



RADIO EXPOSURE TEST REPORT

FCC ID : RSL-TQ7413R

Equipment : IEEE 802.11be tri-radio 2.4G/5G/6G Wireless AP

Brand Name : Allied Telesis

Model Name : AT-TQ7413[yyyyyy]
(Refer to section 1.3 of test report for detail information.)

Applicant : Allied Telesis K.K.
2nd. TOC Bldg.7-21-11 Nishi-Gotanda, Shinagawa-ku
Tokyo 141-0031 Japan

Manufacturer : Allied Telesis K.K.
2nd. TOC Bldg.7-21-11 Nishi-Gotanda, Shinagawa-ku
Tokyo 141-0031 Japan

Standard : 47 CFR Part 2.1091

The product was received on Nov. 05, 2025, and testing was started from Nov. 07, 2025 and completed on Mar. 10, 2026. 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 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

TEL : 886-3-656-9065
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	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sam Chen

Report Producer: Muse Chan



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	For Radio 1: 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) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM) For Scanning Radio 4: 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	5180-5250 5250-5320 5500-5720 5745-5825	For Radio 2: 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) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM) For Scanning Radio 4: 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)
6GHz WLAN	5925-7125	5955-7115	For Radio 3: 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM) For Scanning Radio 4: 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Bluetooth	2400-2483.5	2402-2480	LE: GFSK
IEEE802.15.4	2400-2483.5	2405-2480	O-QPSK



1.2 Antenna Information

Ant.	RF Port	Brand Name	Model Name	Ant. Type	Connector	Gain (dBi)	Modes of Operation
1	1	WNC	95XPAD15.GDY	PIFA	I-PEX	Note 1	WLAN 2.4GHz (Radio 1)
2	2	WNC	95XPAD15.GEA	PIFA	I-PEX		WLAN 5GHz (Radio 2)
3	1	WNC	95XPAD15.GEB	PIFA	I-PEX		WLAN 6GHz (Radio 3)
4	2	WNC	95XPAD15.GEC	PIFA	I-PEX		Bluetooth, Zigbee (Radio 5)
5	1	WNC	95XPAD15.GDZ	PIFA	I-PEX		WLAN 2.4GHz WLAN 5GHz WLAN 6GHz (Radio 4)
6	1	WNC	95XPAD15.GED	PIFA	I-PEX		

Note 1:

Ant.	Antenna Gain (dBi)								
	WLAN 2.4GHz (Radio 1)		WLAN 5GHz (Radio 2)						
			UNII 1	UNII 2A	UNII 2C	UNII 3			
1	4.18		5.06	4.95	4.78	4.39			
2	4.96		5.28	5.01	4.78	4.86			
Ant.	WLAN 6GHz (Radio 3)								
	UNII 5	UNII 6		UNII 7		UNII 8			
3	4.94	4.82		4.82		4.08			
4	5.91	5.91		5.91		5.99			
Ant.	Bluetooth, Zigbee (Radio 5)								
5	4.51								
Ant.	Scanning radio (Radio 4)								
	WLAN 2.4GHz	WLAN 5GHz				WLAN 6GHz			
		UNII 1	UNII 2A	UNII 2C	UNII 3	UNII 5	UNII 6	UNII 7	UNII 8
6	3.93	5.33	4.78	5.64	4.70	5.61	5.61	5.61	5.61

Note 2: The above information was declared by Manufacturer.

Note 3: States antenna 5GHz and 6GHz transmission will be restricted per country's regulation.

Note 4: Directional gain information

Type	Maximum Output Power	Power Spectral Density
Non-BF	Directional gain = Max.gain + array gain. For power measurements on IEEE 802.11 devices Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$	$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_m} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$
BF	$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_m} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$	$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_m} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

Ex.

Directional Gain (NSS1) formula :

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_m} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

$$NSS1(g1,1) = 10^{G1/20} ; NSS1(g1,2) = 10^{G2/20} ; NSS1(g1,3) = 10^{G3/20} ; NSS1(g1,4) = 10^{G4/20}$$

$$g_{j,k} = (NSS1(g1,1) + NSS1(g1,2) + NSS1(g1,3) + NSS1(g1,4))^2$$

$$DG = 10 \log[(NSS1(g1,1) + NSS1(g1,2) + NSS1(g1,3) + NSS1(g1,4))^2 / N_{ANT}] \Rightarrow 10$$

$$\log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / N_{ANT}]$$

Where ;

Radio 1

$$2.4G \ G1 = 4.18 \text{ dBi} ; G2 = 4.96 \text{ dBi} ; DG = 7.59 \text{ dBi}$$

Radio 2

$$5G \text{ UNII-1} \ G1 = 5.06 \text{ dBi} ; G2 = 5.28 \text{ dBi} ; DG = 8.18 \text{ dBi}$$

$$5G \text{ UNII-2A} \ G1 = 4.95 \text{ dBi} ; G2 = 5.01 \text{ dBi} ; DG = 7.99 \text{ dBi}$$

$$5G \text{ UNII-2C} \ G1 = 4.78 \text{ dBi} ; G2 = 4.78 \text{ dBi} ; DG = 7.79 \text{ dBi}$$

$$5G \text{ UNII-3} \ G1 = 4.39 \text{ dBi} ; G2 = 4.86 \text{ dBi} ; DG = 7.64 \text{ dBi}$$

