



RF EXPOSURE EVALUATION REPORT

FCC ID : 2AG0Z-P4LK
Equipment : Media receiver
Brand Name : facebook
Model Name : WD50JM
Applicant : Facebook Technologies, LLC
1 Hacker Way, Menlo Park, CA 94025, USA
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has evaluated this product in accordance with 47 CFR Part 2.1091 and it complies with applicable limit.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Cona Huang / Deputy Manager

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issued Date
FA952409	Rev. 01	Initial issue of report	Jul. 15, 2019

**1. Description of Equipment Under Test (EUT)**

Product Feature & Specification	
EUT Type	Media receiver
Brand Name	facebook
Model Name	WD50JM
FCC ID	2AG0Z-P4LK
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 ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	WLAN: 802.11a/b/g/n/ac HT20 / HT40 / VHT20 / VHT40 / VHT80 Bluetooth BR/EDR/LE
EUT 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.

Reviewed by: Jason Wang

Report Producer: Daisy Peng

2. Maximum RF average output power among production units

Band / Mode	Average Power (dBm)			
	BR / EDR			LE
	1M	2M	3M	GFSK
Bluetooth	9	6	6	6

Band / Channel / Frequency (MHz)			IEEE 802.11 Average Power (dBm)							
			Ant 1				Ant 2			
			11b	11g	HT20	VHT20	11b	11g	HT20	VHT20
2.4GHz WLAN (DTS)	Ch 1	2412	19.5	16	15	15	19.5	16	15	15
	Ch 6	2437	19.5	18	17.5	17.5	19.5	18	17.5	17.5
	Ch 11	2462	19.5	15	15.5	15.5	19.5	15	15.5	15.5

Band / Channel / Frequency (MHz)			IEEE 802.11 Average Power (dBm)			
			Ant 1 + 2			
			11b	11g	HT20	VHT20
2.4GHz WLAN (DTS)	Ch 1	2412	22.5	19	18	18
	Ch 6	2437	22.5	21	20.5	20.5
	Ch 11	2462	22.5	18	18.5	18.5

Band / Channel / Frequency (MHz)			IEEE 802.11 Average Power (dBm)											
			Ant 1						Ant 2					
			11a	HT20	HT40	VHT20	VHT40	VHT80	11a	HT20	HT40	VHT20	VHT40	VHT80
5.2GHz WLAN (U-NII-1)	Ch 36	5180	17	17		17			17	17		17		
	Ch 38	5190			13		13.5				13		13.5	
	Ch 42	5210						11.5						11.5
	Ch 44	5220	17	17		17			17	17		17		
	Ch 46	5230			13		13.5				13		13.5	
	Ch 48	5240	17	17.5		17.5			17	17		17		
5.3GHz WLAN (U-NII-2A)	Ch 52	5260	17	17.5		17.5			17	17		17		
	Ch 54	5270			14.5		15				14.5		14	
	Ch 58	5290						11.5						11.5
	Ch 60	5300	17	17.5		18			17	17		17		
	Ch 62	5310			14.5		15				14.5		14	
	Ch 64	5320	17	17.5		18			17	17		17		
5.5GHz WLAN (U-NII-2C)	Ch 100	5500	17	17		17.5			17	17		17		
	Ch 102	5510			18.5		18.5				18.5		18	
	Ch 106	5530						14						14
	Ch 110	5550			18.5		18.5				18.5		18	
	Ch 116	5580	17	17		17			17	17		17		
	Ch 122	5610						19.5						19.5
	Ch 134	5670			18.5		18.5				18.5		18	
	Ch 138	5690						14						14
	Ch 140	5700	17	17		17			17	17		17		
	Ch 142	5710			18.5		18.5				18.5		18	
5.8GHz WLAN (U-NII-3)	Ch 144	5720	17	17		17.5			17	17		17		
	Ch 149	5745	18.5	18.5		18.5			18.5	18.5		18.5		
	Ch 151	5755			19		19				19		19	
	Ch 155	5775						18.5						18.5
	Ch 157	5785	18.5	18.5		18.5			18.5	18.5		18.5		
	Ch 159	5795			19		19				19		19	
	Ch 165	5825	18.5	18.5		18.5			18.5	18.5		18.5		

Band / Channel / Frequency (MHz)			IEEE 802.11 Average Power (dBm)					
			Ant 1 + 2					
			11a	HT20	HT40	VHT20	VHT40	VHT80
5.2GHz WLAN (U-NII-1)	Ch 36	5180	20	20		20		
	Ch 38	5190			16		16.5	
	Ch 42	5210						14.5
	Ch 44	5220	20	20		20		
	Ch 46	5230			16		16.5	
	Ch 48	5240	20	20.5		20.5		
5.3GHz WLAN (U-NII-2A)	Ch 52	5260	20	20.5		20.5		
	Ch 54	5270			17.5		17.5	
	Ch 58	5290						14.5
	Ch 60	5300	20	20.5		20.5		
	Ch 62	5310			17.5		17.5	
	Ch 64	5320	20	20.5		20.5		
5.5GHz WLAN (U-NII-2C)	Ch 100	5500	20	20		20		
	Ch 102	5510			21.5		21.5	
	Ch 106	5530						17
	Ch 110	5550			21.5		21.5	
	Ch 116	5580	20	20		20		
	Ch 122	5610						22.5
	Ch 134	5670			21.5		21.5	
	Ch 138	5690						17
	Ch 140	5700	20	20		20		
	Ch 142	5710			21.5		21.5	
5.8GHz WLAN (U-NII-3)	Ch 144	5720	20	20		20		
	Ch 149	5745	21.5	21.5		21.5		
	Ch 151	5755			22		22	
	Ch 155	5775						21.5
	Ch 157	5785	21.5	21.5		21.5		
	Ch 159	5795			22		22	
	Ch 165	5825	21.5	21.5		21.5		



3. 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

4. Radio Frequency Radiation Exposure Evaluation

4.1. 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)	Power Density / Limit
2.4GHz WLAN	2412.0	1.90	22.50	24.400	0.275	275.423	0.055	1.000	0.055
5GHz WLAN	5180.0	1.90	22.50	24.400	0.275	275.423	0.055	1.000	0.055
Bluetooth	2402.0	1.90	9.00	10.900	0.012	12.303	0.002	1.000	0.002

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

4.2. Collocated Power Density Calculation

WLAN Power Density / Limit	Bluetooth Power Density / Limit	Σ (Power Density / Limit) of WLAN+Bluetooth
0.055	0.002	0.057

Note:

1. Σ (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WLAN + Bluetooth.
2. Considering the WLAN module collocation with the Bluetooth transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 2 collocated transmitters is compliant

Conclusion:

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