TEST REPORT

EN 62233: 2008

Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure

Report Reference No. .....:	GZES110400210331
Tested by (name + signature) .....:	Kyle Zhang
Approved by (name + signature).....:	Gabriel Qian
Date of issue.....:	2011-04-26

CB Testing Laboratory.....:	SGS-CSTC Standards Technical Services Co., Ltd. - E&E Lab Guangzhou
Address.....:	198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, Guangdong, China 510663
Testing location / procedure .....:	CBTL ☒ TMP ☐ WMT ☐ SMT ☐ RMT ☐
Testing location / address.....:	Same as above
Applicant's name.....:	HoMedics Group Ltd.
Address.....:	HoMedics House, Somerhill Business Park, Five Oak Green Road, Tonbridge, Kent TN11 0GP England
Test specification:	
Standard .....:	EN 62233: 2008
Test procedure .....:	SGS-CSTC
Non-standard test method……..:	N/A
Test Report Form No......:	EN 62233_1
TRF Originator.....:	SGS-CSTC
Master TRF.....:	Dated 2009-01

This document is issued by the company under its General Conditions of Service accessible at **http://www.sgs.com/terms_and_conditions.htm.** Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Test item description .....:	Massage chair (Cocoon Shiatsu Max Back Massager)
Trade Mark .....:	HoMEDICS®
Model/Type reference.....:	CBS-1000-EU & CBS-1000-GB
Ratings.....:	220V – 240V, 50Hz/60Hz, 35 W, Class II

Copy of marking plate:

Summary of testing:

The following standards were carried out:

EN 62233: 2008

The models CBS-1000-EU was subject to test.

The submitted samples fulfilled the requirements of specified standards.

Test item particulars ..... :	
Classification of installation and use..... :	Portable appliance
Supply Connection ..... :	Non-detachable power cord fitted with a plug
Possible test case verdicts..... :	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement..... :	P(Pass)
- test object does not meet the requirement..... :	F(Fail)
Testing ..... :	
Date of receipt of test item ..... :	2011-04-20
Date (s) of performance of tests ..... :	2011-04-20 to 2011-04-26

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

This document is issued by the company under its General Conditions of Service accessible at **http://www.sgs.com/terms_and_conditions.htm**. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated: (a) the results shown in this document refer only to the sample(s) tested and (b) such sample(s) are retained for 12 months. This document cannot be reproduced except in full, without prior approval of the company.

"(see enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

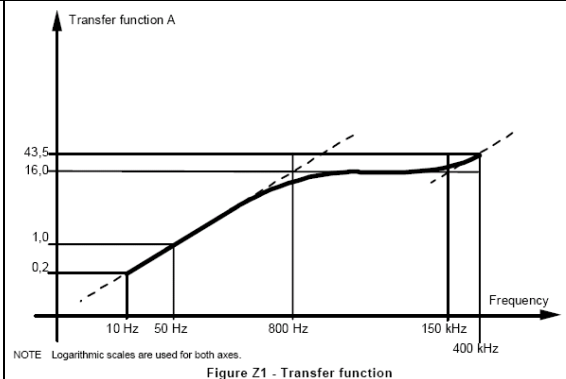
This test report includes the following additional documents to original TRF:

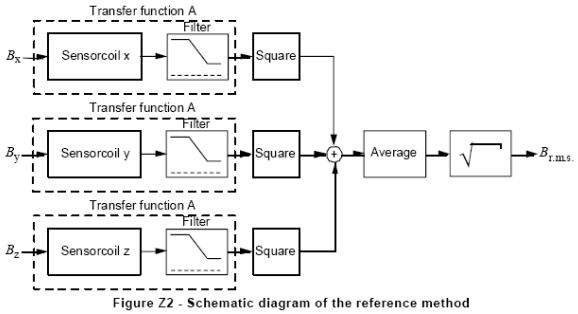
Appendix 1: Photo documents.

General product information:

Massage chair for household and indoor use only.

