

# FCC TEST REPORT

Reference No. : G-44-2015-03497

Applicant : Tianjin Empecs Medical Device Co., Ltd.

Equipment Under Test (EUT):

Product Name : Blood Glucose Monitoring System

Model Name : Medisign GH83 BT

Alt Model Name : Medisign GH81 BT, Medisign GH82 BT

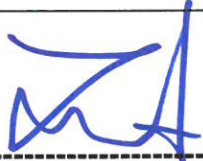
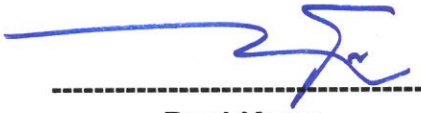
Applied Standards : FCC Part 15 Subpart B  
 ANSI C63.4:2009

Date of Receipt : November 16, 2015

Date of Test : January 04, 2016 ~ January 05, 2016

Date of Issue : January 25, 2016

Test Results : Complied

<p><b>Tested by</b> :</p>	:	 ----- <b>Clark Lee</b>
<p><b>Reviewed by</b> :</p>	:	 ----- <b>Paul Kang</b>

**Remarks :**

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full

# Contents

1. General Information.....	3
1.1 Client Information.....	3
1.2 Test Laboratory.....	3
1.3 General Information of E.U.T. ....	3
1.4 Operating Modes .....	4
1.4.1 Monitoring Method .....	4
1.5 Auxiliary Equipments .....	4
1.6 Cable List.....	5
1.7 System Configurations.....	5
1.8 Test System Layout .....	6
1.9 Modifications.....	6
1.10 Applicable Standards for Testing .....	7
1.11 Summary of Test Results.....	7
2. Emission Test.....	8
2.1 Test Results.....	8
2.2 Test Method and Limits.....	8
2.2.1 Test Method .....	8
2.2.2 Test Limits.....	8
2.3 Conducted Emission .....	9
2.3.1 Test Equipments .....	9
2.3.2 Test Site.....	9
2.3.3 Environment Conditions and data .....	10
2.4 Radiated Emission .....	11
2.4.1 Test Equipments .....	11
2.4.2 Test Site.....	11
2.4.3 Environment Conditions and data .....	12
Appendix A : Conducted Emission .....	13
Appendix B : Radiated Emission (3 m Scan Data) .....	14

# 1. General Information

## 1.1 Client Information

Applicant : Tianjin Empecs Medical Device Co., Ltd  
 Address of Applicant : No. 35, Yingcheng Street, Hangu, Binhai New Area 300480  
 Tianjin, China

Manufacturer : Tianjin Empecs Medical Device Co., Ltd  
 Address of Manufacturer : No. 35, Yingcheng Street, Hangu, Binhai New Area 300480  
 Tianjin, China

## 1.2 Test Laboratory

Name and Address : SGS Korea Co., Ltd.  
 Giheung 1 Laboratory : 35, Giheungdanji-ro 121beon-gil, Giheung-gu, Yongin-si,  
 Gyeonggi-do, Republic of Korea  
 Giheung 2 Laboratory : 23, Giheungdanji-ro 24beon-gil, Giheung-gu, Yongin-si,  
 Gyeonggi-do, Republic of Korea  
 Gunpo Laboratory : 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, 435-040  
 Republic of Korea  
 Phone : + 82 31 428 5700  
 Fax : + 82 31 427 2370  
 e-mail : [paul.kang@sgs.com](mailto:paul.kang@sgs.com)  
 FCC Registration No : 367021

## 1.3 General Information of E.U.T.

Product Name	Blood Glucose Monitoring System
Model Name	Medisign GH83 BT
Alt. Model Name	Medisign GH81 BT, Medisign GH82 BT
Model Difference	Button & Appearance design
FCC ID	2AFE8GH8123BT
Internal Clock Frequency	32 MHz
EMI Classification	Class B
Test Voltage	120 Va.c., 60 Hz(Notebook Computer)
Rated Voltage	3 Vd.c.

