

Prüfbericht - Nr.: 16800691 001		Seite 1 von 31	
<i>Test Report No.:</i>		<i>Page 1 of 31</i>	
Auftraggeber:		Hebei Baiyang Bed Industry Manufactory	
<i>Client:</i>		No .22 Kangming South Road Xushui County Baoding, Hebei 072550 P.R. China	
Gegenstand der Prüfung: ELECTRIC HOSPITAL BED			
<i>Test item:</i>			
Bezeichnung:	BYD- I A,BYD- I B,BYD- I C,BYD- II A,BYD- II B,BYD- II C,BYD- III A,BYD- III B,BYD- III C	Serien-Nr.:	Engineering Sample
<i>Identification:</i>		<i>Serial No.:</i>	
Wareneingangs-Nr.:	1143006040	Eingangsdatum:	2011-06-27
<i>Receipt No.:</i>		<i>Date of receipt:</i>	
Prüfort:	Refer to section 1.1		
<i>Testing location:</i>			
Prüfgrundlage:	EN 60601-1-2:2007		
<i>Test specification:</i>			
Prüfergebnis:	Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).		
<i>Test Result:</i>	<i>The test items passed the test specification(s).</i>		
Prüflaboratorium:	Refer to section 1.1		
<i>Testing Laboratory:</i>			
geprüft/ tested by:		kontrolliert/ reviewed by:	
<i>2011-9-6</i>	Yang, Kai/PE	<i>2011-09-06</i>	Zhu, Qiusheng/TC
<i>Datum</i>	<i>Name/Stellung</i>	<i>Datum</i>	<i>Name/Stellung</i>
<i>Date</i>	<i>Name/Position</i>	<i>Date</i>	<i>Name/Position</i>
<i>Unterschrift</i>	<i>Signature</i>	<i>Unterschrift</i>	<i>Signature</i>
Sonstiges/ Other Aspects:			
Abkürzungen:	P(ass) = entspricht Prüfgrundlage	Abbreviations:	P(ass) = passed
	F(ail) = entspricht nicht Prüfgrundlage		F(ail) = failed
	N/A = nicht anwendbar		N/A = not applicable
	N/T = nicht getestet		N/T = not tested
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TEST SUMMARY

4.1.1 HARMONICS ON AC MAINS

Result:

Passed

4.1.2 VOLTAGE CHANGES, VOLTAGE FLUCTUATIONS AND FLICKER ON AC MAINS

Result:

Passed

4.1.3 MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE

Result:

Passed

4.2.1 RADIATED EMISSION

Result:

Passed

5.1.1 ELECTROSTATIC DISCHARGE

Result:

Passed

5.1.2 RF ELECTROMAGNETIC FIELD IMMUNITY TEST

Result:

Passed

5.1.3 POWER FREQUENCY MAGNETIC FIELD

Result:

N/A

5.2.1 FAST TRANSIENTS ON AC POWER LINE, SIGNAL LINE AND INTERCONNECTING LINE

Result:

Passed

5.2.2 INJECTED CURRENT INTO AC POWER LINE, SIGNAL LINE AND INTERCONNECTING LINE

Result:

Passed

5.2.3 SURGES TO AC POWER PORT, SIGNAL LINE AND INTERCONNECTING LINE

Result:

Passed

5.2.4 VOLTAGE DIPS AND INTERRUPTIONS TO AC POWER PORT

Result:

Passed

5.2.5 VARIATIONS OF POWER FREQUENCY

Result:

Passed

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1 Test Sites

1.1 Test Facilities

Laboratory 1: TÜV Rheinland (Beijing) Laboratory

Address: Room 303, 1st Area, Chuang Xin Building No. B, No. 12, Hong Da Road (north), Economic-Technological Development Area, Beijing 100176, P.R. China

Laboratory 2: Beijing Products Quality Supervision and Test Institute

Address: No.8 Jianwai Langjiayuan, Chaoyang District, Beijing 100022, P.R. China

The used test equipment is in accordance with CISPR 16-1 for measurement of radio interference.

1.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Lab1: (Harmonics on AC mains, Electrostatic Discharge, Injected Current into AC Power Port and Signal Port, Fast Transients on AC Power Lines, Surges to AC Power Port, Voltage Dips and Interruptions to AC Power Port, Variations of Power Frequency)

No.	Equipment	Manufacturer	Model	Serial no. / Inventory no.	Cal. due date
1	ESD Simulator	EM TEST	Dito	V0702102130	2012-07-07
2	Test system for conducted and radiated immunity	TESEQ	NSG 4070	28169	2012-04-07
3	CDN	TESEQ	CDN M016	27465	2014-04-07
4	Attenuator	TESEQ	ATN 6050	27190	2014-04-07
5	AC POWER SUPPLY	NF Corporation	EPO 2000S	9075860	N/A
6	Ultra Compact Simulator	EM TEST AG	UCS 500 M4	V0702102131	2012-04-12
7	Mains	EM TEST	MV2616	V0702102132	2012-04-12
8	EM Injection Clamp	TESEQ	KEMZ 801	28522	2014-04-07
9	Harmonic tester	California Instrument	CCN 1000- 1	72399	2014-04-07

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**Lab2: (Mains Terminal Continuous Disturbance Voltage, Radiated emission, RF
Electromagnetic Field Immunity Test)**

No.	Equipment	Manufacturer	Model	Serial no. / Inventory no.	Cal. due date
1	EMI Receiver	R&S	ESCI	100669	2012-01-28
2	LISN	R&S	ENV216	---	2012-01-20
3	Bi-log Antenna	R&S	HL562	100391	2013-03-03
4	Signal Generator	R&S	SML03	103655	2012-08-24
5	Power Amplifier	BONN	BLWA 0830- 160/100/40D	86974	2012-08-25
6	Power Meter	R&S	NRVD	102013	2012-08-14
7	Horn Antenna	AR	AT4002A	328237	N/A
8	Bi-con Antenna	R&S	HL046	100044	N/A

2 General Product Information

2.1 Product Function and Intended Use

The EUT (equipments under test) are electric hospital beds. For the further information, refer to the user's manual.

2.2 Ratings and System Details

Type	: BYD- I A	BYD- I B	BYD- I C
	BYD- II A	BYD- II B	BYD- II C
	BYD- III A	BYD- III B	BYD- III C
Rated voltage	: AC 230V; 50Hz		
Rated power	: 250W		
Class	: A		
Protection class	: I		

Identifiers and differences:

1. BYD- I A,BYD- I B,BYD- I C are three functions electric hospital bed, the difference of these three models is only the material of the headboard.
 2. BYD- II A,BYD- II B,BYD- II C are four functions electric hospital bed, the difference of these three models is only the material of the headboard.
 3. BYD- III A,BYD- III B,BYD- III C are five functions electric hospital bed, the difference of these three models is only the material of the headboard.
 4. Basing on the five functions electric hospital bed, one or two of the functions were removed for the four functions or three functions electric hospital bed.
- These differences can not affect the EMC performance, therefore all the tests were performed on the model BYD- III C which is the most complex one.

2.3 Independent Operation Modes

The basic operation modes are: "On", "Off".

2.4 Noise Generating and Noise Suppressing Parts

Refer to the circuit diagram for further information.

2.5 Submitted Documents

User's manual and Nameplate, BOM, circuit diagram.

3 Test Set-up and Operation Modes

3.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test conditions were adapted accordingly in reference to the instructions for use.

Refer to the related paragraph of this report.

Immunity: The equipment under test (EUT) was configured to have its highest possible susceptibility against the tested phenomena. The test conditions were adapted accordingly in reference to the instructions for use.

Refer to the related paragraph of this report.

3.2 Physical Configuration for Testing

As the rated frequency of EU is 50Hz, the frequency configuration of all EMC tests is 50Hz.

3.3 Test Operation and Test Software

Refer to the related paragraph of this report. No software was used

3.4 Special Accessories and Auxiliary Equipment

None.

3.5 Countermeasures to achieve EMC Compliance

None.

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4 Test Results EMISSION

4.1 Emission in the Frequency Range up to 30 MHz

4.1.1 Harmonics on AC mains

Result:	Passed
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Date of testing : 2011-08-02
Test procedure : EN 61000-3-2:2006+A1+A2
Test duration : 2.5min
Harmonic order : 2 – 40th
Test voltage : AC 230.45V; 50Hz

Following are the measurement results, which were obtained via an automatic measurement system.

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Table 2: Harmonic currents measurement result

Equipment category: Class A; Test voltage: 220.45V, 50Hz

Fundamental current I1: 0.227A; Power factor: 0.874; Active input power: 143.4W.

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.009	1.080	0.8	0.014	1.620	0.89	Pass
3	0.170	2.300	7.4	0.296	3.450	8.58	Pass
4	0.007	0.430	1.6	0.010	0.645	1.49	Pass
5	0.059	1.140	5.2	0.090	1.710	5.29	Pass
6	0.004	0.300	1.3	0.005	0.450	1.13	Pass
7	0.023	0.770	2.9	0.039	1.155	3.39	Pass
8	0.002	0.230	0.9	0.003	0.345	0.94	Pass
9	0.017	0.400	4.2	0.031	0.600	5.18	Pass
10	0.001	0.184	0.6	0.002	0.276	0.59	Pass
11	0.009	0.330	2.8	0.013	0.495	2.71	Pass
12	0.001	0.153	0.3	0.001	0.230	0.43	Pass
13	0.007	0.210	3.3	0.014	0.315	4.43	Pass
14	0.000	0.131	0.2	0.001	0.197	0.36	Pass
15	0.004	0.150	2.6	0.006	0.225	2.84	Pass
16	0.000	0.115	0.1	0.001	0.173	0.33	Pass
17	0.005	0.132	3.5	0.008	0.199	4.08	Pass
18	0.000	0.102	0.1	0.000	0.153	0.23	Pass
19	0.002	0.118	1.3	0.005	0.178	2.58	Pass
20	0.000	0.092	0.1	0.000	0.138	0.19	Pass
21	0.003	0.107	2.7	0.005	0.161	3.15	Pass
22	0.000	0.084	0.1	0.000	0.125	0.13	Pass
23	0.001	0.098	1.2	0.003	0.147	2.14	Pass
24	0.000	0.077	0.1	0.000	0.115	0.20	Pass
25	0.002	0.090	1.8	0.003	0.135	2.49	Pass
26	0.000	0.071	0.1	0.000	0.106	0.21	Pass
27	0.001	0.083	1.1	0.002	0.125	1.61	Pass
28	0.000	0.066	0.1	0.000	0.099	0.26	Pass
29	0.001	0.078	1.3	0.002	0.116	2.02	Pass
30	0.000	0.061	0.1	0.000	0.092	0.28	Pass
31	0.001	0.073	0.9	0.001	0.109	1.06	Pass
32	0.000	0.058	0.1	0.000	0.086	0.25	Pass
33	0.001	0.068	1.3	0.002	0.102	1.67	Pass
34	0.000	0.054	0.1	0.000	0.081	0.23	Pass
35	0.000	0.064	0.5	0.001	0.096	0.91	Pass
36	0.000	0.051	0.1	0.000	0.077	0.15	Pass
37	0.001	0.061	1.1	0.001	0.091	1.39	Pass
38	0.000	0.048	0.1	0.000	0.073	0.19	Pass
39	0.000	0.058	0.6	0.001	0.087	0.92	Pass
40	0.000	0.046	0.1	0.000	0.069	0.14	Pass

