

RF Exposure Evaluation

FCC ID: 2AXQX-4001230

1. Client Information

Applicant	:	Marpac, LLC
Address	:	2015 Capital Drive, Wilmington, NC 28405 USA
Manufacturer	:	Shen zhen Hi-FiD Electronics Tech Co., Ltd
Address	:	4F~ 5F B7 & 3F B17, Hengfeng Industrial Town, Zhoushi Road, Bao'an District, Shenzhen City, China. 518126.

2. General Description of EUT

EUT Name	:	Duet	
Model(s) No.	:	4001230	
Model Different	:	N/A	
Product Description	:	Operation Frequency:	Bluetooth V5.0(BT): 2402~2480 MHz
		Number of Channel:	Bluetooth 5.0(BT): 79 channels
		RF Output Power:	0.445dBm (Max)
		Antenna Gain:	0.5dBi PCB Antenna
		Modulation Type:	GFSK, π /4-DQPSK
		Bit Rate of Transmitter:	1/2Mbps
Power Supply	:	Input: DC 5V1A	
Software Version	:	N/A	
Hardware Version	:	N/A	
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:

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

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

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	-0.146	0 ± 1	1.0	1.2589	0.390	3.0
2.441	-0.591	0 ± 1	1.0	1.2589	0.393	3.0
2.480	-1.169	0 ± 1	1.0	1.2589	0.397	3.0
Bluetooth Mode ($\pi/4$ -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	0.445	0 ± 1	1.0	1.2589	0.390	3.0
2.441	-0.044	0 ± 1	1.0	1.2589	0.393	3.0
2.480	-0.596	0 ± 1	1.0	1.2589	0.397	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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