

TEST REPORT

Report Number: 100943193DAL-001

Project Number: G100943193

Report Issue Date: February 6, 2013

Product Designation: Vibrating Fork Level Switch
Model: RS85

Standards: CENELEC EN 61326-1*BEI

Issued:2006/05/01 Electrical equipment for measurement, control and laboratory use EMC requirements Part 1: General requirements-IEC 61326-1:2005;;1997

FCC 47CFR 15B cIA*CEI

Issued:2011/04/21 Title 47 CFR Part 15 Subpart B Unintentional Radiators Class A Verification

Tested by:
Intertek Testing Services NA, Inc.
1809 10th St. Suite 400
Plano, TX 75074 - USA

Client:
ABB Inc.
18321 Swamp Road
Prairieville, LA 70769 - USA

Report prepared by



William B. Cullen
EMC Team Leader

Report reviewed by



Shawn McGuinness
Senior EMC Engineer

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

TABLE OF CONTENTS

1 Introduction and Conclusion..... 6

2 Test Summary 6

3 Test Facility 7

4 Description of Equipment Under Test 7

5 System setup including cable interconnection details, support equipment and simplified block diagram 8

6 Performance Criterion of the Equipment when tested against the immunity requirements for the European CE Mark..... 9

7 Radiated Emissions..... 10

8 AC Mains Conducted Emissions-Continuous Disturbance..... 14

9 Harmonics (IEC 61000-3-2)..... 21

10 Flicker (IEC 61000-3-3)..... 21

11 Electrostatic Discharge Immunity Test (IEC 61000-4-2)..... 22

12 Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3) 27

13 Electrical Fast Transient/Burst Immunity Test (IEC 61000-4-4)..... 31

14 Immunity to Surge (IEC 61000-4-5)..... 34

15 Conducted, radio-frequency, electromagnetic field immunity test (IEC 61000-4-6) 37

16 Power Frequency Magnetic Field Immunity Test (IEC 61000-4-8)..... 40

17 Voltage Dips / Interruptions Immunity Tests (EN 61000-4-11)..... 45

18 Measurement Uncertainty 48

19 Revision History..... 49

List of Figures

Figure 5-1 EUT Block Diagram 8

Figure 7-1 Radiated Disturbance Test Setup Front 11

Figure 7-2 Radiated Disturbance Test Setup Rear 11

Figure 8-1 AC Mains Conducted Emissions Setup 15

Figure 11-1 ESD Test Setup table-top equipment 22

Figure 11-2 ESD Test Setup 24

Figure 11-3 ESD Test Points Picture 1 25

Figure 12-1 Radiated, Radio-Frequency, Electromagnetic Field Immunity Test Setup 27

Figure 12-2 Radio-Frequency Electromagnetic Field Test Setup Picture 1 29

Figure 13-1 Electrical Fast Transient/Burst Test Setup 31

Figure 13-2 Electrical Fast Transients Test Setup 32

Figure 14-1 Surge Immunity Test Setup 34

Figure 14-2 Surge Test Setup 35

Figure 15-1 Immunity to Conducted Disturbances, induced by Radio-Frequency Fields Test Setup 37

Figure 15-2 Immunity to Conducted Disturbances Test Setup 39

Figure 166-1 Power-Frequency Magnetic Field Test Setup 40

Figure 166-2 Power Frequency Magnetic Field Immunity Test Setup 42

Figure 166-3 Power Frequency Magnetic Field Immunity Test Setup 43

Figure 166-4 Power Frequency Magnetic Field Immunity Test Setup 44

Figure 177-1 Voltage Dips and Interruptions Test Setup 46

List of Tables

Table 7-1 Radiated Disturbance Limit 30 MHz to 1000 MHz 10
Table 7-2 Radiated Disturbance 30 MHz to 1000 MHz Quasi-Peak 13
Table 8-1 Limits for Conducted Disturbance at the Mains Ports 14
Table 8-2 Conducted Disturbance at AC Mains Line 1 240V/50Hz 19
Table 8-3 Conducted Disturbance at AC Mains Line 2 240V/50Hz 19
Table 11-1 ESD Test Parameters 23
Table 11-2 ESD Test Points 26
Table 12-1 Radio Frequency Electromagnetic Field Test Parameters 27
Table 13-1 Electrical Fast Transients Test Parameters 31
Table 13-2 EFT Test Data 33
Table 14-1 Surge Test Parameters 34
Table 14-2 Surge Test Data 36
Table 14-3 Surge Test Matrix 36
Table 155-1 Immunity to Conducted Disturbances Test Parameters 37
Table 155-2 Conducted Disturbances Test Data 39
Table 16-1 Power Frequency Magnetic Field Test Parameters 40
Table 166-2 Power Frequency Magnetic Field Immunity Data 44
Table 177-1 Voltage Dips and Interruptions Test Parameters 45
Table 177-2 Voltage Dips and Interruptions Test Data 47

Table of Graphs

Graph 7-1 Radiated emission 30 to 1000MHz horizontal polarity	12
Graph 7-2 Radiated emission 30 to 1000MHz vertical polarity	12
Graph 8-1 Conducted Disturbance at AC Mains Line 1 240V/50Hz	16
Graph 8-2 Conducted Disturbance at AC Mains Line 2 240V/50Hz	16

Test Equipment List

Test Equipment 7-1 Radiated Emissions	10
Test Equipment 8-1 Conducted Emissions	14
Test Equipment 11-1 ESD	23
Test Equipment 12-1 Radiated Immunity	28
Test Equipment 13-1 EFT	31
Test Equipment 14-1 Surge	34
Test Equipment 15-1 Conducted Immunity.....	38
Test Equipment 166-1 Power Frequency Magnetic Field Immunity.....	41
Test Equipment 177-1 Voltage Dips / Interruptions Immunity.....	45

1 Introduction and Conclusion

The tests indicated in Section 2 were performed on the product constructed as described in Section 4. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

2 Test Summary

Section	Test full name	Test date	Result
4	Description of Equipment Under Test	---	---
5	System setup including cable interconnection details, support equipment and simplified block diagram	---	---
6	Performance Criterion of the Equipment when tested against the immunity requirements for the European CE Mark	---	---
7	Radiated Emissions	November 12, 2012	Pass
8	AC Mains Conducted Emissions-Continuous Disturbance	November 16, 2012	Pass
9	Harmonics (IEC 61000-3-2)	N/A	---
10	Flicker (IEC 61000-3-3)	N/A	---
11	Electrostatic Discharge Immunity Test (IEC 61000-4-2)	November 13, 2012	Pass
12	Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3)	November 14, 2012	Pass
13	Electrical Fast Transient/Burst Immunity Test (IEC 61000-4-4)	November 15, 2012	Pass
14	Immunity to Surge (IEC 61000-4-5)	November 15, 2012	Pass
15	Conducted, radio-frequency, electromagnetic field immunity test (IEC 61000-4-6)	November 13, 2012	Pass
16	Power Frequency Magnetic Field Immunity Test (IEC 61000-4-8)	November 14, 2012	Pass
17	Voltage Dips / Interruptions Immunity Tests (EN 61000-4-11)	November 14, 2012	Pass

3 Test Facility

Intertek Plano's testing facilities are located at 1809 10th Street Suite 400 Plano, TX 75074. The testing facility is ISO17025:2005 accredited by A2LA, our lab code is 2310.01.

Testing contained in this test report may not be covered under the laboratories scope of accreditation. A note will be placed in the specific test section for testing not covered under the laboratories scope.

4 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Vibrating Fork Level Switch	K-Tek	RS85/A1W/P1/S6	3K780000023975

Receive Date:	November 9, 2012
Received Condition:	Good
Type:	Production

Description of Equipment Under Test (provided by client)
The EUT is a vibrating fork switch designed for level detection in liquids.

Equipment Under Test Power Configuration				
Model	Rated Voltage	Rated Power	Rated Frequency	Number of Phases
RS85/A1W/P1/S6	120VAC	5.5Watts	60Hz	1
RS85/A1W/P1/S6	240VAC	5.5Watts	50Hz	1
RS85/A1W/P1/S6	24VDC	5.5Watts	N/A	N/A

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	Once power was applied EUT was in typical operating state.

5 System setup including cable interconnection details, support equipment and simplified block diagram

5.1 Method:

Record the details of EUT cabling, document the support equipment, and show the interconnections in a block diagram.

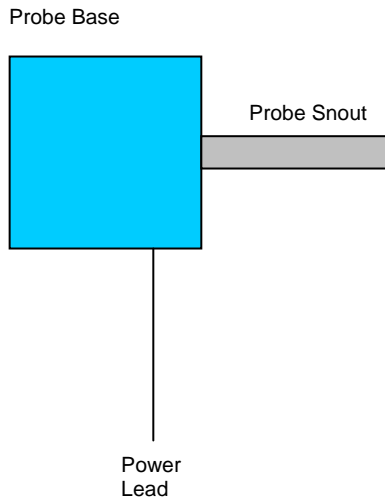


Figure 5-1 EUT Block Diagram

5.2 Data:

ID	Description	Length	Shielding	Ferrites
A	Power Lead	1.4m	No	No

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
None	---	---	---

6 Performance Criterion of the Equipment when tested against the immunity requirements for the European CE Mark

6.1 Method:

The equipment under test (EUT) is to be installed in accordance with the manufacturer's instructions. The installation process includes, product assembly, connecting any support equipment, connecting power and configuration of the equipment under test. All unused ports should be terminated as instructed by the test standard. The EUT should indicate normal operation in accordance with the Operation Manual.

If, as a result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe, the apparatus shall be deemed to have failed the test.

A functional description and a definition of performance criteria, during or as a consequence of the EMC testing, shall be provided by the manufacturer.

Performance criterion A: The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

Performance criterion D: EUT is physically damaged.

Product Specific Performance Criterion:

No.	Description
1	EUT will remain in selected monitoring program.

Description of how performance was observed during testing:

No.	Description
1	Visually observed LED status indicators.

7 Radiated Emissions

7.1 Method

Measurements were conducted with a quasi-peak detector instrument in the frequency range of 30 MHz to 1000 MHz. The measuring receiver meets the requirements of Section One of CISPR 16 and the measuring antenna correlates to a balanced dipole.

Measurements of the radiated field were made with the antenna located at a distance of 3 meters from the EUT. An inverse proportionality factor of 20 dB per decade was used to normalize the measured data to the specified distance for determining compliance. The antenna is adjusted between 1m and 4m in height above the ground plane for maximum meter reading at each test frequency. The antenna-to-EUT azimuth is varied during the measurement to find the maximum field-strength readings. The antenna-to-EUT polarization (horizontal and vertical) is varied during the measurements to find the maximum field-strength readings. The EUT was placed on a 1m by 1.5m non-conductive table 0.8m above the ground plane and centered on the turntable.

Equipment setup for radiated disturbance tests followed the guidelines of CISPR 16-2-3.

7.2 Test Limits

Table 7-1 Radiated Disturbance Limit 30 MHz to 1000 MHz

Radiated Emission Limits 30 MHz to 1000 MHz		
Frequency (MHz)	Quasi-Peak limits, dB (μ V/m) at 10 meters	Quasi-Peak limits, dB (μ V/m) at 3 meters ¹
30 to 230	40	50
230 to 1000	47	57

¹ Limit is extrapolated from the 10m distance limit per CISPR 16 and/or 47 CFR 15.31.

7.3 Test Equipment Used:

Test Equipment 7-1 Radiated Emissions

Description	Manufacturer	Model	Serial Number	Cal Date	Cal Due
Temperature, Humidity & Pressure Recorder	Omega	OM-CP-PRHTemp2000	N10673	07/20/2012	07/20/2013
EMI Receiver rated: 10KHz-7GHz	R & S	ESI 7	100044	04/05/2012	04/05/2013
SMA RF CABLE	Insulated Wire Inc.	SPS-2303-4250-SPS	805	07/19/2012	07/19/2013
DC to 18GHz coaxial RF Cable 3m Em Chamb	MegaPhase	F520NNNK315	F520NNNK315	09/24/2012	09/24/2013
Log Periodic Antenna rated: 30 MHz- 2 GHz	Chase	CBL6112B	2726	08/28/2012	08/28/2013

7.4 Results:

The sample tested was found to Comply.

