

EMC TESTING CENTER OF THE COMPANY «INTERSTANDARD»

A CERTIFICATE OF ACCREDITATION OF THE TESTING LABORATORY
№ POCC RU.0001.21M354



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Electromagnetic Compatibility

Test of: Telecom Analyzer

Model Number: Bercut-ETX

Applicant: JSC NTC "Metrotek"

Test Type: Compliance

**Test Specification: EN 55022:2006, EN 55024:1998+A1:2001+A2:2003,
EN 61000-3-2:2006, EN 61000-3-3:1995+A1:2001+A2:2005**

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EMC TESTING CENTER OF THE COMPANY «INTERSTANDARD»

Test Engineer

Yu. Blokhin

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Authorised Signatory

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1. Client Information

Company Name: JSC NTC "Metrotek"

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Contact name: Company director: A.M.Feldman

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2. Equipment Under Test (EUT)

2.1 Identification Of EUT

Model Number:	Bercut-ETX
Unique Identifier:	S/N 8001
Description of EUT:	Bercut-ETX is intended for 10G ethernet network equipment testing
Supply Voltage:	AC adapter-input:100-240V AC 1.2 A 50-60 Hz; Output: 19V DC 2.1A Internal rechargeable battery – 4.8V
Ports present:	10G Ethernet port LAN port (Ethernet 10/100) USB DC 15V, 230 V, 50 Hz (power adapter)
Accessories Supplied:	AC/DC Adapter ADP-40 PH BB LPS Notebook Acer Ethernet patch-cord (optical)

3. Test Specification, Methods and Procedures

3.1 Test Specification(s)

Standard	Title
EN55022 : 2006	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement
EN 55024 : 1998 A1 : 2001 A2 : 2003	Information Technology Equipment - Immunity characteristics. Limits and methods of measurement
EN 61000-3-2:2006	Electromagnetic compatibility Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
EN 61000-3-3:1995 A1:2001 A2:2005	Electromagnetic compatibility Limitation of voltage fluctuations and flicker in low voltage supply systems for equipment with rated of 16A or less

3.2 Purpose Of Test

To perform the relevant tests and assess the product for compliance with the above specification.

3.3 Methods and Procedures

The standards listed on the previous page refer to the following tests: -

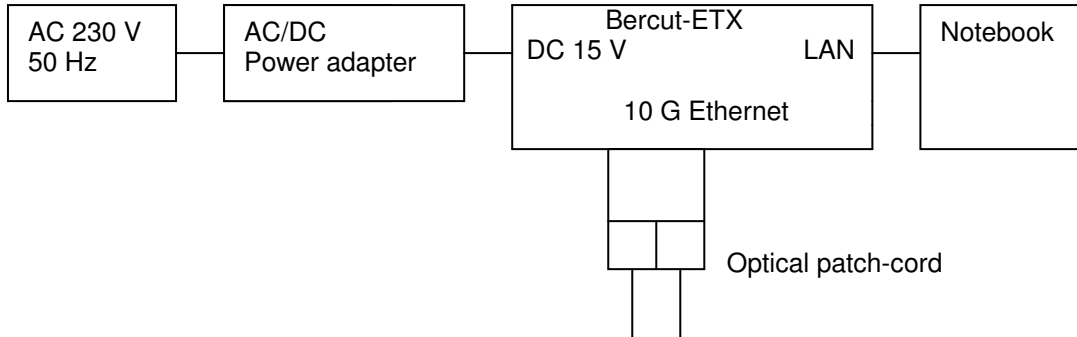
Basic Standard	Date	Description
EN55022	2006	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement <i>Conducted Emissions</i> <i>Radiated Emissions</i>
EN 61000-3-2	2006	Electromagnetic compatibility <i>Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)</i>
EN 61000-3-3: A1 A2	1995 2001 2005	Electromagnetic compatibility <i>Limitation of voltage fluctuations and flicker in low voltage supply systems for equipment with rated of 16A or less</i>
EN 61000-4-2 A1 A2	1995 1998 2001	Testing and measurement techniques. <i>Electrostatic discharge immunity test.</i>
EN 61000-4-3	2006	Testing and measurement techniques. <i>Radiated, radio frequency, electromagnetic field immunity test</i>
EN 61000-4-4	2004	Testing and measurement techniques. <i>Electrical fast transient/burst immunity test.</i>
EN 61000-4-5	2006	Testing and measurement techniques. <i>Surge immunity test.</i>
EN 61000-4-6	2007	Testing and measurement techniques. <i>Immunity to conducted disturbances, induced by radio frequency fields</i>
EN 61000-4-8 A1	1993 2001	Testing and measurement techniques. <i>Power frequency magnetic field immunity test</i>
EN 61000-4-11	2004	Testing and measurement techniques.. <i>Voltage dips, short interruptions and voltage variations immunity tests</i>

4. Deviations or Exclusions from the Test Specifications

For testing, the standards refer to dated basic standards. However for some tests, testing has been performed to later amended standards. Please refer to individual test results section of this report for details of the versions of basic standards actually used for testing.

5. Operation of the EUT During Testing

5.1 Configuration and Peripherals



Notebook is not included in the supplied complete set.
USB port is used only for programming.

5.2 Operating Mode and Environmental Conditions

The operating modes and environmental conditions used for each individual test are described in the test results section of this report.

The EUT operating mode was like those used in real applications. During test procedures the EUT has performed the following functions:

- analysis of the test signal passing quality along the loop optical line via the port 10G Ethernet
- transference of the analysis results to the notebook via the port LAN

5.3 Performance Criteria A

The apparatus shall continue to operate as intended without operator intervention 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 equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance Criteria B

After the test the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test. 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 by what the user may reasonably expect from the equipment if used as intended.

Performance Criteria C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

5.4 Monitoring of the EUT

During the testing there were controlled telecommunication (exchange of data) availability of the notebook with EUT via the port LAN and stability of the data of analysis results via 10G Ethernet on the notebook display.

5.5 EUT Specific Performance Criteria

Performance Criteria A

Telecommunication (exchange of data) with the notebook should not be interrupted; the readings of analysis results on the notebook display should be reflected continuously.

Performance Criteria B

During the application of the test disturbance interruption of telecommunication (exchange of data) of the EUT with the notebook is allowed; settings are kept. After the test disturbance ceased the operation automatically restored with given parameters.

Performance Criteria C

During the application of the test disturbance and after ceasing, telecommunication (exchange of data) with the notebook has interrupted. The EUT and the notebook restarting for restore operation was needed.

6. Test Results

6.1 General Comments

Details of the test methods used can be found in the EMC Testing Center procedures manual.

6.2 Modifications Made to the EUT

No modifications were made to the EUT during the testing process.

