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RF Exposure Evaluation Report

Report No.: CQASZ20211001812E-02
Applicant: Shenzhen Mengxiang Technology Co., Ltd
Address of Applicant: Floor 3, Building 16, Tongfucun park, Dalang Street, Longhua District, Shenzhen
Equipment Under Test (EUT):
EUT Name: Bluetooth Speaker
Model No.: D47CH-6
Test Model No.: D47CH-6
Brand Name: MEREDO
FCC ID: 2AN3ID47CH
Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2021-10-22
Date of Test: 2021-10-22 to 2021-12-22
Date of Issue: 2022-02-07
Test Result: **PASS***

*In the configuration tested, the EUT complied with the standards specified above

Tested By: Lewis Zhou

(Lewis Zhou)

Reviewed By: Rock Huang

(Rock Huang)

Approved By: Jack Ai

(Jack Ai)



Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20211001812E-02	Rev.01	Initial report	2022-02-07

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2 General Information

2.1 Client Information

Applicant:	Shenzhen Mengxiang Technology Co., Ltd
Address of Applicant:	Floor 3, Building 16, Tongfucun park, Dalang Street, Longhua District, Shenzhen
Manufacturer:	Shenzhen Mengxiang Technology Co., Ltd
Address of Manufacturer:	Floor 3, Building 16, Tongfucun park, Dalang Street, Longhua District, Shenzhen
Factory:	Shenzhen Mengxiang Technology Co., Ltd
Address of Factory:	Floor 3, Building 16, Tongfucun park, Dalang Street, Longhua District, Shenzhen

2.2 General Description of EUT

Product Name:	Bluetooth Speaker
Model No.:	D47CH-6
Test Model No.:	D47CH-6
Trade Mark:	MEREDO
Software Version:	V1.0
Hardware Version:	V1.0
#1 adapter:	MODEL NO.:CW1804000US INPUT:100-240V~50/60Hz OUTPUT:18V= 4000mA
#2 adapter:	MODEL:J652-1804000UX INPUT:100-240V~50/60Hz 1.5A OUTPUT:18.0V= 4A 72.0W

2.3 General Description of BT Classic

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V5.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channel:	79
Transfer Rate:	1Mbps/2Mbps/3Mbps
Hopping Channel Type:	Adaptive Frequency Hopping systems
Product Type:	<input type="checkbox"/> Mobile <input type="checkbox"/> Portable <input checked="" type="checkbox"/> Fix Location
Antenna Type:	PCB antenna
Antenna Gain:	-0.68dBi

3 SAR Evaluation

3.1 RF Exposure Compliance Requirement

3.1.1 Limitst

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

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 id 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.

3.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3.1.3 EUT RF Exposure

1) For BT Classic

Antenna Gain: -0.68dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 0.855 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-4.040	-4±1	-3	0.501
Middle(2441MHz)	-3.750	-4±1	-3	0.501
Highest(2480MHz)	-4.020	-4±1	-3	0.501
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-1.880	-2±1	-1	0.794
Middle(2441MHz)	-1.880	-2±1	-1	0.794
Highest(2480MHz)	-2.080	-2±1	-1	0.794
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-1.320	-1±1	0	1
Middle(2441MHz)	-1.700	-2±1	-1	0.794
Highest(2480MHz)	-1.570	-2±1	-1	0.794

The worst case:

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
1	-0.68	0.00017	1.0	PASS

Note: 1) Refer to report No. CQASZ20211001812E-01 for EUT test Max Conducted Peak Output Power value.

2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (1 * 0.855) / (4 * 3.1416 * 20^2) = 0.00017$

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

*** END OF REPORT ***