

FCC Radio Test Report

FCC ID : A8J-ECW536
Equipment : EnGenius Cloud Wi-Fi 7 4x4x4 Tri-Band Indoor Access Point
Brand Name : EnGenius EnGenius®
Model Name : ECW536, ECW536S
Applicant : EnGenius Technologies
1580 Scenic Avenue, Costa Mesa, Los Angeles CA CA92626
United States Of America
Manufacturer : EnGenius Networks Inc.
10F., No.209, Sec. 1, Nangang Rd., Nangang Dist., Taipei City
115018, Taiwan
Standard : 47 CFR FCC Part 15.407

The product was received on Oct. 31, 2023, and testing was started from Nov. 08, 2023 and completed on Nov. 21, 2023. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2020 + Cor.1-2023 + C63.10a-2024 + Errata to C63.10a-2024 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. Hsinhua Laboratory, the test report shall not be reproduced except in full.


Approved by: Jackson Tsai

SPORTON INTERNATIONAL INC. Hsinhua Laboratory

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Report Template No.: HE1-D1 Ver.4.6
FCC ID: A8J-ECW536

Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
-	15.207	AC Power-line Conducted Emissions	Not Performed	Refer 1.1.5
-	15.407(a)	Emission Bandwidth	Not Performed	Refer 1.1.5
-	15.407(a)	Maximum Conducted Output Power	Not Performed	Refer 1.1.5
-	15.407(a)	Peak Power Spectral Density	Not Performed	Refer 1.1.5
-	15.407(b)	Unwanted Emissions	Not Performed	Refer 1.1.5

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 EUT supports beamforming and CDD modes, and the CDD mode is the worst case. Therefore, all test items are evaluated in the report. The beamforming mode only evaluates the output power.

Reviewed by: Barry Hsiao

Report Producer: Amber Chiu

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5150-5250	a, n (HT20), ac (VHT20), ax(HEW20), be(EHT20)	5180-5240	36-48 [4]
5250-5350		5260-5320	52-64 [4]
5470-5725		5500-5700	100-140 [11]
Straddle 5720		5720	144 [1]
5725-5850		5745-5825	149-165 [5]
5150-5250	n (HT40), ac (VHT40), ax(HEW40), be(EHT40)	5190-5230	38-46 [2]
5250-5350		5270-5310	54-62 [2]
5470-5725		5510-5670	102-134 [5]
Straddle 5710		5710	142 [1]
5725-5850		5755-5795	151-159 [2]
5150-5250	ac (VHT80), ax(HEW80), be(EHT80)	5210	42 [1]
5250-5350		5290	58 [1]
5470-5725		5530-5610	106-122 [2]
Straddle 5690		5690	138 [1]
5725-5850		5775	155 [1]
5150-5350	ac (VHT160), ax(HEW160), be(EHT160)	5250	50 [1]
5470-5725		5570	114 [1]

Non-Beamforming

Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11a	20	4TX
5.25-5.35GHz	802.11a	20	4TX
5.47-5.725GHz	802.11a	20	4TX
5.725-5.85GHz	802.11a	20	4TX
5.15-5.25GHz	802.11be EHT20	20	4TX
5.25-5.35GHz	802.11be EHT20	20	4TX
5.47-5.725GHz	802.11be EHT20	20	4TX
5.725-5.85GHz	802.11be EHT20	20	4TX
5.15-5.25GHz	802.11be EHT40	40	4TX
5.25-5.35GHz	802.11be EHT40	40	4TX
5.47-5.725GHz	802.11be EHT40	40	4TX



Band	Mode	BWch (MHz)	Nant
5.725-5.85GHz	802.11be EHT40	40	4TX
5.15-5.25GHz	802.11be EHT80	80	4TX
5.25-5.35GHz	802.11be EHT80	80	4TX
5.47-5.725GHz	802.11be EHT80	80	4TX
5.725-5.85GHz	802.11be EHT80	80	4TX
5.15-5.25GHz	802.11be EHT160	160	4TX
5.25-5.35GHz	802.11be EHT160	160	4TX
5.47-5.725GHz	802.11be EHT160	160	4TX

