

RF Exposure Evaluation

FCC ID: 2ABHA0048

1. Client Information

Applicant	:	NINGBO CSTAR IMP&EXP CO., LTD
Address	:	Floor 4, Building E, No. 65590, Qiming Road, Yinzhou Investment & Innovation Center, Ningbo, China
Manufacturer	:	NINGBO CSTAR IMP&EXP CO., LTD
Address	:	Floor 4, Building E, No. 65590, Qiming Road, Yinzhou Investment & Innovation Center, Ningbo, China

2. General Description of EUT

EUT Name	:	Clock Wireless Charger Speaker
Models No.	:	SL203, 2967, 32328
Model Difference	:	All models are in the same PCB layout interior structure and electrical circuits, The only difference is model name.
Product Description	Operation Frequency:	Bluetooth 4.2(BT): 2402MHz~2480MHz
	RF Output Power:	GFSK:0.265dBm π /4-DQPSK: -0.044dBm 8-DPSK: 0.179dBm
	Antenna Gain:	-0.5dBi PCB Antenna
Power Supply	:	DC Voltage Supply from Adapter DC Voltage supplied by Li-ion battery.
Power Rating	:	Input: DC 5.0V 2A by adapter DC 3.7V by 4000mAh Li-ion battery
Software Version	:	1.0
Hardware Version	:	1.2
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:

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

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

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	0.265	0±1	1	1.259	0.390	3.0
2.441	-0.081	0±1	1	1.259	0.393	3.0
2.480	-0.207	0±1	1	1.259	0.397	3.0
Bluetooth Mode (π/4-QPSK)						
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	-0.044	0±1	1	1.259	0.390	3.0
2.441	-0.090	0±1	1	1.259	0.393	3.0
2.480	-0.185	0±1	1	1.259	0.397	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	0.179	0±1	1	1.259	0.390	3.0
2.441	0.075	0±1	1	1.259	0.393	3.0
2.480	-0.025	0±1	1	1.259	0.397	3.0

Test separation: 5mm		
The worst RF Exposure Evaluation		
Worst Calculation Value	Total Calculation Value	Threshold Value
Bluetooth Mode		
0.397	0.397	3.0

The worst RF Exposure Evaluation is calculated as $0.397 / \text{cm}^2 < \text{limit } 3.0$, So standalone SAR measurements are not required.

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