



# RF Exposure Evaluation Report

**Equipment** : N450 DB Wireless N Router  
**Brand Name** : belkin  
**Model No.** : F9K1105v5  
**FCC ID** : K7SF9K1105V3  
**Standard** : 47 CFR Part 2.1091  
**Applicant** : Belkin International, Inc.  
12045 East Waterfront Drive, Playa Vista, CA 90094

The product sample received on Feb. 24, 2016 and completely tested on Apr. 11, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit.

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Sam Chen  
SPORTON INTERNATIONAL INC.





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# 1 General Description

## 1.1 EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
5GHz WLAN	5150-5250 5725-5850	5180-5240 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)

## 1.2 Table for Class II Change

This product is an extension of original one reported under Sporton project number: 240601

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

Modifications	Performance Checking
1. Changing brand name to "belkin" from "Belkin". 2. Changing model number to "F9K1105v5" from "F9K1105v3".	It does not need to test.
3. Updating adapter (Model No.: MT12-Y120100-A1) to Level VI energy efficiency. 4. Changing flash to "16M flash (Brand Name: MXIC, Model No.: MX25L12835FM2I-10G)" from "8M flash (Brand Name: MXIC, Model No.: MX25L6406EM2I-12G)".	It does not affect the Maximum Permissible Exposure.
5. Updating test rule of 5GHz Band 1, 4 (5150~5250MHz, 5725~5850MHz) to "New Rules" from "Old Rules".	Maximum Permissible Exposure.

Note: Maximum Permissible Exposure of 2.4GHz Band is based on original test report.

## 1.3 Testing Location

Testing Location		
<input type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973
<input checked="" type="checkbox"/>	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

## 2 Maximum Permissible Exposure

### 2.1 Limit of Maximum Permissible Exposure

(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

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

**E** = Electric field (V/m)

**P** = RF output power (W)

**G** = EUT Antenna numeric gain (numeric)

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

The formula can be changed to

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



### 2.3 Calculated Result and Limit

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Ratio (S/Limit)
5.8G;D1D	3.06	23.94	27.00	0.50119	20	0.09971	1	0.09971
2.4G;D1D	3.43	18.62	18.62	0.072778	20	0.03191	1	0.03191
							Sum Ratio	0.13162
							Ratio Limit	1