



RF EXPOSURE EVALUATION REPORT

FCC ID : 2A4DH-3284
Equipment : Digital Media Receiver
Model Name : CL32P4
Applicant : Amazon.com Services LLC
410 Terry Avenue N, Seattle, WA 98109-5210 United States
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part2.1091 and it complies with applicable limit.

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.

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Approved by: Cona Huang / Deputy Manager



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History of this test report

Report No.	Version	Description	Issued Date
FA362718-01	Rev. 01	Initial issue of report	Feb. 27, 2024

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

Product Feature & Specification	
EUT Type	Digital Media Receiver
Model Name	CL32P4
FCC ID	2A4DH-3284
Wireless Technology and Frequency Range	WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Mode	WLAN: 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE

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

Band	Channel	Frequency	Data rate/BW	Ant.	Average power (dBm)	Tune-up (Average power)
BT3.0	CH 00	2402 MHz	1M	0	5.39	5.50
BT3.0	CH 39	2441 MHz	1M	0	4.70	5.00
BT3.0	CH 78	2480 MHz	1M	0	5.48	5.50
BT5.0	CH 00	2402 MHz	1M	0	4.67	5.00
BT5.0	CH 19	2440 MHz	1M	0	4.52	5.00
BT5.0	CH 39	2480 MHz	1M	0	4.97	5.00
BT5.0	CH 00	2402 MHz	2M	0	4.66	5.00
BT5.0	CH 19	2440 MHz	2M	0	4.72	5.00
BT5.0	CH 39	2480 MHz	2M	0	4.96	5.00

Band	Channel	Frequency	Data rate/BW	Ant.	Average power (dBm)	Tune-up (Average power)
802.11b	CH 01	2412 MHz	1M	0+1 (CDD)	18.62	19.00
802.11b	CH 06	2437 MHz	1M	0+1 (CDD)	18.45	18.50
802.11b	CH 11	2462 MHz	1M	0+1 (CDD)	18.37	18.50
802.11b	CH 12	2467 MHz	1M	0+1 (CDD)	15.16	15.50
802.11b	CH 13	2472 MHz	1M	0+1 (CDD)	12.76	13.00
802.11g	CH 01	2412 MHz	6M	0+1 (CDD)	18.52	19.00
802.11g	CH 06	2437 MHz	6M	0+1 (CDD)	18.44	18.50
802.11g	CH 11	2462 MHz	6M	0+1 (CDD)	18.46	18.50
802.11g	CH 12	2467 MHz	6M	0+1 (CDD)	14.46	14.50
802.11g	CH 13	2472 MHz	6M	0+1 (CDD)	11.66	12.00
802.11n HT20	CH 01	2412 MHz	MCS 0	0+1 (CDD)	18.55	19.00
802.11n HT20	CH 06	2437 MHz	MCS 0	0+1 (CDD)	18.31	18.50
802.11n HT20	CH 11	2462 MHz	MCS 0	0+1 (CDD)	18.38	18.50
802.11n HT20	CH 12	2467 MHz	MCS 0	0+1 (CDD)	15.51	16.00
802.11n HT20	CH 13	2472 MHz	MCS 0	0+1 (CDD)	8.26	8.50

Band	Channel	Frequency	Data rate/BW	Ant.	Average power (dBm)	Tune-up (Average power)
802.11a	CH36	5180 MHz	6M	0+1 (CDD)	18.28	18.50
802.11a	CH44	5220 MHz	6M	0+1 (CDD)	18.06	18.50
802.11a	CH48	5240 MHz	6M	0+1 (CDD)	18.07	18.50
802.11n HT20	CH36	5180 MHz	MCS 0	0+1 (CDD)	18.31	18.50
802.11n HT20	CH44	5220 MHz	MCS 0	0+1 (CDD)	18.11	18.50
802.11n HT20	CH48	5240 MHz	MCS 0	0+1 (CDD)	18.15	18.50
802.11n HT40	CH38	5190 MHz	MCS 0	0+1 (CDD)	18.38	18.50
802.11n HT40	CH46	5230 MHz	MCS 0	0+1 (CDD)	18.13	18.50
802.11ac VHT20	CH36	5180 MHz	MCS 0	0+1 (CDD)	18.21	18.50
802.11ac VHT20	CH44	5220 MHz	MCS 0	0+1 (CDD)	18.01	18.50
802.11ac VHT20	CH48	5240 MHz	MCS 0	0+1 (CDD)	18.05	18.50
802.11ac VHT40	CH38	5190 MHz	MCS 0	0+1 (CDD)	18.32	18.50
802.11ac VHT40	CH46	5230 MHz	MCS 0	0+1 (CDD)	18.03	18.50
802.11ac VHT80	CH42	5210 MHz	MCS 0	0+1 (CDD)	15.23	15.50

Band	Channel	Frequency	Data rate/BW	Ant.	Average power (dBm)	Tune-up (Average power)
802.11a	CH52	5260 MHz	6M	0+1 (CDD)	18.49	18.50
802.11a	CH60	5300 MHz	6M	0+1 (CDD)	18.51	19.00
802.11a	CH64	5320 MHz	6M	0+1 (CDD)	18.49	18.50
802.11n HT20	CH52	5260 MHz	MCS 0	0+1 (CDD)	18.45	18.50
802.11n HT20	CH60	5300 MHz	MCS 0	0+1 (CDD)	18.39	18.50
802.11n HT20	CH64	5320 MHz	MCS 0	0+1 (CDD)	18.43	18.50
802.11n HT40	CH54	5270 MHz	MCS 0	0+1 (CDD)	18.54	19.00
802.11n HT40	CH62	5310 MHz	MCS 0	0+1 (CDD)	18.21	18.50
802.11ac VHT20	CH52	5260 MHz	MCS 0	0+1 (CDD)	18.35	18.50
802.11ac VHT20	CH60	5300 MHz	MCS 0	0+1 (CDD)	18.29	18.50
802.11ac VHT20	CH64	5320 MHz	MCS 0	0+1 (CDD)	18.33	18.50
802.11ac VHT40	CH54	5270 MHz	MCS 0	0+1 (CDD)	18.44	18.50
802.11ac VHT40	CH62	5310 MHz	MCS 0	0+1 (CDD)	18.11	18.50
802.11ac VHT80	CH58	5290 MHz	MCS 0	0+1 (CDD)	15.98	16.00

