



**LABORATORY FOR TESTING OF MACHINERY,
EQUIPMENT AND DEVICES**
CENTER FOR TESTING AND EUROPEAN CERTIFICATION LTD

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TEST REPORT

№ 2emc-i-13-664 / 18.06.2013

OBJECT TO BE TESTED: Group luminaries – Industrial lighting “Floodlights” cat. № 98AT 105110SCH
Representative sample from Industrial lighting “Floodlights” group with cat. №:
98AT 45101SCH; 98AT 45102SCH; 98AT 45103SCH; 98AT 45104SCH; 98AT 105109SCH;
98AT 105110SCH; 98AT 505111SCH; 98AT 505112SCH
(name of object to be tested, type, model, quantity,
type – portable, fixed, for walling in and other)

APPLICANT FOR TEST: “ELMARK INDUSTRIES” SC. 2 Dobrudja Blvd. Dobrich, Bulgaria,
Tel.: 058 500 055, e-mail: denkov@elmark.bg
Application № 664 / 08.05.2013
(name of the firm – applicant, address, telephone, number and date of the test application)

STANDART:

- EN 55015:2006+A1:2007+A2:2009 Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment.
EN 61000-3-2:2006+A1:2009+A2:2009 Electromagnetic compatibility (EMC).
Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase).
EN 61000-3-3:2008 Electromagnetic compatibility (EMC).
Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.
EN 61547:2009 Equipment for general lighting purposes - EMC immunity requirements
EN 61000-4-2:2009 Electromagnetic compatibility (EMC).
Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test
EN 61000-4-4:2004+A1:2010 Electromagnetic compatibility (EMC).
Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
EN 61000-4-5:2006 Electromagnetic compatibility (EMC).
Part 4-5: Testing and measurement techniques - Surge immunity test
EN 61000-4-8:2010 Electromagnetic compatibility (EMC).
Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test
EN 61000-4-11:2004 Electromagnetic compatibility (EMC).
Part 4-11: Testing and measurement techniques–Voltage dips, short interruptions and voltage variations immunity tests
(number and name of the standards)

DATE OF ACCEPTANCE IN THE TEST LABORATORY: 08.05.2013

YEAR OF PRODUCTION : 2013
(identification number)

MANUFACTURER: “ELMARK INDUSTRIES” SC. 2 Dobrudja Blvd. Dobrich, Bulgaria,
Tel.: 058 500 055, e-mail: denkov@elmark.bg
(firm, trade mark, address)

DECLARED TECHNICAL DATA: Rated voltage – 230 V AC
Rated frequency – 50 Hz
Rated power – 400 W
Class I
Dimensions - 550x150 mm
Degree of protection – IP 65

DATE OF TEST PERFORMANCE: 28.05.2013

LABORATORY CHIEF:
/ T. Hristov /





I. Emission of Radio disturbance characteristics of electrical lighting and similar equipment

1. Radiated electromagnetic disturbances – 9kHz ÷ 30MHz

EN 55015, cl. 4.4 – Radiated electromagnetic disturbances, limits – Table 3

EN 55015, cl. 5.2.4 – Other luminaires

EN 55015, cl. 6 – Operating conditions for lighting equipment

EN 55015, cl. 6.4 – Ambient temperature: 25 °C ; Relative Humidity: 42 %.

EN 55015, cl.9.1 – Measuring arrangement and procedure

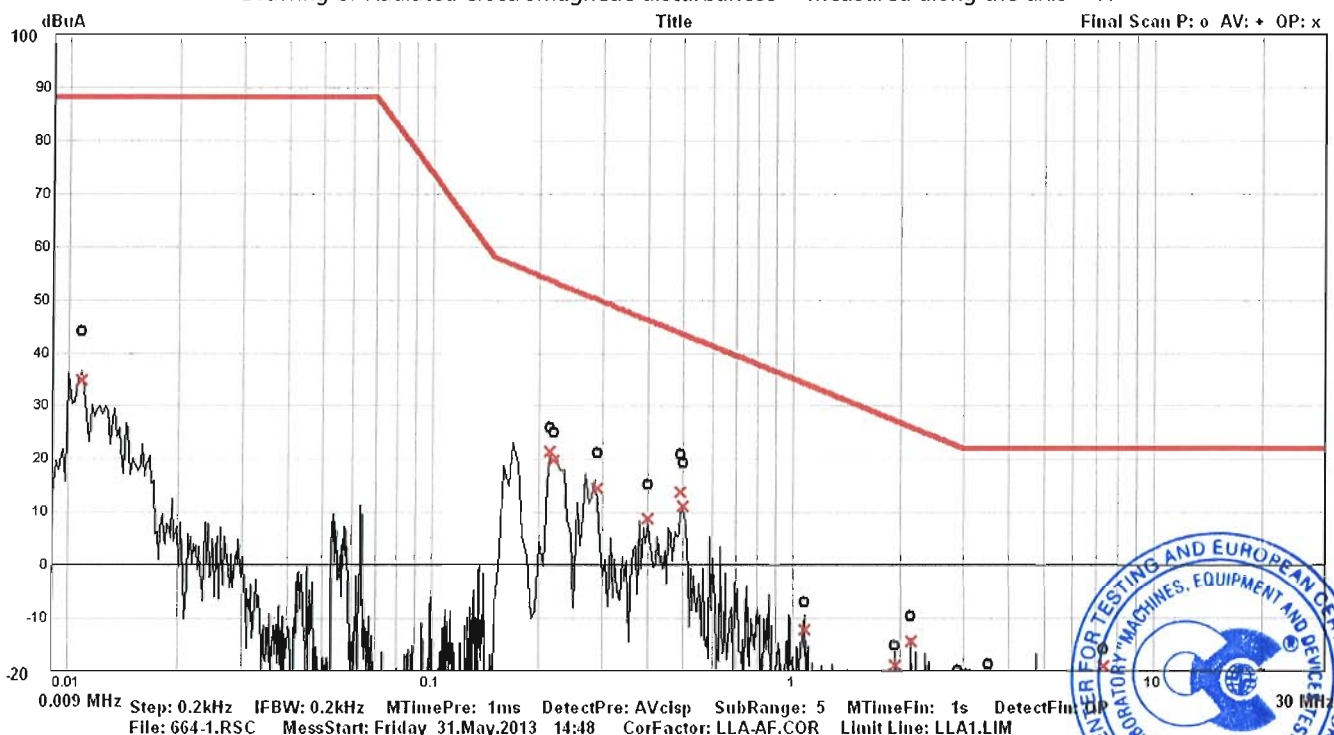
EN 55015, cl.9.2 – Indoor and outdoor luminaires

