



# SPORTON International Inc.

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Certificate No.: CB10307171

## Maximum Permissible Exposure

Applicant's company	Motorola Solutions, Inc.
Applicant Address	One Motorola Plaza Holtsville, NY 11742 USA
FCC ID	UZ7AP7522I
Manufacturer's company	Wistron NeWeb Corporation
Manufacturer Address	20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan, R.O.C.

Product Name	Oak Internal
Brand Name	MOTOROLA
Model Name	AP-7522I
Ref. Standard(s)	47 CFR FCC Part 2 Subpart J, section 2.1091
EUT Freq. Range	5250 ~ 5350MHz / 5470 ~ 5725MHz
Received Date	Apr. 15, 2014
Final Test Date	Jul. 25, 2014
Submission Type	Class II Change

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SPORTON INTERNATIONAL INC.



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## 1. TABLE FOR MULTIPLE LIST AND CLASS II CHANGE

### 1.1. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA441804-03

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

Description	Performance Checking
Add Band 2 and Band 3	All Item test

## 2. MAXIMUM PERMISSIBLE EXPOSURE

### 2.1. 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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> 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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> 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

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

**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=0.25m, as well as the gain of the used antenna, the RF power density can be obtained.

### 2.3. Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

For 5GHz UNII Band 1, Band 4:

Antenna Type : PIFA Antenna

Conducted Power for IEEE 802.11ac VHT20 (2TX) : 24.82 dBm

Directional Gain (dBi)	Antenna Gain (numeric)	The maximum combined Average Output Power		Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
		(dBm)	(mW)			
5.92	3.9084	24.8205	303.4229	0.151070	1	Complies

For 5GHz UNII Band 2~Band 3:

Antenna Type : PIFA Antenna

Conducted Power for IEEE 802.11ac VHT40 (2TX) : 23.96 dBm

Directional Gain (dBi)	Antenna Gain (numeric)	The maximum combined Average Output Power		Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
		(dBm)	(mW)			
5.92	3.9084	23.9588	248.8184	0.123883	1	Complies

For 2.4GHz Band:

Antenna Type : PIFA Antenna

Conducted Power for IEEE 802.11ac VHT20 (2TX) : 24.53 dBm

Directional Gain (dBi)	Antenna Gain (numeric)	The maximum combined Average Output Power		Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
		(dBm)	(mW)			
7.14	5.1764	24.5345	284.0832	0.187329	1	Complies

Note: Directional gain =  $G_{ANT} + 10 \log(N_{ANT}/N_{SS})$

#### 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  $0.187329 / 1 + 0.151070 / 1 = 0.338399$ , which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.