RF EXPOSURE EVALUATION REPORT

FCC ID	:	**2AGOZ-D87L**
Equipment	:	**Media receiver**
Brand Name	:	**facebook**
Model Name	:	**DT90GB**
Applicant	:	**Facebook Technologies, LLC 1 Hacker Way, Menlo Park, CA 94025, USA**
Standard	:	**47 CFR Part 2.1091**

We, SPORTON INTERNATIONAL INC has been 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

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History of this test report

Report No.	Version	Description	Issued Date
FA952407	Rev. 01	Initial issue of report	Jul. 11, 2019

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Media receiver
Brand Name	facebook
Model Name	DT90GB
FCC ID	2AGOZ-D87L
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	18.5	15.5	14.5	14.5	17.5	15.5	15	15
	Ch 6	2437	18.5	18	17.5	17.5	17.5	17.5	17	17.5
	Ch 11	2462	18.5	15.5	14.5	14.5	17.5	15.5	15	15

Band / Channel / Frequency (MHz)			IEEE 802.11 Average Power (dBm)			
			Ant 1 + 2			
			11b	11g	HT20	VHT20
2.4GHz WLAN (DTS)	Ch 1	2412	21.5	18.5	18	18
	Ch 6	2437	21.5	20.5	20.5	20.5
	Ch 11	2462	21.5	18.5	18	18

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	17.5	17		17.5			17	17		17		
	Ch 38	5190			13.5		13.5				13.5		13.5	
	Ch 42	5210						11.5						11.5
	Ch 44	5220	17.5	17		17.5			17	17		17		
	Ch 46	5230			13.5		13.5				13.5		13.5	
	Ch 48	5240	17.5	18		17.5			17	17		17		
5.3GHz WLAN (U-NII-2A)	Ch 52	5260	17.5	18		17.5			17	17		17		
	Ch 54	5270			15		15				14		14	
	Ch 58	5290						11.5						11.5
	Ch 60	5300	17.5	18		18			17	17		17		
	Ch 62	5310			13.5		13.5				13.5		13.5	
	Ch 64	5320	17.5	18		18			17	17		17		
5.5GHz WLAN (U-NII-2C)	Ch 100	5500	17.5	17		17.5			17	17		17		
	Ch 102	5510			17		17				16.5		16.5	
	Ch 106	5530						13						13
	Ch 110	5550			18.5		18.5				18		18	
	Ch 116	5580	17.5	17		17.5			17	17		17		
	Ch 122	5610						20						19
	Ch 134	5670			18.5		18.5				18		18	
	Ch 138	5690						13						13
	Ch 140	5700	17.5	18		17.5			17	17		17		
	Ch 142	5710			18.5		18.5				18		18	
	Ch 144	5720	17.5	18		17.5			17	17		17		
5.8GHz WLAN (U-NII-3)	Ch 149	5745	19	18.5		18.5			19	18.5		18.5		
	Ch 151	5755			19		19				19		19	
	Ch 155	5775						18.5						18.5
	Ch 157	5785	19	18.5		18.5			19	18.5		18.5		
	Ch 159	5795			19		19				19		19	
	Ch 165	5825	19	18.5		18.5			19	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	20.5	20.5		20.5		
	Ch 38	5190			16.5		16.5	
	Ch 42	5210						14.5
	Ch 44	5220	20.5	20.5		20.5		
	Ch 46	5230			16.5		16.5	
	Ch 48	5240	20.5	20.5		20.5		
5.3GHz WLAN (U-NII-2A)	Ch 52	5260	20.5	20.5		20.5		
	Ch 54	5270			18		18	
	Ch 58	5290						14.5
	Ch 60	5300	20.5	20.5		20.5		
	Ch 62	5310			16.5		16.5	
	Ch 64	5320	20.5	20.5		20.5		
5.5GHz WLAN (U-NII-2C)	Ch 100	5500	20.5	20.5		20.5		
	Ch 102	5510			20.5		20.5	
	Ch 106	5530						16
	Ch 110	5550			21.5		21.5	
	Ch 116	5580	20.5	20.5		20.5		
	Ch 122	5610						22.5
	Ch 134	5670			20.5		21	
	Ch 138	5690						16
	Ch 140	5700	20.5	20.5		20.5		
	Ch 142	5710			21.5		21.5	
	Ch 144	5720	20.5	20.5		20.5		
5.8GHz WLAN (U-NII-3)	Ch 149	5745	22	21.5		21.5		
	Ch 151	5755			22		22	
	Ch 155	5775						21.5
	Ch 157	5785	22	21.5		21.5		
	Ch 159	5795			22		22	
	Ch 165	5825	22	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/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

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	1.91	21.50	23.410	0.219	219.280	0.044	1.000	0.044
5GHz WLAN	5180.0	1.95	22.50	24.450	0.279	278.612	0.055	1.000	0.055
Bluetooth	2402.0	1.91	9.00	10.910	0.012	12.331	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.