



Test Report issued under the responsibility of:

TEST REPORT IEC 60601-1-2 Medical Electrical Equipment PART 1-2: General Requirements for Basic Safety and Essential Performance Collateral Standard: Electromagnetic Compatibility	
Report Reference Number.....:	E1/2017/10065
Complied by(+signature)	Johnny Ho Engineer 
Approved by(+signature)	Wisely Huang Reviewer 
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Name of Testing Laboratory preparing the Report.....:	SGS Taiwan LTD. Electronics & Communication Laboratory No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803
Applicant's name.....:	TurnAid Aps
Address	Vejlevej 15, DK 7160 Tørring. Denmark
Test specification:	
Standard.....:	IEC 60601-1-2:2014 (Fourth Edition) EN 60601-1-2:2015
Test procedure	Test Scheme
Non-standard test method.....:	N/A
Test Report Form No.....:	SGS_IEC 60601-1-2:2014
Test Report Form(s) Originator	UL
Master TRF	Dated 2014-12
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Test item description	TurnAid
Trade Mark	TurnAid
Manufacturer	TurnAid Aps
Model/Type reference	TurnAid
Model/Type difference	N/A
Ratings	AC 230~240V, 50~60Hz
Summary of testing:	
Tests performed (name of test and test clause):	Testing location:
Conducted Emission (IEC 60601-1-2:2014, clause 7.1.1)	SGS Taiwan LTD. Electronics & Communication Laboratory
Radiated Emission (IEC 60601-1-2:2014, clause 7.1.1)	No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
Harmonic distortion (IEC 60601-1-2:2014, clause 7.2.1)	
Voltage fluctuations and flicker (IEC 60601-1-2:2014, clause 7.2.2)	For RS_Proximity fields from RF wireless communications equipment (IEC 60601-1-2:2014, clause 8.9) only:
ESD (IEC 60601-1-2:2014, clause 8.9)	Compliance Certification Services Inc
RS_Radiated RF EM fields (IEC 60601-1-2:2014, clause 8.9)	No.163-1, Zhongsheng Rd., Xindian Dist., New Taipei City 23151, Taiwan
RS_Proximity fields from RF wireless communications equipment (IEC 60601-1-2:2014, clause 8.9)	
EFT (IEC 60601-1-2:2014, clause 8.9)	
Surge (IEC 60601-1-2:2014, clause 8.9)	
CS (IEC 60601-1-2:2014, clause 8.9)	
PFMF (IEC 60601-1-2:2014, clause 8.9)	
Voltage dips and interruptions (IEC 60601-1-2:2014, clause 8.9)	
Summary of compliance with National Differences:	
List of countries addressed	
None	

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Test item particulars..... : None	
Classification of installation and use..... : Portable	
Supply Connection : Non-detachable cord	
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 : 2017/02/17	
Date (s) of performance of tests : 2017/02/17~2017/03/13	
General remarks: "(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 <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1-2:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : TurnAid Aps Vejlevej 15, DK 7160 Tørring. Denmark	

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General product information:

Classification of installation and use : Portable
 Device type (component/sub-assembly/equipment/system) : Equipment
 Intended use (including type of patient, application location) : Accessory for mounting on care beds, Home or Professional healthcare environments use.
 Mode of operation : Mode 1. Green shaft (clockwise) + red shaft
 Mode 2. Red shaft (counter clockwise) + green shaft
 Supply connection : Continuous
 Other options included : None

Software and Firmware Version: N/A

Prototype : **Production Version:**

Unit(s) Tested (include serial numbers):

Unit(s):1
Series numbers: 2017 02254L, R, E
 L = Left side/red side of the side rail.
 R = Right side/green side of the side rail.
 E = for the control box

Rationale for number of samples tested:

1

Intended Use:

The "TurnAid" is an accessory for mounting on care beds. It combines two well-known basic functions – bed rail and electric turning system.

Intended healthcare environments (Specify environment: Professional, Home, Aircraft, Special or Other (if other please describe)):

Home healthcare and Professional healthcare environments use.

Any deviations from the Basic EMC standards or from this collateral standard:

None

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1.1 Equipment Description

The TurnAid consists of:

- 1 set of side rails with integrated electric turning system (right and left side).
- Mounting fitting with electro units: 1 control box, 1 distributor box, 1 hand control, and various motor cables.
- 1 Slide sheet.
- 1 Turning sheet

The following are available as spare parts:

- Slide sheet
- Turning sheet
- 1 hand control (The TurnAid can be operated when 2 hand controls are mounted)

The TurnAid is an accessory for mounting on care beds. It combines two well-known basic functions – bed rail and electric turning system.

The turning system operates two motors, one on each side of the bed, to drive a turning sheet to move a patient in the bed. With a hand control the nursing staff controls the motor rolls.

The turning sheet is attached to each motor roller with Velcro.

A slide sheet is placed on the bed's mattress. To fix this sheet to the mattress you apply 4 elastic bands in the sheet corners and to the movable parts of the lying surface you apply 4 Velcro tapes.

The TurnAid has three settings:

- "bed rail-position"
- "working-position"
- "folded position"

The TurnAid is adjusted between the settings by releasing the locking ratchets. Any alteration to/from the settings is only possible with two hands.

Purpose:

- To give a gentle and dignified transfer of a patient.
- To create a care environment with reduced stress and discomfort.
- The bed/side rails ensure safe environment for the patient and the nursing staff.
- To assist the nursing staff with heavy turns and transfers.

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1.1.1 Equipment Marking Plate



1.1.2 Supporting Equipment Used During Test:

Use*	Product Type	Manufacturer	Model	Comments
EUT	TurnAid	TurnAid ApS	TurnAid	-

Note: * Use one of the following:
EUT – Equipment Under Test
AE – Auxiliary/Associated Equipment
SIM – Simulator (Not Subjected to Test) *Note: Use abbreviations:

1.1.3 Input/output Ports:

Port No.	Name	Type*	Cable Max. >3m	Cable Shielded	Comments (Sip/Sop lines must include description of use)
0	Enclosure	N/E	—	—	-
1	POWER CABLE	AC	1.8m	Non-shielding	-

Supplementary information:
 *Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical Batt=Battery
 Sip/Sop = Signal Input/output Port PC – Patient-Coupled Cable
 TP = Telecommunication Ports

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1.1.4 EUT Internal Operating Frequencies:

Frequency (MHz)	Description	Frequency (MHz)	Description
N/A	N/A	N/A	N/A
-	-	-	-
-	-	-	-

Supplementary information:

None

1.1.5 Power Interface

Mode No.	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (No.)	Comments
Rated	AC 230V	1A max	12	50Hz	1	AC Input port

Supplementary information:

None

1.2 EUT Operation Modes:

Mode #	Description
1	Green shaft (clockwise) + red shaft
2	Red shaft (counter clockwise) + green shaft

Supplementary information:

None

1.3 EUT Configuration Modes

Mode #	Description
1	1. Let EUT connect to power and adjust green shaft (clockwise) + red shaft. 2. Test.
2	1. Let EUT connect to power and adjust red shaft (counter clockwise) + green shaft. 2. Test.

Supplementary information:

None

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1.4 Basic Safety, Essential Performance and Immunity Pass/Fail Criteria as determined by the Manufacturer

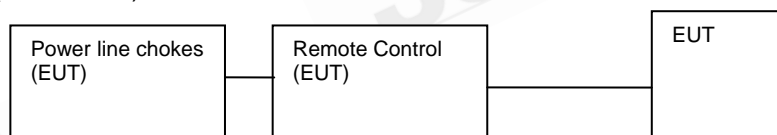
Description of Basic Safety and Essential Performance
The "TurnAid" is an accessory for mounting on care beds. It combines two well-known basic functions – bed rail and electric turning system.

Description how the BASIC SAFETY and ESSENTIAL PERFORMANCE were monitored during each test
During testing , the motor roll to turn left or right was monitored ,it should work as intended setting function and indication

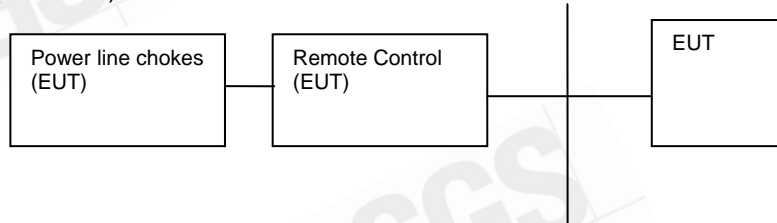
Immunity Pass/Fail Criteria
During testing , the motor roll to turn left or right was monitored ,it should work as intended setting function and indication

1.5 Configuration Block Diagram

(EMI &EMS) Mode 1~2



(RE & RS) Mode 1~2



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1.6 Compliance Summary

IEC 60601-1-2			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		
4.1	Risk management process for ME equipment and ME systems.		P
5	IDENTIFICATION, MARKING AND DOCUMENTS		
5.1	Equipment specified for use only in shielded location has appropriate marking/warning labels		N/A
5.2	Accompanying Documents		
5.2.1	Instructions for use		
5.2.1.1	General		
a)	A statement of the environments the ME equipment will be used. Relevant exclusions, as determined by Risk Analysis, shall also be listed.		P
b)	The essential performance of ME equipment and a description of what the operator can expect if the Essential Performance is lost or degraded due to EM disturbances.		P
c)	A warning regarding stacking and location close to other equipment		N/A
d)	List of cables, transducers and accessories		P
e)	A warning that other cables and accessories may negatively affect EMC performance		N/A
f)	A statement that portable RF communications equipment. Including antennas, can effect medical electrical equipment. The warning should include a use distance such as "...be used no closer than 30 cm (12 inches) to any part of the [ME EQUIPMENT or ME SYSTEM], including cables specified by the manufacturer"		P
5.2.1.2	Required statement from standard for Class A equipment		P

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5.2.2	Technical description		
5.2.2.1	All equipment and systems		
	Describe precautions to be taken to prevent adverse events to the Patient and Operator due to electromagnetic disturbances		P
a)	Compliance information for each test		P
b)	Statement of any deviations from standards used		N/A
c)	Statements to maintain basic safety and essential performance in regards to EMC		P
5.2.2.2	ME Equipment specified for use only in shielded location		
a)	A warning that equipment should be used only in the specified type of shielded location		N/A
b)	Specifications for shielded location including: – minimum RF shielding effectiveness; – for each cable that enters or exits the shielded location, the minimum RF filter attenuation; and – the frequency range(s) over which the specifications apply		N/A
c)	Test methods for measurement of RF shielding effectiveness and RF filter attenuation		N/A
d)	Required statement(s) from standard and recommended notice for information post at entrance.		N/A
5.2.2.3	ME Equipment that intentionally receive RF energy shall include: frequency and/or band and bandwidth of receiving section		N/A
5.2.2.4	ME Equipment that include transmitters shall include frequency and/or band, modulation, and ERP		N/A
5.2.2.5	Large ME Equipment that are permanently installed		
a)	A statement that an exemption has been used and that the equipment has not been tested for radiated RF immunity over the entire frequency range 80 MHz to 6 GHz		N/A
b)	A warning that the ME equipment has been tested for radiated RF immunity only at selected frequencies		N/A
c)	A list of the frequencies and modulations tested		N/A
5.2.2.6	ME equipment that claim compatibility with HF surgical equipment shall include statement of compatibility and conditions of intended use during HR surgery		N/A

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1.7 Result Summary

Requirement – Test	Result/Comments	Verdict
Clause 7 - Emissions		
Classification		—
Class A or B.....:	Class B	—
Group 1 or 2	Group 1	—
CISPR 11, 14-1, 32 or ISO 7137	CISPR 11	—
Conducted RF Emissions		P
Radiated RF Emissions		P
Disturbance Power (if applicable).....:	N/A	N/A
Harmonic Distortion per IEC61000-3-2 (Class A, B, C, D):	Class A	P
Voltage Fluctuations and Flicker per IEC61000-3-3		P
Clause 8 - Immunity		
Electrostatic Discharges		P
Radiated RF EM Fields and Proximity Wireless fields		P
Electrical Fast Transients and bursts		P
Surges		P
Conducted Disturbances, induced by RF fields		P
Voltage Dips and Interruptions		P
Rated Power-frequency Magnetic Field		P

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1.8 Test Conditions and Results – Conducted Emissions

CISPR 11	TEST: Limits of mains terminal disturbance voltage				Verdict
<p>Method: The AMN placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment were at least 0,8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.</p>					P
Laboratory Parameters		Required prior to the test		During the test	
Ambient Temperature		10 to 40 °C		22°C	
Relative Humidity		10 to 90 %		51%	
Fully configured sample scanned over the following frequency range		Frequency range on each side of line		Measurement Point	
		150kHz to 30MHz		Mains	
Equipment mode		Power interface mode		AC 230V,50Hz	
		EUT configurations mode			
		Operation mode		Mode 1	
Limits – Group 1 - Class A					
Frequency (MHz)		Limit dB (µV)			
		Quasi-Peak	Result*	Average	Result*
0.15 to 0.50		79	-	66	-
0.50 to 30		73	-	60	-
Limits - Group 2 - Class A					
Frequency (MHz)		Limit dB (µV)			
		Quasi-Peak	Result*	Average	Result*
0.15 to 0.50		100	-	90	-
0.50 to 5		86	-	76	-
5 to 30		90 to 70	-	80 to 60	-
Limits - Group 2 - Class A					
Mains supply currents in excess of 100 A per phase					
Frequency (MHz)		Limit dB (µV)			
		Quasi-Peak	Result*	Average	Result*
0.15 to 0.50		130	-	120	-
0.50 to 5		125	-	115	-
5 to 30		115	-	105	-

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Limits - Group 1 and 2 - Class B				
Frequency (MHz)	Limit dB (µV)			
	Quasi-Peak	Result*	Average	Result*
0.15 to 0.50	66 to 56	P	56 to 46	P
0.50 to 5	56	P	46	P
5 to 30	60	P	50	P

Supplementary information: * - The result in tables may be a minimum margin to the limit. EUT powered at one of the Nominal input voltages and frequencies.

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	R&S	ESCI 3	101311	2016/6/23	2017/6/22
Coaxial Cables	EMC Instruments Corp	EMCRG58-BM-BM-3000	160812	2016/8/30	2017/8/29
LISN	SCHWARZBECK	NSLK 8127	8127-648	2016/6/13	2017/6/12
Pulse Limiter	Narda S.T.S.	PMM PL01	1110X30602	2016/8/12	2017/8/11
LISN	Schwarzbeck	NSLK 8128	NSLK8127-300	2016/6/22	2017/6/21
Test S/W	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.

