



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.

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Approved by: Jones Tsai / Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA831509-06	Rev. 01	Initial issue of report	May 02, 2019
FA831509-06	Rev. 02	Update section 2	Aug. 21, 2019

**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 5.3GHz 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	802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
Remark: 1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description. 2. This is variant report to enable 5.3/5.5GHz WLAN.	

Reviewed by: Jason Wang**Report Producer: Wan Liu****2. Maximum RF average output power among production units**

	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	
					Ant 1	Ant 2
5.3GHz WLAN	802.11a	CH 52	5260	6Mbps	21.00	21.00
		CH 60	5300		21.00	21.00
		CH 64	5320		18.50	18.50
	802.11n-HT20	CH 52	5260	MCS0	21.50	21.50
		CH 60	5300		21.00	21.50
		CH 64	5320		18.00	18.50
	802.11n-HT40	CH 54	5270	MCS0	20.50	20.50
		CH 62	5310		15.00	16.00
	802.11ac-VHT20	CH 52	5260	MCS0	21.00	21.00
		CH 60	5300		21.00	21.00
		CH 64	5320		17.50	18.50
	802.11ac-VHT40	CH 54	5270	MCS0	20.50	20.50
		CH 62	5310		14.50	16.00
	802.11ac-VHT80	CH 58	5290	MCS0	14.00	15.00



	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	
					Ant 1	Ant 2
5.5GHz WLAN	802.11a	CH 100	5500	6Mbps	19.50	18.50
		CH 116	5580		20.50	20.50
		CH 140	5700		17.50	17.00
		CH 144	5720		19.50	19.50
	802.11n-HT20	CH 100	5500	MCS0	19.50	18.50
		CH 116	5580		20.50	21.00
		CH 140	5700		17.50	16.50
		CH 144	5720		19.50	20.00
	802.11n-HT40	CH 102	5510	MCS0	16.00	14.50
		CH 110	5550		20.50	20.00
		CH 134	5670		18.50	18.00
		CH 142	5710		19.50	20.00
	802.11ac-VHT20	CH 100	5500	MCS0	19.50	18.00
		CH 116	5580		20.50	21.00
		CH 140	5700		17.00	16.50
		CH 144	5720		19.00	19.50
	802.11ac-VHT40	CH 102	5510	MCS0	16.00	14.50
		CH 110	5550		20.50	20.00
		CH 134	5670		18.50	18.00
		CH 142	5710		19.50	20.00
	802.11ac-VHT80	CH 106	5530	MCS0	14.50	14.00
		CH 122	5610		19.00	19.00
		CH 138	5690		20.00	20.00

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
5.3/5.5GHz WLAN Ant1	5260.0	4.80	21.50	26.300	0.427	426.580	0.085	1.000	0.085
5.3/5.5GHz WLAN Ant2	5260.0	4.00	21.50	25.500	0.355	354.813	0.071	1.000	0.071

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. For 2.4GHz WLAN / 5.2GHz WLAN / 5.8GHz WLAN & Bluetooth standalone power density calculation can refer to Sporton RF Exposure Evaluation Original Report, Report No: FA831509-01 (FCC ID: 2AOAG-3668).
2. 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.
3. 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.