

RF Exposure Evaluation Report

Report Reference No.....: MTEB22120196-H

FCC ID.....: 2AJJB-SP-70

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Applicant's name.....: SHENZHEN MAONO TECHNOLOGY CO., LTD

Address 401,Building47,SoftwareTown of Universiade,No.8288 Longgang
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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 Karaoke Machine With Wireless Microphones

Trade Mark sudotack

Manufacturer Guangdong Dingchuang Smart Manufacturing Company Limited

Model/Type reference.....: SP-70

Listed Models SP-70A、SP-70B

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

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

Hardware Version.....: V1.2

Software Version V 1.0

Rating DC 5V by USB Port

DC 3.7V by Battery

Result.....: PASS

TEST REPORT

Equipment under Test : Karaoke Machine With Wireless Microphones

Model /Type : SP-70

Listed Models : SP-70A、 SP-70B

Remark : Only the number of microphone accessories is different, and everything else is the same.

Applicant : SHENZHEN MAONO TECHNOLOGY CO., LTD

Address : 401,Building47,SoftwareTown of Universiade,No.8288 Longgang Rd.,He'ao Community,Yuanshan Street,Longgang District, Shenzhen,China

Manufacturer : Guangdong Dingchuang Smart Manufacturing Company Limited

Address : Room 401, Building 8, Fenggang Tianan Digital City, No.208, Fenggang Section, Dongshen Road, Fenggang Town, Dongguan City, Guangdong Province

Test Result:	PASS
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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	2022-12-23	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 ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	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: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$ Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d is the limit of MPE, 1 mW/cm². 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: 1.2dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.4 in linear scale. Output Power Into Antenna & RF Exposure Evaluation Distance:

EDR

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	1.20	1.20 ± 1	2.20
Middle(2441MHz)	1.03	1.03 ± 1	2.03
Highest(2480MHz)	1.06	1.06 ± 1	2.06

$\pi/4$ DQPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	0.99	0.99 ± 1	1.99
Middle(2441MHz)	1.41	1.41 ± 1	2.41
Highest(2480MHz)	1.00	1.00 ± 1	2.00

8DPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	1.07	1.07 ± 1	2.07
Middle(2441MHz)	1.11	1.11 ± 1	2.11
Highest(2480MHz)	1.12	1.12 ± 1	2.12

EDR

Worst case: $\pi/4$ DQPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Maximum Peak Conducted Output Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Highest(2441 MHz)	2.41	1.74	1.2	0.0004	1.0	Pass

Note: 1) Refer to report **MTEB22120196-R** for EUT test Max Conducted average Output Power value.Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (1.74 \cdot 1.32) / (4 \cdot 3.1416 \cdot 20^2) = 0.0004$

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

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