7.5 Setup Photographs:



Figure 7-1 Radiated Disturbance Test Setup Front

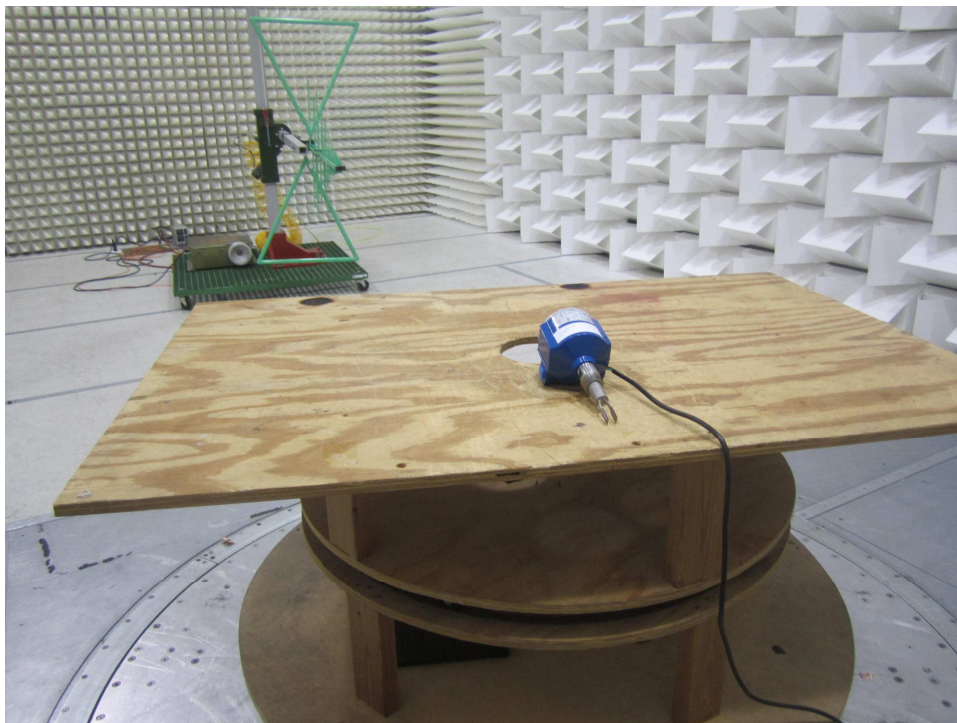
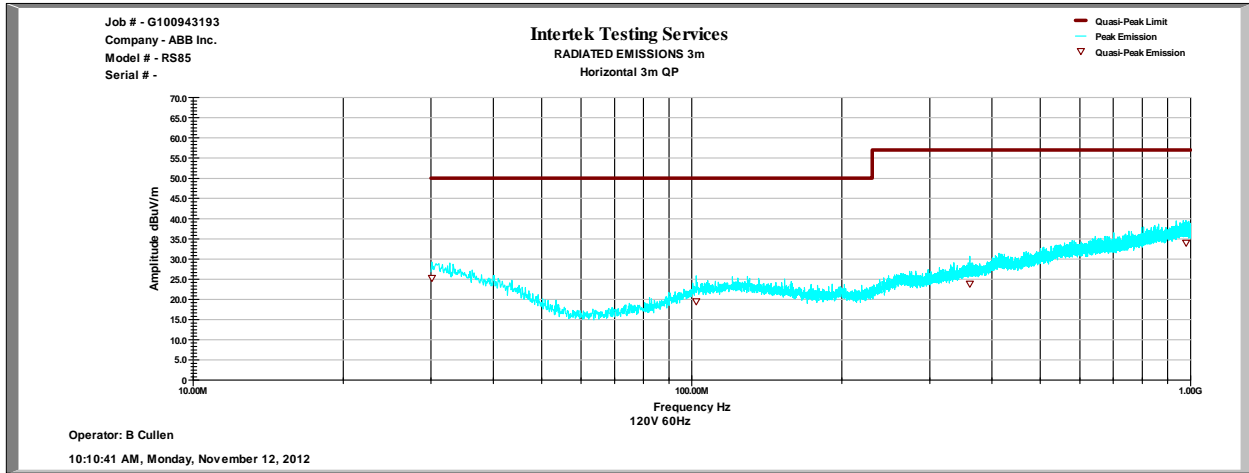
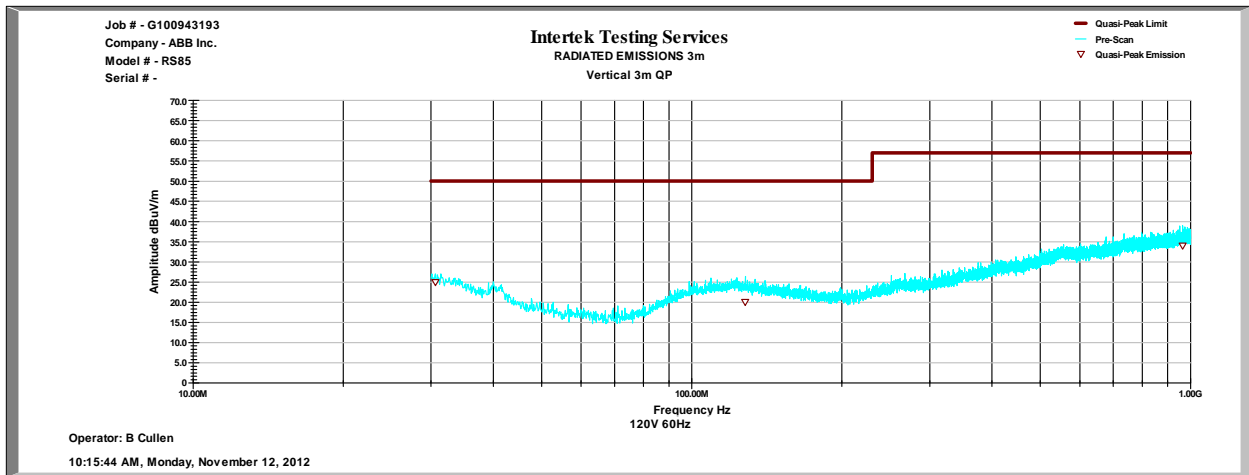


Figure 7-2 Radiated Disturbance Test Setup Rear

7.6 Plots:



Graph 7-1 Radiated emission 30 to 1000MHz horizontal polarity



Graph 7-2 Radiated emission 30 to 1000MHz vertical polarity

7.7 Test Data:

Measurement Distance: 3 meters

Test: Radiated Emissions

Frequency Range: 30 MHz to 1000 MHz

Limits: CENELEC EN 61326-1 Class A

Temperature: 23 °C

Relative Humidity: 48 %Rh

Atmospheric Pressure: 990 mbar

Table 7-2 Radiated Disturbance 30 MHz to 1000 MHz Quasi-Peak

Polarization H/V	Frequency MHz	Height cm	Azimuth	QP Reading (dBuV/m)	Antenna Factor	Cable Factor	QP Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
H	30.09	142	268	4.941	19.446	0.91	25.297	50	-24.703
H	102.1	119	136	6.09	11.81	1.705	19.606	50	-30.394
H	360.73	217	266	4.858	15.8	3.109	23.767	57	-33.233
H	977.94	322	141	6.303	22.5	5.2	34.004	57	-22.996
V	30.59	164	38	5.022	17.046	0.912	25.081	50	-24.919
V	128.11	189	129	5.496	13.5	1.88	20.087	50	-29.913
V	964.76	278	241	6.373	21.3	5.175	34.048	57	-22.952

Note: a) A complete scan from 30-1000 MHz was made with antenna oriented horizontally and vertically.

b) All emissions not reported are at least 10 dB below the limits.

Numbers with a minus sign in margin column are below the limit

Deviations, Additions, or Exclusions: None

Test Date: November 12, 2012

8 AC Mains Conducted Emissions-Continuous Disturbance

8.1 Method

Measurements were carried out using quasi-peak and average detector receivers in accordance with CISPR 16. An Artificial Mains Network (AMN) is required to provide defined impedance at high frequencies across the power feed at the point of measurement of terminal voltage and also to provide isolation of the circuit under test from the ambient noise on the power lines. An AMN as defined in CISPR 16 was used.

The EUT was located so that the distance between the boundary of the EUT and the closest surface of the AMN is 0.8m.

Where a flexible mains cord is provided by the manufacturer, this shall be 1m long or if in excess of 1m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4m in length.

The EUT was arranged and connected with cables terminated in accordance with the product specification. Conducted disturbance was measured between the phase lead and the reference ground, and between the neutral lead and the reference ground. Both measured values are reported.

The EUT was placed on a 1m by 1.5m non-conductive table 0.8m above the ground plane. A vertical, metal reference plane is placed 0.4m from the EUT. The vertical metal reference-plane is at least 2m by 2m.

Equipment setup for conducted disturbance tests followed the guidelines of CISPR 16-2-1.

8.2 Test Limits

Table 8-1 Limits for Conducted Disturbance at the Mains Ports

Frequency band MHz	Limit (dB μ V)	
	Quasi-Peak	Average
0.15-0.50	79	66
0.50-30.00	73	60

8.3 Test Equipment Used:

Test Equipment 8-1 Conducted Emissions

Description	Manufacturer	Model	Serial Number	Cal Date	Cal Due
Temperature, Humidity & Pressure Recorder	Omega	OM-CP-PRHTemp2000	N10673	07/20/2012	07/20/2013
EMI Receiver rated: 10KHz-7GHz	R & S	ESI 7	100044	04/05/2012	04/05/2013
RF Cable	Custom made	#0	none	07/19/2012	07/19/2013
LISN, Frequency 10 kHz - 30 MHz	FCC	FCC-LISN-50-16-2-08	06045	02/23/2012	02/23/2013
Transient Limiter rated: 9 KHz - 200 MHz, 2.5W	Agilent	11947A	3107A03304	07/30/2012	07/30/2013
TILE Profile	Intertek	1130-003	Ver10Rev1	07/05/2012	07/05/2013

8.4 Results:

The sample tested was found to comply.

