



FCC RADIO EXPOSURE TEST REPORT

FCC ID : 2AWNEKDE20105

Equipment : Home Entertainment Hub

Brand Name : E1 by Ericsson

Model Name : KDE20105

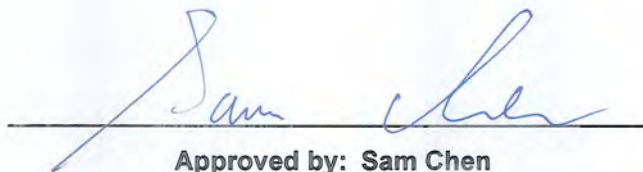
Applicant : Ericsson AB
21-23 Torshamnsgatan Stockholm, 16480 Sweden

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. 14, 2021, and testing was started from Jan. 14, 2021 and completed on Feb. 18, 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.....	3
Summary of Test Result.....	4
1 General Description	5
1.1 EUT General Information	5
1.2 Antenna Information	6
1.3 Table for WWAN Module Information	8
1.4 Table for EUT Supports Functions	8
1.5 Accessories	9
1.6 Testing Location	9
2 Maximum Permissible Exposure	10
2.1 Limit of Maximum Permissible Exposure	10
2.2 MPE Calculation Method.....	10
2.3 Calculated Result and Limit.....	11

Photographs of EUT v01



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

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)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Bluetooth	2400-2483.5	2402-2480	BR / EDR: FHSS (GFSK / $\pi/4$ -DQPSK / 8DPSK) LE: GFSK
Zigbee	2400-2483.5	2405-2475	O-QPSK

Certified WWAN module (FCC ID: N7NEM91)

Evaluation Mode	Uplink Frequency Range (MHz)	Downlink Frequency Range (MHz)	Modulation Type
LTE	Band 2	1850~1910	QPSK, 16QAM, 64QAM, 256QAM
	Band 4	1710~1755	
	Band 5	824~849	
	Band 7	2500~2570	
	Band 12	699~716	
	Band 13	777~787	
	Band 14	788~798	
	Band 17	704~716	
	Band 25	1850~1915	
	Band 26	814~849	
	Band 30	2305~2315	
	Band 38	2570~2620	
	Band 41	2496~2690	
	Band 42	3400~3600	
	Band 48	3550~3700	
	Band 66	1710~1780	
	Band 71	663~698	
		2110~2200	
		617~652	



Evaluation Mode		Uplink Frequency Range (MHz)	Downlink Frequency Range (MHz)	Modulation Type
5G (Note)	NR n2	1850~1910	1930~1990	DFT-s-OFDM (PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM) CP-OFDM(QPSK / 16QAM / 64QAM / 256QAM)
	NR n5	824~849	869~894	
	NR n41	2496~2690		
	NR n66	1710~1780	2110~2200	
	NR n71	663~698	617~652	

Note:

5G EN-DC support Band:

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

1.2 Antenna Information

For WLAN 2.4GHz / WLAN 5GHz / Bluetooth / Zigbee function:

Ant.	Port		Brand	Model Name	Type	Connector	Gain (dBi)		
	WLAN 2.4GHz	WLAN 5GHz B1,B2					WLAN 2.4GHz	WLAN 5GHz B1	WLAN 5GHz B2
1	1	1	Airgain	N2420DSRP	PCB	I-PEX	1.7	3.5	3.4
2	2	2	Airgain	N2420DSRL	PCB	I-PEX	2.0	3.6	3.7
Ant.	Port		Brand	Model Name	Type	Connector	Gain (dBi)		
	WLAN 5GHz B3,B4	Zigbee					WLAN 5GHz B3	WLAN 5GHz B4	Zigbee
3	1	1	Airgain	N2420DSRK	PCB	I-PEX	4.1	4.1	1.8
Ant.	Port		Brand	Model Name	Type	Connector	Gain (dBi)		
	WLAN 5GHz B3,B4	BT					WLAN 5GHz B3	WLAN 5GHz B4	BT
4	2	1	Airgain	N2420DSRK	PCB	I-PEX	4.7	3.9	1.5

Note1: B1 means band 1, B2 means band 2, B3 means band 3, B4 means band 4 and BT means Bluetooth.

Note2: The above information was declared by manufacturer.

Note3: For WLAN 2.4GHz function (2TX/2RX):

The WLAN 2.4GHz supports the b, g, n, VHT.

Port 1 and Port 2 could transmit/receive simultaneously.

Note4: For WLAN 5GHz Band 1, Band 2 function (2TX/2RX):

The WLAN 5GHz Band 1, Band 2 supports the a, n, ac.

Port 1 and Port 2 could transmit/receive simultaneously.



Note5: For WLAN 5GHz Band 3, Band 4 function (2TX/2RX):

The WLAN 5GHz Band 3, Band 4 supports the a, n, ac.

Port 1 and Port 2 could transmit/receive simultaneously.

Note6: For Zigbee function (1TX/1RX):

Only Port 1 can be used as transmitting/receiving.

Note7: For Bluetooth function (1TX/1RX):

Only Port 1 can be used as transmitting/receiving.