### 1.4 Operating Modes

Operating mode	Operating condition
Mode 1 USB data communication	USB Data communication with notebook computer.
Mode 2 Blood glucose measurement	Blood glucose measurement status.

#### 1.4.1 Monitoring Method

-

### 1.5 Auxiliary Equipments

Description	Model	Serial No.	Manufacturer
Notebook Computer	7665-AH6	L3-E5323	LENOVO
LCD Monitor	S2740Lb	CN-DP7D0G- 74261-352- 05CL	DELL Inc.
USB Keyboard	WK590	HDJ2011000 000	WINTEK
USB Mouse	M-U0026	810-002147	Logitech
Wireless Router	WG602v4	-	NETGEAR

### 1.6 Cable List

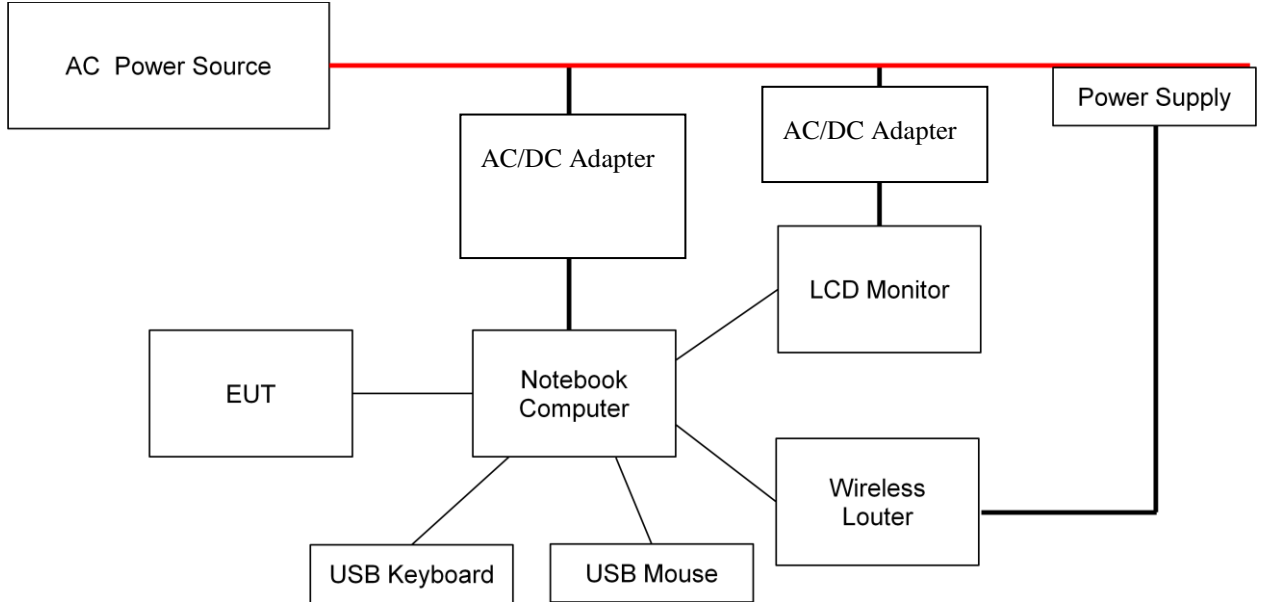
Start		END		Cable Spec.	
Name	I/O Port	Name	I/O Port	Length (m)	Shield
USB Data communication Mode					
EUT	USB	Notebook Computer	USB	1.0	Shield (Core 1ea)
Notebook Computer	USB	USB Keyboard	-	1.2	Unshield
	USB	USB Mouse	-	1.2	Unshield
	RGB	LCD Monitor	RGB	1.0	Unshield
	LAN	Wireless Router	LAN	1.5	Unshield
	DC IN	AC/DC Adapter	DC OUT	1.5	Unshield
AC/DC Adapter	AC IN	AC Source	-	1.2	Unshield
LCD Monitor	DC IN	AC/DC Adapter	DC OUT	1.0	Unshield
AC/DC Adapter	AC IN	AC Source	-	1.5	Unshield
Wireless Router	DC IN	Power Supply	DC OUT	1.0	Unshield
Power Supply	AC IN	AC Source	-	-	-
Blood glucose measurement Mode					
EUT	-	-	-	-	-