The test is performed with MHL and supply voltage: 230 V

RESULTS OF MEASUREMENT :

| Frequency | Radiated electromagnetic disturbances - measured along the axis - X | | |
|-----------|---|--------|--------|
| | Quasi peak - QP | | |
| | Measuring | Margin | Limit |
| MHz | dB(µA) | dB(µA) | dB(µA) |
| 0,011 | 34,89 | 53,11 | 88,00 |
| 0,215 | 21,47 | 32,20 | 53,67 |
| 0,220 | 19,95 | 33,44 | 53,39 |
| 0,290 | 14,57 | 35,50 | 50,07 |
| 0,400 | 8,82 | 37,39 | 46,21 |
| 0,490 | 13,77 | 30,00 | 43,77 |
| 0,500 | 11,34 | 32,19 | 43,53 |
| 1,080 | -12,23 | 46,50 | 34,27 |
| 1,930 | -18,78 | 46,08 | 27,30 |
| 2,150 | -14,22 | 40,22 | 26,00 |
| 2,905 | -25,77 | 48,15 | 22,38 |
| 3,070 | -26,42 | 48,42 | 22,00 |
| 3,515 | -23,50 | 45,50 | 22,00 |
| 3,955 | -31,40 | 53,40 | 22,00 |
| 7,345 | -19,16 | 41,16 | 22,00 |
| 19,950 | -28,88 | 50,88 | 22,00 |

Drawing of Radiated electromagnetic disturbances - measured along the axis - X

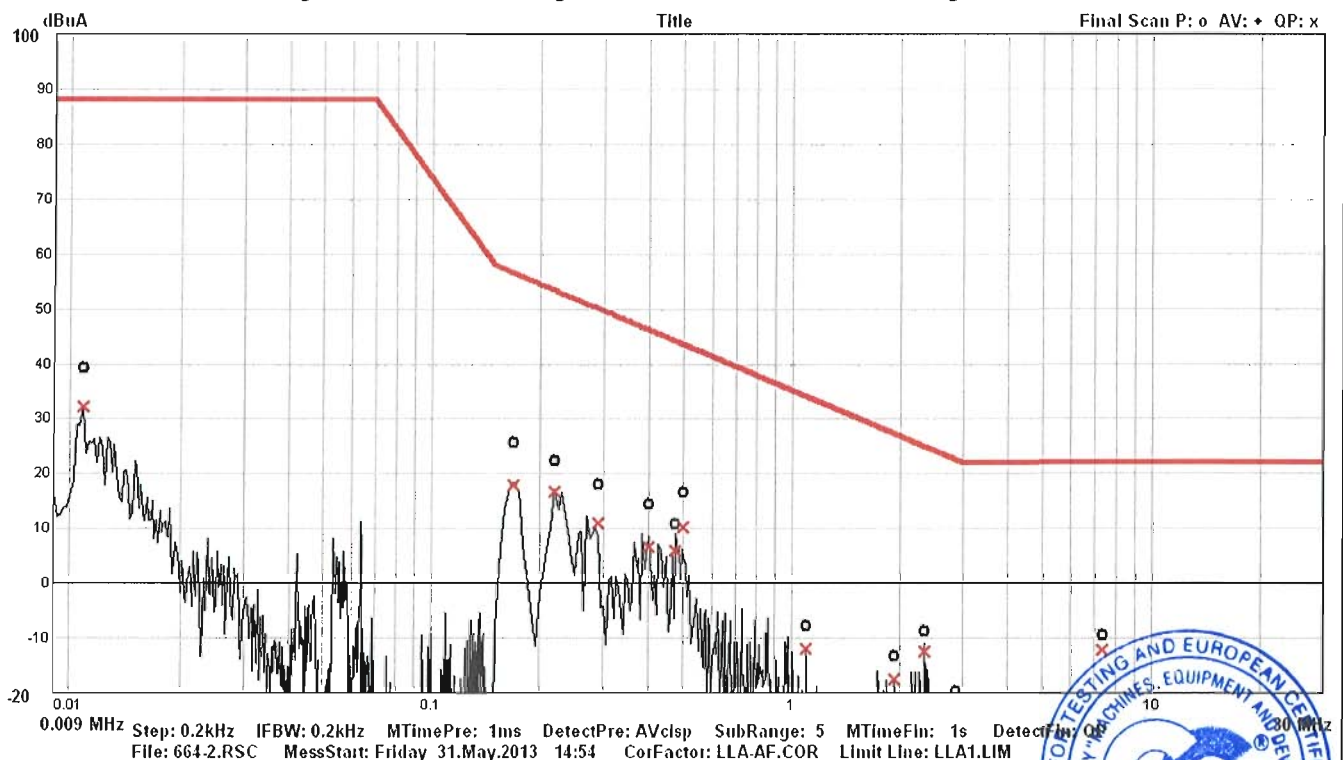


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| Frequency | Radiated electromagnetic disturbances - measured along the axis - Y | | |
|-----------|---|--------|-----------|
| | Quasi peak - QP | | |
| | Measuring | Margin | Measuring |
| MHz | dB(μA) | dB(μA) | dB(μA) |
| 0,011 | 32,23 | 55,77 | 88,00 |
| 0,170 | 17,84 | 38,65 | 56,49 |
| 0,220 | 16,83 | 36,56 | 53,39 |
| 0,290 | 11,10 | 38,97 | 50,07 |
| 0,400 | 6,74 | 39,47 | 46,21 |
| 0,475 | 5,89 | 38,25 | 44,14 |
| 0,500 | 10,39 | 33,14 | 43,53 |
| 1,105 | -11,94 | 45,94 | 34,00 |
| 1,935 | -17,49 | 44,75 | 27,26 |
| 2,360 | -12,46 | 37,34 | 24,88 |
| 2,875 | -25,36 | 47,87 | 22,51 |
| 3,140 | -29,21 | 51,21 | 22,00 |
| 4,670 | -32,99 | 54,99 | 22,00 |
| 7,345 | -12,07 | 34,07 | 22,00 |
| 17,705 | -29,13 | 51,13 | 22,00 |
| 21,540 | -28,20 | 50,20 | 22,00 |

