



CE EMF ASSESSMENT REPORT

According to

EN 62311 (2008-01)

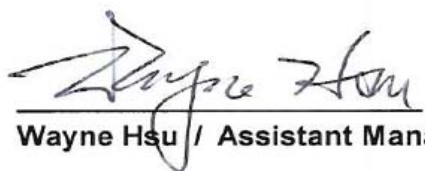
Equipment : 802.11abgn, USB module
Brand Name : SparkLAN
Model No. : WUBR-508N
Filing Type : New Application
Applicant : SparkLAN Communications, Inc.
Manufacturer : 8F., No. 257, Sec. 2, Tiding Blvd., Neihu District,
Taipei City 11493, Taiwan
Received Date : Mar. 29, 2012
Final Test Date : Apr. 26, 2012

Statement

Test result included in this report is only for printed antenna (802.11a/b/g/n) of the product.

The assessment result in this report refers exclusively to the presented assessment model / sample.

Without written approval of SPORTON International Inc., the assessment report shall not be reproduced except in full. The assessment result shown in this report were made in accordance with the procedures and found in compliance with EN 62311 (2008-01). Sporton International as requested by the applicant to evaluate the human exposure to electromagnetic fields (EMF) essential requirements of the product sample received on Mar. 29, 2012 would like to declare that this sample has been evaluated and found to be in compliance with this standard(s)



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Table of Contents

1	GENERAL INFORMATION.....	1
1.1	Basic Restrictions	1
1.2	Reference Levels	1
1.3	Compliance criteria	1
2	ASSESSMENT RESULT	2
2.1	Reference Levels Limits.....	2
2.2	Comply With the Reference Levels.....	2



History of This Assessment Report

Original Issue Date: May 15, 2012

Report No.: EA232843

■ No additional attachment.

□ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description



1 GENERAL INFORMATION

1.1 Basic Restrictions

Restrictions on exposure to time-varying electric, magnetic, and electromagnetic fields which are based directly on established health effects and biological considerations are termed “basic restrictions”. Depending upon the frequency of the field, the physical quantities used to specify these restrictions are specific absorption rate (SAR), and power density.

1.2 Reference Levels

Levels of field strength and currents that can be compared with corresponding measured or calculated values. The reference levels are derived from the basic restrictions using worst-case assumptions about exposure. If the reference levels are met, then the basic restrictions will be complied with, but if the reference levels are exceeded, it does not necessarily mean that the basic restrictions will not be met.

1.3 Compliance criteria

If the average power emitted by apparatus operating in the frequency range 10 MHz - 300 GHz is less than or equal to 20 mW and the transmitting peak power is less than 20 W then the apparatus is deemed to comply with the basic restrictions without testing. The evaluation of power is only valid if it is made with an uncertainty of less than 30 %.



2 ASSESSMENT RESULT

2.1 Reference Levels Limits

According to Council Recommendation 99/519/EC Annex III

Reference levels limits for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density Seq (W/m ²)
0-1 Hz	-	3.2×10^4	4×10^4	-
1-8 Hz	10000	$3.2 \times 10^4 / f^2$	$4 \times 10^4 / f^2$	-
8-25 Hz	10000	$4000 / f$	$5000 / f$	-
0.025-0.8 kHz	$250 / f$	$4 / f$	$5 / f$	-
0.8-3 kHz	$250 / f$	5	6.25	-
3-150 kHz	87	5	6.25	-
0.15-1 MHz	87	$0.73 / f$	$0.92 / f$	-
1-10 MHz	$87 / f^{1/2}$	$0.73 / f$	$0.92 / f$	-
10-400 MHz	28	0.073	0.095	2
400-2000 MHz	$1.375 f^{1/2}$	$0.0037 f^{1/2}$	$0.0046 f^{1/2}$	$f / 200$
2-300 GHz	61	0.16	0.2	10

2.2 Comply With the Reference Levels

The field calculation does not take into account the antenna size, which is assumed to be a point source. An ideal isotropic antenna is used as a reference to compare the performance of practical antennas: P watts is radiated, from a point, uniformly over the surface of sphere of radius r. The POINTING VECTOR gives the power density:

Assumed use distance from EUT to Human, 20 cm separation distance warning is required. In this section, the power density at 20 cm location is calculated to examine if it is lower than the limit.

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

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

E = Electric field (V/m)

P = output power (W)

G = EUT Antenna numeric gain (numeric)

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

The formula can be changed to

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

**IEEE 802.11b/g**

Test Freq (GHz)	λ (cm)	Minimum Far-Field Region ($\lambda/4$) cm	Min. User Distance (cm)	EIRP Power (dBm)	Power (mW)	Power Density (W/m ²)
2.412	12.29	3.07	20	19.83	96.1612	0.1914

IEEE 802.11n

Test Freq (GHz)	λ (cm)	Minimum Far-Field Region ($\lambda/4$) cm	Min. User Distance (cm)	EIRP Power (dBm)	Power (mW)	Power Density (W/m ²)
2.432	12.34	3.08	20	19.31	85.3100	0.1698

Note:

For more detailed e.i.r.p. power measurement description, please refer the **EN 300 328** radio test report. This EUT is deemed to comply with the reference levels are met, then the basic restrictions will be complied with human exposure limits.

IEEE 802.11a

Test Freq (GHz)	λ (cm)	Minimum Far-Field Region ($\lambda/4$) cm	Min. User Distance (cm)	EIRP Power (dBm)	Power (mW)	Power Density (W/m ²)
5700	5.263	1.32	20	22.31	170.2159	0.3388

IEEE 802.11n

Test Freq (GHz)	λ (cm)	Minimum Far-Field Region ($\lambda/4$) cm	Min. User Distance (cm)	EIRP Power (dBm)	Power (mW)	Power Density (W/m ²)
5510	5.445	1.36	20	22.12	162.9296	0.3243

Note:

For more detailed e.i.r.p. power measurement description, please refer the **EN 301 893** radio test report. This EUT is deemed to comply with the reference levels are met, then the basic restrictions will be complied with human exposure limits.