RF EXPOSURE EVALUATION REPORT

FCC ID	:	**2AP65-7225**
Equipment	:	**Digital Media Receiver**
Model Name	:	**P5B83L**
Applicant	:	**Lindland LLC** **9121 Anson Way, Ste. 200, Raleigh, NC 27615**
Standard	:	**47 CFR Part 2.1091**

We, SPORTON INTERNATIONAL INC has been evaluated in accordance with 47 CFR Part 2.1091 for the device and pass the 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 variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Jones Tsai

Approved by: Jones Tsai / Manager

SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory

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History of this test report

Report No.	Version	Description	Issued Date
FA842408-01	Rev. 01	Initial issue of report	Aug. 20, 2018
FA842408-01	Rev. 02	Updated section 2 and section 4.	Aug. 28, 2018

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Digital Media Receiver
Model Name	P5B83L
FCC ID	2AP65-7225
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz ~ 2472 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth LE

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: Eric Huang

Report Producer: Daisy Peng

2. Maximum RF average output power among production units

Bluetooth	Average Power (dBm)
	v4.0 BLE
ANT 1	4.00
ANT 2	4.00

	Transmitter Antenna				ANT 1	ANT 2
	Mode	Channel	Frequency (MHz)	Data Rate	Tune-up Limit	Tune-up Limit
2.4GHz WLAN	802.11b	CH 1	2412	1Mbps	20.5	19
		CH 6	2437		20.5	20.5
		CH 11	2462		20.5	21
		CH 12	2467		16.5	16.5
		CH 13	2472		13.5	14.5
	802.11g	CH 1	2412	6Mbps	17.5	17
		CH 6	2437		18.5	18.5
		CH 11	2462		16.5	16.5
		CH 12	2467		11	12.5
		CH 13	2472		9.5	10.5
	802.11n-HT20	CH 1	2412	MCS0	14	16
		CH 6	2437		17.5	17.5
		CH 11	2462		13	14.5
		CH 12	2467		10.5	12
		CH 13	2472		9	10

	Transmitter Antenna				ANT 1	ANT 2
	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	Tune-Up Limit
5.2GHz WLAN	802.11a	CH 36	5180	6Mbps	18	18
		CH 40	5200		18	18.5
		CH 44	5220		18.5	18.5
		CH 48	5240		18.5	18.5
	802.11n-HT20	CH 36	5180	MCS0	17.5	16.5
		CH 40	5200		17.5	17.5
		CH 44	5220		17.5	17.5
		CH 48	5240		17.5	17.5
	802.11n-HT40	CH 38	5190	MCS0	14	12.5
		CH 46	5230		17.5	17.5
	802.11ac-VHT20	CH 36	5180	MCS0	17.5	16.5
		CH 40	5200		17.5	17.5
		CH 44	5220		17.5	17.5
		CH 48	5240		17.5	17.5
	802.11ac-VHT40	CH 38	5190	MCS0	14	12.5
		CH 46	5230		17.5	17
	802.11ac-VHT80	CH 42	5210	MCS0	9.5	11

	Transmitter Antenna				ANT 1	ANT 2
	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	Tune-Up Limit
5.8GHz WLAN	802.11a	CH 149	5745	MCS0	18.5	18.5
		CH 157	5785		18.5	18.5
		CH 165	5825		19	19
	802.11n-HT20	CH 149	5745	MCS0	17.5	17.5
		CH 157	5785		17.5	17.5
		CH 165	5825		18	18
	802.11n-HT40	CH 151	5755	MCS0	17.5	17.5
		CH 159	5795		17.5	17.5
	802.11ac-VHT20	CH 149	5745	MCS0	17.5	17.5
		CH 157	5785		17.5	17.5
		CH 165	5825		18	18
	802.11ac-VHT40	CH 151	5755	MCS0	17.5	17.5
		CH 159	5795		17.5	17.5
	802.11ac-VHT80	CH 155	5775	MCS0	16.5	18

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)	Power Density at 20cm (mW/cm^2)	Limit (mW/cm^2)
2.4GHz WLAN Ant 1	2412.0	2.97	20.50	23.470	0.222	0.044	1.000
2.4GHz WLAN Ant 2	2412.0	1.36	21.00	22.360	0.172	0.034	1.000
5.2GHz WLAN Ant 1	5180.0	0.88	18.50	19.380	0.087	0.017	1.000
5.2GHz WLAN Ant 2	5180.0	4.00	18.50	22.500	0.178	0.035	1.000
5.8GHz WLAN Ant 1	5745.0	0.96	19.00	19.960	0.099	0.020	1.000
5.8GHz WLAN Ant 2	5745.0	3.98	19.00	22.980	0.199	0.040	1.000
Bluetooth Ant 1	2402.0	2.97	4.00	6.970	0.005	0.001	1.000
Bluetooth Ant 2	2402.0	1.36	4.00	5.360	0.003	0.001	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.