RF Exposure Evaluation Report

Product	:	Patient Monitor
Trade mark	:	INFINIUM
Model/Type reference	:	Omega 12
Serial Number	:	N/A
Report Number	:	EED32N81163202
FCC ID	:	2A3S6-IMI170
Date of Issue	:	Dec. 07, 2021
Test Standards	:	47 CFR Part 1.1307 47 CFR Part 1.1310 KDB447498D01 General RF Exposure Guidance v06
Test result	:	PASS

Prepared for:

Infinium Medical Inc.
12151 62nd St North #5 Largo Fl, 33773 USA

Prepared by:

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Date: Dec. 07, 2021

Check No.: 3430091121

1 Version

Version No.	Date	Description
00	Dec. 07, 2021	Original

2 Contents

Page

1 VERSION **2**

2 CONTENTS **3**

3 GENERAL INFORMATION **4**

3.1 CLIENT INFORMATION 4
3.2 GENERAL DESCRIPTION OF EUT 4
3.3 TEST LOCATION 5
3.4 DEVIATION FROM STANDARDS 5
3.5 ABNORMALITIES FROM STANDARD CONDITIONS 5
3.6 OTHER INFORMATION REQUESTED BY THE CUSTOMER 5

4 SAR EVALUATION **6**

4.1 RF EXPOSURE COMPLIANCE REQUIREMENT 6
4.1.1 Limits *6*
4.1.2 Test Procedure *6*
4.1.3 EUT RF Exposure *7*

PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS **9**

3 General Information

3.1 Client Information

Applicant:	Infinium Medical Inc.
Address of Applicant:	12151 62nd St North #5 Largo Fl, 33773 USA
Manufacturer:	Infinium Medical Inc.
Address of Manufacturer:	12151 62nd St North #5 Largo Fl, 33773 USA
Factory:	Infinium Medical Inc.
Address of Factory:	12151 62nd St North #5 Largo Fl, 33773 USA

3.2 General Description of EUT

Product Name:	Patient Monitor
Mode No.:	Omega 12
Trade mark:	INFINIUM
Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz
Modulation Type:	IEEE for 802.11b: DSSS(CCK, DQPSK, DBPSK) IEEE for 802.11g :OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channel:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels IEEE 802.11n HT40: 7 Channels
Channel Separation:	5MHz
Product Type:	☐ Mobile ☐ Portable ☒ Fix Location
Antenna Type:	Integral antenna
Antenna Gain:	1.5dBi
Power Supply:	AC 100-240V~50/60Hz, 1.3A-0.5A Lithium battery: DC 10.89V, 5200mAh
Test Voltage:	AC 120V/60Hz
Sample Received Date:	Nov. 10, 2021
Sample tested Date:	Nov. 10, 2021 to Nov. 30, 2021
Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.	

3.3 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd
Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China
Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385
No tests were sub-contracted.
FCC Designation No.: CN1164

3.4 Deviation from Standards

None.

3.5 Abnormalities from Standard Conditions

None.

3.6 Other Information Requested by the Customer

None.

4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

According to FCC Part1.1310: 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 part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled 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 Exposure				
0.3–1.34	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

F= Frequency in MHz

Friis Formula

Friis transmission 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

Pd id the limit of MPE, 1 mW/cm2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

4.1.2 Test Procedure

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

4.1.3 EUT RF Exposure

1) For 2.4G WIFI

Antenna Gain: 1.5dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.41 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

IEEE for 802.11b mode				
Test channel	Average Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	15.61	15.0±1	16.0	39.811
Middle(2437MHz)	15.30	14.5±1	15.5	35.481
Highest(2462MHz)	14.49	14.0±1	15.0	31.623
IEEE for 802.11g mode				
Test channel	Average Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	16.43	15.5±1	16.5	44.668
Middle(2437MHz)	16.07	15.5±1	16.5	44.668
Highest(2462MHz)	15.82	15.0±1	16.0	39.811
IEEE for 802.11n(HT20) mode				
Test channel	Average Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	14.36	13.5±1	14.5	28.184
Middle(2437MHz)	14.01	13.5±1	14.5	28.184
Highest(2462MHz)	13.98	13.5±1	14.5	28.184
IEEE for 802.11n(HT40) mode				
Test channel	Average Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2422MHz)	14.49	14.0±1	15.0	31.623
Middle(2437MHz)	14.32	13.5±1	14.5	28.184
Highest(2452MHz)	13.94	13.5±1	14.5	28.184

The worst case:

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm^2)	Limit	Result
44.668	1.5	0.0126	1.0	PASS

Note: 1) Refer to report No. EED32N81163201 for EUT test Max Conducted Peak Output Power value.
2) $Pd = (Pout*G)/(4* Pi * R^2)=(44.668*1.41)/(4*3.1416*20^2)=0.0126$

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32N81163201 for EUT external and internal photos.

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*** End of Report ***