

RF Exposure Evaluation

FCC ID: 2ABHA0015

1. Client Information

Applicant	: NINGBO CSTAR IMP&EXP CO., LTD
Address	: Floor 4, Building E, No. 655-90, Qiming Road, Yinzhou Investment & Innovation Center, Ningbo, China
Manufacturer	: ShenZhen C-Star Electronic Tech. Co., Ltd
Address	: 2, 3/F, Building B, No. 2 Bada Industrial Park, Yongfu Road, Heping Community, Fuyong Town, Baoan District, Shenzhen, China

2. General Description of EUT

EUT Name	: True Wireless Earbuds	
Models No.	: 7198-04, CT16286	
Brand Name	: Cstar	
Model Difference	: All these models are identical in the same PCB, layout and electrical circuit, the only difference is model name for commercial.	
Product Description	Operation Frequency:	Bluetooth 4.1: 2402~2480 MHz
	Number of Channel:	Bluetooth: 79 Channels
	Max Peak Output Power:	Bluetooth: 4.040 dBm(GFSK)
	Antenna Gain:	0 dBi PCB Antenna
	Modulation Type:	GFSK 1Mbps(1 Mbps) π /4-DQPSK(2 Mbps) 8-DPSK(3 Mbps)
Power Supply	: DC Voltage Supplied by the Host System. DC Supply by the Battery.	
Power Rating	: DC 5.0 V by Host System. DC 3.7 V by 40mAh Li-Lion Battery.	
Connecting I/O Port(S)	: Please refer to the User's Manual	

Note:

More test information about the EUT please refer to 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	4.040	4 ± 1	5	3.162	0.980	3.0
2.441	3.958	4 ± 1	5	3.162	0.988	3.0
2.480	3.817	4 ± 1	5	3.162	0.996	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	3.475	4 ± 1	5	3.162	0.980	3.0
2.441	3.900	4 ± 1	5	3.162	0.988	3.0
2.480	3.793	4 ± 1	5	3.162	0.996	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	3.771	4 ± 1	5	3.162	0.980	3.0
2.441	3.629	4 ± 1	5	3.162	0.988	3.0
2.480	3.548	4 ± 1	5	3.162	0.996	3.0

So standalone SAR measurements are not required.

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