

RF Exposure Evaluation Declaration

Product Name : 2x2 11ax WIFI AP
Trade Name : Amigo Technology
Model No. : APL52X, APL54X
FCC ID : RC6-APL5XX

Applicant : Amigo Technology Inc.

Address : No.82, Gongye 2nd Rd., Annan District, Tainan City 70955,
Taiwan (R.O.C.)

Date of Receipt : Feb. 02, 2021

Date of Declaration : Jun. 28, 2021

Report No. : 2120060R-E3082100013

Report Version : V1.0



The declaration results relate only to the samples calculated.

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RF Exposure Evaluation Declaration

Issued Date : Jun. 28, 2021

Report No. : 2120060R-E3082100013



Product Name : 2x2 11ax WIFI AP

Applicant : Amigo Technology Inc.

Address : No.82, Gongye 2nd Rd., Annan District, Tainan City 70955, Taiwan (R.O.C.)

Manufacturer : Sapido Technology Inc.

Address : No.82, Gongye 2nd Rd., Annan District, Tainan City 70955, Taiwan (R.O.C.)

Model No. : APL52X, APL54X

FCC ID : RC6-APL5XX

EUT Voltage : 12Vdc, 2A

Testing Voltage : AC 120V/60Hz

Trade Name : Amigo Technology

Applicable Standard : FCC 47 CFR Part 2.1091 Radiofrequency radiation exposure evaluation: mobile devices.

Test Lab : Hsin Chu Laboratory

Address : No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C.
TEL: +886-3-582-8001 / FAX: +886-3-582-8958

Test Result : Complied

Tested By : 
(Scott Chang / Senior Engineer)

Approved By : 
(Louis Hsu / Deputy Manager)

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Jun. 28, 2021

1.1. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required	Test Site
Temperature (°C)	Peak Output Power	15 - 35	1
Humidity (%RH)		25 - 75	

Note: Test site information refers to Laboratory Information.

USA : FCC Registration Number: TW3024
Canada : IC Registration Number: 22397-1 / 22397-2 / 22397-3

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: <http://www.dekra.com.tw>

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 2. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-582-8001 2. +886-3-582-8001
Fax number	1. +886-3-582-8958 2. +886-3-582-8958
Email address	info.tw@dekra.com
Website	http://www.dekra.com.tw

1.2. List of Test Equipment

Peak Output Power / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2020/11/30	2021/11/29
Pulse Power Sensor	Anritsu	MA2411B	1531043	2020/11/30	2021/11/29
Pulse Power Sensor	Anritsu	MA2411B	1531044	2020/11/30	2021/11/29
Power Meter	Keysight	8990B	MY51000248	2020/05/20	2021/05/19
Power Sensor	Keysight	N1923A	MY57240005	2020/05/20	2021/05/19

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

1.3. Uncertainty

Test item	Uncertainty
Peak Output Power	± 2.26 dB

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2. RF Exposure Evaluation

2.1. 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				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

RF Field Strength Limits for Controlled Use Devices (Controlled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-1023	170	180	-	Instantaneous*
0.1-10	-	1.6/ f	-	6**
1.29-10	193/ f 0.5	-	-	6**
10-20	61.4	0.163	10	6
20-48	129.8/ f 0.25	0.3444/ f 0.25	44.72/ f 0.5	6
48-100	49.33	0.1309	6.455	6
100-6000	15.60 f 0.25	0.04138 f 0.25	0.6455 f 0.5	6
6000-15000	137	0.364	50	6
15000-150000	137	0.364	50	616000/ f 1.2
150000-300000	0.354 f 0.5	9.40 x 10 ⁻⁴ f 0.5	3.33 x 10 ⁻⁴ f	616000/ f 1.2
Note: f is frequency in MHz. *Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

Friis Formula

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

Where

P_d = power density in mW/cm^2

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

P_d is the limit of MPE, $1 mW/cm^2$. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

2.3. Test Result of RF Exposure Evaluation

Product	2x2 11ax WIFI AP		
Test Mode	Transmit Mode		
Test Condition	RF Exposure Evaluation		
Date of Test	2021/02/25~2021/03/15	Test Site	SR12-H
Temperature (°C)	23.0	Humidity (%RH)	55.0

Antenna Gain: The maximum antenna gain is 3.3 dBi.

