

# ภาคผนวกที่ ง

เอกสารสอบเทียบความถูกต้องของเครื่องมือตรวจวัดคุณภาพสิ่งแวดล้อม

**ตารางสรุปรายการเอกสารการสอบเทียบความถูกต้องของเครื่องมือเก็บตัวอย่าง  
และเครื่องมือตรวจวิเคราะห์คุณภาพสิ่งแวดล้อม**

| รายการตรวจวัด                                                                                                                                                   | เครื่องมือเก็บตัวอย่าง                                                                                                            | เครื่องมือตรวจวิเคราะห์                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
|                                                                                                                                                                 | ชื่อเครื่องมือ                                                                                                                    | ชื่อเครื่องมือ                                    |
| <b>1. คุณภาพอากาศในบรรยากาศ</b><br>TSP                                                                                                                          | High Volume Air Sampler<br>Rec No. B19, B25, B31, B39<br>Blow No. B19, B25, B31, B39                                              | Digital Balance                                   |
| PM <sub>10</sub>                                                                                                                                                | High Volume PM <sub>10</sub> Air Sampler<br>Rec No. B21, B22, B31, R02<br>Blow No. B21, B22, B31, R02                             | Digital Balance                                   |
| SO <sub>2</sub>                                                                                                                                                 | SO <sub>2</sub> Analyzer No. B03, B04, B05, B06                                                                                   | SO <sub>2</sub> Analyzer No. B03, B04, B05, B06   |
| NO <sub>2</sub>                                                                                                                                                 | NO <sub>2</sub> Analyzer No. B05, B14, B16, B17                                                                                   | NO <sub>2</sub> Analyzer No. B05, B14, B16, B17   |
| O <sub>3</sub>                                                                                                                                                  | O <sub>3</sub> Analyzer No. DG-B05, B08, B09, B11                                                                                 | O <sub>3</sub> Analyzer No. DG-B05, B08, B09, B11 |
| <b>2. คุณภาพอากาศจากปล่องโรงไฟฟ้า</b><br>TSP                                                                                                                    | Console No. B03, R04<br>Pitot Tube No. B44, B49                                                                                   | Digital Balance                                   |
| PM <sub>10</sub>                                                                                                                                                | Console No. B03, R04<br>Pitot Tube No. B44, B49                                                                                   | Digital Balance                                   |
| SO <sub>2</sub>                                                                                                                                                 | Personal Pump SKC No. B32, B50<br>Rotameter No. H-B01, B09                                                                        | Spectrophotometer                                 |
| NO <sub>x</sub>                                                                                                                                                 | Vacuum Gauge No.7                                                                                                                 | Spectrophotometer                                 |
| CO                                                                                                                                                              | Personal Pump SKC No. B32, B50<br>Rotameter No. H-B01, B09                                                                        | CO Analyzer No. B06, B10                          |
| <b>3. ระดับเสียงในบรรยากาศ</b><br>L <sub>eq</sub> 24 hr, L <sub>eq</sub> 1 hr, L <sub>eq</sub> 5 min, L <sub>dn</sub> ,<br>L <sub>max</sub> และ L <sub>90</sub> | Acoustic Calibrator<br>Sound Level Meter No.<br>ACO-C1-B03, B04, B05<br>ST-C1-B08, B09, B13, B17, B19, B24, B26, B27              | -                                                 |
| <b>4. ระดับเสียงในสถานที่ทำงาน</b><br>L <sub>eq</sub> 8 hr                                                                                                      | Acoustic Calibrator<br>Sound Level Meter No. ACO-C1-B05<br>ACO-B18, B29, B33, B36, B41, B43, R40, R41<br>ST-C1-B07, B08, B09, B14 | -                                                 |
| <b>5. ระดับความร้อนในสถานที่ทำงาน</b><br>WBGT                                                                                                                   | Heat Stress WBGT Meter No. B05, B07, B12,<br>B21, B25, B26, B31, B32                                                              | -                                                 |

คุณภาพอากาศในบรรยากาศ



บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด  
S.P.S. CONSULTING SERVICE CO., LTD.  
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com, www.spscon.com

## High Volume Air Sampler Calibration Report

Calibration Method : Multipoint Orifice Flow Transfer Standard

Model : TE 5025A

S/N : 3611

### Calibration Data

| High Volume Air Sampler Data |            | Calibration Data |                                        |                |
|------------------------------|------------|------------------|----------------------------------------|----------------|
| Recorder No.                 | Blower No. | Date             | Actual Flowrate (ft <sup>3</sup> /min) | R <sup>2</sup> |
| B01                          | B01        | 05/05/2026       | y = 1.106x-2.614                       | 0.997          |
| B02                          | B02        | 06/05/2026       | y = 1.113x-1.359                       | 0.997          |
| B03                          | B03        | 06/05/2026       | y = 1.121x-2.504                       | 0.996          |
| B04                          | B04        | 05/05/2026       | y = 1.099x-1.383                       | 0.997          |
| B05                          | B05        | 05/05/2026       | y = 1.103x-2.160                       | 0.998          |
| B06                          | B06        | 06/05/2026       | y = 1.104x-2.338                       | 0.998          |
| B07                          | B07        | 05/05/2026       | y = 1.110x-1.779                       | 0.997          |
| B08                          | B08        | 06/05/2026       | y = 1.117x-0.069                       | 0.998          |
| B09                          | B09        | 06/05/2026       | y = 1.131x+0.633                       | 0.997          |
| B10                          | B10        | 06/05/2026       | y = 1.109x-1.997                       | 0.996          |
| B11                          | B11        | 05/05/2026       | y = 1.113x-0.879                       | 0.998          |
| B12                          | B12        | 05/05/2026       | y = 1.133x-2.636                       | 0.999          |
| B13                          | B13        | 06/05/2026       | y = 1.121x-1.555                       | 0.996          |
| B14                          | B14        | 05/05/2026       | y = 1.114x-0.668                       | 0.996          |
| B15                          | B15        | 06/05/2026       | y = 1.115x-2.223                       | 0.998          |
| B16                          | B16        | 06/05/2026       | y = 1.119x-1.715                       | 0.996          |
| B17                          | B17        | 06/05/2026       | y = 1.128x-2.077                       | 0.999          |
| B18                          | B18        | 06/05/2026       | y = 1.124x-2.201                       | 0.997          |
| B19                          | B19        | 06/05/2026       | y = 1.126x-2.072                       | 0.998          |
| B20                          | B20        | 05/05/2026       | y = 1.128x-1.147                       | 0.998          |
| B21                          | B21        | 05/05/2026       | y = 1.125x-1.507                       | 0.997          |
| B22                          | B22        | 06/05/2026       | y = 1.129x-3.099                       | 0.998          |
| B23                          | B23        | 05/05/2026       | y = 1.136x-3.514                       | 0.996          |
| B24                          | B24        | 05/05/2026       | y = 1.123x-2.620                       | 0.999          |
| B25                          | B25        | 07/05/2026       | Y = 1.127x-2.205                       | 0.999          |
| B26                          | B26        | 06/05/2026       | y = 1.101x-1.346                       | 0.997          |
| B27                          | B27        | 06/05/2026       | y = 1.120x-2.554                       | 0.996          |
| B28                          | B28        | 06/05/2026       | y = 1.129x-3.221                       | 0.998          |
| B29                          | B29        | 06/05/2026       | y = 1.123x-2.970                       | 0.996          |
| B30                          | B30        | 06/05/2026       | y = 1.126x-1.987                       | 0.996          |
| B31                          | B31        | 06/05/2026       | y = 1.105x-1.053                       | 0.997          |
| B32                          | B32        | 05/05/2026       | y = 1.118x-2.347                       | 0.998          |
| B33                          | B33        | 06/05/2026       | y = 1.129x-1.842                       | 0.996          |
| B34                          | B34        | 06/05/2026       | y = 1.119x-1.939                       | 0.999          |





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7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900

Tel : (662) 939-4370-72. Fax : (662) 513-4221. E-mail : sale@spscon.com., www.spscon.com

## High Volume Air Sampler Calibration Report

Calibration Method : Multipoint Orifice Flow Transfer Standard

Model : TE 5025A

S/N : 3611

### Calibration Data

| High Volume Air Sampler Data |            | Calibration Data |                                        |                |
|------------------------------|------------|------------------|----------------------------------------|----------------|
| Recorder No.                 | Blower No. | Date             | Actual Flowrate (ft <sup>3</sup> /min) | R <sup>2</sup> |
| B35                          | B35        | 06/05/2026       | $y = 1.130x - 2.698$                   | 0.999          |
| B36                          | B36        | 05/05/2026       | $y = 1.112x - 2.644$                   | 0.998          |
| B37                          | B37        | 05/05/2026       | $y = 1.124x - 2.608$                   | 0.996          |
| B38                          | B38        | 06/05/2026       | $y = 1.139x - 1.817$                   | 0.999          |
| B39                          | B39        | 05/05/2026       | $y = 1.099x + 0.749$                   | 0.997          |
| B40                          | B40        | 05/05/2026       | $y = 1.135x - 2.517$                   | 0.997          |
| B41                          | B41        | 06/05/2026       | $y = 1.103x - 0.803$                   | 0.998          |
| B42                          | B42        | 05/05/2026       | $y = 1.138x - 3.754$                   | 0.999          |
| B43                          | B43        | 06/05/2026       | $y = 1.132x - 2.425$                   | 0.997          |
| B44                          | B44        | 06/05/2026       | $y = 1.128x - 2.443$                   | 0.998          |
| R01                          | R01        | 07/05/2026       | $y = 1.103x - 2.879$                   | 0.997          |
| R02                          | R02        | 02/05/2026       | $y = 1.130x - 2.934$                   | 0.997          |
| R03                          | R03        | 05/05/2026       | $y = 1.124x - 2.685$                   | 0.996          |
| R04                          | R04        | 05/05/2026       | $y = 1.114x - 0.914$                   | 0.998          |
| R05                          | R05        | 06/05/2026       | $y = 1.059x + 0.368$                   | 0.998          |
| R06                          | R06        | 06/05/2026       | $y = 1.088x + 0.020$                   | 0.996          |
| R07                          | R07        | 06/05/2026       | $y = 1.122x - 2.809$                   | 0.996          |
| R08                          | R08        | 05/05/2026       | $y = 1.101x - 1.418$                   | 0.999          |
| R09                          | R09        | 05/05/2026       | $y = 1.084x + 0.212$                   | 0.997          |
| R10                          | R10        | 05/05/2026       | $y = 1.104x - 2.080$                   | 0.998          |
| R11                          | R11        | 06/05/2026       | $y = 1.112x - 2.545$                   | 0.999          |
| R12                          | R12        | 05/05/2026       | $y = 1.119x - 0.906$                   | 0.997          |
| R13                          | R13        | 05/05/2026       | $y = 1.116x - 3.391$                   | 0.997          |
| R14                          | R14        | 02/05/2026       | $y = 1.080x - 1.101$                   | 0.996          |
| R15                          | R15        | 06/05/2026       | $y = 1.095x - 0.708$                   | 0.998          |
| R16                          | R16        | 02/05/2026       | $y = 1.104x - 1.452$                   | 0.997          |
| R17                          | R17        | 06/05/2026       | $y = 1.102x - 1.932$                   | 0.998          |
| R18                          | R18        | 02/05/2026       | $y = 1.128x - 4.180$                   | 0.997          |
| R19                          | R19        | 02/05/2026       | $y = 1.090x - 3.037$                   | 0.996          |
| R20                          | R20        | 06/05/2026       | $y = 1.130x - 2.859$                   | 0.999          |

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บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด

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7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900

Tel : (662) 939-4370-72. Fax : (662) 513-4221. E-mail : sale@spscon.com, www.spscon.com