6.3 Summary of Test Results

Basic Standard	Test	Result
EN 55022	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement <i>Conducted Emissions. Mains ports</i>	Complied Class B
EN 55022	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement <i>Conducted Emissions. Telecommunication ports</i>	Complied Clfss B
EN 55022	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement <i>Radiated Emissions.</i>	Complied Class A
EN 61000-3-2	Electromagnetic compatibility <i>Harmonics</i>	N/A Note 1
EN 61000-3-3	Electromagnetic compatibility <i>Flicker</i>	N/A Note 2
EN 61000-4-2	Testing and measurement techniques. <i>Electrostatic discharge immunity test.</i>	Complied Criteria B
EN 61000-4-3	Testing and measurement techniques. <i>Radio Frequency immunity test.</i>	Complied Criteria A
EN 61000-4-4	Testing and measurement techniques. <i>Electrical fast transient/burst immunity test.</i>	Complied Criteria A Note 3
EN 61000-4-5	Testing and measurement techniques. <i>Surge immunity test.</i>	Complied Criteria B Note 3
EN 61000-4-6	Testing and measurement techniques. <i>Conducted Immunity</i>	Complied Criteria A Note 3
EN 61000-4-8	Testing and measurement techniques. Magnetic Field Immunity	N/A Note 4
EN 61000-4-11	Testing and measurement techniques. Voltage Dips and interruptions	Complied Criteria A

Note 1. Not applicable, rated power less than 50 W (max 10 W)

Note 2. Not applicable. Tests need not be made on equipment which is unlikely to produce significant voltage fluctuations or flicker. This device is supplied from inside battery which is DC rechargeable up to 0.5 A from AC/DC power adapter. Mains supplied current without fluctuations, which could cause flicker.

Note 3. Testing was performed only for port A.C. power and LAN, as USB and DC power cables do not exceed the length 3 m; 10G Ethernet port is connected to the optical cable.

Note 4. Not applicable as the device does not contain magnetic sensitive elements.

Result

In the configuration tested, the EUT complies with the test standards detailed above.

Full details of all tests can be found in the test results section of this report.

6.4 Radiated Emissions Test Results

Basic Standard	EN 55022:2006
Limit	Class A

Frequency Range: 30 MHz ÷ 6 GHz

Operating Mode

Analysis of the test signal passing quality along the loop optical line via the port 10G Ethernet. Transference of the analysis results to the notebook via the port LAN

Test Results

Horizontal Polarisation Worst Cases Emissions

Quasi Peak Measurements

Frequency (MHz)	Quasi Peak Measurement (dBµV/m)	Quasi Peak Limit (dBµV/m)
33.18662	18.9	30.0
38.70892	21.3	30.0
40.12710	18.4	30.0
104.95916	19.6	30.0
135.02303	28.1	30.0
184.98745	28.3	30.0
295.02339	29.9	37.0
340.01295	26.4	37.0
544.97932	26.7	37.0
739.95913	29.0	37.0
863.95225	23.2	37.0
892.03156	25.3	37.0

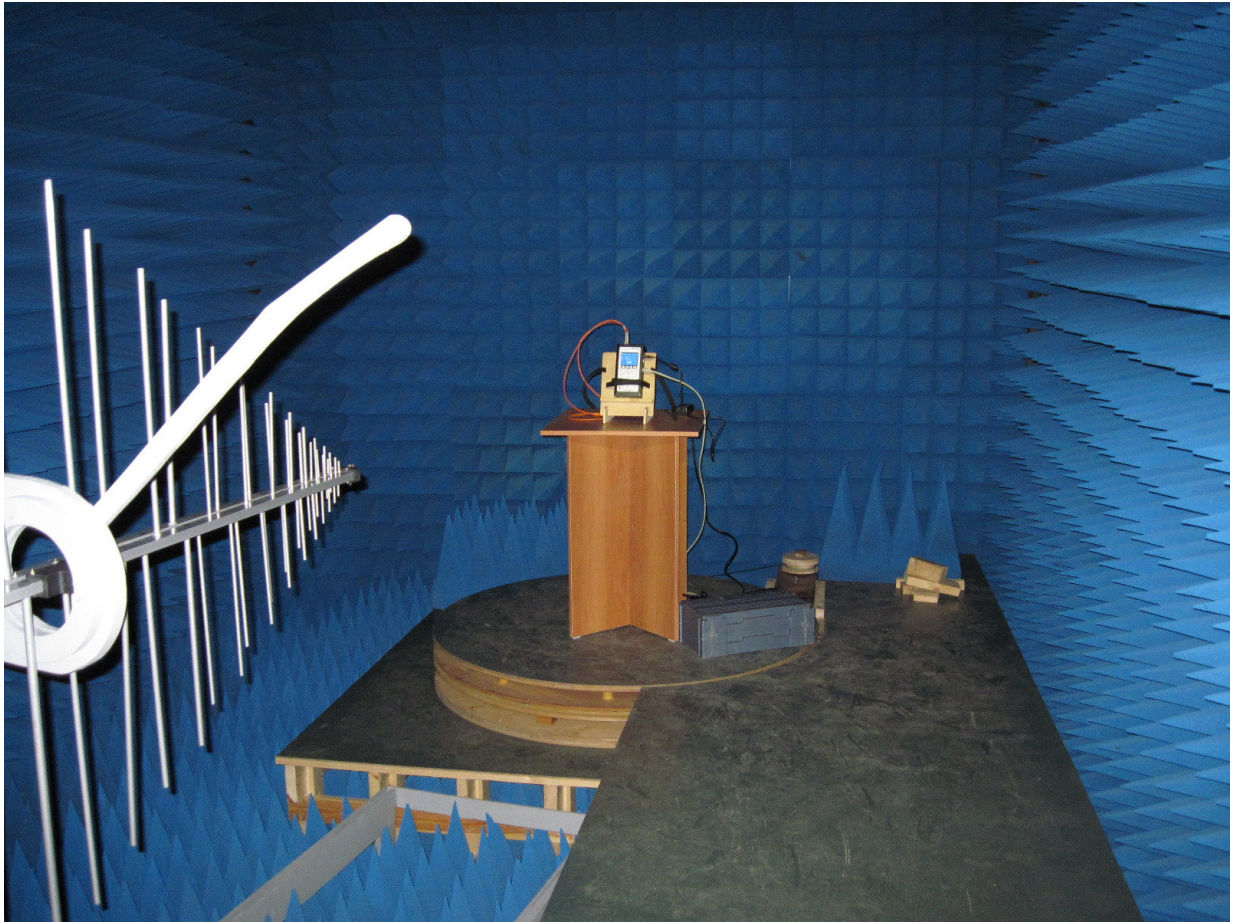
Vertical Polarisation Worst Cases Emissions

Quasi Peak Measurements

Frequency (MHz)	Quasi Peak Measurement (dBµV/m)	Quasi Peak Limit (dBµV/m)
33.18662	35.4	40.0
38.70892	34.1	40.0
40.36847	31.2	40.0
68.97755	25.9	40.0
104.95916	22.9	40.0
135.02303	29.9	40.0
184.98745	31.1	40.0
295.02339	32.9	47.0
624.95484	22.3	47.0
739.95913	26.0	47.0
999.68932	25.4	47.0

Note. The radiated emission measurements were performed in anechoic chamber according to p.7.2.9.2 and p.7.3 of CISPR 16-2-3:2006, the measurement distance was 3m. The correlation coefficient is included in the Test Receiver ESS and is taken into consideration automatically.