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4.1.2 Voltage changes, voltage fluctuations and flicker on AC mains**Result:****Passed**

Test procedure : IEC 61000-3-3:2008

Due to the low power characteristic of the sample (less than 150W), it cannot produce voltage fluctuations and flicker exceeding the limits, thus the sample is deemed to meet the requirements of IEC 61000-3-3:2008 without actual testing.

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4.1.3 Mains Terminal Continuous Disturbance Voltage

Result:

Passed

Date of testing	: 2011-07-26
Test procedure	: EN 60601-1-2:2007, CISPR 11:2009
Frequency range	: 0.15 - 30MHz
Limits	: Quasi-peak: 0.15-0.5MHz, 79dB μ V; 0.5-30MHz, 73dB μ V Average: 0.15-0.5MHz, 66dB μ V; 0.5-30MHz, 60dB μ V
Kind of test site	: Shielding room

Test Setup

Input voltage	: AC 230V; 50Hz
Operation mode	: On
Artificial hand	: N/A
Earthing	: Via PE (as class I equipment)

The measurement equipment like test receivers, quasi-peak detector and Artificial Mains Network (AMN) are in compliance with CISPR 16-1. The tested object was operated under its input voltage and its input frequency.

Furthermore an internal calibration with the test receiver was conducted prior to each measurement.

The tested object was set-up on 0.8m wooden support. The EUT was set 0.8m away from the AMN. The cord longer than necessary to be connected to the AMN was folded forth and back parallel so as to form a bundle with a length between 0.3m and 0.4m.

The test was carried out from 100V to 240V for the max measurement results.

The following figures and tables were those measured by an automatic measuring system. Both Quasi-Peak and Average Value were measured. Quasi-Peak and Average Value were measured and listed respectively where they had a maximum in previous scanning survey.

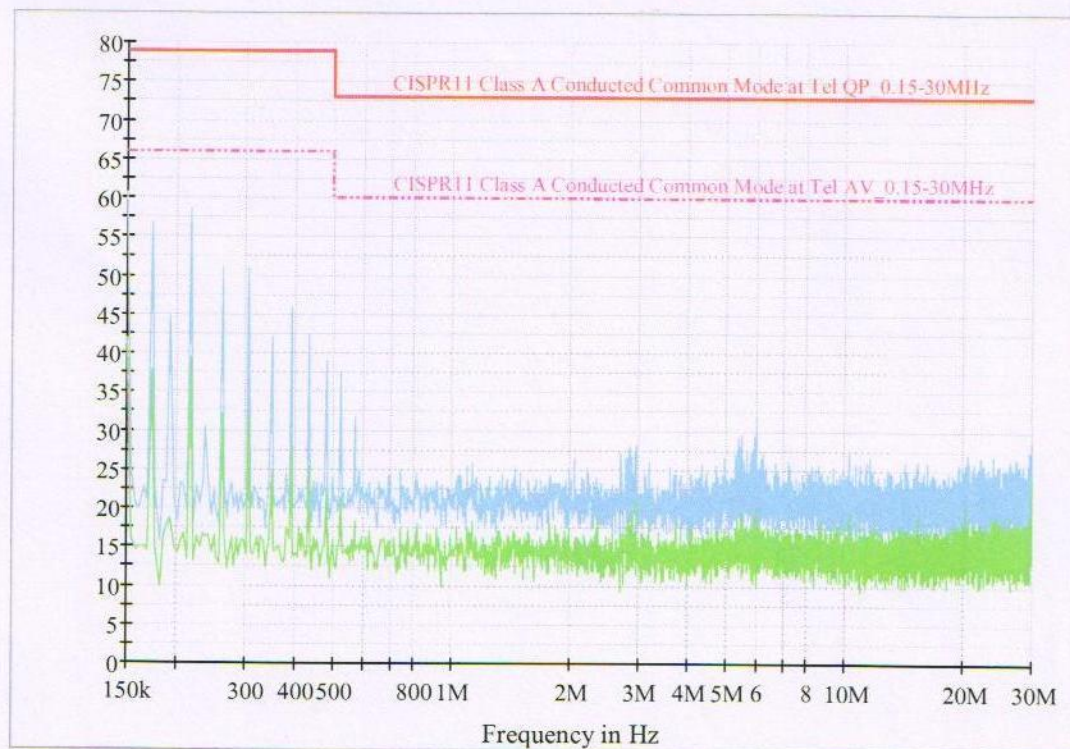
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Figure 1: Spectral Diagrams, Conducted Emission, 150 kHz - 30MHz, line L

Level in dB μ V

Voltage Auto Test-ENV216-L



Final peak measurement results:

All peak values are below limits more than 20dB, therefore no peak value was found.

Note: If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out.

