

Maximum Permissible Exposure

Equipment : 802.11abgn Wireless USB Module
Brand Name : SparkLAN
Model No. : WUBR-507N(M); WUBR-507N(MU)
FCC ID : RYK-WUBR507N
Standard : ANSI/IEEE C95.1
Applicant : SparkLAN Communications, Inc.
Manufacturer : 8F., No.257, Sec. 2, Tiding Blvd., Neihu District,
Taipei City 11493, Taiwan

The product sample received on Jan. 19, 2016 and completely tested on Jan. 29, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI/IEEE C95.1 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

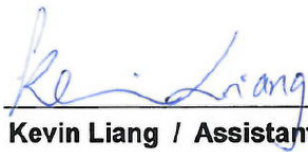

Kevin Liang / Assistant Manager



Table of Contents

1	HUMAN EXPOSURE ASSESSMENT	4
1.1	Maximum Permissible Exposure	4



Revision History

Report No.	Version	Description	Issued Date
FA0O1817	Rev. 01	Original.	Nov. 10, 2010
FA210523	Rev. 01	Reason for change: Additional printed antenna in this report. Therefore, radiation was performed to verify the new components.	Mar. 27, 2012
FA210523-02	Rev. 01	<ol style="list-style-type: none"> 1. Update band 1 Power Limit 2. Update band 4 to 15.407 	Feb. 23, 2016

1 Human Exposure Assessment

1.1 Maximum Permissible Exposure

1.1.1 Limit of Maximum Permissible Exposure

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
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 1: f = frequency in MHz ; *Plane-wave equivalent power density Note 2: For the applicable limit, see FCC 1.1310				

1.1.2 MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$$

E = Electric field (V/m)

G = EUT Antenna numeric gain (numeric)

The formula can be changed to

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

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

P = RF output power (W)

d = Separation distance between radiator and human body (m)



1.1.3 Result of Maximum Permissible Exposure (5.2GHz)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	Number of Transmit Chains (N _{TX})	RF Output Power (dBm)
5150-5250	a	5180-5240	36-48 [4]	1	12.11
5150-5250	n (HT20)	5180-5240	36-48 [4]	2	11.61
5150-5250	n (HT40)	5190-5230	38-46 [2]	2	11.38

Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.

Worst Maximum RF Output Power Result					
Exposure Environment		General Population / Uncontrolled Exposure			
Separation Distance (cm)		20			
Condition		RF Output Power (dBm)			
Modulation Mode	N _{TX}	Chain Port 1	Gain (dBi)	EIRP Power	PD (S) (mW/cm ²)
802.11a	1	12.11	2.00	14.11	0.00513
Maximum Permissible Exposure Limit (mW/cm ²)					1

Note 1: N_{TX} = Number of Transmit Chains



1.1.4 Result of Maximum Permissible Exposure (5.8GHz)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	Number of Transmit Chains (N _{TX})	RF Output Power (dBm) Co-location
5725-5850	a	5745-5825	149-165 [5]	1	14.37
5725-5850	n (HT20)	5745-5825	149-165 [5]	2	17.72
5725-5850	n (HT40)	5755-5795	151-159 [2]	2	17.04

Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.

Worst Maximum RF Output Power Result							
Exposure Environment		General Population / Uncontrolled Exposure					
Separation Distance (cm)		20					
Condition		RF Output Power (dBm)					
Modulation Mode	N _{TX}	Chain Port 1	Chain Port 2	Sum Chain	Gain (dBi)	EIRP Power	PD (S) (mW/cm ²)
802.11a	2	14.38	15.01	17.72	2.00	19.72	0.01864
Maximum Permissible Exposure Limit (mW/cm ²)							1

Note 1: N_{TX} = Number of Transmit Chains