8.5 Setup Photographs:

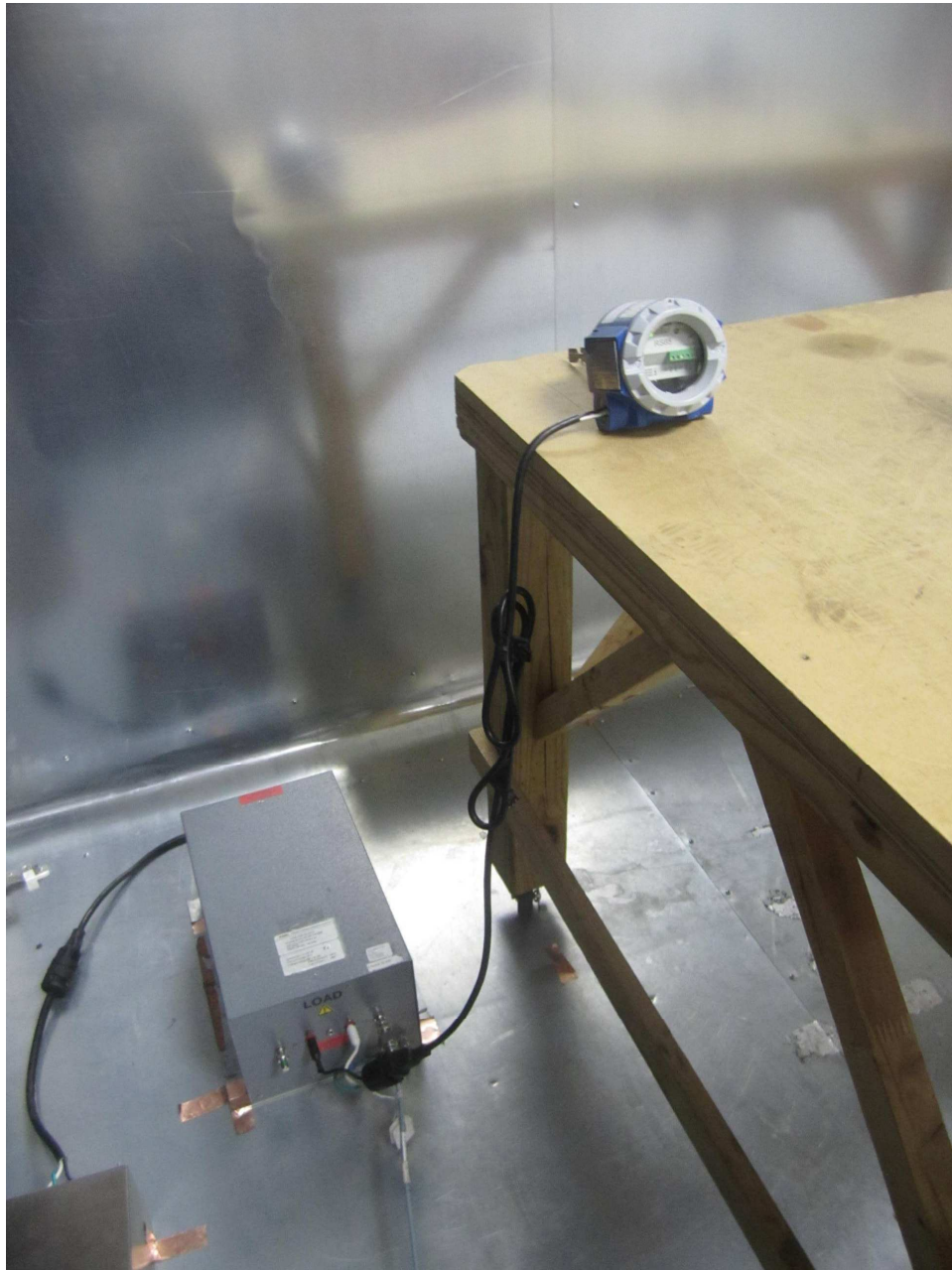
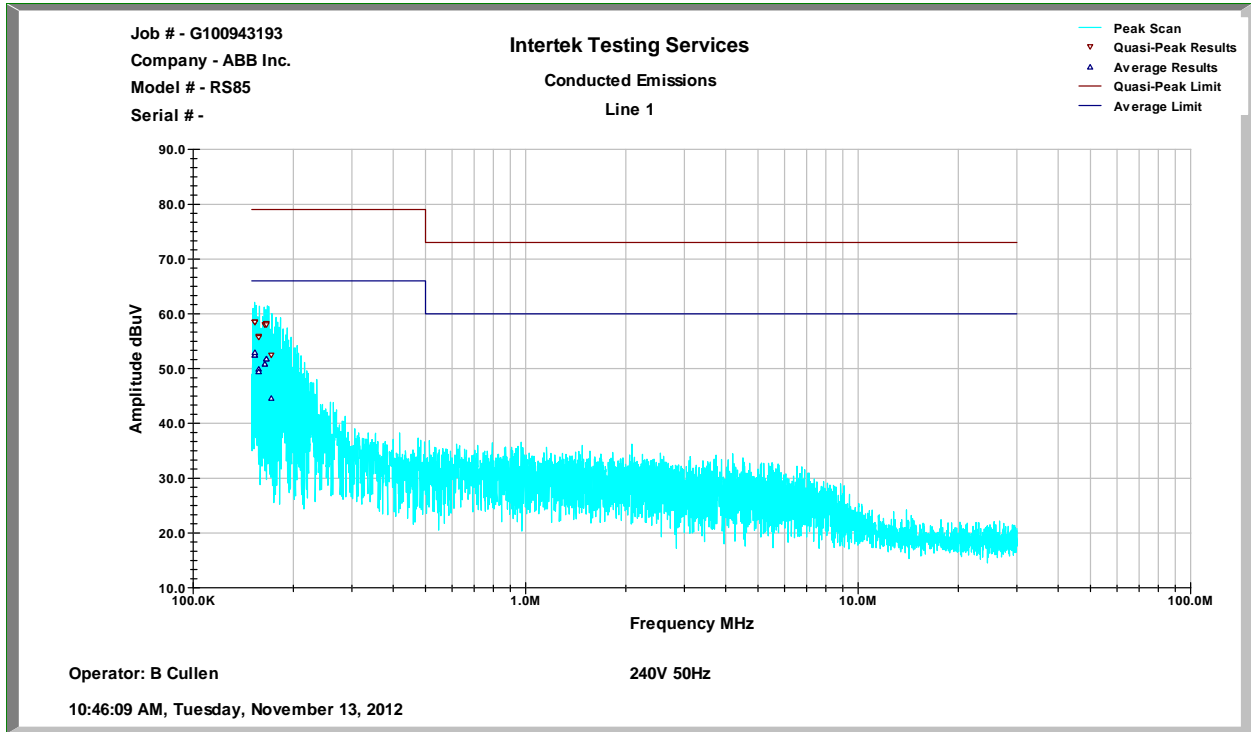
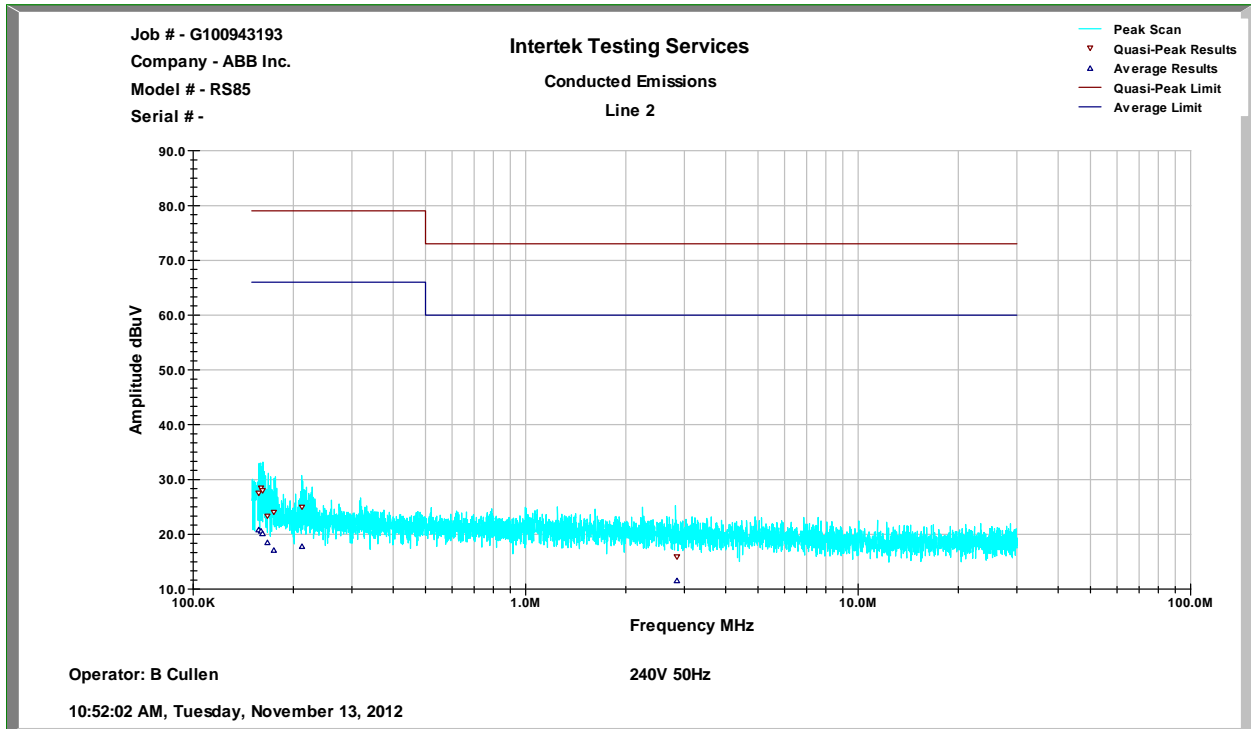


Figure 8-1 AC Mains Conducted Emissions Setup

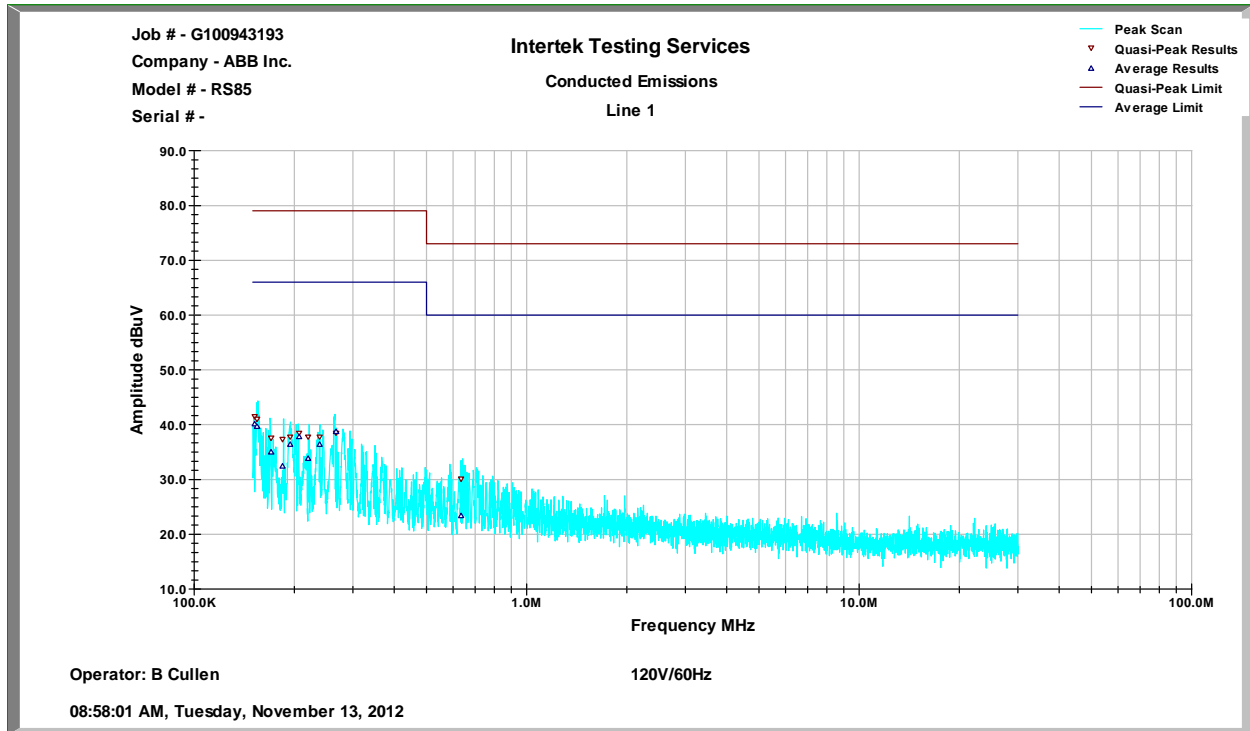
8.6 Plots:



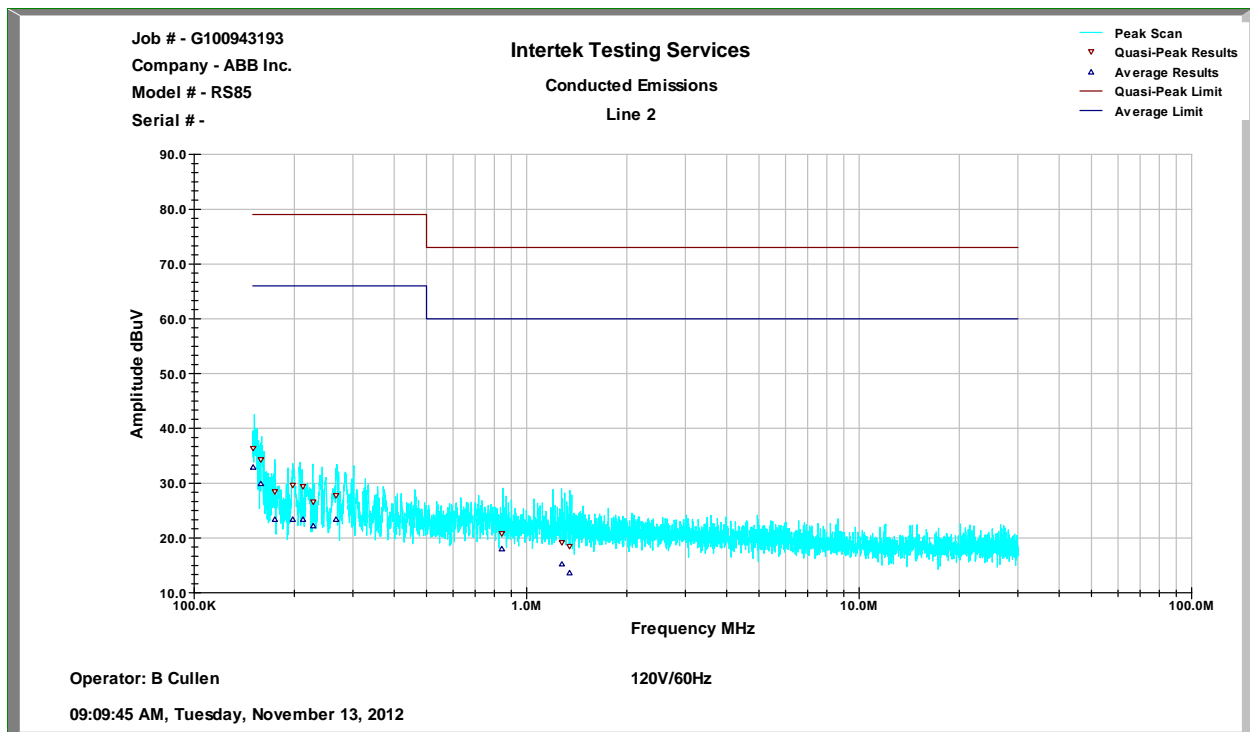
Graph 8-1 Conducted Disturbance at AC Mains Line 1 240V/50Hz



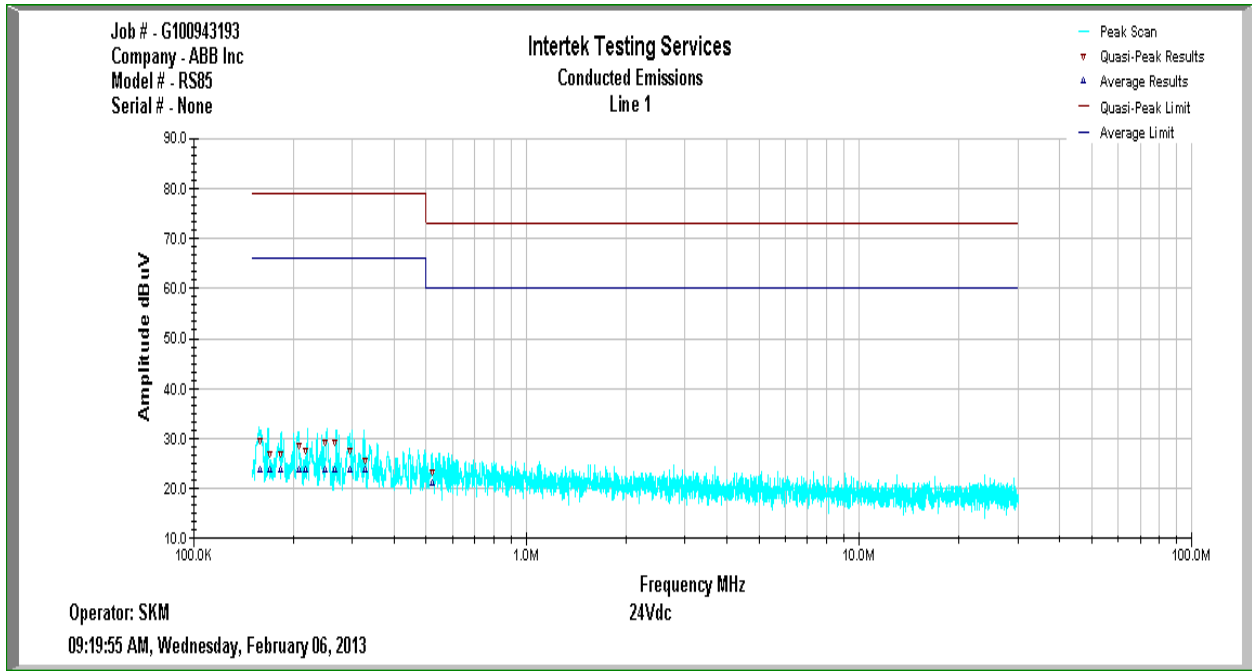
Graph 8-2 Conducted Disturbance at AC Mains Line 2 240V/50Hz



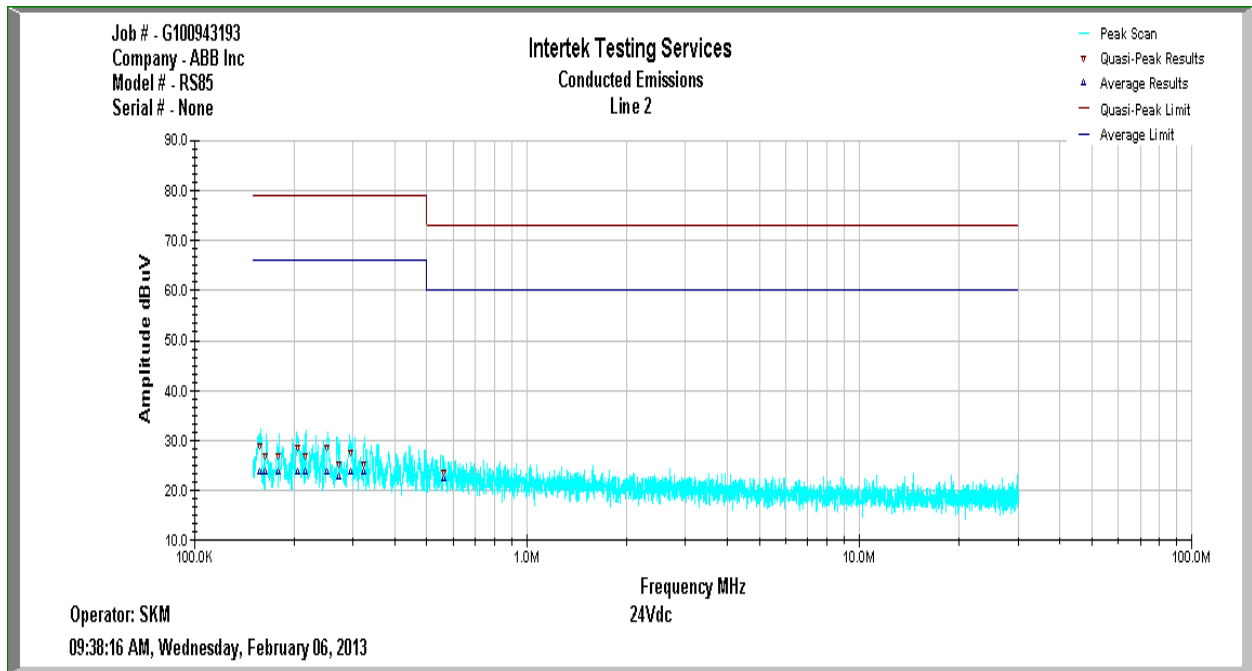
Graph 8-3 Conducted Disturbance at AC Mains Line 1 120V/60Hz



Graph 8-4 Conducted Disturbance at AC Mains Line 2 120V/60Hz



Graph 8-5 Conducted Disturbance at DC Mains Line 1 24VDC



Graph 8-6 Conducted Disturbance at DC Mains Line 2 24VDC

Data:

Standard: CENELEC EN 61326-1
 Test: Conducted Emissions
 Frequency Range: 150 kHz to 30 MHz
 Limits: See Table 8-1

Measurement Uncertainty: 1.74
 Temperature: 22 °C
 Relative Humidity: 46 %Rh
 Atmospheric Pressure: 997 mbar

Measurements made on selected frequencies from line conductor are given below:

Table 8-2 Conducted Disturbance at AC Mains Line 1 240V/50Hz

Frequency MHz	Measured QP dBuV	Measured Avg dBuV	Cable Fac dB	LISN Fac dB	Limiter Fac dB	Final QP dBuV	QP Limit dBuV	QP Margin dB	Final Avg dBuV	Avg Limit dBuV	Avg Margin dB
0.152978	48.888	42.838	0.022	0.1	9.568	58.578	79	-20.422	52.528	66	-13.472
0.153016	48.903	42.813	0.022	0.1	9.568	58.593	79	-20.407	52.504	66	-13.496
0.153692	48.86	43.12	0.022	0.1	9.568	58.55	79	-20.45	52.81	66	-13.19
0.156764	46.138	40.193	0.023	0.1	9.567	55.828	79	-23.172	49.883	66	-16.117
0.15694	45.905	39.816	0.023	0.1	9.567	55.595	79	-23.405	49.506	66	-16.494
0.165046	48.291	41.025	0.023	0.1	9.567	57.981	79	-21.019	50.715	66	-15.285
0.165202	48.402	41.228	0.023	0.1	9.567	58.092	79	-20.908	50.918	66	-15.082
0.166471	48.488	42.066	0.023	0.1	9.567	58.178	79	-20.822	51.756	66	-14.244
0.166633	48.417	42.101	0.023	0.1	9.567	58.107	79	-20.893	51.791	66	-14.209
0.171603	42.768	34.947	0.023	0.1	9.567	52.458	79	-26.542	44.637	66	-21.363

Table 8-3 Conducted Disturbance at AC Mains Line 2 240V/50Hz

Frequency MHz	Measured QP dBuV	Measured Avg dBuV	Cable Fac dB	LISN Fac dB	Limiter Fac dB	Final QP dBuV	QP Limit dBuV	QP Margin dB	Final Avg dBuV	Avg Limit dBuV	Avg Margin dB
0.157975	17.902	11.074	0.023	0.083	9.567	27.575	79	-51.425	20.747	66	-45.253
0.160409	18.689	10.831	0.023	0.08	9.567	28.359	79	-50.641	20.501	66	-45.499
0.161235	18.402	10.418	0.023	0.079	9.567	28.071	79	-50.929	20.087	66	-45.913
0.1678	13.662	8.746	0.023	0.071	9.567	23.323	79	-55.677	18.407	66	-47.593
0.174694	14.478	7.422	0.023	0.062	9.567	24.13	79	-54.87	17.074	66	-48.926
0.211864	15.352	8.173	0.025	0.017	9.565	24.958	79	-54.042	17.78	66	-48.22
2.85753	6.378	1.911	0.074	0.008	9.559	16.018	73	-56.982	11.552	60	-48.448

Table 8-3 Conducted Disturbance at AC Mains Line 1 120V/60Hz

Frequency MHz	Measured QP dBuV	Measured Avg dBuV	Cable Fac dB	LISN Fac dB	Limiter Fac dB	Final QP dBuV	QP Limit dBuV	QP Margin dB	Final Avg dBuV	Avg Limit dBuV	Avg Margin dB
0.152978	48.888	42.838	0.022	0.1	9.568	58.578	79	-20.422	52.528	66	-13.472
0.153016	48.903	42.813	0.022	0.1	9.568	58.593	79	-20.407	52.504	66	-13.496
0.153692	48.86	43.12	0.022	0.1	9.568	58.55	79	-20.45	52.81	66	-13.19
0.156764	46.138	40.193	0.023	0.1	9.567	55.828	79	-23.172	49.883	66	-16.117
0.15694	45.905	39.816	0.023	0.1	9.567	55.595	79	-23.405	49.506	66	-16.494
0.165046	48.291	41.025	0.023	0.1	9.567	57.981	79	-21.019	50.715	66	-15.285
0.165202	48.402	41.228	0.023	0.1	9.567	58.092	79	-20.908	50.918	66	-15.082
0.166471	48.488	42.066	0.023	0.1	9.567	58.178	79	-20.822	51.756	66	-14.244
0.166633	48.417	42.101	0.023	0.1	9.567	58.107	79	-20.893	51.791	66	-14.209
0.171603	42.768	34.947	0.023	0.1	9.567	52.458	79	-26.542	44.637	66	-21.363