EN 62233: 2008			
Cl.	Requirement - Test	Result	Verdict
5	**Measuring methods**		--
5.1	**Electric fields** The measurement method is under consideration. If appliances, with their internal transformer or electronic circuit, are working at voltage lower than 1 000 V, they are deemed to comply without testing.		P
5.2	**Magnetic fields**		P
	Frequency range The frequency range considered is from 10 Hz to 400 kHz .		P
	If it is not feasible to cover the frequency range in one measurement, the weighted results of each measured frequency range shall be added.		N/A
5.3	**Measuring distances, sensor locations and operating conditions** The **measuring distances**, sensor locations and operating conditions are specified in Annex A.	0 cm; Against the massage head; Continuously without load, highest speed setting.	P
5.4	**Magnetic field sensor** Measurement values of magnetic flux density are averaged over an area of 100 cm² in each direction. The reference sensor consists of three mutually perpendicular concentric coils with a measuring area of 100 cm² +/- 5 cm² to provide isotropic sensitivity. The outside diameter of the reference sensor is not to exceed 13 cm.		P
	For the determination of **coupling factors**, as s pecified in Annex C, an isotropic sensor having a measuring area of 3 cm² +/-0,3 cm² is used.		P
	NOTE The final value of the magnetic flux density is the vector addition of the values measured in each direction. This ensures that the measured value is independent of the direction of the magnetic field.		P
5.5	**Measuring procedures for magnetic fields**		--
5.5.1	**General**		--
	The measuring signal shall be evaluated dependent on the frequency. Transient magnetic fields with a duration of less than 200 ms, e.g. during switching events, are disregarded.		P
	If a switching action occurs during the measurements, the measurement has to be repeated. The measuring equipment is to have a maximum noise level of 5 % of the limit value.		P

EN 62233: 2008			
Cl.	Requirement - Test	Result	Verdict
	Any measured value below the maximum noise level is disregarded. The background level is to be less than 5 % of the limit value. The response time for the measuring equipment to reach 90 % of the final value is not to exceed 1 s.	Background level: 0,238 %	P
	The magnetic flux density is determined by using an averaging time of 1 s. Shorter sampling times may be used if the source is shown to be constant over a period greater than 1 s for 10 Hz – 400 kHz signals. During the final measurement the sensor should remain stationary.		P
5.5.2	**Time domain evaluation**		--
	This is the reference method and is used in case of doubt. Independent of the type of the signal, a time domain measurement of the value of the magnetic flux density can be carried out. For fields with several frequency components, the dependency on frequency of the reference levels is taken into account by implementing a transfer function A which is inverse of the reference level expressed as a function of the frequency.		P
	The transfer function is to be established using a first order filter and shall have the characteristics shown in Figure Z1.		P
	 Figure Z1 - Transfer function		P
	The following sequence is used for the measurements: − perform a separate measurement of each coil signal; − apply a weighting to each signal using the transfer function; − square the weighted signals; − add the squared signals; − average the sum; − obtain the square root of the average.		P
	The result is the weighted r.m.s. value of the magnetic flux density.		P

EN 62233: 2008			
Cl.	Requirement - Test	Result	Verdict
	This procedure is shown schematically in Figure Z2.		P
	 Figure Z2 - Schematic diagram of the reference method		P
	The actual measured value shall be compared directly with the reference level *B*BRL of the flux density at 50 Hz. With appliances with highly localized fields, this has to be performed after taking the coupling factor *a*c(*r*1) given in Annex C into account.		P
	The final weighted result, *W*, can be derived as follows:		P
	$W_n = \frac{B_{r.m.s.}}{B_{RL}}$		P
	where *W*n weighted result for one measurement; *B*Br.m.s r.m.s. value of the magnetic flux density; *B*BRL reference level of the magnetic flux density at *f*C0; *a*c(*r*1) coupling factor according to Annex C or Table D.3. *W*nc weighted result for one measurement taking the coupling of the inhomogeneous field into account by applying *a*c(*r*1). The determined weighted result *W* shall not exceed the value 1		P
5.5.3	**Line spectrum evaluation**		N/A
5.5.4	**Simplified test methods**		N/A
5.6	**Measurement uncertainty**		P
	The maximum overall measurement uncertainty shall not exceed 25 % of the limit. Guidance to assess uncertainty is provided in IEC 61786.		P
	NOTE 1 The total measurement uncertainty can comprise aspects such as sensor position, operating conditions, noise background or the signal exceeding the dynamic range of the measuring instrument.		P
	When the result has to be compared with a limit, the measurement uncertainty shall be implemented as follows:		N/A

