RF Exposure Evaluation Report

APPLICANT	:	**Hon Hai Precision Industry Co., Ltd.**
EQUIPMENT	:	**802.11a/b/g/n/ac 2T2R WLAN Module**
BRAND NAME	:	**Foxconn**
MODEL NAME	:	**WFUR6**
FCC ID	:	**RX3-WFUR6**
IC ID	:	**2878F-WFUR6**
STANDARD	:	**47 CFR Part 2.1091**
		IC RSS-102 ISSUE 4 (MARCH 2010)

We, SPORTON INTERNATIONAL INC., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and IC RSS-102 Issue 4 (March 2010), and pass the limit. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA420682	Rev. 01	Initial issue of report	Mar. 28, 2014

1. Statement of Compliance

The **Hon Hai Precision Industry Co., Ltd. 802.11a/b/g/n/ac 2T2R WLAN Module WFUR6** has been evaluated and found to be compliant with the essential requirement of human exposure to electromagnetic fields (EMF) according to 47 CFR Part 2.1091 and IC RSS-102 Issue 4 (March 2010).

2. Administration Data

2.1. Testing Laboratory

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

2.2. Applicant

Company Name	Hon Hai Precision Industry Co., Ltd.
Address	No.151, Sec.1, Nankan Rd., Lujhu Township, Taoyuan County 33859, Taiwan(R.O.C)

2.3. Manufacturer

Company Name	Hon Hai Precision Industry Co., Ltd.
Address	No.151, Sec.1, Nankan Rd., Lujhu Township, Taoyuan County 33859, Taiwan(R.O.C)

3. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	802.11a/b/g/n/ac 2T2R WLAN Module
Brand Name	Foxconn
Model Name	WFUR6
FCC ID	RX3-WFUR6
IC ID	2878F-WFUR6
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz
Mode	‧802.11a/b/g/n HT20/HT40/VHT20/VHT40/VHT80
Antenna Type	WLAN: PIFA Antenna
EUT Stage	Identical Prototype
Remark: 1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description. 2. This product hava two kinds antenna Manufacturers, RF exposure evaluation was select worse antenna gain perform calculated.	

Antenna Information			
Antenna 1 (Vizio_P60)	Manufacturer	Hon Hai Precision Industry Co., Ltd.	
	Antenna Type	Main: PIFA Antenna	Aux: PIFA Antenna
	Peak gain	Main : WLAN(2.4GHz):3.42 dBi WLAN(5.2GHz):1.5 dBi WLAN(5.3GHz):1.5dBi WLAN(5.5 GHz):1.19dBi WLAN(5.8 GHz):3.86dBi	Aux : WLAN(2.4GHz):2.62 dBi WLAN(5.2GHz):2.48dBi WLAN(5.3GHz):2.48dBi WLAN(5.5GHz):2.75 dBi WLAN(5.8GHz):1.91dBi
	Antenna No.	FX5526-11-001-C-TB00	FX5526-11-002-C-TB00
Antenna 2 (Vizio_P70)	Manufacturer	Hon Hai Precision Industry Co., Ltd.	
	Antenna Type	Main: PIFA Antenna	Aux: PIFA Antenna
	Peak gain	Main : WLAN(2.4GHz):3.33 dBi WLAN(5.2GHz):2.42 dBi WLAN(5.3GHz):2.42dBi WLAN(5.5GHz):2.31dBi WLAN(5.8GHz):-0.7dBi	Aux : WLAN(2.4GHz):3.47 dBi WLAN(5.2GHz):4.66dBi WLAN(5.3GHz):4.66dBi WLAN(5.5GHz):3.57 dBi WLAN(5.8GHz):3.34dBi
	Antenna No.	FX5541-11-001-C-TB00	FX5541-11-002-C-TB00

4. Maximum RF average output power among production units

WLAN 2.4GHz	IEEE 802.11 Average Power (dBm)		
Mode	Ant 1	Ant 2	Ant 1+2
11b	18.0	18.0	
11g	17.0	17.0	
HT20	16.0	16.0	15.5
HT40	15.5	15.5	16.5

WLAN 5GHz	IEEE 802.11 Average Power (dBm)		
Mode	Ant 1	Ant 2	Ant 1+2
11a	14.5	14.5	
HT20	16.0	16.0	15.5
HT40	15.5	15.5	18.5
VHT20	16.0	16.0	15.5
VHT40	15.5	15.5	18.5
VHT80	14.0	14.0	15.0

5. RF Exposure Limit Introduction

<Limit for FCC>

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f2)	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				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

<Limit for IC>

IC has adopted the RF field strength limits established in Health Canada's RF exposure guideline. The limits are shown in Table 2 below per RSS-102.

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Averaging Time (minutes)
0.003-1	280	2.19	-	6
1-10	$280/f$	$2.19/f$	-	6
10-30	28	$2.19/f$	-	6
30-300	28	0.073	2*	6
300-1500	$1.585\ f^{0.5}$	$0.0042\ f^{0.5}$	$f/150$	6
1500-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158\ f^{0.5}$	$4.21 \times 10^{-4}\ f^{0.5}$	$6.67 \times 10^{-5}\ f$	$616000/f^{1.2}$

Note: f is frequency in MHz.
* Power density limit is applicable at frequencies greater than 100 MHz.

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:

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

Where:
S = Power Density
P = Output Power at Antenna Terminals
G = Gain of Transmit Antenna (linear gain)
R = Distance from Transmitting Antenna

6. Radio Frequency Radiation Exposure Evaluation

6.1. Standalone Power Density Calculations

Note:
1. For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band

<Standalone Calculated for FCC>

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm2)	Limit (mW/cm2)	Power Density / Limit
WLNA2.4GHz Band	2412	3.47	18.0	21.5	0.14	140.28	0.028	1.000	0.028
WLNA5GHz Band	5180	4.66	18.5	23.2	0.21	207.01	0.041	1.000	0.041

<Standalone Calculated for IC>

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (W/m2)	Limit (W/m2)	Power Density / Limit
WLNA2.4GHz Band	2412	3.47	18.0	21.5	0.14	140.28	0.279	10.000	0.028
WLNA5GHz Band	5180	4.66	18.5	23.2	0.21	207.01	0.412	10.000	0.041

Conclusion:

According to 47 CFR§2.1091 and IC RSS-102 Issue 4, the RF exposure analysis concludes that the RF Exposure is FCC compliant.