Table 8-4 Conducted Disturbance at AC Mains Line 2 120V/60Hz

Frequency	Measured QP	Measured Avg	Cable Fac	LISN Fac	Limiter Fac	Final QP	QP Limit	QP Margin	Final Avg	Avg Limit	Avg Margin
MHz	dBuV	dBuV	dB	dB	dB	dBuV	dBuV	dB	dBuV	dBuV	dB
0.157975	17.902	11.074	0.023	0.083	9.567	27.575	79	-51.425	20.747	66	-45.253
0.160409	18.689	10.831	0.023	0.08	9.567	28.359	79	-50.641	20.501	66	-45.499
0.161235	18.402	10.418	0.023	0.079	9.567	28.071	79	-50.929	20.087	66	-45.913
0.1678	13.662	8.746	0.023	0.071	9.567	23.323	79	-55.677	18.407	66	-47.593
0.174694	14.478	7.422	0.023	0.062	9.567	24.13	79	-54.87	17.074	66	-48.926
0.211864	15.352	8.173	0.025	0.017	9.565	24.958	79	-54.042	17.78	66	-48.22
2.85753	6.378	1.911	0.074	0.008	9.559	16.018	73	-56.982	11.552	60	-48.448

Table 8-5 Conducted Disturbance at DC Mains Line 1 24VDC

Frequency	Measured QP	Measured Avg	Cable Fac	LISN Fac	Limiter Fac	Final QP	QP Limit	QP Margin	Final Avg	Avg Limit	Avg Margin
MHz	dBuV	dBuV	dB	dB	dB	dBuV	dBuV	dB	dBuV	dBuV	dB
0.158645	19.982	13.996	0.023	0.1	9.567	29.672	79	-49.328	23.686	66	-42.314
0.168692	17.434	13.996	0.023	0.1	9.567	27.124	79	-51.876	23.686	66	-42.314
0.18212	17.239	13.996	0.024	0.1	9.566	26.929	79	-52.071	23.686	66	-42.314
0.207071	19.072	13.996	0.025	0.1	9.565	28.761	79	-50.239	23.685	66	-42.315
0.216911	17.834	14	0.025	0.1	9.565	27.523	79	-51.477	23.689	66	-42.311
0.248519	19.489	14.006	0.026	0.1	9.563	29.178	79	-49.822	23.695	66	-42.305
0.265785	19.457	14.004	0.027	0.1	9.563	29.146	79	-49.854	23.693	66	-42.307
0.293897	17.89	14.002	0.028	0.1	9.561	27.579	79	-51.421	23.691	66	-42.309
0.327844	15.857	13.996	0.029	0.1	9.56	25.546	79	-53.454	23.685	66	-42.315
0.521762	13.681	11.355	0.034	0.1	9.551	23.366	73	-49.634	21.041	60	-38.959

Table 8-6 Conducted Disturbance at DC Mains Line 2 24VDC

Frequency	Measured QP	Measured Avg	Cable Fac	LISN Fac	Limiter Fac	Final QP	QP Limit	QP Margin	Final Avg	Avg Limit	Avg Margin
MHz	dBuV	dBuV	dB	dB	dB	dBuV	dBuV	dB	dBuV	dBuV	dB
0.157154	19.168	13.996	0.023	0.084	9.567	28.842	79	-50.158	23.67	66	-42.33
0.162645	17.249	13.996	0.023	0.077	9.567	26.916	79	-52.084	23.663	66	-42.337
0.17816	17.367	13.996	0.023	0.058	9.567	27.015	79	-51.985	23.644	66	-42.356
0.203547	19.129	13.996	0.024	0.027	9.565	28.746	79	-50.254	23.613	66	-42.387
0.214488	17.507	13.998	0.025	0.014	9.565	27.11	79	-51.89	23.601	66	-42.399
0.250493	18.988	14.006	0.026	0	9.563	28.577	79	-50.423	23.595	66	-42.405
0.271998	15.884	13.037	0.027	0	9.562	25.473	79	-53.527	22.627	66	-43.373
0.294055	17.96	14.002	0.028	0	9.561	27.549	79	-51.451	23.591	66	-42.409
0.322005	15.848	13.996	0.029	0	9.56	25.437	79	-53.563	23.585	66	-42.415
0.561537	14.17	12.827	0.036	0.001	9.549	23.756	73	-49.244	22.413	60	-37.587

- Notes: (a) All emissions not reported are at least 10 dB below the limits
 (b) Analyzer setting: RBW \geq 9 kHz, VBW \geq 30 kHz
 (c) Detector mode: Quasi-peak unless otherwise specified in the data page
 (d) Numbers with a minus sign in margin column are below the limit.

Deviations, Additions, or Exclusions: None

Test Date: February 6, 2013

9 Harmonics (IEC 61000-3-2)

Not applicable, EUT is industrial equipment.

10 Flicker (IEC 61000-3-3)

Not applicable, EUT is industrial equipment.

11 Electrostatic Discharge Immunity Test (IEC 61000-4-2)

11.1 Method

Figure 11-1 shows the test configuration for a table top EUT. The ESD test level is set and discharges of positive and negative polarization are applied to the following locations:

- The horizontal ground plane
- The vertical coupling plane
- The conductive surfaces under the test sample
- Along all seams and control surfaces of the EUT, that are accessible to user during normal usage

Inside the EUT, only the points and/or surfaces that have to be accessed to perform user's maintenance are included in the test unless the manufacturer prescribes clear instructions for the use of ESD precautions (e.g. changing the print cartridge for inkjet printers). ESD discharges are not applied to any point of the EUT which are accessible only for maintenance purposes, excluding customer's maintenance, unless different instruction is given.

If a discharge occurs and an error is caused, the type of error, discharge level and location is recorded.

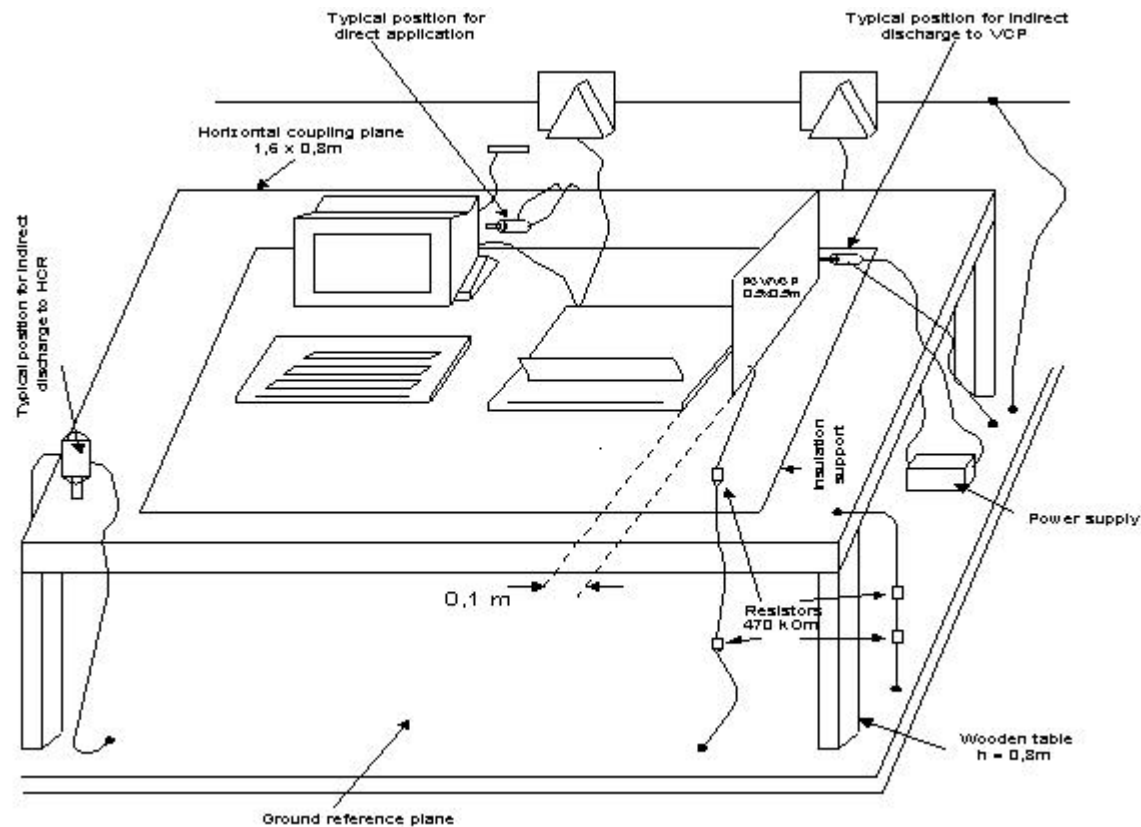


Figure 11-1 ESD Test Setup table-top equipment

11.2 Test Parameters*Table 11-1 ESD Test Parameters*

Environmental phenomenon	Test Specification	Basic Standard	Remarks	Performance criterion required
Electrostatic discharge	$\pm 2,4$ kV (contact discharge) $\pm 2, 4, 8$ kV (air discharge)	IEC 61000-4-2	---	B

11.3 Test Equipment Used:**Test Equipment 11-1 ESD**

Description	Manufacturer	Model	Serial Number	Cal. Date	Cal. Due
Temperature, Humidity & Pressure Recorder	Omega	OM-CP-PRHTemp2000	N10673	07/20/2012	07/20/2013
Electrostatic Discharge Simulator with Discharge Gun Model: TC-815R, S/N: ESS073E645.	NoiseKen	ESS-2002	ESS0746804	07/17/2012	07/17/2013

11.4 Results:

The sample tested was found to Comply. $\pm 2,4$ kV (contact discharge)
 $\pm 2, 4, 8$ kV (air discharge)