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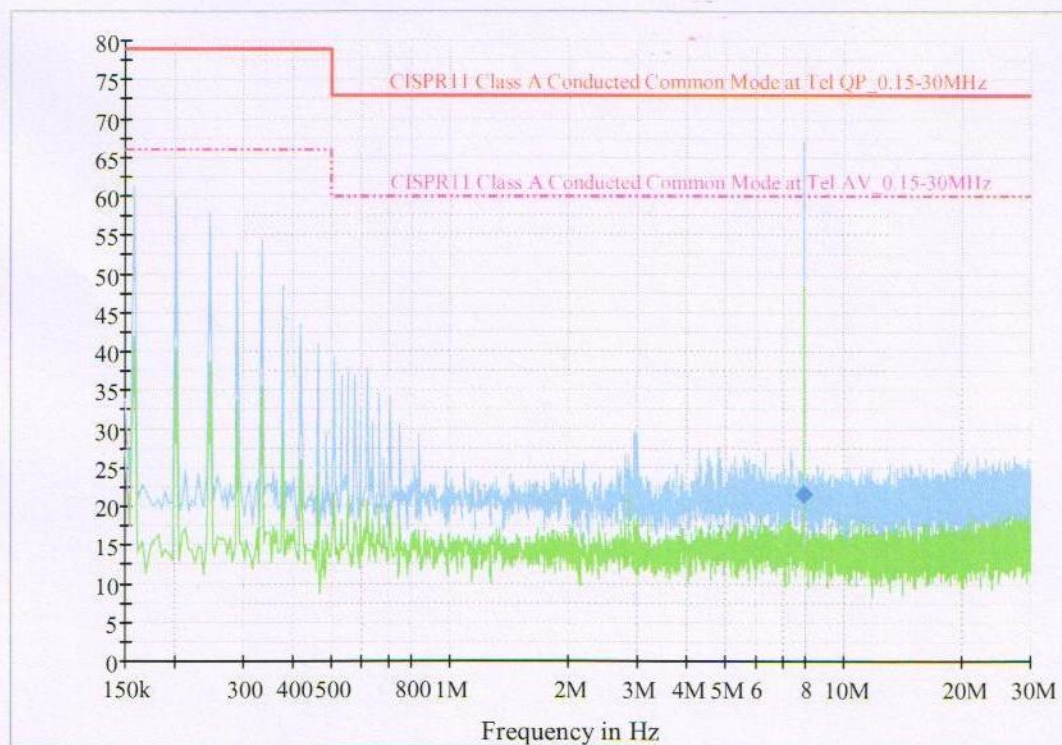
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Figure 2: Spectral Diagrams, Conducted Emission, 150 kHz - 30MHz, line N

Level in dB μ V

Voltage Auto Test-ENV216-N



Final quasi-peak measurement results:

Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB μ V)
7.960000	21.5	1000.000	9.000	N	51.5	73.0

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4.2 Emission in the Frequency Range above 30 MHz

4.2.1 Radiated emission

Result:	Passed
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Date of testing : 2011-07-26
Test procedure : EN 60601-1-2:2007, CISPR 11:2009
Frequency range : 30 – 1000MHz
Limits : 30-230MHz, 50dB μ V/m with 3m test distance;
230-1000MHz, 57dB μ V/m with 3m test distance.
Kind of test site : Semi-anechoic chamber
Operation mode : On

The measurement setup was made according to EN 60601-1-2:2007.

The test equipment listed in 1.1, table 1 of this report are as specified in CISPR 16-1.

The EUT was placed on a turntable. The turntable can turn in 360°. A log periodic antenna or a loop antenna is fixed 3m from centre of the turntable.

During the test, the turntable was rotated fully with a measurement antenna oriented for both horizontal and vertical polarisation. The antenna was adjusted between 1m and 4m in height above the ground plane to find the max disturbance.

In this anechoic chamber the distance between EUT and centre is 3m. The limit of EN 60601-1-2:2007 is given for 10m. According to CISPR 11:2009, clause 8.3.4: "For test site measurements in the frequency range above 30 MHz, an inverse proportionality factor of 20 dB per decade shall be used to normalize the measured data to the specified distance for determining compliance. Care should be taken in measuring a large test unit at 3 m at a frequency near 30 MHz due to near-field effects. For test site measurements in the frequency range below 30 MHz, the conversion factor deviates from 20 dB per decade." That means: $L(a)-L(b) = 20\log(b/a)$

Frequency MHz	Limit in 10m	Limit in 3m
30-230	40 dB(μ V/m)	50 dB(μ V/m)
230-1000	47 dB(μ V/m)	57 dB(μ V/m)

The test was carried out from 100V to 240V for the max measurement results.

The following figures and tables were those measured by an automatic measurement system. A preview test was firstly performed with peak detector. The final test was performed with quasi-peak detector at those critical frequencies found during the preview test. In the following figures, the vertical results are marked with red, and the horizontal ones are marked with blue.

