC_66A_n5A,EN-DC_2A_n41A, EN-DC_66A_n41A,EN-DC_5A_n66A,EN-DC_12A_n66A, EN-DC_13A_n66A,EN-DC_2A_n71A,EN-DC_7A_n71A,EN-DC_66A_n71A
2	Sierra	EM9191	N7NEM91	

Note: The above information was declared by manufacturer.



1.3 Antenna Information

For WIFI Gain:

2.4GHz and 5GHz Band 4							
Ant.	Port	Brand	Model Name or P/N	Antenna Type	Connector	Gain (dBi)	
						2.4GHz	5GHz Band 4
1	1	INPAQ	RFPCA241711IMLB301	PCB Antenna	I-PEX	4.97	5.03
2	3	INPAQ	RFPCA241709IMLB301	PCB Antenna	I-PEX	4.97	2.34
3	4	INPAQ	RFPCA241708IMLB301	PCB Antenna	I-PEX	4.78	4.02
4	2	INPAQ	RFPCA241709IMLB302	PCB Antenna	I-PEX	4.78	3.82
5GHz Band 1							
Ant.	Port	Brand	Model Name or P/N	Antenna Type	Connector	Gain (dBi)	
1	3	INPAQ	RFPCA200812IM5B302	PCB Antenna	I-PEX	4.63	
2	1	INPAQ	RFPCA180808IM5B301	PCB Antenna	I-PEX	3.64	
3	2	INPAQ	RFPCA180812IM5B301	PCB Antenna	I-PEX	4.87	
4	4	INPAQ	RFPCA180810IM5B301	PCB Antenna	I-PEX	3.96	

Note: The above information was declared by manufacturer.

For 2.4GHz function:

For IEEE 802.11b/g/n/VHT/ax (4TX/4RX):

Port 1, Port 2, Port 3 and Port 4 can be used as transmitting/receiving antenna.

Port 1, Port 2, Port 3 and Port 4 could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11a/n/ac/ax (4TX/4RX):

Port 1, Port 2, Port 3 and Port 4 can be used as transmitting/receiving antenna.

Port 1, Port 2, Port 3 and Port 4 could transmit/receive simultaneously.

**For WWAN Gain:**

Band	WWAN Gain (dBi)			
	Brand: INPAQ			
	Model Name or P/N: RFPCA102019EMMB301	Model Name or P/N: RFPCA802216EMMB301	Model Name or P/N: RFPCA802234EMMB301	Model Name or P/N: RFPCA102034EMMB301
4G Band 2	3.51	1.99	3.59	2.86
4G Band 4	3.51	1.99	3.59	2.86
4G Band 5	0.61	N/A	N/A	0.054
4G Band 7	1.97	4.98	3.06	3.12
4G Band 12	-2.68	N/A	N/A	0.054
4G Band 13	-2.68	N/A	N/A	0.054
4G Band 14	-2.68	N/A	N/A	0.054
4G Band 17	-2.68	N/A	N/A	0.054
4G Band 25	3.51	1.99	3.59	2.86
4G Band 26	-2.68	N/A	N/A	0.054
4G Band 30	3.51	4.98	3.59	2.86
4G Band 38	1.97	4.98	3.06	3.12
4G Band 41	1.97	4.98	3.06	3.12
4G Band 41-HUPE	1.97	4.98	3.06	3.12
4G Band 42	3.28	0.74	3.87	3.47
4G Band 48	3.28	0.74	3.87	3.47
4G Band 66	3.51	1.99	3.59	2.86
4G Band 71	-2.18	N/A	N/A	0.054
5G Band (NR) n2	3.51	1.99	3.59	2.86
5G Band (NR) n5	-2.68	N/A	N/A	0.054
5G Band (NR) n41	1.97	4.98	3.06	3.12
5G Band (NR) n66	3.51	1.99	3.59	2.86
5G Band (NR) n71	-2.18	N/A	N/A	-1.5

Note: The above information was declared by manufacturer.



1.4 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter	Ktec	KSA-42W-120350D5	Input: 100-240V~50/60Hz 1.0A Output: 12.0V, 3.5A, 42.0W
Other			
Plug*1			

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/ 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)*	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/ 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)*	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:

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

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)
2.4G;D1D	10.90	25.07	35.97	0.02	35.99	3.97192	35	0.25801	1.00000
5.2G;D1D	10.31	25.67	35.98	0.01	35.99	3.97192	35	0.25801	1.00000
5.8G;D1D	9.88	26.05	35.93	0.06	35.99	3.97192	35	0.25801	1.00000
Band41-HUPE	4.98	26.00	30.98	0.50	31.48	1.40605	35	0.09134	0.51967
n41	4.98	24.00	28.98	0.50	29.48	0.88716	35	0.05763	0.44367

Simultaneous Transmission Analysis Mode:

EUT with WWAN module 1: WIFI_2.4GHz + WIFI_5GHz Band 4 + 5GHz Band 1 + LTE

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)
2.4G;D1D	10.90	25.07	35.97	0.02	35.99	3.97192	35	0.25801	1.00000	0.25801
5.2G;D1D	10.31	25.67	35.98	0.01	35.99	3.97192	35	0.25801	1.00000	0.25801
5.8G;D1D	9.88	26.05	35.93	0.06	35.99	3.97192	35	0.25801	1.00000	0.25801
Band41-HUPE	4.98	26.00	30.98	0.50	31.48	1.40605	35	0.09134	0.51967	0.17577
									Sum Ratio	0.94980
									Ratio Limit	1.00000

EUT with WWAN module 1: WIFI_2.4GHz + WIFI_5GHz Band 4 + 5GHz Band 1 + 5G

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)
2.4G;D1D	10.90	25.07	35.97	0.02	35.99	3.97192	35	0.25801	1.00000	0.25801
5.2G;D1D	10.31	25.67	35.98	0.01	35.99	3.97192	35	0.25801	1.00000	0.25801
5.8G;D1D	9.88	26.05	35.93	0.06	35.99	3.97192	35	0.25801	1.00000	0.25801
n41	4.98	24.00	28.98	0.50	29.48	0.88716	35	0.05763	0.44367	0.12989
									Sum Ratio	0.90392
									Ratio Limit	1.00000

Note: The above antenna gain was declared by manufacturer.

————THE END————