

RF Exposure Evaluation

FCC ID:2AYQ2-ES-T6

1. Client Information

Applicant	:	SHENZHEN ESHINE INTERACTION TECHNOLOGY CO.,LTD
Address	:	4F, Flat C, SIDE OF JINPENG INDUSTRIAL ZONE, XUEXIANG COMMUNITY, BANTIAN STREET, LONGGANG DISTRICT, SHENZHEN, CHINA
Manufacturer	:	SHENZHEN ESHINE INTERACTION TECHNOLOGY CO.,LTD
Address	:	4F, Flat C, SIDE OF JINPENG INDUSTRIAL ZONE, XUEXIANG COMMUNITY, BANTIAN STREET, LONGGANG DISTRICT, SHENZHEN, CHINA

2. General Description of EUT

EUT Name	:	Bluetooth earphone	
Model(s) No.	:	ES-T6, ES-T6S, ES-T8, ES-T8S, ES-T9, ES-T9S, ES-T5, ES-T5S	
Model Different	:	All these models are in the same PCB, layout and electrical circuit, the only difference is model.	
Product Description	:	Operation Frequency:	Bluetooth V5.0(BT): 2402~2480 MHz
	:	Number of Channel:	Bluetooth: 79 Channels
	:	Max Peak Output Power:	Bluetooth: 2.564dBm(GFSK)
	:	Antenna Gain:	-1 dBi Caremic Antenna
	:	Modulation Type:	GFSK π /4-DQPSK 8-DPSK BLE1M/2Mbps
Power Supply (Earphone)	:	Input: Output DC 5V DC 3.7V by 55mAh Li-ion battery	
Power Supply (Charger Box)	:	Input: Output DC 5V DC 3.7V by 2500mAh Li-ion battery	
Software Version	:	N/A	
Hardware Version	:	V2.1	
Remark: The antenna gain and adapter provided by the applicant, the adapter and verified for the RF conduction test provided by TOBY test lab.			

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:

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

- [(max. power of channel, including tune-up tolerance, mW)/(min. test separation, mm)] * $[\sqrt{f(\text{GHz})}] \leq 7.5.0$ 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	2.204	2±1	3	1.995	0.618	3.0
2.441	2.564	2±1	3	1.995	0.623	3.0
2.480	2.093	2±1	3	1.995	0.628	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	1.991	1±1	2	1.585	0.491	3.0
2.441	2.178	2±1	3	1.995	0.623	3.0
2.480	1.641	1±1	2	1.585	0.499	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	2.34	2±1	3	1.995	0.618	3.0
2.441	2.465	2±1	3	1.995	0.623	3.0
2.480	1.921	1±1	2	1.585	0.499	3.0
Bluetooth Mode (BLE1Mbps)						
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
2402	0.159	0±1	1	1.259	0.390	3.0
2442	0.623	0±1	1	1.259	0.393	3.0
2480	0.03	0±1	1	1.259	0.397	3.0
Bluetooth Mode (BLE2Mbps)						
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
2402	1.187	1±1	2	1.585	0.491	3.0
2442	2.555	2±1	3	1.995	0.623	3.0
2480	2.017	2±1	3	1.995	0.628	3.0

Simultaneous Transmission for SAR Exclusion			
Simultaneous Transmission for SAR Exclusion			Limit
Bluetooth Mode	BLE Mode	Total Calculation Value	
0.0841	0.0841	0.1682	1.0
Note: The sample support one BT modular and BLE modular, they supports difference antenna, need consider simultaneous transmission;			

Conclusion:The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06.

-----END OF REPORT-----