



## MPE TEST REPORT

### FCC Per 47 CFR 2.1091(b)

**Report Reference No.....:** TRE1303011202 R/C: 76529

**FCC ID.....:** SMQIM70EDAN

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Date of issue.....: Aug 05, 2013

**Testing Laboratory Name .....** Shenzhen Huatongwei International Inspection Co., Ltd

Address.....: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

**Applicant's name .....** Edan Instruments, Inc.

Address.....: 3/F - B, Nanshan Medical Equipments Park, Nantai Rd 1019#,  
Shekou, Nanshan Shenzhen, 518067 P.R. China

**Test specification:**

Standard .....

**FCC Per 47 CFR 2.1091(b)**  
**KDB447498 v05r01**

TRF Originator .....

Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF .....

Dated 2006-06

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**Test item description .....** Patient Monitor

Trade Mark .....

**EDAN**  
理邦仪器

Manufacturer .....

**Edan Instruments, Inc.**

Model/Type reference.....

iM70

Listed Models .....

/

Ratings.....

AC 120V/60Hz

Modulation .....

CCK,OFDM

Operation Frequency.....

From 2412MHz to 2462MHz

Result.....

**Positive**

**MPE TEST REPORT**

<b>Test Report No. :</b>	<b>TRE1303011202</b>	Aug 05, 2013
		Date of issue

Equipment under Test : Patient Monitor

Model /Type : iM70

Listed Models : /

**Applicant** : **Edan Instruments, Inc.**

Address : 3/F - B, Nanshan Medical Equipments Park, Nanhai Rd  
1019#, Shekou, Nanshan Shenzhen,518067 P.R. China

**Manufacturer** : **Edan Instruments, Inc.**

Address : 3/F - B, Nanshan Medical Equipments Park, Nanhai Rd  
1019#, Shekou, Nanshan Shenzhen,518067 P.R. China

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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## 1. SUMMARY

### 1.1. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

●	Power Cable	Length (m) :	1.20
		Shield :	Unshielded
		Detachable :	Undetachable :
○	Multimeter	Manufacturer :	/
		Model No. :	/

### 1.2. NOTE

1. The EUT is an 802.11b/g/n Patient Monitor ,The functions of the EUT listed as below:

	Test Standards	Reference Report
WLAN 802.11b/g/n	FCC Part 15 Subpart C	TRE1303012001
MPE	FCC Per 47 CFR 2.1091(d)	TRE1303012002

2. The frequency bands used in this EUT are listed as follows:

Frequency Band(MHz)	2400-2483.5	5150-5350	5470-5725	5725-5850
802.11b	√	—	—	—
802.11g	√	—	—	—
802.11n(20MHz)	√	—	—	—
802.11n(40MHz)	—	—	—	—

3. The EUT incorporates a SISO function,Physically,the EUT provides one completed transmitter and one completed receiver.

Modulation Mode	TX Function
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	1TX
802.11n (40MHz)	—

## 2. TEST ENVIRONMENT

### 2.1. Address of the test laboratory

Shenzhen Huatongwei International Inspection Co., Ltd  
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China  
Phone: 86-755-26715686 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

### 2.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 950-1050mbar

### 2.3. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

## 3. Method of measurement

### 3.1. Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

KDB447498 v05r01:Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

### 3.2. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(180/f <sup>2</sup> )*	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

\*=Plane-wave equivalent power density

### 3.3. MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=PG/4\pi R^2$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

As declared by the Applicant, the EUT transmits with the maximum source-based Duty Cycle of 100%-see the User manual, and the EUT is a wireless device used in a mobile application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum mobile separation distance,  $r=20\text{cm}$ , as well as the gain of the used antenna is 2.0dBi, and the power drift from Turn-up Procedure provide by manufacturer as following states, the RF power density can be obtained..

802.11b			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	15.50	15.50	15.50
Tolerance $\pm$ (dB)	2	2	2
802.11g			
Channel	Channel 810	Channel 661	Channel 512
Target (dBm)	15.50	15.50	15.50
Tolerance $\pm$ (dB)	2	2	2
802.11n(20MHz)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	15.50	15.50	15.50
Tolerance $\pm$ (dB)	2	2	2

**TEST RESULTS*****For 802.11b***

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 20 cm (mW/cm <sup>2</sup> )	Power Density Limit (mW/cm <sup>2</sup> )	Test Results
2412	20.00	15.31	33.9625	1.5849	0.0107	1.0000	PASS
2437	20.00	16.52	44.8745	1.5849	0.0141	1.0000	PASS
2442	20.00	14.68	29.3765	1.5849	0.0093	1.0000	PASS

***For 802.11g***

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 20 cm (mW/cm <sup>2</sup> )	Power Density Limit (mW/cm <sup>2</sup> )	Test Results
2412	20.00	15.38	34.5144	1.5849	0.0109	1.0000	PASS
2437	20.00	16.28	42.4620	1.5849	0.0134	1.0000	PASS
2442	20.00	14.56	28.5759	1.5849	0.0090	1.0000	PASS

***For 802.11n(20MHz)***

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 20 cm (mW/cm <sup>2</sup> )	Power Density Limit (mW/cm <sup>2</sup> )	Test Results
2412	20.00	15.05	31.9890	1.5849	0.0101	1.0000	PASS
2437	20.00	15.97	39.5367	1.5849	0.0125	1.0000	PASS
2442	20.00	14.31	26.9774	1.5849	0.0085	1.0000	PASS

**4. Conclusion**

The measurement results comply with the FCC Limit per 47 CFR 2.1091(b) for the uncontrolled RF Exposure.

.....**End of Report**.....