

RF Exposure Evaluation

FCC ID: 2ATG6-I9-TWS

1. Client Information

Applicant	:	Shenzhen Langong Innovation Technology Co., Ltd.
Address	:	3008, Block A, Huaqiang North Electronic Technology Building, Futian District, Shenzhen, Guangdong, China
Manufacturer	:	Shenzhen Chi Hang Technology Co., Ltd.
Address	:	1-4/F, Building 5, Huarong Lutai Science Park, Dalang, Longhua District, Shenzhen City, Guangdong Province, China

2. General Description of EUT

EUT Name	:	Bluetooth Earphone
Models No.	:	i9-TWS, i9 Touch, Q1 TWS, Q2 TWS, Q3 TWS, Q5 TWS
Model Difference	:	All models are identical in the same PCB layout interior structure and electrical circuits, The only difference is model.
Product Description	Operation Frequency:	Bluetooth 5.0(BT): 2402MHz~2480MHz
	RF Output Power:	GFSK:-1.201dBm π /4-DQPSK: -1.187dBm 8-DPSK: -1.210dBm
	Antenna Gain:	1.75dBi Ceramics Antenna
Power Supply	:	DC Voltage Supply from charging compartment. DC Voltage supplied by Li-ion battery.
Power Rating	:	charging compartment: Input: DC 5.0V 500mA by adapter Output: DC 3.7V by 250mAh Li-ion battery(model: 502030) DC 3.7V by 1400mAh Li-ion battery(model: 501012)
Software Version	:	V40
Hardware Version	:	V1.1
Connecting I/O Port(S)	:	Please refer to the User's Manual

Note: More test information about the EUT please refer the RF Test Report.

SAR Test Exclusion Calculations

1. FCC: According to KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.

- (1) Clause 4.3: General SAR test reduction and exclusion guidance

- Sub clause 4.31: Standalone SAR test exclusion considerations**

- 1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6GHz at test separation distance ≤ 5 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation, mm})] * [\sqrt{f_{(\text{GHz})}}] \leq 3.0 \text{ for 1-g SAR}$$
$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation, mm})] * [\sqrt{f_{(\text{GHz})}}] \leq 7.5.0 \text{ for 10-g SAR}$$

2. Calculation:

Test separation: 5mm						
Bluetooth Mode (GFSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-1.201	-1±1	0	1.000	0.310	3.0
2.441	-1.732	-2±1	-1	0.794	0.248	3.0
2.480	-2.753	-3±1	-2	0.631	0.199	3.0
Bluetooth Mode (π/4-DQPSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-1.187	-1±1	0	1.000	0.310	3.0
2.441	-1.753	-2±1	-1	0.794	0.248	3.0
2.480	-2.756	-3±1	-2	0.631	0.199	3.0
Bluetooth Mode (8-DPSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-1.210	-1±1	0	1.000	0.310	3.0
2.441	-1.776	-2±1	-1	0.794	0.248	3.0
2.480	-2.776	-3±1	-2	0.631	0.199	3.0

Test separation: 5mm		
The worst RF Exposure Evaluation		
Worst Calculation Value	Total Calculation Value	Threshold Value
Bluetooth Mode		
0.310	0.310	3.0

The worst RF Exposure Evaluation is calculated as **0.310 / cm² < limit 3.0**, So standalone SAR measurements are not required.

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