11.5 Setup Photographs:



Figure 11-2 ESD Test Setup

11.6 Photo:

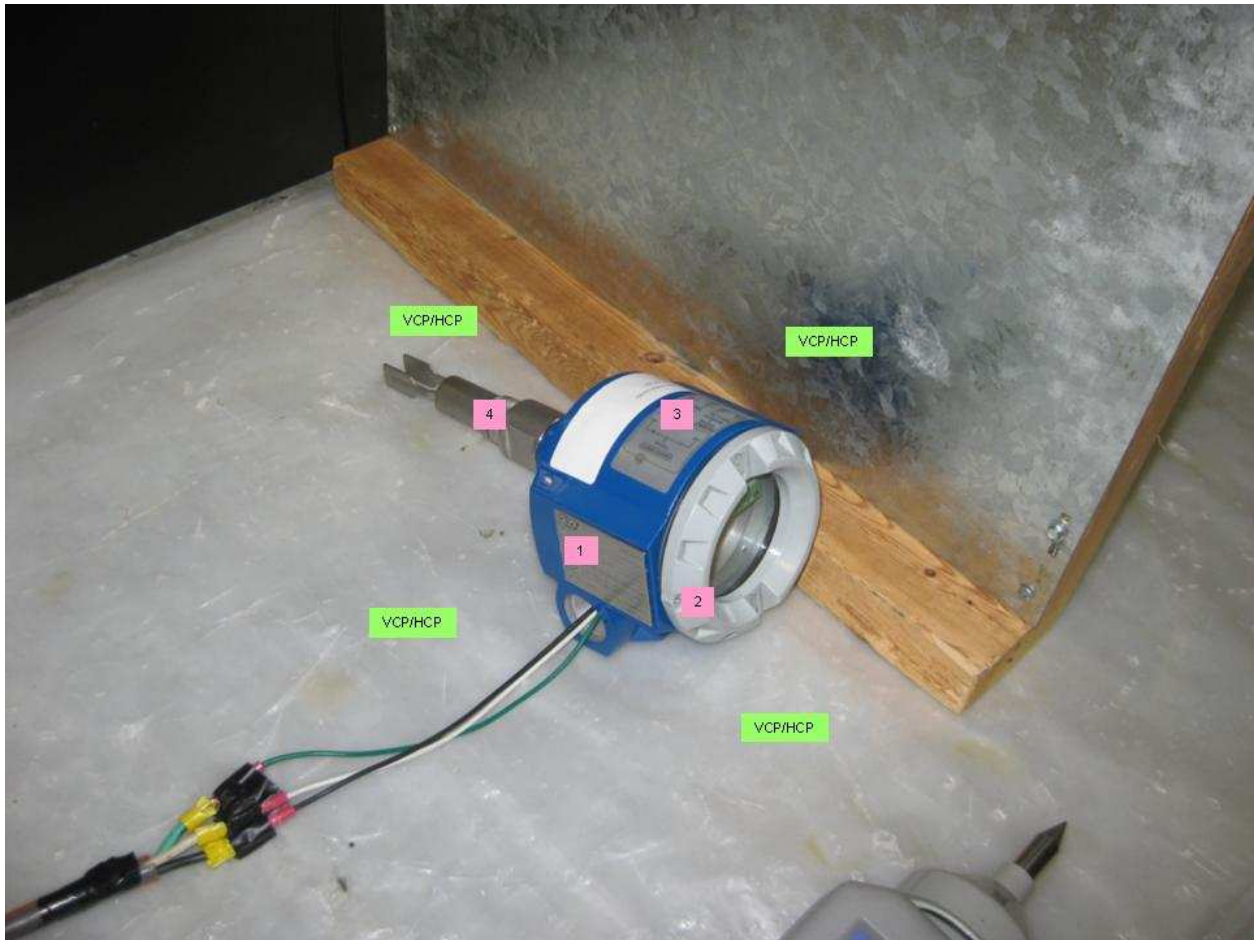


Figure 11-3 ESD Test Points Picture 1

11.7 Data:

Table 11-2 ESD Test Points

Test Point	Discharge Voltage Type	Test Voltages, Polarities and Result Classification															
		2 kV		4 kV		6 kV		8 kV		Air Discharges only above 8 kV	15 kV		kV				
		Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg		Pos	Neg	Pos	Neg			
HCP	Contact	A(1)	A(1)	A(1)	A(1)												
VCP	Contact	A(2)	A(2)	A(2)	A(2)												
1	Contact	A	A	A	A												
2	Contact	A	A	A	A												
3	Contact	A	A	A	A												
4	Contact	A	A	A	A												

Standard: CENELEC EN 61326-1
 Input Voltage: 240VAC/50Hz
 ESD Observed on Oscilloscope: No

Test Levels: 8kV air / 4 kV contact
 Ambient Temperature: 22 °C
 Relative Humidity: 50 %
 Atmospheric Pressure: 996 mbars

Notes:

- (1) Discharged to Horizontal Coupling Plane, 4 locations.
- (2) Discharged to Vertical Coupling Plane, 4 locations

Deviations, Additions, or Exclusions: None

Test Date: November 13, 2012

12 Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3)

12.1 Method

Figure 12-1 shows the test configuration. The test sample is set into operation and then monitored for degradations in performance. The RF test signal is set by a PC controlled process that automates the signal power leveling for field uniformity as the test signal is swept through the testing range. The EUT to transmit antenna distance is 3 meters, unless otherwise indicated in the report.

If an error is detected during testing, the field strength is manually reduced until the error corrects, then increased until the error begins to occur again. This RF level, the frequency, and the error effects created are hence noted before continuing. The procedure is performed in both horizontal and vertical antenna polarities.

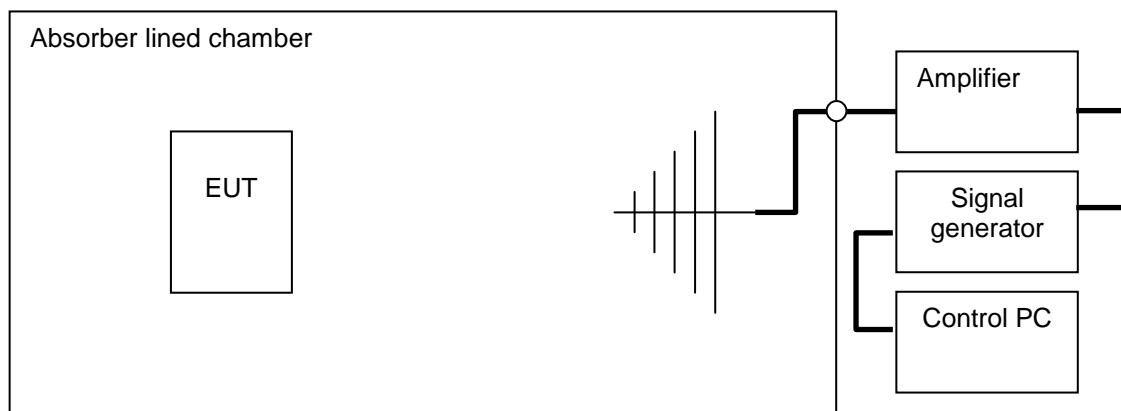


Figure 12-1 Radiated, Radio-Frequency, Electromagnetic Field Immunity Test Setup

12.2 Test Parameters

Table 12-1 Radio Frequency Electromagnetic Field Test Parameters

Environmental phenomenon	Test Specification	Basic Standard	Remarks	Performance criterion
Radio-frequency electromagnetic field Amplitude modulated	3 V/m, 80 to 1000 MHz 3V/m, 1.4 to 2 GHz 1 V/m, 2.0 to 2.7 GHz 1 kHz sine wave 80 % AM	IEC 61000-4-3	The test level specified is prior to modulation	B

12.3 Test Equipment Used:**Test Equipment 12-1 Radiated Immunity**

Description	Manufacturer	Model	Serial Number	Cal Date	Cal Due
Temperature, Humidity & Pressure Recorder	Omega	OM-CP-PRHTemp2000	N10673	07/20/2012	07/20/2013
Cable	L-Com	CA6NMNM010	2	VBU	VBU
Compact Chamber Amplifier	IFI	CMX5001	none	VBU	VBU
Amplifier	Amplifier Research	25S1G4A	309110	VBU	VBU
Signal Generator rated: 9 kHz - 2080 MHz	Rohde & Schwarz	SMY02	DE23662	09/27/2012	09/27/2013
Directional Coupler	Amplifier Research	DC6080	304859	02/22/2012	02/22/2013
Cable	L-Com	CA6NMNM010	3	VBU	VBU
RF Power Sensor	Hewlett Packard	8285H	2237A02163	01/27/2012	01/27/2013
RF Power Meter	Agilent	RF Power Meter	GB43318053	01/26/2012	01/26/2013
Antenna	Amplifier Research	AT5080	306847	VBU	VBU
Cable	L-Com	CA6NMNM010	1	VBU	VBU

12.4 Results:

The sample tested was found to Comply.

12.5 Setup Photographs:

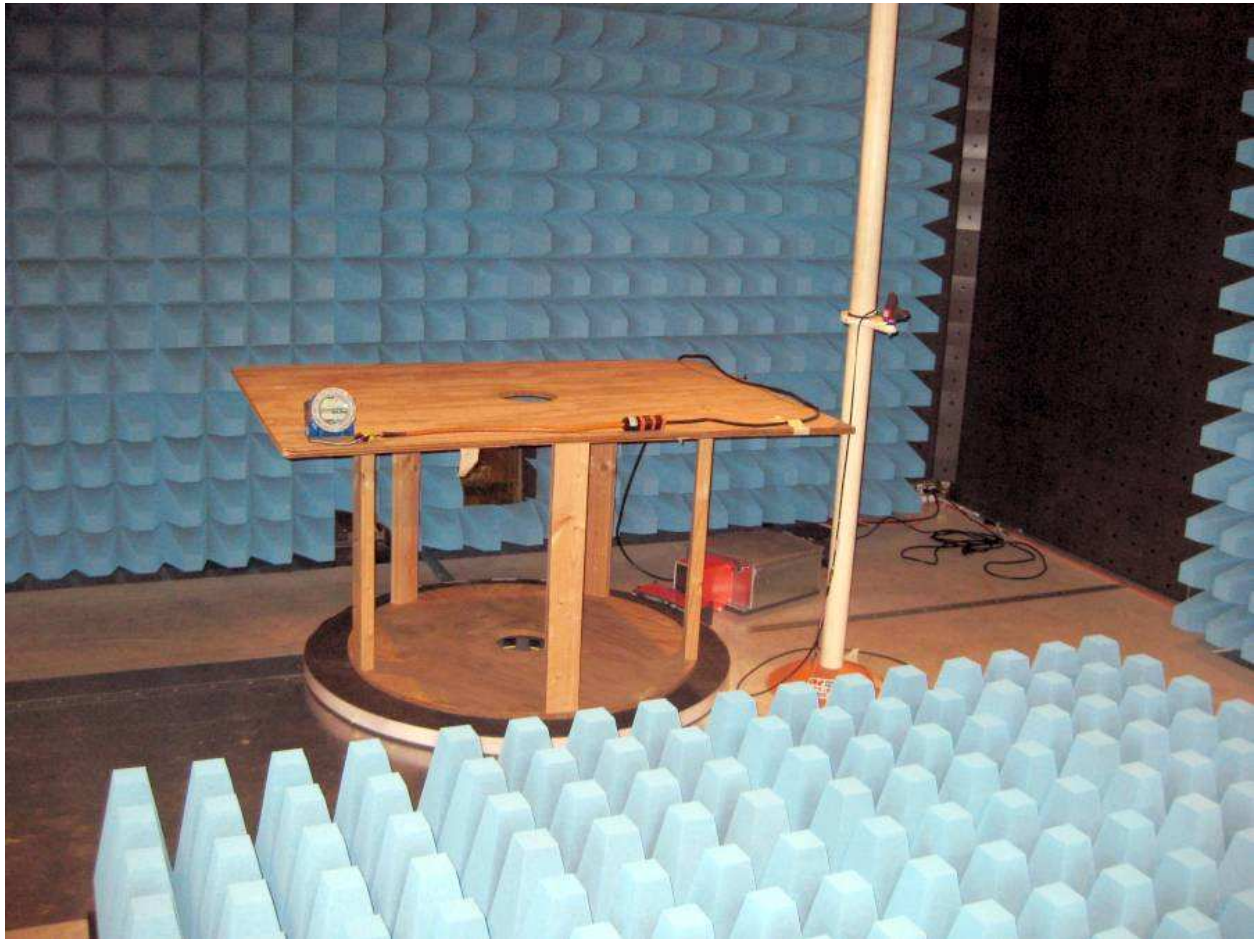


Figure 12-2 Radio-Frequency Electromagnetic Field Test Setup Picture 1

12.6 Test Data:

Field Level (V/m)	Frequency Range MHz	Antenna Polarity, Azimuths and Result Classification							
		Vertical							
		0	90	180	270	0	90	180	270
10	80-1000	A	A	A	A	A	A	A	A
3	1400-2000	A	A	A	A	A	A	A	A
1	2000-2700	A	A	A	A	A	A	A	A

Standard: CENELEC EN 61326-1

Test Levels: 10 V/m, 80 to 1000 MHz
3V/m, 1.4 to 2 GHz
1 V/m, 2.0 to 2.7 GHz
1 kHz sine wave 80 % AM

Observed on field probe: Yes

Ambient Temperature: 22 °C
Relative Humidity: 46 %
Atmospheric Pressure: 994mbar

Deviations, Additions, or Exclusions: None

Test Date: November 14, 2012

13 Electrical Fast Transient/Burst Immunity Test (IEC 61000-4-4)

13.1 Method

The test sample was connected to the test equipment, as shown in Figure 13-1 and monitored for performance. The test level was set, and the test signal of positive and negative polarization was applied to the power line for minimum of 1 minute per polarity. Using a capacitive coupling plate as called out in IEC 61000-4-4; the procedure was then repeated on signal and I/O lines whenever this was applicable.