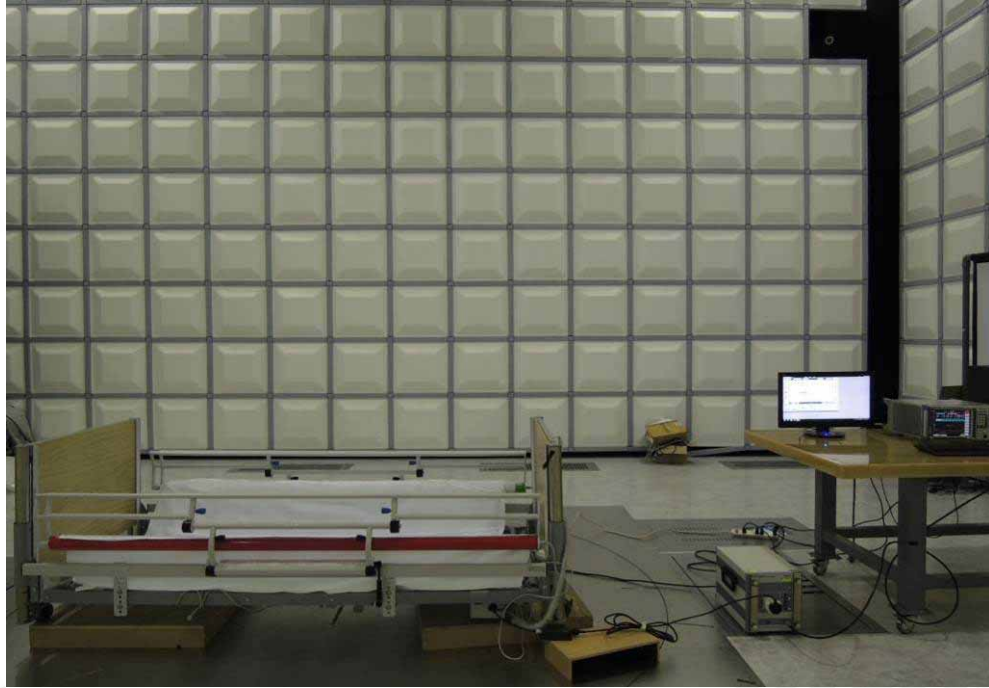
SGS Taiwan LTD. Electronics & Communication Laboratory
 No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
 Measurement Uncertainty of Conducted Emission
 Expanded uncertainty (K=2) of conducted emission is 2.20 dB

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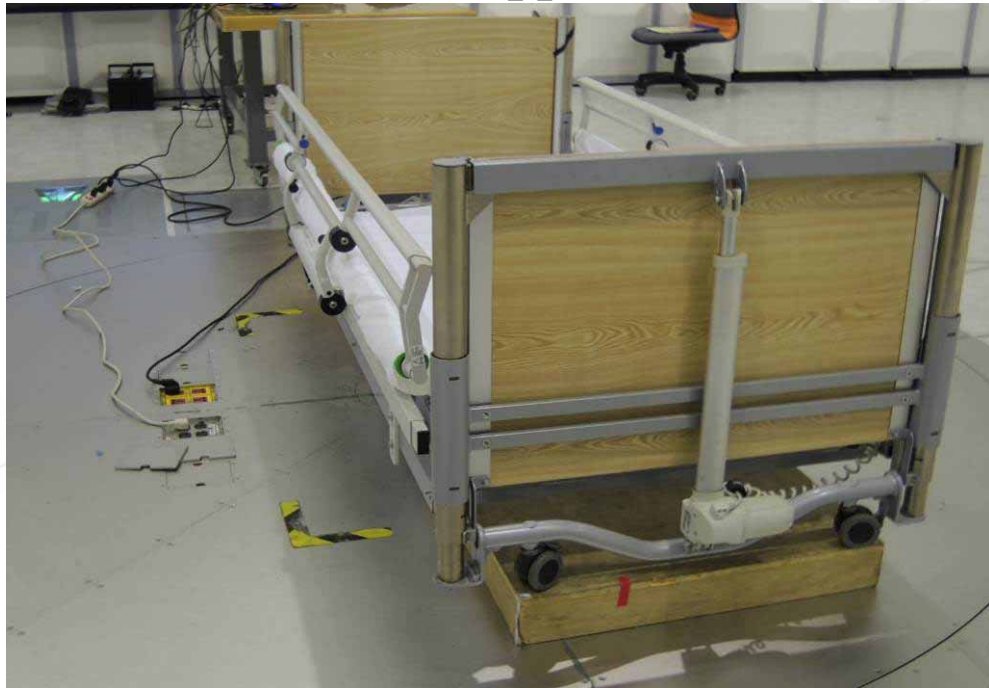
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Photo of test setup for Mains Terminal Disturbance Voltage Measurement

Mode_1_+



Mode_1_-



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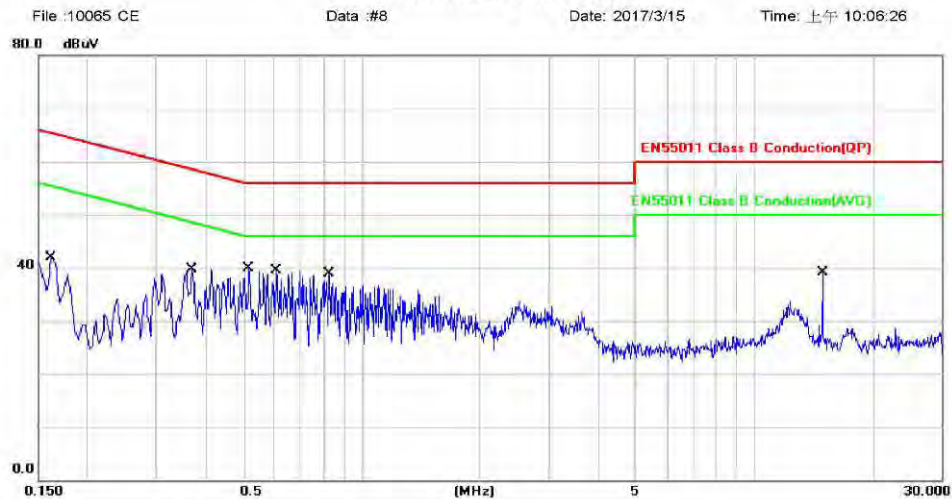
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Graphical representation of Mains Terminal Disturbance Voltage Measurement

Mode_1_L

Site : Conduction Room Phase: **L1** Temperature: 22 °C
 Limit: EN55011 Class B Conduction(QP) Power: AC 230V/50Hz Humidity: 51 %
 Mode: Mode_1
 Note:

Conducted Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1620	18.39	19.72	38.11	65.36	-27.25	QP	
2		0.1620	13.97	19.72	33.69	55.36	-21.67	AVG	
3		0.3700	9.81	19.81	29.62	58.50	-28.88	QP	
4		0.3700	7.67	19.81	27.48	48.50	-21.02	AVG	
5		0.5180	10.51	19.90	30.41	56.00	-25.59	QP	
6		0.5180	8.75	19.90	28.65	46.00	-17.35	AVG	
7		0.6060	9.59	19.90	29.49	56.00	-26.51	QP	
8		0.6060	7.47	19.90	27.37	46.00	-18.63	AVG	
9		0.8300	8.93	19.91	28.84	56.00	-27.16	QP	
10		0.8300	5.09	19.91	25.00	46.00	-21.00	AVG	
11		14.9420	16.51	20.29	36.80	60.00	-23.20	QP	
12 *		14.9420	13.01	20.29	33.30	50.00	-16.70	AVG	

*:Maximum data x:Over limit !:over margin

File :10065 CEData :#8

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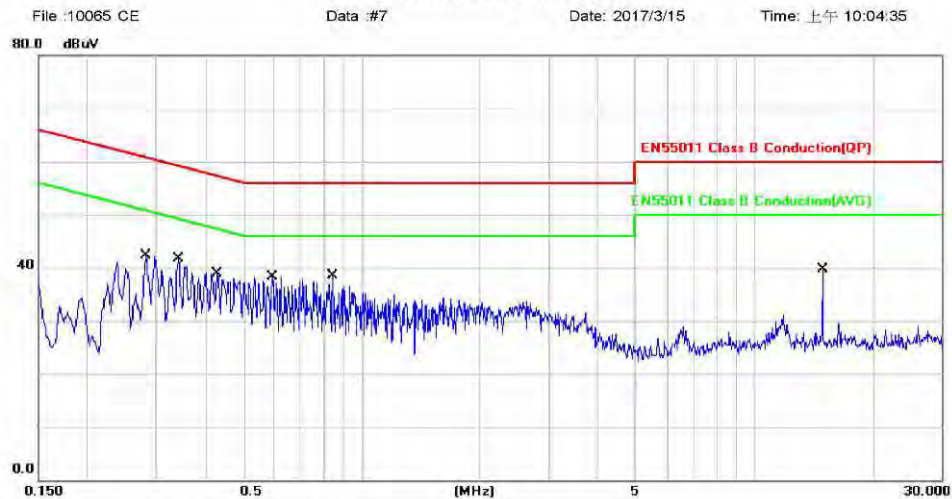
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Graphical representation of Mains Terminal Disturbance Voltage Measurement

Mode_1_N

Site : Conduction Room Phase: **N** Temperature: 22 °C
 Limit: EN55011 Class B Conduction(QP) Power: AC 230V/50Hz Humidity: 51 %
 Mode: Mode_1
 Note:

Conducted Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2820	20.63	19.77	40.40	60.76	-20.36	QP	
2		0.2820	19.78	19.77	39.55	50.76	-11.21	AVG	
3		0.3420	18.30	19.80	38.10	59.15	-21.05	QP	
4		0.3420	18.05	19.80	37.85	49.15	-11.30	AVG	
5		0.4300	14.67	19.86	34.53	57.25	-22.72	QP	
6		0.4300	12.15	19.86	32.01	47.25	-15.24	AVG	
7		0.5940	-1.02	19.91	18.89	56.00	-37.11	QP	
8		0.5940	-4.05	19.91	15.86	46.00	-30.14	AVG	
9		0.8460	-0.93	19.92	18.99	56.00	-37.01	QP	
10		0.8460	-4.10	19.92	15.82	46.00	-30.18	AVG	
11		14.9420	20.50	20.35	40.85	60.00	-19.15	QP	
12 *		14.9420	18.64	20.35	38.99	50.00	-11.01	AVG	

*:Maximum data x:Over limit !:over margin

File :10065 CE>Data :#7

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CISPR 32	TEST: Limits of mains terminal disturbance voltage			Verdict	
<p>Method: The AMN placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment were at least 0,8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.</p>				N/A	
Laboratory Parameters		Required prior to the test		During the test	
Ambient Temperature		10 to 40 °C		N/A	
Relative Humidity		10 to 90 %		N/A	
Fully configured sample scanned over the following frequency range		Frequency range on each side of line		Measurement Point	
		150kHz to 30MHz		Mains	
Equipment mode		Power interface mode		N/A	
		EUT configurations mode		N/A	
		Operation mode		N/A	
Limits – Class A					
Frequency (MHz)		Limit dB (µV)			
		Quasi-Peak	Result *	Average	Result *
0.15 to 0.50		79	N/A	66	N/A
0.50 to 30		73	N/A	60	N/A
Limits - Class B					
Frequency (MHz)		Limit dB (µV)			
		Quasi-Peak	Result *	Average	Result *
0.15 to 0.50		66 to 56	N/A	56 to 46	N/A
0.50 to 5		56	N/A	46	N/A
5 to 30		60	N/A	50	N/A
Supplementary information: * - The result in tables may be a minimum margin to the limit.					
EUT powered at one of the Nominal input voltages and frequencies.					

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CISPR 14	TEST: Limits of terminal disturbance voltage			Verdict	
<p>Method: The AMN was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.</p>				N/A	
Laboratory Parameters:		Required prior to the test		During the test	
Ambient Temperature		10 to 40 °C		N/A	
Relative Humidity		10 to 90 %		N/A	
Fully configured sample scanned over the following frequency range (see note 1)		Frequency range on each side of line		Measurement Point	
		148.5 kHz to 30MHz		Mains, Load Terminals, Additional Terminals	
Equipment mode		Power interface mode		N/A	
		EUT configurations mode		N/A	
		Operation mode		N/A	
Limits – Mains Terminal					
Frequency (MHz)		Limit dB (µV)			
		Quasi-Peak	Result *	Average	Result *
0.15 to 0.50		66 to 56	N/A	59 to 46	N/A
0.50 to 5		56	N/A	46	N/A
5 to 30		60	N/A	50	N/A
Limits - Load /Additional Terminals					
Frequency (MHz)		Limit dB (µV)			
		Quasi-Peak	Result *	Average	Result *
0.15 to 0.50		80	N/A	70	N/A
0.50 to 5		74	N/A	64	N/A
5 to 30		74	N/A	64	N/A
<p>Supplementary information: * - The result in this table may be a minimum margin to the limit. EUT powered at one of the Nominal input voltages and frequencies. Note 1: the World Administrative Radio-Communications Conference (WARC) has in 1979 reduced the lower frequency limit in region 1 to 148.5 kHz; for applications falling in the scope of this standard, tests at 150 kHz are considered adequate, since 148,5 kHz falls within the receiver bandwidth. In limit tables 150 kHz used.</p>					

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ISO 7137	TEST: Limits of mains terminal and I/O disturbance current		Verdict
Method: Measurements are made with a current probe. Tests are setup per Figure 21-6 of DO-160G. The current probe is installed five centimetres from the EUT. If the EUT connector plus back shell length exceeds five centimetres the probe shall be placed as close to the connector back shell as possible and the position noted.			N/A
Laboratory Parameters		Required prior to the test	During the test
Ambient Temperature		10 to 40 °C	N/A
Relative Humidity		10 to 90 %	N/A
Fully configured sample scanned over the following frequency range	Frequency range on each side of line		Measurement Point
	150kHz to 152MHz		Mains
	150kHz to 152MHz		I/O
Equipment mode	Power interface mode		N/A
	EUT configurations mode		N/A
	Operation mode		N/A
Limits – Power Lines			
Frequency (MHz)	Limit dB (µA)		Results *
	Quasi-Peak		
0.15 to 2	53 to 20		N/A
2 to 30	2		N/A
30 to 152	30		N/A
Limits – I/O Line			
Frequency (MHz)	Limit dB (µA)		Results *
	Quasi-Peak		
0.15 to 2	73 to 40		N/A
2 to 30	40		N/A
30 to 108	50		N/A
30 to 152	40		N/A
Supplementary information: * - The result in tables may be a minimum margin to the limit. EUT powered at one of the Nominal input voltages and frequencies.			

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Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Graphical representation of Input/Output Terminal Disturbance Current Measurement
N/A

Tabulated Results for Mains Terminal Disturbance Current								
Terminal	Test Frequency (MHz)	Meter Reading dB (µV)	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor (dB)	Level dB (µA)	Limit 1 dB (µA)	Margin (dB)
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

Supplementary information:
 Note: This table is to be used for combined correction factors (Gain/Loss and Transducer). Use column "Terminal" to identify the Line and /or Neutral that was tested. Other table formats are allowed as long as all information is included.

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1.9 Test Conditions and Results – Radiated Emissions

CISPR 11	TEST: Limits for radiated disturbance 30 MHz –1 GHz		Verdict
<p><u>Method:</u> Measurements were made in a 10-meter semi-anechoic chamber or Open Area Test Site that complies to CISPR 16. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of listed below. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (quasi-peak) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.</p>			P
Laboratory Parameters:	Required prior to the test	During the test	
Ambient Temperature	10 to 40 °C	20°C	
Relative Humidity	10 to 90 %	69%	
Fully configured sample scanned over the following frequency range	Frequency range on each side of line	Measurement Point	
	30MHz – 1GHz	10 m measurement distance***	
Equipment mode	Power interface mode	AC 230V,50Hz	
	EUT configurations mode		
	Operation mode	Mode 1	
Limits – Group 1 Class A			
Frequency (MHz)	Limit dB (µV/m)		
	Quasi-Peak	Results *	
30 to 230	40(10m), 50(3m)	-	
230 to 1000	47(10m), 57(3m)	-	
Limits – Group 1 Class B			
Frequency (MHz)	Limit dB (µV/m)		
	Quasi-Peak	Results *	
30 to 230	30(10m), 40(3m)	P	
230 to 1000	37(10m), 47(3m)	P	
Limits – Group 2 Class A			
Frequency (MHz)	Limit dB (µV/m)		
	Quasi-Peak	Results *	
30 to 1000	See standard	-	

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Limits – Group 2 Class B			
Frequency (MHz)	Limit dB (µV/m)		
	Quasi-Peak	Average**	Results *
30 to 80,872	30	25	-
80,872 to 81,848	50	45	-
81,848 to 134,786	30	25	-
134,786 to 136,414	50	45	-
136,414 to 230	30	25	-
230 to 1000	37	32	-

Supplementary information: EUT powered at one of the Nominal input voltages and frequencies.

* - The result in this table may be a minimum margin to the limit.