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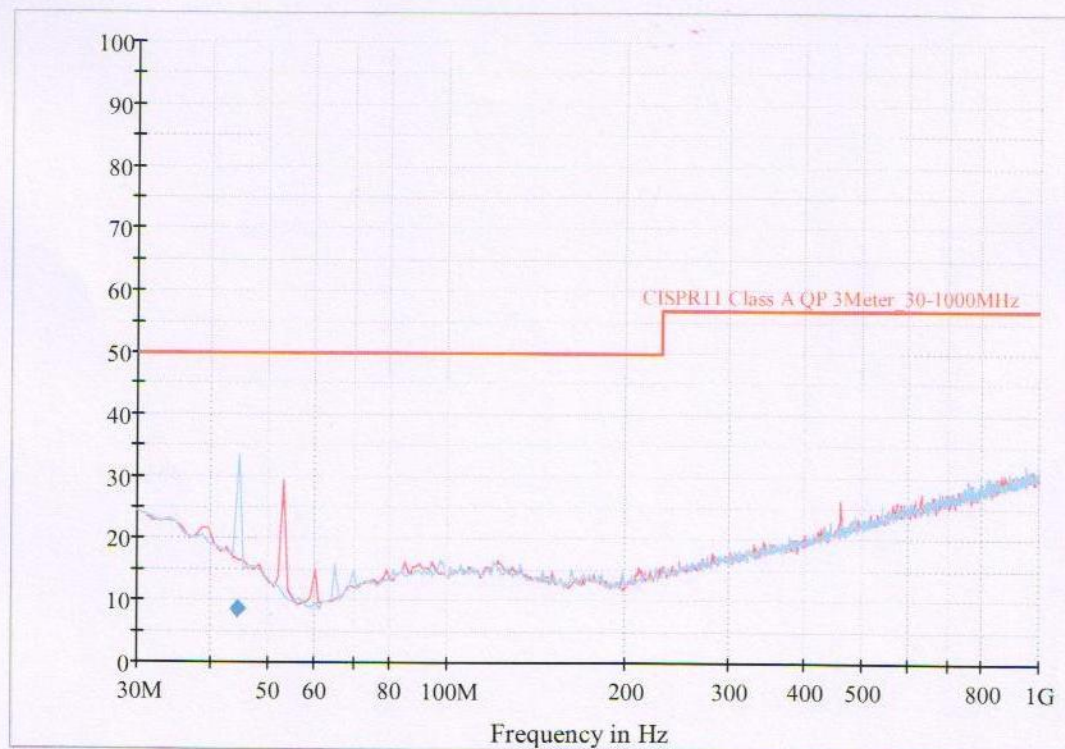
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Figure 3: Spectral diagrams and measurement results, Horizontal and Vertical polarization

Level in dB μ V/m

EMI Auto Test with sweep_HV



Final quasi-peak measurement result:

Frequency (MHz)	Quasi Peak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Margin (dB)	Limit (dB μ V/m)
44.510000	8.4	1000.000	120.000	280.0	H	48.0	41.6	50.0

5 Test Results I M M U N I T Y

During the immunity tests, the EUT was operated under conditions specified by clause 3.1 of this report.

The particular performance criterion for the immunity tests are as listed in clause 6.2.1.10 of EN 60601-1-2:2007 and is listed as follows:

Under the test conditions specified in 6.2, the electric hospital bed shall be able to provide the BASIC SAFETY and ESSENTIAL PERFORMANCE. The following DEGRADATIONS, if associated with BASIC SAFETY and ESSENTIAL PERFORMANCE, shall not be allowed:

- component failures;
 - changes in programmable parameters;
 - reset to factory defaults (MANUFACTURER'S presets);
 - change of operating mode;
 - false alarms;
 - cessation or interruption of any intended operation, even if accompanied by an alarm;
 - initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm;
 - error of a displayed numerical value sufficiently large to affect diagnosis or treatment;
 - noise on a waveform in which the noise would interfere with diagnosis, treatment or monitoring;
 - artefact or distortion in an image in which the artefact would interfere with diagnosis, treatment or monitoring;
- failure of automatic diagnosis or treatment electric hospital bed to diagnose or treat, even if accompanied by an alarm.

5.1 Enclosure

5.1.1 Electrostatic Discharge

Result:	Passed
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During the test, the EUT was placed on a 0.1m high insulating support above the ground plane. The minimum distance between the EUT and all other conductive structures except the ground plane beneath the EUT is more than 0.5m. The size of the reference ground plane is more than 2m by 2m.

A vertical coupling plane (VCP), size 0.5m x 0.5m, was placed on the wooden table and an insulating plate was placed beneath the EUT to isolate the EUT from the horizontal ground plane.

Date of testing	: 2011-08-02
Test procedure	: IEC 61000-4-2:2008
Test level	: EN 60601-1-2:2007; ±2.0kV, ±4.0kV, ±6.0kV contact discharge; ±2.0kV, ±4.0kV ±8.0kV air discharge
Polarity	: Positive / Negative
Number of discharges	: 10 at each point
Ambient condition	: Temperature: 26°C, Relative humidity: 46%

Table 3: Electrostatic discharge immunity test results

Position	Kind of Discharge	Remarks
Nonmetallic part of enclosure	Air discharge $\pm 2.0\text{kV}$, $\pm 4.0\text{kV}$, $\pm 8.0\text{kV}$	During the test, the EUT can operate as intended.
Power line and signal line	Air discharge $\pm 2.0\text{kV}$, $\pm 4.0\text{kV}$, $\pm 8.0\text{kV}$	During the test, the EUT can operate as intended.
Metallic enclosure	Contact discharge $\pm 2.0\text{kV}$, $\pm 4.0\text{kV}$, $\pm 6.0\text{kV}$	During the test, the EUT can operate as intended.
VCP	Indirect Contact $\pm 2.0\text{kV}$, $\pm 4.0\text{kV}$, $\pm 6.0\text{kV}$	During the test, the EUT can operate as intended.