EN 62233: 2008			
Cl.	Requirement - Test	Result	Verdict
	– to establish whether an appliance produces only fields below the limit, the measurement uncertainty has to be added to the result and the sum has to be compared with the limit;		N/A
	NOTE This applies e.g. for measurements carried out by the manufacturer.		N/A
	– to establish whether an appliance produces fields over the limit, the measurement uncertainty has to be subtracted from the result and the difference has to be compared with the limit.		N/A
5.7	**Test report**		--
	The test report shall include at least the following items:		P
	. Identification of the appliance	BES900	P
	. specification of the measuring equipment	Narda ELT-400; Overload limit: 160%, Detection time: 1s	P
	. operating mode, measuring positions and measuring distance unless specified in Annex A	0 cm; Against the massage head; Continuously without load, highest speed setting.	P
	. rated voltage and frequency	AC 220 V - 240 V, 50 Hz / 60 Hz	P
	. measuring method	Time domain method	P
	. measured maximum value, weighted with the coupling factor if applicable	23,89 %	P
	. measurement uncertainty, if the measured result is more than 75 % of the limit.		N/A
6	**Evaluation of results**		--
	The requirements of this standard are fulfilled: – if the measured values with measurement uncertainty taken into account (see 5.6) do not exceed the reference levels, or		P
	– if a measured value exceeds the reference level the coupling factor can be taken into account to show that the basic restrictions are met. For specific apparatus the corresponding coupling factor *ac*(*r*1) can be determined as described in Annex C, or		N/A
	– if the value still exceeds the reference level when using the coupling factor, it does not necessarily follow that the basic restrictions will be exceeded. It shall be verified, e.g. by calculation methods, whether the basic restrictions are fulfilled or not.		N/A
	Annex A (normative)		--
	Test conditions for the measurement of magnetic flux density		P
A.1	**General**		--

EN 62233: 2008			
Cl.	Requirement - Test	Result	Verdict
	The measurements are carried out under the conditions specified in Table A.1, the appliance being positioned as in normal use.		P
A.1.1	**Operating conditions, if not specified in Table A.1:** a) Maximum setting. b) The operating condition as specified in the relevant CISPR 14-1 series or without load, if possible.		P
	Manufacturer's specifications regarding short time operation have to be taken into account. The running-in time is not specified but, prior to testing, the appliance is operated for a sufficient period to ensure that the conditions of operation are typical of those during normal use.		N/A
	The appliances shall be operated as in normal use from a supply which provides the rated voltage ±2 % and the rated frequency ±2 % of the appliance.		N/A
	If a voltage range and/or a frequency range are indicated, then the supply voltage and/or frequency shall be the nominal voltage and/or frequency of the country or region in which the appliance is intended to be used.	AC 220 V - 240 V; 50 Hz / 60 Hz;	P
	Controls are adjusted to the highest setting. However, pre-set controls are used in the intended position. The measurements are made while the appliance is energized.		N/A
	Tests are carried out at an ambient temperature of 25 °C ± 10 °C.		P
A.1.2	**Measuring distance, if not specified in Table A.1:** a) The appliance used in contact with the relevant parts of the body: 0 cm. b) Other appliances: 30 cm.	0 cm.	P
A.1.3	**Sensor location, if not specified in Table A.1:** a) Appliance in contact with the relevant parts of the body: toward user (contact side). b) Un-transportable large appliance: front (operating side) and the other sides to which persons can access (see Figure A.1). c) Other appliances: around (see Figure A.2).	Against the massage head;	P
A.2	**Operating conditions for specific appliances**		--
A.2.1	**Multifunction equipment** Multifunction equipment, which is subjected simultaneously to different clauses of this standard, shall be tested with each function operated separately, if this can be achieved without modifying the equipment internally.		N/A

