

**Humidity, Temperature and Pressure  
Laboratory LAB-EL  
LAB-EL LABORATORY ELECTRONICS Co.**



Poland, 05-816 Reguły, 9, Herbaciana Street  
tel.: +48 22 753 61 30 fax: +48 22 753 61 35  
http://www.label.pl e-mail: info@label.pl



AP 067

The Calibration Laboratory accredited by the Polish Center for Accreditation, a signatory to EA MLA and ILAC MRA that include recognition of the calibration certificates.  
Accreditation no. AP 067

## CALIBRATION CERTIFICATE

Date of issue: ..... 2012                      Certificate No: ..... 2012                      Page 1/2

**OBJECT OF CALIBRATION**                      Hygrometer type *LB-710A*, factory no. *4082*, produced by LAB-EL Laboratory Electronics Co., with a capacity sensor of relative humidity and a resistance temperature sensor Pt1000.

**APPLICANT**                                      *LAB-EL Elektronika Laboratoryjna Sp. J.*  
*9, Herbaciana Street*  
*05-816 Reguły*

**CALIBRATION METHOD**                      Operational Instruction LW.SOP-14 (edition 01, version 1): Calibration of the devices for measurement of humidity and a gases temperature: hytherographs, hygrometers and thermometers.

**ENVIRONMENTAL CONDITIONS**                      Temperature: 3,5 ÷ 16,                      °C  
Relative humidity: (36,7 ÷ 43,7)                      %  
Pressure: (996,8 ÷ 1003,7)                      hPa

**DATE OF CALIBRATION**                      2012-05-27, 2012

**TRACEABILITY**                                      The calibration results were referred to a reference measurement standard of humidity maintained in GUM, with the application of a dew point hygrometer with a chilled mirror type DP-30-BCS-K2 factory no. 01-0117, and to a national measurement standard of a temperature maintained in GUM, with the application of a resistance thermometer platinum sensor type 935-14-16, factory no. 24782/2.

**CALIBRATION RESULTS**                                      The results have been presented on page 2 of this certificate including uncertainty of measurement (calibration protocol *169/2012*).

**UNCERTAINTY OF MEASUREMENT**                      Uncertainty of measurement has been evaluated in compliance with EA-4/02. The expanded uncertainty assigned corresponds to a coverage probability of 95 % and the coverage factor  $k = 2$ .

**CALIBRATION CERTIFICATE issued by the ACCREDITED LABORATORY No AP 067**

Date of issue: ..... 2012

Certificate No: ..... 2012

Page 2/2

**CALIBRATION RESULTS**

Calibration results are the following:

*Description:*

*RH<sub>w</sub>* – reference relative humidity value [%],

*t<sub>w</sub>* – reference temperature value [°C],

*RH<sub>m</sub>* - relative humidity indication of a calibrated instrument [%],

*t<sub>m</sub>* - temperature indication of a calibrated instrument [°C],

*ΔRH* – relative humidity datum measurement error of a calibrated instrument [%],

$$\Delta RH = RH_m - RH_w$$

*Δt* – temperature datum measurement error of a calibrated instrument [°C],

$$\Delta t = t_m - t_w$$

*URH* - expanded measurement uncertainty (*k* = 2) of relative humidity datum measurement error [%],

*Ut* - expanded measurement uncertainty (*k* = 2) of temperature datum measurement error [°C].

| <i>RH<sub>w</sub></i> | <i>t<sub>w</sub></i> | <i>RH<sub>m</sub></i> | <i>t<sub>m</sub></i> | <i>ΔRH</i> | <i>URH</i> | <i>Δt</i> | <i>Ut</i> |
|-----------------------|----------------------|-----------------------|----------------------|------------|------------|-----------|-----------|
| %                     | °C                   | %                     | °C                   | %          | %          | °C        | °C        |
| 57,1                  | 4,99                 | 56,9                  | 5,04                 | -0,2       | 1,1        |           | 0,12      |
| 29,0                  | 22,07                | 28,9                  | 22,06                | -0,1       | 0,5        |           | 0,12      |
| 57,2                  | 21,99                | 57,4                  | 22,01                | 0,2        | 0,5        |           | 0,12      |
| 84,7                  | 21,96                | 84,7                  |                      | 0          | 0,7        | -0,06     | 0,12      |
| 56,9                  | 42,02                | 56,9                  | 42,03                | 0,06       | 0,5        | 0,01      | 0,12      |

Example

Authorized by: