



RF Exposure Evaluation Report

Equipment : Wireless Access Point Radio module
Brand Name : XIRRUS
Model No. : XDR240
FCC ID : SK6-XDR240
Standard : 47 CFR Part 2.1091
Applicant : Xirrus, Inc.
2101 Corporate Center Drive, Thousand Oaks, CA
91320 USA
Manufacturer : Lite-On Network Communication (Dongguan)
Limited
30#Keji Rd.,Yin Hu Industrial Area, Qingxi Town,
DongGuan City, Guangdong, China

The product sample received on Jul. 22, 2016 and completely tested on Sep. 13, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit.

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Cliff Chang
SPORTON INTERNATIONAL INC.





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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) 802.11ac: OFDM (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, 1024QAM)

Note 1: The EUT is a limited module which only limited to the Wireless Access Point (brand: XIRRUS / model: XA4240).

The EUT was installed to the Wireless Access Point (brand: XIRRUS / model: XA4240) to perform all the tests.

Note 2: The Wireless Access Point (brand: XIRRUS / model: XA4240) will install four radio modules (Radio 1(FCC ID: SK6-XDR240), Radio 2~ Radio 4(FCC ID: SK6-XDR241)). These four radios will be operated in different bands. The Simultaneous Transmission Analysis will be evaluated on FCC ID: SK6-XDR241.

1.2 Table for Class II Change

This product is an extension of original one reported under Sporton project number: 5D1826

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
Adding two antennas	Re-evaluated MPE.

1.3 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

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 2.4GHz

For Dipole Antenna:

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;D1D	8.02	26.30	34.32	2.70396	20	0.53794	1

For Directional Antenna:

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;D1D	14.62	21.30	35.92	3.90841	20	0.77755	1

For 5GHz

For Dipole Antenna:

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
5.8G;D1D	9.02	25.68	34.70	2.95121	20	0.58712	1

For Directional Antenna:

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
5.2G;D1D	15.42	20.52	35.94	3.92645	20	0.78114	1