### 1.7 System Configurations

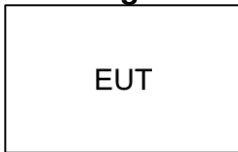
Description	Model	Serial No.	Manufacturer
Main Board	-	-	-
Display	-	-	-

### 1.8 Test System Layout

#### - USB Data communication Mode



#### - Blood glucose measurement Mode



### 1.9 Modifications

There was no modified item during the test.

### 1.10 Applicable Standards for Testing

Standards	Status	Deviation
FCC Part 15 Subpart B	Applicable	No Deviation

### 1.11 Summary of Test Results

Test Item	Basic Standards	Results
Conducted Emission	ANSI C63.4 : 2009 FCC Part 15 Subpart B	Complied
Radiated Emission	ANSI C63.4 : 2009 FCC Part 15 Subpart B	Complied

# EMISSION

## 2.1 Test Results

Test Items	Basic Standards	Test Results
Conducted Emission	ANSI C63.4 : 2009 FCC Part 15 Subpart B	<b>Complied</b>
Radiated Emission	ANSI C63.4 : 2009 FCC Part 15 Subpart B	<b>Complied</b>

## 2.2 Test Method and Limits

### 2.2.1 Test Method

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Conducted Emission	0.15 MHz ~ 30 MHz	9 kHz	-
Radiated Emission	30 MHz ~ 1 GHz	120 kHz	10 m
	Above 1 GHz	1 MHz	3 m

### 2.2.2 Test Limits

#### -Conducted Emission Limits

Frequency Range	Limits( dB(μV) )		Class
	Quasi-peak	Average	
0.15 MHz ~ 0.5 MHz	79	66	<b>Class A</b>
0.5 MHz ~ 30 MHz	73	60	
0.15 MHz ~ 0.5 MHz	66 to 56	56 to 46	<b>Class B</b>
0.5 MHz ~ 5 MHz	56	46	
5 MHz ~ 30 MHz	60	50	

Note : The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.



**Radiated Emission Limits below 1 GHz**

Frequency Range	Limits( dB( $\mu$ V/m) )		Class
	Quasi-peak		
30 MHz ~ 88 MHz	39.1		<b>Class A</b>
88 MHz ~ 216 MHz	43.5		
216 MHz ~ 960 MHz	46.4		
960 MHz ~ 1 GHz	49.5		
30 MHz ~ 88 MHz	40		<b>Class B</b>
88 MHz ~ 216 MHz	43.5		
216 MHz ~ 960 MHz	46		
960 MHz ~ 1 GHz	54		

**-Radiated Emission Limits above 1 GHz (3m method)**

Frequency Range	Limits( dB( $\mu$ V/m) )		Class
	Average	Peak	
Above 1 GHz	59.5	79.5	<b>Class A</b>
Above 1 GHz	54	74	<b>Class B</b>

**2.3 Conducted Emission**

The initial preliminary exploratory scans were performed over the measuring frequency range(0.15 MHz to 30 MHz) using a max hold mode incorporating a Peak detector and Average detector and using the software of EMC32(Version V9.12.00 from R&S). The final test data was measured using a Quasi-Peak detector and Average detector.

**2.3.1 Test Equipments**

Description	Model No.	Manufacturer	S/N	Cal. Due Date
Two-Line V-Network	ENV216	R & S	100190	2016.12.21
Artificial Mains Networks	ESH2-Z5	R & S	100280	2016.04.03
Test Receiver	ESCI 7	R & S	100911	2016.12.22

Note : The calibration period of every equipment is 1 year.

