



FCC RADIO EXPOSURE TEST REPORT

FCC ID : 2AHKM-CODA5519

Equipment : DOCSIS 3.1 Wi-Fi 6 EMTA Gateway

Brand Name : hitron

Model Name : CODA-5519, CODA-5512, CODA-5719, CODA-5712,
CODA-5610, CODA-5810, CODA-5814, CODA5610

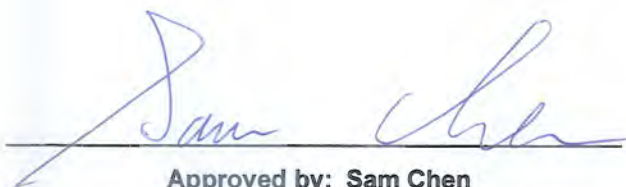
Applicant : Hitron Technologies Inc.
No. 1-8, Li-Hsin 1st Rd. Hsinchu Science Park,
Hsinchu 30078, Taiwan

Manufacturer : Hitron Technologies Inc.
No. 1-8, Li-Hsin 1st Rd. Hsinchu Science Park,
Hsinchu 30078, Taiwan

Standard : 47 CFR Part 2.1091

The product was received on Nov. 28, 2019, and testing was started from Nov. 28, 2019 and completed on Jul. 23, 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 47 CFR Part 2.1091 and shown compliance with the applicable technical standards.

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

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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



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Report Template No.: CB-A1_1 Ver1.0



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:

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: Cindy Peng



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) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5250 5250-5320 5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)



1.2 Table for Multiple Listing

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

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EUT	Model Name	Frequency Configuration	MoCA	Voice (SLIC)	LAN	Wi-Fi	BBU	USB
1	CODA-5519	5~85 US	Yes	PEF42078	PHY: GPY212	WAV614+	Yes	Yes
		108 ~ 1002 DS			Switch: PEF7085	Wave624		
2	CODA-5512	5~85 US	Yes	No	PHY: GPY212	WAV614+	No	Yes
		108 ~ 1002 DS			Switch: PEF7085	Wave624		
3	CODA-5719	5-85/ 5~204MHz US	Yes	PEF42078	PHY: GPY212	WAV614+	Yes	Yes
		108 ~ 1002 / 258 ~ 1002Mhz DS			Switch: PEF7085	Wave624		
4	CODA-5712	5-85/ 5~204MHz US	Yes	No	PHY: GPY212	WAV614+	No	Yes
		108 ~ 1002 / 258 ~ 1002Mhz DS			Switch: PEF7085	Wave624		
5	CODA-5610	5-42/ 5~85MHz US	No	No	PHY: GPY212	WAV614+	No	Yes
		108 ~ 1002 DS			Switch: PEF7085	Wave624		
6	CODA-5810	5-85/ 5~204MHz US	No	No	PHY: GPY212	WAV614+	No	Yes
		108 ~ 1218 / 258 ~ 1218Mhz DS			Switch: PEF7085	Wave624		
7	CODA-5814	5-85/ 5~204MHz US	No	PEF42078	PHY: GPY212	WAV614+	Yes	Yes
					Switch: PEF7085	Wave624		
-	CODA5610	5-42/ 5~85MHz US	No	No	PHY: GPY212	WAV614+	No	Yes
		108 ~ 1002 DS			Switch: PEF7085	Wave624		

Note: The model “CODA-5610” and “CODA5610” are identical, different model names serve as marketing strategy.

From the above models, model: CODA-5519 was selected as representative model for the test and its data was recorded in this report.



1.3 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA020705

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

Modifications	Performance Checking
1. Changing the color of RJ-45 cable to "orange" from "yellow". 2. Removing one adapter (Brand Name: APD, Model Name: DA-60Y12). 3. Changing the hardware of model names: CODA-5512, CODA-5719, CODA-5712, CODA-5610, the detail please refer to the section 1.2. 4. Adding three model names: CODA-5810, CODA-5814, CODA5610.	It does not affect the test result.
5. Adding 5GHz band 2 and band 3 (5250~5350 MHz, 5470~5725 MHz). 6. Adding the 160MHz bandwidth.	Maximum Permissible Exposure.

Note: Maximum Permissible Exposure of 5GHz band 1, 4 and 2.4GHz band are based on original test report.

1.4 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

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.



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 22 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

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	2.80	29.88	32.68	0.50	33.18	2.07970	22	0.34194	1.00000
5.2G;D1D	8.62	27.28	35.90	0.09	35.99	3.97192	22	0.65305	1.00000
5.3G;D1D	9.02	20.94	29.96	0.03	29.99	0.99770	22	0.16404	1.00000
5.6G;D1D	9.42	20.45	29.87	0.12	29.99	0.99770	22	0.16404	1.00000
5.8G;D1D	9.02	26.96	35.98	0.01	35.99	3.97192	22	0.65305	1.00000

Simultaneous Transmission Analysis Mode: WLAN 2.4GHz + WLAN 5GHz

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;D1D	2.80	29.88	32.68	0.50	33.18	2.07970	22	0.34194	1.00000	0.34194
5.8G;D1D	9.02	26.96	35.98	0.01	35.99	3.97192	22	0.65305	1.00000	0.65305
									Sum Ratio	0.99499
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

————THE END————