RF Exposure Evaluation Report

Application No.:	DNT2506100222R6108-07071
Applicant:	SHENZHEN LONFINE INNOVATION TECHNOLOGY CO., LTD.
Address of Applicant:	1011, D Area, Building 7, Hengda Fashion Valley, Dalang Street, Longhua District,Shenzhen China
EUT Description:	TWS Bluetooth Earphones
Model No.:	TAT2420
FCC ID:	2BOYB-TAT2420
Power Supply (Charging Box):	Input:DC 5V; DC 3.7V From rechargeable lithium-ion battery
Power Supply (Earphone):	DC 3.7V by rechargeable lithium-ion battery
Trade Mark:	PHILIPS
Standards:	47 CFR Part 2.1093 FCC KDB 447498 D04 v01
Date of Receipt:	2025/6/10
Date of Test:	2025/6/11 to 2025/6/18
Date of Issue:	2025/6/19
Test Result:	**PASS**

Prepared By: Wayne.Lin (Testing Engineer)

Reviewed By: Pencils.Chen (Project Engineer)

Approved By: Yeise Chen (Manager)

Note: If there is any objection to the results in this report, please submit a written inquiry to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp, and is issued by the company in accordance

with the requirements of the "Conditions of Issuance of Test Reports" printed in the attached page. Unless otherwise stated, the results presented in this report only apply to the samples tested this time. Partial reproduction of this report is not allowed unless approved by the company in writing.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V2.0	/	June 19, 2025	Valid	Original Report

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1 General Information

1.1 Test Location

Company:	Dongguan DN Testing Co., Ltd
Address:	No. 1, West Fourth Street, South Xinfa Road, Wusha Liwu, Chang ' an Town, Dongguan City, Guangdong P.R.China
Test engineer:	Wayne Lin

1.2 General Description of EUT

Manufacturer:	Guanjie Audiovisual Technology (Shenzhen) Co., Ltd
Address of Manufacturer:	4201, Block A, Building 2, Shenzhen Bay Innovation Technology Center, No. 3156 Keyuan South Road, High tech Zone Community, Yuehai Street, Nanshan District, Shenzhen
EUT Description:	TWS Bluetooth Earphones
Test Model No.:	TAT2420
Additional Model(s):	/
Chip Type:	BP2D116-73D4
Serial number:	PR2506100222R6108
Power Supply (Charging Box):	Input:DC 5V; DC 3.7V From rechargeable lithium-ion battery
Power Supply (Earphone):	DC 3.7V by rechargeable lithium-ion battery
Trade Mark:	PHILIPS
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	2402MHz to 2480MHz
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Type of Modulation:	GFSK,π/4-DQPSK
Sample Type:	☒ Portable Device, ☐ Module,☐ Mobile Device
Antenna Type:	☐ External, ☒ Integrated
Antenna Gain:	☒ Provided by applicant
	2.58dBi

Remark:

*Since the above data and/or information is provided by the applicant relevant results or conclusions of this report are only made for these data and/or information , DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

1.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

Lab A:

• FCC, USA

Designation Number: CN1348

• A2LA (Certificate No. 7050.01)

DONGGUAN DN TESTING CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 7050.01.

• Innovation, Science and Economic Development Canada

DONGGUAN DN TESTING CO., LTD. EMC Laboratory has been recognized by ISED as an accredited testing laboratory. CAB identifier is CN0149.

IC#: 30755.

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1.4 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	20dB Emission Bandwidth	±0.0196%
2	Carrier Frequency Separation	±1.9%
3	Number of Hopping Channel	±1.9%
4	Time of Occupancy	±0.028%
5	Max Peak Conducted Output Power	±0.743 dB
6	Band-edge Spurious Emission	±1.328 dB
7	Conducted RF Spurious Emission	9KHz-1GHz:±0.746dB 1GHz-26GHz:±1.328dB

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.0dB (150kHz to 30MHz)
2	Radiated Emission	± 4.8dB (Below 1GHz)
		± 4.8dB (1GHz to 6GHz)
		± 4.5dB (6GHz to 18GHz)
		± 5.02dB (Above 18GHz)

2 RF Exposure Evaluation

2.1 RF Exposure Compliance Requirement

2.1.1 Limits

Human exposure to RF emissions from portable devices (47 CFR §2.1093), as defined by the FCC, must be evaluated with respect to the FCC-adopted limits for SAR. Evaluation of mobile devices, as defined by the FCC, may also be performed with respect to SAR limits, but in such cases it is usually simpler and more cost-effective to evaluate compliance with respect to field strength or power density limits. For certain devices that are designed to be used in both mobile and portable configurations similar to those described in 47 CFR §2.1091(d)(4), such as certain desktop phones and wireless modem modules, compliance for mobile configurations is also satisfied when the same device is evaluated for SAR compliance in portable configurations.

Refer to 47 CFR §2.1093:

A portable device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that the RF source's radiating structure(s) is/are within 20 centimeters of the body of the user.

Evaluation of compliance with the exposure limits in § 1.1310 of this chapter, and preparation of an EA if the limits are exceeded, is necessary for portable devices having single RF sources with more than an available maximum time-averaged power of 1 mW, more than the ERP listed in Table 1 to § 1.1307(b)(3)(i)(C), or more than the Pth in the following formula, whichever is greater. The following formula shall only be used in conjunction with portable devices not exempt by § 1.1307(b)(3)(i)(C) at distances from 0.5 centimeters to 20 centimeters and frequencies from 0.3 GHz to 6 GHz.

$$P_{\text{th}}\ (\text{mW}) = \begin{cases} ERP_{20\ \text{cm}}(d/20\ \text{cm})^x & d \le 20\ \text{cm} \\ ERP_{20\ \text{cm}} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases} \qquad \text{(B.2)}$$

where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ \text{cm}}\sqrt{f}}\right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20\text{cm}}$ is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)									
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 300 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

2.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually

2.1.3 EUT RF Exposure Evaluation

Mode	Fre (MHz)	Peak Conducted output Power (dBm)	Target power (dBm)	Antenna Gain (dBi)	Max. E.R.P (dBm)	Max. Target power (mW)	SAR Test Exemption Limit (mW)	Distance (mm)
GFSK	2402	0.06	0±1	2.58	1.43	1.390	3	5
	2441	0.42	0±1	2.58	1.43	1.390	3	5
	2480	0.69	0±1	2.58	1.43	1.390	3	5
π/4-DQPSK	2402	-2.21	-2±1	2.58	-0.57	0.877	3	5
	2441	-1.58	-1±1	2.58	0.43	1.104	3	5
	2480	-1.56	-1±1	2.58	0.43	1.104	3	5

Note:

1. E.R.P=Conducted output Power+Antenna Gain -2.15.
2. SAR Test Exclusion Thresholds is 3mW for separation distance 5mm. Therefore, SAR test is not required.

The End Report