Variant RF Exposure Evaluation Report

APPLICANT: Zebra Technologies Corporation

EQUIPMENT: CONCIERGE HUB

BRAND NAME: Zebra

MODEL NAME: CCHUB1

FCC ID : UZ7CCHUB1

STANDARD : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091, 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

Cole huan'

Jones, sw

Approved by: Jones Tsai / Manager



Report No.: FA2D1407-08

SPORTON INTERNATIONAL INC.

No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.)

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7CCHUB1 Page Number : 1 of 6
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SPORTON LAB. RF Exposure Evaluation Report

Revision History

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REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA2D1407-08	Rev. 01	This is a variant report for updating 5.8GHz WLAN conducted power by FCC new rule.	Mar. 14, 2016

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1. Administration Data

1.1. <u>Testing Laboratory</u>

Testing Laboratory					
Test Site SPORTON INTERNATIONAL INC.					
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978				

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	Applicant Applicant			
Company Name	Zebra Technologies Corporation			
Address	1 Zebra Plaza, Holtsville, NY 11742			

	Manufacturer
Company Name	Zebra Technologies Corporation
Address	1 Zebra Plaza, Holtsville, NY 11742

2. <u>Description of Equipment Under Test (EUT)</u>

Product Feature & Specification						
EUT Type	UT Type CONCIERGE HUB					
Brand Name	Zebra					
Model Name	CCHUB1					
FCC ID	UZ7CCHUB1					
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 Bluetooth: 2402 MHz ~ 2480 MHz					
Mode	802.11a/b/g/n HT20 Bluetooth v2.1 EDR					
MFD	26Aug15					
Antenna Type	WLAN: PCB Antenna Bluetooth: PCB Antenna					
EUT Stage	UT Stage Identical Prototype					

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

3. Maximum RF average output power among production units

5GHz WLAN	IEEE 802.11		
Band / Mode	11a	HT20	
5.8GHz Band	12.50	12.50	

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4. RF Exposure Limit Introduction

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)	
800 St.	(A) Limits for Oc	ccupational/Controlled Expos	sures	W	
0.3-3.0	614	1.63	*(100)	6	
3.0-30	1842/	f 4.89/1	*(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 Gene	ral Population/Uncontrolled I	Exposure		
0.3-1.34	614	1.63	*(100)	30	
1.34-30	824/	f 2.19/1	*(180/f2)	30	
30-300	27.5	0.073	0.2	30	
300-1500			f/1500	30	
1500-100,000			1.0	30	

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:

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

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

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5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm^2)	Limit (mW/cm^2)
5.8GHz WLAN	5745.0	4.11	12.50	16.610	0.046	45.814	0.009	1.000

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

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

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