

Radio Exposure Evaluation Report

FCC ID : SK6-XH2240

Equipment : Wireless Access Point

Brand Name : riverbed

Model Name : XH2240

Applicant : RIVERBED TECHNOLOGY, INC.
680 Folsom Street San Francisco, California United States 94107

Manufacturer : 1) Lite-On Network Communication (Dongguan) Limited
30#Keji Rd., Yin Hu Industrial Area, Qingxi Town, DongGuan City,
Guangdong, China
2) LiteOn Technology Corporation ZhuBei Plant
1F, No.20-1, Taiyuan St., Zhubei City, Hsinchu County 30288, Taiwan
3) LiteOn Technology Corporation
No.37, Chung Yang Road, N.E.P.Z., Kaohsiung 81170, Taiwan

Standard : 47 CFR Part 2.1091

The product was received on Jul. 13, 2018, and testing was started from Jul. 30, 2018 and completed on Aug. 30, 2018. 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 United States 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: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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Photographs of EUT V01



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 5725-5850	5180-5240 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: DSSS (GFSK)

1.2 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
Test site Designation No. TW1190 with FCC.			
☐	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL : 886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.			

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 31 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

Radio 1 :

2.4G

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;G1D	2.00	28.48	30.48	0.00	30.48	1.11686	31	0.09248	1.00000
2.4G;D1D	2.00	28.76	30.76	0.00	30.76	1.19124	31	0.09864	1.00000

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)
5.2G;D1D	2.00	18.94	20.94	0.00	20.94	0.12417	31	0.01028	1.00000
5.8G;D1D	2.00	29.31	31.31	0.00	31.31	1.35207	31	0.11196	1.00000

Radio 2 :

2.4G

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;G1D	10.23	25.73	35.96	0.00	35.96	3.94457	31	0.32664	1.00000
2.4G;D1D	10.23	25.71	35.94	0.00	35.94	3.92645	31	0.32514	1.00000

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)
5.2G;D1D	12.14	8.85	20.99	0.00	20.99	0.12560	31	0.01040	1.00000
5.8G;D1D	12.14	23.84	35.98	0.00	35.98	3.96278	31	0.32815	1.00000

**Radio 3 :****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)
2.4G;BT-LE	2.30	6.65	8.95	0.50	9.45	0.00881	31	0.00065	1.00000
2.4G;BT-BR	2.30	10.31	12.61	0.50	13.11	0.02046	31	0.00151	1.00000
2.4G;BT-EDR	2.30	7.53	9.83	0.50	10.33	0.01079	31	0.00080	1.00000

Radio 1 (2.4G)+ Radio 2(5G)+ Radio 3(BT) Co-location

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	2.30	10.31	12.61	0.00	12.61	0.01824	31	0.00151	1.00000	0.00151
2.4G;D1D	12.14	23.84	35.98	0.00	35.98	3.96278	31	0.32815	1.00000	0.32815
5.8G;D1D	18.16	17.83	35.99	0.00	35.99	3.97192	31	0.32890	1.00000	0.32890
									Sum Ratio	0.65856
									Ratio Limit	1

Radio 1 (5G)+ Radio 2(5G)+ Radio 3(BT) Co-location

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	2.30	10.31	12.61	0.00	12.61	0.01824	31	0.00151	1.00000	0.00151
5.8G;D1D	18.16	17.83	35.99	0.00	35.99	3.97192	31	0.32890	1.00000	0.32890
5.8G;D1D	18.16	17.83	35.99	0.00	35.99	3.97192	31	0.32890	1.00000	0.32890
									Sum Ratio	0.65931
									Ratio Limit	1

—THE END—