



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 Oct. 09, 2020, and testing was started from Oct. 09, 2020 and completed on Oct. 17, 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

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History of this test report

Report No.	Version	Description	Issued Date
FA092402-01	01	Initial issue of report	Mar. 17, 2021



Summary of Test Result

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

Reference to Sporton Project No.: 092402

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: Cindy Peng



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 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5720 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 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Composite Peak Realized Gain (dBi)		
						2.4GHz	5GHz Band 1	5GHz Band 2
1	1	Galtronics	DB-1	Off-Board Internal Dipole-Like Dual-Band	I-PEX	2.38	2.57	2.24
2	2	Galtronics	DB-2	Off-Board Internal Dipole-Like Dual-Band	I-PEX			
Ant.	Port	Brand	Model Name	Antenna Type	Connector	Composite Peak Realized Gain (dBi)		
						5GHz Band 3	5GHz Band 4	
3	1	Galtronics	5G-1	Off-Board Internal Dipole-Like Single-Band	I-PEX	1.18	0.99	
4	2	Galtronics	5G-2	Off-Board Internal Dipole-Like Single-Band	I-PEX			
5	3	Galtronics	5G-3	Off-Board Internal Dipole-Like Single-Band	I-PEX			

Note: The above information was declared by manufacturer.

For 2.4GHz function, 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 5GHz Band 1 and 5GHz Band 2 function, 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 5GHz Band 3 and 5GHz Band 4 function, 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.



1.3 Table for Multiple Listing

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

Equipment Name	Description
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.

1.4 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

1.5 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA092402-02

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

Modifications	Performance Checking
1. Adding the 5GHz band 2 and band 3 (5250~5350 MHz, 5470~5725 MHz) for this device.	Maximum Permissible Exposure.
2. Changing the operating mode to "Master (AP) - 5GHz Band 1, 2" and "Mesh - 5GHz Band 3, 4".	After verified does not affect the test result.

Note: The test results of WLAN 2.4GHz, WLAN 5GHz Band 1 and WLAN 5GHz Band 4 were based on the original report.

1.6 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.)
	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:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

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
5.3G;D1D	5.25	23.83	29.08	0.50	29.58	0.90782	24	0.12542	1.00000
5.6G;D1D	5.95	23.97	29.92	0.07	29.99	0.99770	24	0.13783	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—————