Radiated Emissions Test Configuration



Radiated Emissions Environmental Conditions

Power Supply	A.C. 230 V, 50 Hz
Temperature	20°C
Relative Humidity	70%
Barometric Pressure	740mb

Radiated Emissions Measurement Uncertainties

Frequency	± 10kHz
Amplitude	± 4.6dB

The uncertainties stated are calculated in accordance with the requirements of UKAS with a confidence level of 95%.

Radiated Emissions Test Equipment Used

Equipment Type	Model Number	Serial Number	Cal. Date	Cal. Due
Test Receiver	Rohde&Schwarz ESS HP8564 E	0830262/004	06.06.2011	06.06.2012
		3846 AO1470	04.04.2010	04.04.2012
Antenna	EMCO 3144,	9906-1059	19.04.2010	19.04.2012
	EMKO 3109	9906-3228	19.04.2010	19.04.2012
	BBHA 9120 D	495	19.04.2010	19.04.2012

6.5 Conducted Emissions Test Results

Basic Standard	EN 55022: 2006
Limit	Class B

Operating Mode

Analysis of the test signal passing quality along the loop optical line via the port 10G Ethernet.
 Transference of the analysis results to the notebook via the port LAN

Test Results

Port: A.C. Mains ports

Continuous disturbance Line Terminal Worst Case Emissions

Frequency (MHz)	Quasi Peak Measurement (dBμV)	Quasi Peak Limit (dBμV)
0.15363	52.1	65.8
0.18899	52.2	64.1
0.23436	43.7	62.3
0.28375	40.0	60.7
0.35467	35.5	58.9
0.55414	29.6	56.0
0.70941	25.2	56.0
1.22934	23.2	56.0
2.23466	22.8	56.0
3.49141	27.7	56.0
4.32948	26.2	56.0
5.58692	19.7	60.0
12.19846	28.1	60.0
16.77746	34.9	60.0
20.80466	39.9	60.0
30.00000	47.7	60.0

Frequency (MHz)	Average Measurement (dBμV)	Average Limit (dBμV)
0.15241	21.4	55.8
0.19983	38.9	53.6
0.26411	27.0	51.3
0.34355	23.2	49.1
0.46876	19.3	46.5
0.55414	15.4	46.0
1.24909	11.7	46.0
2.23466	12.3	46.0
3.19842	17.4	46.0
4.32948	16.7	46.0
9.45296	15.5	50.0
12.19846	23.6	50.0

Neutral Terminal Worst Case Emissions

Frequency (MHz)	Quasi Peak Measurement (dBμV)	Quasi Peak Limit (dBμV)
0.15241	50.9	65.8
0.19051	52.8	64.0
0.25994	45.2	61.4
0.28602	40.1	60.7
0.43285	32.0	57.2
0.83197	24.0	56.0
1.29986	20.7	56.0
2.93001	22.2	56.0
4.39903	24.9	56.0
5.54258	17.7	60.0
12.19846	29.3	60.0
16.77746	34.7	60.0
20.80466	40.1	60.0
30.00000	37.6	60.0

Frequency (MHz)	Average Measurement (dBμV)	Average Limit (dBμV)
0.15486	21.7	55.7
0.19668	35.6	53.8
0.25994	26.8	51.4
0.32233	18.8	49.7
0.48010	16.2	46.4
2,14738	10.0	46.0
3.19842	15.7	46.0
5.11808	17.3	50.0
7.03928	11.9	50.0
12.19846	24.6	50.0

Conducted Emissions Test Configuration (AC mains)



Port: Telecommunication ports (LAN)

Frequency (MHz)	Quasi Peak Measurement (dBμV)	Quasi Peak Limit (dBμV)
0.20143	42.9	81.5
0.31977	44.3	77.7
0.53250	45.6	74.0
0.81231	49.4	74.0
1.23917	61.6	74.0
1.33130	65.5	74.0
1.54891	60.4	74.0
5.90740	57.9	74.0
12.19846	64.2	74.0
20.80466	64.7	74.0
24.59415	58.2	74.0

Frequency (MHz)	Average Measurement (dBμV)	Average Limit (dBμV)
0.16637	31.5	73.2
0.20143	38.4	71.5
0.31977	39.5	67.7
0.35186	40.1	66.9
0.93015	44.9	64.0
1.40767	53.2	64.0
2.36285	44.3	64.0
4.46970	47.3	64.0
5.90740	56.4	64.0
12.19846	63.0	64.0
15.61642	62.4	64.0

Conducted Emissions Test Configuration (Port LAN)



Conducted Emissions Environmental Conditions

Power Supply	A.C. 230V, 50 Hz
Temperature	20°C
Relative Humidity	70%
Barometric Pressure	740 mb

Conducted Emissions Measurement Uncertainties

Frequency	± 10kHz
Amplitude	± 2.9dB

The uncertainties stated are calculated in accordance with the requirements of UKAS with a confidence level of 95%.

Conducted Emissions Test Equipment Used

Equipment Type	Model Number	Serial Number	Cal. Date	Cal. Due
LISN	PMM L3-32	0120F90401	16.05.2010	16.05.2012
Test receiver	Rohde&Schwarz ESS	0830262/004	06.06.2011	06.06.2012
ISN	ISN T400	16870	11.10.2010	11.10.2012

6.6 Harmonics Test Results

Basic Standard	EN 61000-3-2:2006
Limit	Class A
Test Time:	10.5 minutes

Not applicable, rated power less than 10 W

6.7 Flicker

Basic Standard	EN 61000-3-3:1995, A1:2001, A2:2005
Limit	EN 61000-3-3, c.5, listing a)
Short time	10 min
Period	12

Not applicable. Tests need not be made on equipment which is unlikely to produce significant voltage fluctuations or flicker. This device is supplied from inside battery which is DC rechargeable up to 0.5 A from AC/DC power adapter. Mains supplied current without fluctuations, which could cause flicker.