** - The Average Limits Apply To Magnetron Driven Equipment Only.

*** - Test distance used shall follow guidance from CISPR 11

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Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	R&S	ESCI 7	100924	2016/9/30	2017/9/29
EMI Test Receiver	R&S	ESCI 3	101343	2016/12/21	2017/12/20
Broadband Antenna	SCHWAZBECK	VULB9168	9168-628	2016/9/22	2017/9/21
Broadband Antenna	SCHWAZBECK	VULB9168	9168-629	2016/9/22	2017/9/21
Pre Amplifier	EMC Instruments Corp.	EMC330	980178	2016/3/31	2017/3/30
Pre Amplifier	EMC Instruments Corp.	EMC330	980179	2016/3/31	2017/3/30
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150917	2016/9/18	2017/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150919	2016/9/18	2017/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150820	2016/9/18	2017/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150918	2016/9/18	2017/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150821	2016/9/18	2017/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150822	2016/9/18	2017/9/17
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Site NSA	Chance Most	10M Chamber	10M SAC	2016/12/31	2017/12/31
Test S/W	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.

SGS Taiwan LTD. Electronics & Communication Laboratory
 No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
 Measurement Uncertainty of Radiated Emission
 Expanded uncertainty of radiated emission is 4.24 dB. (30MHz ~ 1000MHz)

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Photo of test setup for Radiated Disturbance

Mode_1_+



Mode_1_-



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SGS Taiwan Ltd.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279

f (886-2) 2298-0488

www.tw.sgs.com

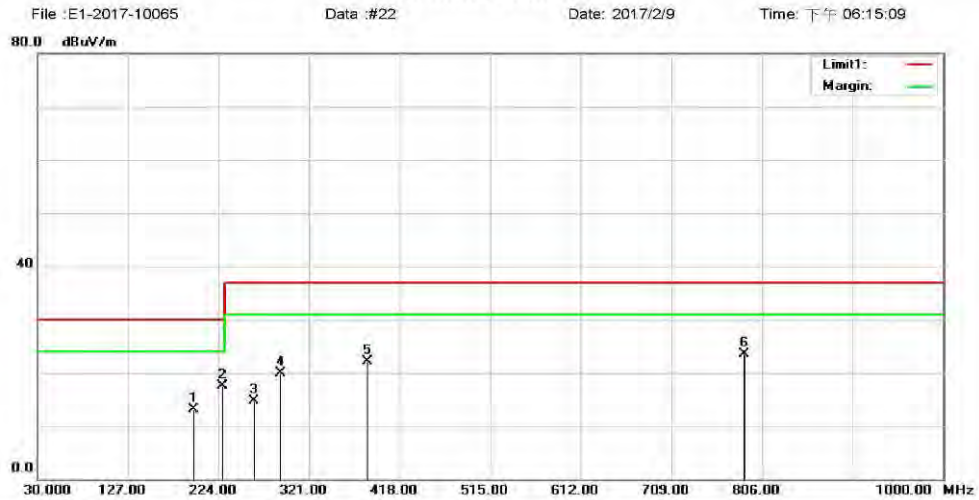
Member of SGS Group

Graphical representation of Radiated Disturbance Measurement

Mode_1_H

Site: SGS 10m Chamber	Polarization: Horizontal	Temperature: 20 °C
Limit: CISPR11 Class B 10M Radiation	Power: AC 230V/50Hz	Humidity: 69 %
Mode: Mode_1	Distance: 10m	
Note:		

Radiated Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		197.5900	27.74	-14.71	13.03	30.00	-16.97	QP	
2	*	227.6500	31.98	-14.48	17.50	30.00	-12.50	QP	
3		261.1100	27.11	-12.46	14.65	37.00	-22.35	QP	
4		289.3200	30.98	-11.14	19.84	37.00	-17.16	QP	
5		383.2400	30.97	-8.81	22.16	37.00	-14.84	QP	
6		786.6000	24.19	-0.60	23.59	37.00	-13.41	QP	

*:Maximum data x:Over limit !:over margin

File :E1-2017-10065\Data :#22

Page: 1

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Graphical representation of Radiated Disturbance Measurement

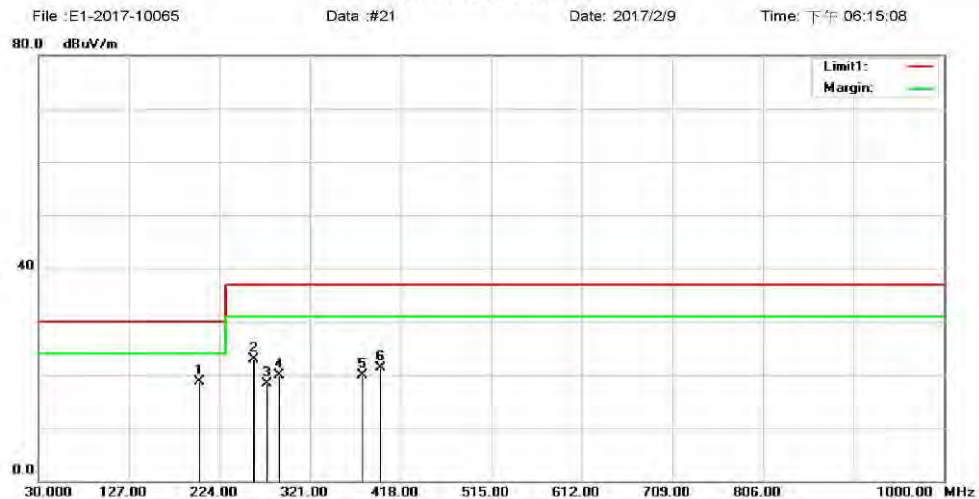
Mode_1_V

Site: SGS 10m Chamber
 Limit: CISPR11 Class B 10M Radiation
 Mode: Mode_1
 Note:

Polarization: **Vertical**
 Power: AC 230V/50Hz
 Distance: 10m

Temperature: 20 °C
 Humidity: 69 %

Radiated Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	202.0820	33.31	-14.52	18.79	30.00	-11.21	QP	
2		259.9500	35.21	-12.40	22.81	37.00	-14.19	QP	
3		275.4100	29.80	-11.48	18.32	37.00	-18.68	QP	
4		287.4300	30.86	-11.05	19.81	37.00	-17.19	QP	
5		376.6100	28.86	-8.89	19.97	37.00	-17.03	QP	
6		396.1200	29.78	-8.40	21.38	37.00	-15.62	QP	

*:Maximum data x:Over limit !:over margin

File :E1-2017-10065\Data :#21

Page: 1

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CISPR 32	TEST: Limits for radiated disturbance 30 MHz –XX GHz**		Verdict
<p>Method: Measurements were made in a 10-meter semi-anechoic chamber or Open Area Test Site that complies to CISPR 16. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 10 meter below 1GHz and 3 meter above 1GHz. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (quasi-peak detector below 1GHz and average detector above 1GHz) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.</p>			N/A
Laboratory Parameters:		Required prior to the test	During the test
Ambient Temperature		10 to 40 °C	N/A
Relative Humidity		10 to 90 %	N/A
Fully configured sample scanned over the following frequency range	Frequency range on each side of line		Measurement Point
	30MHz – 1GHz		10 m measurement distance
	1GHz – 6GHz		3 m measurement distance
Equipment mode	Power interface mode		N/A
	EUT configurations mode		N/A
	Operation mode		N/A
Limits – Class A			
Frequency (MHz)	Limit dB (µV/m)		
	Detector	Results *	
30 to 230	40 Quasi-Peak	N/A	
230 to 1000	47 Quasi-Peak	N/A	
1000 to 3000	56 Average, 76 Peak	N/A	
3000 to 6000	76 Average, 80 Peak	N/A	
Limits – Class B			
Frequency (MHz)	Limit dB (µV/m)		
	Detector	Results *	
30 to 230	30 Quasi-Peak	N/A	
230 to 1000	37 Quasi-Peak	N/A	
1000 to 3000	50 Average, 70 Peak	N/A	
3000 to 6000	54 Average, 74 Peak	N/A	
<p>Supplementary information: EUT powered at one of the Nominal input voltages and frequencies.</p> <p>* - The result in this table may be a minimum margin to the limit.</p> <p>** - Input highest test frequency based on internal frequency used in the ME equipment</p>			

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CISPR 14-1	TEST: Limits for radiated disturbance 30 MHz –1 GHz		Verdict
<p>Method: Measurements were made in a 10-meter semi-anechoic chamber or Open Area Test Site that complies to CISPR 16. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 10 meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (quasi-peak) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.</p>			N/A
Laboratory Parameters:	Required prior to the test	During the test	
Ambient Temperature	10 to 40 °C	N/A	
Relative Humidity	10 to 90 %	N/A	
Fully configured sample scanned over the following frequency range	Frequency range on each side of line	Measurement Point	
	30MHz – 1GHz	10 m measurement distance	
Equipment mode	Power interface mode	N/A	
	EUT configurations mode	N/A	
	Operation mode	N/A	
Limits – CISPR 14-1			
Frequency (MHz)	Limit dB (µV/m)		
	Quasi-Peak	Results *	
30 to 230	30	N/A	
230 to 1000	37	N/A	
Supplementary information: EUT powered at one of the Nominal input voltages and frequencies.			
* -The result in this table may be a minimum margin to the limit.			

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ISO 7137	TEST: Limits for radiated disturbance 100 MHz –6 GHz		Verdict
<p>Method: Measurements were made in a shielded enclosure. RF absorber shall be placed above, behind, and on both sides of test setup boundary, from ceiling to ground plane. The absorber shall extend ≥ 50 cm in front of the ground plane. RF absorber shall be placed behind the test antenna, from ceiling to floor. The distance between the absorber and the antenna shall be ≥ 30 cm. Linearly polarized antennas are required for radiated tests. Measure radiated emissions using both vertically and horizontally polarized orientations. Other requirements in DO-160G, clause 21.5, shall be followed.</p> <p>If radiated RF emissions are conducted in a reverberation chamber, the procedures in DO-160G, clause 21.6, shall be followed.</p>			N/A
Laboratory Parameters:			
	Required prior to the test	During the test	
Ambient Temperature	10 to 40 °C	N/A	
Relative Humidity	10 to 90 %	N/A	
Fully configured sample scanned over the following frequency range	Frequency range on each side of line	Measurement Point	
	100MHz – 1GHz	0.9 m from the front of the test table	
	1GHz – 6GHz		
Equipment mode	Power interface mode	N/A	
	EUT configurations mode	N/A	
	Operation mode	N/A	
Limits			
Frequency (MHz)	Limit dB (μV/m)		Results *
	Detector		
100 to 108	44.6 to 45.2 (QP)		N/A
108 to 152	35 to 37.5 (QP)		N/A
152 to 960	47.5 to 60.2 (QP)		N/A
960 to 1215	50.3 to 52 (AV)		N/A
1215 to 1525	61.9 to 63.5 (AV)		N/A
1525 to 1680	53.5 to 54 (AV)		N/A
1680 to 6000	64 to 73 (AV)		N/A
Supplementary information: EUT powered at one of the Nominal input voltages and frequencies.			
* -The result in this table may be a minimum margin to the limit.			

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Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Photo of test setup for Radiated Disturbance
N/A

Tabulated Results for Radiated Disturbance										
Test Frequency (MHz)	Meter Reading dB(μV)	Detector (Pk/QP/Av)	Polarity (V/H)	Azimuth (Degrees)	Antenna Height (cm)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level dB(μV/m)	Limit dB(μV/m)	Margin (dB)
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-

Supplementary information:

Note: Other table formats are allowed as long as all information is included.

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1.10 Test Conditions and Results – Disturbance Power Emissions

CISPR 14-1	TEST: Limits of disturbance power			Verdict
<p>Method: Measurements were made on a ground plane that extends 1-meter minimum beyond all sides of the system under test. All power was connected to the system through Line Impedance Stabilization Networks (LISN). The lead to be measured on is stretched in a straight line for a distance sufficient to accommodate the absorbing clamp, and to permit the necessary measuring adjustment of position for tuning. The clamp is placed around the lead so as to measure a quantity proportional to the disturbance on the lead.</p>				N/A
Laboratory Parameters:		Required prior to the test	During the test	
Ambient Temperature		15 to 35 °C	N/A	
Relative Humidity		30 to 60 %	N/A	
Fully configured sample scanned over the following frequency range		Frequency range	Measurement point	
		30 MHz to 300 MHz	Mains	
Equipment mode		Power interface mode	N/A	
		EUT configurations mode	N/A	
		Operation mode	N/A	
Limits disturbance power on terminals				
Frequency	dB(pW)			
30 – 300 MHz	Quasi-Peak	Result *	Average	Result *
Household and Tools < 700 W	45 to 55	N/A	35 to 45	N/A
700 W < Tools < 1000 W	49 to 59	N/A	39 to 49	N/A
Tools >1000 W	55 to 65	N/A	45 to 55	N/A
Supplementary information: * - The result in this table may be a minimum margin to the limit.				
EUT powered at one of the Nominal input voltages and frequencies.				

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Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Photo of test setup for Disturbance Power Emissions
N/A

Tabulated Results for Disturbance Power Emissions							
Test Frequency (MHz)	Meter Reading dB(μV)	Detector (PK/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level dB(μV/m)	Limit dB(μV/m)	Margin (dB)
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Supplementary information:

Note: Other table formats are allowed as long as all information is included.

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1.11 Test Conditions and Results – Harmonic Distortion

61000-3-2	TEST: Limits for Harmonic current emissions (IEC 61000-3-2:2014)	Verdict
<p>Method: This test consists on the measurement of harmonics components of the input current which may be produced by equipment having an input current up to and including 16 A per phase, and intended to be connected to public low-voltage distribution systems. The equipment is tested under specified conditions of operation.</p>		P
Laboratory Parameters:	Required prior to the test	During the test
Ambient Temperature	15 to 35 °C	22°C
Relative Humidity	30 to 60 %	51%
Equipment mode	Power interface mode	AC 230V,50Hz
	EUT configurations mode	
	Operation mode	Mode 1
Classification of Equipment..... :		Class A
Supplementary information:		

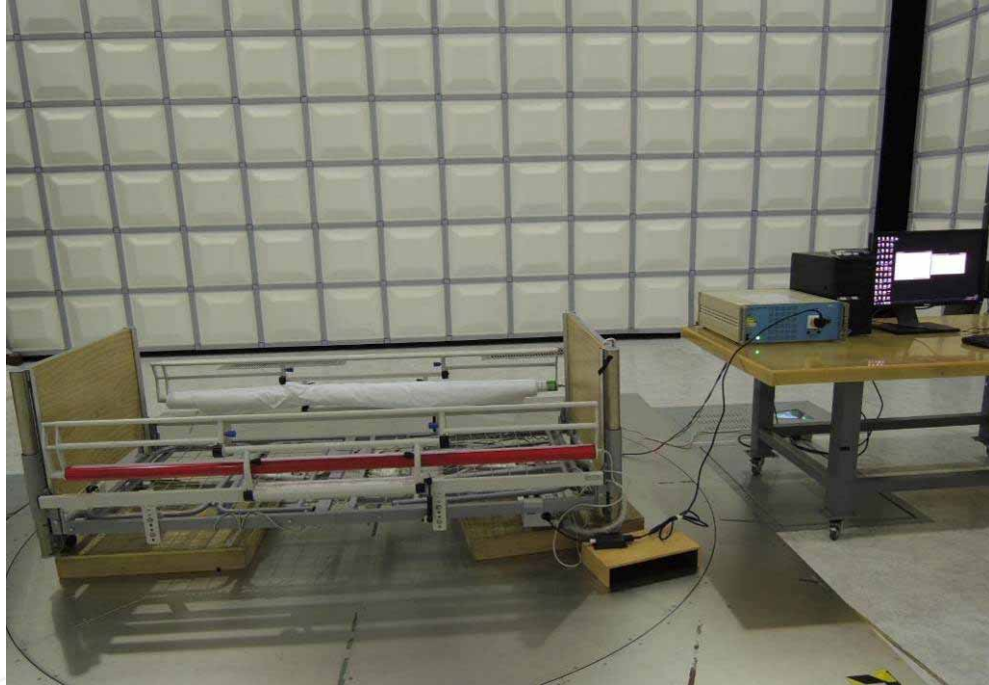
Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Power Analyzer	TESEQ	CCN 1000-1	1504A02654	2017/3/20	2018/3/19
AC Power Source	TESEQ	NSG 1007	1504A02654	2017/3/20	2018/3/19
Test Software	TESEQ	Win2100 V4	Ver. 4.5.8	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)					