**2.3.2 Test Site**

Shield Room in Gunpo Laboratory

### 2.3.3 Environment Conditions and data

Temperature: 22.3°C ~ 22.8°C  
 Humidity: 28.0 %R.H. ~ 30.0 %R.H.  
 Atmospheric Pressure: 102.9 kPa

**Test Date:** January 05, 2016

Freq. ( MHz )	Line (H/N)	Level ( dB $\mu$ V )		CL ( dB )	LISN ( dB )	Result ( dB $\mu$ V )		Limit ( dB $\mu$ V )		Margin ( dB )	
		Q/P	A/V			Q/P	A/V	Q/P	A/V	Q/P	A/V
0.15	N	51.28	32.38	0.02	9.70	61.00	42.10	66.00	56.00	5.00	13.90
0.16	H	50.03	30.83	0.02	9.65	59.70	40.50	65.46	55.46	5.76	14.96
0.17	N	50.38	30.28	0.02	9.70	60.10	40.00	65.21	55.21	5.11	15.21
0.18	H	48.69	31.59	0.01	9.60	58.30	41.20	64.72	54.72	6.42	13.52
0.20	N	46.59	31.49	0.01	9.70	56.30	41.20	63.82	53.82	7.52	12.62
0.41	N	35.22	23.92	0.08	9.70	45.00	33.70	57.65	47.65	12.65	13.95

Measurement Uncertainty :  $\pm 3.21$  dB (The confidential level is about 95%,  $k=2$ )

- Note :
- Line ( H ) : Hot
  - Line ( N ) : Neutral
  - CL: Cable Loss
  - LISN : LISN Factor
  - Result = Level + CL + LISN
  - Margin = Limit – Result

**See Appendix A (Conducted Emission)**

## 2.4 Radiated Emission

The initial preliminary exploratory scans were performed at 3 m distance over the measuring frequency range(30 MHz to 1 GHz) using a max hold mode incorporating a Peak detector and using the software of EP5RE(Version Ver3.10.20 from TOYO). The final test data was measured using a Quasi-Peak detector below 1 GHz at 10 m distance. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

### 2.4.1 Test Equipments

Description	Model No.	Manufacturer	S/N	Cal. Due Date
Bilog Antenna	VULB9163	SCHWARZBECK MESS- ELEKTRONIK	396	2016.06.16
Test Receiver	ESU26	R & S	100109	2016.03.03
Amplifier	8447F	HP	2944A03909	2015.08.27

Note : Only the calibration period of Antennas is 2 years but the period of every equipment is 1 year.

### 2.4.2 Test Site

3 m Semi-Anechoic Chamber in Gunpo Laboratory

### 2.4.3 Environment Conditions and data

#### Below 1 GHz (3 m method)

Temperature: 21.0 °C ~ 22.5 °C  
 Humidity: 25.0 %R.H. ~ 27.0 %R.H.  
 Atmospheric Pressure: 102.6 kPa

**Test Date** : January 04, 2016

#### BT+Operating Mode

Freq. ( MHz )	Level ( dB $\mu$ V )	Pol. (H/V)	A ( ° )	H ( cm )	AF ( dB )	CL ( dB )	Amp. ( dB )	F/S ( dB $\mu$ V/m )	Limit ( dB $\mu$ V/m )	Margin ( dB )
41.68	32.70	H	170	300	14.24	0.70	27.84	19.80	40.00	20.20
936.02	33.80	H	252	300	23.36	3.28	27.56	32.88	46.00	13.12