EN 62233: 2008			
Cl.	Requirement - Test	Result	Verdict
	For equipment for which it is not practical to test with each function operated separately, or where the separation of a particular function would result in the equipment being unable to fulfil its primary function, the equipment shall be operated with the minimum number of functions needed to operate.		N/A
A.2.2	**Battery operated equipment** If the appliance can be connected to the mains it shall be tested operating in each permitted mode. When operating with power from the battery, the battery shall be fully charged prior to start the test.		N/A
A.2.3	**Measuring distance and sensor location**		P
	NOTE The measuring distances in Table A.1 have been defined based upon the expected location of the operator during normal operation, to protect against effects on central nervous system tissues in the head and trunk of the body.		P

EN 62233: 2008			
Cl.	Requirement - Test	Result	Verdict

Type of appliance	Measuring distance r_1 cm	Sensor locations	Operating conditions	Coupling factor $a_c(r_1)$ σ = 0,1 S/m 8 Hz .. 800 Hz [a]
Appliances not mentioned in the table	Operator distance	All surfaces	As specified in EN 55014-1	See Annex C
Air cleaners	30	All surfaces	Continuously	0,17
Air conditioners	30	Around	Continuously. When cooling lowest temperature setting. When heating highest temperature setting	0,18
Battery chargers (including inductive)	30	All surfaces	Charging a discharged battery having the highest capacity specified by the manufacturer	0,15
Blankets	0	Top	Spread out and laid on a sheet of thermal insulation	0,19
Blenders	30	Around	Continuously, no load	0,16
Citrus presses	30	Around	Continuously, no load	0,15
Clocks	30	Around	Continuously	0,15
Coffee makers	30	Around	As specified in 3.1.9 of EN 60335-2-15	0,16
Coffee mills	30	All surfaces	As specified in 3.1.9.108 of EN 60335-2-14	0,15
Convector heaters	30	Around	With highest output	0,20
Deep fat fryers	30	Around	As specified in 3.1.9 of EN 60335-2-13	0,16
Dental hygiene appliances	0	All surfaces	As specified in 3.1.9 of EN 60335-2-52	0,19
Depilators	0	Against cutter	Continuously, no load	0,30
Dishwashers	30	Top, front	Without dishes in the washing mode and drying mode	0,18
Egg boilers	30	Around	As specified in 3.1.9 of EN 60335-2-15	0,15
Electric and electronic controls for track sets	30	All surfaces	Continuously	0,17
Facial sauna appliances	10	Top	Continuously	0,12
Fans	30	Front	Continuously	0,16
Fan heaters	30	Front	Continuously, highest heat setting	0,16

EN 62233: 2008			
Cl.	Requirement - Test	Result	Verdict

Type of appliance	Measuring distance r_1 cm	Sensor locations	Operating conditions	Coupling factor $a_c(r_1)$ σ = 0,1 S/m 8 Hz .. 800 Hz [a]
Floor polishers	30	All surfaces	Continuously without any mechanical load on the polishing brushes	0,19
Food processors	30	Around	Continuously without load, highest speed setting	0,17
Food warming cabinets	30	Front	Continuously without load, highest heat setting	0,15
Foot warmers	30	Top	Continuously without load, highest heat setting	0,15
Gas heating appliances, wall mounted	30	Front, left and right side	Continuously, highest heat setting with pump in operation	0,16
Gas heating appliances, floor standing	30	Front, left and right side	Continuously, highest heat setting with pump in operation	0,20
Gas igniters	30	All surfaces	Continuously	0,15
Grills	30	Around	Continuously without load, highest heat setting	0,16
Hair clippers	0	Against cutter	Continuously without load	0,30
Hairdryers	10	All surfaces	Continuously, highest heat setting	0,12
Heat pumps	30	Around	Continuously. When cooling lowest temperature setting. When heating highest temperature setting	0,17
Heating mats	30	Top	Spread out and laid on a sheet of thermal insulation	0,15
Heating pads	0	Top	Spread out and laid on a sheet of thermal insulation	0,14
Hobs	30	Top, front	As specified in 3.1.9 of EN 60335-2-6 but with highest setting, each heating unit separately	0,18
Hotplates	30	Around	As specified in 3.1.9 of EN 60335-2-9 but with highest setting, each heating unit separately	0,17
Icecream makers	30	Around	Continuously without load, lowest temperature setting	0,18
Immersion heaters	30	Around	Heating element fully submerged	0,16
Induction hobs and hotplates	See A.3.1	See A.3.1	See A.3.2.	
Irons	30	All surfaces	As specified in 3.1.9 of EN 60335-2-3	0,15
Ironing machines	30	All surfaces	As specified in 3.1.9 of EN 60335-2-44	0,19
Juice extractors	30	Around	Continuously without load	0,17
Kettles	30	Around	Half-filled with water	0,17
Kitchen scales	30	Around	Continuously without load	0,14
Knives	30	All surfaces	Continuously without load	0,16