Drawing of Radiated electromagnetic disturbances - measured along the axis - Y

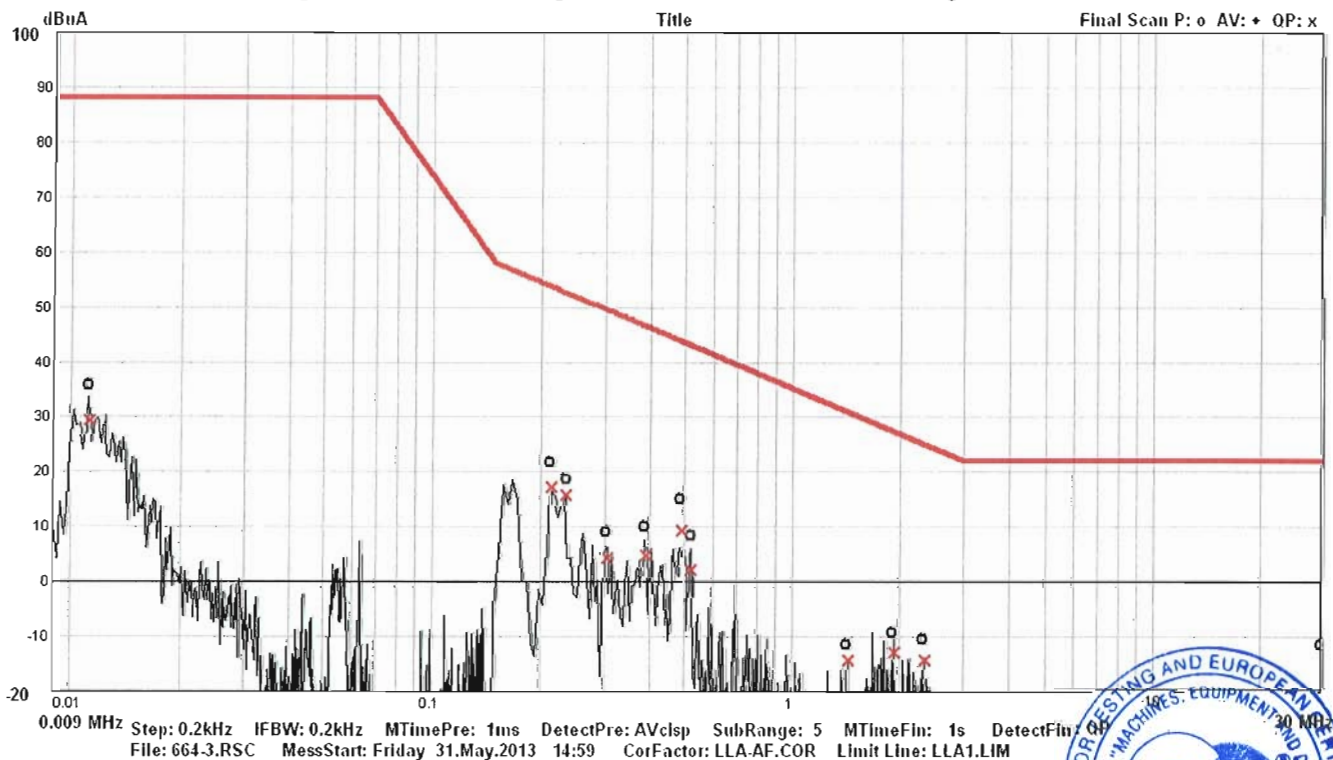


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| Frequency | Radiated electromagnetic disturbances - measured along the axis - Z | | |
|-----------|---|--------|-----------|
| | Quasi peak - QP | | |
| | Measuring | Margin | Measuring |
| MHz | dB(μA) | dB(μA) | dB(μA) |
| 0,011 | 29,42 | 58,58 | 88,00 |
| 0,215 | 17,20 | 36,47 | 53,67 |
| 0,235 | 15,82 | 36,78 | 52,60 |
| 0,305 | 4,40 | 45,07 | 49,47 |
| 0,390 | 4,76 | 41,75 | 46,51 |
| 0,490 | 9,40 | 34,37 | 43,77 |
| 0,520 | 2,30 | 40,76 | 43,06 |
| 1,440 | -14,29 | 45,11 | 30,82 |
| 1,935 | -12,96 | 40,22 | 27,26 |
| 2,345 | -14,23 | 39,19 | 24,96 |
| 2,875 | -24,78 | 47,29 | 22,51 |
| 3,050 | -31,16 | 53,16 | 22,00 |
| 3,585 | -35,66 | 57,66 | 22,00 |
| 4,055 | -32,23 | 54,23 | 22,00 |
| 7,345 | -26,64 | 48,64 | 22,00 |
| 30,000 | -23,47 | 45,47 | 22,00 |

Drawing of Radiated electromagnetic disturbances - measured along the axis - Z



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2. Radiated electromagnetic disturbances – 30MHz ÷ 300MHz

EN 55015, cl. 4.4.2 – Frequency range 30MHz to 300MHz – Annex B. Limits - Table B.1