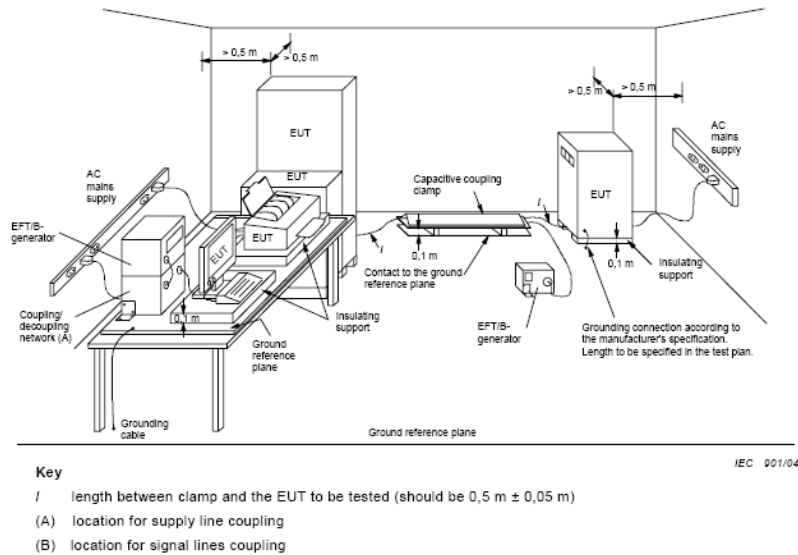


Figure 13-1 Electrical Fast Transient/Burst Test Setup

13.2 Test parameters

Table 13-1 Electrical Fast Transients Test Parameters

Environmental phenomenon	Test Specification	Basic Standard	Remarks	Performance criterion required
Fast transients on input AC power ports	±1kV 5/50 Tr/Th ns 5 kHz repetition	IEC 61000-4-4	---	A
Fast transients on input DC power ports	±1kV 5/50 Tr/Th ns 5 kHz repetition	IEC 61000-4-4	---	A

13.3 Test Equipment Used:

Test Equipment 13-1 EFT

Description	Manufacturer	Model	Serial Number	Cal Date	Cal Due
Temperature, Humidity & Pressure Recorder	Omega	OM-CP-PRHTemp2000	N10673	07/20/2012	07/20/2013
EMC Pro	Thermo Electron Corp	EMCProPLUS	0601242	02/27/2012	02/27/2013
CEWare32 Version 4.00	Thermo Electron Corp.	CEWare32 Version 4.00	CEWare32 Version 4.00	VBU	VBU

13.4 Results:

The sample tested was found to Comply.

13.5 Setup Photographs:

Figure 13-2 Electrical Fast Transients Test Setup

13.6 Test Data:

Table 13-2 EFT Test Data

Test Point	Coupling Method	Test Voltages, Polarities, and Result Classification							
		0.5kV		1 kV		2 kV		4 kV	
		pos	neg	pos	neg	pos	neg	pos	neg
L1-L2-PE 240VAC EUT	Direct	A	A	A	A	A	A		
L1-L2-PE 24VDC EUT	Direct	A	A	A	A	A	A		

Standard: CENELEC EN 61326-1
 Input Voltage: 240V/50Hz & 24VDC

Observed on Oscilloscope: Yes
 Ground Strap Used yes

Test Levels: AC/DC: 2kV
 Ambient Temperature: 22 °C
 Relative Humidity: 48%
 Atmospheric Pressure: 991 mbar

Deviations, Additions, or Exclusions: None

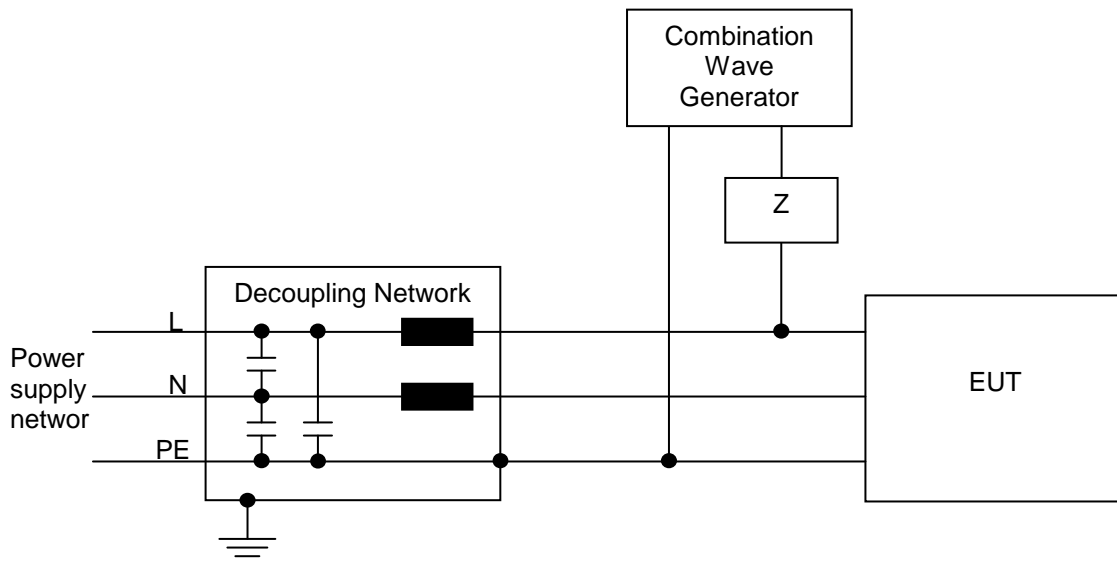
Test Date: November 15, 2012

14 Immunity to Surge (IEC 61000-4-5)

14.1 Method

Figure 14-1 shows the test configuration. The test sample is connected to the test equipment and monitored for performance. The test level is set and the test signal of positive and negative polarization is applied between one side of the Line (L1) and ground. When an error occurs, the test level is reduced until the error recovers. The test level is then increased until the threshold level is reached. This threshold and any error conditions are noted. If no error is detected, the injected voltage is increased to the next test level. This procedure was then repeated while injecting into Line 2 (L2). The pulse is then applied between L1 and L2. For signal and I/O lines, the test level is set and the test signal of positive and negative polarization is applied between the shield of the line and ground.

Figure 14-1 Surge Immunity Test Setup



14.2 Test Parameters

Table 14-1 Surge Test Parameters

Environmental phenomenon	Test Specification	Basic Standard	Remarks	Performance criterion required
Surge on AC & DC power ports	±1 kV line to line ±2 kV line to PE 1.2/50 (8/20) Tr/Th μs	IEC 61000-4-5	---	A

14.3 Test Equipment Used:

Test Equipment 14-1 Surge

Description	Manufacturer	Model	Serial Number	Cal Date	Cal Due
Temperature, Humidity & Pressure Recorder	Omega	OM-CP-PRHTemp2000	N10673	07/20/2012	07/20/2013
EMC Pro	Thermo Electron Corp	EMCProPLUS	0601242	02/27/2012	02/27/2013
CEWare32 Version 4.00	Thermo Electron Corp.	CEWare32 Version 4.00	CEWare32 Version 4.00	VBU	VBU

14.4 Results:

The sample tested was found to Comply.

14.5 Setup Photographs:



Figure 14-2 Surge Test Setup

14.6 Test Data:

Table 14-2 Surge Test Data

Test	Test Voltages, Polarities, and Result Classification							
	0.5kV		1kV		2kV		4kV	
	pos	neg	pos	neg	pos	neg	pos	neg
L1-PE, at 0 deg	A	A	A	A	A	A		
L1-PE, at 90 deg	A	A	A	A	A	A		
L1-PE, at 180 deg	A	A	A	A	A	A		
L1-PE, at 270 deg	A	A	A	A	A	A		
N-PE, at 0 deg	A	A	A	A	A	A		
N-PE, at 90 deg	A	A	A	A	A	A		
N-PE, at 180 deg	A	A	A	A	A	A		
N-PE, at 270 deg	A	A	A	A	A	A		
L1-N, at 0 deg	A	A	A	A				
L1-N, at 90 deg	A	A	A	A				
L1-N, at 180 deg	A	A	A	A				
L1-N, at 270 deg	A	A	A	A				

Standard: CENELEC EN 61326-1
 Input Voltage: 230V/50Hz & 24VDC
 Observed on
 Oscilloscope: yes

Test Levels: See Table 14-3 Surge Test Matrix
 Ambient Temperature: 22 °C
 Relative Humidity: 48 %
 Atmospheric Pressure: 992 mbar

Table 14-3 Surge Test Matrix

Test Matrix	Line to Physical Earth (ground)	Line to Line (or Neutral)
AC:	+/-2kV	+/-1kV
DC:	+/-2kV	+/-1kV
Indoor Signal:	N/A	N/A
Outdoor Signal:	N/A	N/A

Both 240VAC/50Hz and 24VDC units tested.

Deviations, Additions, or Exclusions: None

Test Date: November 15, 2012

Note:

15 Conducted, radio-frequency, electromagnetic field immunity test (IEC 61000-4-6)

15.1 Method

Figure 15-1 shows the test configuration. The test level is calibrated using calibration fixtures. RF energy from a power amplifier is coupled to one of two types of coupling devices, a CDN or an EM Clamp and outputs to an RF Power meter. The frequency range is swept incrementally from 150 kHz to 80 MHz with an incremental step size of 1%. When the desired test voltage level is attained then that drive level is saved in the file. In the test mode, the stored voltage levels at each frequency are regenerated with a modulation depth of 80% (1 kHz sine wave) while the EUT is monitored for failures. The RF test signal is set by a PC controlled process that automates the signal power leveling as the test signal is swept through the testing range.

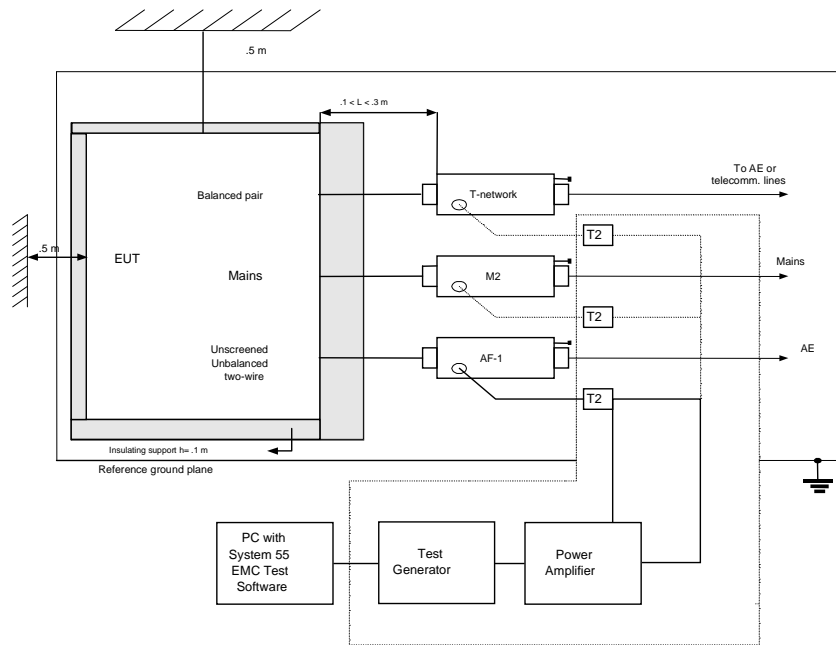


Figure 15-1 Immunity to Conducted Disturbances, induced by Radio-Frequency Fields Test Setup

15.2 Test Parameters

Table 155-1 Immunity to Conducted Disturbances Test Parameters

Environmental phenomenon	Test Specification	Basic Standard	Remarks	Performance criterion required
RF continuous conducted	0.15 to 230 MHz 1 kHz sine wave 80 % AM 3 V	IEC 61000-4-6	---	A

15.3 Test Equipment Used:**Test Equipment 15-1 Conducted Immunity**

Description	Manufacturer	Model	Serial Number	Cal Date	Cal Due
Temperature, Humidity & Pressure Recorder	Omega	OM-CP-PRHTemp2000	N10673	07/20/2012	07/20/2013
Coupling Decoupling Network	FCC	FCC-801-M3-25A	01027	07/17/2012	07/17/2013
Type N RF Cable	Custom made	#9	none	07/19/2012	07/19/2013
Power Amplifier	Kalmus	757LCB	9183-1	VBU	VBU
cable	SemFlex	RF coax cable	none	08/06/2012	08/06/2013
Signal Generator	Rohde & Schwarz	SMT03	825784/0016	02/27/2012	02/27/2013
Power Sensor with 437B Power Meter	HP	HP 8482H	3318A07268	02/21/2012	02/21/2013
Master Conducted Immunity Ver10Rev0 04-25-12.TIL	Intertek	1130-005	1130-005	VBU	VBU

15.4 Results:

The sample tested was found to Comply.