## High Volume PM-10 Air Sampler Calibration Report

Calibration Method : Multipoint Orifice Flow Transfer Standard

Model : TE 5025A

S/N : 3611

### Calibration Data

| High Volume PM-10 Data |            | Calibration Data |                                        |                |
|------------------------|------------|------------------|----------------------------------------|----------------|
| Recorder No.           | Blower No. | Date             | Actual Flowrate (ft <sup>3</sup> /min) | R <sup>2</sup> |
| B01                    | B01        | 05/05/2026       | $y = 1.058x - 0.266$                   | 0.999          |
| B02                    | B02        | 05/05/2026       | $y = 1.072x + 0.447$                   | 0.998          |
| B03                    | B03        | 06/05/2026       | $y = 1.022x + 1.142$                   | 0.997          |
| B04                    | B04        | 06/05/2026       | $y = 1.046x + 2.215$                   | 0.998          |
| B05                    | B05        | 05/05/2026       | $y = 1.067x - 0.683$                   | 0.998          |
| B06                    | B06        | 05/05/2026       | $y = 1.032x + 1.745$                   | 0.998          |
| B07                    | B07        | 06/05/2026       | $y = 1.036x + 3.671$                   | 0.999          |
| B08                    | B08        | 06/05/2026       | $y = 1.089x + 0.007$                   | 0.996          |
| B09                    | B09        | 06/05/2026       | $y = 1.110x - 4.169$                   | 0.997          |
| B10                    | B10        | 05/05/2026       | $y = 1.093x - 1.221$                   | 0.999          |
| B11                    | B11        | 06/05/2026       | $y = 1.097x - 2.675$                   | 0.999          |
| B12                    | B12        | 02/05/2026       | $y = 1.109x - 3.242$                   | 0.998          |
| B13                    | B13        | 05/05/2026       | $y = 1.100x - 2.210$                   | 0.998          |
| B14                    | B14        | 02/05/2026       | $y = 1.115x - 2.412$                   | 0.998          |
| B15                    | B15        | 05/05/2026       | $y = 1.112x - 1.692$                   | 0.999          |
| B16                    | B16        | 05/05/2026       | $y = 1.063x + 1.099$                   | 0.998          |
| B17                    | B17        | 06/05/2026       | $y = 1.076x + 0.306$                   | 0.996          |
| B18                    | B18        | 06/05/2026       | $y = 1.043x + 2.348$                   | 0.996          |
| B19                    | B19        | 05/05/2026       | $y = 1.059x + 0.713$                   | 0.999          |
| B20                    | B20        | 06/05/2026       | $y = 1.051x + 1.596$                   | 0.997          |
| B21                    | B21        | 05/05/2026       | $y = 1.080x - 1.280$                   | 0.997          |
| B22                    | B22        | 05/05/2026       | $y = 1.120x - 1.761$                   | 0.996          |
| B23                    | B23        | 06/05/2026       | $y = 1.112x - 2.877$                   | 0.998          |
| B24                    | B24        | 06/05/2026       | $y = 1.106x - 2.523$                   | 0.996          |
| B25                    | B25        | 05/05/2026       | $y = 1.010x + 1.468$                   | 0.997          |
| B26                    | B26        | 06/05/2026       | $y = 1.037x + 0.527$                   | 0.997          |
| B27                    | B27        | 06/05/2026       | $y = 1.083x - 2.178$                   | 0.996          |
| B28                    | B28        | 05/05/2026       | $y = 1.116x - 2.667$                   | 0.997          |
| B29                    | B29        | 05/05/2026       | $y = 1.038x + 0.547$                   | 0.997          |
| B30                    | B30        | 06/05/2026       | $y = 1.125x - 4.369$                   | 0.999          |
| B31                    | B31        | 02/05/2026       | $y = 1.045x + 3.293$                   | 0.999          |
| B32                    | B32        | 06/05/2026       | $y = 1.026x + 2.014$                   | 0.999          |
| B33                    | B33        | 06/05/2026       | $y = 1.095x - 1.577$                   | 0.996          |
| B34                    | B34        | 06/05/2026       | $y = 1.040x + 2.233$                   | 0.996          |



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## High Volume PM-10 Air Sampler Calibration Report

Calibration Method : Multipoint Orifice Flow Transfer Standard

Model : TE 5025A

S/N : 3611

### Calibration Data

| High Volume PM-10 Data |            | Calibration Data |                                        |                |
|------------------------|------------|------------------|----------------------------------------|----------------|
| Recorder No.           | Blower No. | Date             | Actual Flowrate (ft <sup>3</sup> /min) | R <sup>2</sup> |
| R01                    | R01        | 06/05/2026       | y = 1.023x+2.784                       | 0.996          |
| R02                    | R02        | 06/05/2026       | y = 1.060x+0.840                       | 0.997          |
| R03                    | R03        | 06/05/2026       | y = 1.086x-1.550                       | 0.998          |
| R04                    | R04        | 05/05/2026       | y = 1.117x-3.501                       | 0.999          |
| R05                    | R05        | 06/05/2026       | y = 1.075x-1.953                       | 0.997          |
| R06                    | R06        | 06/05/2026       | y = 1.113x-2.377                       | 0.996          |
| R07                    | R07        | 06/05/2026       | y = 1.104x-1.898                       | 0.997          |
| R08                    | R08        | 05/05/2026       | y = 1.119x-2.379                       | 0.998          |
| R09                    | R09        | 05/05/2026       | y = 1.044x+0.730                       | 0.998          |
| R10                    | R10        | 06/05/2026       | y = 1.103x-2.555                       | 0.997          |
| R11                    | R11        | 05/05/2026       | y = 1.021x+2.220                       | 0.998          |
| R12                    | R12        | 06/05/2026       | y = 1.033x+1.005                       | 0.999          |
| R13                    | R13        | 06/05/2026       | y = 1.112x-3.260                       | 0.997          |
| R14                    | R14        | 06/05/2026       | y = 1.074x-2.039                       | 0.999          |
| R15                    | R15        | 06/05/2026       | y = 1.093x-1.992                       | 0.996          |
| R16                    | R16        | 06/05/2026       | y = 1.113x-2.436                       | 0.997          |
| R17                    | R17        | 06/05/2026       | y = 1.086x-1.693                       | 0.998          |
| R18                    | R18        | 05/05/2026       | y = 1.100x-4.540                       | 0.999          |
| R19                    | R19        | 05/05/2026       | y = 1.067x+1.116                       | 0.997          |
| R20                    | R20        | 05/05/2026       | y = 1.077x-1.807                       | 0.999          |





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| CALIBRATION REPORT                                 |                                      |                   |                                |                                |            |
|----------------------------------------------------|--------------------------------------|-------------------|--------------------------------|--------------------------------|------------|
| SO <sub>2</sub> FLUORESCENT ANALYZER               |                                      |                   |                                |                                |            |
| DATE :                                             | 21 May 2026                          | BRAND :           | API                            | MODEL :                        | 100A       |
| NO.                                                | SO <sub>2</sub> -B03                 | SERIAL NO.        | 1846                           |                                |            |
| Calibrator (Dilution System)                       |                                      |                   |                                |                                |            |
| Brand                                              | : Teledyne                           |                   |                                | Model                          | : 700      |
| Last Cal. Date                                     | : 24 October 2025                    |                   |                                | Serial No.                     | : 421      |
| Reference Standard Gas                             |                                      |                   |                                |                                |            |
| Standard Gas                                       | : Sulphur Dioxide (SO <sub>2</sub> ) |                   |                                | Cylinder No.                   | : A00814SK |
| Certified Date                                     | : 21 June 2021                       | Expired Date      | : 21 June 2029                 | Cylinder Conc.                 | : 49.8 ppm |
| CALIBRATING CONDITION                              |                                      |                   |                                |                                |            |
| Pressure                                           | 1011                                 | mmbar             | Temp.                          | 24.5                           | °C         |
|                                                    |                                      |                   | % RH                           | 49                             |            |
| CALIBRATION SETTING                                |                                      |                   |                                |                                |            |
| Span                                               | Initial Reading (Before Adj.),PPB    |                   |                                | Final Reading (After Adj.),PPB |            |
| Set Point                                          | Expected Concentration               | Analyzer Response | %Dif                           | Analyzer Response              | Slope      |
| Zero                                               | 0                                    | 0.11              | -                              | 0                              | -          |
| SO <sub>2</sub> Span                               | 400.0                                | 400.2             | 0.050                          | 400.0                          | 1.012      |
| API Model 100A SO <sub>2</sub> Analyzer Check list |                                      |                   |                                |                                |            |
| Test Values                                        | Observed Value                       | Units             | Nominal Range                  |                                |            |
| RANGE                                              | 500                                  | PPB               | 0-500                          |                                |            |
| SAMPLE PRESS                                       | 28.4                                 | in-Hg             | 25-35                          |                                |            |
| SAMPLE FLOW                                        | 659                                  | cc/min            | 650 ± 10%                      |                                |            |
| PMT                                                | 103.2                                | mV                | -20-150 with Zero Air          |                                |            |
| UV LAMP                                            | 3027.8                               | mV                | 1000-4900                      |                                |            |
| STR. LGT                                           | 61.6                                 | PPB               | <100                           |                                |            |
| DRK PMT                                            | 63.1                                 | mV                | -50 - 200                      |                                |            |
| DRK LMP                                            | 57.7                                 | mV                | -50 - 200                      |                                |            |
| HVPS                                               | 669                                  | V                 | 550-900 constant               |                                |            |
| DCPS                                               | 2520                                 | mV                | 2500 ± 200                     |                                |            |
| RCELL TEMP                                         | 50.1                                 | °C                | 50 ± 1                         |                                |            |
| BOX TEMP                                           | 29.2                                 | °C                | 5-40                           |                                |            |
| PMT TEMP                                           | 7.3                                  | °C                | 7 ± 2.0                        |                                |            |
| SO <sub>2</sub> Span Conc                          | 400                                  | PPB               | 20-20,000                      |                                |            |
| SO <sub>2</sub> Slope                              | 1.012                                | -                 | 1.0 ± 0.3                      |                                |            |
| SO <sub>2</sub> Offset                             | 21.9                                 | mV                | <250                           |                                |            |
| Stability at Zero                                  | 0.1                                  | PPB               | <0.2                           |                                |            |
| Stability at Span                                  | 0.2                                  | PPB               | 0.5% of reading (above 50 ppb) |                                |            |



บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด

S.P.S. CONSULTING SERVICE CO., LTD.

7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจตุจักร เขตจตุจักร กรุงเทพฯ 10900

7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900

Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com, www.spscon.com

| CALIBRATION REPORT                                 |                                   |                             |                                |                                |       |
|----------------------------------------------------|-----------------------------------|-----------------------------|--------------------------------|--------------------------------|-------|
| SO <sub>2</sub> FLUORESCENT ANALYZER               |                                   |                             |                                |                                |       |
| DATE :                                             | 21 May 2026                       | BRAND :                     | API                            | MODEL :                        | 100E  |
| NO.                                                | SO <sub>2</sub> -B04              |                             |                                | SERIAL NO.                     | 3159  |
| Calibrator (Dilution System)                       |                                   |                             |                                |                                |       |
| Brand : Teledyne                                   |                                   |                             | Model : 700                    |                                |       |
| Last Cal. Date : 24 October 2025                   |                                   |                             | Serial No. : 421               |                                |       |
| Reference Standard Gas                             |                                   |                             |                                |                                |       |
| Standard Gas : Sulphur Dioxide (SO <sub>2</sub> )  |                                   |                             | Cylinder No. : A00814SK        |                                |       |
| Certified Date : 21 June 2021                      |                                   | Expired Date : 21 June 2029 |                                | Cylinder Conc. : 49.8 ppm      |       |
| CALIBRATING CONDITION                              |                                   |                             |                                |                                |       |
| Pressure                                           | 1011                              | mbar                        | Temp.                          | 24.5                           | °C    |
|                                                    |                                   |                             | % RH                           | 49                             |       |
| CALIBRATION SETTING                                |                                   |                             |                                |                                |       |
| Span                                               | Initial Reading (Before Adj.),PPB |                             |                                | Final Reading (After Adj.),PPB |       |
| Set Point:                                         | Expected Concentration            | Analyzer Response           | %Dif                           | Analyzer Response              | Slope |
| Zero                                               | 0                                 | -0.10                       | -                              | 0                              | -     |
| SO <sub>2</sub> Span                               | 400.0                             | 399.9                       | -0.025                         | 400.0                          | 1.009 |
| API Model 100E SO <sub>2</sub> Analyzer Check list |                                   |                             |                                |                                |       |
| Test Values                                        | Observed Value                    | Units                       | Nominal Range                  |                                |       |
| RANGE                                              | 500                               | PPB                         | 0-500                          |                                |       |
| SAMPLE PRESS                                       | 28.6                              | in-Hg                       | 25-35                          |                                |       |
| SAMPLE FLOW                                        | 658                               | cc/min                      | 650 ± 10%                      |                                |       |
| PMT                                                | 103.4                             | mV                          | -20-150 with Zero Air          |                                |       |
| UV LAMP                                            | 3038.9                            | mV                          | 1000-4900                      |                                |       |
| STR. LGT                                           | 61.7                              | PPB                         | <100                           |                                |       |
| DRK PMT                                            | 63.2                              | mV                          | -50 - 200                      |                                |       |
| DRK LMP                                            | 57.9                              | mV                          | -50 - 200                      |                                |       |
| HVPS                                               | 673                               | V                           | 550-900 constant               |                                |       |
| DCPS                                               | 2526                              | mV                          | 2500 ± 200                     |                                |       |
| RCCELL TEMP                                        | 50.4                              | °C                          | 50 ± 1                         |                                |       |
| BOX TEMP                                           | 29.1                              | °C                          | 5-40                           |                                |       |
| PMT TEMP                                           | 7.2                               | °C                          | 7 ± 2.0                        |                                |       |
| SO <sub>2</sub> Span Conc                          | 400                               | PPB                         | 20-20,000                      |                                |       |
| SO <sub>2</sub> Slope                              | 1.009                             | -                           | 1.0 ± 0.3                      |                                |       |
| SO <sub>2</sub> Offset                             | 22.2                              | mV                          | <250                           |                                |       |
| Stability at Zero                                  | 0.1                               | PPB                         | <0.2                           |                                |       |
| Stability at Span                                  | 0.2                               | PPB                         | 0.5% of reading (above 50 ppb) |                                |       |



บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด  
S.P.S. CONSULTING SERVICE CO., LTD.  
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chaluchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sales@spscon.com, www.spscon.com

| CALIBRATION REPORT                                 |                                   |                             |                                |                                |       |
|----------------------------------------------------|-----------------------------------|-----------------------------|--------------------------------|--------------------------------|-------|
| SO <sub>2</sub> FLUORESCENT ANALYZER               |                                   |                             |                                |                                |       |
| DATE :                                             | 21 May 2026                       | BRAND :                     | API                            | MODEL :                        | 100E  |
| NO.                                                | SO <sub>2</sub> -B05              | SERIAL NO.                  | 3270                           |                                |       |
| Calibrator (Dilution System)                       |                                   |                             |                                |                                |       |
| Brand : Teledyne                                   |                                   |                             | Model : 700                    |                                |       |
| Last Cal. Date : 24 October 2025                   |                                   |                             | Serial No. : 421               |                                |       |
| Reference Standard Gas                             |                                   |                             |                                |                                |       |
| Standard Gas : Sulphur Dioxide (SO <sub>2</sub> )  |                                   |                             | Cylinder No. : A00814SK        |                                |       |
| Certified Date : 21 June 2021                      |                                   | Expired Date : 21 June 2029 |                                | Cylinder Conc. : 49.8 ppm      |       |
| CALIBRATING CONDITION                              |                                   |                             |                                |                                |       |
| Pressure                                           | 1011                              | mmbar                       | Temp.                          | 24.5                           | °C    |
|                                                    |                                   |                             | % RH                           | 49                             |       |
| CALIBRATION SETTING                                |                                   |                             |                                |                                |       |
| Span                                               | Initial Reading (Before Adj.),PPB |                             |                                | Final Reading (After Adj.),PPB |       |
| Set Point                                          | Expected Concentration            | Analyzer Response           | %Dif                           | Analyzer Response              | Slope |
| Zero                                               | 0                                 | 0.10                        | -                              | 0                              | -     |
| SO <sub>2</sub> Span                               | 400.0                             | 400.1                       | 0.025                          | 400.0                          | 1.011 |
| API Model 100E SO <sub>2</sub> Analyzer Check list |                                   |                             |                                |                                |       |
| Test Values                                        | Observed Value                    | Units                       | Nominal Range                  |                                |       |
| RANGE                                              | 500                               | PPB                         | 0-500                          |                                |       |
| SAMPLE PRESS                                       | 28.7                              | in-Hg                       | 25-35                          |                                |       |
| SAMPLE FLOW                                        | 655                               | cc/min                      | 650 ± 10%                      |                                |       |
| PMT                                                | 103.1                             | mV                          | -20-150 with Zero Air          |                                |       |
| UV LAMP                                            | 3020.5                            | mV                          | 1000-4900                      |                                |       |
| STR. LGT                                           | 61.8                              | PPB                         | <100                           |                                |       |
| DRK PMT                                            | 63.3                              | mV                          | -50 - 200                      |                                |       |
| DRK LMP                                            | 58.1                              | mV                          | -50 - 200                      |                                |       |
| HVPS                                               | 672                               | V                           | 550-900 constant               |                                |       |
| DCPS                                               | 2523                              | mV                          | 2500 ± 200                     |                                |       |
| RCCELL TEMP                                        | 50.2                              | °C                          | 50 ± 1                         |                                |       |
| BOX TEMP                                           | 29.3                              | °C                          | 5-40                           |                                |       |
| PMT TEMP                                           | 7.4                               | °C                          | 7 ± 2.0                        |                                |       |
| SO <sub>2</sub> Span Conc                          | 400                               | PPB                         | 20-20,000                      |                                |       |
| SO <sub>2</sub> Slope                              | 1.011                             | -                           | 1.0 ± 0.3                      |                                |       |
| SO <sub>2</sub> Offset                             | 22.0                              | mV                          | <250                           |                                |       |
| Stability at Zero                                  | 0.1                               | PPB                         | <0.2                           |                                |       |
| Stability at Span                                  | 0.2                               | PPB                         | 0.5% of reading (above 50 ppb) |                                |       |





บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด

S.P.S. CONSULTING SERVICE CO., LTD.

7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอยพล เขตจตุจักร กรุงเทพฯ 10900

7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900

Tel : (662) 939-4370-72 Fax : (662) 513-4221 E-mail : sale@spscon.com, www.spscon.com

| CALIBRATION REPORT                                 |                                      |                   |                                |                                |            |
|----------------------------------------------------|--------------------------------------|-------------------|--------------------------------|--------------------------------|------------|
| SO <sub>2</sub> FLUORESCENT ANALYZER               |                                      |                   |                                |                                |            |
| DATE :                                             | 21 May 2026                          | BRAND :           | API                            | MODEL :                        | 100E       |
| NO.                                                | SO <sub>2</sub> -B06                 |                   |                                | SERIAL NO.                     | 3430       |
| Calibrator (Dilution System)                       |                                      |                   |                                |                                |            |
| Brand                                              | : Teledyne                           |                   |                                | Model                          | : 700      |
| Last Cal. Date                                     | : 24 October 2025                    |                   |                                | Serial No.                     | : 421      |
| Reference Standard Gas                             |                                      |                   |                                |                                |            |
| Standard Gas                                       | : Sulphur Dioxide (SO <sub>2</sub> ) |                   |                                | Cylinder No.                   | : A00814SK |
| Certified Date                                     | : 21 June 2021                       | Expired Date      | : 21 June 2029                 | Cylinder Conc.                 | : 49.8 ppm |
| CALIBRATING CONDITION                              |                                      |                   |                                |                                |            |
| Pressure                                           | 1011                                 | mmbar             | Temp.                          | 24.5                           | °C         |
|                                                    |                                      |                   | % RH                           | 49                             |            |
| CALIBRATION SETTING                                |                                      |                   |                                |                                |            |
| Span                                               | Initial Reading (Before Adj.),PPB    |                   |                                | Final Reading (After Adj.),PPB |            |
| Set Point                                          | Expected Concentration               | Analyzer Response | %Dif                           | Analyzer Response              | Slope      |
| Zero                                               | 0                                    | 0.10              | -                              | 0                              | -          |
| SO <sub>2</sub> Span                               | 400.0                                | 399.8             | -0.050                         | 400.0                          | 1.008      |
| API Model 100E SO <sub>2</sub> Analyzer Check list |                                      |                   |                                |                                |            |
| Test Values                                        | Observed Value                       | Units             | Nominal Range                  |                                |            |
| RANGE                                              | 500                                  | PPB               | 0-500                          |                                |            |
| SAMPLE PRESS                                       | 28.5                                 | in-Hg             | 25-35                          |                                |            |
| SAMPLE FLOW                                        | 656                                  | cc/min            | 650 ± 10%                      |                                |            |
| PMT                                                | 103.3                                | mV                | -20-150 with Zero Air          |                                |            |
| UV LAMP                                            | 3032.7                               | mV                | 1000-4900                      |                                |            |
| STR. LGT                                           | 61.9                                 | PPB               | <100                           |                                |            |
| DRK PMT                                            | 63.4                                 | mV                | -50 - 200                      |                                |            |
| DRK LMP                                            | 58.2                                 | mV                | -50 - 200                      |                                |            |
| HVPS                                               | 670                                  | V                 | 550-900 constant               |                                |            |
| DCPS                                               | 2521                                 | mV                | 2500 ± 200                     |                                |            |
| RCCELL TEMP                                        | 50.3                                 | °C                | 50 ± 1                         |                                |            |
| BOX TEMP                                           | 29.4                                 | °C                | 5-40                           |                                |            |
| PMT TEMP                                           | 7.1                                  | °C                | 7 ± 2.0                        |                                |            |
| SO <sub>2</sub> Span Conc                          | 400                                  | PPB               | 20-20,000                      |                                |            |
| SO <sub>2</sub> Slope                              | 1.008                                | -                 | 1.0 ± 0.3                      |                                |            |
| SO <sub>2</sub> Offset                             | 22.1                                 | mV                | <250                           |                                |            |
| Stability at Zero                                  | 0.1                                  | PPB               | <0.2                           |                                |            |
| Stability at Span                                  | 0.2                                  | PPB               | 0.5% of reading (above 50 ppb) |                                |            |



บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด  
S.P.S. CONSULTING SERVICE CO., LTD.  
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72 Fax : (662) 513-4221, E-mail : sale@spscon.com.. www.spscon.com

| CALIBRATION REPORT                                               |                                   |                   |                            |                                |            |    |
|------------------------------------------------------------------|-----------------------------------|-------------------|----------------------------|--------------------------------|------------|----|
| CHEMILUMINESCENT NO / NO <sub>2</sub> / NO <sub>x</sub> ANALYZER |                                   |                   |                            |                                |            |    |
| DATE :                                                           | 21 May 2026                       | BRAND :           | API                        | MODEL :                        | 200E       |    |
| NO.                                                              | NOX-B05                           | SERIAL NO.        | 2284                       |                                |            |    |
| Calibrator (Dilution System)                                     |                                   |                   |                            |                                |            |    |
| Brand                                                            | : Teledyne                        |                   |                            | Model                          | : 700      |    |
| Last Cal. Date                                                   | : 24 October 2025                 |                   |                            | Serial No.                     | : 421      |    |
| Reference Standard Gas                                           |                                   |                   |                            |                                |            |    |
| Standard Gas                                                     | : Nitric Oxide (NO)               |                   |                            | Cylinder No.                   | : A00674SV |    |
| Certified Date                                                   | : 12 March 2025                   | Expired Date      | : 12 March 2028            | Cylinder Conc.                 | : 48.7 ppm |    |
| CALIBRATING CONDITION                                            |                                   |                   |                            |                                |            |    |
| Pressure                                                         | 1011                              | mmbar             | Temp.                      | 24.5                           | °C         |    |
| % RH                                                             |                                   |                   |                            |                                |            | 49 |
| CALIBRATION SETTING                                              |                                   |                   |                            |                                |            |    |
| Span                                                             | Initial Reading (Before Adj.),PPB |                   |                            | Final Reading (After Adj.),PPB |            |    |
| Set Point                                                        | Expected Concentration            | Analyzer Response | %Dif                       | Analyzer Response              | Slope      |    |
| Zero                                                             | 0                                 | -0.10             | -                          | 0                              | -          |    |
| NO Span                                                          | 400                               | 399.6             | -0.100                     | 400.0                          | 1.004      |    |
| NO <sub>x</sub> Span                                             | 400                               | 399.9             | -0.025                     | 400.0                          | 1.008      |    |
| API Model 200E NO <sub>x</sub> Analyzer Check List               |                                   |                   |                            |                                |            |    |
| Test Values                                                      | Observed Value                    | Units             | Nominal Range              |                                |            |    |
| RANGE                                                            | 500                               | PPB               | 500 standard               |                                |            |    |
| STABILITY (Zero Gas)                                             | 0.1                               | PPB               | < 2 with zero air          |                                |            |    |
| SAMPLE FLOW                                                      | 509                               | cc/min            | 500 ± 50                   |                                |            |    |
| OZONE FLOW                                                       | 79                                | cc/min            | 80 ± 15                    |                                |            |    |
| PMT                                                              | 103.4                             | mV                | -20 - 150                  |                                |            |    |
| AZERO                                                            | 94.2                              | mV                | -20 - 150                  |                                |            |    |
| HVPS                                                             | 671                               | V                 | 420 - 900 constant         |                                |            |    |
| RCELL TEMP                                                       | 50.2                              | °C                | 50 ± 1                     |                                |            |    |
| BOX TEMP                                                         | 21.9                              | °C                | 8 - 48                     |                                |            |    |
| PMT TEMP                                                         | 7.3                               | °C                | 7 ± 2                      |                                |            |    |
| MOLY TEMP                                                        | 314.9                             | °C                | 315 ± 5                    |                                |            |    |
| RCELL PRESS                                                      | 8.3                               | IN-Hg-A           | 2 - 10 constant            |                                |            |    |
| SAMPLE PRESS                                                     | 28.5                              | IN-Hg-A           | 25 - 30 constant           |                                |            |    |
| NO Span Conc                                                     | 400                               | PPB               | 20 - 20,000                |                                |            |    |
| NO <sub>x</sub> Span Conc                                        | 400                               | PPB               | 20 - 20,000                |                                |            |    |
| NO Slope                                                         | 1.004                             | -                 | 1.0 ± 0.3                  |                                |            |    |
| NO <sub>x</sub> Slope                                            | 1.008                             | -                 | 1.0 ± 0.3                  |                                |            |    |
| NO Offset                                                        | 1.0                               | mV                | -20 to +150                |                                |            |    |
| NO <sub>x</sub> Offset                                           | 0.6                               | mV                | -20 to 150                 |                                |            |    |
| Stability at Zero                                                | 0.1                               | PPB               | < 0.2                      |                                |            |    |
| Stability at Span                                                | 0.2                               | PPB               | < 2 ppb @ 400 ppb span gas |                                |            |    |





บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด  
S.P.S. CONSULTING SERVICE CO., LTD.  
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com, www.spscon.com

| CALIBRATION REPORT                                               |                                   |                   |                            |                                |            |    |
|------------------------------------------------------------------|-----------------------------------|-------------------|----------------------------|--------------------------------|------------|----|
| CHEMILUMINESCENT NO / NO <sub>2</sub> / NO <sub>x</sub> ANALYZER |                                   |                   |                            |                                |            |    |
| DATE :                                                           | 21 May 2026                       | BRAND :           | API                        | MODEL :                        | 200A       |    |
| NO.                                                              | NOX-B14                           | SERIAL NO.        | 212                        |                                |            |    |
| Calibrator (Dilution System)                                     |                                   |                   |                            |                                |            |    |
| Brand                                                            | : Teledyne                        |                   |                            | Model                          | : 700      |    |
| Last Cal. Date                                                   | : 24 October 2025                 |                   |                            | Serial No.                     | : 421      |    |
| Reference Standard Gas                                           |                                   |                   |                            |                                |            |    |
| Standard Gas                                                     | : Nitric Oxide (NO)               |                   |                            | Cylinder No.                   | : A00674SV |    |
| Certified Date                                                   | : 12 March 2025                   | Expired Date      | : 12 March 2028            | Cylinder Conc.                 | : 48.7 ppm |    |
| CALIBRATING CONDITION                                            |                                   |                   |                            |                                |            |    |
| Pressure                                                         | 1011                              | mmbar             | Temp.                      | 24.5                           | °C         |    |
| % RH                                                             |                                   |                   |                            |                                |            | 49 |
| CALIBRATION SETTING                                              |                                   |                   |                            |                                |            |    |
| Span                                                             | Initial Reading (Before Adj.),PPB |                   |                            | Final Reading (After Adj.),PPB |            |    |
| Set Point                                                        | Expected Concentration            | Analyzer Response | %Dif                       | Analyzer Response              | Slope      |    |
| Zero                                                             | 0                                 | 0.11              | -                          | 0                              | -          |    |
| NO Span                                                          | 400                               | 399.9             | -0.025                     | 400.0                          | 1.009      |    |
| NO <sub>x</sub> Span                                             | 400                               | 400.2             | 0.050                      | 400.0                          | 1.012      |    |
| API Model 200A NO <sub>x</sub> Analyzer Check List               |                                   |                   |                            |                                |            |    |
| Test Values                                                      | Observed Value                    | Units             | Nominal Range              |                                |            |    |
| RANGE                                                            | 500                               | PPB               | 500 standard               |                                |            |    |
| STABILITY (Zero Gas)                                             | 0.1                               | PPB               | < 2 with zero air          |                                |            |    |
| SAMPLE FLOW                                                      | 505                               | cc/min            | 500 ± 50                   |                                |            |    |
| OZONE FLOW                                                       | 78                                | cc/min            | 80 ± 15                    |                                |            |    |
| PMT                                                              | 103.3                             | mV                | -20 - 150                  |                                |            |    |
| AZERO                                                            | 94.1                              | mV                | -20 - 150                  |                                |            |    |
| HVPS                                                             | 672                               | V                 | 420 - 900 constant         |                                |            |    |
| RCELL TEMP                                                       | 50.3                              | °C                | 50 ± 1                     |                                |            |    |
| BOX TEMP                                                         | 29.4                              | °C                | 8 - 48                     |                                |            |    |
| PMT TEMP                                                         | 7.2                               | °C                | 7 ± 2                      |                                |            |    |
| MOLY TEMP                                                        | 314.8                             | °C                | 315 ± 5                    |                                |            |    |
| RCELL PRESS                                                      | 8.5                               | IN-Hg-A           | 2 - 10 constant            |                                |            |    |
| SAMPLE PRESS                                                     | 28.7                              | IN-Hg-A           | 25 - 30 constant           |                                |            |    |
| NO Span Conc                                                     | 400                               | PPB               | 20 - 20,000                |                                |            |    |
| NO <sub>x</sub> Span Conc                                        | 400                               | PPB               | 20 - 20,000                |                                |            |    |
| NO Slope                                                         | 1.009                             | -                 | 1.0 ± 0.3                  |                                |            |    |
| NO <sub>x</sub> Slope                                            | 1.012                             | -                 | 1.0 ± 0.3                  |                                |            |    |
| NO Offset                                                        | 1.4                               | mV                | -20 to +150                |                                |            |    |
| NO <sub>x</sub> Offset                                           | 0.9                               | mV                | -20 to 150                 |                                |            |    |
| Stability at Zero                                                | 0.1                               | PPB               | < 0.2                      |                                |            |    |
| Stability at Span                                                | 0.2                               | PPB               | < 2 ppb @ 400 ppb span gas |                                |            |    |



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7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900

Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com, www.spscon.com

## CALIBRATION REPORT

### CHEMILUMINESCENT NO / NO<sub>2</sub> / NO<sub>x</sub> ANALYZER

DATE : 21 May 2026

BRAND : API

MODEL : 200E

NO. NOX-B16

SERIAL NO. 249

#### Calibrator (Dilution System)

Brand : Teledyne Model : 700  
Last Cal. Date : 24 October 2025 Serial No. : 421

#### Reference Standard Gas

Standard Gas : Nitric Oxide (NO) Cylinder No. : A00674SV  
Certified Date : 12 March 2025 Expired Date : 12 March 2028 Cylinder Conc. : 48.7 ppm

#### CALIBRATING CONDITION

Pressure 1011 mmbar

Temp. 24.5 °C

% RH 49

#### CALIBRATION SETTING

| Span<br>Set Point    | Initial Reading (Before Adj.),PPB |                   |        | Final Reading (After Adj.),PPB |       |
|----------------------|-----------------------------------|-------------------|--------|--------------------------------|-------|
|                      | Expected Concentration            | Analyzer Response | %Dif   | Analyzer Response              | Slope |
| Zero                 | 0                                 | 0.10              | -      | 0                              | -     |
| NO Span              | 400                               | 399.7             | -0.075 | 400.0                          | 1.007 |
| NO <sub>x</sub> Span | 400                               | 400.1             | 0.025  | 400.0                          | 1.010 |

#### API Model 200E NO<sub>x</sub> Analyzer Check List

| Test Values               | Observed Value | Units   | Nominal Range              |
|---------------------------|----------------|---------|----------------------------|
| RANGE                     | 500            | PPB     | 500 standard               |
| STABILITY (Zero Gas)      | 0.1            | PPB     | < 2 with zero air          |
| SAMPLE FLOW               | 507            | cc/min  | 500 ± 50                   |
| OZONE FLOW                | 78             | cc/min  | 80 ± 15                    |
| PMT                       | 103.1          | mV      | -20 - 150                  |
| AZERO                     | 93.8           | mV      | -20 - 150                  |
| HVPS                      | 673            | V       | 420 - 900 constant         |
| RCELL TEMP                | 50.4           | °C      | 50 ± 1                     |
| BOX TEMP                  | 29.2           | °C      | 8 - 48                     |
| PMT TEMP                  | 8.2            | °C      | 7 ± 2                      |
| MOLY TEMP                 | 315.1          | °C      | 315 ± 5                    |
| RCELL PRESS               | 8.2            | IN-Hg-A | 2 - 10 constant            |
| SAMPLE PRESS              | 28.4           | IN-Hg-A | 25 - 30 constant           |
| NO Span Conc              | 400            | PPB     | 20 - 20,000                |
| NO <sub>x</sub> Span Conc | 400            | PPB     | 20 - 20,000                |
| NO Slope                  | 1.007          | -       | 1.0 ± 0.3                  |
| NO <sub>x</sub> Slope     | 1.010          | -       | 1.0 ± 0.3                  |
| NO Offset                 | 1.2            | mV      | -20 to +150                |
| NO <sub>x</sub> Offset    | 0.8            | mV      | -20 to 150                 |
| Stability at Zero         | 0.1            | PPB     | < 0.2                      |
| Stability at Span         | 0.2            | PPB     | < 2 ppb @ 400 ppb span gas |





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## CALIBRATION REPORT

### CHEMILUMINESCENT NO / NO<sub>2</sub> / NO<sub>x</sub> ANALYZER

DATE : 21 May 2026

BRAND : API

MODEL : 200A

NO. NOX-B17

SERIAL NO. 1977

#### Calibrator (Dilution System)

Brand : Teledyne Model : 700  
Last Cal. Date : 24 October 2025 Serial No. : 421

#### Reference Standard Gas

Standard Gas : Nitric Oxide (NO) Cylinder No. : A00674SV  
Certified Date : 12 March 2025 Expired Date : 12 March 2028 Cylinder Conc. : 48.7 ppm

#### CALIBRATING CONDITION

Pressure 1011 mmbar Temp. 24.5 °C % RH 49

#### CALIBRATION SETTING

| Span<br>Set Point    | Initial Reading (Before Adj.), PPB |                   |       | Final Reading (After Adj.), PPB |       |
|----------------------|------------------------------------|-------------------|-------|---------------------------------|-------|
|                      | Expected Concentration             | Analyzer Response | %Dif  | Analyzer Response               | Slope |
| Zero                 | 0                                  | 0.10              | -     | 0                               | -     |
| NO Span              | 400                                | 400.1             | 0.025 | 400.0                           | 1.010 |
| NO <sub>x</sub> Span | 400                                | 400.2             | 0.050 | 400.0                           | 1.013 |

#### API Model 200A NO<sub>x</sub> Analyzer Check List

| Test Values               | Observed Value | Units   | Nominal Range              |
|---------------------------|----------------|---------|----------------------------|
| RANGE                     | 500            | PPB     | 500 standard               |
| STABILITY (Zero Gas)      | 0.1            | PPB     | < 2 with zero air          |
| SAMPLE FLOW               | 510            | cc/min  | 500 ± 50                   |
| OZONE FLOW                | 79             | cc/min  | 80 ± 15                    |
| PMT                       | 103.2          | mV      | -20 - 150                  |
| AZERO                     | 93.9           | mV      | -20 - 150                  |
| HVPS                      | 670            | V       | 420 - 900 constant         |
| RCELL TEMP                | 50.1           | °C      | 50 ± 1                     |
| BOX TEMP                  | 29.3           | °C      | 8 - 48                     |
| PMT TEMP                  | 7.4            | °C      | 7 ± 2                      |
| MOLY TEMP                 | 315.2          | °C      | 315 ± 5                    |
| RCELL PRESS               | 8.4            | IN-Hg-A | 2 - 10 constant            |
| SAMPLE PRESS              | 28.6           | IN-Hg-A | 25 - 30 constant           |
| NO Span Conc              | 400            | PPB     | 20 - 20,000                |
| NO <sub>x</sub> Span Conc | 400            | PPB     | 20 - 20,000                |
| NO Slope                  | 1.010          | -       | 1.0 ± 0.3                  |
| NO <sub>x</sub> Slope     | 1.013          | -       | 1.0 ± 0.3                  |
| NO Offset                 | 1.5            | mV      | -20 to +150                |
| NO <sub>x</sub> Offset    | 0.9            | mV      | -20 to 150                 |
| Stability at Zero         | 0.1            | PPB     | < 0.2                      |
| Stability at Span         | 0.2            | PPB     | < 2 ppb @ 400 ppb span gas |



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7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900

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## CALIBRATION REPORT

### O<sub>3</sub> ANALYZER

DATE :

21 May 2026

SERIAL NO.

00402425091300045757-O3

NO.

O3-DG-B05

AQMS-06

### Calibrator (Primary Ozone Generator)

Brand : TELEDYDE

Model : T703

Serial No. : 412

Last Cal. Date : 01 September 2025

Expired Date : 01 September 2026

### CALIBRATING CONDITION

Pressure

1011

mmbar

Temp.