EN 55015, cl. 5.2.4 – Other luminaires

EN 55015, cl. 6 – Operating conditions for lighting equipment

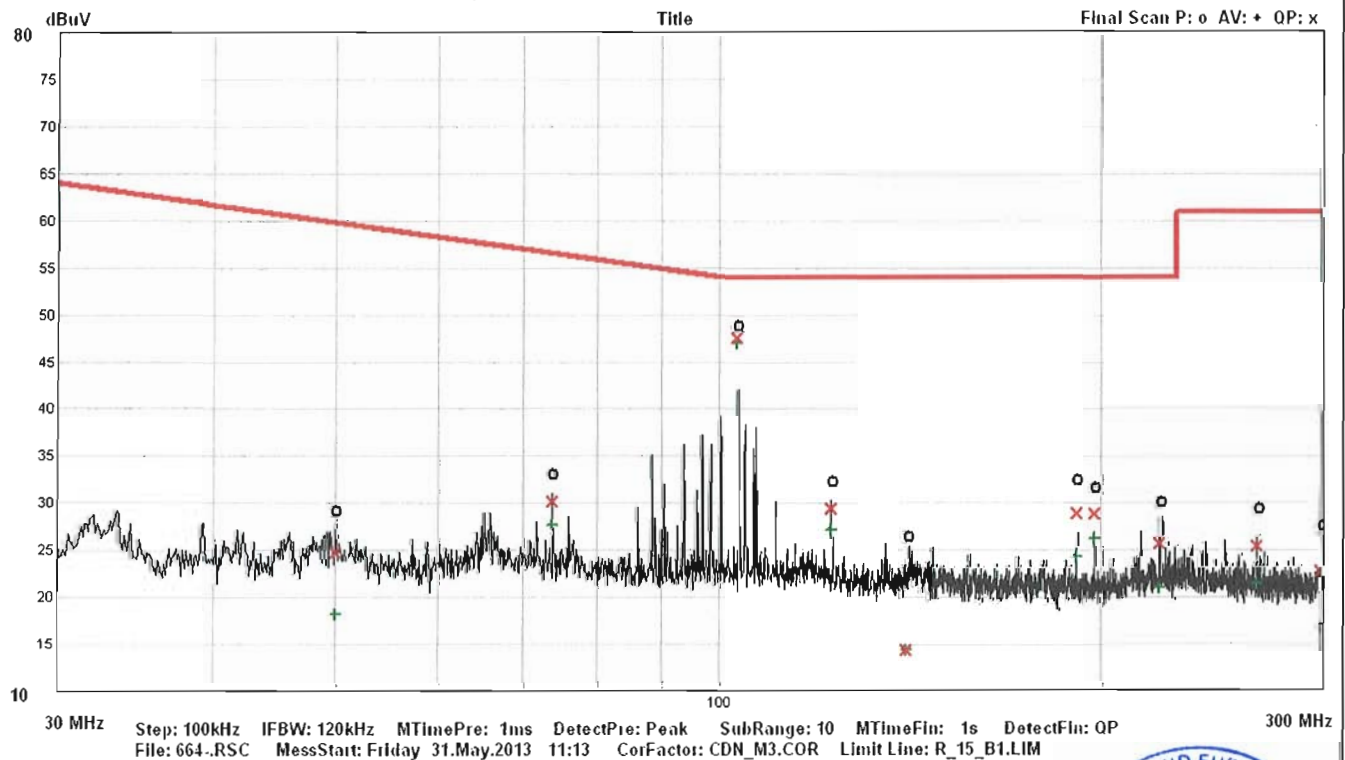
EN 55015, cl. 6.4 – Ambient temperature: 25 °C ; Relative Humidity: 42 %.

EN 55015, cl.9.2 – Measuring arrangement and procedure related to Subclause 4.4.2

RESULTS OF MEASUREMENT :

| Frequency | Radiated electromagnetic disturbances | | |
|-----------|---------------------------------------|--------|-----------|
| | Quasi peak - QP | | |
| | Measuring | Margin | Measuring |
| MHz | dB(μV) | dB(μV) | dB(μV) |
| 50,00 | 24,74 | 35,01 | 59,75 |
| 73,70 | 30,24 | 26,29 | 56,53 |
| 103,40 | 47,57 | 6,43 | 54,00 |
| 122,90 | 29,51 | 24,49 | 54,00 |
| 141,30 | 14,40 | 39,60 | 54,00 |
| 191,30 | 28,93 | 25,07 | 54,00 |
| 197,80 | 28,93 | 25,07 | 54,00 |
| 223,20 | 25,79 | 28,21 | 54,00 |
| 266,70 | 25,46 | 35,54 | 61,00 |
| 300,00 | 22,86 | 38,14 | 61,00 |

Drawing of Radiated electromagnetic disturbances



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3. HARMONIC CURRENT MEASUREMENT

Classification of equipment - C

Duration of test - 2.5 min

| | | | |
|---------------------|----------------------|-------------------|-----------------------|
| THC= 0,3679 A | I-THD= 18,881 % | POHC= 0,01474 A | POHC Limit= 0,18893 A |
| V_{RMS} = 229,9 V | I_{peak} = 3,426 A | Frequency = 50 Hz | |
| I_{RMS} = 2,027 A | I_f = 1,992 A | Power= 453,4 W | |
| Crest Factor= 1,69 | Power Factor = 0,97 | K Factor= 1,898 | |

| Harmonic | AVERAGE VALUES | | | MAX VALUE | | |
|----------|----------------|------------|------------|-----------|------------|------------|
| | Measured | 100% Limit | % of Limit | Measured | 150% Limit | % of Limit |
| Nº | , A | , A | % | , A | , A | % |
| 2 | 0,0023 | 0,0398 | 6 | 0,0028 | 0,0598 | 5 |
| 3 | 0,3297 | 0,5795 | 57 | 0,3307 | 0,8699 | 38 |
| 5 | 0,1133 | 0,1992 | 57 | 0,1141 | 0,2990 | 38 |
| 7 | 0,0555 | 0,1394 | 40 | 0,0561 | 0,2093 | 27 |
| 9 | 0,0653 | 0,0996 | 66 | 0,0662 | 0,1495 | 44 |
| 11 | 0,0537 | 0,0597 | 90 | 0,0550 | 0,0897 | 61 |
| 13 | 0,0527 | 0,0597 | 88 | 0,0540 | 0,0897 | 60 |
| 15 | 0,0082 | 0,0597 | 14 | 0,0100 | 0,0897 | 11 |
| 17 | 0,0176 | 0,0597 | 30 | 0,0189 | 0,0897 | 21 |
| 19 | 0,0125 | 0,0597 | 21 | 0,0129 | 0,0897 | 14 |
| 21 | 0,0057 | 0,0597 | 10 | 0,0060 | 0,0897 | 7 |
| 23 | 0,0036 | 0,0597 | 6 | 0,0038 | 0,0897 | 4 |
| 25 | 0,0076 | 0,0597 | 13 | 0,0078 | 0,0897 | 9 |
| 27 | 0,0017 | 0,0597 | 3 | 0,0018 | 0,0897 | 2 |
| 29 | 0,0036 | 0,0597 | 6 | 0,0036 | 0,0897 | 4 |
| 31 | 0,0090 | 0,0597 | 15 | 0,0090 | 0,0897 | 10 |
| 33 | 0,0024 | 0,0597 | 4 | 0,0026 | 0,0897 | 3 |
| 35 | 0,0010 | 0,0597 | 2 | 0,0010 | 0,0897 | 1 |
| 37 | 0,0014 | 0,0597 | 2 | 0,0016 | 0,0897 | |
| 39 | 0,0031 | 0,0597 | 5 | 0,0032 | 0,0897 | |