For WWAN function:

Ant.	Port	Brand	P/N	Type	Connector
1	1	Airgain	F1450DLTEA-CM-LR305U4LI	PIFA	I-PEX
2	2	Airgain	F700DLTEA-CM-LP185U4LI	PIFA	I-PEX
3	3	Airgain	F1450DLTEB-CM-LK75U4LI	PIFA	I-PEX
4	4	Airgain	F700DLTEB-CM-GD-LE135U4LI	PIFA	I-PEX

Ant.	Port	Antenna Gain (dBi)																
		LTE Band 2	LTE Band 4	LTE Band 5	LTE Band 7	LTE Band 12	LTE Band 13	LTE Band 14	LTE Band 17	LTE Band 25	LTE Band 26	LTE Band 30	LTE Band 38	LTE Band 41	LTE Band 42	LTE Band 48	LTE Band 66	LTE Band 77
1	1	3.8	2.5	-	3.4	-	-	-	-	3.8	-	2.6	3.4	3.5	-	3.6	2.5	-
2	2	1.6	2.5	-1.3	-0.5	-1.9	-0.5	-0.5	-1.9	1.6	-1.3	1.1	-0.5	0.2	-	5.0	2.5	-1.9
3	3	3.7	3.2	-	4.2	-	-	-	-	3.7	-	1.6	4.2	4.6	-	4.1	3.2	-
4	4	2.1	1.5	-3.8	3.5	-6.3	-5.5	-5.5	-6.3	2.1	-3.8	4.7	3.5	2.5	-	3.2	1.5	-6.3

Ant.	Port	Antenna Gain (dBi)				
		5G NR Band n2	5G NR Band n5	5G NR Band n41	5G NR Band n66	5G NR Band n71
1	1	3.8	-	3.5	2.5	-
2	2	1.6	-1.3	0.2	2.5	-1.9
3	3	3.7	-	4.6	3.2	-
4	4	2.1	-3.8	2.5	1.5	-6.3

Note: The above information was declared by manufacturer.



1.3 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
2	Sierra	EM9191	N7NEM91	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

Note: The above information was declared by manufacturer.

1.4 Table for EUT Supports Functions

Function	Support Type
AP	Master
Mesh	Master



1.5 Accessories

Accessories				
Equipment Name	Brand Name	Model Name	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				

1.6 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 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/ 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

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	4.86	28.88	33.74	0.50	34.24	2.65461	35	0.17244	1.00000
5.2G;D1D	6.56	28.90	35.46	0.50	35.96	3.94457	35	0.25624	1.00000
5.3G;D1D	6.56	23.41	29.97	0.02	29.99	0.99770	35	0.06481	1.00000
5.6G;D1D	7.42	22.54	29.96	0.03	29.99	0.99770	35	0.06481	1.00000
5.8G;D1D	7.01	28.93	35.94	0.05	35.99	3.97192	35	0.25801	1.00000
2.4G;BT-BR	1.50	8.43	9.93	0.50	10.43	0.01104	35	0.00072	1.00000
2.4G;BT-LE	1.50	8.34	9.84	0.50	10.34	0.01081	35	0.00070	1.00000
2.4G;Zigbee	1.80	22.77	24.57	0.50	25.07	0.32137	35	0.02088	1.00000
LTE Band 41 -HPUE	4.60	26.00	30.60	0.50	31.10	1.28825	35	0.08368	1.00000
5G NR n41	4.60	24.00	28.60	0.50	29.10	0.81283	35	0.05280	1.00000

Simultaneous Transmission Analysis Mode:

Mode 1: WLAN 2.4GHz+WLAN 5GHz Band 1, 2+WLAN 5GHz Band 3, 4+Bluetooth+Zigbee+4G 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;BT-BR	1.50	8.43	9.93	0.50	10.43	0.01104	35	0.00072	1.00000	0.00072
2.4G;Zigbee	1.80	22.77	24.57	0.50	25.07	0.32137	35	0.02088	1.00000	0.02088
2.4G;D1D	4.86	28.88	33.74	0.50	34.24	2.65461	35	0.17244	1.00000	0.17244
5.2G;D1D	6.56	28.90	35.46	0.50	35.96	3.94457	35	0.25624	1.00000	0.25624
5.8G;D1D	7.01	28.93	35.94	0.05	35.99	3.97192	35	0.25801	1.00000	0.25801
LTE Band 41 -HPUE	4.60	26.00	30.60	0.50	31.10	1.28825	35	0.08368	1.00000	0.08368
									Sum Ratio	0.79197
									Ratio Limit	1



Mode 2: WLAN 2.4GHz+WLAN 5GHz Band 1, 2+WLAN 5GHz Band 3, 4+Bluetooth+Zigbee+5G NR

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;BT-BR	1.50	8.43	9.93	0.50	10.43	0.01104	35	0.00072	1.00000	0.00072
2.4G;Zigbee	1.80	22.77	24.57	0.50	25.07	0.32137	35	0.02088	1.00000	0.02088
2.4G;D1D	4.86	28.88	33.74	0.50	34.24	2.65461	35	0.17244	1.00000	0.17244
5.2G;D1D	6.56	28.90	35.46	0.50	35.96	3.94457	35	0.25624	1.00000	0.25624
5.8G;D1D	7.01	28.93	35.94	0.05	35.99	3.97192	35	0.25801	1.00000	0.25801
5G NR n41	4.60	24.00	28.60	0.50	29.10	0.81283	35	0.05280	1.00000	0.05280
									Sum Ratio	0.76109
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

————THE END————