Radio 3

$$6G \text{ UNII-5} \ G1 = 4.94 \text{ dBi} ; G2 = 5.91 \text{ dBi} ; DG = 8.45 \text{ dBi}$$

$$6G \text{ UNII-6} \ G1 = 4.82 \text{ dBi} ; G2 = 5.91 \text{ dBi} ; DG = 8.39 \text{ dBi}$$

$$6G \text{ UNII-7} \ G1 = 4.82 \text{ dBi} ; G2 = 5.91 \text{ dBi} ; DG = 8.39 \text{ dBi}$$

$$6G \text{ UNII-8} \ G1 = 4.08 \text{ dBi} ; G2 = 5.99 \text{ dBi} ; DG = 8.1 \text{ dBi}$$

Note 5: **For Radio 1:**

2.4GHz IEEE 802.11b/g/n/VHT/ax/be 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 Radio 2:

5GHz IEEE 802.11a/n/ac/ax/be 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 Radio 3:

**6GHz IEEE 802.11ax/be 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 Radio 4 (Scanning radio):**2.4GHz IEEE 802.11b/g/n/VHT/ax mode (1RX)****5GHz IEEE 802.11a/n/ac/ax mode (1RX)****6GHz IEEE 802.11ax mode (1RX)**

Only Port 1 can be used as receiving antenna.

For Radio 5:**Bluetooth and Zigbee mode (1TX/1RX)**

Only Port 1 can be used as transmitting/receiving antenna.

1.3 Table for Multiple Listing

Model Name	Description
AT-TQ7413[yyyyy] (where [y] can be A–Z, a–z, “-”, “/”, or blank. The characters in brackets are optional and used for marketing differentiation only, with no impact on safety-related construction or critical components.)	All the models are identical, the difference model served as marketing strategy.

Note 1: From the above models, model: AT-TQ7413-R 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 Table for Radio Function

Function Radio	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz	Bluetooth	Zigbee
1	V	-	-	-	-
2	-	V	-	-	-
3	-	-	V	-	-
4 (Scanning radio)	V	V	V	-	-
5	-	-	-	V	V

Note1: For WLAN 2.4GHz: The Radio 1 and Radio 4 (Scanning radio) can't operate at the same frequency simultaneously.

For WLAN 5GHz: The Radio2 and Radio 4 (Scanning radio) can't operate at the same frequency simultaneously.

For WLAN 6GHz: The Radio 3 and Radio 4 (Scanning radio) can't operate at the same frequency simultaneously.

Note 2: The above information was declared by manufacturer.



1.5 Accessories

Bracket*1

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 27 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

For Radio 1:

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;D1D	7.59	27.37	34.96	0.50	35.46	27	0.38376	1.00000	0.38376

For Radio 2:

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
5.2G;D1D	8.18	27.49	35.67	0.32	35.99	27	0.43357	1.00000	0.43357
5.3G;D1D	7.99	21.74	29.73	0.24	29.97	27	0.10841	1.00000	0.10841
5.6G;D1D	7.79	22.15	29.94	0.03	29.97	27	0.10841	1.00000	0.10841
5.8G;D1D	7.64	28.17	35.81	0.18	35.99	27	0.43357	1.00000	0.43357

For Radio 3:

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
6.2G;D1D	8.45	21.48	29.93	0.06	29.99	27	0.10891	1.00000	0.10891
6.4G;D1D	8.39	21.19	29.58	0.41	29.99	27	0.10891	1.00000	0.10891
6.7G;D1D	8.39	21.29	29.68	0.31	29.99	27	0.10891	1.00000	0.10891
7.0G;D1D	8.10	18.84	26.94	0.50	27.44	27	0.06054	1.00000	0.06054

For Radio 5:

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;BT-LE	4.51	19.17	23.68	0.50	24.18	27	0.02858	1.00000	0.02858
Zigbee	4.51	19.52	24.03	0.50	24.53	27	0.03098	1.00000	0.03098

**Simultaneous Transmission Analysis****Mode 1: R1: 2.4GHz+R2: 5GHz+R3: 6GHz+R5: Bluetooth**

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;D1D	7.59	27.37	34.96	0.50	35.46	27	0.38376	1.00000	0.38376
5.8G;D1D	7.64	28.17	35.81	0.18	35.99	27	0.43357	1.00000	0.43357
6.2G;D1D	8.45	21.48	29.93	0.06	29.99	27	0.10891	1.00000	0.10891
2.4G;BT-LE	4.51	19.17	23.68	0.50	24.18	27	0.02858	1.00000	0.02858
Sum S/Limit Ratio	0.95482								
Ratio Limit	1								

Mode 2: R1: 2.4GHz+R2: 5GHz+R3: 6GHz+R5: Zigbee

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;D1D	7.59	27.37	34.96	0.50	35.46	27	0.38376	1.00000	0.38376
5.8G;D1D	7.64	28.17	35.81	0.18	35.99	27	0.43357	1.00000	0.43357
6.2G;D1D	8.45	21.48	29.93	0.06	29.99	27	0.10891	1.00000	0.10891
Zigbee	4.51	19.52	24.03	0.50	24.53	27	0.03098	1.00000	0.03098
Sum S/Limit Ratio	0.95722								
Ratio Limit	1								

—————THE END—————