Beamforming

Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11be EHT20-BF	20	4TX
5.25-5.35GHz	802.11be EHT20-BF	20	4TX
5.47-5.725GHz	802.11be EHT20-BF	20	4TX
5.725-5.85GHz	802.11be EHT20-BF	20	4TX
5.15-5.25GHz	802.11be EHT40-BF	40	4TX
5.25-5.35GHz	802.11be EHT40-BF	40	4TX
5.47-5.725GHz	802.11be EHT40-BF	40	4TX
5.725-5.85GHz	802.11be EHT40-BF	40	4TX
5.15-5.25GHz	802.11be EHT80-BF	80	4TX
5.25-5.35GHz	802.11be EHT80-BF	80	4TX
5.47-5.725GHz	802.11be EHT80-BF	80	4TX
5.725-5.85GHz	802.11be EHT80-BF	80	4TX
5.15-5.25GHz	802.11be EHT160-BF	160	4TX
5.25-5.35GHz	802.11be EHT160-BF	160	4TX
5.47-5.725GHz	802.11be EHT160-BF	160	4TX

Note:

- ♦ 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- ♦ VHT20, VHT40, VHT80, VHT 160 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- ♦ HEW20, HEW40, HEW80, HEW 160 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- ♦ EHT20, EHT40, EHT80, EHT160 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM modulation.
- ♦ BWch is the nominal channel bandwidth.
- ♦ Evaluated EHT20/EHT40/EHT80/EHT160 mode only due to the similar modulation. The power setting of HT20/HT40/VHT20/VHT40/VHT80/VHT160/HEW20/HEW40/HEW80/HEW160. mode are the same or lower than EHT20/EHT40/EHT80/EHT160.

**1.1.2 Antenna Information**

Model Name : ECW536						
Ant.	Brand	Model Name	Antenna Type	Connector	Support	Radio
1	Senao	5718A0738300	PIFA	I-Pex	2.4G	Radio 1
2	Senao	5718A0739300	PIFA	I-Pex	2.4G	
3	Senao	5718A0740300	PIFA	I-Pex	2.4G	
4	Senao	5718A0741300	PIFA	I-Pex	2.4G	
5	Senao	5718A0742300	PIFA	I-Pex	5G	Radio 2
6	Senao	5718A0743300	PIFA	I-Pex	5G	
7	Senao	5718A0744300	PIFA	I-Pex	5G	
8	Senao	5718A0745300	PIFA	I-Pex	5G	
9	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100089	Alford loop	I-Pex	6E	Radio 3
10	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100090	Alford loop	I-Pex	6E	
11	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100091	Alford loop	I-Pex	6E	
12	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100092	Alford loop	I-Pex	6E	
13	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100093	Dipole	I-Pex	BT	-

Ant.	Port	Gain (dBi)									
		2.4G	BT	5G				6E			
				UNII-1	UNII-2A	UNII-2C	UNII-3	6.175G	6.475G	6.695G	6.995G
1	1	2.82	-	-	-	-	-	-	-	-	-
2	2	2.39	-	-	-	-	-	-	-	-	-
3	3	2.33	-	-	-	-	-	-	-	-	-
4	4	2.69	-	-	-	-	-	-	-	-	-
5	1	-	-	4.81	4.19	5.45	4.98	-	-	-	-
6	2	-	-	2.63	3.44	5.31	5.17	-	-	-	-
7	3	-	-	5.06	5.29	4.27	3.96	-	-	-	-
8	4	-	-	3.72	3.52	4.66	4.51	-	-	-	-
9	1	-	-	-	-	-	-	4.96	4.99	4.98	4.78
10	2	-	-	-	-	-	-	4.72	4.74	4.53	4.69
11	3	-	-	-	-	-	-	4.88	4.63	4.47	4.94
12	4	-	-	-	-	-	-	4.77	4.84	4.61	4.26
13	1	-	3.07	-	-	-	-	-	-	-	-



Composite Gain (dBi)									
	2.4G	UNII-1	UNII-2A	UNII-2C	UNII-3	6.175G	6.475G	6.695G	6.995G
DG [1SS]	6.46	7.31	7.57	8.57	8.92	9.98	9.93	9.53	9.86
DG [2SS]	3.46	5.06	5.29	5.57	5.92	6.98	6.93	6.53	6.86
DG [4SS]	2.82	5.06	5.29	5.45	5.17	4.96	4.99	4.98	4.94

Note 1: The EUT has thirteen antennas.