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Harmonics of power supply source

$V_{RMS} = 229,9 \text{ V}$

$I_{peak} = 3,426 \text{ A}$

Frequency = 50 Hz

$I_{RMS} = 2,027 \text{ A}$

$I_F = 1,992 \text{ A}$

Power = 453,4 W

Power Factor = 0,97

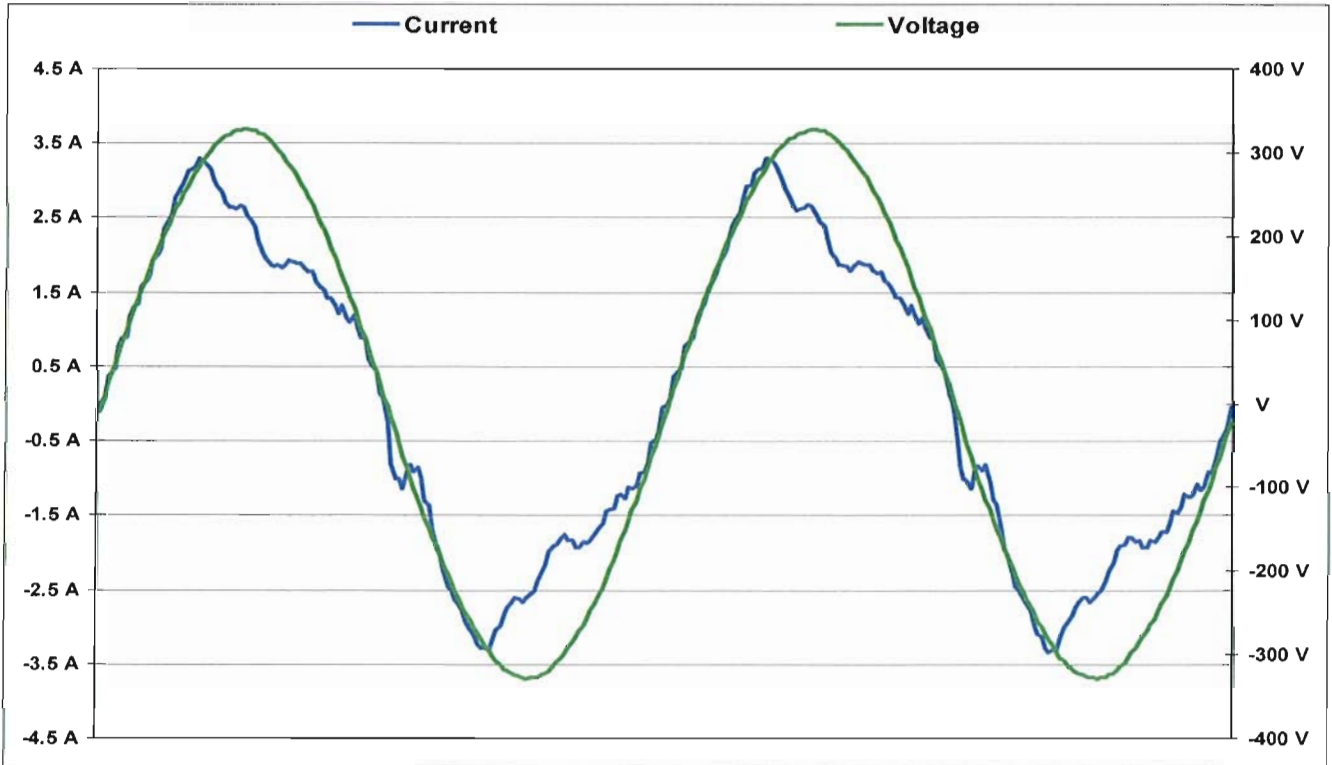
| Harmonic | Measured | 100% Limit | % of Limit |
|----------|----------|------------|------------|
| № | V | V | % |
| 2 | 0,0940 | 0,460 | 20,4 |
| 3 | 0,9806 | 2,069 | 47,4 |
| 4 | 0,3381 | 0,460 | 73,5 |
| 5 | 0,8600 | 0,920 | 93,5 |
| 6 | 0,2529 | 0,460 | 55,0 |
| 7 | 0,2753 | 0,690 | 39,9 |
| 8 | 0,2301 | 0,460 | 50,0 |
| 9 | 0,4385 | 0,460 | 95,4 |
| 10 | 0,2072 | 0,460 | 45,1 |
| 11 | 0,2050 | 0,230 | 89,2 |
| 12 | 0,2144 | 0,230 | 93,3 |
| 13 | 0,2076 | 0,230 | 90,3 |
| 14 | 0,1168 | 0,230 | 50,8 |
| 15 | 0,0418 | 0,230 | 18,2 |
| 16 | 0,0697 | 0,230 | 30,3 |
| 17 | 0,0690 | 0,230 | 30,0 |
| 18 | 0,0460 | 0,230 | 20,0 |
| 19 | 0,0464 | 0,230 | 20,2 |
| 20 | 0,0463 | 0,230 | 20,1 |
| 21 | 0,1140 | 0,230 | 49,6 |
| 22 | 0,0233 | 0,230 | 10,1 |
| 23 | 0,0241 | 0,230 | 10,5 |
| 24 | 0,0230 | 0,230 | 10,0 |
| 25 | 0,0234 | 0,230 | 10,2 |
| 26 | 0,0230 | 0,230 | 10,0 |
| 27 | 0,0230 | 0,230 | 10,0 |
| 28 | 0,0230 | 0,230 | 10,0 |
| 29 | 0,0230 | 0,230 | 10,0 |
| 30 | 0,0230 | 0,230 | 10,0 |
| 31 | 0,0230 | 0,230 | 10,0 |
| 32 | 0,0230 | 0,230 | 10,0 |
| 33 | 0,0115 | 0,230 | 5,0 |
| 34 | 0,0093 | 0,230 | 4,1 |
| 35 | 0,0003 | 0,230 | 0,1 |
| 36 | 0,0225 | 0,230 | 9,8 |
| 37 | 0,0227 | 0,230 | 9,9 |
| 38 | 0,0005 | 0,230 | |
| 39 | 0,0228 | 0,230 | |
| 40 | 0,0193 | 0,230 | |