Output Power into Antenna & RF Exposure Evaluation Distance:

WLAN Function 2.4GHz Band					
Mode	Frequency (MHz)	Maximum Conducted Output Power		Maximum Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	mW		
802.11b (CDD_PoE Mode)	2412	24.996	315.965	0.134	1
	2437	24.937	311.709	0.133	1
	2462	25.413	347.741	0.148	1
802.11g (CDD_PoE Mode)	2412	26.331	429.639	0.183	1
	2437	25.800	380.161	0.162	1
	2462	26.436	440.128	0.187	1
802.11n (20MHz) (CDD_PoE Mode)	2412	25.347	342.497	0.146	1
	2437	25.026	318.155	0.135	1
	2462	25.450	350.763	0.149	1
802.11n (40MHz) (CDD_PoE Mode)	2422	24.652	291.854	0.124	1
	2437	24.483	280.762	0.119	1
	2452	24.861	306.257	0.130	1
802.11ax (20MHz) (RU Full_PoE Mode)	2412	26.665	464.021	0.197	1
	2437	25.909	389.881	0.166	1
	2462	26.581	455.053	0.194	1
802.11ax (40MHz) (RU Full_PoE Mode)	2422	24.901	309.133	0.131	1
	2437	24.935	311.562	0.133	1
	2452	25.179	329.552	0.140	1

Note:

1. The results are evaluated using the maximum power from test report no. 2120060R-E3032110113.
2. The antenna information is from the customer declaration.

WLAN Function 2.4GHz Band					
Mode	Frequency (MHz)	Maximum Conducted Output Power		Maximum Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	mW		
802.11ax (20MHz) (RU M UNMOD_PoE Mode)	2412	25.422	348.517	0.148	1
	2437	25.829	382.758	0.163	1
	2462	22.987	198.910	0.085	1
802.11ax (40MHz) (RU M UNMOD_PoE Mode)	2422	23.193	208.605	0.089	1
	2437	23.470	222.338	0.095	1
	2452	23.178	207.861	0.088	1
802.11n (20MHz) (RU BE UNMOD_PoE Mode)	2412	25.186	330.030	0.140	1
	2437	25.258	335.589	0.143	1
	2462	22.601	182.017	0.077	1
802.11n (40MHz) (RU BE UNMOD_PoE Mode)	2422	22.110	162.543	0.069	1
	2437	21.824	152.195	0.065	1
	2452	22.123	163.034	0.069	1
802.11n (20MHz) (BF_PoE Mode)	2412	22.337	171.260	0.073	1
	2437	22.016	159.088	0.068	1
	2462	22.440	175.394	0.075	1
802.11n (40MHz) (BF_PoE Mode)	2422	21.642	145.937	0.062	1
	2437	21.473	140.391	0.060	1
	2452	21.851	153.139	0.065	1
802.11ax (20MHz) (BF_PoE Mode)	2412	23.655	232.026	0.099	1
	2437	22.899	194.954	0.083	1
	2462	23.571	227.542	0.097	1
802.11ax (40MHz) (BF_PoE Mode)	2422	21.891	154.577	0.066	1
	2437	21.925	155.792	0.066	1
	2452	22.169	164.787	0.070	1

Note:

1. The results are evaluated using the maximum power from test report no. 2120060R-E3032110113.
2. The antenna information is from the customer declaration.

Product	2x2 11ax WIFI AP		
Test Mode	Transmit Mode		
Test Condition	RF Exposure Evaluation		
Date of Test	2021/02/24~2021/03/15	Test Site	SR12-H
Temperature(°C)	22.8	Humidity (%RH)	61.2

Antenna Gain: The maximum antenna gain is 5.8 dBi.

