



RADIO EXPOSURE TEST REPORT

FCC ID : Z3WAIR4971

Equipment : Tri-Band 11ax Smart Wi-Fi Extender, AT&T Smart Wi-Fi Extender

Brand Name : AirTies

Model Name : WFEXT4971-41

Applicant : AirTies Wireless Networks
Mithat Uluunlu Sokak No. 23 Esentepe, Sisli
Istanbul, 34394 Turkey

Manufacturer : AirTies Wireless Networks
Mithat Uluunlu Sokak No. 23 Esentepe, Sisli
Istanbul, 34394 Turkey

Standard : 47 CFR Part 2.1091

The product was received on Sep. 25, 2020, and testing was started from Oct. 05, 2020 and completed on Nov. 06, 2020. We, Sporton International Inc. Hsinchu 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. 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

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FAX : 886-3-656-9085
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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: Vicky Huang

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) VHT: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
5GHz WLAN	5150-5250 5725-5850	5180-5240 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)

1.2 Table for Multiple Listing

The EUT has two equipment names which are identical to each other in all aspects except for the following table:

Brand Name	Model Name	Equipment Name	Description
AirTies	WFEXT4971-41	Tri-Band 11ax Smart Wi-Fi Extender	All the equipment names are identical, the difference equipment names for difference served as marketing strategy.
		AT&T Smart Wi-Fi Extender	

Note: The above information was declared by manufacturer.

1.3 EUT Support Function

The EUT supports AP mode and mesh mode. Only the AP mode was tested and recorded in this test report.



1.4 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Composite Peak Realized Gain (dBi)		
						WLAN 2.4GHz	WLAN 5GHz Band 1	WLAN 5GHz Band 4
1	1	AirTies	DB-1	Off-Board Internal Dipole-Like Dual-Band	I-PEX	2.38	2.57	-
2	2	AirTies	DB-2	Off-Board Internal Dipole-Like Dual-Band	I-PEX			-
3	1	AirTies	5G-1	Off-Board Internal Dipole-Like Single-Band	I-PEX	-	-	0.99
4	2	AirTies	5G-2	Off-Board Internal Dipole-Like Single-Band	I-PEX	-	-	
5	3	AirTies	5G-3	Off-Board Internal Dipole-Like Single-Band	I-PEX	-	-	

Note: The above information was declared by manufacturer.

For WLAN 2.4GHz function:

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

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

Port 1 and Port 2 could transmit/receive simultaneously.

For WLAN 5GHz Band 1 function:

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

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

Port 1 and Port 2 could transmit/receive simultaneously.

For WLAN 5GHz Band 4 function:

For IEEE 802.11a/n/ac/ax mode (3TX/3RX):

Port 1, Port 2 and Port 3 can be used as transmitting/receiving antenna.

Port 1, Port 2 and Port 3 could transmit/receive simultaneously.

1.5 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter 1	AT&T (mfg. by DELTA)	EPS18R0-16	INPUT: 120V~0.5A Max 60Hz OUTPUT: 12V, 1.5A 18W
Adapter 2	AT&T (mfg. by DELTA)	EPS18R1G-16	INPUT: 120V~0.5A Max 60Hz OUTPUT: 12V, 1.5A 18W



1.6 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA092402

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

Modifications	Performance Checking
Adding an adapter (Mode: EPS18R1G-16)	It's no need to re-evaluated.

Note: The MPE result of WLAN-2.4GHz and WLAN-5GHz Band 1 and Band 4 were based on the original report.

1.7 Testing Location

Testing Location Information	
Test Lab. : Sporton International Inc. Hsinchu Laboratory	
Hsinchu (TAF: 3787)	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, 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 ²)	<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 ²)	<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 24 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	5.39	24.34	29.73	0.50	30.23	1.05439	24	0.14567	1.00000
5.2G;D1D	5.58	27.23	32.81	0.50	33.31	2.14289	24	0.29604	1.00000
5.8G;D1D	5.76	29.67	35.43	0.50	35.93	3.91742	24	0.54120	1.00000

Simultaneous Transmission Analysis Mode: WLAN 2.4GHz+WLAN 5GHz Low Band+ WLAN 5GHz High Band

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	5.39	24.34	29.73	0.50	30.23	1.05439	24	0.14567	1.00000	0.14567
5.2G;D1D	5.58	27.23	32.81	0.50	33.31	2.14289	24	0.29604	1.00000	0.29604
5.8G;D1D	5.76	29.67	35.43	0.50	35.93	3.91742	24	0.54120	1.00000	0.54120
									Sum Ratio	0.98291
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

————THE END————