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RF Exposure Evaluation Report

Report No.:	CQASZ20201101421E-03
Applicant:	Shenzhen Muke Technology Co.,Ltd
Address of Applicant:	802, 8/F, Jiaanda Building, Huafan Road, Dalang Street, Longhua Dist, Shenzhen, China
Equipment Under Test (EUT):	
EUT Name:	True Wireless Earphones
Model No.:	BT-0C4, MINISO-M1
Test Model No.:	MINISO-M1
Brand Name:	MUCRO, MINISO
FCC ID:	2ANYH-BT0C4
Standards:	47 CFR Part 1.1307 47 CFR Part 2.1093 KDB447498D01 General RF Exposure Guidance v06
Date of Receipt:	2020-11-27
Date of Test:	2020-11-27 to 2020-12-04
Date of Issue:	2020-12-04
Test Result:	**PASS***

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

Tested By: Martin Lee

(Martin Lee)

Reviewed By: Sheek Luo

(Sheek Luo)

Approved By:

(Jack Ai)

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20201101421E-03	Rev.01	Initial report	2020-12-04

2 Contents

3 General Information

3.1 Client Information

Applicant:	Shenzhen Muke Technology Co.,Ltd
Address of Applicant:	802, 8/F, Jiaanda Building, Huafan Road, Dalang Street, Longhua Dist, Shenzhen, China
Manufacturer:	Huizhou Willong Zhanye Industrial Co., Ltd.
Address of Manufacturer:	1st Rainbow Rd, Yonghu Town, Huiyang Dist, Huizhou, Guangdong
Factory:	Huizhou Willong Zhanye Industrial Co., Ltd.
Address of Factory:	1st Rainbow Rd, Yonghu Town, Huiyang Dist, Huizhou, Guangdong

3.2 General Description of EUT

Product Name:	True Wireless Earphones	
Model No.:	BT-0C4, MINISO-M1	
Test Model No.:	MINISO-M1	
Trade Mark:	MUCRO, MINISO	
EUT Supports Radios application:	Bluetooth dual mode: 2402-2480MHz	
Hardware Version:	AD6976D	
Software Version:	5.1	
EUT Power Supply:	Left ear:	lithium battery: DC 3.7V, Charge by DC 5.0V
	Right ear:	lithium battery: DC 3.7V, Charge by DC 5.0V
	The earphone box:	lithium battery: DC 3.7V, 300mAh, Charge by DC 5.0V

3.3 General Description of BT

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V5.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK
Number of Channel:	79
Transfer Rate:	1Mbps/2Mbps
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	☐ Mobile ☒ Portable ☐ Fix Location
Test Software of EUT:	FCC Assist 1.0.1.2(manufacturer declare)
Antenna Type:	Chip Antenna
Antenna Gain:	3.09dBi

3.4 General Description of BLE

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V5.0
Modulation Type:	GFSK
Transfer Rate:	1Mbps, 2Mbps

Number of Channel:	40
Sample Type:	☐ Mobile ☒ Portable ☐ Fix Location
Test Software of EUT:	FCC Assist 1.0.1.2(manufacturer declare)
Antenna Type:	Chip Antenna
Antenna Gain:	3.09dBi

Note:

1. Model No.: BT-0C4, MINISO-M1

Only the model MINISO-M1 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance and model name.

2. Since the RF parameters of the left and right earplugs are the same, only the right ear was tested in this report.

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4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 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.

4.1.2 Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

f(GHz) is the RF channel transmit frequency in GHz
Power and distance are rounded to the nearest mW and mm before calculation[17]
The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

4.1.3 EUT RF Exposure

1) For BT

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-5.030	-5.5±1	-4.5	0.355
Middle(2441MHz)	-3.660	-4.5±1	-3.5	0.447
Highest(2480MHz)	-3.110	-4.0±1	-3.0	0.501
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-4.810	-5.5±1	-4.5	0.355
Middle(2441MHz)	-3.440	-4.0±1	-3.0	0.501
Highest(2480MHz)	-2.840	-3.5±1	-2.5	0.562

Worst case: π/4DQPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-4.810	-5.5±1	-4.5	0.355	0.110	3.0
Middle (2441MHz)	-3.440	-4.0±1	-3.0	0.501	0.157	
Highest (2480MHz)	-2.840	-3.5±1	-2.5	0.562	0.177	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20201101421E-01

2) For BLE

Measurement Data

GFSK mode(1Mbps)				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-4.99	-5.5±1	-4.5	0.355
Middle(2440MHz)	-3.56	-4.0±1	-3.0	0.501
Highest(2480MHz)	-3.04	-3.5±1	-2.5	0.562
GFSK mode(2Mbps)				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-4.92	-5.5±1	-4.5	0.355
Middle(2440MHz)	-3.46	-4.0±1	-3.0	0.501
Highest(2480MHz)	-2.92	-3.5±1	-2.5	0.562

Worst case: GFSK mode(2Mbps)						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-4.92	-5.5±1	-4.5	0.355	0.110	3.0
Middle (2440MHz)	-3.46	-4.0±1	-3.0	0.501	0.157	
Highest (2480MHz)	-2.92	-3.5±1	-2.5	0.562	0.177	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20201101421E-02
BDR and BLE can not simultaneous transmitting at same time.