



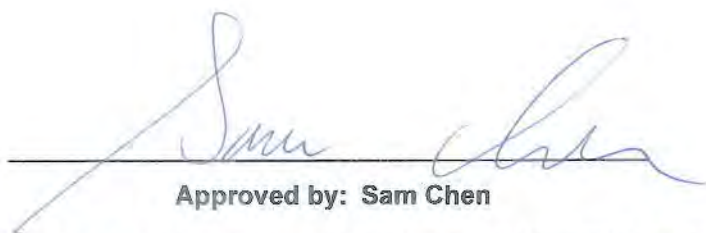
FCC RADIO EXPOSURE TEST REPORT

FCC ID : RAX-AIOS4-0F
Equipment : HEOS 4.X Platform Module
Brand Name : Arcadyan
Model Name : AIOS4.0S, AIOS4.0V, AIOS4.0R, AIOS4.0F
Applicant : Arcadyan Technology Corporation
No.8, Sec.2, Guangfu Rd., Hsinchu, 30071 Taiwan
Manufacturer : Arcadyan Technology Corporation
No.8, Sec.2, Guangfu Rd., Hsinchu, 30071 Taiwan
Standard : 47 CFR Part 2.1091

The product was received on Jul. 22, 2015, and testing was started from Aug. 22, 2015 and completed on Nov. 19, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 2.1091 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test 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: Sam Chen

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Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2	-	Exposure evaluation	PASS	-

Note: Reference to Sporton Project No.: 581110

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Viola Huang



1 General Description

1.1 EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Bluetooth	2400-2483.5	2402-2480	BR / EDR: FHSS (GFSK / $\pi/4$ -DQPSK / 8DPSK) LE: GFSK

1.2 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
AIOS4.0S	All the models are identical, the different model names served as marketing strategy.
AIOS4.0V	
AIOS4.0R	
AIOS4.0F	

From the above models, model: AIOS4.0S was selected as representative model for the test and its data was recorded in this report.

1.3 Table for Radio

Radio	Operate Mode	Function	CPU	Antenna
R0	Slave without radar detection (STA mode)	Bluetooth / 2.4GHz WLAN / 5GHz WLAN band 1~4	1G / 1.25G	Set 1~7, 10~12
R1	Master (AP mode)	5GHz WLAN band 1~4	1G / 1.25G	Set 8~12

Note: CPU 1.25G covers CPU 1G, due to it is the highest CPU speed.



1.4 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA581110AA

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. Adding 5GHz WLAN band 2~3 non-beamforming (5250~5350 MHz, 5470~5725 MHz) for Radio: R1 Master (AP mode).	Maximum Permissible Exposure
2. Remove the Beamforming mode of Radio (R1).	There's no influence on this test report.

Note: RF Exposure Evaluation of 5GHz R0 Band 1~4, R1 Band 1, Band 4 and 2.4GHz Band are based on original test report

1.5 Testing Location

Testing Location		
☐	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973
☒	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085



2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	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

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Method

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:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

For Radio: R0

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;D1D	3.10	21.73	24.83	0.50	25.33	0.34119	20	0.06788	1
BT-BR	3.10	7.56	10.66	0.50	11.16	0.01306	20	0.00260	1
5.2G;D1D-BF	6.67	22.82	29.49	0.50	29.99	0.99770	20	0.19848	1
5.3G;D1D-BF	6.67	22.82	29.49	0.50	29.99	0.99770	20	0.19848	1
5.6G;D1D-BF	6.67	23.00	29.67	0.32	29.99	0.99770	20	0.19849	1
5.8G;G1D-BF	6.67	23.75	30.42	0.50	30.92	1.23595	20	0.24588	1

For Radio: R1

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
5.2G;D1D	3.19	23.85	27.04	0.50	27.54	0.56754	20	0.11291	1
5.3G;D1D	3.19	23.48	26.67	0.50	27.17	0.52119	20	0.10369	1
5.6G;D1D	3.19	21.00	24.19	0.50	24.69	0.29444	20	0.05858	1
5.8G;G1D	3.19	22.62	25.81	0.50	26.31	0.42756	20	0.08506	1

Simultaneous Transmission Analysis Mode:

WLAN 2.4GHz (R0) + WLAN 5GHz (R1) + Bluetooth (R0)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;G1D	3.10	21.73	24.83	0.50	25.33	0.34119	20	0.06788	1.00000	0.06788
5.2G;D1D	3.19	23.85	27.04	0.50	27.54	0.56754	20	0.11291	1.00000	0.11291
BT-BR	3.10	7.56	10.66	0.50	11.16	0.01306	20	0.00260	1.00000	0.00260
									Sum Ratio	0.18339
									Ratio Limit	1

WLAN 5GHz (R0) + WLAN 5GHz (R1) + Bluetooth (R0)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
5.8G;G1D-BF	6.67	23.75	30.42	0.50	30.92	1.23595	20	0.24588	1.00000	0.24588
5.2G;D1D	3.19	23.85	27.04	0.50	27.54	0.56754	20	0.11291	1.00000	0.11291
BT-BR	3.10	7.56	10.66	0.50	11.16	0.01306	20	0.00260	1.00000	0.00260
									Sum Ratio	0.36139
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.