#### USB Mode

Freq. ( MHz )	Level ( dB $\mu$ V )	Pol. (H/V)	A ( ° )	H ( cm )	AF ( dB )	CL ( dB )	Amp. ( dB )	F/S ( dB $\mu$ V/m )	Limit ( dB $\mu$ V/m )	Margin ( dB )
34.28	47.60	V	7	100	12.45	0.64	27.88	32.81	40.00	7.19
47.99	48.10	V	240	100	14.14	0.75	27.81	35.18	40.00	4.82
71.95	44.30	V	96	100	8.02	0.93	27.76	25.49	40.00	14.51
69.00	42.70	H	329	300	8.72	0.92	27.76	24.58	40.00	15.42
205.85	49.50	V	20	100	11.33	1.51	27.28	35.06	43.50	8.44
288.02	45.80	H	133	100	13.90	1.87	27.04	34.53	46.00	11.47

Measurement Uncertainty (Horizontal) :  $\pm 5.31$  dB (The confidential level is about 95%,  $k=2$ )

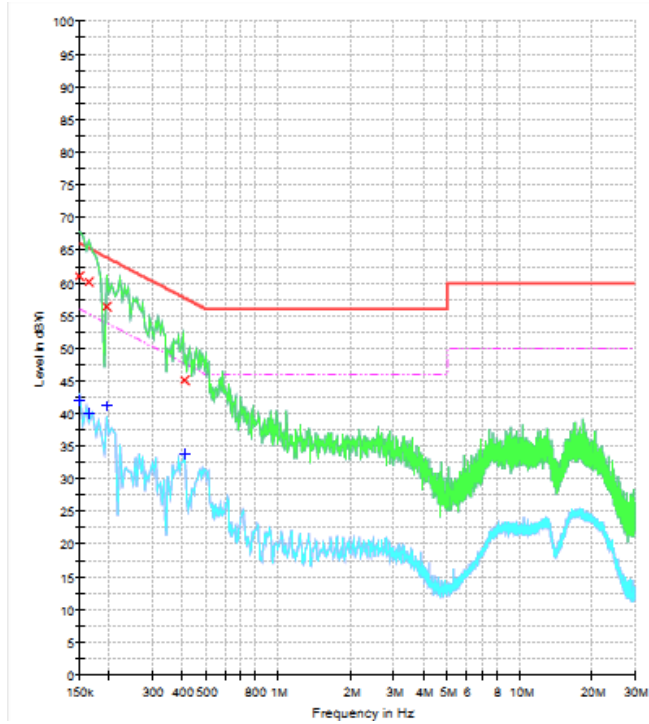
Measurement Uncertainty (Vertical) :  $\pm 5.73$  dB (The confidential level is about 95%,  $k=2$ )

Note: • AF = Antenna Factor                      • CL = Cable Loss                      • F/S = Field Strength  
 • Pol.(H) = Horizontal                      • Pol.(V) = Vertical                      • Amp. = Amplifier Gain  
 • Margin = Limit – F/S                      • F/S = Level + AF + CL – Amp.  
 • A : Angle                                      • H : Height

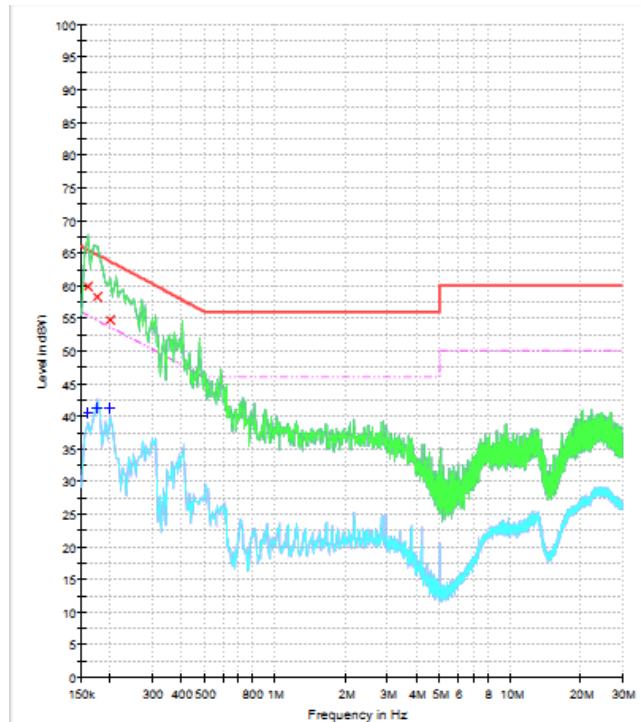
#### See Appendix B (Radiated Emission)

