

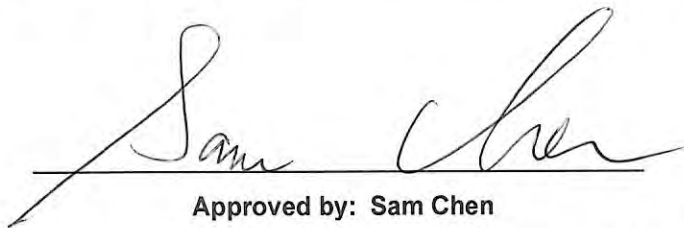


RADIO EXPOSURE TEST REPORT

Equipment : Industrial Wireless Router
Brand Name : Atop
Model Name : AWR5805P/AWR5805
Applicant : Atop Technologies, Inc.
1F, No. 30 R&D Rd. II, Science-Based Industrial Park,
Hsinchu 30076, Tawian , R.O.C
Manufacturer : Atop Technologies, Inc.
1F, No. 30 R&D Rd. II, Science-Based Industrial Park,
Hsinchu 30076, Tawian , R.O.C
Standard : EN IEC 62311: 2020, EN 50665:2017 and EN 50385:2017

The product was received on Aug. 23, 2022, and testing was started from Sep. 03, 2022 and completed on Oct. 14, 2022. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in EN IEC 62311: 2020, EN 50665:2017 and EN 50385:2017 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of We, Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.



Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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History of this test report

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-E2_1 Ver1.2

Page Number : 3 of 8
Issued Date : Nov. 24, 2022
Report Version : 01



Summary of Test Result

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

Declaration of Conformity:

1. The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to report "Measurement Uncertainty".

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: Sophia Shiung



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	2412-2472	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
5GHz WLAN	5150-5250	5180-5240	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)

Multiple Transmitters Condition
Co-location as simultaneously transmitting (co-transmitting) and the evaluation shall be consider that simultaneous transmissions from co-located devices the individual transmitters are evaluated separately. After sum of the individual value (basic restriction / reference level) are measured/calculated also have to under basic restriction / reference level.
Co-transmitting mode: WLAN 2.4GHz + WLAN 5GHz

1.2 Antenna Information

Ant.	Port		Brand	Model Name	Antenna Type	Connector	Gain (dBi)	
	2.4GHz	5GHz					2.4GHz	5GHz
1	1	1	PSA	RFDPA141300SBLB301	Dipole	Reversed-SMA	4.35	6.59
2	2	2	PSA	RFDPA141300SBLB301	Dipole	Reversed-SMA	4.35	6.59

Note 1: The above information was declared by manufacturer.

Note 2: **For 2.4GHz function:**

For IEEE 802.11 b/g/n (2TX/2RX):

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11a/n/ac (2TX/2RX):

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.



1.3 Table for Multiple Listing

The difference for each model is show as below:

EUT	Model Name	PoE Function
1	AWR5805P	V
2	AWR5805	X

Note 1: From the above models, model: AWR5805P (EUT 1) was selected as representative model for the test and its data was recorded in this report.

Note 2: The above information was declared by manufacturer.

1.4 Accessories

DC jack*1

1.5 Testing Location

Testing Location Information		
Test Lab. : Sporton International Inc. Hsinchu Laboratory		
Hsinchu	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)	
(TAF: 3787)	TEL: 886-3-656-9065	FAX: 886-3-656-9085

1.6 Evaluation Distance

Evaluation Distance
Evaluation distance 20cm as a distance between the equipment and the operator or user when it is used normally. The distance used for the assessment had be specified by the manufacturer and be consistent with the intended usage of the equipment.



1.7 Evaluation Method

Evaluation Method	
Far field region, For calculating the field in the far-field region the free space formula:	
$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$	Power Density: $P_d \text{ (W/m}^2\text{)} = \frac{E^2}{377}$
E = Electric field (V/m)	P = RF output power (W)
G = EUT Antenna numeric gain (numeric)	d = Separation distance between radiator and human (m)
The formula can be changed to	
$P_d = \frac{30 \times P \times G}{377 \times d^2}$	
Co-transmitting Evaluation Method	
Conclusion:	
CPD1 / LPD1 + CPD2 / LPD2 +etc. < 1	
CPD = Calculation power density	
LPD = Limit of power density	

1.8 Basic Restrictions

Restrictions on exposure to time-varying electric, magnetic, and electromagnetic fields which are based directly on established health effects and biological considerations are termed “basic restrictions”. Depending upon the frequency of the field, the physical quantities used to specify these restrictions are specific absorption rate (SAR), and power density.

1.9 Reference Levels

Levels of field strength and currents that can be compared with corresponding measured or calculated values. The reference levels are derived from the basic restrictions using worst-case assumptions about exposure. If the reference levels are met, then the basic restrictions will be complied with, but if the reference levels are exceeded, it does not necessarily mean that the basic restrictions will not be met.

1.10 Compliance criteria

If the average power emitted by apparatus operating in the frequency range 10 MHz – 300 GHz is less than or equal to 20 mW then the apparatus is deemed to comply with the basic restrictions without testing. The evaluation of power is only valid if it is made with an uncertainty of less than 30 %.

2 Assessment Result

2.1 Reference Levels Limits

According to Council Recommendation 99/519/EC Annex III
Reference levels limits for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density Seq (W/m ²)
0-1 Hz	-	3.2×10^4	4×10^4	-
1-8 Hz	10000	$3.2 \times 10^4 / f^2$	$4 \times 10^4 / f^2$	-
8-25 Hz	10000	$4000 / f$	$5000 / f$	-
0.025-0.8 kHz	$250 / f$	$4 / f$	$5 / f$	-
0.8-3 kHz	$250 / f$	5	6.25	-
3-150 kHz	87	5	6.25	-
0.15-1 MHz	87	$0.73 / f$	$0.92 / f$	-
1-10 MHz	$87 / f^{1/2}$	$0.73 / f$	$0.92 / f$	-
10-400 MHz	28	0.073	0.092	2
400-2000 MHz	$1.375 f^{1/2}$	$0.0037 f^{1/2}$	$0.0046 f^{1/2}$	$f / 200$
2-300 GHz	61	0.16	0.2	10

2.2 Reference Levels Evaluation

Mode	G (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (W/m ²)	S Limit (W/m ²)
2.4G;D1D	4.35	15.62	19.97	0.09931	20	0.19757	10.00000
5.2G;D1D	6.59	16.26	22.85	0.19275	20	0.38346	10.00000

Mode	G (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (W/m ²)	S Limit (W/m ²)	Ratio (S/Limit)
2.4G;D1D	4.35	15.62	19.97	0.09931	20	0.19757	10.00000	0.01976
5.2G;D1D	6.59	16.26	22.85	0.19275	20	0.38346	10.00000	0.03835
							Sum Ratio	0.05811
							Ratio Limit	1

Note:

- For more detailed e.i.r.p. power measurement description, please refer to ER282309AA and ER282309AB radio test report.
- The above antenna gain was declared by manufacturer.

————THE END————