



Maximum Permissible Exposure

FCC ID: 2AWJG-OTPR

IC: 26228-OTPR

APPLICANT: OhmniLabs, Inc.

Application Type: Certification

Product: OHMNI TELEPRESENCE ROBOTS

Model No.: OHMNI ROBOT

Trademark: 

FCC Rule Part(s): Part 2.1091 (Mobile)

IC Standard: RSS 102 (issue5)

Test Date: May 20 ~ June 9, 2020

Reviewed By

: 

(Paddy Chen)



Testing Laboratory
3261

Approved By

: 

(Chenz Ker)

The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Taiwan) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2003TW3801-U5	1.0	Original Report	2020-07-22	

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name	OHMNI TELEPRESENCE ROBOTS
Model No.	OHMNI ROBOT
Trademark	
Supports Radios Spec.	2.4G: 802.11b/g/n-20/n-40 (2TX/2RX) 5G: 802.11a/n-20/ac-20/n-40/ac-40/ac-80, Band 1,2,3,4 (2TX/2RX)
Wi-Fi Specification	2.4G:802.11b/g/n 5G:802.11a/n/ac
Frequency Range	<u>2.4GHz:</u> For 802.11b/g/n-20M: 2412 ~ 2462 MHz For 802.11n-40M: 2422 ~ 2452 MHz <u>5GHz:</u> For 802.11a/n-HT20/ac-VHT-20: 5180~5320MHz, 5500~5700MHz, 5745~5825MHz For 802.11n-HT40/ ac-VHT40: 5190~5310MHz, 5510~5670MHz, 5755~5795MHz For 802.11ac-VHT80: 5210MHz, 5290MHz, 5530MHz, 5610MHz, 5690MHz, 5775MHz
Modulation Type	2.4G: 802.11b: DSSS, DBPSK, DQPSK, CCK 802.11g/n-20M/n-40M: OFDM, BPSK, QPSK, 16QAM, 64QAM 5G: 802.11a/n-20/ac-20/n-40/ac-40/ac-80: OFDM (BPSK, QPSK, 16QAM, 64QAM,256QAM)

1.2. Antenna Description

No.	Manufacturer	Part No.	Antenna Type	Mode	Peak Gain
1	N/A	UD812A08_1v0	PCB	WIFI 2.4G	3.5dBi
2				WIFI5G	6dBi

2. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

2.1. FCC Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
0.3-1.4	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

Note : (1) f= Frequency in MHz , (2) * = Plane-wave equivalent power density

Calculation Formula:

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

Where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

r = distance between observation point and center of the radiator in cm

Under normal use condition, is at least 20cm away from the body of the user .

So, this device is classified as **Mobile Device**.

2.2. IC Limits

According to RSS 102 The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in Table 4
LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

**Table 4: RF Field Strength Limits for Devices Used by the General Public
(Uncontrolled Environment)**

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73/ <i>f</i>	-	6**
1.1-10	87/ <i>f</i> ^{0.5}	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ <i>f</i> ^{0.25}	0.1540/ <i>f</i> ^{0.25}	8.944/ <i>f</i> ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 <i>f</i> ^{0.3417}	0.008335 <i>f</i> ^{0.3417}	0.02619 <i>f</i> ^{0.6834}	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ <i>f</i> ^{1.2}
150000-300000	0.158 <i>f</i> ^{0.5}	4.21 x 10 ⁻⁴ <i>f</i> ^{0.5}	6.67 x 10 ⁻⁵ <i>f</i>	616000/ <i>f</i> ^{1.2}
Note: <i>f</i> is frequency in MHz. *Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

Calculation Formula:

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

Where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

r = distance between observation point and center of the radiator in cm

Under normal use condition, is at least 20cm away from the body of the user .

So, this device is classified as **Mobile Device**.

2.3. Test Result

Mode	Frequency Band (MHz)	Maximum Output Power (dBm)	Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)
WiFi 2.4G	2412~2462	25.40	3.5	0.1544	1
WiFi 5G	5150~5850	16.45	6	0.0350	1

Conclusion :

$$\text{CPD1/LPD1} + \text{CPD2/LPD2} + \dots + \text{CPDN/LPDN} \leq 1$$

CPD : Calculation Power Density

LPD : Limit of Power Density

Mode	Power Density	Limit	Conclusion	Result (≤ 1)
WiFi 2.4G	0.1544	1	0.1894	Pass
WiFi 5G (Band4)	0.0350	1		

Therefore, the Max Power Density at R (20 cm) = 0.1894mW/cm².

So, device can comply with FCC radiation exposure requirement specified in the FCC Rule 2.1091.

_____ The End _____