

RF Exposure Evaluation

FCC ID: 2AXWO-M200

1. Client Information

Applicant	:	Doors Korea Co., Ltd
Address	:	1F, 27, Mangu-ro 81-gil, Jungnang-gu, Seoul, South Korea
Manufacturer	:	TIAN JIN PACHEM ELCTRONICS CO.,LTD
Address	:	Dagang Development Area, Binhai New Area, Tianjin, China 300270

2. General Description of EUT

EUT Name	:	Miracle, m M200 Wireless portable karaoke speaker
Model(s)	:	M200, M220, M230
Model Different	:	All PCB boards and circuit diagrams are the same, the only difference is that different customers have different names.
Product Description	Operation Frequency:	Bluetooth V5.0(BT): 2402~2480 MHz
	Number of Channel:	Bluetooth 5.0(BT): 79 channels
	RF Output Power:	5.477dBm (Max)
	Antenna Gain:	0.5dBi PCB Antenna
	Modulation Type:	GFSK π /4-DQPSK 8DPSK
	Bit Rate of Transmitter:	1/2/3Mbps
Power Supply	:	DC 7.4V by 2500mAh Li-ion battery
Software Version	:	VE31
Hardware Version	:	V3.2
Remark: The antenna gain provided by the applicant, the adapter and verified for the RF conduction test and adapter 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)] * $\sqrt{f_{\text{GHz}}}$ ≤ 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	2.931	3±1	4.0	2.51	0.78	3.0
2.441	0.763	0±1	1.0	1.26	0.57	3.0
2.480	-0.919	0±1	1.0	1.26	0.40	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	5.108	5±1	6.0	3.98	1.23	3.0
2.441	2.958	3±1	4.0	2.51	1.15	3.0
2.480	1.172	1±1	2.0	1.58	0.50	3.0
Bluetooth Mode (8DPSK)						
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	5.477	5±1	6.0	3.98	1.23	3.0
2.441	3.294	3±1	4.0	2.51	1.15	3.0
2.480	1.547	2±1	3.0	1.58	0.50	3.0

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.

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