EN 62233: 2008			
Cl.	Requirement - Test	Result	Verdict

Type of appliance	Measuring distance r_1 cm	Sensor locations	Operating conditions	Coupling factor $a_c(r_1)$ σ = 0,1 S/m 8 Hz .. 800 Hz [a]
Massage appliances	0	Against the massage head	Continuously without load, highest speed setting	0,21
Microwave ovens	30	Top, front	Continuously with highest microwave power setting. Conventional heating elements, if available, are operated simultaneously at their highest setting. The load is 1 l of tap water, placed in the centre of the shelf. The water container is made of electrically non-conductive material such as glass or plastic.	0,17
Mixers	30	All surfaces	Continuously without load, highest speed setting	0,16
Oil filled radiators	30	Around	Continuously, highest heat setting	0,20
Ovens	30	Top, front	Oven empty with door closed, thermostat being at the highest setting. Also in the cleaning mode, if available, as described in the instructions for use.	0,20
Ranges	30	Top, front	Each function separately	0,20
Range hoods	30	Bottom, front	Controls at highest setting	0,19
Refrigeration appliances	30	Top, front	Continuously with the door closed. The thermostat is adjusted to lowest temperature setting. The cabinet is empty. The measurement is made after steady conditions have been reached but with active cooling in all compartments.	0,18
Rice cookers	30	Around	Half-filled with water, without lid and highest heat setting	0,16
Shavers	0	Against cutter	Continuously without load	0,30
Slicing machines	30	All surfaces	Continuously without load, highest speed setting	0,17
Solaria - parts touching the body - other parts	 0 30	 Around Around	 Continuously, highest settings Continuously, highest settings	 0,18 0,20
Spin extractors	30	Top, front	Continuously without load	0,18
Storage heaters	30	Around	Continuously, highest heat setting	0,20
Tea makers	30	Around	Continuously, no load	0,16
Toasters	30	Around	Without load, highest heat setting	0,16
Tools, hand-guided	30	Around, unless the same side is always towards the user	No-load, all settings e.g. speed set to maximum.	0,15
Tools, hand-held	30	Around, unless the same side is always towards the user	No-load, all settings e.g. speed set to maximum.	0,15

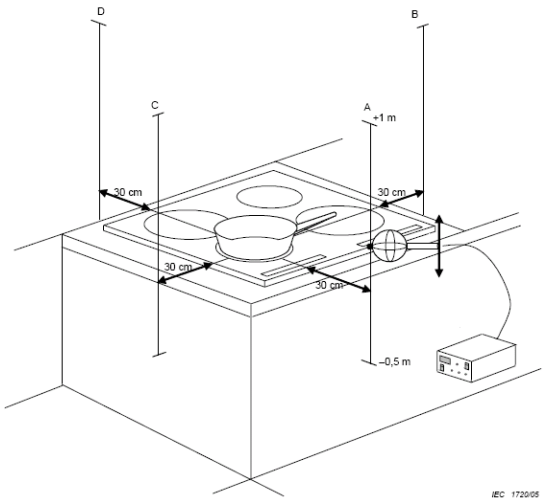
EN 62233: 2008			
Cl.	Requirement - Test	Result	Verdict