Note 2: The composite gain is derived as KDB 662911 D03 v01 which was used as directional gain. For more detail information, please refer to the Antenna Pattern Report AP381814.

For 2.4GHz function:

For IEEE 802.11 b/g/n/VHT/ax/be mode (4TX/4RX) < **Radio 1** >

Ant. 1 (port 1), Ant. 2 (port 2), Ant. 3 (port 3) and Ant. 4 (port 4) could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax/be mode (4TX/4RX) < **Radio 2** >

Ant. 5 (port 1), Ant. 6 (port 2), Ant. 7 (port 3) and Ant. 8 (port 4) could transmit/receive simultaneously.

For 6GHz function:

For IEEE 802.11 ax/be mode (4TX/4RX) < **Radio 3** >

Ant. 9 (port 1), Ant. 10 (port 2), Ant. 11 (port 3) and Ant. 12 (port 4) could transmit/receive simultaneously.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Ant. 13 (port 1) could transmit/receive.

Model Name : ECW536S						
Ant.	Brand	Model Name	Antenna Type	Connector	Support	Radio
1	Senao	5718A0738300	PIFA	I-Pex	2.4G	Radio 1
2	Senao	5718A0739300	PIFA	I-Pex	2.4G	
3	Senao	5718A0740300	PIFA	I-Pex	2.4G	
4	Senao	5718A0741300	PIFA	I-Pex	2.4G	
5	Senao	5718A0742300	PIFA	I-Pex	5G	Radio 2
6	Senao	5718A0743300	PIFA	I-Pex	5G	
7	Senao	5718A0744300	PIFA	I-Pex	5G	
8	Senao	5718A0745300	PIFA	I-Pex	5G	
9	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100089	Alford loop	I-Pex	6E	Radio 3
10	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100090	Alford loop	I-Pex	6E	
11	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100091	Alford loop	I-Pex	6E	
12	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100092	Alford loop	I-Pex	6E	
13	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100093	Dipole	I-Pex	BT	-
14	EnRack	7102A0836000	PIFA	I-Pex	2.4G/5G/6G	Scan Radio
15	EnRack	7102A0837000	PIFA	I-Pex	2.4G/5G/6G	Scan Radio

Ant.	Port	Gain (dBi)									
		2.4G	BT	5G				6E			
				UNII-1	UNII-2A	UNII-2C	UNII-3	6.175G	6.475G	6.695G	6.995G
1	1	2.82	-	-	-	-	-	-	-	-	-
2	2	2.39	-	-	-	-	-	-	-	-	-
3	3	2.33	-	-	-	-	-	-	-	-	-
4	4	2.69	-	-	-	-	-	-	-	-	-
5	1	-	-	4.81	4.19	5.45	4.98	-	-	-	-
6	2	-	-	2.63	3.44	5.31	5.17	-	-	-	-
7	3	-	-	5.06	5.29	4.27	3.96	-	-	-	-
8	4	-	-	3.72	3.52	4.66	4.51	-	-	-	-
9	1	-	-	-	-	-	-	4.96	4.99	4.98	4.78
10	2	-	-	-	-	-	-	4.72	4.74	4.53	4.69
11	3	-	-	-	-	-	-	4.88	4.63	4.47	4.94
12	4	-	-	-	-	-	-	4.77	4.84	4.61	4.26
13	1	-	3.07	-	-	-	-	-	-	-	-
14	1	4.76	-	5.37	5.37	5.37	5.37	5.14	5.14	5.14	5.14
15	2	4.94	-	5	5	5	5	5.55	5.55	5.55	5.55

Composite Gain (dBi)									
	2.4G	UNII-1	UNII-2A	UNII-2C	UNII-3	6.175G	6.475G	6.695G	6.995G
DG [1SS]	6.46	7.31	7.57	8.57	8.92	9.98	9.93	9.53	9.86
DG [2SS]	3.46	5.06	5.29	5.57	5.92	6.98	6.93	6.53	6.86
DG [4SS]	2.82	5.06	5.29	5.45	5.17	4.96	4.99	4.98	4.94

Note 1: The EUT has thirteen antennas.

