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RF Exposure Evaluation Report

Report No.: CQASZ20210300319E-02
Applicant: HONGKONG VIMAI TECHNOLOGY CO.,LIMITED
Address of Applicant: FLAT/RM H29, 1/F PHASE 2 KWAI SHING IND BLDG NO.42-46, TAI LIN PAI ROAD KWAI CHUNG, HONG KONG
Equipment Under Test (EUT):
EUT Name: wireless microphone
Model No.: EP033-TYPE-C
Brand Name: N/A
FCC ID: 2AVLI-TYPE-C
Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2021-3-22
Date of Test: 2021-3-22 to 2021-4-16
Date of Issue: 2021-4-16
Test Result: **PASS***

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

Tested By:

Jun Li

(Jun Li)

Reviewed By:

Ares Liu

(Ares Liu)

Approved By:

Sheek Luo

(Sheek Luo)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20210300319E-02	Rev.01	Initial report	2021-4-16

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3 General Information

3.1 Client Information

Applicant:	HONGKONG VIMAI TECHNOLOGY CO.,LIMITED
Address of Applicant:	FLAT/RM H29, 1/F PHASE 2 KWAI SHING IND BLDG NO.42-46, TAI LIN PAI ROAD KWAI CHUNG, HONG KONG
Manufacturer:	SHEN ZHEN VIMAI TECHNOLOGY CO.,LTD
Address of Manufacturer:	Floor 3, building B, no. 5 huating road, tongsheng community, dalang street, longhua district, shenzhen
Factory:	SHEN ZHEN VIMAI TECHNOLOGY CO.,LTD
Address of Factory:	Floor 3, building B, no. 5 huating road, tongsheng community, dalang street, longhua district, shenzhen

3.2 General Description of EUT

Product Name:	wireless microphone
Model No.:	EP033-TYPE-C
Trade Mark:	N/A
Hardware Version:	EP033-TYPE-C-V1.4 EP033-MIC-v0.6
Software Version:	MIC-V1.4+EP033-TYPE-C-V1.4
Frequency Range:	2413MHz ~ 2460MHz
Modulation Type:	GFSK
Number of Channels:	3(declared by the client)
Sample Type:	☐ Mobile ☒ Portable ☐ Fix Location
Test Software of EUT:	Serial Debugging Assistant V1.3
Antenna Type:	PCB antenna
Antenna Gain:	0dBi
Power Supply:	Button battery 80mAh, DC DC3.7V-4.2V

4 RF Exposure 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

4.2 EUT RF Exposure Evaluation

1) For 2.4G

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

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 CQASZ20210300319E-01) is below:

Antenna polarization: Horizontal		
Frequency (MHz)	Level (dB μ V/m)	Polarization
2460	89.61	Peak
2460	86.86	Average

For 2460MHz wireless:

Field strength = 89.61dB μ V/m @3m

Ant. gain 0dBi; so Ant numeric gain=1.0

$$\text{So } p_t = \{ [10^{(89.61/20)/10^6} \times 3]^2 / 30 / 1.0 \} \times 1000 \text{mW} = 0.274 \text{mW}$$

$$\text{So } (0.274 \text{mW} / 5 \text{mm}) \times \sqrt{2.460 \text{GHz}} = 0.086,$$

$$0.086 < 3.0 \text{ for 1-g SAR}$$

So the SAR report is not required.