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5.1.2 RF electromagnetic field immunity test

Result:

Passed

The test for frequency range 80-2.5GHz was performed inside a 3m modified semi-anechoic chamber with a test disturbance of 3m. The field uniformity of the test sites is regularly calibrated to ensure the 0-6dB field uniformity criterion as specified by IEC 61000-4-3:2006+A1:2007+A2:2010 is met.

Date of testing : 2011-07-26
Basic standard : IEC 61000-4-3:2006+A1:2007+A2:2010
Test level : EN 60601-1-2: 2007, 3V/m
Frequency range : 80MHz-2.5GHz
Modulation : 80% 1kHz AM
Frequency scan speed : Frequency step: 1%; Dwell time: 3s
Ambient condition : Temperature: 24°C, Relative humidity: 47%

Table 4: RF electromagnetic field immunity test results

Polarization	Result	Remarks
Horizontal	Passed	During the test, the EUT can operate as intended.
Vertical	Passed	During the test, the EUT can operate as intended.

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5.1.3 Power frequency magnetic field**Result:****N/A**

Due to the EUT does not contain components susceptible to magnetic fields, such as Hall elements or magnetic field sensors. Therefore, the EUT is deemed to meet the requirement without actual testing.

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5.2 Input and Output AC Power Port, Signal Port and Interconnecting Port

5.2.1 Fast Transients on AC Power Line, Signal Line and Interconnecting Line

Result:

Passed

During the test, the EUT was placed on a 0.1m high insulating support above the reference ground plane. The minimum distance between the EUT and all other conductive structures except the reference ground plane beneath the EUT is more than 0.5m.

The length between the coupling device and the EUT is less than 1m. The excessive part of the power cord longer than 1m was folded forth and back parallel so as to form a bundle with a length between 0.3m and 0.4m.

Date of testing : 2011-08-02
Test procedure : IEC 61000-4-4:2004+A1:2010
Test level : EN 60601-1-2:2007, ± 2 kV, 5kHz, for mains port
Polarity : +/-
Coupling duration : 1min/polarity
Ambient condition : Temperature: 23°C, Relative humidity: 46%

Table 5: EFT/B immunity test results for power line

Coupling mode	Result	Remarks
L-N-PE	Passed	During the test, the EUT can operate as intended.
Signal line and Interconnecting line	N/A	The length of signal line and interconnecting line is shorter than three meters.

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5.2.2 Injected Current into AC Power Line, Signal Line and Interconnecting Line

Result:

Passed

During the test, the sample was placed on a 0.1m wooden support above the reference ground plane. The minimum distance between the sample and all other conductive structures except the reference ground plane beneath the EUT is more than 0.5m.

A CDN ^{and 3m lamp} was used to couple the disturbing signal onto the power input port of the sample. The distance between the EUT and the CDN is within 0.1-0.3m. The cable between the EUT and CDN is placed about 50mm above the reference ground plane.

Date of testing : 2011-08-02
Basic standard : IEC 61000-4-6:2003+A1:2004+A2:2006
Test level : Table 3 of EN 60601-1-2:2007
3V for Mains port and signal port
Frequency range : 0.15 – 80 MHz
Modulation : 80%AM, 1kHz
Frequency scan speed : Frequency step: 1%; Dwell time: 3s
Ambient conditions : Temperature: 24°C; Relative humidity: 48%

Table 6: Injected current, AC power port

Port	Result	Remarks
AC power line	Passed	During the test, the EUT can operate as intended.
Signal port and Interconnecting line	Passed	During the test, the EUT can operate as intended.

5.2.3 Surges to AC Power Port, Signal Line and Interconnecting Line

Result:	Passed
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The immunity against surges to AC power port was tested in accordance to IEC 61000-4-5:2005. Test setup and the Combination Wave Generator (CWG) were according to IEC 61000-4-5:2005 which is specified by EN 60601-1-2:2007.

Date of testing	:	2011-08-02
Test procedure	:	IEC 61000-4-5:2005
Test level	:	EN 60601-1-2:2007
		$\pm 0.5\text{kV}$, $\pm 1.0\text{kV}$, $\pm 2\text{kV}$ (Common mode), $\pm 0.5\text{kV}$, $\pm 1\text{kV}$ (Differential mode)
T_r/T_n	:	1.2/50 μs (open-circuit voltage) 8/20 μs (short-circuit current)
Polarity	:	Positive / Negative
Pulse number	:	5 pulses for each polarity
Coupling phase	:	0°, 90°, 180° and 270°
Repetition rate	:	1 pulse/min
Ambient conditions	:	Temperature: 23°C; Relative humidity: 47%

Table 7: Surge immunity test results

Coupling mode	Result	Remarks
L-PE	Passed	During the test, the EUT can operate as intended
N-PE	Passed	During the test, the EUT can operate as intended
L-N	Passed	During the test, the EUT can operate as intended
Signal port and Interconnecting port	N/A	According to EN 60601-1-2:2007 cause 6.2.5.2, Only power lines and AC inputs to AC-to-DC converters and battery chargers are tested;

5.2.4 Voltage dips and interruptions to AC Power Port

Result:

Passed

The immunity against voltage dips and interruptions to AC power port was tested in accordance to IEC 61000-4-11:2004. Test setup and the test generator were according to IEC 61000-4-11:2004 which is specified by EN 60601-1-2:2007.