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Photo of test setup for Harmonic Current Emissions

Mode_1

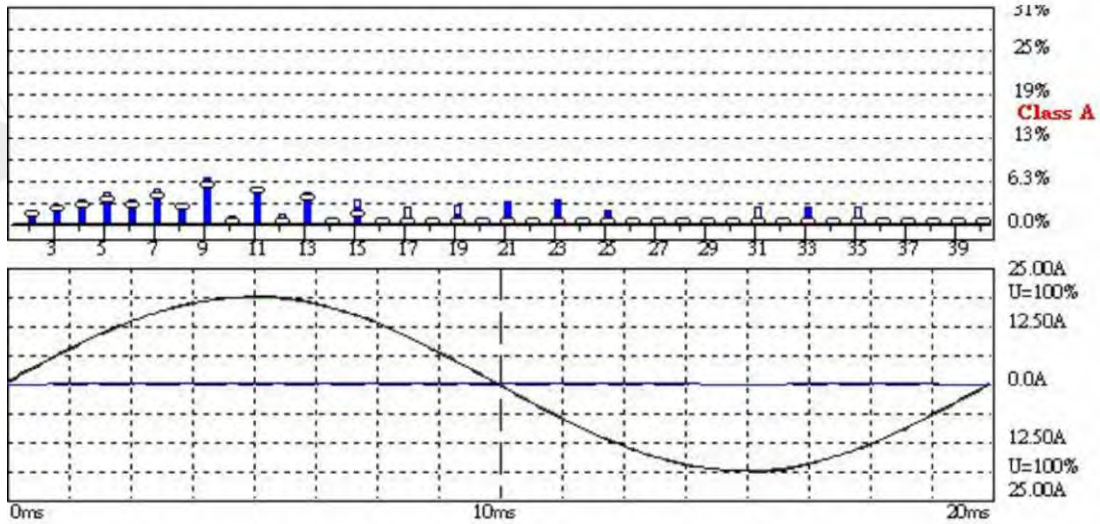


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Tabulated Results for Harmonic Current Emissions

Mode_1



Harmonic Emission - IEC 61000-3-2, EN 61000-3-2, (CEN60555-2)

2017/3/15 下午 12:08

U_{rms} = 230.3 V P = 14.11 W THC = 0.079 A
 I_{rms} = 0.110 A pf = 0.558

Range: 25 A
 V-nom: 230 V
 TestTime: 10 min (100%)

Test completed, Result: PASSED

HAR-1000 EMC-Printer

Note : Equipment with a rated power of 75 W or less other than lighting equipment, the limits are not specified in this edition of the standard.

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1.12 Test Conditions and Results – Voltage Fluctuations and Flicker

61000-3-3	TEST: Limitation of Voltage Fluctuations And Flicker (IEC 61000-3-3:2013)		Verdict
Method: The test circuit consists of a test supply voltage, reference impedance, the equipment under test and a flicker meter compliant with IEC 60868. The equipment shall be tested in the condition in which the manufacturer supplies it.			P
Laboratory Parameters:	Required prior to the test		During the test
Ambient Temperature	15 to 35 °C		20°C
Relative Humidity	30 to 60 %		58%
Equipment mode	Power interface mode	AC 230V,50Hz	
	EUT configurations mode		
	Operation mode	Mode 1	
Control Method of Equipment (see below).....:			
1 - without additional conditions			
2 - switched manually, or switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.			
3 - attended while in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.			
Supplementary information:			

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Power Analyzer	TESEQ	CCN 1000-1	1504A02654	2017/3/20	2018/3/19
AC Power Source	TESEQ	NSG 1007	1504A02654	2017/3/20	2018/3/19
Test Software	TESEQ	Win2100 V4	Ver. 4.5.8	N.C.R.	N.C.R.

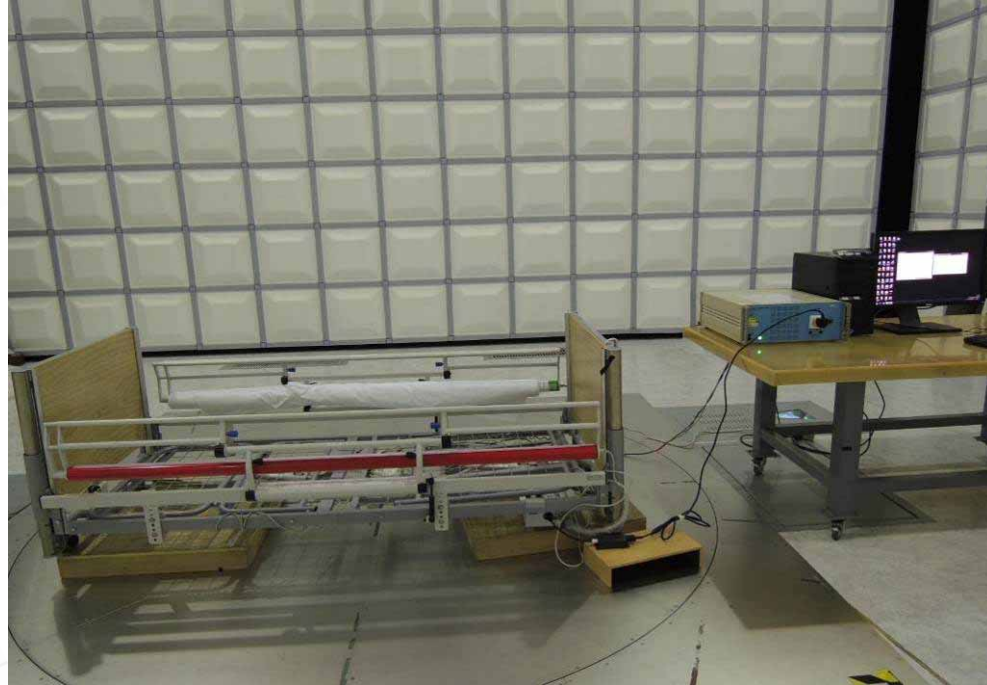
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Photo of test setup for Voltage Fluctuations And Flicker

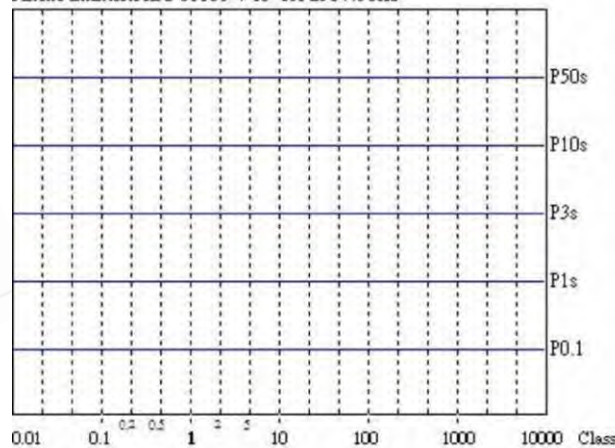
Mode_1



Tabulated Results for Voltage Fluctuations And Flicker

Mode_1

Flicker Emission IEC 61000-4-15 for 230V/50Hz



Actual Flicker (Fli): 0.00

Short-term Flicker (Pst): 0.07

Limit (Pst): 1.00

Long-term Flicker (Plt): 0.07

Limit (Plt): 0.65

Maximum Relative Volt. Change (dmax): 0.00%

Limit (dmax): 4.00%

Relative Steady-state Voltage Change (dc): 0.08%

Limit (dc): 3.00%

Tmax 3.00% (dt): 0.00ms

Limit (dt>Lim): 500ms

Flicker Emission - IEC 61000-3-3, EN 61000-3-3

U_{rms} = 230.3 V P = 14.11 W
I_{rms} = 0.110 A pf = 0.558

2017/3/15 下午 01:26

Range: 25 A
V_{nom}: 230 V
TestTime: 10 min (100%)

Test completed, Result: PASSED

HAZ-1000 EMC-Page

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1.13 Test Conditions and Results – Immunity to Electrostatic Discharges

61000-4-2	TEST: Electrostatic discharges (IEC 61000-4-2:2008)		Verdict
<p>Method: The test is intended to demonstrate the immunity of equipment subjected to static electricity discharges from operators directly and to adjacent objects. The table top equipment under test is placed on a wooden table, 0.8 m high, standing on the ground reference plane. A horizontal coupling plane (HCP), 1.6 x 0.8 m, is placed on the table. The EUT and the cables are isolated from the coupling plane by an insulating support 0.5 mm thick. The floor standing equipment is isolated from the ground reference plane by an insulating support about 0.1 m thick. The vertical coupling plane (VCP) of dimensions 0.5 m x 0.5 m is placed parallel to, and positioned at a distance of 0.1 m from, the EUT.</p>			P
Laboratory Parameters:		Required prior to the test	During the test
Ambient Temperature		15 to 35 °C	26°C
Relative Humidity		30 to 60 %	48%
Equipment mode		Power interface mode	AC 230V,50Hz
		EUT configurations mode	
		Operation mode	Mode 1
Test Levels			
Discharge type	Discharge Level (kV)		Number of discharges per location (each polarity)
	Positive	Negative	
Air – Direct	2,4,8,15	2,4,8,15	10
Contact – Direct	8	8	10
Contact – Indirect	8	8	10
Discharge location	<p>See photo documentation of the test set-up All external locations accessible by hand, Horizontal plate (HCP) Vertical coupling plate (VCP)</p>		
Supplementary information: EUT powered at one of the Nominal input voltages and frequencies			

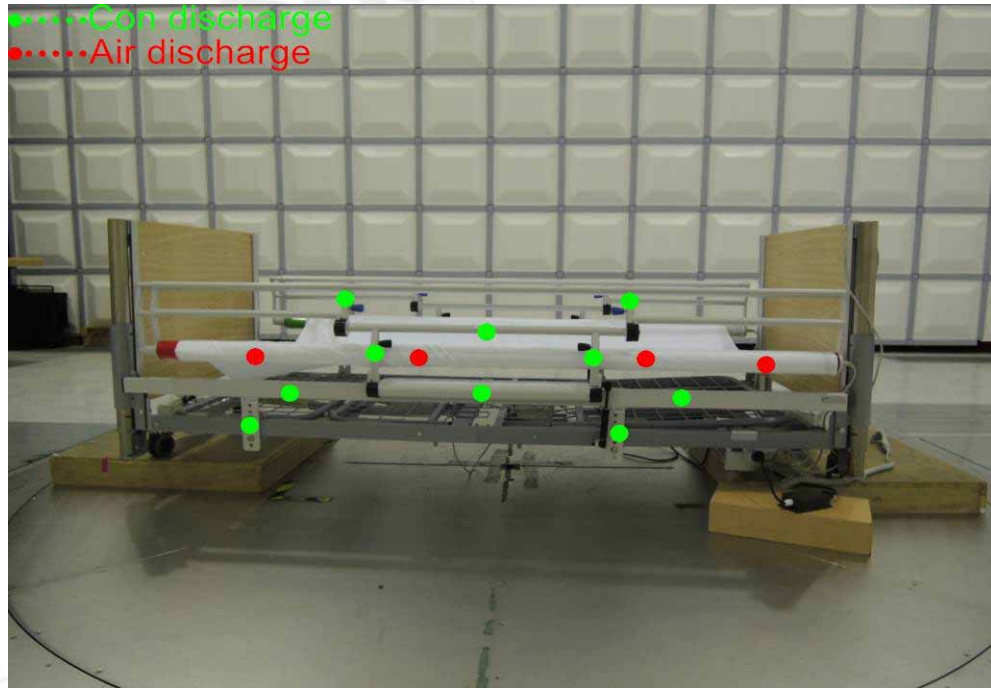
Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
ESD Simulator	Thermo	MiniZap	612312	2016/6/13	2017/6/12
HCP	N/A	1.6 x 0.8 m	N/A	N.C.R.	N.C.R.
VCP	N/A	0.5 x 0.5 m	N/A	N.C.R.	N.C.R.
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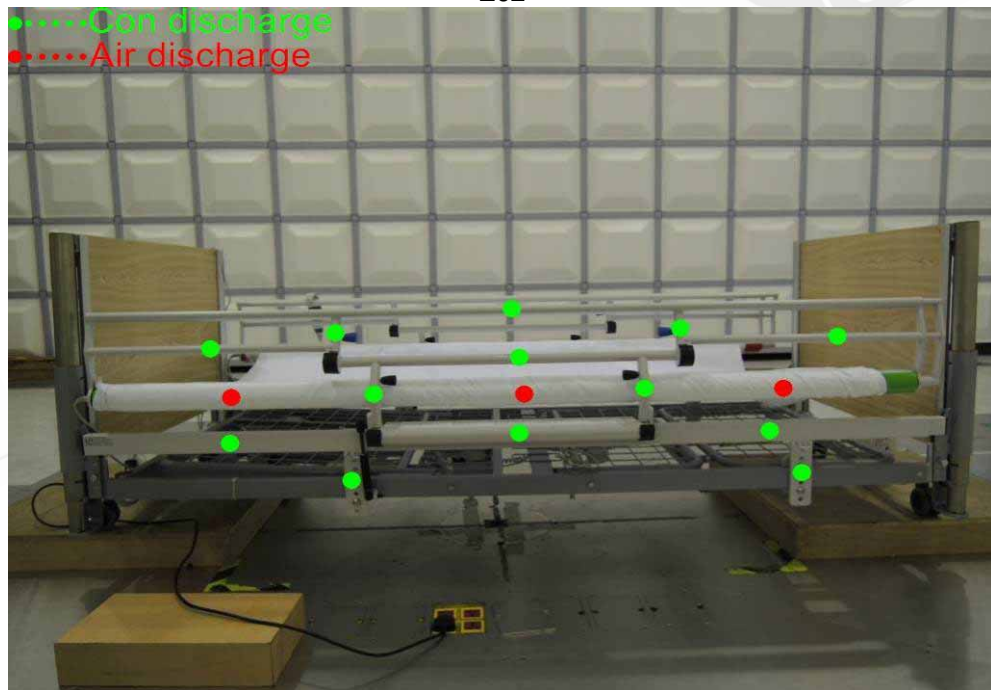
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Photo of test setup for Immunity to Electrostatic Discharges

E01



E02

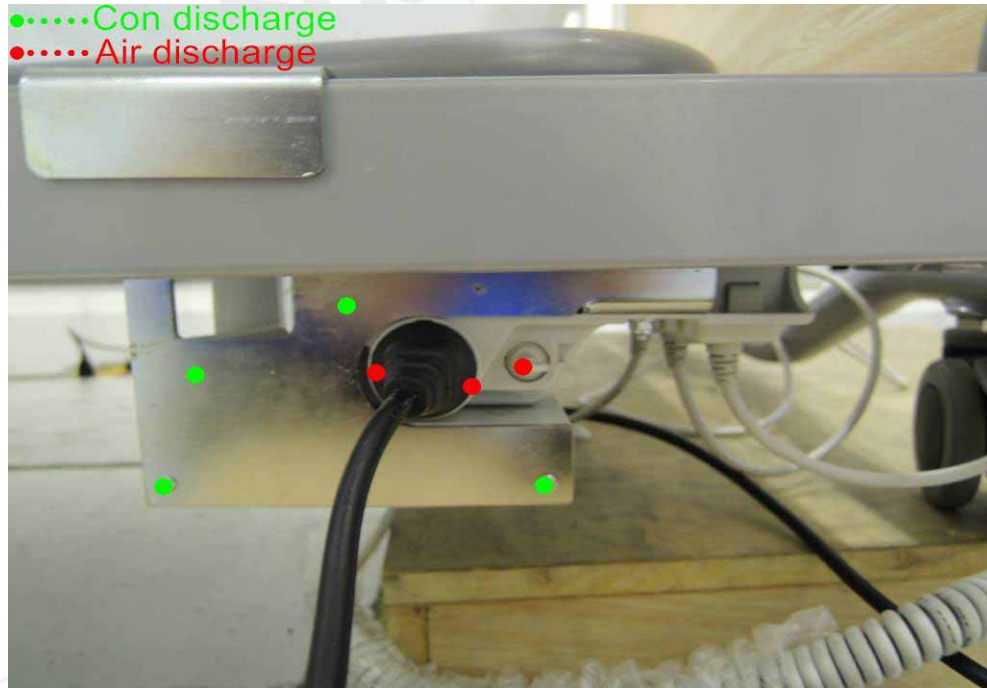


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Photo of test setup for Immunity to Electrostatic Discharges

