



RADIO EXPOSURE TEST REPORT

FCC ID : RSL-TQ6602GEN2
Equipment : IEEE802.11ax dual-radio 5G/2.4GHz 4x4+4x4 wireless AP
Brand Name : Allied Telesis
Model Name : AT-TQ6602 GEN2 , AT-TQm6602 GEN2
Applicant : Allied Telesis K.K
2nd. TOC Bldg.7-21-11 Nishi-Gotanda, Shinagawa-ku Tokyo
1430031 Japan
Manufacturer : Allied Telesis K.K
2nd. TOC Bldg.7-21-11 Nishi-Gotanda, Shinagawa-ku Tokyo
1430031 Japan
Standard : 47 CFR Part 2.1091

The product was received on Aug. 02, 2021, and testing was started from Aug. 16, 2021 and completed on Nov. 23, 2021. 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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Photographs of EUT v01



History of this test report

Report No.	Version	Description	Issued Date
FA152531-02	01	Initial issue of report	Apr. 27, 2022



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: Viola 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) 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) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)



1.2 Antenna Information

Ant.	Port		Brand	P/N	Antenna Type	Connector	Gain (dBi)
	2.4GHz	5GHz					
1	3	3	WNC	ATKK RANQ-AK72	PIFA	I-PEX	Note 1
2	4	4	WNC	ATKK RANQ-AK72	PIFA	I-PEX	
3	2	2	WNC	ATKK RANQ-AK72	PIFA	I-PEX	
4	1	1	WNC	ATKK RANQ-AK72	PIFA	I-PEX	

Note 1:

Ant.	Gain (dBi)				
	2.4GHz	5GHz, UNII 1	5GHz, UNII 2A	5GHz, UNII 2C	5GHz, UNII 3
1	2.59	1.68	3.13	3.65	3.46
2	3	1.6	1.93	1.82	2.4
3	3.02	1.87	1.74	1.77	2.77
4	1.42	1.87	2.75	4.23	4.42
Directional Gain (dBi) (4T1S)	5.78	4.17	3.25	4.49	4.48
Directional Gain (dBi) (4T2S)	3.02	1.87	3.13	4.23	4.42
Directional Gain (dBi) (4T4S)	0.3	-1.27	-1.11	-0.39	0.18

Note 2: The above information was declared by manufacturer.

Note 3: The directional gain is measured which follows the procedure of KDB 662911 D03. The antenna report is provided in the operational description for this application.

For 2.4GHz function:

For IEEE 802.11b/g/n/VHT/ax (4TX/4RX):

Port 1, Port 2, Pot 3 and Port 4 can be used as transmitting/receiving antenna.

Port 1, Port 2, Pot 3 and Port 4 could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11a/n/ac/ax (4TX/4RX):

Port 1, Port 2, Pot 3 and Port 4 can be used as transmitting/receiving antenna.

Port 1, Port 2, Pot 3 and Port 4 could transmit/receive simultaneously.



1.3 Table for Multiple Listing

Model Name	Description
AT-TQ6602 GEN2	All the models are identical; different models serve as marketing strategy.
AT-TQm6602 GEN2	

Note 1: From the above models, model: AT-TQ6602 GEN2 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

Wall-mounted rack*1

1.5 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FA152531-01

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

Modifications	Performance Checking
1. Adding U-NII-2A and U-NII-2C bands (5250~5350 MHz, 5470~5725 MHz) for this device. 2. Adding 80+80MHz mode	Maximum Permissible Exposure

Note: RF Exposure Evaluation of 5GHz UNII 1, UNII 3 and 2.4GHz Band are based on original test 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.)
(TAF: 3787)	TEL: 886-3-656-9065 FAX: 886-3-656-9085
	Test site Designation No. TW3787 with FCC.
	Conformity Assessment Body Identifier (CABID) TW3787 with ISED.



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 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

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;G1D	5.78	24.44	30.22	0.50	30.72	1.18032	20	0.23482	1.00000
5.2G;D1D	4.17	28.17	32.34	0.50	32.84	1.92309	20	0.38259	1.00000
5.3G;D1D	3.25	23.86	27.11	0.50	27.61	0.57677	20	0.11474	1.00000
5.6G;D1D	4.49	23.93	28.42	0.50	28.92	0.77983	20	0.15514	1.00000
5.8G;D1D	4.48	27.88	32.36	0.50	32.86	1.93197	20	0.38435	1.00000

Simultaneous Transmission Analysis Mode: WLAN 2.4GHz + WLAN 5GHz

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	5.78	24.44	30.22	0.50	30.72	1.18032	20	0.23482	1.00000	0.23482
5.8G;D1D	4.48	27.88	32.36	0.50	32.86	1.93197	20	0.38435	1.00000	0.38435
									Sum Ratio	0.61917
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

—————THE END—————