RF EXPOSURE EVALUATION REPORT

FCC ID	:	**2AHSE-2045**
Equipment	:	**Digital Media Receiver**
Model Name	:	**RS03QR**
Applicant	:	**Altocumulous LLC 300 E. Business Way, Suite 200, Summit Woods Corporate Center Cincinnati, Ohio 45241**
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 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.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

Cona Huang

Approved by: Cona Huang / Deputy Manager

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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History of this test report

Report No.	Version	Description	Issued Date
FA631725-16	Rev. 01	Initial issue of report	Sep. 25, 2020
FA631725-16	Rev. 02	Update section 4	Nov. 06, 2020

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Digital Media Receiver
Model Name	RS03QR
FCC ID	2AHSE-2045
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: 5250 MHz ~ 5350 MHz WLAN 5.5GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	802.11a/b/g/n HT20/HT40 Bluetooth 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: Paula Chen

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

	Mode	Channel	Frequency (MHz)	Ant 1 Tune-up Limit	Ant 2 Tune-up Limit
5.3GHz WLAN	802.11a 6Mbps	52	5260	18.00	18.00
		56	5280	18.50	18.00
		60	5300	18.50	18.00
		64	5320	17.50	16.50
	802.11n-HT20 MCS0	52	5260	18.00	18.00
		56	5280	18.00	18.00
		60	5300	18.00	18.00
		64	5320	16.50	16.50
	802.11n-HT40 MCS0	54	5270	18.50	18.50
		62	5310	11.50	10.50

	Mode	Channel	Frequency (MHz)	Ant 1 Tune-up Limit	Ant 2 Tune-up Limit
5.5GHz WLAN	802.11a 6Mbps	100	5500	18.00	17.50
		116	5580	18.00	17.50
		124	5620	18.00	17.50
		132	5660	18.00	17.50
		140	5700	18.00	15.00
		144	5720	17.50	17.50
	802.11n-HT20 MCS0	100	5500	18.00	17.00
		116	5580	18.00	17.50
		124	5620	18.00	18.00
		132	5660	18.00	18.00
		140	5700	17.00	15.00
		144	5720	17.50	18.00
	802.11n-HT40 MCS0	102	5510	15.00	12.50
		110	5550	18.50	18.50
		126	5630	18.50	18.50
		134	5670	17.50	16.50
		142	5710	18.00	18.50

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	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
5GHz WLAN	4.46	18.50	22.960	0.198	197.697	0.039	1.000	0.039

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.