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RF Exposure Evaluation Report

Report No. : CQASZ20200200094E-02
Applicant: Shenzhen Tantio Technology Co.,LTD
Address of Applicant: 806, A block, Taojindi Building, Tenlong Road, Longhua district, Shenzhen, China
Equipment Under Test (EUT):
EUT Name: TWS
Model No.: T1, T15, T18
Test Model No.: T1
Brand Name: tantio
FCC ID: 2AVTD-TWST1X
Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2020-02-27
Date of Test: 2020-02-27 to 2020-03-09
Date of Issue: 2020-03-09
Test Result : PASS*

*In the configuration tested, the EUT complied with the standards specified above

Tested By:

Tom Chen

(Tom Chen)

Reviewed By:

Aaron Ma

(Aaron Ma)

Approved By:

Jack Ai

(Jack Ai)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20200200094E-02	Rev.01	Initial report	2020-03-09

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3 General Information

3.1 Client Information

Applicant:	Shenzhen Tantio Technology Co.,LTD
Address of Applicant:	806, A block, Taojindi Building, Tenlong Road, Longhua district, Shenzhen, China
Manufacturer:	Shenzhen Tantio Technology Co.,LTD
Address of Manufacturer:	806, A block, Taojindi Building, Tenlong Road, Longhua district, Shenzhen, China

3.2 General Description of EUT

Product Name:	TWS
Model No.:	T1, T15, T18
Test Model No.:	T1
Trade Mark:	tantio
Hardware Version:	TT-L-V3.1, TT-R-V3.1
Software Version:	V1.0
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V5.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Transfer Rate:	1Mbps/2Mbps/3Mbps
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Test Software of EUT:	Bluetooth RF Test Tool (manufacturer declare)
Antenna Type:	Integral antenna
Antenna Gain:	0dBi
Power Supply:	lithium battery:DC3.7V, Charge by DC5.0V

Note:

- Both the left and right ears were tested, find the left ear is the worst case, only the worst case is recorded in the report.
- Model No.: T1, T15, T18

Only the model T1 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance and model name.

4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

4.1.2 Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation distance, mm}} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation¹⁷

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 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

4.1.3 EUT RF Exposure

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	0.570	0±1	1.0	1.259
Middle(2441MHz)	1.970	1.0±1	2.0	1.585
Highest(2480MHz)	2.720	2.0±1	3.0	1.995
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-1.330	-2.0±1	-1.0	0.794
Middle(2441MHz)	1.200	0.5±1	1.5	1.413
Highest(2480MHz)	2.020	1.5±1	2.5	1.778
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-1.000	-1.5±1	-0.5	0.891
Middle(2441MHz)	1.380	0.5±1	1.5	1.413
Highest(2480MHz)	2.150	1.5±1	2.5	1.778

Worst case: 8DPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	0.570	0±1	1.0	1.259	0.390	3.0
Middle (2441MHz)	1.970	1.0±1	2.0	1.585	0.495	
Highest (2480MHz)	2.720	2.0±1	3.0	1.995	0.628	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20200200094E-01