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RF Exposure Evaluation Report

Report No.: CQASZ20240100088E-02
Applicant: TV Ears Inc.
Address of Applicant: 2701 Via Orange Way Ste 1 Spring Valley, CA 91978
Equipment Under Test (EUT):
EUT Name: TV·Ears Long Range TV Speaker System
Model No.: TV·Ears Long Range Mini Transmitter 2221,
Voice Clarifying TV Listening System 22741,
TV·Ears Long Range Headset 22621,
TV·Ears Long Range TV Speaker System, TV Speaker Only,
TV Ears Headphone System - Long Range 5.8 System 22281,
TV Ears SafeT Sound Headphone 22622,
TV·Ears 5.8 GHz-Voice Clarifying Headphones Only 22212
Test Model No.: TV·Ears Long Range TV Speaker System
Brand Name: TV·Ears
FCC ID: 2AUOK-TVEA02
Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2024-1-8
Date of Test: 2024-1-8 to 2024-1-15
Date of Issue: 2024-1-24
Test Result: **PASS***

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

Tested By: Lewis Zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Jack Ai
(Jack Ai)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20240100088E-02	Rev.01	Initial report	2024-1-24

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3 General Information

3.1 Client Information

Applicant:	TV Ears Inc.
Address of Applicant:	2701 Via Orange Way Ste 1Spring Valley, CA 91978
Manufacturer:	DONGGUAN WISIC ELECTRONIC CO., LTD.
Address of Manufacturer:	Rm301, 2nd Building, No.5 Songyin Road, Tangxia Town, Dongguan City, Guangdong Province, China
Factory:	DONGGUAN WISIC ELECTRONIC CO., LTD.
Address of Factory:	Rm301, 2nd Building, No.5 Songyin Road, Tangxia Town, Dongguan City, Guangdong Province, China

3.2 General Description of EUT

Product Name:	TV·Ears Long Range TV Speaker System
Model No.:	TV·Ears Long Range Mini Transmitter 2221, Voice Clarifying TV Listening System 22741, TV·Ears Long Range Headset 22621, TV·Ears Long Range TV Speaker System, TV Speaker Only, TV Ears Headphone System - Long Range 5.8 System 22281, TV Ears SafeT Sound Headphone 22622, TV·Ears 5.8 GHz-Voice Clarifying Headphones Only 22212
Test Model No.:	TV·Ears Long Range TV Speaker System
Trade Mark:	TV·Ears
Hardware Version:	V1.0
Software Version:	V1.0
Sample Type:	<input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable
Operation Frequency:	5730MHz-5845MHz
Channel Numbers:	3
Modulation Type:	GFSK
Antenna Type:	PCB antenna
Antenna Gain:	0 dBi
Power Supply:	Power by DC 5V 1A for Adapter Model: JK050100-S37USVU Input: 100-240V 50/60Hz 0.5A Output: 5V 1000mA

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:

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

$$e_{irp} = p_t \times g_t = (E \times d)^2 / 30$$

where:

p_t = transmitter output power in watts,

g_t = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, $10^{((dB_{\mu V/m})/20)/10^6}$,

d = measurement distance in meters (m)---3m,

$$\text{So } p_t = (E \times d)^2 / 30 / g_t$$

The worst case (refer to report CQASZ20240100088E-01) is below:

Antenna polarization: Horizontal		
Frequency (MHz)	Level (dBuV/m)	Polarization
5730	97.41	Peak
5730	93.26	Average

Antenna polarization: Vertical		
Frequency (MHz)	Level (dBuV/m)	Polarization
5730	96.00	Peak
5730	93.51	Average

For 5730MHz wireless:

Field strength = 97.41dB μ V/m @3m

Ant. gain 0dBi; so Ant numeric gain=1

$$\text{So } p_t = \{ [10^{(97.41/20)} / 10^6 \times 3]^2 / 30 / 1 \} \times 1000 \text{mW} = 1.652 \text{mW}$$

$$\text{So } (1.652 \text{mW} / 5 \text{mm}) \times \sqrt{0.3142 \text{GHz}} = 0.1852,$$

0.1852 < 3.0 for 1-g SAR

So the SAR report is not required.