E03



E04



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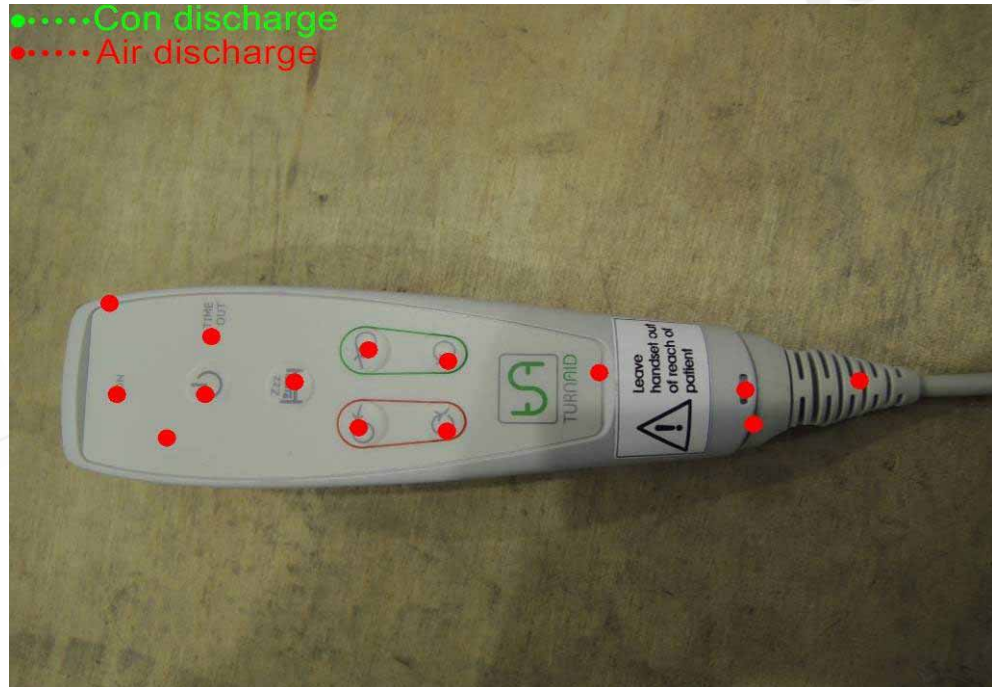
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Photo of test setup for Immunity to Electrostatic Discharges

E05



E06



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Photo of test setup for Immunity to Electrostatic Discharges

E07



ESD Waveform Verification (Optional)

None	None
Positive 6 kV Amplitude	Negative 6 kV Amplitude

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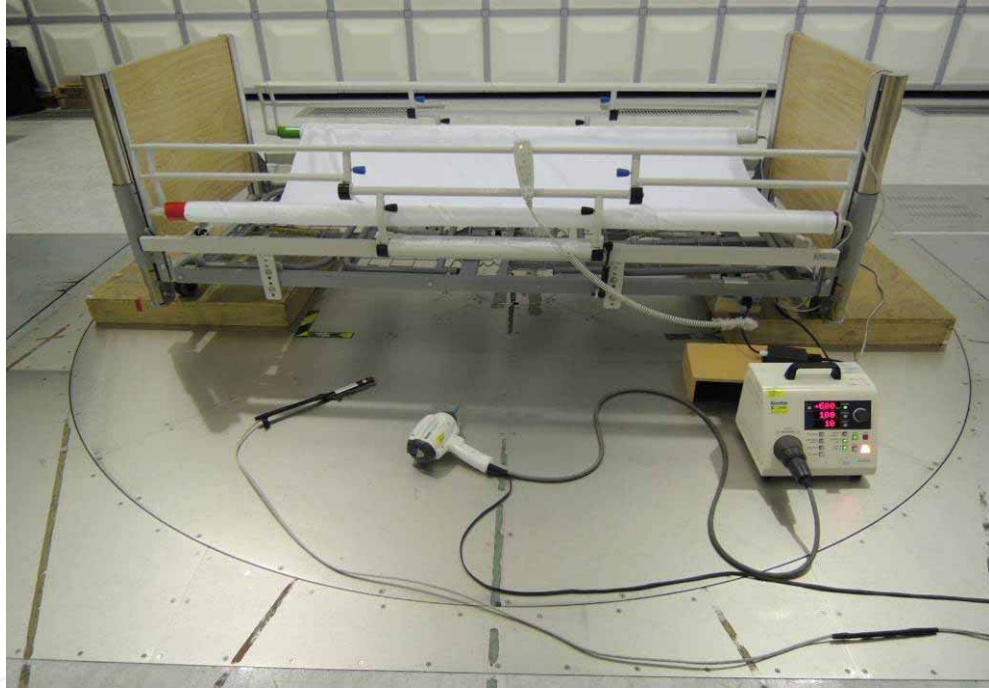
Tabulated Results for Electrostatic Discharges			
Nominal Voltage (V)			AC 230V
Nominal Frequency (Hz)			50
Direct discharges: Air and Contact			
Discharge location	Air discharge voltage (kV)	Polarity	Result
Junction of case	2, 4, 8, 15	+ and -	1
Switch	2, 4, 8, 15	+ and -	1
AC Socket	2, 4, 8, 15	+ and -	1
Discharge location	Contact discharge voltage (kV)	Polarity	Result
Surface of case	2, 4, 8	+ and -	1
Screw	2, 4, 8	+ and -	1
Indirect discharges			
Discharge location	Contact discharge voltage (kV)	Polarity	Result
HCP - Front	2, 4, 8	+ and -	1
HCP - Left	2, 4, 8	+ and -	1
HCP - Right	2, 4, 8	+ and -	1
HCP - Rear	2, 4, 8	+ and -	1
VCP - Front	2, 4, 8	+ and -	1
VCP - Left	2, 4, 8	+ and -	1
VCP - Right	2, 4, 8	+ and -	1
VCP - Rear	2, 4, 8	+ and -	1
Results Descriptions:			
X - Not Performed nor required.			
1 – Compliant - No perceived discharge, no observed response from EUT.			
2 – Compliant – Discharge observed, no observed response from EUT.			
Note: During perform contact discharge ± 8kV to pedal, the pedal device remove from system also device detect signal changed then reload to system return to intended use function automatically, it don't affect the essential performance and basic safety.			

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Photo of Electrostatic Discharges Test Locations

Mode_1



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1.14 Test Conditions and Results - Immunity to Radio Frequency Electromagnetic Fields

61000-4-3	TEST: RF electromagnetic fields (IEC 61000-4-3:2006 A1:2007 A2:2010)		Verdict
Method: The test allows estimating of the radiated immunity of electrical and electronic equipment to electromagnetic disturbances coming from intended radio-frequency (RF) transmitters in the frequency range 80 MHz to 2700 MHz. The interference is applied on the enclosure of the equipment by using transmitting antennas.			P
Laboratory Parameters:		Required prior to the test	During the test
Ambient Temperature		15 to 35 °C	25°C
Relative Humidity		30 to 60 %	56%
Equipment mode		Power interface mode	AC 230V,50Hz
		EUT configurations mode	
		Operation mode	Mode 1
Test specifications			
Calibration Requirements		Uniform field area (UFA)	1.5 m x 1.5 m, 16 points with a minimum UFA size 0.5 m x 0.5 m
			75 % of calibration points within specifications if UFA is larger than 0.5 m x 0.5 m. 100 % (all 4 points) in the specifications for 0.5 x 0.5 m UFA
Frequency bandwidth		80 MHz to 2700 MHz	
Modulation		80% AM at 1kHz*	
Level	Professional Healthcare Environment	3 V/m	
	Home Healthcare Environment	10 V/m	
Frequency step		1%	
Supplementary information: EUT powered at one of the Nominal input voltages and frequencies. Dwell time minimum 1 s. Actual dwell time noted in results table. Actual test level noted in results table. Note * - Testing may be performed at other modulation frequencies identified by the Risk Management Process.			

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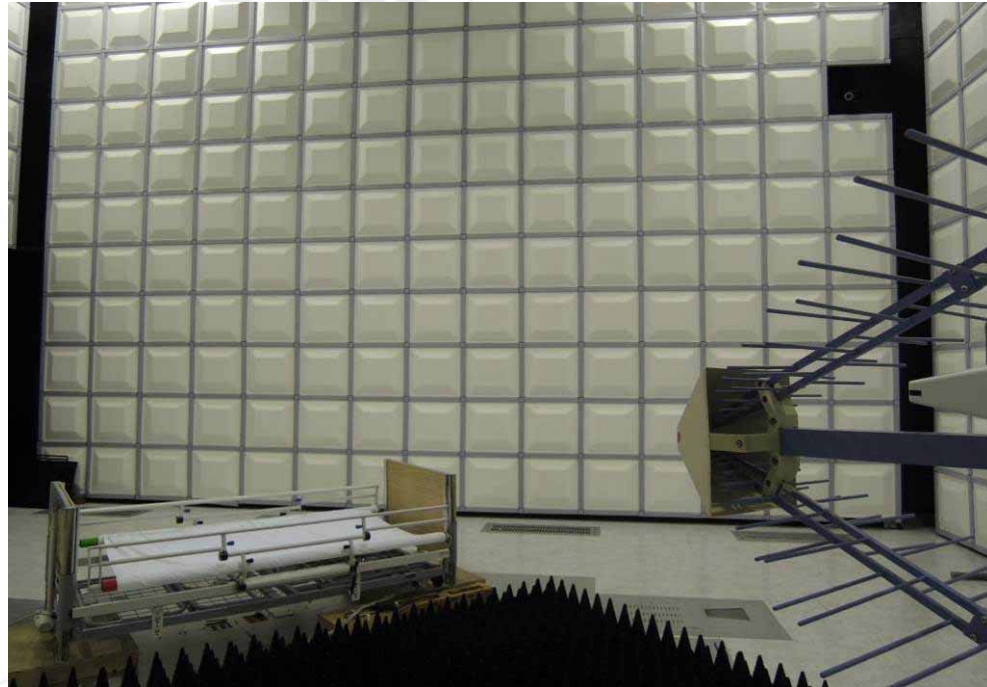
Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
RS Test Site	Chance Most	9X6X6	SAC-B	2016/11/30	2017/11/29
Signal Generator	R&S	SMT 06	100867	2017/3/13	2018/3/12
Power Sensor	R&S	NRP-Z11	111682	2016/3/30	2017/3/29
Power Sensor	R&S	NRP-Z11	112186	2016/3/24	2017/3/23
Power Amplifier	R&S	BBA100	101075	N.C.R.	N.C.R.
Power Amplifier	R&S	BBA100	101021	N.C.R.	N.C.R.
Power Amplifier	MILMEGA	AS0104-100/100	1049222	N.C.R.	N.C.R.
High Power Broadband Antenna	Schwarzbeck	VHBD 9134	9134-075	N.C.R.	N.C.R.
Calibrated Broadband Log-Per. Test-Antenna	R&S	HL046E	100112	N.C.R.	N.C.R.
Field Probes	Narda	NBM-550	V8.F-0375	2015/6/18	2017/6/17
Test Software	R&S	EMC 32	V9.21.00	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)					

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Photo of test setup for Radio Frequency Electromagnetic Fields

Mode_1



**Tabulated Results for RF Electromagnetic Field
80 MHz to 2700 MHz**

Side of the equipment under test	Test Level (V/m)	Antenna polarization (V/H)	Dwell Time (second)	Result
Front	10	H	3	1
	10	V	3	1
Back	10	H	3	1
	10	V	3	1
Left	10	H	3	1
	10	V	3	1
Right	10	H	3	1
	10	V	3	1

Results Descriptions:

X - Not performed nor required.
1 - Compliant - No observed response from EUT.

Note: Description of the response should detail observations during testing.

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1.15 Test Conditions and Results – Proximity fields from RF wireless communications equipment

61000-4-3	TEST: Proximity fields from RF wireless communications equipment (IEC 61000-4-3:2006 A1:2007 A2:2010)		Verdict
Method: The test allows estimating of the radiated immunity of electrical and electronic equipment to electromagnetic disturbances coming from RF communications equipment. The interference is applied on the enclosure of the equipment by using transmitting antennas.			P
Laboratory Parameters:		Required prior to the test	During the test
Ambient Temperature		15 to 35 °C	19 °C
Relative Humidity		30 to 60 %	55 %
Equipment mode		Power interface mode	AC 230V,50Hz
		EUT configurations mode	
		Operation mode	Mode 1
Test specifications			
Calibration Requirements		Uniform field area (UFA)	1.5 m x 1.5 m, 16 points with a minimum UFA size / 0.5 m x 0.5 m
			75 % of calibration points within specifications if UFA is larger than 0.5 m x 0.5 m. 100 % (all 4 points) in the specifications for 0.5 x 0.5 m UFA

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Frequency Range and Level: RF wireless communication equipment		
Test Frequency (MHz)	Modulation	Immunity Level (V/m)
385	**Pulse Modulation: 18Hz	27
450	*FM ± 5Hz deviation: 1kHz sine	28
710 745 780	**Pulse Modulation: 217Hz	9
810 870 930	**Pulse Modulation: 18Hz	28
1720 1845 1970	**Pulse Modulation: 217Hz	28
2450	**Pulse Modulation: 217Hz	28
5240 5500 5785	**Pulse Modulation: 217Hz	9

Supplementary information:

EUT powered at one of the Nominal input voltages and frequencies.
Dwell time minimum 1 s. Actual dwell time noted in results table.

Note * - As an alternative to FM modulation, 50 % pulse modulation at 18 Hz may be used because while it does not represent actual modulation, it would be worst case.

Note** - The carrier shall be modulated using a 50 % duty cycle square wave signal.

