



FCC RADIO EXPOSURE TEST REPORT

FCC ID : TLZ-CB250NF

Equipment : IEEE 802.11 2x2 MU-MIMO a/b/g/n/ac Wireless LAN
+ Bluetooth 5.0 M.2 2230 Module

Brand Name : AzureWave

Model Name : AW-CB250NF

Applicant : AzureWave Technologies, Inc.
8F., No.94, Baozhong Rd., Xindian Dist., New Taipei
City 23144, Taiwan


Manufacturer : AzureWave Technologies, Inc.
8F., No.94, Baozhong Rd., Xindian Dist., New Taipei
City 23144, Taiwan

Standard : 47 CFR Part 2.1091

The product was received on Dec. 26, 2018, and testing was started from Jul. 15, 2019 and completed on Oct. 12, 2019. 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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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History of this test report

Report No.	Version	Description	Issued Date
FA8D2029	01	Initial issue of report	Nov. 22, 2019



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: **Wendy Pan**



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)
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)
Bluetooth	2400-2483.5	2402-2480	BR / EDR: FHSS (GFSK / $\pi/4$ -DQPSK / 8DPSK) LE: GFSK

1.2 Testing Location

Testing Location		
<input type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973
<input checked="" type="checkbox"/>	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei 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 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

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

For Ant.1:

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;BT-LE	2.98	1.42	4.40	0.50	4.90	0.00309	20	0.00061	1.00000
2.4G;BT-EDR	2.98	1.66	4.64	0.50	5.14	0.00327	20	0.00065	1.00000
2.4G;D1D	2.98	21.27	24.25	0.50	24.75	0.29854	20	0.05939	1.00000
5.2G;D1D	5.16	22.58	27.74	0.50	28.24	0.66681	20	0.13266	1.00000
5.3G;D1D	5.16	20.79	25.95	0.50	26.45	0.44157	20	0.08785	1.00000
5.6G;D1D	5.16	23.10	28.26	0.50	28.76	0.75162	20	0.14953	1.00000
5.8G;D1D	5.16	25.45	30.61	0.50	31.11	1.29122	20	0.25688	1.00000

For Ant.2:

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;BT-LE	2.14	1.42	3.56	0.50	4.06	0.00255	20	0.00051	1.00000
2.4G;BT-EDR	2.14	1.66	3.80	0.50	4.30	0.00269	20	0.00054	1.00000
2.4G;D1D	2.14	18.77	20.91	0.50	21.41	0.13836	20	0.02753	1.00000
5.2G;D1D	3.61	22.72	26.33	0.50	26.83	0.48195	20	0.09588	1.00000
5.3G;D1D	3.61	22.80	26.41	0.50	26.91	0.49091	20	0.09766	1.00000
5.6G;D1D	3.61	19.09	22.70	0.50	23.20	0.20893	20	0.04157	1.00000
5.8G;D1D	3.61	23.65	27.26	0.50	27.76	0.59704	20	0.11878	1.00000



Simultaneous Transmission Analysis Mode: WLAN 2.4GHz+Bluetooth

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-EDR	2.98	1.66	4.64	0.50	5.14	0.00327	20	0.00065	1.00000	0.05939
2.4G;D1D	2.98	21.27	24.25	0.50	24.75	0.29854	20	0.05939	1.00000	0.00065
									Sum Ratio	0.06004
									Ratio Limit	1

Simultaneous Transmission Analysis Mode: WLAN 5GHz+Bluetooth

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-EDR	2.98	1.66	4.64	0.50	5.14	0.00327	20	0.00065	1.00000	0.05939
5.8G;D1D	5.16	25.45	30.61	0.50	31.11	1.29122	20	0.25688	1.00000	0.25688
									Sum Ratio	0.25752
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

————THE END————