Note 2: The composite gain is derived as KDB 662911 D03 v01 which was used as directional gain. For more detail information, please refer to the Antenna Pattern Report AP381814.

For 2.4GHz function:

For IEEE 802.11 b/g/n/VHT/ax/be mode (4TX/4RX) < **Radio 1** >

Ant. 1 (port 1), Ant. 2 (port 2), Ant. 3 (port 3) and Ant. 4 (port 4) could transmit/receive simultaneously.

For IEEE 802.11 b/g/n/VHT/ax mode (2RX) < **Scan Radio** >

Ant. 14 (port 1), Ant. 15 (port 2) could receive simultaneously.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax/be mode (4TX/4RX) < **Radio 2** >

Ant. 5 (port 1), Ant. 6 (port 2), Ant. 7 (port 3) and Ant. 8 (port 4) could transmit/receive simultaneously.

For IEEE 802.11 a/n/ac/ax mode (2RX) < **Scan Radio** >

Ant. 14 (port 1), Ant. 15 (port 2) could receive simultaneously

For 6GHz function:

For IEEE 802.11 ax/be mode (4TX/4RX) < **Radio 3** >

Ant. 9 (port 1), Ant. 10 (port 2), Ant. 11(port 3) and Ant. 12 (port 4) could transmit/receive simultaneously.

For IEEE 802.11 a/n/ac/ax mode (2RX) < **Scan Radio** >

Ant. 14 (port 1), Ant. 15 (port 2) could receive simultaneously

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Ant. 13 (port 1) could transmit/receive.

1.1.3 EUT Information

Operational Condition			
EUT Power Type	From AC Adapter		
EUT Function	☐ Outdoor AP	☒ Indoor AP	
	☐ Fixed P2P AP	☐ Client	
Beamforming Function	☒ With beamforming	☐ Without beamforming	
TPC Function	☒ With TPC Function	☐ Without TPC Function	
Weather Band	☒ With 5600~5650MHz	☐ Without 5600~5650MHz	
Resource Unit(802.11ax)	☒ Full RU	☐ Partial RU	
Type of EUT			
☒	Stand-alone		
☐	Combined (EUT where the radio part is fully integrated within another device)		
	Combined Equipment - Brand Name / Model No.: ...		
☐	Plug-in radio (EUT intended for a variety of host systems)		
	Host System - Brand Name / Model No.:		
☐	Other:		

1.1.4 Table for Multiple Listing

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

Model Name	ECW536	ECW536S
Radio 1_2.4G	X	X
Radio 2_5G	X	X
Radio 3_6G	X	X
BT	X	X
Scan Radio (RX only)	N/A	X

1.1.5 Table for Existing Change

This product is an extension of original one reported under Sporton project number: FR381846AN

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

Modifications	Performance Checking
1. Add model (ECW536S) and Antenna 14,15. (Scan Radio only RX)	After evaluation, the new added Radio 4 is scan radio that is RX only and not transmits intentionally, which was performed verification test by FCC Part 15B. Therefore, no RF test validations are required for FCC Part 15C/15E.
2. Update standard version to ANSI C63.10-2020 + Cor.1-2023 + C63.10a-2024 + Errata to C63.10a-2024	

1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2020 + Cor.1-2023 + C63.10a-2024 + Errata to C63.10a-2024
- ♦ KDB 789033 D02 v02r01

The following reference test guidance is not within the scope of accreditation of TAF:

- ♦ KDB 662911 D01 v02r01
- ♦ KDB 662911 D03 v02
- ♦ KDB 414788 D01 v01r01

1.3 Testing Location Information

Test Lab. : Sporton International Inc. Hsinhua Laboratory		
☒ Hsinhua (TAF: 3785)	ADD: No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)	
	TEL: 886-3-327-3456	FAX: 886-3-327-0973
Test site Designation No. TW3785 with FCC.		
☒ Wenhua 3rd. (TAF: 3785)	ADD: No. 58, Aly. 75, Ln. 564, Wenhua 3rd Rd., Guishan Dist. Taoyuan City 333, Taiwan (R.O.C.)	
	TEL: 886-3-327-0868	
Test site Designation No. TW0036 with FCC.		

————THE END————