Band	Channel	Frequency	Data rate/BW	Ant.	Average power (dBm)	Tune-up (Average power)
802.11a	CH100	5500 MHz	6M	0+1 (CDD)	18.96	19.00
802.11a	CH116	5580 MHz	6M	0+1 (CDD)	18.65	19.00
802.11a	CH140	5700 MHz	6M	0+1 (CDD)	18.22	18.50
802.11a	CH144	5720 MHz	6M	0+1 (CDD)	18.08	18.50
802.11n HT20	CH100	5500 MHz	MCS 0	0+1 (CDD)	18.82	19.00
802.11n HT20	CH116	5580 MHz	MCS 0	0+1 (CDD)	18.81	19.00
802.11n HT20	CH140	5700 MHz	MCS 0	0+1 (CDD)	18.00	18.00
802.11n HT20	CH144	5720 MHz	MCS 0	0+1 (CDD)	18.02	18.50
802.11n HT40	CH102	5510 MHz	MCS 0	0+1 (CDD)	18.82	19.00
802.11n HT40	CH110	5550 MHz	MCS 0	0+1 (CDD)	18.52	19.00
802.11n HT40	CH134	5670 MHz	MCS 0	0+1 (CDD)	18.52	19.00
802.11n HT40	CH142	5710 MHz	MCS 0	0+1 (CDD)	17.90	18.00
802.11ac VHT20	CH100	5500 MHz	MCS 0	0+1 (CDD)	18.53	19.00
802.11ac VHT20	CH116	5580 MHz	MCS 0	0+1 (CDD)	18.72	19.00
802.11ac VHT20	CH140	5700 MHz	MCS 0	0+1 (CDD)	17.94	18.00
802.11ac VHT20	CH144	5720 MHz	MCS 0	0+1 (CDD)	17.92	18.00
802.11ac VHT40	CH102	5510 MHz	MCS 0	0+1 (CDD)	18.72	19.00
802.11ac VHT40	CH110	5550 MHz	MCS 0	0+1 (CDD)	18.42	18.50
802.11ac VHT40	CH134	5670 MHz	MCS 0	0+1 (CDD)	18.42	18.50
802.11ac VHT40	CH142	5710 MHz	MCS 0	0+1 (CDD)	17.85	18.00
802.11ac VHT80	CH106	5530 MHz	MCS 0	0+1 (CDD)	16.98	17.00
802.11ac VHT80	CH122	5610 MHz	MCS 0	0+1 (CDD)	18.55	19.00
802.11ac VHT80	CH138	5690 MHz	MCS 0	0+1 (CDD)	18.36	18.50

Band	Channel	Frequency	Data rate/BW	Ant.	Average power (dBm)	Tune-up (Average power)
802.11a	CH149	5745 MHz	6M	0+1 (CDD)	18.10	18.50
802.11a	CH157	5785 MHz	6M	0+1 (CDD)	18.22	18.50
802.11a	CH165	5825 MHz	6M	0+1 (CDD)	17.93	18.00
802.11n HT20	CH149	5745 MHz	MCS 0	0+1 (CDD)	18.10	18.50
802.11n HT20	CH157	5785 MHz	MCS 0	0+1 (CDD)	18.05	18.50
802.11n HT20	CH165	5825 MHz	MCS 0	0+1 (CDD)	17.91	18.00
802.11n HT40	CH151	5755 MHz	MCS 0	0+1 (CDD)	18.09	18.50
802.11n HT40	CH159	5795 MHz	MCS 0	0+1 (CDD)	18.00	18.00
802.11ac VHT20	CH149	5745 MHz	MCS 0	0+1 (CDD)	17.92	18.00
802.11ac VHT20	CH157	5785 MHz	MCS 0	0+1 (CDD)	18.01	18.50
802.11ac VHT20	CH165	5825 MHz	MCS 0	0+1 (CDD)	17.87	18.00
802.11ac VHT40	CH151	5755 MHz	MCS 0	0+1 (CDD)	18.01	18.50
802.11ac VHT40	CH159	5795 MHz	MCS 0	0+1 (CDD)	17.96	18.00
802.11ac VHT80	CH155	5775 MHz	MCS 0	0+1 (CDD)	17.61	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.

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	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	1.5	5.5	7.0	0.01	5.01	0.001	1.000	0.001
WLAN2.4GHz Band	1.5	19.0	20.5	0.11	112.20	0.022	1.000	0.022
WLAN5GHz Band	3.5	19.0	22.5	0.18	177.83	0.035	1.000	0.035

4.2. Collocated Power Density Calculation

<WLAN 2.4GHz + Bluetooth >

2.4GHz WLAN Power Density / Limit	Bluetooth Power Density / Limit	Σ (Power Density / Limit)
0.022	0.001	0.023

<WLAN 5GHz + Bluetooth >

5GHz WLAN Power Density / Limit	Bluetooth Power Density / Limit	Σ (Power Density / Limit)
0.035	0.001	0.036

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)]
2. Considering all of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1.

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.