Output Power into Antenna & RF Exposure Evaluation Distance:

WLAN Function 5GHz Band					
Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	mW		
802.11a (CDD_PoE Mode)	5180	20.666	116.574	0.088	1
	5220	20.721	118.059	0.089	1
	5240	20.488	111.892	0.085	1
	5745	20.656	116.305	0.088	1
	5785	20.526	112.876	0.085	1
	5825	20.462	111.224	0.084	1
802.11n (20MHz) (CDD_PoE Mode)	5180	20.273	106.488	0.081	1
	5220	20.341	108.168	0.082	1
	5240	19.991	99.793	0.075	1
	5745	20.346	108.293	0.082	1
	5785	20.731	118.331	0.090	1
	5825	20.631	115.638	0.087	1
802.11n (40MHz) (CDD_PoE Mode)	5190	20.239	105.657	0.080	1
	5230	20.313	107.473	0.081	1
	5755	20.831	121.088	0.092	1
	5795	20.681	116.977	0.088	1

Note:

1. The results are evaluated using the maximum power from test report no. 2120060R-E3032110126.
2. The antenna information is from the customer declaration.

WLAN Function 5GHz Band					
Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	mW		
802.11ac (20MHz) (CDD_PoE Mode)	5180	20.303	107.226	0.081	1
	5220	20.367	108.818	0.082	1
	5240	20.039	100.902	0.076	1
	5745	20.386	109.295	0.083	1
	5785	20.771	119.426	0.090	1
	5825	20.631	115.638	0.087	1
802.11ac (40MHz) (CDD_PoE Mode)	5190	20.284	106.758	0.081	1
	5230	20.323	107.721	0.081	1
	5755	20.301	107.177	0.081	1
	5795	20.196	104.616	0.079	1
802.11ac (80MHz) (CDD_PoE Mode)	5210	20.181	104.256	0.079	1
	5775	20.416	110.053	0.083	1
802.11ax (20MHz) (RU Full_PoE Mode)	5180	20.562	113.815	0.086	1
	5220	20.621	115.372	0.087	1
	5240	20.271	106.439	0.081	1
	5745	20.626	115.505	0.087	1
	5785	20.857	121.815	0.092	1
	5825	20.926	123.766	0.094	1
802.11ax (40MHz) (RU Full_PoE Mode)	5190	20.661	116.439	0.088	1
	5230	20.329	107.870	0.082	1
	5755	20.750	118.850	0.090	1
	5795	20.621	115.372	0.087	1
802.11ax (80MHz) (RU Full_PoE Mode)	5210	20.581	114.314	0.086	1
	5775	20.700	117.490	0.089	1

Note:

1. The results are evaluated using the maximum power from test report no. 2120060R-E3032110126.
2. The antenna information is from the customer declaration.

WLAN Function 5GHz Band					
Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	mW		
802.11ax (20MHz) (RU M UNMOD_PoE)	5180	14.207	26.345	0.020	1
	5220	17.321	53.963	0.041	1
	5240	16.593	45.635	0.035	1
	5745	18.022	63.416	0.048	1
	5785	17.936	62.173	0.047	1
	5825	18.275	67.220	0.051	1
802.11ax (40MHz) (RU M UNMOD_PoE)	5190	15.341	34.206	0.026	1
	5230	14.477	28.035	0.021	1
	5755	14.687	29.424	0.022	1
	5795	15.054	32.018	0.024	1
802.11ax (80MHz) (RU M UNMOD_PoE)	5210	15.147	32.711	0.025	1
	5775	10.561	11.379	0.009	1
802.11ax (20MHz) (RU BE UNMOD_PoE)	5180	14.150	26.002	0.020	1
	5220	17.317	53.914	0.041	1
	5240	16.586	45.562	0.034	1
	5745	18.042	63.709	0.048	1
	5785	17.952	62.402	0.047	1
	5825	18.346	68.328	0.052	1
802.11ax (40MHz) (RU BE UNMOD_PoE)	5190	15.650	36.728	0.028	1
	5230	14.775	30.026	0.023	1
	5755	15.120	32.509	0.025	1
	5795	15.501	35.490	0.027	1
802.11ax (80MHz) (RU BE UNMOD_PoE)	5210	15.253	33.520	0.025	1
	5775	10.646	11.604	0.009	1

Note:

1. The results are evaluated using the maximum power from test report no. 2120060R-E3032110126.
2. The antenna information is from the customer declaration.

