

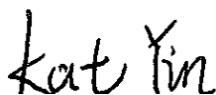
# RF Exposure Evaluation Report

**APPLICANT** : GigaDevice Semiconductor Inc.  
**EQUIPMENT** : 802.11bgn wlan module  
**BRAND NAME** : GigaDevice  
**MODEL NAME** : GD32W515\_MD1  
**FCC ID** : 2A3BS-GD32W515MD1  
**STANDARD** : 47 CFR Part 2.1091  
FCC KDB 447498 D01 v06

We, Sporton International (Kunshan) Inc., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and FCC KDB 447498 D01 v06, and pass the limit. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.



Reviewed by: Nick Hu / Supervisor



Approved by: Kat Yin / Manager



**Sporton International (Kunshan) Inc.**

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300  
People's Republic of China



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**Revision History**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA191334	Rev. 01	Initial issue of report	Oct. 22, 2021



## **1. Administration Data**

### **1.1. Testing Laboratory**

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory			
Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-KS	CN1257	314309

Applicant	
Company Name	GigaDevice Semiconductor Inc.
Address	Building No. 8, IC Park, No. 9 Fenghao East Road, Haidian District, Beijing 100094, China

Manufacturer	
Company Name	GigaDevice Semiconductor Inc.
Address	Building No. 8, IC Park, No. 9 Fenghao East Road, Haidian District, Beijing 100094, China

## **2. Description of Equipment Under Test (EUT)**

Product Feature & Specification	
EUT Type	802.11bgn wlan module
Brand Name	GigaDevice
Model Name	GD32W515_MD1
FCC ID	2A3BS-GD32W515MD1
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz
Mode	WLAN 2.4GHz : 802.11b/g/n/ HT20/ HT40
Antenna Type/Gain	WLAN: PCB Antenna with 2.9 dBi WLAN: Dipole Antenna with 2.5 dBi
HW Version	GD32W515_MD1_SP_2V1
SW Version	KEIL-image-all-rf-test-1.0.3.bin
EUT Stage	Identical Prototype
<b>Remark:</b>	
1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.	
2. The device supports two types of antenna which can't use simultaneously.	

Comments and Explanations:
1. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.
2. The maximum RF output tune up power, antenna gain also the safe distance used for evaluate RF exposure were declared by manufacturer.

**3. Maximum RF average output power among production units****<WLAN 2.4GHz>**

Mode		Maximum Average Power (dBm)
2.4GHz	802.11b	19.00
	802.11g	17.00
	802.11n-HT20	17.00
	802.11n-HT40	14.00

#### **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 <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2.4GHz WLAN	2412	2.90	19.00	21.90	0.15	154.88	0.031	1.000

**Note:**

1. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
2. The device supports two types of antenna which can't use simultaneously.
3. For WLAN2.4GHz with the same tune up power, we only chose higher gain to perform MPE calculation.

### **Conclusion:**

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

-----THE END-----