Date of testing	: 2011-08-02
Basic standard	: IEC 61000-4-11:2004
Test level	: EN 60601-1-2:2007 <5 % during 0.5 cycle 40 % during 5 cycle 70 % during 25 cycles <5 % during 250 cycles
Ambient conditions	: Temperature: 23°C; Relative humidity: 47%

Table 8: Test condition and Test Result for Voltage interruptions

Environmental Phenomena	Test level (in % U _T)	Duration (in period of the rated frequency)	Remarks
Dips	0	0.5 (10ms)	The EUT can operate as intended after the test.
Dips	40	5 (100ms)	The EUT can operate as intended after the test.
Dips	70	25 (500ms)	The EUT can operate as intended after the test.
Interruptions	0	250 (5s)	The EUT can operate as intended after the test.

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5.2.5 Variations of power frequency**Result:****Passed**

Date of testing : 2011-08-02
Test procedure : Clause 6.2.14 of EN 60601-1-2:2007
Frequency : 50Hz
Ambient conditions : Temperature: 24°C; Relative humidity: 48%

Table 9: Test condition and test result for variations of power frequency

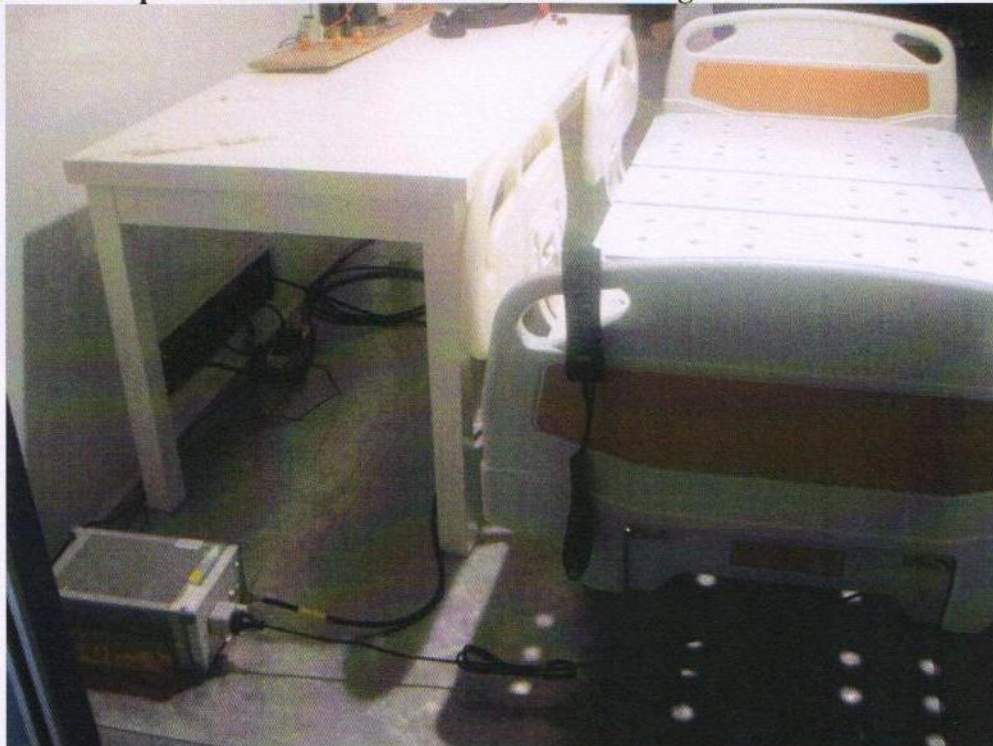
Test voltage (%U _T)	Test frequency (in % f _T)	Remarks
100%	100%(50Hz)	The EUT can operate as intended during the test.
100%	-2%(49Hz)	The EUT can operate as intended during the test.
100%	+2%(51Hz)	The EUT can operate as intended during the test.

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6 Photographs of the Test Set-Up

Photograph 1: Set-up for measurement of disturbance voltage on AC mains



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Photograph 2: Set-up for measurement of radiated emission



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Photograph 3: Set-up for immunity test of electrostatic discharge