Type of appliance	Measuring distance r_1 cm	Sensor locations	Operating conditions	Coupling factor $a_c(r_1)$ σ = 0,1 S/m 8 Hz .. 800 Hz [a]
Tools, transportable	30	Top and side towards the user	No-load, all settings e.g. speed set to maximum.	0,16
Tools with heating elements	30	Around, unless the same side is always towards the user	Highest temperature setting. Glue guns with glue stick in working position	0,15
Tumble dryers	30	Top, front	Drum filled with textile material having a mass in the dry condition of 50 % of the maximum load. The textile material consists of pre-washed double-hemmed cotton sheets approximately 70 cm ×70 cm cm having a mass between 140 g/m² and 170 g/m² in the dry condition. The material is soaked with water of a mass of 60 % of that of the textile material.	0,18
Vacuum cleaners, handheld	30	All surfaces	As specified in 3.1.9 of EN 60335-2-2	0,16
Vacuum cleaners, body sling	0	All surfaces	As specified in 3.1.9 of EN 60335-2-2	0,13
Vacuum cleaners, others	30	Around	As specified in 3.1.9 of EN 60335-2-2	0,16
Washing machines and washer dryers	30	Top, front	Without textiles, in the spinning mode at highest speed	0,18
Water-bed heaters	10	Top	Spread out and laid on a sheet of thermal insulation	0,14
Water heaters	30	Around	Controls at highest setting, with water flowing, if necessary	0,17
Whirlpool baths - inside - outside	 0 30	 Around Around	 Continuously Continuously	 0,18 0,20

[a] The worst case coupling factors have been calculated for frequencies up to 800 Hz. For fundamental operating frequencies greater than 800 Hz and lower than 150 kHz, the coupling factor is $a_c(r_1)$ x 1,25.

A.3	**Test conditions for induction hobs and hotplates**		N/A

EN 62233: 2008			
Cl.	Requirement - Test	Result	Verdict
A.3.1	**Measuring distances** For each cooking zone measurements are made along four vertical lines (A, B, C, D) at a distance of 30 cm from the edges of the appliance to the surface of the sensor (see Figure A.3). The measurements are made up to 1 m above the cooking zone and 0,5 m below it. The measurement is not made at the rear of the appliance (line D) if it is intended to be used when placed against a wall.		N/A
A.3.2	**Operating mode** An enamelled steel cooking vessel, approximately half filled with tap water is placed centrally on the cooking zone to be measured.		N/A
	The smallest vessel recommended in the instructions for use is used. If no recommendations are provided, the smallest standard vessel that covers the marked cooking zone is used. The bottom diameters of standard cooking vessels are: 110 mm, 145 mm, 180 mm, 210 mm and 300 mm. The induction heating units are operated in turn, the other cooking zones not being covered. Energy controller settings shall be set to maximum. The measurements are made after stable operating conditions are reached.		N/A
	If no stable conditions can be reached, an appropriated observation time (e.g. 30 s) should be defined to be sure to get the max. value at fluctuating field sources. NOTE Because of sharing power between induction heating units, the highest and continuous magnetic field is obtained when each heating units are operated separately.		N/A

EN 62233: 2008			
Cl.	Requirement - Test	Result	Verdict
	Lines A, B, C and D indicate the measuring positions. This figure shows the front left hand induction heating element of a 4-zone hob in operation. **Figure A.3 – Measuring distances for induction hobs and hotplates** 		N/A
	Annex B (informative)		--
	Basic restrictions and reference levels		--
	The following **basic restrictions** and **reference levels** of 1999/519/EC apply.		P
	Annex C (normative)		--
	Determination of coupling factors		N/A

Appendix 1:

Photo documents

Type of equipment, model: Massage chair (Cocoon Shiatsu Max Back Massager) / CBS-1000-EU, CBS-1000-GB

Details of: Appearance

View:

☒ general

☒ front

☐ rear

☐ right

☐ left

☐ top

☐ bottom

Details of: Control pannel

View:

☒ general

☐ front

☐ rear

☐ right

☐ left

☐ top

☐ bottom

-- End of Report --