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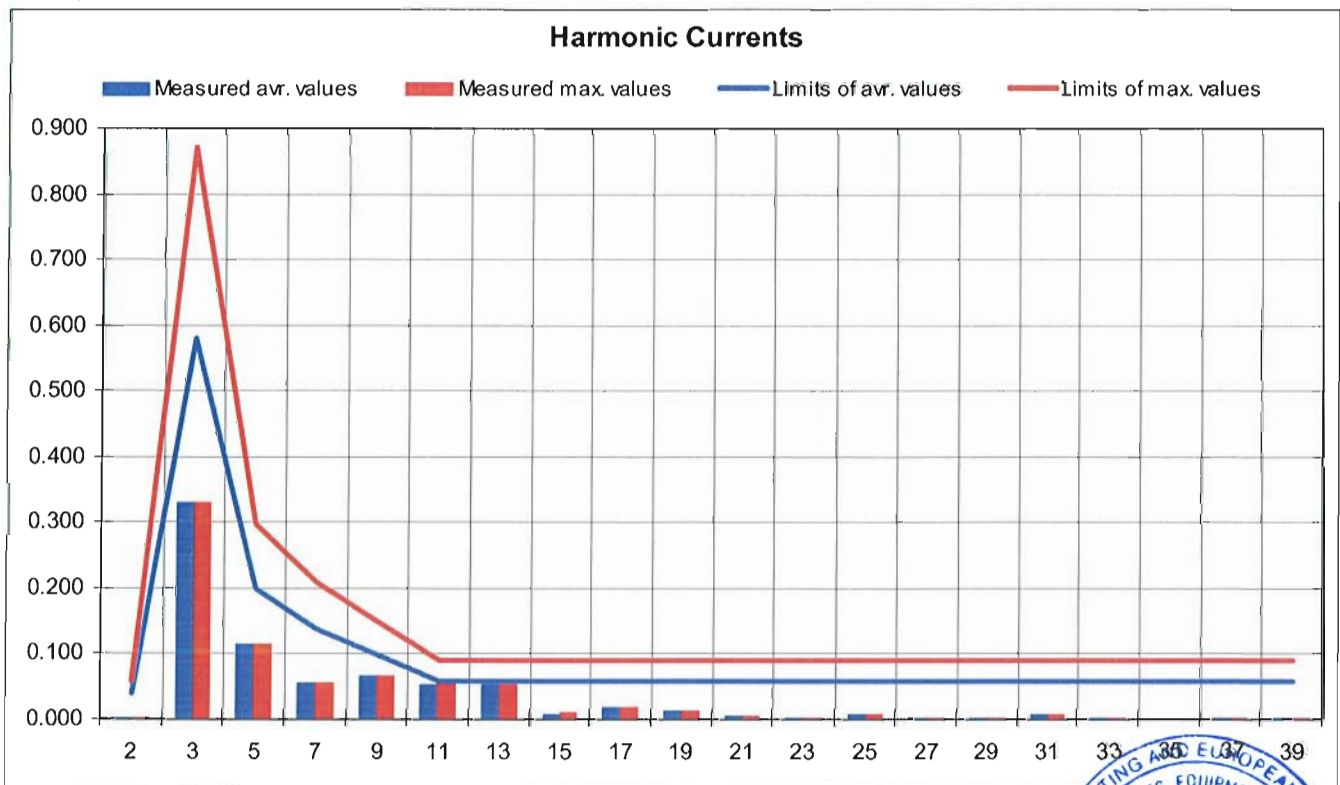
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Current and voltage waveform



Graphics harmonics



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4. Voltage fluctuations and flicker measurement

EN 61000-3-3, cl. 4 – Assessment of voltage changes, voltage fluctuations and flicker

EN 61000-3-3, cl. 5 – Limits

EN 61000-3-3, cl. 6 – Test conditions

EN 61000-3-3, cl. 6.5 - Observation period

According to EN 61000-3-3:2008 – Annex A, clause A.2 luminaire is deemed to satisfy the requirements of the standard without testing of the EUT



II. Immunity of Radio disturbance characteristics for general lighting purposes

EN 61547 cl. 4.2 – Performance criteria for lighting equipment

Performance criterion A

During the test, no change of the luminous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.

Performance criterion B

During the test, the luminous intensity may change to any value. After the test, the luminous intensity shall be restored to its initial value within 1 min. Regulating controls need not function during the test, but after the test, the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.

Performance criterion C

During and after the test, any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min, all functions shall return to normal, if necessary by temporary interruption of the mains supply and/or operating the regulating control.

Additional requirement for lighting equipment incorporating a starting device: After the test, the lighting equipment is switched off. After half an hour, it is switched on again. The lighting equipment shall start and operate as intended.

| | | |
|--|---------------------|------------------|
| Environment requirements during the test | Ambient temperature | 15 to 35 °C |
| | Relative Humidity | 30 to 60 % |
| | Air pressure | 860 to 1060 mbar |
| Test environment | Ambient temperature | 25 °C |
| | Relative Humidity | 42 % |
| | Air pressure | 1010 mbar |

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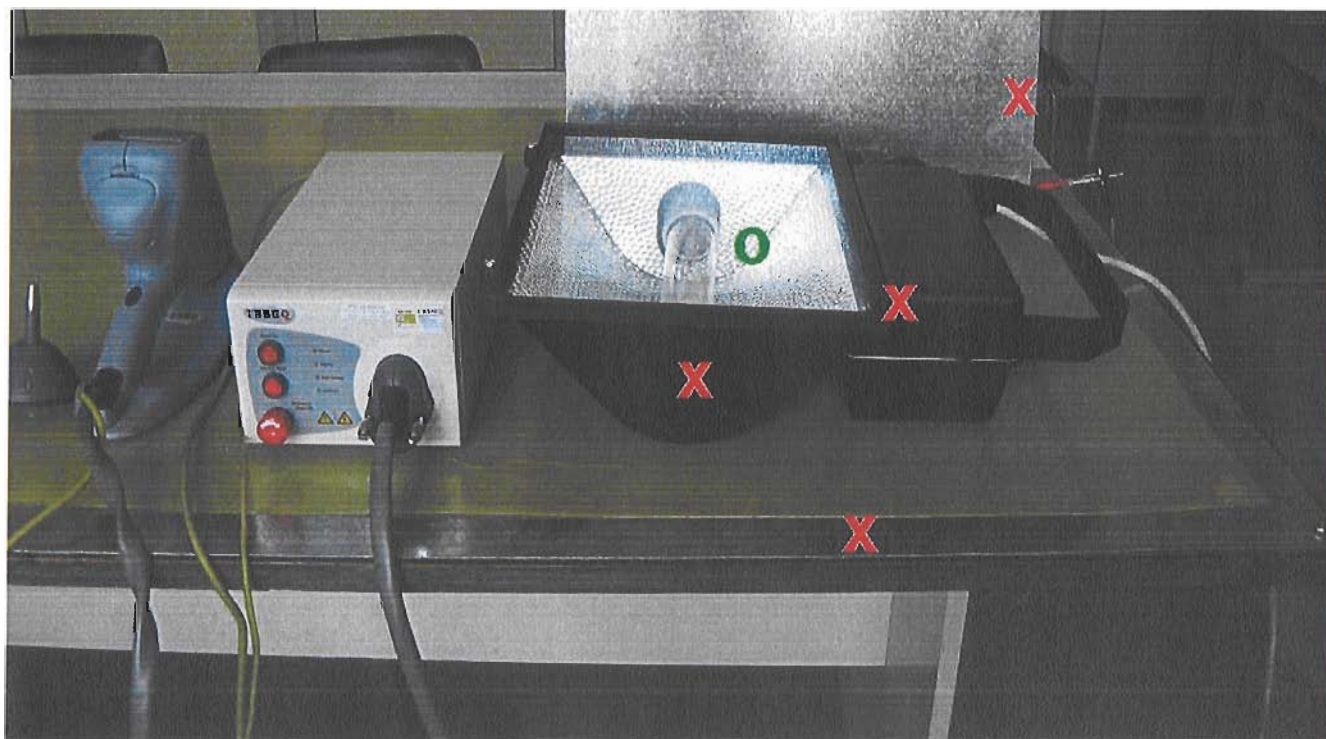
1. IMMUNITY TO ELECTROSTATIC DISCHARGE (ESD)

EN 61547, т. 5.2 – Electrostatic discharges – Table 1 - Test levels at enclosure port
 EN 61000-4-2, т. 7 – Test setup
 EN 61000-4-2, т. 7.2.2 – Table-top equipment , Figure 4
 EN 61000-4-2, т. 8 – Test procedure

| | |
|--|--|
| Time interval between discharges | 1 s |
| Discharge impedance | 150 pF |
| Discharge impedance | 330 Ω |
| Performance Criteria according cl.6.3.4 and Table 15 of EN 61547 | Criteria B |
| Number of discharges | 10 positive and 10 negative at the selected points |

| Discharge location | Type of discharge | Level | Test voltage | Polarity | Result |
|--|-------------------|-------|--------------|----------|-------------------|
| Glass - O | Air - Direct | 3 | 8 kV | + - | Pass (criteria A) |
| Body of luminaire - X | Contact - Direct | 2 | 4 kV | + - | Pass (criteria A) |
| Vertical coupling plane (VCP) - X | Contact - Direct | 2 | 4 kV | + - | Pass (criteria A) |
| Horizontal coupling plane (HCP) - X | Contact - Direct | 2 | 4 kV | + - | Pass (criteria A) |

Picture of the object with marked points of discharge locations



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2. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

EN 61547, τ. 5.5 – Applicability, Table 6

EN 61000-4-4, τ. 7 – Test setup

EN 61000-4-4, τ. 8 – Test procedure

| | |
|---|--------------------------------------|
| Rise time | 5 ns ± 30 % |
| Duration | 50 ns ± 30 % |
| Repetition frequency | 5 kHz |
| Burst duration | 15 ms ± 20 % за 5 kHz |
| Burst period | 300 ms ± 20 % |
| Time of application | 1 min for each polarity and coupling |
| Performance Criteria according to cl.6.3.4 and Table 15 of EN 61547 | Criteria B |

| Pulse Application | Application | Level | Test Voltage V | Polarity | Result |
|---|------------------|-------|----------------|----------|-------------------|
| Between L and Ground plane | Coupling network | 1 | 500 | + | Pass (criteria B) |
| | | | | - | Pass (criteria B) |
| | | 2 | 1000 | + | Pass (criteria B) |
| | | | | - | Pass (criteria B) |
| Between neutral and Ground plane | Coupling network | 1 | 500 | + | Pass (criteria B) |
| | | | | - | Pass (criteria B) |
| | | 2 | 1000 | + | Pass (criteria B) |
| | | | | - | Pass (criteria B) |
| Between PE and Ground plane | Coupling network | 1 | 500 | + | Pass (criteria B) |
| | | | | - | Pass (criteria B) |
| | | 2 | 1000 | + | Pass (criteria B) |
| | | | | - | Pass (criteria B) |
| Between L, neutral, PE and Ground plane | Coupling network | 1 | 500 | + | Pass (criteria B) |
| | | | | - | Pass (criteria B) |
| | | 2 | 1000 | + | Pass (criteria B) |
| | | | | - | Pass (criteria B) |

Signal lines

| Pulse Application | Application | Level | Test Voltage V | Polarity | Result |
|-------------------|----------------|-------|----------------|----------|--------|
| - | Coupling clamp | 1 | 500 | + | - |
| | | | | - | - |
| - | Coupling clamp | 2 | 1000 | + | - |
| | | | | - | - |

