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RF Exposure Evaluation Report

Report No. : CQASZ20190100043E-03

Applicant: SHENZHEN ZIJIEYUANZI TECHNOLOGY CO., LTD.

Address of Applicant: 1115, No.6 Building, Xishixiang, Changkeng Road, Bantian Street, Longgang District, Shenzhen, China

Manufacturer: SHENZHENSHI KEYUEDUO INTELLIGENT ELECTRONICS CO., LTD

Address of Manufacturer: 4 floor, Building A, Lijiafa industrial area, Yongtaidong Road, Xintang industrial area, Baishixiadong District, Fuyong Street, Baoan District, Shenzhen

Equipment Under Test (EUT):

Product: Bluetooth headset

All Model No.: G1816, G1810, G1811, G1910, G1911, G1915, G1916, G1918, G2016, G2018

Test Model No.: G1816

Brand Name: GoNovate

FCC ID: 2ALJI-G1618

Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06

Date of Test: 2019-01-14 to 2019-01-24

Date of Issue: 2019-01-24

Test Result : PASS*

Tested By:

Daisy Qin

(Daisy Qin)

Reviewed By:

Aaron Ma

(Aaron Ma)

Approved By:

Jack Ai

(Jack Ai)



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

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20190100043E-03	Rev.01	Initial report	2019-01-24

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3 General Information

3.1 Client Information

Applicant:	SHENZHEN ZIJIEYUANZI TECHNOLOGY CO., LTD.
Address of Applicant:	1115, No.6 Building, Xishixiang, Changkeng Road, Bantian Street, Longgang District, Shenzhen, China
Manufacturer:	SHENZHENSHI KEYUEDUO INTELLIGENT ELECTRONICS CO., LTD
Address of Manufacturer:	4 floor, Building A, Lijiafa industrial area, YongtaidongRoad, Xintang industrial area, Baishixiadong District, Fuyong Street, Baoan District, Shenzhen

3.2 General Description of EUT

Product Name:	Bluetooth headset
All Model No.:	G1816, G1810, G1811, G1910, G1911, G1915, G1916, G1918, G2016, G2018
Test Model No.:	G1816
Trade Mark:	GoNovate
Hardware Version:	V1.0
Software Version:	5.0
Bluetooth Version:	V5.0
Sample Type:	☐ Mobile ☒ Portable ☐ Fix Location
Power Supply:	lithium battery:DC3.7V, Charge by DC5.0V

3.3 General Description of BT

Operation Frequency:	2402MHz~2480MHz
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
Test Software of EUT:	Bluetooth RF test Tool (manufacturer declare)
Antenna Type:	PCB antenna
Antenna Gain:	0dBi

3.4 General Description of BLE

Operation Frequency:	2402MHz~2480MHz
Modulation Type:	GFSK
Transfer Rate:	1Mbps/2Mbps
Number of Channel:	40
Test Software of EUT:	Bluetooth RF test Tool (manufacturer declare)
Antenna Type:	PCB antenna
Antenna Gain:	0dBi

Note:

All model: G1816, G1810, G1811, G1910, G1911, G1915, G1916, G1918, G2016, G2018

1. Only the model G1816 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 left and right earbud have identical RF parameter, we tested only the left ear.

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:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{(\text{min. test separation distance, mm})} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation¹⁷

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

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	2.400	2.0±1	3.0	1.995
Middle(2441MHz)	2.870	2.0±1	3.0	1.995
Highest(2480MHz)	3.640	3.0±1	4.0	2.512
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	2.490	2.0±1	3.0	1.995
Middle(2441MHz)	2.800	2.0±1	3.0	1.995
Highest(2480MHz)	3.540	3.0±1	4.0	2.512
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	2.480	2.0±1	3.0	1.995
Middle(2441MHz)	2.800	2.0±1	3.0	1.995
Highest(2480MHz)	3.650	3.0±1	4.0	2.512

Worst case: GFSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	2.480	2.0±1	3.0	1.995	0.62	3.0
Middle (2441MHz)	2.800	2.0±1	3.0	1.995	0.62	
Highest (2480MHz)	3.650	3.0±1	4.0	2.512	0.79	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20190100043E-01

2) For BLE

Measurement Data

GFSK(1Mbps) mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	0.96	0±1	1.0	1.259
Middle(2440MHz)	1.9	1.0±1	2.0	1.585
Highest(2480MHz)	2.8	2.0±1	3.0	1.995

Worst case: GFSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	0.96	0±1	1.0	1.259	0.39	3.0
Middle (2440MHz)	1.9	1.0±1	2.0	1.585	0.50	
Highest (2480MHz)	2.8	2.0±1	3.0	1.995	0.63	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20190100043E-02

BDR, EDR and BLE can not simultaneous transmitting at same time.