

RF EXPOSURE EVALUATION REPORT

FCC ID : 2AOAG-3668
Equipment : Digital Media Receiver
Model Name : D9N29T
Applicant : Moxham L.L.C.
1320 Main Street Suite 300 Columbia,
South Carolina, 29201
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.



Approved by: Jones Tsai / Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA831509-01	Rev. 01	Initial issue of report	Aug. 02, 2018

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

Product Feature & Specification	
EUT Type	Digital Media Receiver
Model Name	D9N29T
FCC ID	2AOAG-3668
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 BR/EDR/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: Wan Liu

2. Maximum RF average output power among production units

Band / Mode	ANT1&2 _Average Power (dBm)			
	BR / EDR			LE
	1M	2M	3M	GFSK
Bluetooth	6	6	6	6.5

2.4GHz WLAN ANT 1	Mode	Channel	Frequency(MHz)	Data Rate	Tune-Up Limit
	802.11b	CH 1	2412	1Mbps	18.5
		CH 6	2437		19.5
		CH 11	2462		18.5
		CH 12	2467		17.5
		CH13	2472		14.5
	802.11g	CH 1	2412	6Mbps	17.0
		CH 6	2437		19.0
		CH 11	2462		16.5
		CH 12	2467		13.0
		CH13	2472		9.0
	802.11n-HT20	CH 1	2412	MCS0	16.0
		CH 6	2437		19.0
		CH 10	2457		19.0
		CH 11	2462		16.0
		CH 12	2467		12.0
		CH13	2472		9.0

2.4GHz WLAN ANT 2	Mode	Channel	Frequency(MHz)	Data Rate	Tune-Up Limit
	802.11b	CH 1	2412	1Mbps	19.5
		CH 6	2437		20.0
		CH 11	2462		20.0
		CH 12	2467		18.0
		CH13	2472		15.0
	802.11g	CH 1	2412	6Mbps	15.0
		CH 2	2417		16.5
		CH 3	2422		18.0
		CH 6	2437		19.5
		CH 9	2452		18.0
		CH 10	2457		16.0
		CH 11	2462		14.5
		CH 12	2467		12.0
	802.11n-HT20	CH13	2472		10.0
		CH 1	2412	MCS0	14.5
		CH 2	2417		16.0
		CH 3	2422		17.5
		CH 6	2437		20.0
		CH 9	2452		17.5
		CH 10	2457		16.0
		CH 11	2462		13.5
		CH 12	2467		12.0
		CH13	2472		10.0

5.2GHz WLAN ANT 1	Mode	Channel	Frequency(MHz)	Data Rate	Tune-Up Limit
	802.11a	CH 36	5180	6Mbps	18.0
		CH 44	5220		21.5
		CH 48	5240		19.0
	802.11n-HT20	CH 36	5180	MCS0	17.5
		CH 44	5220		21.5
		CH 48	5240		19.0
	802.11n-HT40	CH 38	5190	MCS0	14.5
		CH 46	5230		19.0
	802.11ac-VHT20	CH 36	5180	MCS0	17.5
		CH 44	5220		21.5
		CH 48	5240		19.0
	802.11ac-VHT40	CH 38	5190	MCS0	14.5
		CH 46	5230		19.0
	802.11ac-VHT80	CH 42	5210	MCS0	13.5

5.2GHz WLAN ANT 2	Mode	Channel	Frequency(MHz)	Data Rate	Tune-Up Limit
	802.11a	CH 36	5180	6Mbps	18.0
		CH 44	5220		21.5
		CH 48	5240		19.5
	802.11n-HT20	CH 36	5180	MCS0	18.0
		CH 44	5220		21.5
		CH 48	5240		19.5
	802.11n-HT40	CH 38	5190	MCS0	14.0
		CH 46	5230		19.5
	802.11ac-VHT20	CH 36	5180	MCS0	19.0
		CH 44	5220		21.5
		CH 48	5240		19.0
	802.11ac-VHT40	CH 38	5190	MCS0	14.0
		CH 46	5230		19.5
	802.11ac-VHT80	CH 42	5210	MCS0	14.0

5.8GHz WLAN ANT 1	Mode	Channel	Frequency(MHz)	Data Rate	Tune-Up Limit
	802.11a	CH 149	5745	MCS0	19.5
		CH 157	5785		19.5
		CH 165	5825		19.0
	802.11n-HT20	CH 149	5745	MCS0	19.5
		CH 157	5785		19.5
		CH 165	5825		19.0
	802.11n-HT40	CH 151	5755	MCS0	19.5
		CH 159	5795		19.5
	802.11ac-VHT20	CH 149	5745	MCS0	19.5
		CH 157	5785		19.5
		CH 165	5825		19.0
	802.11ac-VHT40	CH 151	5755	MCS0	19.5
		CH 159	5795		19.5
	802.11ac-VHT80	CH 155	5775	MCS0	16.5

5.8GHz WLAN ANT 2	Mode	Channel	Frequency(MHz)	Data Rate	Tune-Up Limit
	802.11a	CH 149	5745	MCS0	20.0
		CH 157	5785		20.0
		CH 165	5825		19.5
	802.11n-HT20	CH 149	5745	MCS0	20.0
		CH 157	5785		19.5
		CH 165	5825		19.5
	802.11n-HT40	CH 151	5755	MCS0	19.5
		CH 159	5795		19.5
	802.11ac-VHT20	CH 149	5745	MCS0	20.0
		CH 157	5785		19.5
		CH 165	5825		19.5
	802.11ac-VHT40	CH 151	5755	MCS0	19.5
		CH 159	5795		19.5
	802.11ac-VHT80	CH 155	5775	MCS0	17.0

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
Bluetooth Ant1	2402.0	3.30	6.50	9.800	0.010	9.550	0.002	1.000	0.002
Bluetooth Ant2	2402.0	3.30	6.50	9.800	0.010	9.550	0.002	1.000	0.002
2.4GHz WLAN Ant1	2412.0	3.30	19.50	22.800	0.191	190.546	0.038	1.000	0.038
2.4GHz WLAN Ant2	2412.0	3.30	20.00	23.300	0.214	213.796	0.043	1.000	0.043
5GHz WLAN Ant1	5180.0	4.40	21.50	25.900	0.389	389.045	0.077	1.000	0.077
5GHz WLAN Ant2	5180.0	4.80	21.50	26.300	0.427	426.580	0.085	1.000	0.085

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
0.085	0.002	0.087

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.