

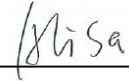
## RF Exposure Evaluation Report

**Report Reference No.**..... : **MTWG22060417-H**

**FCC ID**..... : **QWI-SBT**

Compiled by

( position+printed name+signature)..: File administrators Alisa Luo



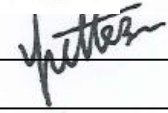
Supervised by

( position+printed name+signature)..: Test Engineer Sunny Deng



Approved by

( position+printed name+signature)..: Manager Yvette Zhou



Date of issue..... : **June 09, 2022**

**Representative Laboratory Name. :** **Shenzhen Most Technology Service Co., Ltd.**

Address..... : No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park,  
Nanshan, Shenzhen, Guangdong, China.

**Applicant's name**..... : **AFCO INC.**

Address..... : **122 Gayoso Ave Memphis Tennessee United States**

**Test specification/ Standard**..... : **47 CFR Part 1.1307**

**47 CFR Part 1.1310**

**KDB447498D01 General RF Exposure Guidance v06**

TRF Originator..... : Shenzhen Most Technology Service Co., Ltd.

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**Test item description**..... : Bluetooth Controller

Trade Mark..... : MEMPHIS

Manufacturer..... : **Medeli Musical Instrument (Zhuhai) Co.,Ltd.**

Model/Type reference..... : SBT4

Listed Models ..... : SBT1,SBT2,SBT3

Modulation Type..... : GFSK,  $\pi/4$ DQPSK, 8DPSK

Operation Frequency..... : From 2402MHz to 2480MHz

Hardware Version..... : SBT3/4-V1.0

Software Version..... : SBT4-V1.0

Rating..... : DC12V

Result..... : **PASS**

**TEST REPORT**

Equipment under Test : Bluetooth Controller

Model /Type : SBT4

Listed Models : SBT1,SBT2,SBT3

Remark : Only the model name is different

Applicant : **AFCO INC.**

Address : **122 Gayoso Ave Memphis Tennessee United States**

Manufacturer : **ZHEJIANG BOSS ELECTRONICS CO., LTD**

Address : No2189, Jiashan Road, Dayun Industrial Zone, Jiashan, Zhejiang

<b>Test Result:</b>	<b>PASS</b>
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The test report merely corresponds to the test sample.  
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

## 1. Revision History

Revision	Issue Date	Revisions	Revised By
00	2022-06-09	Initial Issue	Alisa Luo

## 2. SAR Evaluation

### 2.1 RF Exposure Compliance Requirement

#### 2.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

##### 4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

#### 2.1.2 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3–3.0 .....	614	1.63	*(100)	6
3.0–30 .....	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30–300 .....	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3–1.34 .....	614	1.63	*(100)	30
1.34–30 .....	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30–300 .....	27.5	0.073	0.2	30
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$  Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

**2.1.3 EUT RF Exposure**

Antenna Gain: 1.7dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.2 in linear scale. Output Power Into Antenna &amp; RF Exposure Evaluation Distance:

BLE

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	1.86	1.86 ± 1	2.86
Middle(2440MHz)	2.24	2.24 ± 1	3.24
Highest(2480MHz)	2.50	2.50 ± 1	3.50

BLE

Worst case: GFSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Maximum Peak Conducted Output Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit	Result
Highest(2480 MHz)	3.50	2.24	1.7	0.0006	1.0	Pass

Note: 1) Refer to report **MTWG22060417-R1** for EUT test Max Conducted average Output Power value.Note: 2)  $P_d = (P_{out} * G) / (4 * \pi * R^2) = (2.24 * 1.48) / (4 * 3.1416 * 20^2) = 0.0006$ 

Note: 3) EUT's Bluetooth module is more than 20cm away from the human body.

EDR

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	-2.20	-2.20 ± 1	-1.20
Middle(2441MHz)	-2.84	-2.84 ± 1	-1.84
Highest(2480MHz)	-3.92	-3.92 ± 1	-2.92

π/4DQPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	-0.33	-0.33 ± 1	0.67
Middle(2441MHz)	-1.06	-1.06 ± 1	-0.06
Highest(2480MHz)	-2.01	-2.01 ± 1	-1.01

8DPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	-0.21	-0.21 ± 1	0.79
Middle(2441MHz)	-0.81	-0.81 ± 1	0.19
Highest(2480MHz)	-1.77	-1.77 ± 1	-0.77

EDR

Worst case: 8DPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Maximum Peak Conducted Output Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit	Result
Highest(2402 MHz)	0.79	1.20	1.7	0.0003	1.0	Pass

Note: 1) Refer to report **MTWG22060417-R1** for EUT test Max Conducted average Output Power value.

Note: 2)  $P_d = (P_{out} * G) / (4 * \pi * R^2) = (1.20 * 1.48) / (4 * 3.1416 * 20^2) = 0.0003$

Note: 3) EUT's Bluetooth module is more than 20cm away from the human body.

.....**THE END OF REPORT**.....