Photograph 4: Set-up for immunity test of RF electromagnetic field, 80M-1GHz



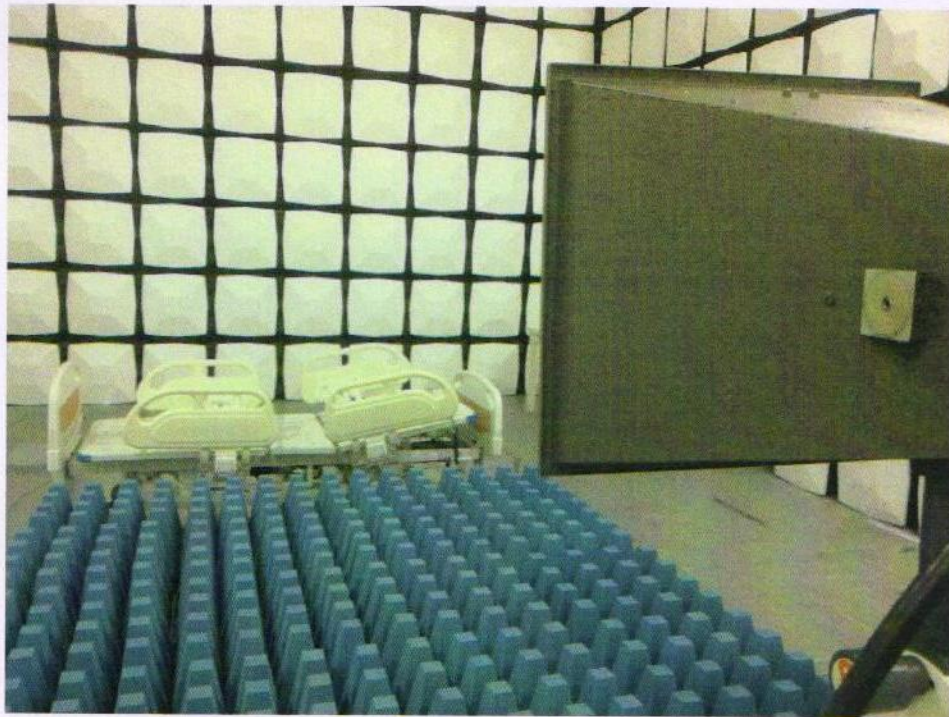
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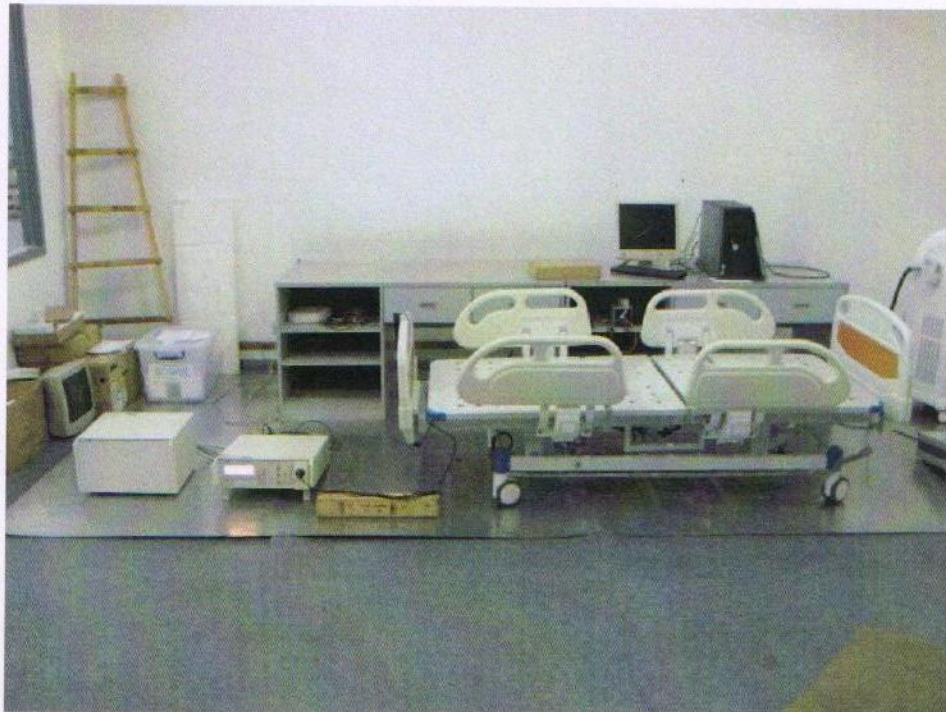
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Photograph 5: Set-up for immunity test of RF electromagnetic field, 1GHz-2.5GHz



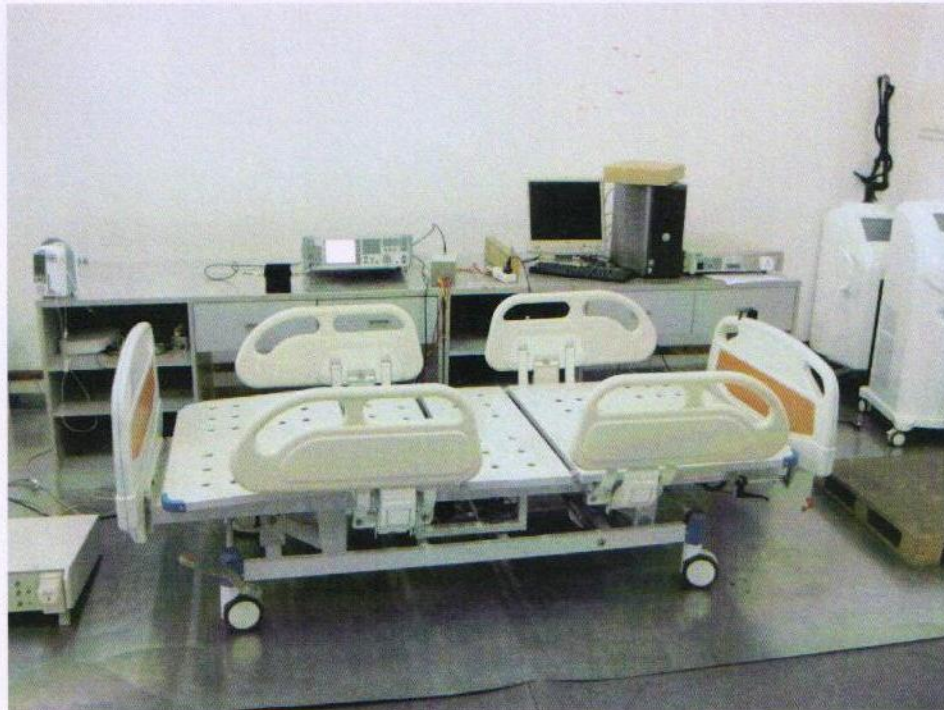
Photograph 6: Set-up for immunity test of fast transient/burst, surge, voltage dips and short interruptions



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Photograph 7: Set-up for immunity test of injected current, AC power line



Photograph 8: Set-up for immunity test of injected current, signal line



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Photograph 9: Set-up for immunity test of variations of power frequency



Photograph 10: Set-up for harmonics on AC mains



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