



SPORTON International Inc.

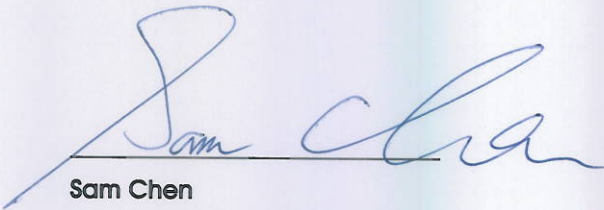
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Certificate No.: CB10307079

Maximum Permissible Exposure

Applicant's company	Linksys LLC
Applicant Address	131 Theory Drive Irvine California 92617 United States
FCC ID	Q87-E8350
Manufacturer's company	Linksys LLC
Manufacturer Address	131 Theory Drive Irvine California 92617 United States

Product Name	Linksys Dual-Band Wireless-AC Router
Brand Name	Linksys
Model Name	E8350
Ref. Standard(s)	47 CFR FCC Part 2 Subpart J, section 2.1091
EUT Freq. Range	2400 ~ 2483.5MHz / 5150 ~ 5250MHz / 5725 ~ 5850MHz
Received Date	May 05, 2014
Final Test Date	Jun. 17, 2014
Submission Type	Original Equipment



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SPORTON INTERNATIONAL INC.



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1. MAXIMUM PERMISSIBLE EXPOSURE

1.1. Applicable Standard

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

(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

1.2. MPE Calculation Method

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

E = Electric field (V/m)

P = Peak 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

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

1.3. Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

For 5GHz UNII Band:

Antenna Type : Dipole Antenna

Conducted Power for IEEE 802.11ac MCS0/Nss1 VHT20 : 29.06 dBm

Directional Gain (dBi)	Antenna Gain (numeric)	The Maximum Combined Average Output Power		Distance (m)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
		(dBm)	(mW)				
6.77	4.7587	29.0649	806.2933	0.2	0.763717	1	Complies

Note: Directional gain = $10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

For 5GHz ISM Band:

Antenna Type : Dipole Antenna

Conducted Power for IEEE 802.11ac MCS0/Nss1 VHT40 : 28.19 dBm

Directional Gain (dBi)	Antenna Gain (numeric)	The Maximum Combined Average Output Power		Distance (m)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
		(dBm)	(mW)				
7.09	5.1200	28.1947	659.8915	0.2	0.672500	1	Complies

Note: Directional gain = $10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

For 2.4GHz Band:

Antenna Type : Dipole Antenna

Conducted Power for IEEE 802.11b : 29.46 dBm

Antenna Gain (dBi)	Antenna Gain (numeric)	The Maximum Combined Average Output Power		Distance (m)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
		(dBm)	(mW)				
1.21	1.3213	29.4582	882.7050	0.2	0.232149	1	Complies

CONCLUSION:

Both of the WLAN 2.4GHz Band and WLAN 5GHz Band can transmit simultaneously, the formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

Therefore, the worst-case situation is $0.232149 / 1 + 0.763717 / 1 = 0.995866$, which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.