Maximum Permissible Exposure

Equipment	**:**	**802.11abgn Wireless Mini PCI**
Brand Name	**:**	**Fortinet**
Model No.	**:**	**WMIR-200N, WMIR-200Nv2**
FCC ID	**:**	**TVE-06836**
Standard	**:**	**ANSI/IEEE C95.1**
Applicant	**:**	**Fortinet, Inc.** 899 Kifer Road Sunnyvale California 94086 United States
Manufacturer	**:**	**SparkLAN Communications, Inc** 8F., No. 257, Sec. 2, Tiding Blvd., Neihu District, Taipei City 11493, Taiwan

The product sample received on Mar. 30, 2016 and completely tested on May 16, 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

Testing Laboratory
1190

Table of Contents

Revision History

Report No.	Version	Description	Issued Date
FA9O0604	Rev. 01	Initial issue of report	Nov. 10, 2009
FA9O0604-02	Rev. 01	Update Standard to 47 CFR FCC Part 15.407	Jun. 08, 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/ cm²)**	**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/ cm²)**	**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

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

1.1.3 Result of Maximum Permissible Exposure (2.4GHz)

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}**	**Sum Chain**	**DG (dBi)**	**EIRP Power**	**PD (S) (mW/cm²)**
b	1	22.17	2.5	24.67	0.0583
Maximum Permissible Exposure Limit (mW/cm²)					1
Note 1: N_{TX} = Number of Transmit Chains					

1.1.4 Result of Maximum Permissible Exposure (5.2GHz)

RF General Information 5150~5250MHz					
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	15.63
5150-5250	n (HT20)	5180-5240	36-48 [4]	2	16.35
5150-5250	n (HT40)	5190-5230	38-46 [2]	2	10.69
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**	**DG (dBi)**	**EIRP Power**	**PD (S) (mW/cm²)**
n (HT20)	1	13.63	13.03	16.35	5	21.35	0.02715
Maximum Permissible Exposure Limit (mW/cm²)							1
Note 1: N_{TX} = Number of Transmit Chains							

1.1.5 Result of Maximum Permissible Exposure (5.8GHz)

RF General Information 5725 MHz – 5850 MHz					
Frequency Range (MHz)	**IEEE Std. 802.11 Protocol**	**Ch. Frequency (MHz)**	**Channel Number**	**Number of Transmit Chains (N_{TX})**	**RF Output Power (dBm)**
5725-5850	a	5745-5825	149-165 [5]	1	14.85
5725-5850	n(HT20)	5745-5825	149-165 [5]	2	19.96
5725-5850	n(HT40)	5755-5795	151-159 [2]	2	18.53
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**	**DG (dBi)**	**EIRP Power**	**PD (S) (mW/cm²)**
n(HT20)	2	14.69	18.43	19.96	5.00	24.96	0.06235
Maximum Permissible Exposure Limit (mW/cm²)							1
Note 1: N_{TX} = Number of Transmit Chains							