24.5

°C

% RH

49

### CALIBRATION SETTING

| Span                | Initial Reading (Before Adj.),PPB |                   |        | Final Reading (After Adj.),PPB |
|---------------------|-----------------------------------|-------------------|--------|--------------------------------|
|                     | Expected Concentration            | Analyzer Response | %Dif   | Analyzer Response Slope        |
| Zero                | 0                                 | 0.10              | -      | 0                              |
| O <sub>3</sub> Span | 400                               | 399.7             | -0.075 | 400                            |





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7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900

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## CALIBRATION REPORT

### O<sub>3</sub> ANALYZER

DATE : 21 May 2026

SERIAL NO. 00402425091300044785-O3

NO. O3-DG-B08

AQMS-06

### Calibrator (Primary Ozone Generator)

Brand : TELEDYDE

Model : T703

Serial No. : 412

Last Cal. Date : 01 September 2025

Expired Date : 01 September 2026

### CALIBRATING CONDITION

Pressure 1011 mmbar

Temp. 24.5 °C

% RH 49

### CALIBRATION SETTING

| Span                | Initial Reading (Before Adj.),PPB |                   |        | Final Reading (After Adj.),PPB |
|---------------------|-----------------------------------|-------------------|--------|--------------------------------|
| Set Point           | Expected Concentration            | Analyzer Response | %Dif   | Analyzer Response Slope        |
| Zero                | 0                                 | -0.10             | -      | 0                              |
| O <sub>3</sub> Span | 400                               | 399.8             | -0.050 | 400                            |



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7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chaluchak, Bangkok 10900

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## CALIBRATION REPORT

### O<sub>3</sub> ANALYZER

DATE : 21 May 2026

SERIAL NO. 00402425091300145887-O3

NO. O3-DG-B09

AQMS-06

### Calibrator (Primary Ozone Generator)

|                |                     |              |                     |            |       |
|----------------|---------------------|--------------|---------------------|------------|-------|
| Brand          | : TELEDYDE          | Model        | : T703              | Serial No. | : 412 |
| Last Cal. Date | : 01 September 2025 | Expired Date | : 01 September 2026 |            |       |

### CALIBRATING CONDITION

Pressure 1011 mmbar

Temp. 24.5 °C

% RH 49

### CALIBRATION SETTING

| Span<br>Set Point   | Initial Reading (Before Adj.),PPB |                   |       | Final Reading (After Adj.),PPB |
|---------------------|-----------------------------------|-------------------|-------|--------------------------------|
|                     | Expected Concentration            | Analyzer Response | %Dif  | Analyzer Response Slope        |
| Zero                | 0                                 | 0.11              | -     | 0                              |
| O <sub>3</sub> Span | 400                               | 400.2             | 0.050 | 400                            |



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7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900

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## CALIBRATION REPORT

### O<sub>3</sub> ANALYZER

DATE :

21 May 2026

SERIAL NO.

00402425091300045188-O3

NO.

O3-DG-B11

AQMS-06

### Calibrator (Primary Ozone Generator)

Brand : TELEDYDE

Model : T703

Serial No. : 412

Last Cal. Date : 01 September 2025

Expired Date : 01 September 2026

### CALIBRATING CONDITION

Pressure

1011

mmbar

Temp.

24.5

°C

% RH

49

### CALIBRATION SETTING

| Span                | Initial Reading (Before Adj.), PPB |                   |        | Final Reading (After Adj.), PPB |
|---------------------|------------------------------------|-------------------|--------|---------------------------------|
| Set Point           | Expected Concentration             | Analyzer Response | %Dif   | Analyzer Response Slope         |
| Zero                | 0                                  | 0.10              | -      | 0                               |
| O <sub>3</sub> Span | 400                                | 399.9             | -0.025 | 400                             |





CERTIFICATE No : 26M2266  
REFERENCE No : 80204-1

PAGE : 1 OF 2

## Certificate of Calibration

**EQUIPMENT** : DIGITAL BALANCE  
**MANUFACTURER** : METTLER TOLEDO  
**MODEL** : XS105DU  
**SERIAL No** : 1126422905  
**ID No** : BA 05/50  
**CONDITION AS RECEIVED** : USED ITEM  
**SUBMITTED BY** : S.P.S. CONSULTING SERVICE CO., LTD.  
7 SOI PHAHOLYOTHIN 24, PHAHOLYOTHIN RD.,  
JOMPOL, CHATUCHAK, BANGKOK 10900

**CALIBRATED BY** : SUCHAT S.

**CALIBRATION DATE** : 05-Mar-26

**APPROVED BY** : [REDACTED]

**ISSUED DATE** : 06-Mar-26

**RECEIVED DATE** : 05-Mar-26







CERTIFICATE No : 26M2266

PAGE : 2 OF 2

## Calibration Report

EQUIPMENT : DIGITAL BALANCE MODEL : XS105DU  
MANUFACTURER : METTLER TOLEDO S/N : 1126422905  
ID No : BA 05/50 RECEIVED DATE : 05-Mar-26  
AIR PRESSURE : 1004mbar  $\pm$  1mbar CALIBRATION DATE : 05-Mar-26  
AMBIENT TEMPERATURE : 25° C  $\pm$  1° C RELATIVE HUMIDITY : 50 %RH  $\pm$  10 % RH

### CONDITION OF THIS RESULTS OF CALIBRATION

1. THIS INSTRUMENT WAS CALIBRATED BY ACCORDING TO UKAS LAB 14 EDITION 6:2019 BY USING KNOWN WEIGHT STANDARD WEIGHT. THE BALANCE WAS NOT ADJUSTED BEFORE CALIBRATION. THE BALANCE HAS NO ZERO TRACKING FUNCTION. REPEATABILITY WAS MEASURED BY USING 10 REPEATED MEASUREMENTS. LINEARITY WAS MEASURED COVERING 10 POINTS, EVENLY SPREAD OVER THE RANGE. THE INSTRUMENT WAS SET ZERO BEFORE PERFORMING THE LINEARITY TEST. OFF-CENTER LOADING WAS MEASURED BY USING STANDARD WEIGHTS PLACED ON THE PAN AND MOVED TO VARIOUS POSITIONS ON THE PAN.

### 2. REFERENCE STANDARD INSTRUMENTS :-

| INSTRUMENT             | MODEL | SERIAL No | CERTIFICATE No | DUE DATE  |
|------------------------|-------|-----------|----------------|-----------|
| 1) STANDARD WEIGHT SET | E2    | QK-I-151  | C02250116      | 28-Jan-27 |
| 2) STANDARD WEIGHT     | E2    | 15843     | C02250117      | 29-Jan-27 |

3. THE CERTIFICATE IS VALID FOR THE ITEM CALIBRATED AS SHOWN ON THE DATE AND PLACE OF CALIBRATION ONLY.

4. THIS RESULT EXCLUDE LONG TERM STABILITY OF THE UNIT UNDER CALIBRATION.

5. THIS CERTIFICATE IS TRACEABLE TO THE INTERNATIONAL SYSTEM OF UNIT MAINTAINED AT:-

- NATIONAL INSTITUTE OF METROLOGY (THAILAND)

### RESULT OF CALIBRATION :- WITHOUT ADJUSTMENT

1. ZERO SETTING FUNCTION : NORMAL

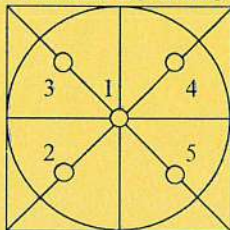
2. TARE FUNCTION : NORMAL

3. REPEATABILITY OF READING AT 120 g WAS 0.000055 g

4. DEPARTURE FROM NOMINAL VALUE/ LINEARITY

| NOMINAL VALUE (g) | BALANCE READING (g) | CORRECTION (g) | UNCERTAINTY ( $\pm$ g) |
|-------------------|---------------------|----------------|------------------------|
| 0.00              | 0.00000             | 0.00000        | 0.000065               |
| 0.02              | 0.02000             | 0.00000        | 0.000065               |
| 0.10              | 0.10000             | 0.00000        | 0.000066               |
| 0.20              | 0.20000             | 0.00000        | 0.000066               |
| 0.50              | 0.50001             | -0.00001       | 0.000065               |
| 1.00              | 1.00001             | -0.00001       | 0.000066               |
| 2.00              | 2.00000             | 0.00000        | 0.000067               |
| 5.00              | 5.00001             | -0.00001       | 0.000068               |
| 10.00             | 10.00004            | -0.00004       | 0.000070               |
| 20.00             | 20.00006            | -0.00006       | 0.000078               |
| 50.00             | 50.00000            | 0.00000        | 0.00012                |
| 100.00            | 100.00002           | -0.00002       | 0.00019                |
| 120.00            | 120.00002           | -0.00002       | 0.00022                |

### 5. OFF CENTER LOADING ERROR



| POINT              | READING (g) |
|--------------------|-------------|
| 1                  | 50.0000     |
| 2                  | 50.0000     |
| 3                  | 50.0000     |
| 4                  | 50.0000     |
| 5                  | 50.0000     |
| OFF-CENTER LOADING | 0.0000      |

NOTE: THIS CALIBRATION WAS CARRIED OUT AT THE CUSTOMER'S PLACE AT LABORATORY AREA

THE REPORTED UNCERTAINTY OF MEASUREMENT WAS BASED ON A STANDARD UNCERTAINTY MULTIPLIED BY A COVERAGE FACTOR  $k=2$ , PROVIDING A LEVEL OF CONFIDENCE APPROXIMATELY 95%.

END OF CALIBRATION REPORT



คุณภาพอากาศจากปล่องโรงไฟฟ้า (แบบสุ่ม)





บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด

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7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900

Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com, www.spscon.com

## Console Calibration Report

Calibration Method

Critical Orifices

### Calibration Data

| Console Data |            | Calibration Data |       |                                            |
|--------------|------------|------------------|-------|--------------------------------------------|
| No.          | Serial No. | Date             | y     | $\Delta H_{\text{g}}$ (mmH <sub>2</sub> O) |
| B01          | 1563       | 03/06/2026       | 0.999 | 49.74                                      |
| B02          | 8002514    | 02/06/2026       | 1.004 | 49.63                                      |
| B03          | 1503016    | 03/06/2026       | 0.998 | 49.52                                      |
| B04          | 00006659   | 01/06/2026       | 0.997 | 49.68                                      |
| B05          | 00007428   | 01/06/2026       | 1.002 | 49.50                                      |
| R01          | 1561       | 02/06/2026       | 1.004 | 49.81                                      |
| R02          | 8002513    | 02/06/2026       | 1.003 | 49.45                                      |
| R03          | 1570       | 04/06/2026       | 0.998 | 49.67                                      |
| R04          | 8002519    | 04/06/2026       | 0.997 | 49.76                                      |
| R05          | 1503015    | 01/06/2026       | 1.002 | 49.88                                      |

Remark : Accept Value of y (test) is  $0.97 < y < 1.03$

Accept Value of  $\Delta H_{\text{g}}$  (test) is  $46.7 \pm 6.4$  (mmH<sub>2</sub>O)





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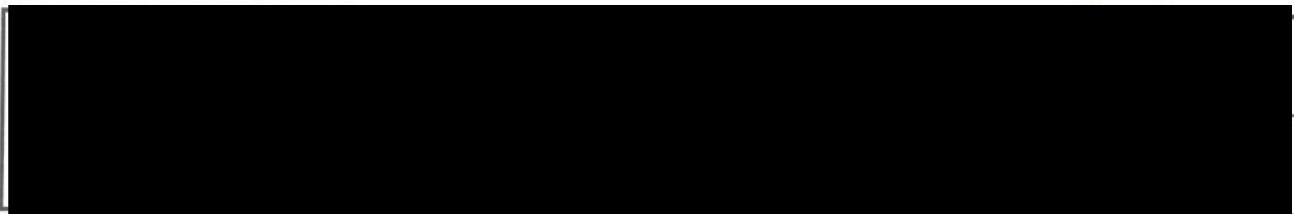
## Pitot Tube Calibration Report

Calibration Method

Standard Pitot Tube

| Calibration Data |               |                                  |                  |                   |        |
|------------------|---------------|----------------------------------|------------------|-------------------|--------|
| Pitot Tube Data  |               |                                  | Calibration Data |                   |        |
| No.              | Type of Pitot | Coefficient of Standard<br>Pitot | Date             | Avg. of Cp (test) |        |
|                  |               |                                  |                  | Side A            | Side B |
| B03              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.83   |
| B04              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.85   |
| B05              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.83   |
| B07              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.84   |
| B08              | S             | 0.99                             | 05/05/2025       | 0.84              | 0.84   |
| B09              | S             | 0.99                             | 05/05/2026       | 0.85              | 0.84   |
| B11              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.84   |
| B16              | S             | 0.99                             | 06/05/2026       | 0.84              | 0.84   |
| B18              | S             | 0.99                             | 06/05/2026       | 0.85              | 0.84   |
| B19              | S             | 0.99                             | 06/05/2025       | 0.84              | 0.85   |
| B21              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.84   |
| B24              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.85   |
| B27              | S             | 0.99                             | 05/05/2026       | 0.85              | 0.84   |
| B30              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.85   |
| B31              | S             | 0.99                             | 05/05/2026       | 0.83              | 0.84   |
| B33              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.84   |
| B35              | S             | 0.99                             | 03/05/2026       | 0.84              | 0.85   |