6.8 Electrostatic Discharge Test Results

Basic Standard	EN 61000-4-2:1995+A1:1998+A2:2001
Limit	EN 55024: 1998 + A1:2001+ A2:2003 Table 1

Port: Enclosure (to 10 points on each side of enclosure including all the screws, connectors, coupling planes)

Test Level: ± 4 kV contact discharge
 ± 8 kV air discharge.
(Contact discharge is the preferred method, and air discharge is to be used where contact discharge is not possible).

Operating Mode

Analysis of the test signal passing quality along the loop optical line via the port 10G Ethernet.
Transference of the analysis results to the notebook via the port LAN

Test Results

Test Voltage (kV)	Discharge Type	Application	Observation
± 2	Air	Enclosure	Note 1
± 4	Air	Enclosure	Note 1
± 8	Air	Enclosure	Note 2
± 2	Contact	Enclosure	Note 1
± 4	Contact	Enclosure	Note 1
± 2	Contact	VCP	Note 1
± 4	Contact	VCP	Note 1
± 2	Contact	HCP	Note 1
± 4	Contact	HCP	Note 1

Air discharge was applied only where contact discharge was not possible.

VCP = Vertical Coupling Plane

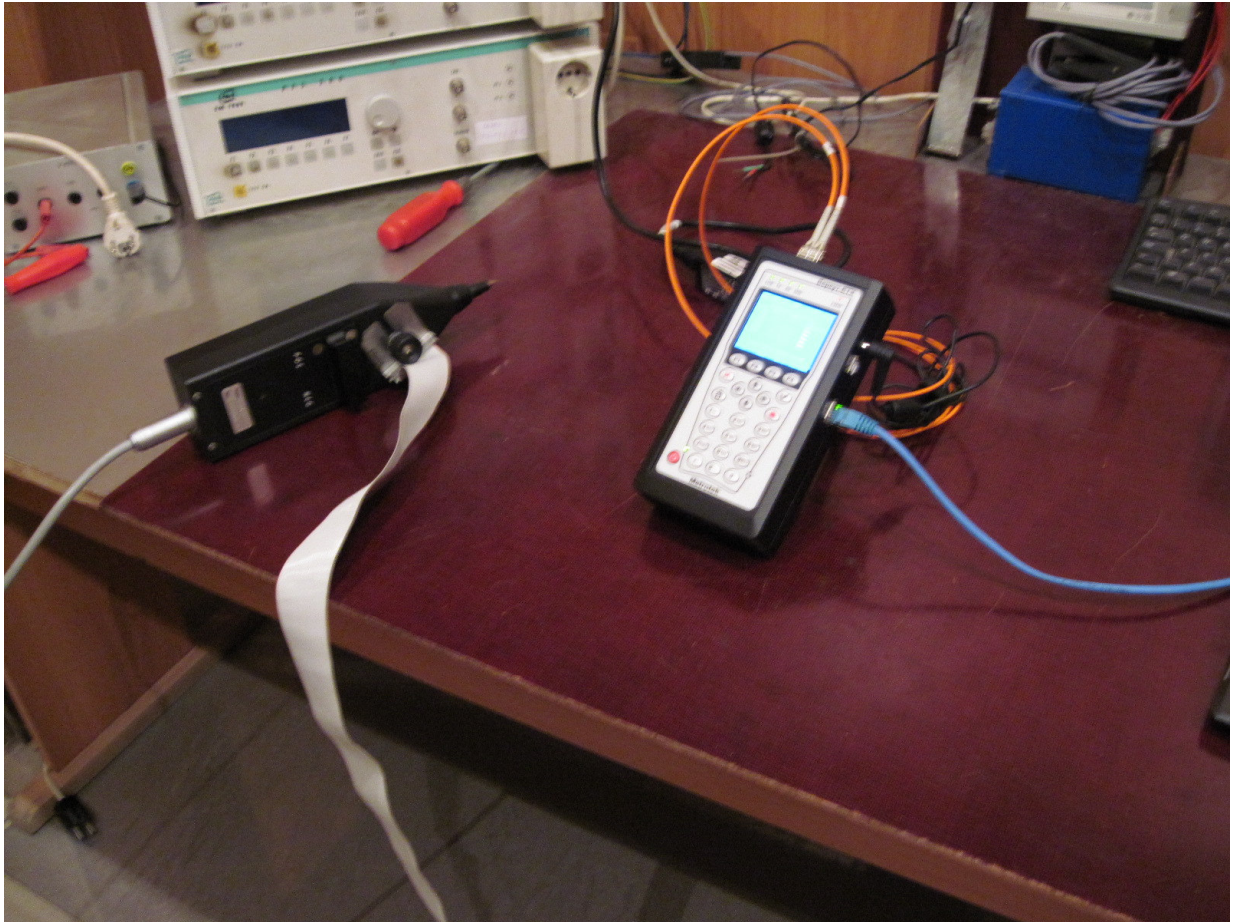
HCP = Horizontal Coupling Plane

Note 1: No degradation in performance of the EUT was observed during the test.

Note 2: Telecommunication (exchange of data) with the notebook during application of the test disturbance was interrupted. After the test disturbance ceased the operation was restored without the operator intervention. The settings were kept. Criteria B. It complies to EN 55024 Table 1.

For VCP and HCP tests, discharges were made on each of the four sides of the EUT.
The result 'Enclosure' refers to all possible discharge points around the enclosure.

Electrostatic Discharge Test Configuration



Electrostatic Discharge Environmental Conditions

Power Supply	A.C. 230 V, 50 Hz
Temperature	20°C
Relative Humidity	70%
Barometric Pressure	740mb

Electrostatic Discharge Measurement Uncertainties

Current Pulse	1 to 35 amps pulse width < 2ns	±8%
	1 to 35 amps pulse width > 2ns	±5.5%
Rise Time	0.5 to 10ns	± (5%+0.05ns)
Time Interval	10 to 100ns	±3%
DC Voltage	0 to 30kV	±2 %

The uncertainties stated are calculated in accordance with the requirements of UKAS with a confidence level of 95%.

Electrostatic Discharge Test Equipment Used

Equipment Type	Model Number	Serial Number	Cal. Date	Cal. Due
ESD Simulator	ESP30/P18 EM TEST	0999-03	29.05.2010	29.05.2012

6.9 Radiated Immunity Test Results

Basic Standard	EN 61000-4-3: 2006
Limit	EN 55024:1998+A1:2001+ A2:2003 Table 1

Port: Enclosure
Test Level: 3 V/m
Frequency Range: 80MHz – 1 GHz
Dwell Time: 2 second
Modulation: 80%, 1kHz Amplitude Modulation.

