



RF EXPOSURE EVALUATION REPORT

FCC ID : 2ARIV-2425
Equipment : Digital Media Receiver
Model Name : H23K37
Applicant : Abandon LLC
801 E. Douglas Avenue, 2nd
Floor Wichita, Kansas 67202
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 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
FA892513-02	Rev. 01	Initial issue of report	Mar. 27, 2019



1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Digital Media Receiver
Model Name	H23K37
FCC ID	2ARIV-2425
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: 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: Wan Liu

2. Maximum RF average output power among production units (dBm)

Band / Mode	Average Power (dBm)			
	BR / EDR			v5.0 LE
	1M	2M	3M	GFSK
Bluetooth	12.5	11.0	11.0	12.5

2.4GHz WLAN	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit
	802.11b		CH 1	2412	1Mbps
CH 6			2437	21.50	
CH 11			2462	21.00	
CH 12			2467	18.50	
CH13			2472	15.50	
802.11g		CH 1	2412	6Mbps	18.00
		CH 6	2437		20.00
		CH 10	2457		19.50
		CH 11	2462		17.00
		CH 12	2467		14.50
		CH13	2472		13.00
802.11n-HT20		CH 1	2412	MCS0	17.00
		CH 6	2437		19.00
		CH 11	2462		17.00
		CH 12	2467		15.00
		CH13	2472		13.50



5.2GHz WLAN	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit
	802.11a	CH 36	5180	6Mbps	19.00
		CH 44	5220		19.00
		CH 48	5240		19.00
	802.11n-HT20	CH 36	5180	MCS0	18.50
		CH 44	5220		18.50
		CH 48	5240		18.50
	802.11n-HT40	CH 38	5190	MCS0	15.00
		CH 46	5230		18.00
	802.11ac-VHT20	CH 36	5180	MCS0	18.50
CH 44		5220	18.50		
CH 48		5240	18.50		
802.11ac-VHT40	CH 38	5190	MCS0	14.50	
	CH 46	5230		18.00	
802.11ac-VHT80	CH 42	5210	MCS0	13.00	

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



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

5.8GHz WLAN	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit
	802.11a	CH 149	5745	MCS0	19.50
		CH 157	5785		19.50
		CH 165	5825		19.00
	802.11n-HT20	CH 149	5745	MCS0	19.00
		CH 157	5785		19.00
		CH 165	5825		18.50
	802.11n-HT40	CH 151	5755	MCS0	18.50
		CH 159	5795		18.50
	802.11ac-VHT20	CH 149	5745	MCS0	19.00
		CH 157	5785		19.00
		CH 165	5825		18.50
	802.11ac-VHT40	CH 151	5755	MCS0	18.50
CH 159		5795	18.50		
802.11ac-VHT80	CH 155	5775	MCS0	18.00	



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.

Table with 5 columns: Frequency range (MHz), Electric field strength (V/m), Magnetic field strength (A/m), Power density (mW/cm²), Averaging time (minutes). It is divided into two sections: (A) Limits for Occupational/Controlled Exposures and (B) Limits for General Population/Uncontrolled Exposure.

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 = 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	2.30	21.50	23.800	0.240	239.883	0.048	1.000	0.048
5GHz WLAN	5180.0	5.10	20.00	25.100	0.324	323.594	0.064	1.000	0.064
Bluetooth	2402.0	1.85	12.50	14.350	0.027	27.227	0.005	1.000	0.005

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
0.064	0.005	0.069

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.