WLAN Function 5GHz Band					
Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	mW		
802.11n (20MHz) (BF_PoE Mode)	5180	17.263	53.248	0.040	1
	5220	17.331	54.088	0.041	1
	5240	16.981	49.900	0.038	1
	5745	17.336	54.150	0.041	1
	5785	17.721	59.170	0.045	1
	5825	17.621	57.823	0.044	1
802.11n (40MHz) (BF_PoE Mode)	5190	17.229	52.832	0.040	1
	5230	17.303	53.740	0.041	1
	5755	17.821	60.548	0.046	1
	5795	17.671	58.492	0.044	1
802.11ac (20MHz) (BF_PoE Mode)	5180	17.293	53.617	0.041	1
	5220	17.357	54.413	0.041	1
	5240	17.029	50.455	0.038	1
	5745	17.376	54.651	0.041	1
	5785	17.761	59.717	0.045	1
	5825	17.621	57.823	0.044	1
802.11ac (40MHz) (BF_PoE Mode)	5190	17.274	53.383	0.040	1
	5230	17.313	53.864	0.041	1
	5755	17.291	53.592	0.041	1
	5795	17.186	52.312	0.040	1
802.11ac (80MHz) (BF_PoE Mode)	5210	17.171	52.131	0.039	1
	5775	17.406	55.030	0.042	1

Note:

1. The results are evaluated using the maximum power from test report no. 20C1060R-E3032110113.
2. The antenna information is from the customer declaration.

WLAN Function 5GHz Band					
Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	mW		
802.11ax (20MHz) (BF_PoE Mode)	5180	17.552	56.911	0.043	1
	5220	17.611	57.690	0.044	1
	5240	17.261	53.223	0.040	1
	5745	17.616	57.756	0.044	1
	5785	17.847	60.912	0.046	1
	5825	17.916	61.887	0.047	1
802.11ax (40MHz) (BF_PoE Mode)	5190	17.651	58.224	0.044	1
	5230	17.319	53.939	0.041	1
	5755	17.740	59.429	0.045	1
	5795	17.611	57.690	0.044	1
(BF_PoE Mode)	5210	17.571	57.161	0.043	1
(RU Full_PoE Mode)	5775	17.690	58.749	0.044	1

Note:

1. The results are evaluated using the maximum power from test report no. 20C1060R-E3032110125.
2. The antenna information is from the customer declaration.

Product	2x2 11ax WIFI AP		
Test Mode	Transmit Mode		
Test Condition	RF Exposure Evaluation		
Date of Test	2021/02/25~2021/03/15	Test Site	SR12-H
Temperature(°C)	23.0	Humidity (%RH)	55.0

MPE Ratio for WiFi 2.4GHz	MPE Ratio for WCDMA	Σ of MPE ratios	Limit
0.197	0.131	0.328	1.000

MPE Ratio for WiFi 5GHz	MPE Ratio for WCDMA	Σ of MPE ratios	Limit
0.094	0.131	0.225	1.000

MPE Ratio for WiFi 2.4GHz	MPE Ratio for LTE	Σ of MPE ratios	Limit
0.197	0.155	0.352	1.000

MPE Ratio for WiFi 5GHz	MPE Ratio for LTE	Σ of MPE ratios	Limit
0.094	0.155	0.249	1.000

MPE Ratio for WiFi 2.4GHz	MPE Ratio for WiFi 5GHz	MPE Ratio for WCDMA	MPE Ratio for LTE	Σ of MPE ratios	Limit
0.197	0.094	0.131	0.155	0.577	1.000

Note: Σ of MPE ratios= MPE Ratio for WiFi 2.4GHz + MPE Ratio for WiFi 5GHz + MPE Ratio for WCDMA + MPE Ratio for LTE