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# RF Exposure Evaluation Report

**Report No. :** CQASZ20200500431E-03  
**Applicant:** Dongguan Liesheng Electronic Co., Ltd.  
**Address of Applicant:** 13/F, Project Phrase 2 of GaoshengTechTower, No.5 Longxi Road, Nancheng, Dongguan, Guangdong, China  
**Equipment Under Test (EUT):**  
**EUT Name:** Haylou GT1 True Wireless Earbuds  
**Model No.:** Haylou GT1  
**Brand Name:** Haylou  
**FCC ID:** 2AMQ6-GT01  
**Standards:** 47 CFR Part 1.1307  
47 CFR Part 2.1093  
KDB447498D01 General RF Exposure Guidance v06  
**Date of Receipt:** 2020-05-25  
**Date of Test:** 2020-05-25 to 2020-05-29  
**Date of Issue:** 2020-05-29  
**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
CQASZ20200500431E-03	Rev.01	Initial report	2020-05-29

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### 3 General Information

#### 3.1 Client Information

Applicant:	Dongguan Liesheng Electronic Co., Ltd.
Address of Applicant:	13/F, Project Phrase 2 of GaoshengTechTower, No.5 Longxi Road, Nancheng, Dongguan, Guangdong, China
Manufacturer:	Dongguan Liesheng Electronic Co., Ltd.
Address of Manufacturer:	13/F, Project Phrase 2 of GaoshengTechTower, No.5 Longxi Road, Nancheng, Dongguan, Guangdong, China
Factory:	Dongguan Liesheng Electronic Co., Ltd.
Address of Factory:	13/F, Project Phrase 2 of GaoshengTechTower, No.5 Longxi Road, Nancheng, Dongguan, Guangdong, China

#### 3.2 General Description of EUT

Product Name:	Haylou GT1 True Wireless Earbuds	
Model No.:	Haylou GT1	
Trade Mark:	Haylou	
EUT Supports Radios application:	Bluetooth Dual mode 2402-2480MHz	
Hardware Version:	V1.0	
Software Version:	V1.0	
Sample Type:	<input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location	
Power Supply:	Left ear:	lithium battery: DC 3.7V, 0.16Wh, Charge by DC 5.0V
	Right ear:	lithium battery: DC 3.7V, 0.16Wh, Charge by DC 5.0V
	The earphone box:	lithium battery: DC 3.7V, 310mAh, Charge by DC 5.0V

#### 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:	Chip antenna
Antenna Gain:	2.2dBi

#### 3.4 General Description of BLE

Operation Frequency:	2402MHz~2480MHz
Modulation Type:	GFSK
Transfer Rate:	1Mbps, 2Mbps
Number of Channel:	40

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Test Software of EUT:	Bluetooth RF Test Tool (manufacturer declare)
Antenna Type:	Chip antenna
Antenna Gain:	2.2dBi

Note: Since the left and right earbuds have identical RF parameter, only the left ear was tested.

## 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  $\leq 50$  mm are determined by:

$$\left[ \frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0$$
 for 1-g SAR and  $\leq 7.5$  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<sup>17</sup>

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  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)	-1.680	-2.5±1	-1.5	0.708
Middle(2441MHz)	-1.140	-2.0±1	-1.0	0.794
Highest(2480MHz)	0.240	-0.5±1	0.5	1.122
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	0.950	0±1	1.0	1.259
Middle(2441MHz)	1.480	0.5±1	1.5	1.413
Highest(2480MHz)	2.760	2.0±1	3.0	1.995
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	1.510	1.0±1	2.0	1.585
Middle(2441MHz)	2.100	1.5±1	2.5	1.778
Highest(2480MHz)	3.410	2.5±1	3.5	2.239

Worst case: 8DPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	1.510	1.0±1	2.0	1.585	0.491	3.0
Middle (2441MHz)	2.100	1.5±1	2.5	1.778	0.556	
Highest (2480MHz)	3.410	2.5±1	3.5	2.239	0.705	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20200500431E-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)	-1.73	-2.5±1	-1.5	0.708
Middle(2440MHz)	3.01	2.5±1	3.5	2.239
Highest(2480MHz)	0.05	-0.5±1	0.5	1.122
GFSK(2Mbps) mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-1.45	-2.0±1	-1.0	0.794
Middle(2440MHz)	3.24	2.5±1	3.5	2.239
Highest(2480MHz)	0.29	-0.5±1	0.5	1.122

Worst case: GFSK(2Mbps)						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-1.45	-2.0±1	-1.0	0.794	0.246	3.0
Middle (2440MHz)	3.24	2.5±1	3.5	2.239	0.700	
Highest (2480MHz)	0.29	-0.5±1	0.5	1.122	0.353	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20200500431E-02

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