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RF Exposure Evaluation Report

Report No. : CQASZ20180700064E-02

Applicant: Altigo Inc

Address of Applicant: 6905 S. 1300 E #186, Cottonwood Heights, Utah, United States, 84047

Manufacturer: Altigo Inc

Address of Manufacturer: 6905 S. 1300 E #186, Cottonwood Heights, Utah, United States, 84047

Factory: Dongguan Kailai Eletronic Co.,Ltd

Address of Factory: No 36# Industrial Main Road, 2nd District (Shahukou), Eastern Industrial Park, Changping Town, Dongguan City, Guangdong Province, China

Equipment Under Test (EUT):

Product: Altigo ANC Headphone

Model No.: AOEHA2029

Brand Name: Altigo

FCC ID: 2AQRJ-AAIYHA20

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

Date of Test: 2018-07-20 to 2018-07-24

Date of Issue: 2018-07-24

Test Result : PASS*

Tested By:

(Martin Lee)

Reviewed By:

(Aaron Ma)

Approved By:

(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
CQASZ20180700064E-02	Rev.01	Initial report	2018-07-24

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3 General Information

3.1 Client Information

Applicant:	Altigo Inc
Address of Applicant:	6905 S. 1300 E #186, Cottonwood Heights, Utah, United States, 84047
Manufacturer:	Altigo Inc
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Factory:	Dongguan Kailai Eletronic Co.,Ltd
Address of Factory:	No 36# Industrial Main Road, 2nd District (Shahukou), Eastern Industrial Park, Changping Town, Dongguan City, Guangdong Province, China

3.2 General Description of EUT

Product Name:	Altigo ANC Headphone
Model No.:	AOEHA2029
Trade Mark:	Altigo
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V4.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	portable production
Test Software of EUT:	Bule Test3 (manufacturer declare)
Antenna Type:	Ceramic antenna
Antenna Gain:	1.0dBi
Power Supply:	lithium battery: Model: EN502540 DC3.7V, 450mAh, Charge by DC5.0V

Note: Only one model number: AOEHA2029, but it comes in four colors (white, black, blue and red)

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

For BT:

Measurement Data

GFSK mode	
Test channel	Peak Output Power (dBm)
Lowest	0.330
Middle	4.070
Highest	4.780
π/4DQPSK mode	
Test channel	Peak Output Power (dBm)
Lowest	-2.030
Middle	2.460
Highest	3.350
8DPSK mode	
Test channel	Peak Output Power (dBm)
Lowest	-1.580
Middle	2.650
Highest	3.630

The Max Conducted Peak Output Power is 4.78dBm in highest channel(2.480GHz);

The best case gain of the antenna is 1.0dBi.

EIRP= 4.78dBm + 1.0dBi = 5.78dBm

5.78dBm logarithmic terms convert to numeric result is nearly 3.784mW

According to the formula. calculate the EIRP test result:

$$\left[\frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} \right] \cdot \sqrt{f(\text{GHz})}$$

General RF Exposure = $(3.784\text{mW} / 5 \text{ mm}) \times \sqrt{2.480\text{GHz}} = 1.192$ ①

SAR requirement:

S= 3.0

② ;

① < ②.

So the SAR report is not required.

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20180700064E-01