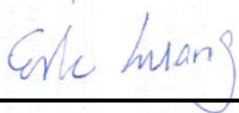


RF Exposure Evaluation Report

APPLICANT : Compal Electronics, INC.
EQUIPMENT : VOICE HUB GATEWAY
BRAND NAME : Compal
MODEL NAME : DBX81
MARKETING NAME : VOICE HUB GATEWAY
FCC ID : GKR-DBX81WBZ
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 / Manager



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA7N2101	Rev. 01	Initial issue of report	Jan. 26, 2018
FA7N2101	Rev. 02	Revised ID	Mar. 14, 2018



1. Administration Data

1.1. Testing Laboratory

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

Applicant	
Company Name	Compal Electronics, INC.
Address	No. 581 ruiguang rd.,Neihu District, Taipei City 11492, Taiwan (R.O.C.)

Manufacturer	
Company Name	Compal Electronics, Inc. Pingzhen plant
Address	3-4F., No. 8-1 & No. 8, Nandong Rd., Pingzhen Dist., Taoyuan City, 32455, Taiwan (R.O.C.)



2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	VOICE HUB GATEWAY
Brand Name	Compal
Model Name	DBX81
Marketing Name	VOICE HUB GATEWAY
FCC ID	GKR-DBX81WBZ
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz Zigbee: 2405 MHz ~ 2480 MHz
Mode	802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE Zigbee: BPSK
HW Version	img.minispeaker.android.a00.0006.2017.1108.img
FW Version	LS-F331P
EUT Stage	Production Unit

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

Mode	Maximum Average Power (dBm)
Bluetooth BR/EDR	8.5
Bluetooth LE	4.0
Zigbee	5.5

Band / Mode	IEEE 802.11 Average Power (dBm)		
	11b	11g	HT20
2.4GHz Band	14.5	14.5	13.0

Band / Mode	IEEE 802.11 Average Power (dBm)					
	11a	HT20	HT40	VHT20	VHT40	VHT80
5.2GHz Band	16.0	16.0	15.5	16.0	15.5	10.0
5.8GHz Band	16.5	16.0	16.0	16.0	16.0	16.0



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)
(A) Limits for Occupational/Controlled Exposures				
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
(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/f ²)	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



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)
2.4GHz WLAN	2412.0	1.42	14.50	15.920	0.039	39.084	0.008	1.000
5.2GHz WLAN	5180.0	1.71	16.00	17.710	0.059	59.020	0.012	1.000
5.8GHz WLAN	5745.0	0.10	16.50	16.600	0.046	45.709	0.009	1.000
Bluetooth	2402.0	1.42	8.50	9.920	0.010	9.817	0.002	1.000
Zigbee	2405.0	-2.08	5.50	3.420	0.002	2.198	0.000	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.