

RF Exposure Evaluation declaration

Product Name : 11ax Cloud Managed AP

Model No. : ECW336

FCC ID : A8J-ECW336

Applicant : EnGenius Technologies

Address : 1580 Scenic Avenue, Costa Mesa, CA92626

Date of Receipt : Mar. 07, 2022

Date of Declaration : May 20, 2022

Report No. : 2230212R-RFUSMPEV02-A

Report Version : V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Issued Date: May 20, 2022

Report No.: 2230212R-RFUSMPEV02-A



Product Name	11ax Cloud Managed AP	
Applicant	EnGenius Technologies	
Address	1580 Scenic Avenue, Costa Mesa, CA92626	
Manufacturer	Senao Networks, Inc.	
Model No.	ECW336	
FCC ID	A8J-ECW336	
Trade Name	EnGenius	
Applicable Standard	KDB 447498 D01 v06	☒ Minimum test separation distance ≥ 20 cm ☐ For low power devices
Test Result	Complied	

Documented By :



(Senior Project Specialist / Genie Chang)

Tested By :



(Senior Engineer / Alan Chen)

Approved By :



(Manager / Tim Sung)

Revision History

Report No.	Version	Description	Issued Date
2230212R-RFUSMPEV02-A	V1.0	Initial issue of report.	2022-05-20

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	11ax Cloud Managed AP
Model No.	ECW336
Trade Name	EnGenius
FCC ID	A8J-ECW336
Frequency Range	For WLAN 2.4GHz 802.11b/g/n/ac/ax-20: 2412-2462MHz, 802.11n/ac/ax-40: 2422-2452MHz For WLAN 5GHz/6E 802.11a/n/ac/ax-20MHz: 5180-5320MHz, 5500-5700MHz, 5720MHz, 5745-5825MHz, 6115~7095MHz 802.11n/ac/ax-40MHz: 5190-5310, 5510-5670MHz, 5710MHz, 5755-5795MHz, 6125~7085MHz 802.11ac/ax-80MHz: 5210-5290MHz, 5530-5690MHz, 5775MHz, 6145~7025MHz 802.11ax-160MHz: 6185~6985Hz
Type of Modulation	DSSS (DBPSK, DQPSK, CCK) OFDM, OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain	Directional Gain for Beamforming
1	Senao	ECW336	PIFA antenna	4.07dBi for 2400MHz 4.87dBi for 5150~5250 MHz 4.87dBi for 5250~5350 MHz 4.73dBi for 5470~5725 MHz 5.09dBi for 5725~5850 MHz	10.28dBi for 2400MHz 10.89dBi for 5150~5250 MHz 10.89dBi for 5250~5350 MHz 10.75dBi for 5470~5725 MHz 11.11dBi for 5725~5850 MHz
2	Senao	ECW336	PIFA antenna	4.26dBi for 2400MHz 4.01dBi for 5150~5250 MHz 4.01dBi for 5250~5350 MHz 2.55dBi for 5470~5725 MHz 3.04dBi for 5725~5850 MHz	
3	Senao	ECW336	PIFA antenna	3.89dBi for 2400MHz 4.36dBi for 5150~5250 MHz 4.36dBi for 5250~5350 MHz 4.39dBi for 5470~5725 MHz 4.56dBi for 5725~5850 MHz	
4	Senao	ECW336	PIFA antenna	3.15dBi for 2400MHz 3.59dBi for 5150~5250 MHz 3.59dBi for 5250~5350 MHz 3.18dBi for 5470~5725 MHz 4.01dBi for 5725~5850 MHz	

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Senao	ECW336	Dipole Antenna	5.30dBi for 5925~6425 MHz 3.71dBi for 6425~6525 MHz 3.71dBi for 6525~6875 MHz 5.06dBi for 6875~7125 MHz
2	Senao	ECW336	Dipole Antenna	4.66dBi for 5925~6425 MHz 4.74dBi for 6425~6525 MHz 4.74dBi for 6525~6875 MHz 3.96dBi for 6875~7125 MHz
3	Senao	ECW336	Dipole Antenna	4.68dBi for 5925~6425 MHz 4.44dBi for 6425~6525 MHz 4.44dBi for 6525~6875 MHz 5.43dBi for 6875~7125 MHz
4	Senao	ECW336	Dipole Antenna	5.44dBi for 5925~6425 MHz 5.38dBi for 6425~6525 MHz 5.38dBi for 6525~6875 MHz 5.48dBi for 6875~7125 MHz

