



# SAR Exemption Evaluation Report

Product Name : VR Motion Controller

Model No. : C1810

FCC ID : 2A5NV-C1810

Applicant : Qingdao Chuangjian Weilai Technology Co., Ltd

Address : Room 401, 4th Floor, Building 3, Qingdao

Research Institute, Beijing University of

Aeronautics and Astronautics, 393 Songling Road,

Laoshan District, Qingdao City, Shandong

Province

Date of Receipt : May. 27, 2022

Test Date : Jun. 06, 2022 ~ Jun. 24, 2022

Issued Date : Jul. 12, 2022

Report No. : 2250808R-RF-US-P20V01

Report Version : V1.0

The test results presented in this report relate only to the object tested.

The measurement result is considered in conformance with the requirement if it is within the prescribed limit.  
It is not necessary to account the uncertainty associated with the measurement result.

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# Test Report Certification

Issued Date : Jul. 12, 2022

Report No. : 2250808R-RF-US-P20V01

Product Name

: VR Motion Controller

Trademark



Applicant

: Qingdao Chuangjian Weilai Technology Co., Ltd

Address

: Room 401, 4th Floor, Building 3, Qingdao Research Institute, Beijing University of Aeronautics and Astronautics, 393 Songling Road, Laoshan District, Qingdao City, Shandong Province

Manufacturer

: Qingdao Chuangjian Weilai Technology Co., Ltd

Address

: Room 401, 4th Floor, Building 3, Qingdao Research Institute, Beijing University of Aeronautics and Astronautics, 393 Songling Road, Laoshan District, Qingdao City, Shandong Province

Factory

: Goertek Inc.

Address

: No.8877 Yingqian Street, High-Tech Industrial Development District, Weifang, Shandong, 261031, P.R.China

Model No.

: C1810

FCC ID

: 2A5NV-C1810

EUT Voltage

: 3 Vdc

Applicable Standard

: KDB 447498 D04

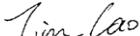
Test Result

: Complied

Performed Location

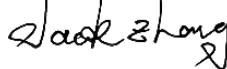
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FCC Designation Number: CN1199

Documented By

: 

(Project Engineer: Tim Cao)

Approved By

: 

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## 1. RF Exposure Evaluation

### 1.1. Limits

According to KDB 447498 D04 General RF Exposure Guidance.

1) 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:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  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 calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

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 according to 5) in section 4.1 is applied to determine SAR test exclusion.

2) At 100 MHz to 6 GHz and for test separation distances  $> 50$  mm, the SAR test exclusion threshold is determined according to the following, and as illustrated in Appendix B:

a)  $[\text{Power allowed at numeric threshold for } 50 \text{ mm in step 1} + (\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)] \text{ mW}$ , at 100 MHz to 1500 MHz

b)  $[\text{Power allowed at numeric threshold for } 50 \text{ mm in step 1} + (\text{test separation distance} - 50 \text{ mm}) \cdot 10] \text{ mW}$  at  $> 1500 \text{ MHz}$  and  $\leq 6 \text{ GHz}$

3) The 1-g and 10-g SAR test exclusion thresholds for below 100 MHz at test separation distances  $\leq 50$  mm are determined by:

a) The power threshold at the corresponding test separation distance at 100 MHz in step 2) is multiplied by  $[1 + \log(100/f(\text{MHz}))]$  for test separation distances  $> 50$  mm and  $< 200$  mm

b) The power threshold determined by the equation in a) for 50 mm and 100 MHz is multiplied by  $\frac{1}{2}$  for test separation distances  $\leq 50$  mm

c) SAR measurement procedures are not established below 100 MHz. When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any test results to be acceptable. Note: when the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

## 1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

## 1.3. Test Result of RF Exposure Evaluation

Product	:	VR Motion Controller
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

### Antenna Information

Antenna model	N/A					
Antenna Delivery	<input checked="" type="checkbox"/>	1*TX+1*RX	<input type="checkbox"/>	2*TX+2*RX	<input type="checkbox"/>	3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/>	SISO				
	<input type="checkbox"/>	MIMO	<input type="checkbox"/>	Basic		
	<input type="checkbox"/>		<input type="checkbox"/>	CDD		
	<input type="checkbox"/>		<input type="checkbox"/>	Beam-forming		
Antenna Type	<input type="checkbox"/>	External	<input type="checkbox"/>	Dipole		
	<input checked="" type="checkbox"/>	Internal	<input checked="" type="checkbox"/>	FPC		
			<input type="checkbox"/>	PCB		
			<input type="checkbox"/>	Ceramic Chip Antenna		
Antenna Gain	1.59 dBi for left Controller 1.89 dBi for right Controller					

Based on The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm and the formula below:

$$\text{SAR test exclusion thresholds} = \sqrt{f(\text{GHz})} * \frac{(\text{Max Power of channel, mW})}{\text{Min. Separation Distance, mm}}$$

The tune-up tolerance is 0.5 dB, the maximum conducted power we used to calculate RF exposure is 8.01dBm.

Wireless Configuration	Exposure Condition	Pmax	Pmax	Distance	Frequency (GHz)	Calculation Result	Stand-alone Test exclusion threshold	SAR Test
		(dBm)	(mw)	(mm)		(mw)	(mw)	
BT	Body	8.01	6.32	6.14	2.48	6.32	10.05	No

Threshold for no SAR evaluation in 6.14mm is 4.02mW. For limb-worn devices where the 10 gram value applies, the exemption limits for routine evaluation are multiplied by a factor of 2.5. Maximum TX Power is 6.32mW Conducted.

Maximum TX Power is 6.32mW

Conclusion: 2.4GHz SAR was not required.

— The End —