## Appendix A : Conducted Emission

### Neutral



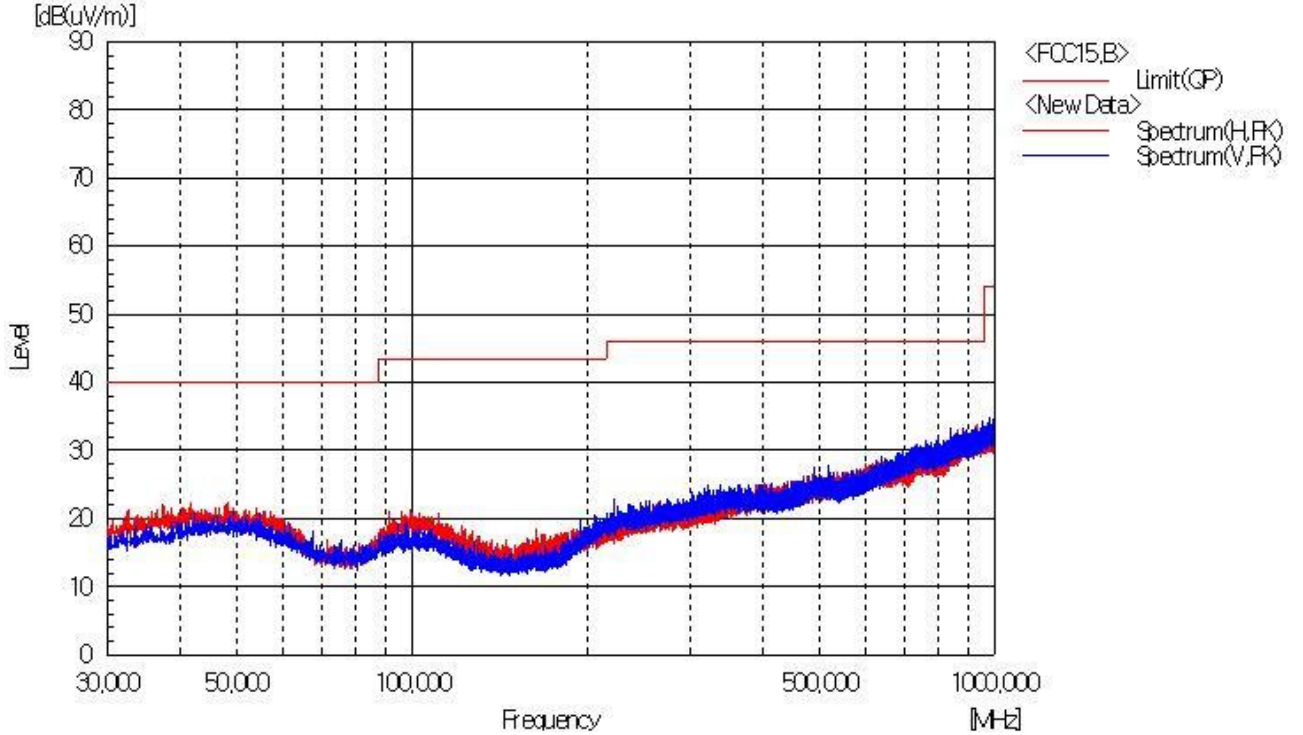
### Hot



**Appendix B : Radiated Emission (3 m Scan Data)**

**Below 1 GHz(3 m Scan Data)**

**- BT+ Operating Mode**



**- USB Mode**