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844 Chamber#RS (EN 61000-4-3)_80-1000MHz					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Electric Field Probe	AR	FL7006	0338955	05/31/2016	05/30/2017
Field of Calibration	CCS	Chamber#RS	80-1000MHz	04/05/2016	04/04/2017
Power Sensor	Boonton	51013-4E	35811	02/14/2017	02/13/2018
Power Sensor	Boonton	51013-4E	35812	02/14/2017	02/13/2018
RF Power Meter	Boonton	4242-01-02	14357	02/14/2017	02/13/2018
Signal Generator	R&S	SMJ 100A	101041	09/25/2016	09/24/2017
Signal Generator	Agilent	N5181A	MY47421336	12/05/2016	12/04/2017
Thermo-Hygro Meter	TFA	N/A	NO.6	10/18/2016	10/17/2017
Broadband Antenna	AR	AT1080	311819	N.C.R	N.C.R
Direction Coupler	AR	DC6180A	312189	N.C.R	N.C.R
Power Amplifier	AR	500W 1000A	320994	N.C.R	N.C.R
Software	EmcwareVer. 2.6.0.16				
844 Chamber#RS (EN 61000-4-3)_1-6GHz					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Field of Calibration	CCS	Chamber#RS	1-3GHz	04/08/2016	04/07/2017
Field of Calibration	CCS	Chamber#RS	2-6GHz	08/21/2016	08/20/2017
Direction Coupler	AR	DC7200	0343647	N.C.R	N.C.R
Horn Antenna	EMCO	3115	5761	N.C.R	N.C.R
Power Amplifier	AR	60S1G3	302728	N.C.R	N.C.R
Power Amplifier	Milmega	AS1860-100	1075832	N.C.R	N.C.R
Software	EmcwareVer. 2.6.0.16				

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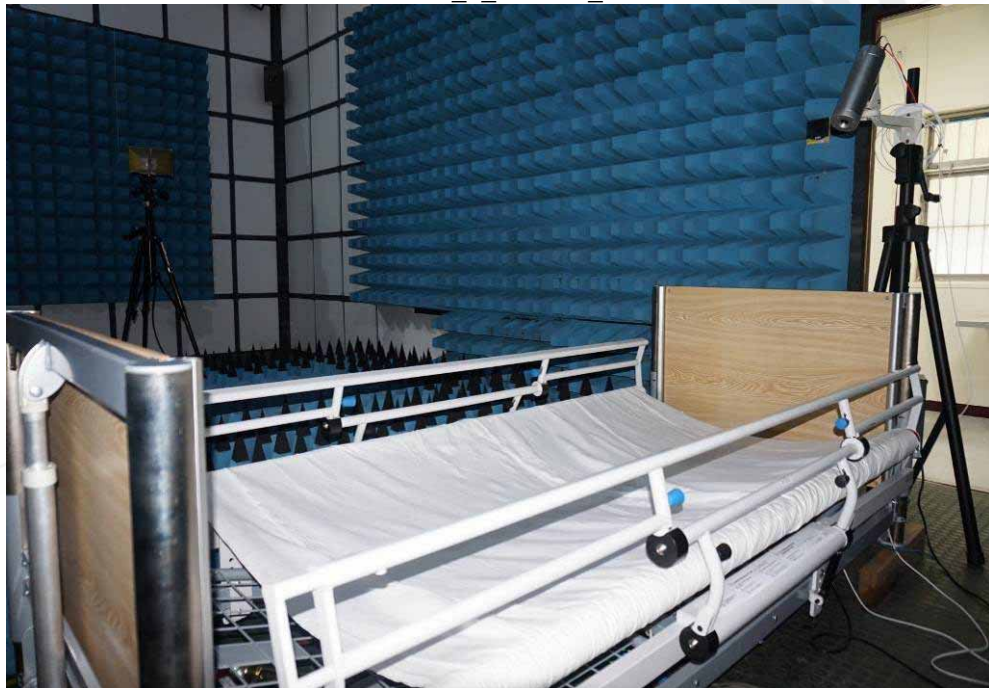
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Photo of test setup for Proximity fields from RF wireless communications equipment

Mode_1 Table 9_1



Mode_1 Table 9_2

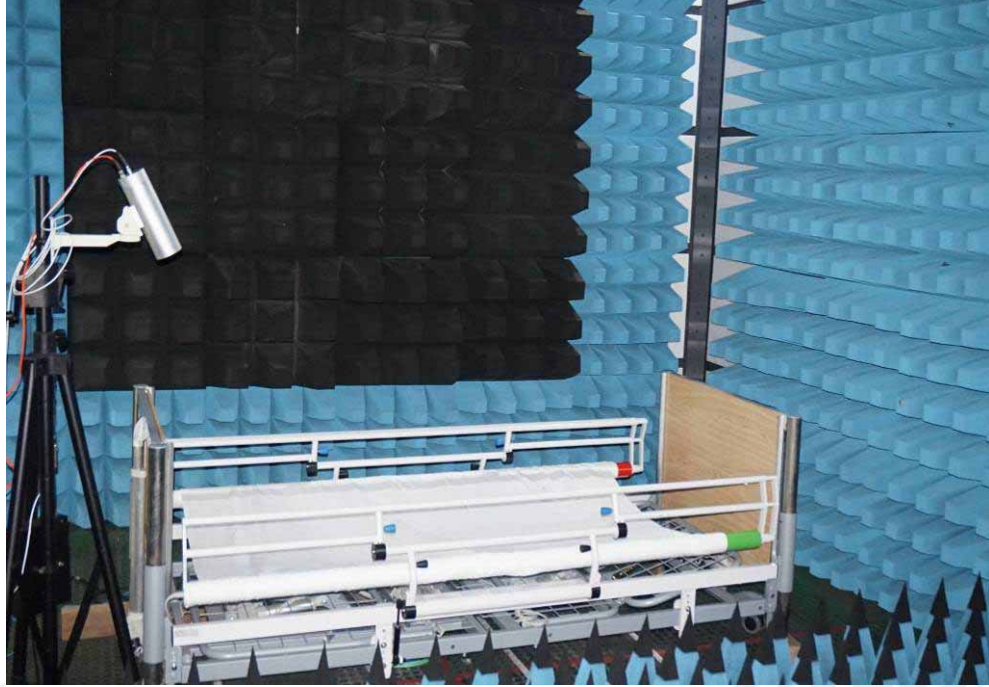


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Photo of test setup for Proximity fields from RF wireless communications equipment

Mode_1_Table 9_3



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Tabulated Results for Proximity Fields From RF Wireless Communications Equipment				
Side of the equipment under test	Frequency Band (MHz)	Antenna polarization (V/H)	Dwell Time (second)	Result
Front	380 – 380	H	3	1
	430 – 470	H	3	1
	704 – 787	H	3	1
	800 – 960	H	3	1
	1700 – 1990	H	3	1
	2400 – 2570	H	3	1
	5100 – 5800	H	3	1
	Front	380 – 380	V	3
430 – 470		V	3	1
704 – 787		V	3	1
800 – 960		V	3	1
1700 – 1990		V	3	1
2400 – 2570		V	3	1
5100 – 5800		V	3	1
Back		380 – 380	H	3
	430 – 470	H	3	1
	704 – 787	H	3	1
	800 – 960	H	3	1
	1700 – 1990	H	3	1
	2400 – 2570	H	3	1
	5100 – 5800	H	3	1
	Back	380 – 380	V	3
430 – 470		V	3	1
704 – 787		V	3	1
800 – 960		V	3	1
1700 – 1990		V	3	1
2400 – 2570		V	3	1
5100 – 5800		V	3	1

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Left	380 – 380	H	3	1
	430 – 470	H	3	1
	704 – 787	H	3	1
	800 – 960	H	3	1
	1700 – 1990	H	3	1
	2400 – 2570	H	3	1
	5100 – 5800	H	3	1
Left	380 – 380	V	3	1
	430 – 470	V	3	1
	704 – 787	V	3	1
	800 – 960	V	3	1
	1700 – 1990	V	3	1
	2400 – 2570	V	3	1
	5100 – 5800	V	3	1
Right	380 – 380	H	3	1
	430 – 470	H	3	1
	704 – 787	H	3	1
	800 – 960	H	3	1
	1700 – 1990	H	3	1
	2400 – 2570	H	3	1
	5100 – 5800	H	3	1
Right	380 – 380	V	3	1
	430 – 470	V	3	1
	704 – 787	V	3	1
	800 – 960	V	3	1
	1700 – 1990	V	3	1
	2400 – 2570	V	3	1
	5100 – 5800	V	3	1

Results Descriptions:

X - Not performed nor required.

1 – Compliant - No observed response from EUT.

Supplementary information:

None

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1.16 Test Conditions and Results – Electrical Fast Transients

61000-4-4	TEST: Fast Transients – (IEC61000-4-4:2012)			Verdict
<p>Method: Measurements were made on a ground plane that extends 1-meter minimum beyond all sides of the system under test. Mains power tests were conducted with the product connected to a Coupling/Decoupling Network (CDN). I/O lines were tested in a Capacitive Coupling Clamp. One of each unique interface was tested for a period of one (1) minute per polarity.</p>				P
Laboratory Parameters:		Required prior to the test		During the test
Ambient Temperature		10 to 40 °C		26°C
Relative Humidity		10 to 90 %		48%
Fully configured sample subject to the levels shown below.		Measurement Point		
		Input a.c. Power Ports		
		Input d.c. Power Ports		
		Signal Input/Output Ports		
Equipment mode		Power interface mode		AC 230V,50Hz
		EUT configurations mode		
		Operation mode		Mode 1
Applied Level				
Application Point		(kV)	Coupling Method	Repetition Frequency (kHz)
Input a.c. Power Ports		±2	Direct Injection	100
Input d.c. Power Ports		±2	Direct Injection	100
Signal Input/Output Ports*		±1	Capacitive Clamp	100
Input d.c. Power ports (transportation)		See ISO 7637-2		
Supplementary information:				
EUT powered at one of the Nominal input voltages and frequencies.				
Note* - SIP/SOPS whose maximum cable length is less than 3m are excluded				

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Burst Generator	TESEQ	NSG 3025	35177	2016/12/6	2017/12/5
EFT Clamp	Thermo	CCL	612359	2016/12/6	2017/12/5

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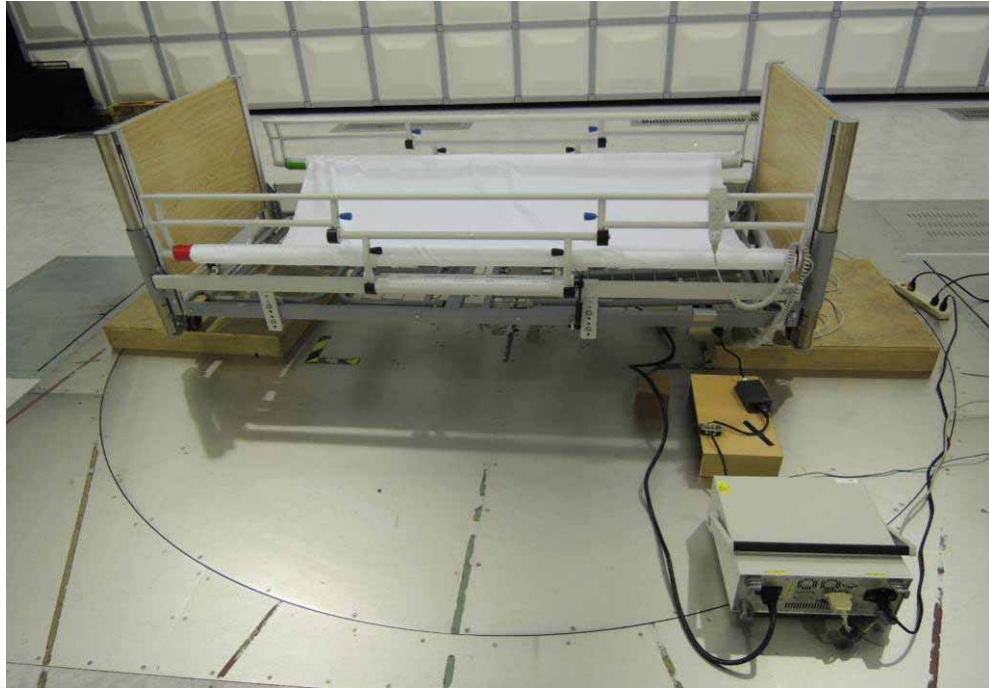
Electrical Fast Transients Waveform Verification (Optional)	
None	None
2000V Amplitude and Rise Time	2000V Duration @ 50% amplitude
None	2000V Repetition Frequency

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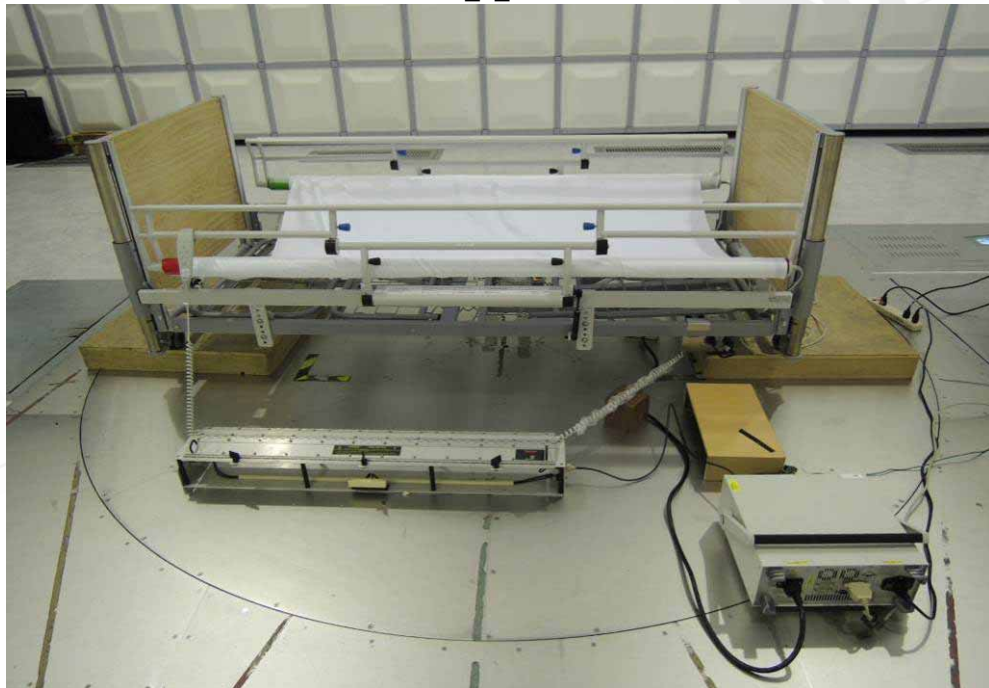
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Photo of test setup for Electrical Fast Transients

Mode_1



Mode_1_CLAMP



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台灣檢驗科技股份有限公司

t (886-2) 2299-3279

f (886-2) 2298-0488

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Tabulated Results for Electrical Fast Transients	
Point of application	Results
Mains	1
I/O Line 1 -	1
I/O Line 2 -	X
Results Descriptions:	
X - Not performed nor required. 1 – Compliant - No observed response from EUT.	
Supplementary information:	
None	

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1.17 Test Conditions and Results – Surge Immunity

61000-4-5	TEST: Surge Immunity Test – (IEC61000-4-5:2014)		Verdict
<p>Method: Mains power tests were conducted with the product connected to a Coupling/Decoupling Network (CDN). The test voltage was increased from the lowest indicated level up to the maximum level. Five (5) positive surges and five (5) negative surges were applied at each of phases of the a.c. waveform: 0°, 90°, 180° and 270°. Each surge was applied 60 seconds after the previous surge. Signal and Telecommunications ports were subject to five (5) positive and five (negative) surges applied through the appropriate Coupling/Decoupling Network (CDN).</p>			P
Laboratory Parameters:		Required prior to the test	During the test
Ambient Temperature		10 to 40 °C	26°C
Relative Humidity		10 to 90 %	48%
Fully configured sample subject to the levels shown below.		Measurement Point	
		Input AC and DC Power Ports	
Equipment mode		Power interface mode	AC 230V,50Hz
		EUT configurations mode	
		Operation mode	Mode 1
Applied Level			
Application Point	[kV]	Required Surge Waveform	
Input Power Ports	0.5 and 1.0 (Line to Line)	Combination Wave (2µs x 50µs Voltage, 8µs x 20µs Current)	
	0.5, 1.0 and 2.0 (Line to Earth)	Combination Wave (2µs x 50µs Voltage, 8µs x 20µs Current)	
Signal input/output*	2.0 (Line to Earth)	Combination Wave (2µs x 50µs Voltage, 8µs x 20µs Current)	
ME EQUIPMENT and ME SYSTEMS that do not have a surge protection device in the primary power circuit may be tested only at 2 kV line(s) to earth and 1 kV line(s) to line(s).			
Supplementary information: EUT powered at one of the Nominal input voltages and frequencies. Note* - Applicable to output lines intended to connect directly to outdoor cables			

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Surge Tester	EMC Partner	MIG0603IN2 S-T	1515	2016/5/17	2017/5/16
Universal Surge CDN	EMC Partner	CDN-UTP8	CDN-UTP8-1516	2016/5/25	2017/5/24

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Surge Waveform Verification (Optional)	
None	None
2000V Amplitude and Rise Time Open Circuit Voltage	2000V Duration @ 50% Amplitude Open Circuit Voltage
None	None
2000V Amplitude and Rise Time Short Circuit Current	2000V Duration @ 50% Amplitude Short Circuit Current

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Photo of test setup for Surge Immunity

Mode_1



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Tabulated Results for Surge - Mains			
Mode of Application	Level	Polarity	Results
Line 1 to Line 2 (Differential mode)	0.5kV	Positive	1
		Negative	1
	1.0kV	Positive	1
		Negative	1
Line 1 to Earth (Common mode)	0.5kV	Positive	1
		Negative	1
	1.0kV	Positive	1
		Negative	1
	2.0kV	Positive	1
		Negative	1
Line 2 to Earth (Common mode)	0.5kV	Positive	1
		Negative	1
	1.0kV	Positive	1
		Negative	1
	2.0kV	Positive	1
		Negative	1

Results Descriptions:

X - Not performed nor required.
1 – Compliant - No observed response from EUT.