Remark : Accept value of Cp (test) is  $0.84 \pm 0.01$





บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด  
S.P.S. CONSULTING SERVICE CO., LTD.  
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com., www.spscon.com

## Pitot Tube Calibration Report

Calibration Method

Standard Pitot Tube

| Calibration Data |               |                                  |                  |                   |        |
|------------------|---------------|----------------------------------|------------------|-------------------|--------|
| Pitot Tube Data  |               |                                  | Calibration Data |                   |        |
| No.              | Type of Pitot | Coefficient of Standard<br>Pitot | Date             | Avg. of Cp (test) |        |
|                  |               |                                  |                  | Side A            | Side B |
| B36              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.84   |
| B37              | S             | 0.99                             | 03/05/2026       | 0.84              | 0.85   |
| B38              | S             | 0.99                             | 03/05/2026       | 0.84              | 0.84   |
| B39              | S             | 0.99                             | 06/05/2026       | 0.84              | 0.85   |
| B40              | S             | 0.99                             | 06/05/2026       | 0.85              | 0.84   |
| B41              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.85   |
| B44              | S             | 0.99                             | 06/05/2026       | 0.84              | 0.83   |
| B45              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.84   |
| B46              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.85   |
| B47              | S             | 0.99                             | 03/05/2026       | 0.84              | 0.84   |
| B48              | S             | 0.99                             | 03/05/2026       | 0.85              | 0.84   |
| B49              | S             | 0.99                             | 03/05/2026       | 0.84              | 0.84   |
| B54              | S             | 0.99                             | 05/05/2026       | 0.85              | 0.84   |
| B56              | S             | 0.99                             | 03/05/2026       | 0.84              | 0.84   |
| B57              | S             | 0.99                             | 05/05/2026       | 0.84              | 0.84   |
| B58              | S             | 0.99                             | 03/05/2026       | 0.84              | 0.84   |

Remark : Accept value of Cp (test) is  $0.84 \pm 0.01$





บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด  
S.P.S. CONSULTING SERVICE CO., LTD.  
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com., www.spscon.com

Personal Pump Calibration Report

Calibration Method : Dry Cal Primary Flowmeter

Model : Defender 510-H

S/N : 136164

Environmental Conditions

Temperature : 25 ± 3 °C  
Pressure : 1010 ± 15 mmbar

| Personal Pump Data |       |           |            | Calibration Data |                    |       |       |                 |       |       |                              |                |
|--------------------|-------|-----------|------------|------------------|--------------------|-------|-------|-----------------|-------|-------|------------------------------|----------------|
| No.                | Brand | Model     | Serial No. | Date             | Flow Rate (mL/min) |       |       |                 |       |       | Value From Calibration Curve |                |
|                    |       |           |            |                  | Setting            |       |       | Actual (Q std.) |       |       |                              |                |
|                    |       |           |            |                  | 1                  | 2     | 3     | 1               | 2     | 3     | y                            | R <sup>2</sup> |
| B01                | SKC   | 224-PCXR4 | 262101     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 1,002           | 1,503 | 2,004 | 1.002x - 1.364               | 1.000          |
| B02                | SKC   | 224-PCXR4 | 626166     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 1,004           | 1,501 | 2,003 | 1.001x - 0.594               | 1.000          |
| B03                | SKC   | 224-PCXR4 | 612968     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 1,003           | 1,502 | 1,994 | 1.003x - 9.098               | 0.999          |
| B04                | SKC   | 224-PCXR4 | 602804     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 1,000           | 1,502 | 1,998 | 0.998x + 0.642               | 1.000          |
| B05                | SKC   | 224-PCXR4 | 612693     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 1,001           | 1,504 | 1,999 | 1.000x - 1.767               | 1.000          |
| B06                | SKC   | 224-PCXR4 | 262188     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 999             | 1,500 | 2,002 | 1.001x - 3.590               | 1.000          |
| B07                | SKC   | 224-PCXR4 | 626262     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 997             | 1,506 | 2,003 | 1.004x - 9.859               | 0.999          |
| B08                | SKC   | 224-PCXR4 | 626100     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 1,003           | 1,503 | 2,005 | 1.003x - 4.160               | 1.000          |
| B09                | SKC   | 224-PCXR4 | 626479     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 998             | 1,497 | 1,997 | 1.000x - 3.382               | 1.000          |
| B10                | SKC   | 224-PCXR4 | 091950     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 1,004           | 1,506 | 1,996 | 1.003x - 7.323               | 0.999          |
| B11                | SKC   | 224-PCXR8 | 564315     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 1,000           | 1,493 | 2,003 | 1.005x - 10.601              | 1.000          |
| B12                | SKC   | 224-PCXR4 | 034656     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 997             | 1,495 | 1,997 | 0.998x - 1.755               | 1.000          |
| B13                | SKC   | 224-PCXR4 | 602073     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 1,001           | 1,501 | 1,986 | 0.996x + 2.864               | 0.999          |
| B14                | SKC   | 224-PCXR4 | 626313     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 999             | 1,494 | 1,997 | 0.999x - 1.898               | 0.999          |
| B15                | SKC   | 224-PCXR4 | 626474     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 996             | 1,498 | 1,993 | 1.007x - 17.126              | 0.999          |
| B16                | SKC   | 224-PCXR4 | 626477     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 1,002           | 1,499 | 1,997 | 0.997x + 1.352               | 1.000          |
| B17                | SKC   | 224-PCXR4 | 626860     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 996             | 1,510 | 1,999 | 1.005x - 12.252              | 0.999          |
| B18                | SKC   | 224-PCXR4 | 691484     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 995             | 1,499 | 1,997 | 1.006x - 12.384              | 1.000          |
| B19                | SKC   | 224-PCXR4 | 691599     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 998             | 1,501 | 1,991 | 1.004x - 10.506              | 0.999          |
| B20                | SKC   | 224-PCXR4 | 691587     | 01/04/2026       | 1,000              | 1,500 | 2,000 | 997             | 1,495 | 1,998 | 1.003x - 7.247               | 1.000          |
| B21                | SKC   | 224-PCXR4 | 691531     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 998             | 1,496 | 1,996 | 1.000x - 3.454               | 1.000          |
| B22                | SKC   | 224-PCXR4 | 691654     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 996             | 1,494 | 1,997 | 0.998x - 2.784               | 1.000          |
| B23                | SKC   | 224-PCXR4 | 798393     | 02/04/2026       | 1,000              | 1,500 | 2,000 | 1,000           | 1,503 | 1,999 | 0.999x - 1.308               | 1.000          |
| B24                | SKC   | 224-PCXR4 | 626363     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 1,001           | 1,509 | 1,995 | 1.002x - 6.940               | 0.999          |
| B25                | SKC   | 224-PCXR4 | 798489     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 1,002           | 1,502 | 2,004 | 1.004x - 7.267               | 1.000          |
| B26                | SKC   | 224-PCXR4 | 798479     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 996             | 1,503 | 2,003 | 1.006x - 12.675              | 1.000          |
| B27                | SKC   | 224-PCXR4 | 691673     | 02/04/2026       | 1,000              | 1,500 | 2,000 | 1,000           | 1,504 | 2,000 | 0.999x + 0.483               | 1.000          |
| B28                | SKC   | 224-PCXR4 | 691570     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 997             | 1,510 | 2,001 | 0.998x - 0.455               | 0.999          |
| B29                | SKC   | 224-PCXR4 | 626472     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 998             | 1,494 | 1,992 | 1.000x - 5.221               | 1.000          |
| B30                | SKC   | 224-PCXR4 | 691489     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 1,008           | 1,504 | 2,006 | 1.003x - 2.114               | 1.000          |
| B31                | SKC   | 224-PCXR4 | 691509     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 1,003           | 1,503 | 2,002 | 0.997x + 0.610               | 0.999          |
| B32                | SKC   | 224-PCXR4 | 091567     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 1,002           | 1,502 | 1,996 | 0.996x + 7.008               | 1.000          |
| B33                | SKC   | 224-PCXR4 | 091756     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 998             | 1,501 | 1,992 | 1.006x - 12.101              | 0.999          |
| B34                | SKC   | 224-PCXR4 | 612962     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 1,001           | 1,494 | 2,004 | 1.004x - 8.196               | 1.000          |
| B35                | SKC   | 224-PCXR4 | 602682     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 997             | 1,504 | 1,998 | 1.000x - 2.804               | 1.000          |
| B36                | SKC   | 224-PCXR4 | 626164     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 996             | 1,512 | 1,996 | 1.001x - 5.867               | 0.999          |
| B37                | SKC   | 224-PCXR4 | 626256     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 999             | 1,496 | 2,005 | 1.007x - 11.487              | 1.000          |
| B38                | SKC   | 224-PCXR4 | 626167     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 1,002           | 1,500 | 2,003 | 1.008x - 16.377              | 0.999          |
| B39                | SKC   | 224-PCXR4 | 034637     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 998             | 1,490 | 1,994 | 0.996x - 0.044               | 1.000          |
| B40                | SKC   | 224-PCXR4 | 798349     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 1,001           | 1,501 | 2,000 | 0.995x + 0.921               | 0.999          |





บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด  
S.P.S. CONSULTING SERVICE CO., LTD.  
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com, www.spscon.com

