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RF Exposure Evaluation Report

Report No. : CQASZ20181000002E-02

Applicant: SHENZHEN WAHCHING TECHNOLOGY CO., LTD.

Address of Applicant: Penglongpan Hi-Tech Industiral Park, Dafu Industrial Zone, Guanlan Street, Longhua, Shenzhen, China.

Manufacturer: SHENZHEN WAHCHING TECHNOLOGY CO., LTD.

Address of Manufacturer: Penglongpan Hi-Tech Industiral Park, Dafu Industrial Zone, Guanlan Street, Longhua, Shenzhen, China.

Factory: SHENZHEN WAHCHING TECHNOLOGY CO., LTD.

Address of Factory: Penglongpan Hi-Tech Industiral Park, Dafu Industrial Zone, Guanlan Street, Longhua, Shenzhen, China.

Equipment Under Test (EUT):

Product: Sports Bluetooth Headphone

All Model No.: X29, Avantree NB16, Avantree HT4186, PX-5, PX-9, auLife-N16, X9, X10, X11, X28, X30, BT-26, BT-27, BT-28, BT-29, BT-30, ISYS-N1, MiS-z2901, N9 Plus

Test Model No.: X29

Brand Name: N/A

FCC ID: 2AJNJ-X29

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

Date of Test: 2018-10-12 to 2018-10-16

Date of Issue: 2018-10-16

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
CQASZ20181000002E-02	Rev.01	Initial report	2018-10-16

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3 General Information

3.1 Client Information

Applicant:	SHENZHEN WAHCHING TECHNOLOGY CO., LTD.
Address of Applicant:	Penglongpan Hi-Tech Industiral Park, Dafu Industrial Zone,Guanlan Street, Longhua, Shenzhen, China.
Manufacturer:	SHENZHEN WAHCHING TECHNOLOGY CO., LTD.
Address of Manufacturer:	Penglongpan Hi-Tech Industiral Park, Dafu Industrial Zone,Guanlan Street, Longhua, Shenzhen, China.
Factory:	SHENZHEN WAHCHING TECHNOLOGY CO., LTD.
Address of Factory:	Penglongpan Hi-Tech Industiral Park, Dafu Industrial Zone,Guanlan Street, Longhua, Shenzhen, China.

3.2 General Description of EUT

Product Name:	Sports Bluetooth Headphone
All Model No.:	X29, Avantree NB16, Avantree HT4186, PX-5, PX-9, auLife-N16, X9, X10, X11, X28, X30, BT-26, BT-27, BT-28, BT-29, BT-30, ISYS-N1, MiS-z2901, N9 Plus
Test Model No.:	X29
Trade Mark:	N/A
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V4.1
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:	Blue test (manufacturer declare)
Antenna Type:	Integral antenna
Antenna Gain:	0dBi
Power Supply:	lithium battery: DC3.7V, 130mAh, Charge by DC5.0V

Note:

All model: X29, Avantree NB16, Avantree HT4186, PX-5, PX-9, auLife-N16, X9, X10, X11, X28, X30, BT-26, BT-27, BT-28, BT-29, BT-30, ISYS-N1, MiS-z2901, N9 Plus

Only the model X29 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.

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:

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

$f(\text{GHz})$ 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	2.430
Middle	3.870
Highest	2.400
$\pi/4$ DQPSK mode	
Test channel	Peak Output Power (dBm)
Lowest	1.470
Middle	2.980
Highest	1.480
8DPSK mode	
Test channel	Peak Output Power (dBm)
Lowest	1.860
Middle	3.410
Highest	1.970

The Max Conducted Peak Output Power is 3.87dBm in highest channel(2.441GHz);

The best case gain of the antenna is 0dBi.

EIRP= 3.87dBm + 0dBi = 3.87dBm

3.87dBm logarithmic terms convert to numeric result is nearly 2.438mW

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 = $(2.438\text{mW} / 5 \text{ mm}) \times \sqrt{2.441\text{GHz}} = 0.76$ 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.: CQASZ20181000002E-01