1.2. Test Facility

USA : **FCC Registration Number: TW0033**

Canada : **CAB Identifier Number: TW3023 / Company Number: 26930**

Site Description : Accredited by TAF
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd

Address : No. 5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan

Performed Location : No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan,
R.O.C.

Phone number : +886-3-275-7255

Fax number : +866-3-327-8031

Email address : info.tw@dekra.com

Website : <http://www.dekra.com.tw>

2. RF Exposure Evaluation

2.1. Standard Applicable

According to KDB 447498 D01 (7.1), A minimum test separation distance ≥ 20 cm is required between the antenna and radiating structures of the device and nearby persons to apply mobile device exposure limits.

2.2. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
3.0-30	1842/f	4.89/f	900/f ²	6
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
1.34-30	824/f	2.19/f	180/f ²	30
300-1500	--	--	F/1500	30
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0

2.3. Test Result of RF Exposure Evaluation

Product : 11ax Cloud Managed AP
 Test Item : RF Exposure Evaluation for CDD mode

WLAN 2.4GHz Peak Gain: 4.26dBi

Band	Maximum E.I.R.P (dBm)	Maximum E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Pass/Fail
2.4GHz	30.800	1202.264	0.239	1	Pass

WLAN 5GHz Peak Gain: 5.09dBi

Band	Maximum E.I.R.P (dBm)	Maximum E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Pass/Fail
5GHz	32.560	1803.018	0.359	1	Pass

WLAN 6GHz Peak Gain: 5.48dBi

Band	Maximum E.I.R.P (dBm)	Maximum E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Pass/Fail
6GHz	20.410	109.901	0.022	1	Pass

Note: The E.I.R.P output power is refer to report No.: 2230212R-RFUSWL2V01-A,
 2230212R-RFUSWL5V01-A, 2230212R-RFUSWL6V01-A

Calculations for Multi-Transmitter

Worst Case Mode	Maximum E.I.R.P (dBm)	Power Density (mW/cm ²)	Power Density Limit (mW/cm ²)	Safety Distance (cm)	Ratios	Result	Limit
2.4G WLAN	30.800	0.239	1	20	0.239	0.620	1
5G WLAN	32.560	0.359	1		0.359		
6G WLAN	20.410	0.022	1		0.022		

Ratios = Power Density / Power Density Limit

Product : 11ax Cloud Managed AP
 Test Item : RF Exposure Evaluation for Beamforming mode

Beamforming WLAN 2.4GHz Directional Gain: 10.28dBi

Band	Maximum E.I.R.P (dBm)	Maximum E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Pass/Fail
2.4GHz	28.960	787.046	0.157	1	Pass

Beamforming WLAN 5GHz Directional Gain: 11.11dBi

Band	Maximum E.I.R.P (dBm)	Maximum E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Pass/Fail
5GHz	32.550	1798.871	0.358	1	Pass

Band	Maximum E.I.R.P (dBm)	Maximum E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Pass/Fail
6GHz	20.410	109.901	0.022	1	Pass

Note: The E.I.R.P output power is refer to report No.: 2230212R-RFUSWL2V01-A,
 2230212R-RFUSWL5V01-A, 2230212R-RFUSWL6V01-A

Calculations for Multi-Transmitter

Worst Case Mode	Maximum E.I.R.P (dBm)	Power Density (mW/cm ²)	Power Density Limit (mW/cm ²)	Safety Distance (cm)	Ratios	Result	Limit
2.4G WLAN	28.960	0.157	1	20	0.157	0.537	1
5G WLAN	32.550	0.358	1		0.358		
6G WLAN	20.410	0.022	1		0.022		

Ratios = Power Density / Power Density Limit