Control lines

| Pulse Application | Application | Level | Test Voltage V | Polarity | Result |
|-------------------|----------------|-------|----------------|----------|--------|
| - | Coupling clamp | 1 | 500 | + | - |
| | | | | - | - |
| - | Coupling clamp | 2 | 1000 | + | - |
| | | | | - | - |

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3. SURGE IMMUNITY TEST

EN 61547, т. 5.7 – Applicability ,Table 10
EN 61000-4-5, т. 7 – Test setup
EN 61000-4-2, т. 8 – Test procedure

| | | |
|---|--|--|
| Front time | 1,2 μ s \pm 30 % | |
| Time to half value | 50 μ s \pm 20 % | |
| Source impedance | Power line symmetrical Power line unsymmetrical | 2 Ω + 18 μ F 12 Ω + 9 μ F |
| Phase angles | 90°/ 270° | |
| Number of surges / polarity /phase angle | 5 | |
| Performance Criteria according to cl.6.3.4 and Table 15 of EN 61547 | Criteria C | |

Power line symmetrical

| Pulse Application | Level | Test Voltage V | Polarity | Result |
|---------------------|-------|----------------|----------|-------------------|
| phase L – neutral N | 1 | 500 | + | Pass (criteria B) |
| | | | - | Pass (criteria B) |
| | 2 | 1000 | + | Pass (criteria B) |
| | | | - | Pass (criteria B) |

Power line unsymmetrical

| Pulse Application | Level | Test Voltage V | Polarity | Result |
|------------------------------|-------|----------------|----------|-------------------|
| phase L – protective earth | 1 | 500 | + | Pass (criteria A) |
| | | | - | Pass (criteria A) |
| | 2 | 1000 | + | Pass (criteria A) |
| | | | - | Pass (criteria A) |
| | 3 | 2000 | + | Pass (criteria A) |
| | | | - | Pass (criteria A) |
| neutral N - protective earth | 1 | 500 | + | Pass (criteria A) |
| | | | - | Pass (criteria A) |
| | 2 | 1000 | + | Pass (criteria A) |
| | | | - | Pass (criteria A) |
| | 3 | 2000 | + | Pass (criteria A) |
| | | | - | Pass (criteria A) |

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4. RATED POWER FREQUENCY MAGNETIC FIELD

EN 61547, τ. 5.4 – Applicability ,Table 3

EN 61000-4-8 τ. 7 – Test setup

EN 61000-4-8 τ. 8 – Test procedure

Performance Criteria according to cl.6.3.3
and Table 15 of EN 61547

Criteria A

| Standard inductive coil | Orientation of standard inductive coil | Level | Field strength in the centre for all other inductive coils | Current in the coil (a coil with 10 windings) | Result |
|-------------------------|--|-------|--|---|-------------------|
| 1 m x 1 m | X | 2 | 3 A/m | 3,45 A | Pass (criteria A) |
| 1 m x 1 m | Y | 2 | 3 A/m | 3,45 A | Pass (criteria A) |
| 1 m x 1 m | Z | 2 | 3 A/m | 3,45 A | Pass (criteria A) |

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5. Voltage dips, short interruptions and voltage variations immunity tests

5.1 Voltage dips immunity tests

EN 61547, τ. 5.8 – Applicability ,Table 11

EN 61000-4-11 τ. 7 – Test setup

EN 61000-4-11 τ. 8 – Test procedure

EN 61000-4-11 τ. 8.2.1 – Testing for each selected combination of test level and duration with a sequence of three dips with intervals of 10 s minimum (between each test event)

Performance Criteria according to cl.6.3.4
and Table 15 of EN 61547

Criteria C

| Voltage test levels (% of rated voltage) | Duration (cycles) | Phase angle synchronization | Result |
|--|----------------------|-----------------------------|-------------------|
| 70 % | 10 cycles | 0° | Pass (criteria C) |

5.2 Short interruptions immunity tests

EN 61547, τ. 5.8 – Applicability ,Table 12

EN 61000-4-11 τ. 7 – Test setup

EN 61000-4-11 τ. 8 – Test procedure

EN 61000-4-11 τ. 8.2.1 – Testing for each selected combination of test level and duration with a sequence of three interruptions with intervals of 10 s minimum (between each test event)

Performance Criteria according to cl.6.3.4
and Table 15 of EN 61547

Criteria B

| Voltage test levels (% of rated voltage) | Duration (cycles) | Phase angle synchronization | Result |
|--|----------------------|-----------------------------|-------------------|
| 0 % | 0,5 cycles | 0° | Pass (criteria B) |

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USED TECHNICAL EQUIPMENTS:

| | Appliance | Type | Manufacturer | Identity № | Last calibration date |
|-----|------------------------------------|---|---|---|-----------------------|
| 1. | ESD - Generator | NSG438 | TESEQ Switzerland | 988 | 14.03.2012 |
| 2. | EFT/B - Generator | NSG 2050 INA 2050 PNW 2225 CDN 133 | Schaffner Electrotest GmbH, Germany | 200902-653LU 200906-578LU 200838-570LU 34460 | 14.03.2012 |
| 3. | Surge - Generator | NSG 2050 INA 2050 PNW 2050 CDN 133 | Schaffner Electrotest GmbH, Germany | 200902-653LU 200906-578LU 200911-636LU 34460 | 16.03.2012 |
| 4. | Digital multimeter | UNIGOR 390 | LEM Austria | PI 3288 | 08.07.2011 |
| 5. | Voltage Generator | GL 01-16-230 | Neosvet Bulgaria | 0001 | - |
| 6. | Power Quality Analyzer | 435 | Fluke Netherlands | DM 9881064 | 08.11.2011 |
| 7. | Thermometer-higrometer | 177-H1 | TESTO Germany | 01320300/902 | 19.04.2012 |
| 8. | EMI – receiver 9 kHz ÷ 1000 MHz | SCR 3501 | Schaffner Electrotest GmbH, Germany | 522 | 07.07.2011 |
| 9. | Large loop antenna 2m | RF300 | Laplace Instruments LTD U.K. | 9123 | 12.03.2013 |
| 10. | Coupling/Decoupling network | CDN M2+M3 | Frankonia EMC Test - Systems | A2210229 | 18.04.2013 |

TEST PERFORMER: 1.

/ T. Hristov /

2.

/D. Chavalinov /

CHIEF LABORATORY :

/ T. Hristov /

