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RF Exposure Evaluation Report

Report No. : CQASZ20200400319E-02
Applicant: Dongguan Hele Electronics Co.,Ltd
Address of Applicant: Dalingya Industrial Zone, Daojiao Town, Dongguan City, Guangdong, China
Equipment Under Test (EUT):
EUT Name: TWS Bluetooth earphones
Model No.: In2012
Brand Name: QCY
FCC ID: RDR-IN2012
Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2020-04-30
Date of Test: 2020-04-28 to 2020-05-13
Date of Issue: 2020-05-14
Test Result : PASS*

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

Tested By:

Tom Chen

(Tom Chen)

Reviewed By:

Sheek Luo

(Sheek Luo)

Approved By:

Jack Ai

(Jack Ai)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20200400319E-02	Rev.01	Initial report	2020-05-14

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3 General Information

3.1 Client Information

Applicant:	Dongguan Hele Electronics Co.,Ltd
Address of Applicant:	Dalingya Industrial Zone, Daojiao Town, Dongguan City, Guangdong, China
Manufacturer:	Dongguan Hele Electronics Co.,Ltd
Address of Manufacturer:	Dalingya Industrial Zone, Daojiao Town, Dongguan City, Guangdong, China
Factory:	Dongguan Hele Electronics Co.,Ltd
Address of Factory:	Dalingya Industrial Zone, Daojiao Town, Dongguan City, Guangdong, China

3.2 General Description of EUT

Product Name:	TWS Bluetooth earphones
Model No.:	In2012
Brand Name:	QCY
Hardware Version:	V5.0
Software Version:	V5.0
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V5.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Transfer Rate:	1Mbps/2Mbps/3Mbps
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Test Software of EUT:	Bluetooth FCC Tool 9.00.01 (manufacturer declare)
Antenna Type:	Chip Antenna
Antenna Gain:	2.2dBi
Power Supply:	lithium battery:DC 3.7V 0.159Wh, Charge by DC 5.0V

Note:

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

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)	0.180	0.5±1	1.5	1.413
Middle(2441MHz)	0.070	0.5±1	1.5	1.413
Highest(2480MHz)	0.600	0.5±1	1.5	1.413
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-4.170	-4.0±1	-3	0.501
Middle(2441MHz)	-4.180	-4.0±1	-3	0.501
Highest(2480MHz)	-3.630	-4.0±1	-3	0.501
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-4.240	-4.0±1	-3	0.501
Middle(2441MHz)	-4.270	-4.0±1	-3	0.501
Highest(2480MHz)	-3.610	-4.0±1	-3	0.501

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)	0.180	0.5±1	1.5	1.413	0.438	3.0
Middle (2441MHz)	0.070	0.5±1	1.5	1.413	0.439	
Highest (2480MHz)	0.600	0.5±1	1.5	1.413	0.445	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20200400319E-01