15.5 Setup Photographs:

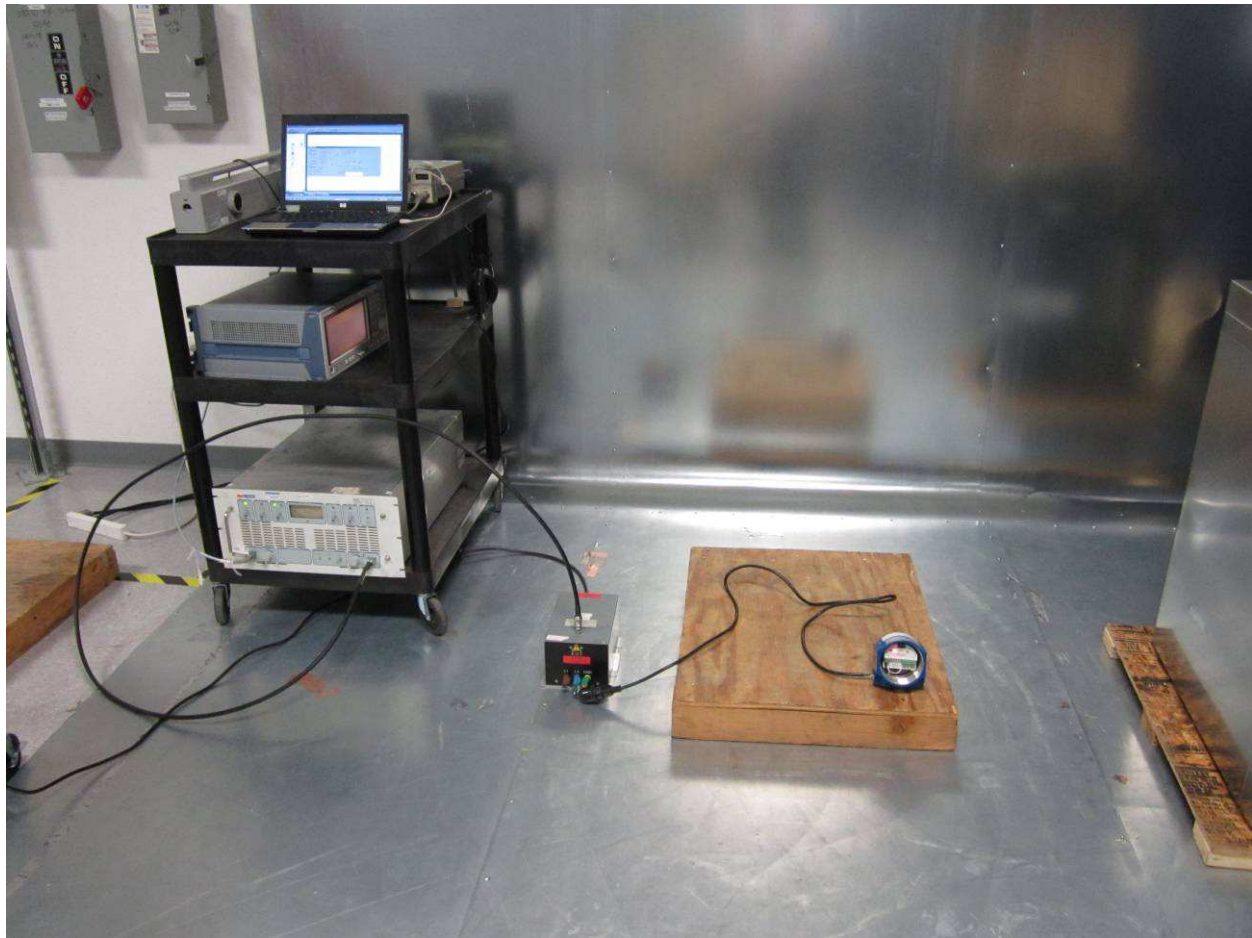


Figure 15-2 Immunity to Conducted Disturbances Test Setup

15.6 Test Data:

Table 155-2 Conducted Disturbances Test Data

Injection Device Type	Port Description	Test Level (Vrms)	Result Classification
CDN	240 VAC Power Unit	3	A
CDN	24 VDC Unit	3	A

Standard: CENELEC EN 61326-1
 Input Voltage: 240VAC/50Hz & 24VDC

Test Levels: 3Vrms @80%AM 1kHz
 Ambient Temperature: 22 °C
 Relative Humidity: 48 %
 Atmospheric Pressure: 992mbar

Note: All external cabling runs through armored/shielded conduit.

Deviations, Additions, or Exclusions: None

Test Date: November 13, 2012

16 Power Frequency Magnetic Field Immunity Test (IEC 61000-4-8)

Figure 166-1 shows the test configuration. A calibration is performed before testing is started. A loop of 1-meter diameter wire envelops the EUT with a minimum distance of 10 cm from the EUT to the loop. The resulting magnetic field is monitored with a Magnetic field sensor, which acts as the EUT in a calibration run, while placed in the center of the test loop. The output current necessary to generate the proper field in each configuration is then recorded. The EUT is then placed in the loop; the calibrated output current is set and monitored for performance. If an error occurs, the test level is reduced until the test system recovers. The test level is then increased until the threshold level is reached. This threshold and any error conditions are noted.

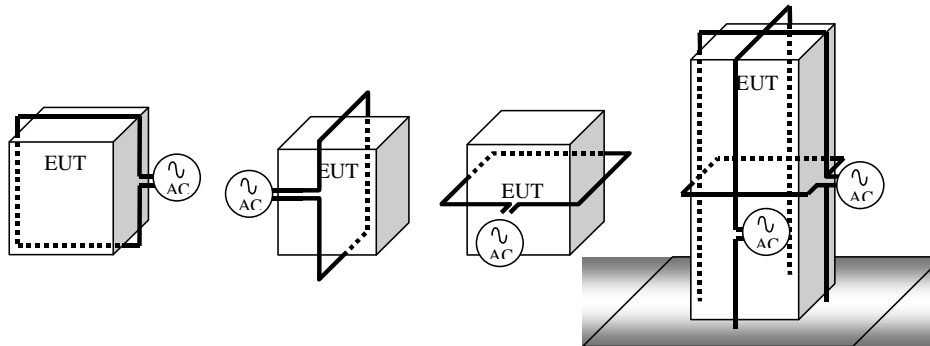


Figure 166-1 Power-Frequency Magnetic Field Test Setup

16.1 Test Parameters

Table 16-1 Power Frequency Magnetic Field Test Parameters

Environmental phenomenon	Test Specification	Basic Standard	Remarks	Performance criterion required
<i>Power frequency magnetic field</i>	<i>30 A/m (50 Hz, 60 Hz)</i>	<i>IEC 61000-4-8</i>	<i>Only to magnetically sensitive equipment. CRT display interference is allowed above 1 A/m.</i>	<i>A</i>

16.2 Test Equipment Used:**Test Equipment 166-1 Power Frequency Magnetic Field Immunity**

Description	Manufacturer	Model	Serial Number	Cal Date	Cal Due
Temperature, Humidity & Pressure Recorder	Omega	OM-CP-PRHTemp2000	N10673	07/20/2012	07/20/2013
Magnetic Field Loop rated: 50/60 Hz, 100A/m	FCC	Magnetic Field Loop	01026	05/15/2002	VBU
Ground Bond Tester	Associate Research	3140	9500239	06/25/2012	06/25/2013

16.3 Results:

The sample tested was found to comply.

16.4 Setup Photographs:



Figure 166-2 Power Frequency Magnetic Field Immunity Test Setup



Figure 166-3 Power Frequency Magnetic Field Immunity Test Setup



Figure 166-4 Power Frequency Magnetic Field Immunity Test Setup

16.5 Test Data:

Table 166-2 Power Frequency Magnetic Field Immunity Data

Test Location/ Mode/ EUT AC Input	Test Level (A/m)	Frequency (Hz)	Result		
			X - Axis	Y - Axis	Z - Axis
Enclosure/ Operating/ 240 VAC, 50 Hz	30	50	Pass	Pass	Pass
Enclosure/ Operating/ 240 VAC, 60 Hz	30	60	Pass	Pass	Pass

Standard: EN 61326-1
 Input Voltage: 240 VAC 50/60 Hz

Test Levels: 30 A/m
 Ambient Temperature: 23.0 °C
 Relative Humidity: 30.3 %
 Atmospheric Pressure: 1000.7 mbar

Deviations, Additions, or Exclusions: None

Test Date: November 14, 2012

17 Voltage Dips / Interruptions Immunity Tests (EN 61000-4-11)**17.1 Method**

The test sample is connected to the mains dropout and voltage variation simulator and monitored for performance.

17.2 Test Parameters

Table 177-1 Voltage Dips and Interruptions Test Parameters

Test Voltage	Parameters	Test Point	Remarks	Results Criteria
240	100 % reduction 1.0 cycle, each polarity	AC Mains		B
240	60 % reduction 10 cycle, each polarity	AC Mains		B
240	30 % reduction 25 cycles, each polarity	AC Mains		C
240	100 % reduction 250 cycles, each polarity	AC Mains		C

17.3 Test Equipment Used:**Test Equipment 177-1 Voltage Dips / Interruptions Immunity**

Description	Manufacturer	Model	Serial Number	Cal Date	Cal Due
Temperature, Humidity & Pressure Recorder	Omega	OM-CP-PRHTemp2000	N10673	07/20/2012	07/20/2013
Power Source rated: 50Hz-1200Hz, 16A, 0V-230V	Pacific Power	140TMX	00724/0248	07/19/2012	07/19/2013
PPSD TMX Test System Software Part Number 141481 Ver. 5.03	Pacific Power Source	141481V5.03	141481V5.03	VBU	VBU

17.4 Results:

The sample tested was found to Comply.

17.5 Setup Photographs:



Figure 177-1 Voltage Dips and Interruptions Test Setup

17.6 Test Data:

Table 177-2 Voltage Dips and Interruptions Test Data

Specification	Rated Voltage (Vac)	Frequency (Hz)	Voltage Test Level (%)	Voltage Dip (%)	Test Voltage (Vac)	Duration (Periods)	Result Classification	
							0 deg	180 deg
Test Specification #1	240	50	0	100	0.0	1.0	A	A
Test Specification #2	240	50	60	40	144	10	B	B
Test Specification #3	240	50	30	70	72	25	B	B
Test Specification #4	240	50	0	100	0.0	250	B	B

Standard: EN 61326-1

Test Levels: See Table Table 177-2

Ambient Temperature: 23.2

Relative Humidity: 30.6

Atmospheric Pressure: 1005.3

Deviations, Additions, or Exclusions: None

Test Date: November 14, 2012 .

18 Measurement Uncertainty

The measured value related to the corresponding limit will be used to decide whether the equipment meets the requirements.

The measurement uncertainty figures were calculated and correspond to a coverage factor of $k = 2$, providing a confidence level of respectively 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian).

Measurement uncertainty Table

Parameter	Uncertainty(dB)	Notes
Radiated emissions, 30 to 1000 MHz @ 3m	3.1	
Radiated emissions, 1 to 18 GHz	---	
Radiated emissions, 18 to 40 GHz	---	
AC mains Conducted emissions, 150kHz to 30 MHz	1.7	
Telecom Port Conducted emissions, Voltage 150 kHz to 30 MHz	1.7	
Telecom Port Conducted emissions, Current 150 kHz to 30 MHz	1.5	
Harmonics	---	
Flicker	---	
ESD	---	
Radiated RF field immunity	1.8	
EFT	---	
Surge	---	
Conducted RF immunity	1.6	
Power frequency magnetic field immunity	---	
Voltage dips / interruptions immunity	---	

19 Revision History

Revision Level	Date	Report Number	Notes
0	February 6, 2013	100943193DAL-002	Original Issue