CE EMF Test Report

Equipment	:	**802.11abgn, USB Dongle**
Brand Name	:	**SparkLAN**
Model No.	:	**WUBR-508N**
Standard	:	**EN 62311:2008**
Applicant		**SparkLAN Communications, Inc.**
Manufacturer		8F., No. 257, Sec. 2, Tiding Blvd., Neihu District, Taipei City 11493, Taiwan

The product sample received on May 26, 2015 and completely tested on Oct. 03, 2015. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in EN 62311:2008 and shown compliance with the applicable technical standards. The object of the declaration described above is in conformity with the relevant Union harmonisation legislation: Directive 1999/5/EC (until 12 June 2016) and Directive 2014/53/EU (from 13 June 2016).

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

Kevin Liang / Assistant Manager

Testing Laboratory
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Summary of Test Result

EN 62311:2008 Harmonized Standard and Conformance Test Specifications				
Report Clause	**Ref. Std. Clause**	**Description**	**Limit**	**Result**
2.2	4/6	Basic Restrictions or Reference Levels	Recommendation 1999/519/EC Table 1 Basic Restrictions Table 2 Reference Levels	Complied

Revision History

Report No.	Version	Description	Issued Date
EA232843-06	Rev. 01	Initial issue of report	Nov. 20, 2014
EA232843-12	Rev. 01	Initial issue of report	May 16, 2016

1 General Description

1.1 EUT General Information

RF General Information		
Frequency Range (MHz)	**Evaluation Mode**	**Application**
2400-2483.5	2.4GHz WLAN	Wideband Data Transmission
5150-5250	5GHz WLAN	Wideband Data Transmission
5250-5350	5GHz WLAN	Wideband Data Transmission
5470-5725	5GHz WLAN	Wideband Data Transmission

1.2 Evaluation Distance

Evaluation Distance
Evaluation distance 20cm as a distance between the equipment and the operator or user when it is used normally. The distance used for the assessment had be specified by the manufacturer and be consistent with the intended usage of the equipment.
Evaluation Region
☒ Far field region, r > (λ/2π) (m) ; D ≤ λ (small dimension: low-gain antenna in free-space)
☐ Far field region, r > (λ/2π) (m) ; D>>λ (large dimension: low-gain antenna installed on or near a large conducting ground plane)
☐ Far field region, r > ($2*D^2$)/λ (m) ; D ≤ λ (large high-gain antenna with aperture diameter)
☐ Radiating near-field region, Far field region ≥ r > (λ/4) (m)
☐ Reactive near-field region, (λ/4) ≥ r (m)
largest linear dimension = D (m), evaluation distance = r (m), wavelength = λ(m)

1.3 Evaluation Method

Evaluation Method
Far field region, For calculating the field in the far-field region the free space formula: E (V/m) = $\frac{\sqrt{30 \times P \times G}}{d}$ Power Density: Pd (W/m^2) = $\frac{E^2}{377}$ **E** = Electric field (V/m) **P** = RF output power (W) **G** = EUT Antenna numeric gain (numeric) **d** = Separation distance between radiator and human (m) The formula can be changed to **Pd** = $\frac{30 \times P \times G}{377 \times d^2}$
Radiating near-field region evaluation method: ◆ SAR evaluation ◆ alternative are E-field, H-field measurements ◆ alternative either the synthetic model or cylindrical wave model. The cylindrical wave model allows direct calculation of the power flux density, S, using: S = $\frac{P \times 180}{\pi \times D \times r \times \delta}$ S = Power flux density W/m^2 P = Power in watts radiated (W) D = Length of antenna (m) r = Distance in meters from the antenna The cylindrical wave model is valid for a range of distances where rc (the distance at which the Cylinder and far-field wave models give the same result) lies in the radiating near-field, and where the distance is less than rc. At distances greater than rc the far field model (refer to the far-field calculation information in the previous section) is more appropriate. Rc (m) – DG/2*δ/360
Reactive near-field region evaluation method: ◆ SAR evaluation

1.4 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.

1.5 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.

1.6 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	$3.2\times10^4/f^2$	$4\times10^4/f^2$	-
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 Reference Levels Evaluation

Evaluation Mode	Min. User Distance (cm)	RF Output Power (dBm)	Gain (dBi)	EIRP Power (dBm)	PD (S) (W/m^2)
2.4GHz WLAN	20	16.13	3.79	19.92	0.19537
5GHz WLAN	20	16.09	6.64	22.73	0.37302
Maximum Reference Level Limit (W/m^2)					10