Supplementary information:

None

Tabulated Results for Surge – Signal Input/output Lines Directly Connected to Outdoor Lines			
Mode of Application	Level	Polarity	Results
Line 1 to Earth (Common mode)	2kV	Positive	1
		Negative	1
Line 2 to Earth (Common mode)	2kV	Positive	1
		Negative	1

Results Descriptions:

X - Not performed nor required.
1 – Compliant - No observed response from EUT.

Supplementary information:

Note: Description of the response should detail observations during testing.

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1.18 Test Conditions and Results – Conducted Disturbances Immunity

61000-4-6		TEST: RF Continuous Conducted – (IEC61000-4-6:2013)		Verdict
<p>Method: Measurements were made on a ground plane that extends 0.5-meter minimum beyond all sides of the system under test. The EUT was located 10cm above the reference ground plane and any associated I/O cables attached to the EUT were located between 30mm and 50mm above the ground plane. The indicated field was pre-calibrated prior to placement of the system under test.</p>				P
Laboratory Parameters:		Required prior to the test		During the test
Ambient Temperature		10 to 40 °C		20°C
Relative Humidity		10 to 90 %		56%
Equipment mode		Power interface mode		AC 230V,50Hz
		EUT configurations mode		
		Operation mode		Mode 1
Test Specifications:		Frequency range		Measurement Point
Fully configured sample scanned over the following frequency range		150kHz to 80MHz		Input a.c. Power Ports Input d.c. Power Ports Signal Input/output Ports Patient Connected Ports
Level	Home Healthcare Environment	3 V RMS outside the ISM band, 6 V RMS in the ISM and amateur radio bands		
	Professional Healthcare Environment	3 V RMS outside the ISM band, 6 V RMS in the ISM band		
Frequency step		1%		
Modulation		80% Am at 1kHz*		
<p>Supplementary information:</p> <p>EUT powered at one of the Nominal input voltages and frequencies.</p> <p>Dwell time minimum 1 s.</p> <p>Note * - Testing may be performed at other modulation frequencies identified by the Risk Management Process.</p>				

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Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Signal Generator	R&S	SMB 100A	102920	2016/5/10	2017/5/9
Power Sensor	R&S	NRP-Z91	100373	2016/12/6	2017/12/5
Power Sensor	R&S	NRP-Z91	100547	2017/2/16	2018/2/15
Power Amplifier	R&S	BBA150	102118	N.C.R.	N.C.R.
CDN	LUTHI	CDN M2	P1317118042	2016/5/26	2017/5/25
CDN	LUTHI	CDN M3	P1318118505	2016/5/20	2017/5/19
CDN	FCC	FCC-801-T2-RJ11	5032	2017/3/6	2018/3/5
CDN	FCC	FCC-801-T8-RJ45	5034	2017/3/6	2018/3/5
EM Injection Clamp	LUTHI	EM 101	36158	2016/5/18	2017/5/17
CDN	Frankonia	CDN M2+M3	A3011070	N.C.R.	N.C.R.
Test Software	R&S	EMC 32	V9.25.00	N.C.R.	N.C.R.

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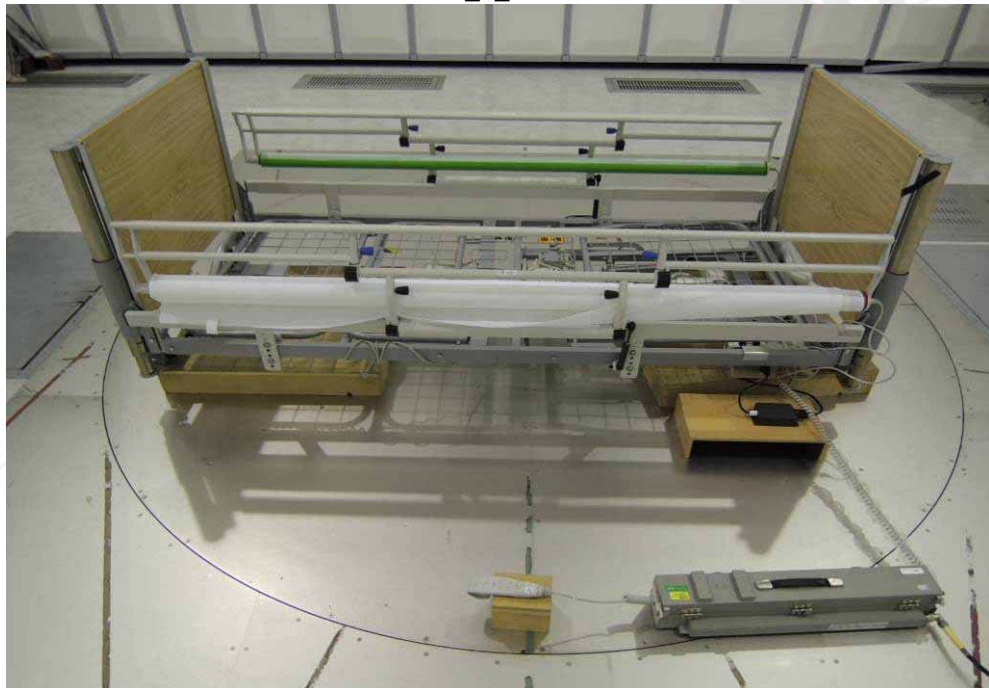
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Photo of test setup for Conducted Disturbances

Mode_1



Mode_1_CLAMP



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Tabulated Results for Conducted Disturbances		
Point of Application	Results	Dwell Time (second)
Mains	1	3
Sip/Sop 1 -	1	3
Sip/Sop 2 -	X	X
Sip/Sop 3 -	X	X
Patient Connected Port 1 -	X	X
Patient Connected Port 2 -	X	X
Supplementary information: Results Descriptions: X - Not performed nor required. 1 – Compliant - No observed response from EUT. Note: Description of the response should detail observations during testing. Note: Delete rows not used Note: Describe each port tested		

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1.19 Test Conditions and Results – Power- Frequency Magnetic Fields

61000-4-8	TEST: Power-frequency magnetic field – (IEC61000-4-8:2009)		Verdict
<p><u>Method:</u> Measurements were made on a ground plane that extends 1-meter minimum beyond sides of the system under test. Table top EUT is located 80cm above the reference ground plane and floor-standing EUT is located 10cm above the reference ground plane. The indicated field was pre-calibrated prior to placement of the EUT under test.</p>			P
Laboratory Parameters:		Required prior to the test	During the test
Ambient Temperature		10 to 40 °C	26°C
Relative Humidity		10 to 90 %	48%
Equipment mode		Power interface mode	AC 230V,50Hz
		EUT configurations mode	
		Operation mode	Mode 1
Fully configured sample tested at the power line frequency (See Note 1)		Frequency	Application Point
		50Hz/ 60 Hz	Enclosure
Test Level		30 (A/m)	
<p>Supplementary information: EUT powered at one of the Nominal input voltages and frequency of either 50Hz or 60Hz. During the test, the frequency of the field and line frequency of the ME equipment shall be the same.</p>			

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Magnetic Field Generator	Narda S.T.S.	PMM 1008	0100X30601	2016/11/21	2017/11/20
AC CLAMP METER	CHAUVIN ARNOUX	96	12002769	2016/9/5	2017/9/4
Triax Elf Magnetic Field Meter	F.W. BELL	4180	1248004	2016/7/1	2017/6/30

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Photo of test setup for Power- Frequency Magnetic Fields

Mode_1



Tabulated Results for Power Frequency Magnetic Field

Point of application	Results
X-Axis	1
Y-Axis	1
Z-Axis	1

Supplementary information:

Results Descriptions:

X - Not performed nor required.

1 – Compliant - No observed response from EUT.

Note: Description of the response should detail observations during testing.

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1.20 Test Conditions and Results – Voltage Dips, Interruptions, and Variations

61000-4-11	TEST: Voltage Dips and Interruptions – (IEC61000-4-11:2004)		Verdict
Method: The product was subjected to voltage dips and interruptions. Testing was performed with the product connected directly to a generator capable of simulating the voltage drops and interrupts as described.			P
Laboratory Parameters:	Required prior to the test		During the test
Ambient Temperature	10 to 40 °C		26°C
Relative Humidity	10 to 90 %		48%
Fully configured subjected to the levels indicated below.	Measurement Point		
	Input A.C. Power Ports		
Equipment mode	Power interface mode	AC 230V,50Hz	
	EUT configurations mode		
	Operation mode	Mode 1	
Applied Levels			
Voltage Dips % U_T	Cycles		Sync Angle (degrees)
0	0.5*		0,45,90,135,180,225,270,315
0	1		0
70	25 (50Hz) 30 (60Hz)		0
Voltage Interruption % U_T	Cycles		Sync Angle [degrees]
0	250 (50Hz),300 (60Hz)		0
<p>Supplementary information: If the Rated voltage range <25% of the lowest rated input voltage, one rated input voltage. Otherwise, minimum and maximum rated voltage. EUT powered at one of the Nominal input frequencies. ME EQUIPMENT and ME SYSTEMS with power input voltage selection by transformer taps shall be tested at only one tap setting. Note* - Only applicable to ME equipment with single phase a.c. mains</p>			

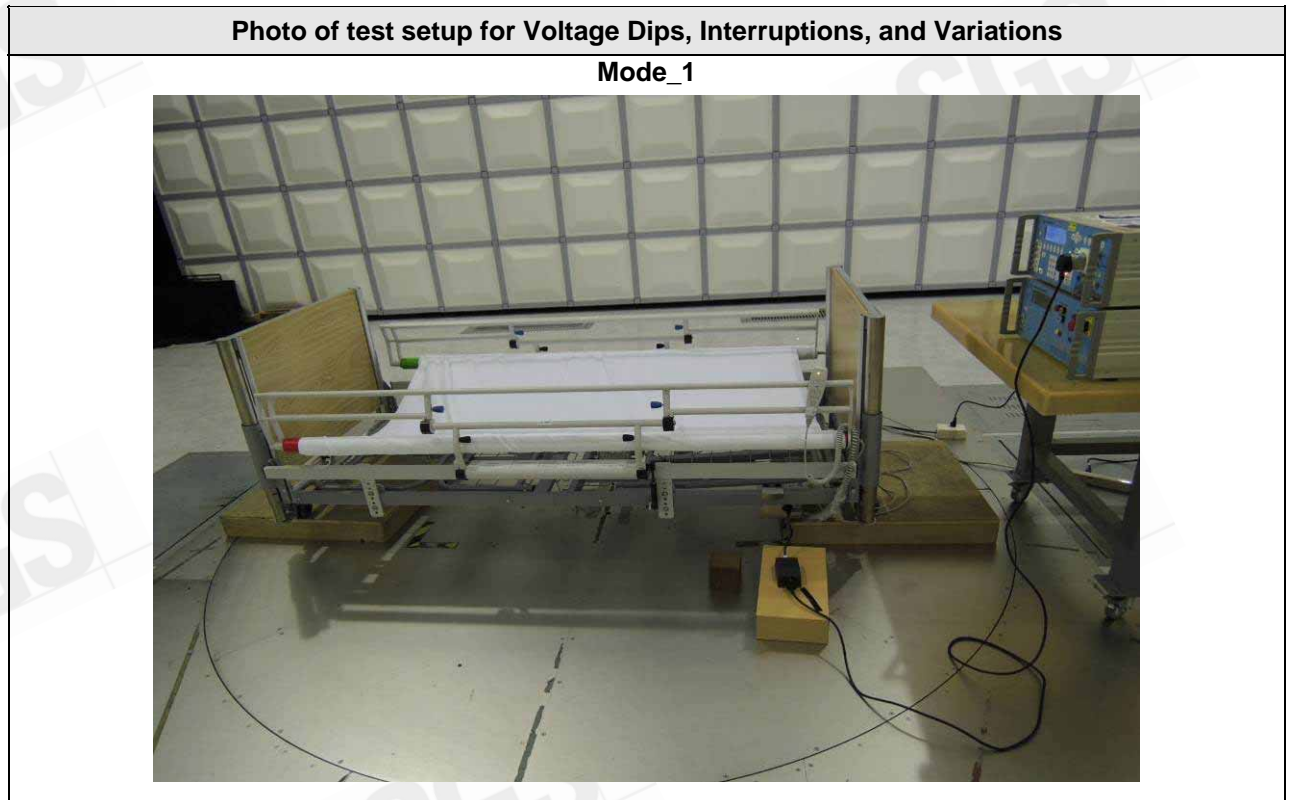
Supply Voltage Range	Difference of Max Voltage – Min Voltage	25% of Lowest Rated input Voltage	Test at Min/Max Voltages required (Y/N)
230VAC	10V	Y	Y

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Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMS Multi-Tester	EMC Partner	TRANSIENT 3000D	D-1500	2016/5/4	2017/5/3

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Voltage Dips and Interruption Verifications (Optional)	
30% Dip	60% Dip
None	None
>95% Interruption	
None	

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Tabulated Results for Voltage Dips and Interruptions			
Minimum Rated Voltage (V).....			AC 230V
Frequency (Hz)			50
Point of application	Voltage Dips	Period (Cycles)	Results
Mains	>95	0.5	1
Mains	60	1	1
Mains	30	25/30 (50/60Hz)	1
Point of application	Voltage Interruptions	Period (Cycles)	Results
Mains	>95	250/300 (50/60Hz)	1

Supplementary information:
 Results Descriptions:
 X - Not performed nor required.
 1 – Compliant - No observed response from EUT.
 Note: Description of the response should detail observations during testing.

Tabulated Results for Voltage Dips and Interruptions			
Maximum Rated Voltage (V)....			X
Frequency (Hz)			X
Point of application	Voltage reduction	Period (Cycles)	Results
Mains	>95	0.5	X
Mains	>95	1	X
Mains	30	25/30 (50/60Hz)	X
Point of application	Voltage Interruptions	Period (Cycles)	Results
Mains	>95	250/300 (50/60Hz)	X

Supplementary information:
 Results Descriptions:
 X – Not performed nor required.
 1 – Compliant – No observed response from EUT.
 Note: Description of the response should detail observations during testing.

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1.21 Test Conditions and Results – Electrical transient conduction along supply lines

ISO 7637-2	TEST: Electrical transient conduction along supply lines		Verdict
<p>Method: The DUT shall be placed on a non-conductive low relative permittivity ($\epsilon_r \leq 1.4$) support with a thickness of (50 ± 5) mm. Grounding of the DUT case to the ground plane shall reflect the vehicle installation. Preferably, the load simulator shall be placed directly on the ground plane. If the load simulator has a metallic case, this case shall be bonded to the ground plane. The peak voltage U_s shall be adjusted to be the required test level with the tolerances of +10 % and 0 %.</p>			N/A
Laboratory Parameters:		Required prior to the test	During the test
Ambient Temperature		10 to 40 °C	N/A
Relative Humidity		10 to 90 %	N/A
Fully configured sample subject to the levels shown below.			
Equipment mode		Power interface mode	N/A
		EUT configurations mode	N/A
		Operation mode	N/A
Applied Level			
Application Point	Test pulse and level	Coupling Method	
Input d.c. Power ports (transportation)	1 (-150V)	Direct Injection	
	2a (+112V)	Direct Injection	
	2b (10V for 12V system; 20V for 24V system)	Direct Injection	
	3a (-220V for 12V system; -300V for 24Vsystem)	Direct Injection	
	3b (+150V for 12V system; +300 for 24V system)	Direct Injection	
<p>Supplementary information: For ME EQUIPMENT and ME SYSTEMS intended to be installed in passenger cars and light commercial vehicles including ambulances fitted with 12 V electrical systems or commercial vehicles including ambulances fitted with 24 V electrical systems.</p>			

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

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Electrical transient conduction along supply lines (Optional)	
None	None
Pulse 1	Pulse 2a
None	None
Pulse 2b	Pulse 3a
None	
Pulse 3b	

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Photo of test setup for Electrical Transient Conduction Along Supply Lines
None

Tabulated Results for Electrical Transient Conduction Along Supply Lines	
Point of application	Results
Mains Pulse 1	X
Mains Pulse 2a	X
Mains Pulse 2b	X
Mains Pulse 3a	X
Mains Pulse 3b	X
Results Descriptions: X - Not performed nor required. 1 – Compliant - No observed response from EUT.	
Note: Description of the response should detail observations during testing.	