Operating Mode

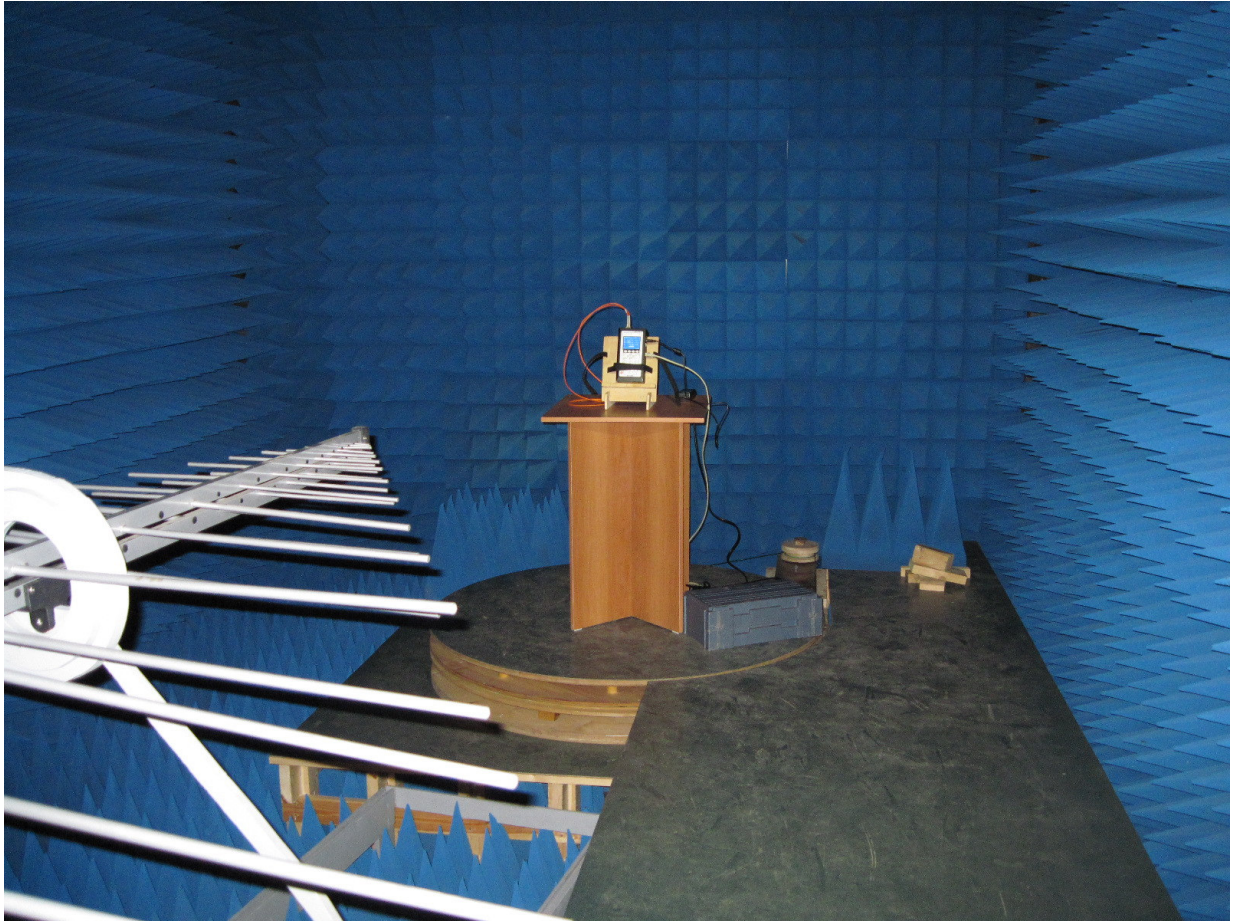
Analysis of the test signal passing quality along the loop optical line via the port 10G Ethernet.
Transference of the analysis results to the notebook via the port LAN

Test Results

EUT Face	Polarity	Observations
Front	Horizontal	Note 1
Front	Vertical	Note 1
Rear	Horizontal	Note 1
Rear	Vertical	Note 1
LHS	Horizontal	Note 1
LHS	Vertical	Note 1
RHS	Horizontal	Note 1
RHS	Vertical	Note 1

Note 1: No degradation in performance of the EUT was observed during the test.

Radiated Immunity Test Configuration



Radiated Immunity Environmental Conditions

Power Supply	A.C. 230 V, 50 Hz
Temperature	20°C
Relative Humidity	70%
Barometric Pressure	740mb

Radiated Immunity Measurement Uncertainties

Frequency	± 10kHz
Field Level (Field Probe Uncertainty)	± 4.0dB

The uncertainties stated are calculated in accordance with the requirements of UKAS with a confidence level of 95%.

Radiated Immunity Test Equipment Used

Equipment Type	Model Number	Serial Number	Cal. Date	Cal. Due
Antenna	EMCO 3144	9906-1059	19.04.2010	19.04.2012
Amplifier	Kalmus LA1000VUFG	-	25.04.2010	25.04.2012
Signal Generator	Aeroflex IFR 2032	203003/007	25.04.2010	25.04.2012

6.10 Fast Transients/Burst Test Results

Basic Standard	EN 61000-4-4:2004
Limit	EN 55024:1998+A1:2001+ A2:2003 Table 2, Table 4

Port: A.C. Mains port, port LAN

Note. Testing was performed only for port A.C. power and LAN, as USB and DC power cables do not exceed the length 3 m; 10G Ethernet port is connected to the optical cable.

Operating Mode

Analysis of the test signal passing quality along the loop optical line via the port 10G Ethernet.
Transference of the analysis results to the notebook via the port LAN

Test Results

A.C. Mains port

Line	Test Voltage (kV)	Coupling (Direct / Clamp)	Observations
Line+Neutral	$\pm 0,5$ ± 1	Direct	Note 1

The test duration was 1 minute, with a 30-second recovery time, repetition rate 5 kHz.

Note 1: No degradation in performance of the EUT was observed during the test.

