

Radio Exposure Evaluation Report

Equipment : 802.11 a/n/ac/ax + b/g/n/ax Access Point

Brand Name : Arista

Model Name : C-230, C-230E, O-235, O-235E

Applicant : Arista Networks, Inc.
5453 Great America Parkway, Santa Clara, CA 95054

Manufacturer : Arista Networks, Inc.
5453 Great America Parkway, Santa Clara, CA 95054

Standard : LP0002 Section 5.20.2 (2018-01-10)

The product was received on Feb. 26, 2020, and testing was started from Mar. 08, 2020 and completed on May 08, 2020. 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 LP0002 Section 5.20.2 (2018-01-10) 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 United States government.

The test 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.



Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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Summary of Test Result

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

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:

None.

Reviewed by: Ben Tseng

Report Producer: Debby Hung

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) 802.11 ax: OFDMA(BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5700 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11 ax: OFDMA(BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Bluetooth	2400-2483.5	2402-2480	LE: DSSS (GFSK)

1.2 Table for Multiple Listing

Sample No.	Model Name	Indoor/Outdoor	Description
1	C-230	Indoor	The model C-230 and O-235 indicate that it comes with internal antennas and the model C-230E and O-235E indicates that the access point comes with external antenna connectors.
2	C-230E		
3	O-235	Outdoor	
4	O-235E		

1.3 Testing Location

Testing Location			
☒	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
		TEL : 886-3-327-3456	FAX : 886-3-327-0973
☐	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, 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
3-30	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	-	-	5.0	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)
0.3-3.0	614	1.63	*100	30
3-30	1842/f	4.89/f	*180/f ²	30
30-300	27.5	0.073	1.0	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 25 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

2.4G WLAN

Sample 1_Radio 2

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;G1D	5.23	21.33	26.56	0.50	27.06	0.50816	25	0.06470	1.00000
2.4G;D1D	5.23	27.11	32.34	0.50	32.84	1.92309	25	0.24486	1.00000

Sample 1_Radio 3

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;G1D	4.44	18.96	23.40	0.50	23.90	0.24547	25	0.03125	1.00000
2.4G;D1D	4.44	23.20	27.64	0.50	28.14	0.65163	25	0.08297	1.00000

Sample 2_Radio 2

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;G1D	2.40	28.53	30.93	0.50	31.43	1.38995	25	0.17697	1.00000
2.4G;D1D	2.40	28.24	30.64	0.50	31.14	1.30017	25	0.16554	1.00000

Sample 2_Radio 3

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;G1D	2.37	17.65	20.02	0.50	20.52	0.11272	25	0.01435	1.00000
2.4G;D1D	2.37	23.23	25.60	0.50	26.10	0.40738	25	0.05187	1.00000

Sample 3_Radio 2

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;G1D	5.23	21.33	26.56	0.50	27.06	0.50816	25	0.06470	1.00000
2.4G;D1D	5.23	28.29	33.52	0.50	34.02	2.52348	25	0.32130	1.00000

Sample 3_Radio 3

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;G1D	4.44	22.02	26.46	0.50	26.96	0.49659	29	0.04699	0.54040
2.4G;D1D	4.44	24.06	28.50	0.50	29.00	0.79433	29	0.07516	0.54040

Sample 4_Radio 2

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;G1D	5.00	24.33	29.33	0.50	29.83	0.96161	25	0.12244	1.00000
2.4G;D1D	5.00	28.10	33.10	0.50	33.60	2.29087	25	0.29168	1.00000

Sample 4_Radio 3

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;G1D	4.89	24.26	29.15	0.50	29.65	0.92257	25	0.11747	1.00000
2.4G;D1D	4.89	23.87	28.76	0.50	29.26	0.84333	25	0.10738	1.00000

Bluetooth

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;BT-LE	3.87	6.96	10.83	0.50	11.33	0.01358	25	0.00173	1.00000

**5G WLAN****Sample 1_Radio 1**

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	5.98	27.69	33.67	0.50	34.17	2.61216	25	0.33259	1.00000
5.3G;D1D	5.98	23.26	29.24	0.50	29.74	0.94189	25	0.11993	1.00000
5.6G;D1D	5.98	23.42	29.40	0.50	29.90	0.97724	25	0.12443	1.00000
5.8G;D1D	5.98	29.50	35.48	0.50	35.98	3.96278	25	0.50456	1.00000

Sample 1_Radio 3

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	5.97	18.06	24.03	0.50	24.53	0.28379	25	0.03613	1.00000
5.3G;D1D	5.97	18.88	24.85	0.50	25.35	0.34277	25	0.04364	1.00000
5.6G;D1D	5.97	20.52	26.49	0.50	26.99	0.50003	25	0.06367	1.00000
5.8G;D1D	5.97	21.58	27.55	0.50	28.05	0.63826	25	0.08127	1.00000

Sample 2_Radio 1

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	4.66	28.37	33.03	0.50	33.53	2.25424	25	0.28702	1.00000
5.3G;D1D	4.66	22.25	26.91	0.50	27.41	0.55081	25	0.07013	1.00000
5.6G;D1D	4.66	23.70	28.36	0.50	28.86	0.76913	25	0.09793	1.00000
5.8G;D1D	4.66	29.99	34.65	0.50	35.15	3.27341	25	0.41678	1.00000

Sample 2_Radio 3

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	4.63	23.38	28.01	0.50	28.51	0.70958	25	0.09035	1.00000
5.3G;D1D	4.63	22.78	27.41	0.50	27.91	0.61802	25	0.07869	1.00000
5.6G;D1D	4.63	20.98	25.61	0.50	26.11	0.40832	25	0.05199	1.00000
5.8G;D1D	4.63	21.56	26.19	0.50	26.69	0.46666	25	0.05942	1.00000

Sample 3_Radio 1

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	5.98	17.04	23.02	0.50	23.52	0.22491	25	0.02864	1.00000
5.3G;D1D	5.98	23.18	29.16	0.50	29.66	0.92470	25	0.11774	1.00000
5.6G;D1D	5.98	23.49	29.47	0.50	29.97	0.99312	25	0.12645	1.00000
5.8G;D1D	5.98	29.51	35.49	0.50	35.99	3.97192	25	0.50572	1.00000

Sample 3_Radio 3

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	5.97	23.13	29.10	0.50	29.60	0.91201	25	0.11612	1.00000
5.3G;D1D	5.97	23.27	29.24	0.50	29.74	0.94189	25	0.11993	1.00000
5.6G;D1D	5.97	21.71	27.68	0.50	28.18	0.65766	25	0.08374	1.00000
5.8G;D1D	5.97	22.53	28.50	0.50	29.00	0.79433	25	0.10114	1.00000

Sample 4_Radio 1

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	6.09	20.99	27.08	0.50	27.58	0.57280	25	0.07293	1.00000
5.3G;D1D	6.09	22.38	28.47	0.50	28.97	0.78886	25	0.10044	1.00000
5.6G;D1D	6.09	23.38	29.47	0.50	29.97	0.99312	25	0.12645	1.00000
5.8G;D1D	6.09	29.36	35.45	0.50	35.95	3.93550	25	0.50108	1.00000

Sample 4_Radio 3

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	5.99	22.86	28.85	0.50	29.35	0.86099	25	0.10962	1.00000
5.3G;D1D	5.99	22.96	28.95	0.50	29.45	0.88105	25	0.11218	1.00000
5.6G;D1D	5.99	21.93	27.92	0.50	28.42	0.69502	25	0.08849	1.00000
5.8G;D1D	5.99	22.27	28.26	0.50	28.76	0.75162	25	0.09570	1.00000

————THE END————