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1.22 Photographs of Product Exterior:



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台灣檢驗科技股份有限公司

t (886-2) 2299-3279

f (886-2) 2298-0488

www.tw.sgs.com

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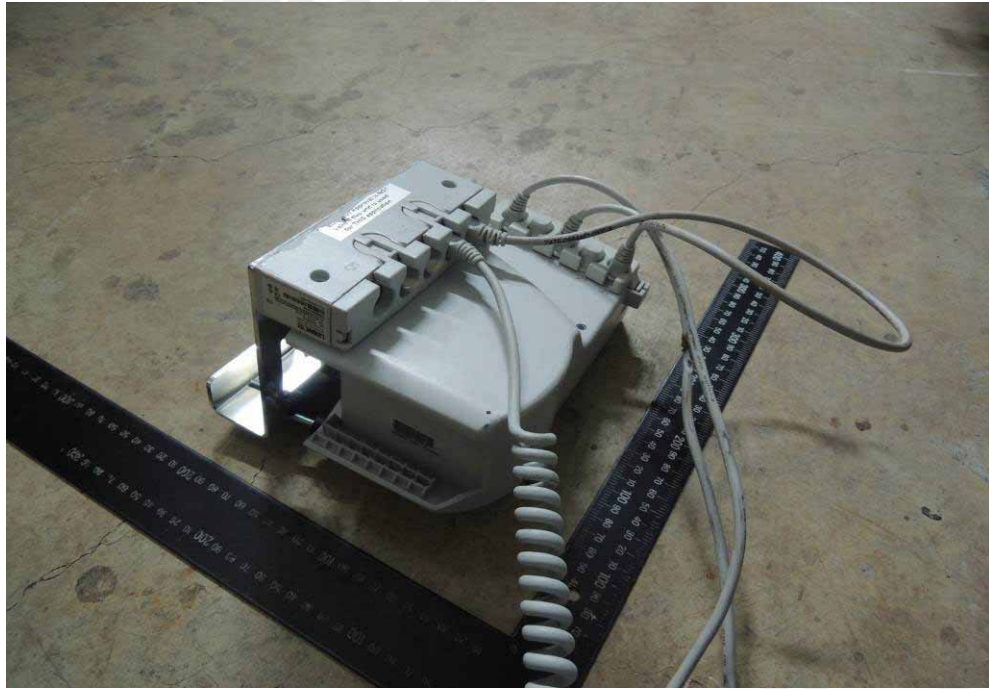
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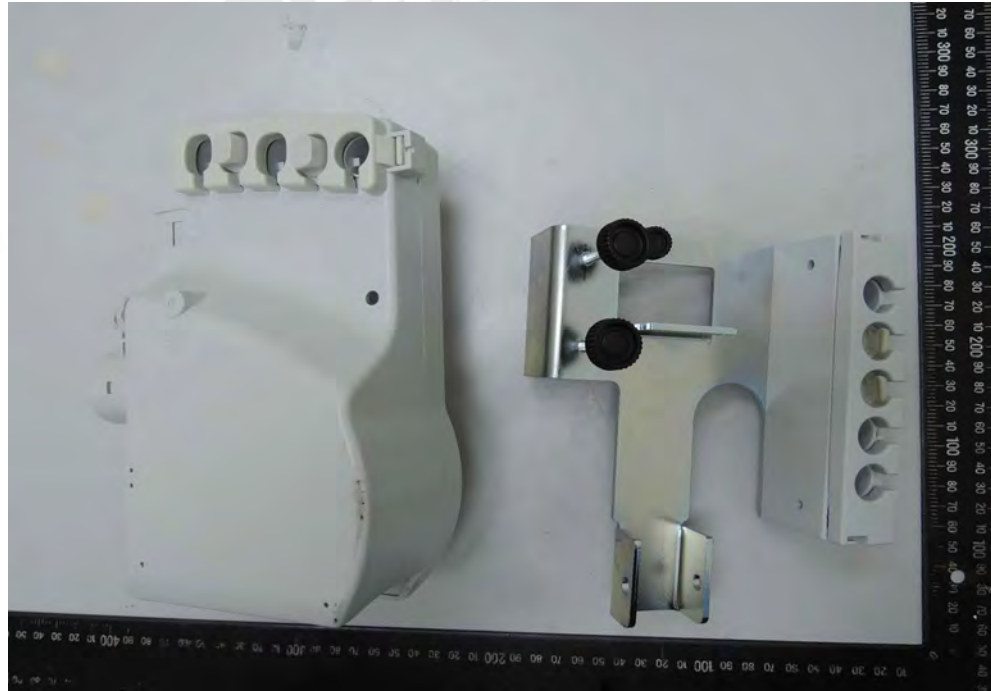


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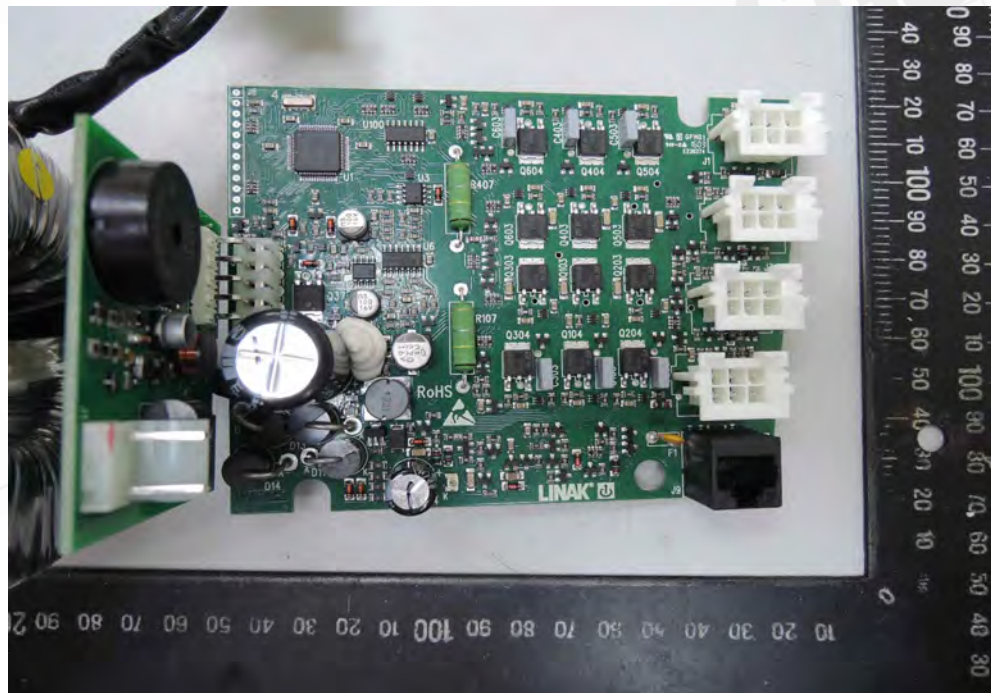
Interior:



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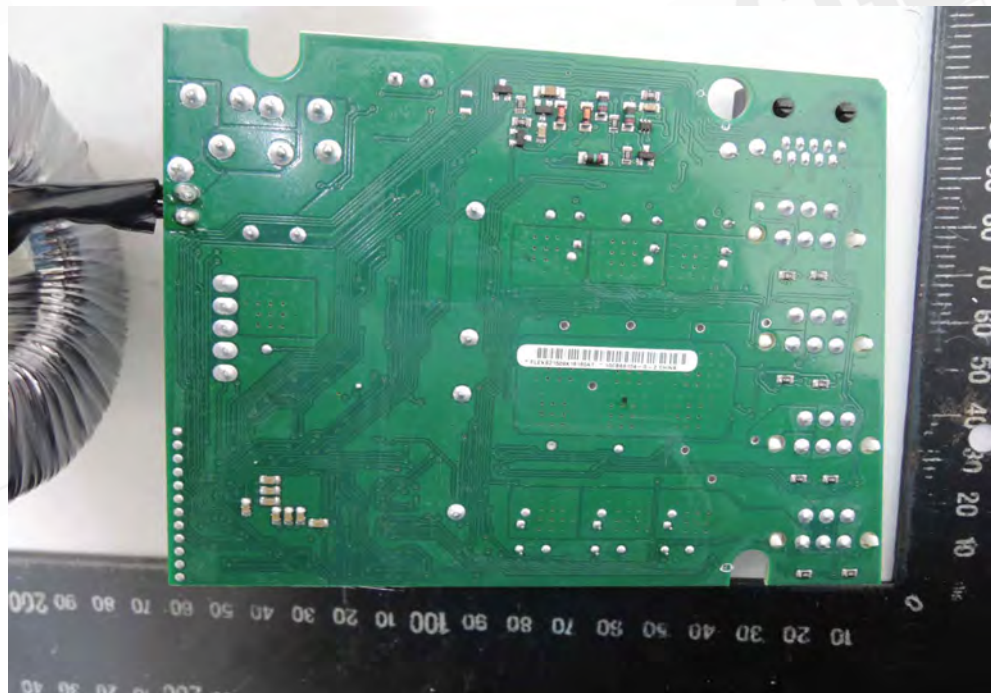
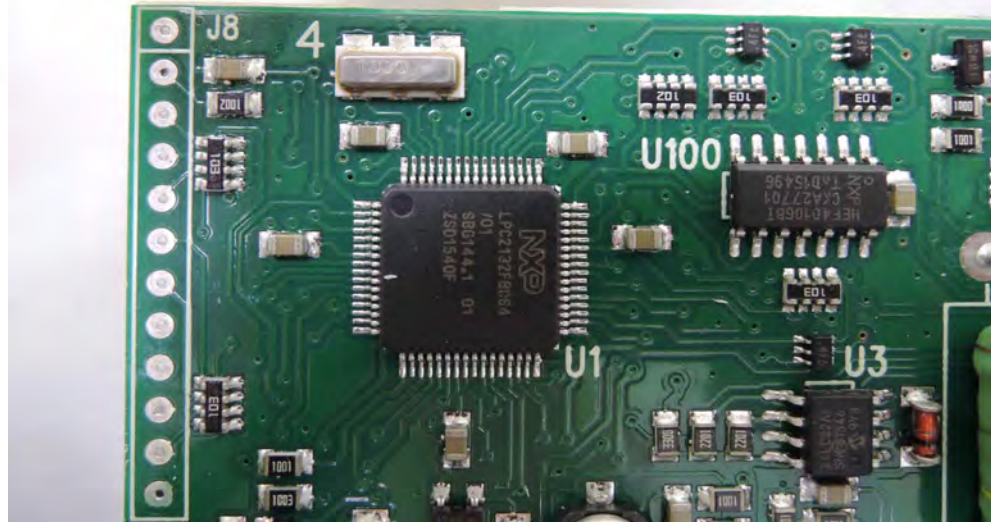
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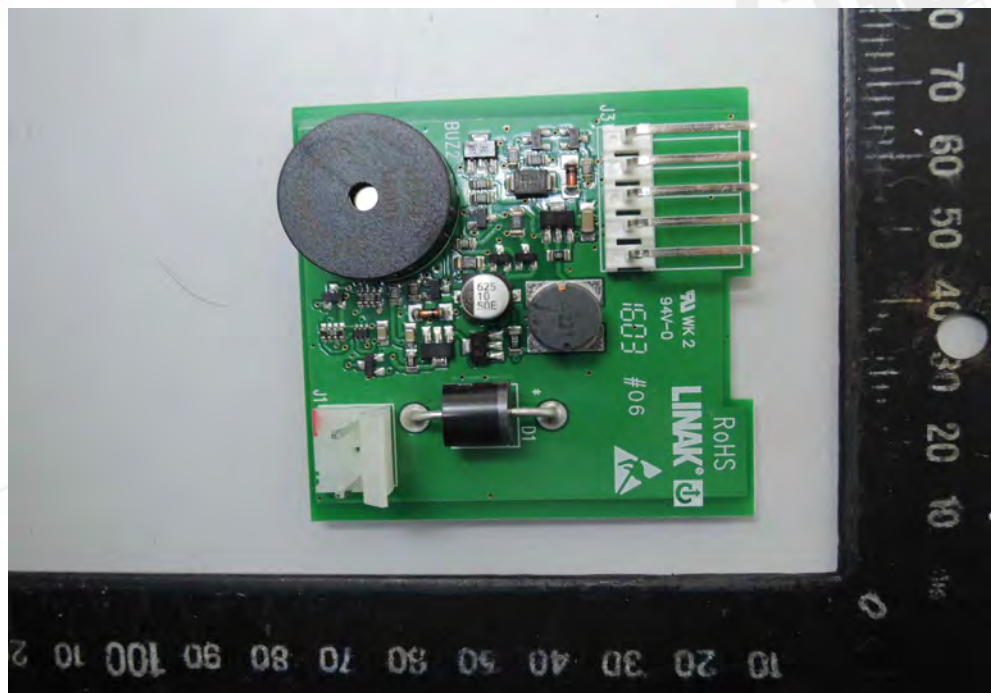
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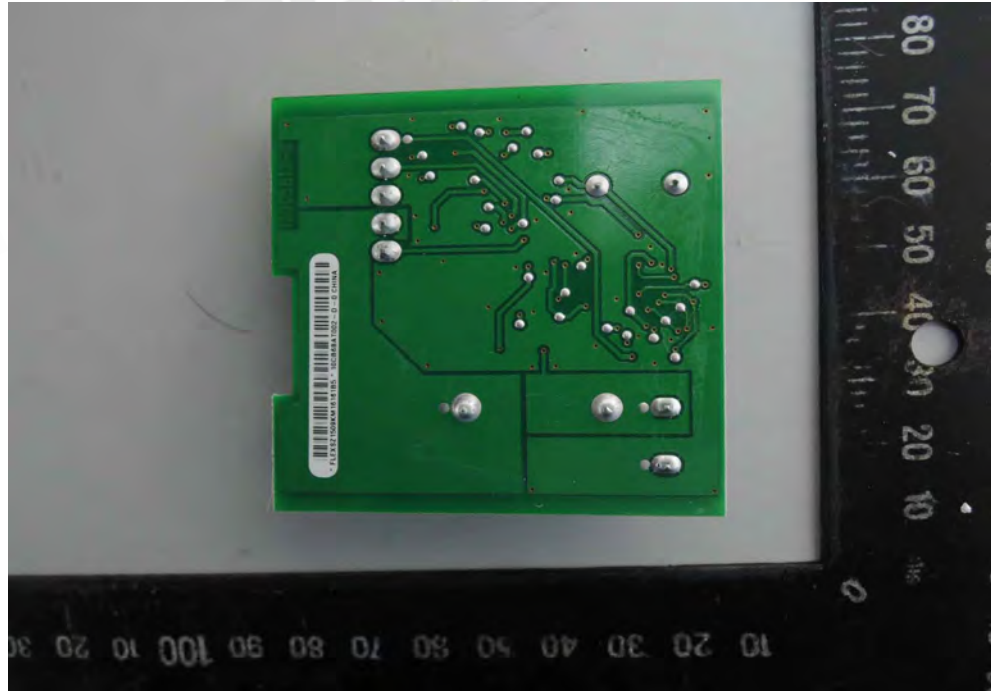
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End of the Report

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