Fast Transients/Burst Test Configuration (AC mains)



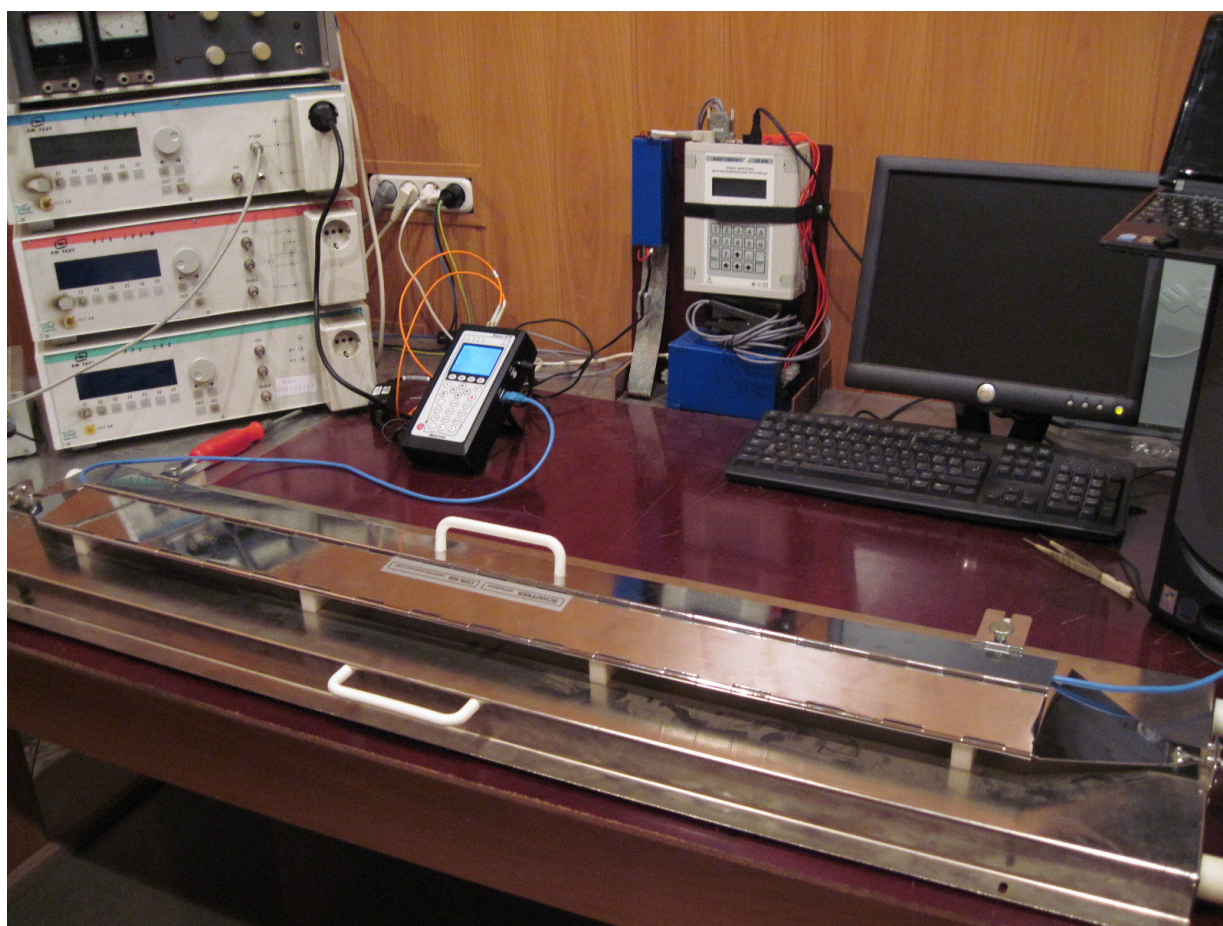
Port LAN

Line	Test Voltage (kV)	Coupling (Direct / Clamp)	Observations
LAN (Ethernet)	$\pm 0,25$ $\pm 0,5$	Clamp	Note 1

The test duration was 1 minute, with a 30-second recovery time, repetition rate 5 kHz.

Note 1: No degradation in performance of the EUT was observed during the test.

Fast Transients/Burst Test Configuration (Port LAN)



Fast Transients/Burst Environmental Conditions

Power Supply	A.C.230V,50 Hz
Temperature	20°C
Relative Humidity	70 %
Barometric Pressure	740 mb

Fast Transients /Burst Measurement Uncertainties

The instruments specified are subject to periodic calibration. Monthly controls ensure, with 95% confidence level, that the instruments remain within the calibrated levels.

Fast Burst Transients Test Equipment Used

Equipment Type	Model Number	Serial Number	Cal. Date	Cal. Due
Disturbance simulator	EFT 500 EM TEST	1198-07	04.06.2010	04.06.2012

6.11 Surge Test Results

Basic Standard	EN 61000-4-5:2006
Limit	EN 55024:1998+A1:2001+ A2:2003 Table 2, Table 4

Port: A.C. Mains port, port LAN

Note. Testing was performed only for port A.C. power and LAN, as USB and DC power cables do not exceed the length 3 m; 10G Ethernet port is connected to the optical cable.

Operating Mode

Analysis of the test signal passing quality along the loop optical line via the port 10G Ethernet.
 Transference of the analysis results to the notebook via the port LAN