Personal Pump Calibration Report

Calibration Method : Dry Cal Primary Flowmeter

Model : Defender 510-H

S/N : 136164

Environmental Conditions

Temperature : 25 ± 3 °C  
Pressure : 1010 ± 15 mmbar

| Personal Pump Data |       |           |            | Calibration Data |                    |       |       |                 |       |       |                              |                |
|--------------------|-------|-----------|------------|------------------|--------------------|-------|-------|-----------------|-------|-------|------------------------------|----------------|
| No.                | Brand | Model     | Serial No. | Date             | Flow Rate (mL/min) |       |       |                 |       |       | Value From Calibration Curve |                |
|                    |       |           |            |                  | Setting            |       |       | Actual (Q std.) |       |       |                              |                |
|                    |       |           |            |                  | 1                  | 2     | 3     | 1               | 2     | 3     | y                            | R <sup>2</sup> |
| B41                | SKC   | 224-PCXR4 | 612669     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 996             | 1,498 | 1,991 | 1.006x - 15.132              | 0.999          |
| B42                | SKC   | 224-PCXR4 | 626041     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 998             | 1,495 | 1,998 | 1.001x - 5.029               | 1.000          |
| B43                | SKC   | 224-PCXR4 | 034636     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 996             | 1,512 | 1,995 | 1.000x - 4.272               | 0.999          |
| B44                | SKC   | 224-PCXR8 | 529341     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 1,000           | 1,501 | 2,000 | 0.999x + 0.802               | 1.000          |
| B45                | SKC   | 224-PCXR8 | 529594     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 996             | 1,495 | 1,999 | 1.003x - 8.918               | 1.000          |
| B46                | SKC   | 224-PCXR8 | 566743     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 998             | 1,501 | 1,992 | 1.006x - 12.300              | 0.999          |
| B47                | SKC   | 224-PCXR8 | 566747     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 996             | 1,505 | 2,000 | 1.004x - 8.392               | 1.000          |
| B48                | SKC   | 224-PCXR8 | 566753     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 1,011           | 1,508 | 2,008 | 0.998x + 4.726               | 0.999          |
| B49                | SKC   | 224-PCXR8 | 566780     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 997             | 1,495 | 1,999 | 1.003x - 8.045               | 1.000          |
| B50                | SKC   | 224-PCXR8 | 500400     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 1,000           | 1,499 | 1,994 | 0.996x + 3.406               | 1.000          |
| B51                | SKC   | 224-PCXR8 | 500363     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 997             | 1,505 | 1,997 | 1.005x - 14.055              | 0.999          |
| B52                | SKC   | 224-PCXR8 | 093186     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 996             | 1,506 | 2,000 | 1.002x - 5.484               | 1.000          |
| B53                | SKC   | 224-PCXR8 | 707670     | 03/04/2026       | 1,000              | 1,500 | 2,000 | 993             | 1,505 | 2,001 | 1.009x - 20.477              | 0.999          |
| B54                | SKC   | 224-PCXR3 | 509821     | 06/04/2026       | 1,000              | 1,500 | 2,000 | 1,005           | 1,500 | 2,008 | 1.007x - 10.015              | 1.000          |
| B55                | SKC   | 224-PCXR3 | 510710     | 06/04/2026       | 1,000              | 1,500 | 2,000 | 1,013           | 1,502 | 2,007 | 1.002x - 2.573               | 0.999          |
| B56                | SKC   | 224-PCXR3 | 511450     | 06/04/2026       | 1,000              | 1,500 | 2,000 | 992             | 1,492 | 1,999 | 1.004x - 10.669              | 1.000          |
| B57                | SKC   | 224-PCXR3 | 510798     | 06/04/2026       | 1,000              | 1,500 | 2,000 | 999             | 1,496 | 1,996 | 0.998x - 0.463               | 1.000          |
| B58                | SKC   | 224-PCXR3 | 509852     | 06/04/2026       | 1,000              | 1,500 | 2,000 | 1,003           | 1,499 | 1,999 | 0.996x + 4.204               | 1.000          |
| B59                | SKC   | 224-PCXR3 | 509862     | 06/04/2026       | 1,000              | 1,500 | 2,000 | 1,000           | 1,500 | 1,998 | 0.998x + 0.850               | 1.000          |
| B60                | SKC   | 224-PCXR3 | 512655     | 06/04/2026       | 1,000              | 1,500 | 2,000 | 997             | 1,506 | 2,002 | 1.003x - 8.264               | 0.999          |
| B61                | SKC   | 224-PCXR3 | 503915     | 06/04/2026       | 1,000              | 1,500 | 2,000 | 999             | 1,505 | 2,006 | 1.004x - 6.792               | 1.000          |
| B62                | SKC   | 224-PCXR3 | 505975     | 06/04/2026       | 1,000              | 1,500 | 2,000 | 998             | 1,504 | 2,004 | 1.005x - 10.095              | 1.000          |
| B63                | SKC   | 224-PCXR3 | 511432     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 999             | 1,500 | 1,997 | 0.999x - 2.345               | 1.000          |
| B64                | SKC   | 224-PCXR3 | 508302     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 1,001           | 1,491 | 1,996 | 0.997x + 0.511               | 1.000          |
| B65                | SKC   | 224-PCXR3 | 508310     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 1,002           | 1,509 | 1,994 | 1.000x - 4.906               | 0.999          |
| B66                | SKC   | 224-PCXR3 | 509861     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 995             | 1,501 | 2,004 | 1.008x - 15.001              | 1.000          |
| B67                | SKC   | 224-PCXR3 | 506295     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 1,002           | 1,500 | 1,999 | 0.998x + 1.468               | 1.000          |
| B68                | SKC   | 224-PCXR3 | 505872     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 1,005           | 1,494 | 1,994 | 0.996x - 1.783               | 0.999          |
| B69                | SKC   | 224-PCXR3 | 508375     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 997             | 1,505 | 2,005 | 1.009x - 17.840              | 0.999          |
| B70                | SKC   | 224-PCXR3 | 510623     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 998             | 1,499 | 1,999 | 1.000x - 2.573               | 1.000          |
| B71                | SKC   | 224-PCXR3 | 508367     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 1,002           | 1,503 | 1,989 | 0.997x - 0.594               | 0.999          |
| B72                | SKC   | 224-PCXR3 | 505977     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 999             | 1,504 | 2,001 | 1.002x - 4.551               | 1.000          |
| B73                | SKC   | 224-PCXR3 | 512606     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 1,001           | 1,502 | 2,002 | 1.000x - 1.555               | 1.000          |
| B74                | SKC   | 224-PCXR3 | 505993     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 1,003           | 1,504 | 2,008 | 1.006x - 6.832               | 1.000          |
| B75                | SKC   | 224-PCXR3 | 509820     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 1,002           | 1,503 | 1,990 | 1.002x - 9.465               | 0.999          |
| B76                | SKC   | 224-PCXR3 | 509811     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 1,001           | 1,500 | 2,002 | 1.001x - 2.688               | 1.000          |
| B77                | SKC   | 224-PCXR3 | 508301     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 999             | 1,501 | 1,996 | 0.998x + 0.550               | 1.000          |
| B78                | SKC   | 224-PCXR3 | 510677     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 1,000           | 1,496 | 1,997 | 1.000x - 3.151               | 1.000          |
| B79                | SKC   | 224-PCXR3 | 510920     | 09/04/2026       | 1,000              | 1,500 | 2,000 | 1,002           | 1,502 | 1,986 | 0.997x - 2.026               | 0.999          |



บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด  
S.P.S. CONSULTING SERVICE CO., LTD.  
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com., www.spscon.com

Rotameter Calibration Report (For Personal Pump High Flow Adjust)

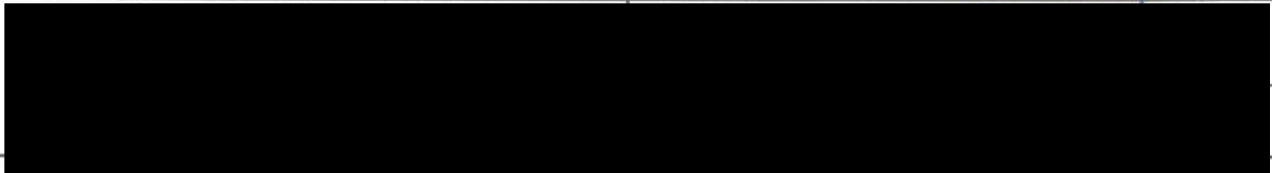
Calibration Method : Dry Cal Primary Flowmeter

Model : Defender 510-H

S/N : 136164

Calibration Data

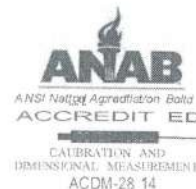
| Calibration Data |       |        |                  |                     |       |       |                 |        |        |                              |                |
|------------------|-------|--------|------------------|---------------------|-------|-------|-----------------|--------|--------|------------------------------|----------------|
| Rotameter Data   |       |        | Calibration Data |                     |       |       |                 |        |        |                              |                |
| No.              | Brand | Model  | Date             | Flow Rate (mL/min)  |       |       |                 |        |        | Value From Calibration Curve |                |
|                  |       |        |                  | Flow Rate (Reading) |       |       | Actual (Q std.) |        |        |                              |                |
|                  |       |        |                  | 1                   | 2     | 3     | 1               | 2      | 3      | y                            | R <sup>2</sup> |
| H-B01            | Dwyer | VFB-65 | 01/04/2026       | 500                 | 1,000 | 2,000 | 500.8           | 997.7  | 1994.6 | 0.997x + 1.368               | 1.000          |
| H-B02            | Dwyer | VFB-65 | 01/04/2026       | 500                 | 1,000 | 2,000 | 500.9           | 997.0  | 1994.3 | 0.998x + 0.689               | 1.000          |
| H-B03            | Dwyer | VFB-65 | 01/04/2026       | 500                 | 1,000 | 2,000 | 499.5           | 999.8  | 1997.2 | 0.999x - 0.227               | 1.000          |
| H-B04            | Dwyer | VFB-65 | 02/04/2026       | 500                 | 1,000 | 2,000 | 499.4           | 1000.9 | 2000.3 | 1.000x - 1.929               | 0.999          |
| H-B05            | Dwyer | VFB-65 | 02/04/2026       | 500                 | 1,000 | 2,000 | 499.0           | 999.6  | 1998.7 | 1.001x + 0.053               | 1.000          |
| H-B06            | Dwyer | VFB-65 | 02/04/2026       | 500                 | 1,000 | 2,000 | 499.8           | 998.0  | 1996.5 | 0.998x + 0.698               | 1.000          |
| H-B07            | Dwyer | VFB-65 | 01/04/2026       | 500                 | 1,000 | 2,000 | 500.1           | 1000.8 | 1996.2 | 0.999x + 2.423               | 0.999          |
| H-B08            | Dwyer | VFB-65 | 01/04/2026       | 500                 | 1,000 | 2,000 | 499.8           | 1000.1 | 1997.6 | 0.999x - 0.675               | 1.000          |
| H-B09            | Dwyer | VFB-65 | 06/04/2026       | 500                 | 1,000 | 2,000 | 499.6           | 1002.1 | 2002.4 | 1.001x - 6.068               | 0.999          |
| H-B10            | Dwyer | VFB-65 | 06/04/2026       | 500                 | 1,000 | 2,000 | 500.4           | 1001.6 | 1999.6 | 0.999x + 1.475               | 1.000          |





# CALIBRATION LABORATORY Co.,LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230  
Tel. 02-578-G353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



## CERTIFICATE OF CALIBRATION FOR

|                 |                  |
|-----------------|------------------|
| NOMENCLATURE    | VACUUM GAUGE     |
| MANUFACTURER    | HI-LIGHT         |
| MODEL/TYPE      | N/A              |
| SERIAL NO.      | N/A[64-220088-1] |
| CLID.NO.        | 212301422        |
| JOB CONTROL NO. | 240720076546     |

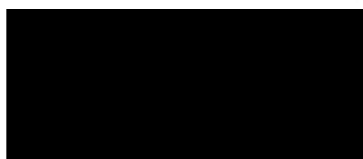
CUSTOMER S.P.S. CONSULTING SERVICE CO., LTD.  
7 SOI PHAHOLYOTHIN 24 ROAD., JOMPOL,  
CHATUCHAK, BANGKOK 10900

DATE OF RECEIVED : 19 July 2025

DATE OF ISSUED: 24 July 2025

The report or calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Sittipong Pimdee  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
24 July 2025



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q24076546

F3-011-05/12-23

page 1 of 3





# CALIBRATION LABORATORY Co., LTD.

211Q-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230  
Tel. 02-578-Q353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



CALIBRATION AND  
DIMENSIONAL MEASUREMENT  
ACDM-2814

## REPORT OF CALIBRATION

### FOR

|                         |                   |
|-------------------------|-------------------|
| NOMENCLATURE            | VACUUM GAUGE      |
| MANUFACTURER            | HI-LIGHT          |
| MODEL/TYPE              | N/A               |
| SERIAL NO.              | N/A [64-220088-1] |
| DATE OF CALIBRATION     | 23 July 2025      |
| DUE DATE OF CALIBRATION | 23 July 2026      |

---

#### ENVIRONMENT CONDITIONS

Temperature :  $(23 \pm 2) ^\circ\text{C}$

Relative Humidity  $(55 \pm 10) \% \text{RH}$

#### PROCEDURE USED :

This instrument was calibrated under procedure No. CLC-CPPP-05 according to DKD-R 6-1 as calibration guidelines.

The calibration was performed by direct measurement with Document Process Calibrator and Pressure Module which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

Document Process Calibrator, Fluke Model 74 1B *S/N.* 8295020 with Pressure Module Model 700PD5 *S/N.* 89404505.

#### TRACEABILITY :

The measurement s are traceable to International System of Units (SI), through National Institute of Metrology (Thailand).  
Certificate No. MP-0040-24.

#### UNCERTAINTY :

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor of  $k = 2$ . It has been evaluated according to the "Calibration of Pressure Gauges (DKD-R 6-1)" which provides a level of confidence approximately 95%.

Certificate No. Q24076546

F3-011-05/12-23

page 2 of 3

## CONDITION OF CALIBRATION ITEM :RECEIVED IN GOOD OPERATIONAL CONDITION

### MEASUREMENT RESULTS: (X) without adjustment ( ) adjustment

The DUC was exercised by applying a known pressure from its zero to full scale 1 times. Then 2 series of known gauge pressure were applied. The STD reading were recorded and the means value were reported in the table below.

### CALIBRATION DATA

#### CORRECTION OF PRESSURE

| DUC Test point<br>( inHg ) | STD Reading ( kPa ) |         | Conversion to inHg |       | Correction ( inHg) |      |
|----------------------------|---------------------|---------|--------------------|-------|--------------------|------|
|                            | Up                  | Down    | Up                 | Down  | Up                 | Down |
| 0                          | 0.00                | 0.00    | 0.0                | 0.0   | 0.0                | 0.0  |
| -5                         | -15.07              | -15.10  | -4.5               | -4.5  | +0.5               | +0.5 |
| -10                        | -32.50              | -32.84  | -9.6               | -9.7  | +0.4               | +0.3 |
| -15                        | -49.44              | -49.77  | -14.6              | -14.7 | +0.4               | +0.3 |
| -20                        | -66.70              | -66.70  | -19.7              | -19.7 | +0.3               | +0.3 |
| -25                        | -83.63              | -83.97  | -24.7              | -24.8 | +0.3               | +0.2 |
| -30                        | -100.39             | -100.39 | -29.6              | -29.6 | +0.4               | +0.4 |

Uncertainty of measurement  $\pm 0.2$  inHg

Transmitting fluid : Air.