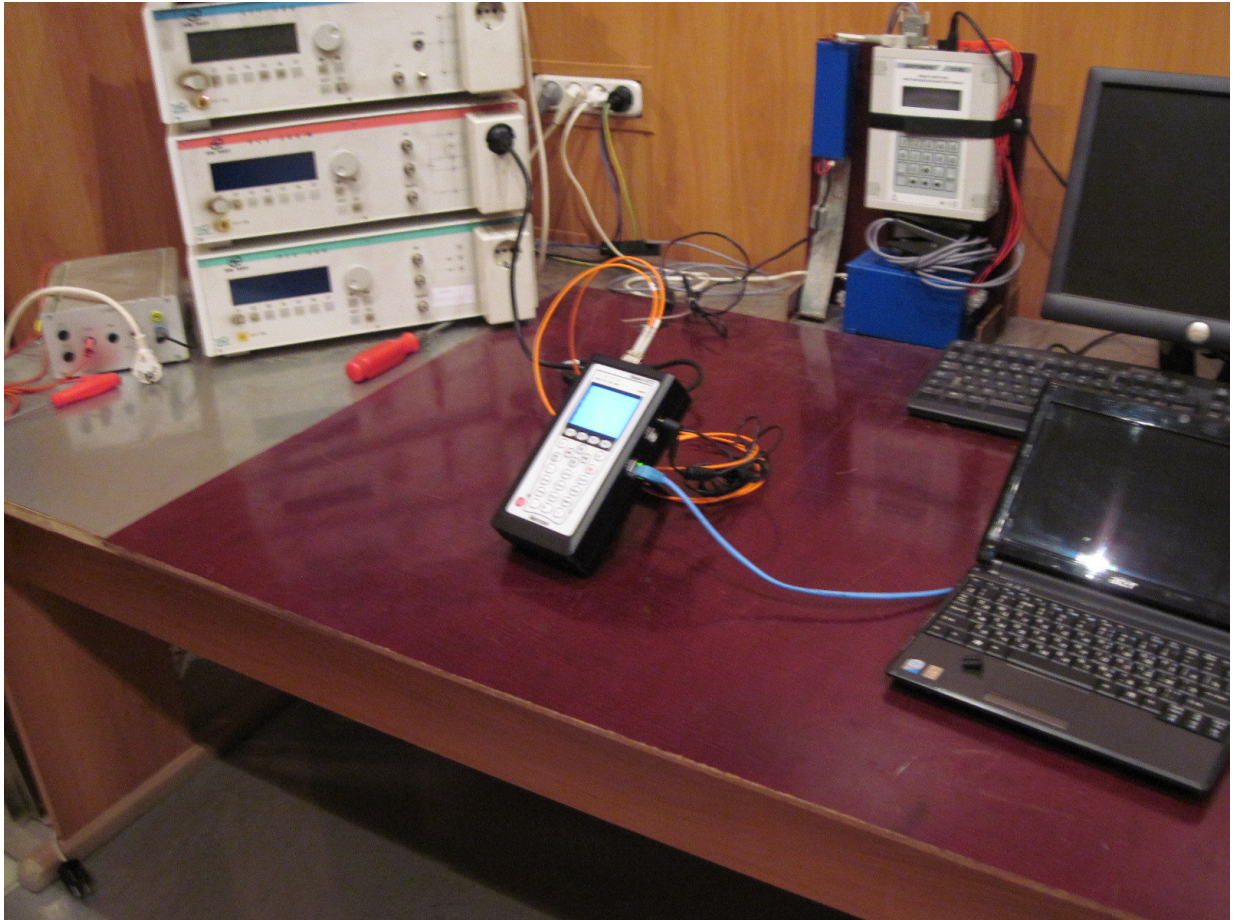
Test Results

A.C. Mains port

Pulse Application	Test Voltage kV	Observations
Line – Earth	+0.5	Note
	-0,5	Note
	+1	Note
	-1	Note
	+2	Note
	-2	Note
Neutral – Earth	+0.5	Note
	-0,5	Note
	+1	Note
	-1	Note
	+2	Note
	-2	Note
Line - Neutral	+0.5	Note
	-0,5	Note
	+1	Note
	-1	Note

Note: No degradation in performance of the EUT was observed during the test.

Surge Test Configuration (AC mains)



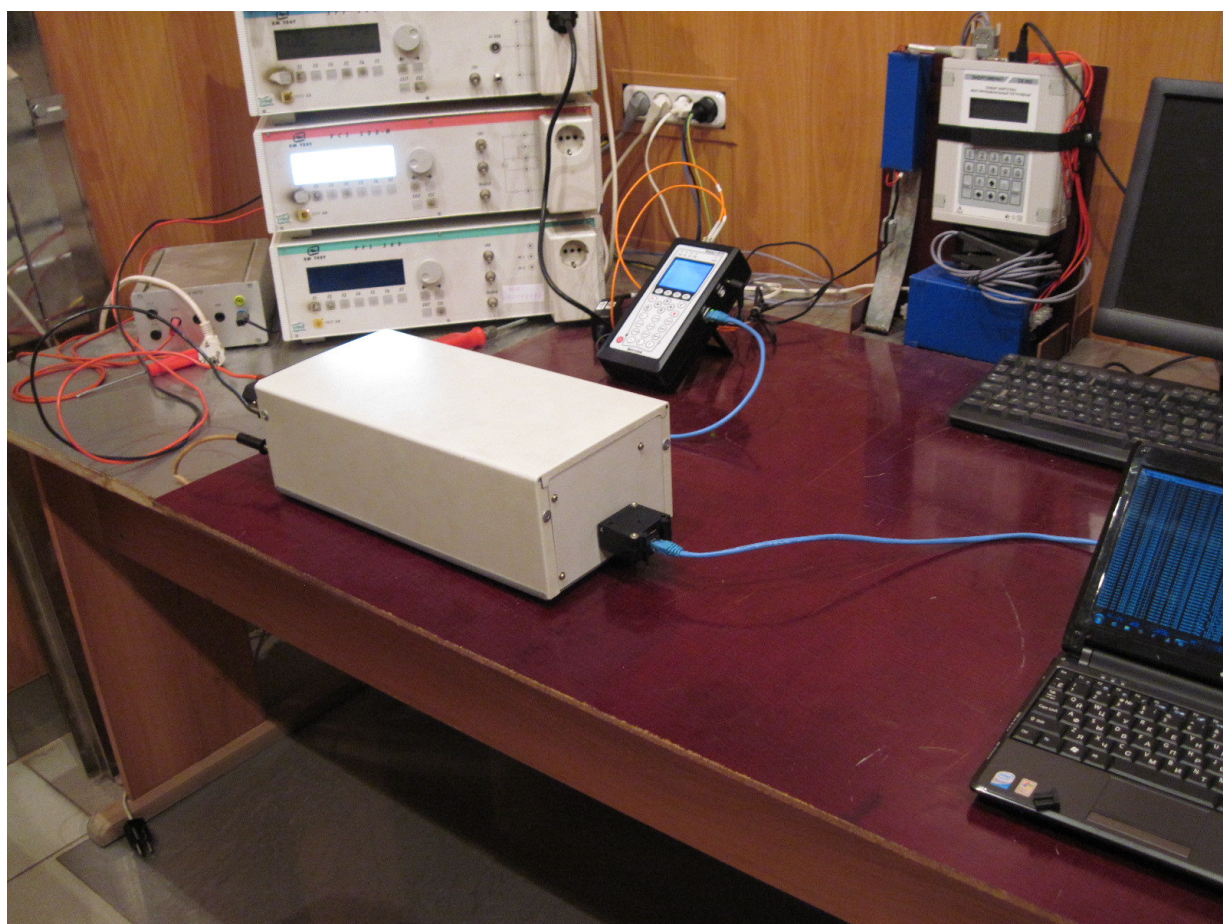
Port LAN

Line	Test Voltage (kV)	Observations
Port LAN (Ethernet)	+ 0, 5	Note 1
	- 0,5	Note 1
	+ 1	Note 2
	- 1	Note 2

Note 1: No degradation in performance of the EUT was observed during the test.

Note 2. Telecommunication (exchange of data) with the notebook during application of the test disturbance was interrupted. After the test disturbance ceased the operation was restored without the operator intervention. The settings were kept. Criteria B. It complies to EN 55024 Table 2.

Surge Test Configuration (port LAN)



Surge Environmental Conditions

Power Supply	A.C.230V,50 Hz
Temperature	20°C
Relative Humidity	70%
Barometric Pressure	740 mb

Surge Measurement Uncertainties

The instruments specified are subject to periodic calibration. Monthly controls ensure, with 95% confidence level, that the instruments remain within the calibrated levels.

Surge Test Equipment Used

Equipment Type	Model Number	Serial Number	Cal. Date	Cal. Due
Disturbance simulator	VCS 500 M EM TEST	0498-08	05.06.2010	05.06.2012

6.12 Voltage Dips Test Results

Basic Standard	EN 61000-4-11: 2004
Limit	EN 55024:1998+A1:2001+ A2:2003 Table 4

Port: A.C. Mains port

Operating Mode

Analysis of the test signal passing quality along the loop optical line via the port 10G Ethernet.
Transference of the analysis results to the notebook via the port LAN

Test Results

Residual voltage %	Duration (periods)	Performance Criterion	Observation
0	0,5	B	Note 1
70	25	C	Note 1
0	250	C	Note 1

Note 1. No degradation in performance of the EUT was observed during the test.

Voltage Dips Environmental Conditions

Power Supply	A.C. 230V, 50 Hz
Temperature	20°C
Relative Humidity	70%
Barometric Pressure	740 mb

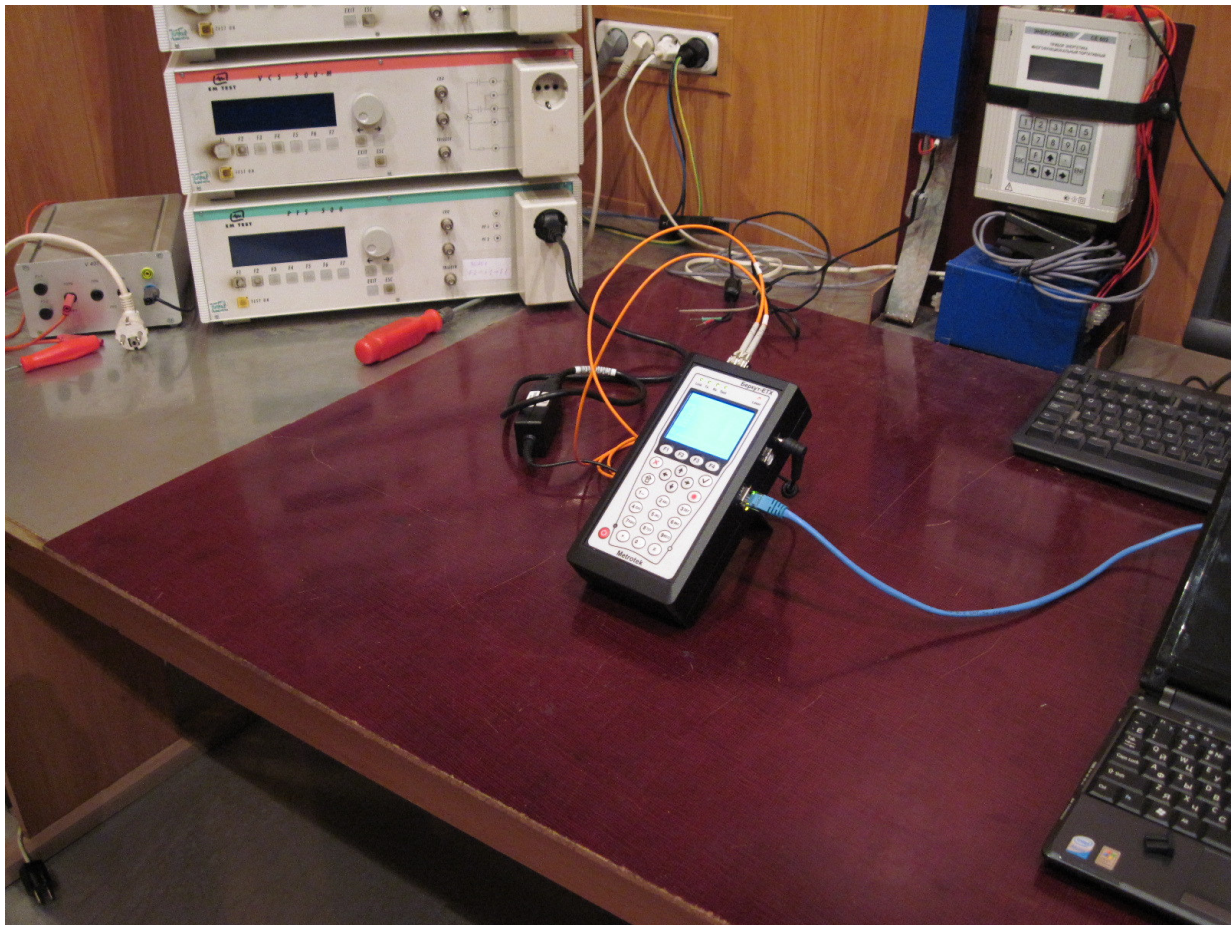
Voltage Dips Measurement Uncertainties

The instruments specified are subject to periodic calibration. Monthly controls ensure, with 95% confidence level, that the instruments remain within the calibrated levels.

Voltage Dips Test Equipment Used

Equipment Type	Model Number	Serial Number	Cal. Date	Cal. Due
Disturbance simulator	PFS 500 EM TEST	0499-01	04.06.2010	04.06.2012

Voltage Dips Test Configuration



6.13 Conducted Immunity Test Results

Basic Standard	IEC 61000-4-6: 2007
Limit	EN 55024:1998+A1:2001+ A2:2003 Table 2, Table 4

Port: A.C. Mains ports, port LAN

Note. Testing was performed only for port A.C. power and LAN, as USB and DC power cables do not exceed the length 3 m; 10G Ethernet port is connected to the optical cable.

Test level	3V
Frequency Range:	0.15 to 80MHz
Dwell Time:	2 second
Frequency Step Size:	1%
Modulation:	80%, 1kHz Amplitude Modulation

Operating Mode

Analysis of the test signal passing quality along the loop optical line via the port 10G Ethernet.
Transference of the analysis results to the notebook via the port LAN

Test Results

A.C. Mains port

Test Voltage (Vrms)	Frequency Range (MHz)	Observations
3	0.15 – 80	Note 1

Note 1: No degradation in the performance of the EUT was observed during the test.

Conducted Immunity Test Configuration (AC mains)



Port LAN

Test Voltage (Vrms)	Frequency Range (MHz)	Observations
3	0.15 – 80	Note 1

Note 1: No degradation in the performance of the EUT was observed during the test.

Conducted Immunity Test Configuration (Port LAN)



Conducted Immunity Environmental Conditions

Power Supply	A.C.230V, 50 Hz
Temperature	20°C
Relative Humidity	70%
Barometric Pressure	740 mb

Conducted Immunity Measurement Uncertainties

The instruments specified are subject to periodic calibration. Monthly controls ensure, with 95% confidence level, that the instruments remain within the calibrated levels.

Conducted Immunity Test Equipment Used

Equipment Type	Model Number	Serial Number	Cal. Date	Cal. Due
Amplifier	Kalmus 137C	-	10.06.2010	10.06.2012
Coupling / Decoupling Network	USR 2/4	-	10.06.2010	10.06.2012
Signal Generator	HP 8648 B	3P47U02340	10.06.2010	10.06.2012

ANNEX 1 The photo of the product, configuration and peripherals