Technical Note. Conversion factor 1 kPa ; 0.2953003 inHg

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 012 Page 43 of 67

**This report is valid for the above stated instrument/s only.**

**### End of Certificate ###**

Certificate No. Q24076546

F3-011-05/ 12-23





CERTIFICATE No : 26M2266  
REFERENCE No : 80204-1

PAGE : 1 OF 2

## Certificate of Calibration

**EQUIPMENT** : DIGITAL BALANCE  
**MANUFACTURER** : METTLER TOLEDO  
**MODEL** : XS105DU  
**SERIAL No** : 1126422905  
**ID No** : BA 05/50  
**CONDITION AS RECEIVED** : USED ITEM  
**SUBMITTED BY** : S.P.S. CONSULTING SERVICE CO., LTD.  
7 SOI PHAHOLYOTHIN 24, PHAHOLYOTHIN RD.,  
JOMPOL, CHATUCHAK, BANGKOK 10900

**CALIBRATED BY** : SUCHAT S.

**CALIBRATION DATE** : 05-Mar-26

**APPROVED BY** : [REDACTED]

**ISSUED DATE** : 06-Mar-26

**RECEIVED DATE** : 05-Mar-26







CERTIFICATE No : 26M2266

PAGE : 2 OF 2

## Calibration Report

EQUIPMENT : DIGITAL BALANCE MODEL : XS105DU  
MANUFACTURER : METTLER TOLEDO S/N : 1126422905  
ID No : BA 05/50 RECEIVED DATE : 05-Mar-26  
AIR PRESSURE : 1004mbar  $\pm$  1mbar CALIBRATION DATE : 05-Mar-26  
AMBIENT TEMPERATURE : 25° C  $\pm$  1° C RELATIVE HUMIDITY : 50 %RH  $\pm$  10 % RH

### CONDITION OF THIS RESULTS OF CALIBRATION

1. THIS INSTRUMENT WAS CALIBRATED BY ACCORDING TO UKAS LAB 14 EDITION 6:2019 BY USING KNOWN WEIGHT STANDARD WEIGHT. THE BALANCE WAS NOT ADJUSTED BEFORE CALIBRATION. THE BALANCE HAS NO ZERO TRACKING FUNCTION. REPEATABILITY WAS MEASURED BY USING 10 REPEATED MEASUREMENTS. LINEARITY WAS MEASURED COVERING 10 POINTS, EVENLY SPREAD OVER THE RANGE. THE INSTRUMENT WAS SET ZERO BEFORE PERFORMING THE LINEARITY TEST. OFF-CENTER LOADING WAS MEASURED BY USING STANDARD WEIGHTS PLACED ON THE PAN AND MOVED TO VARIOUS POSITIONS ON THE PAN.

### 2. REFERENCE STANDARD INSTRUMENTS :-

| INSTRUMENT             | MODEL | SERIAL No | CERTIFICATE No | DUE DATE  |
|------------------------|-------|-----------|----------------|-----------|
| 1) STANDARD WEIGHT SET | E2    | QK-I-151  | C02250116      | 28-Jan-27 |
| 2) STANDARD WEIGHT     | E2    | 15843     | C02250117      | 29-Jan-27 |

3. THE CERTIFICATE IS VALID FOR THE ITEM CALIBRATED AS SHOWN ON THE DATE AND PLACE OF CALIBRATION ONLY.

4. THIS RESULT EXCLUDE LONG TERM STABILITY OF THE UNIT UNDER CALIBRATION.

5. THIS CERTIFICATE IS TRACEABLE TO THE INTERNATIONAL SYSTEM OF UNIT MAINTAINED AT:-

- NATIONAL INSTITUTE OF METROLOGY (THAILAND)

### RESULT OF CALIBRATION :- WITHOUT ADJUSTMENT

1. ZERO SETTING FUNCTION : NORMAL

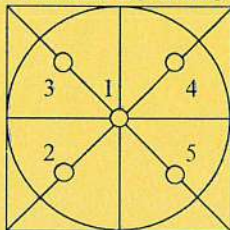
2. TARE FUNCTION : NORMAL

3. REPEATABILITY OF READING AT 120 g WAS 0.000055 g

4. DEPARTURE FROM NOMINAL VALUE/ LINEARITY

| NOMINAL VALUE (g) | BALANCE READING (g) | CORRECTION (g) | UNCERTAINTY ( $\pm$ g) |
|-------------------|---------------------|----------------|------------------------|
| 0.00              | 0.00000             | 0.00000        | 0.000065               |
| 0.02              | 0.02000             | 0.00000        | 0.000065               |
| 0.10              | 0.10000             | 0.00000        | 0.000066               |
| 0.20              | 0.20000             | 0.00000        | 0.000066               |
| 0.50              | 0.50001             | -0.00001       | 0.000065               |
| 1.00              | 1.00001             | -0.00001       | 0.000066               |
| 2.00              | 2.00000             | 0.00000        | 0.000067               |
| 5.00              | 5.00001             | -0.00001       | 0.000068               |
| 10.00             | 10.00004            | -0.00004       | 0.000070               |
| 20.00             | 20.00006            | -0.00006       | 0.000078               |
| 50.00             | 50.00000            | 0.00000        | 0.00012                |
| 100.00            | 100.00002           | -0.00002       | 0.00019                |
| 120.00            | 120.00002           | -0.00002       | 0.00022                |

### 5. OFF CENTER LOADING ERROR



| POINT              | READING (g) |
|--------------------|-------------|
| 1                  | 50.0000     |
| 2                  | 50.0000     |
| 3                  | 50.0000     |
| 4                  | 50.0000     |
| 5                  | 50.0000     |
| OFF-CENTER LOADING | 0.0000      |

NOTE: THIS CALIBRATION WAS CARRIED OUT AT THE CUSTOMER'S PLACE AT LABORATORY AREA

THE REPORTED UNCERTAINTY OF MEASUREMENT WAS BASED ON A STANDARD UNCERTAINTY MULTIPLIED BY A COVERAGE FACTOR  $k=2$ , PROVIDING A LEVEL OF CONFIDENCE APPROXIMATELY 95%.

END OF CALIBRATION REPORT





Cert. No. : SP25026

Pages : 1 of 4

## Calibration Certificate

**Equipment :** UV-VIS SPECTROPHOTOMETER  
**Manufacturer :** PERKINELMER  
**Model :** LAMBDA 25  
**Serial No.:** 501S14123010  
**ID No.:** SP03/58  
**Calibration Mode :** WAVELENGTH ACCURACY  
PHOTOMETRIC ACCURACY  
STRAY LIGHT  
  
**Condition As Found :** GOOD  
  
**Customer :** S.P.S CONSULTING SERVICE CO., LTD.  
7 SOI PHAHOLYOTHIN 24, PHAHOLYOTHIN ROAD,  
CHOMPHON SUB-DISTRICT, CHATUCHAK DISTRICT,  
BANGKOK PROVINCE 10900 THAILAND.  
  
**Location :** ORGANIC LABORATORY IV  
  
**Ambient Temperature :** ( 22.9  $\pm$  5 ) °C  
**Relative Humidity :** ( 53.7  $\pm$  25 ) %  
  
**Received Date :** 22 AUGUST 2025  
**Calibration Date :** 22 AUGUST 2025  
**Date of Issue :** 25 AUGUST 2025

**Calibrated by :**

Nitinun Srihawan

**Approved by :**

( Wichok Ekpongpradit )

This certificate is issued in accordance with the requirements of ISO/IEC 17025 standard, may not be reproduced other than in full, except with the prior written approval of the head of Calibration Laboratory.

**Cert. No. : SP25026**

**Job No. : VC68SP0019**

**Pages : 2 of 4**

**Calibration Method :**

This instrument was calibrated by using on-site calibration procedure In-house method : CP-SP-01

The calibration procedure to direct measurement wavelength accuracy by using wavelength standard solution, Photometric accuracy by using absorbance standard filter and absorbance standard solution

The calibration procedure used was based on ASTM E275-01, ASTM E925-02

**Condition of this result of calibration :**

1. Certified reference materials

| <u>Material</u>                | <u>Ref. type</u> | <u>Cell serial No.</u> | <u>Cert. No.</u> | <u>Due Date</u> |
|--------------------------------|------------------|------------------------|------------------|-----------------|
| Holmium liquid                 | RM-HL            | 29706                  | 126461           | 24/10/2026      |
| Didymium liquid                | RM-DL            | 28912                  | 126462           | 24/10/2026      |
| Neutral density filter         | RM-1N2N3N        | 13877                  | 126457           | 24/10/2026      |
| Potassium dichromate solutions | RM-0204060810    | 14204                  | 126497           | 25/10/2026      |
| Potassium Iodide solution      | -                | KI-0701-001            | CI-0185-24       | 14/05/2026      |

2. This result of calibration was found accurate as shown on date and place of calibration only.

3. This certificate is traceable to the international system of unit maintained at :

3.1 The UK National Physical Laboratory (NPL)

**Result of calibration : Wavelength Accuracy**

(Without adjustment)

| <b>Material</b> | <b>Certified Values of<br/>Reference Material (nm)</b> | <b>UUC* Reading<br/>(nm)</b> | <b>Error<br/>(nm)</b> | <b>Uncertainty<br/>± (nm)</b> | <b>k<br/>Factor</b> |
|-----------------|--------------------------------------------------------|------------------------------|-----------------------|-------------------------------|---------------------|
| <b>RM-HL</b>    | 278.13                                                 | 278.21                       | 0.08                  | 0.16                          | 2.00                |
|                 | 361.25                                                 | 361.39                       | 0.14                  | 0.16                          | 2.00                |
|                 | 467.82                                                 | 467.71                       | -0.11                 | 0.16                          | 2.00                |
|                 | 536.56                                                 | 536.50                       | -0.06                 | 0.16                          | 2.00                |
|                 | 640.50                                                 | 640.36                       | -0.14                 | 0.16                          | 2.00                |
| <b>RM-DL</b>    | 740.09                                                 | 739.85                       | -0.24                 | 0.16                          | 2.00                |
|                 | 864.94                                                 | 865.12                       | 0.18                  | 0.16                          | 2.00                |

UUC\* = Unit Under Calibration



Cert. No. : SP25026  
Job No. : VC68SP0019  
Pages : 3 of 4

**Result of calibration : Photometric Accuracy**

| Material                     | Wavelength<br>(nm) | Filter S/N | Nominal<br>Absorbance (A) | Certified<br>Absorbance (A) | UUC* Reading<br>Absorbance (A) | Error<br>(A) | Uncertainty<br>± (A) | k<br>Factor |
|------------------------------|--------------------|------------|---------------------------|-----------------------------|--------------------------------|--------------|----------------------|-------------|
| Neutral Density glass filter | 440.0              | 29381      | 0.5                       | 0.5443                      | 0.5413                         | -0.0030      | 0.0043               | 2.00        |
|                              |                    | 29914      | 0.7                       | 0.7484                      | 0.7455                         | -0.0029      | 0.0054               | 2.00        |
|                              |                    | 29360      | 1.0                       | 1.0527                      | 1.0535                         | 0.0008       | 0.0032               | 2.00        |
|                              | 465.0              | 29381      | 0.5                       | 0.4948                      | 0.4922                         | -0.0026      | 0.0041               | 2.00        |
|                              |                    | 29914      | 0.7                       | 0.6906                      | 0.6877                         | -0.0029      | 0.0050               | 2.00        |
|                              |                    | 29360      | 1.0                       | 0.9695                      | 0.9709                         | 0.0014       | 0.0031               | 2.00        |
|                              | 546.1              | 29381      | 0.5                       | 0.5090                      | 0.5068                         | -0.0022      | 0.0036               | 2.00        |
|                              |                    | 29914      | 0.7                       | 0.6985                      | 0.6960                         | -0.0025      | 0.0041               | 2.00        |
|                              |                    | 29360      | 1.0                       | 0.9814                      | 0.9825                         | 0.0011       | 0.0031               | 2.00        |
|                              | 590.0              | 29381      | 0.5                       | 0.5375                      | 0.5353                         | -0.0022      | 0.0034               | 2.00        |
|                              |                    | 29914      | 0.7                       | 0.7256                      | 0.7231                         | -0.0025      | 0.0037               | 2.00        |
|                              |                    | 29360      | 1.0                       | 1.0213                      | 1.0219                         | 0.0006       | 0.0032               | 2.00        |
|                              | 635.0              | 29381      | 0.5                       | 0.5223                      | 0.5202                         | -0.0021      | 0.0033               | 2.00        |
|                              |                    | 29914      | 0.7                       | 0.6927                      | 0.6901                         | -0.0026      | 0.0036               | 2.00        |
|                              |                    | 29360      | 1.0                       | 0.9744                      | 0.9750                         | 0.0006       | 0.0032               | 2.00        |

UUC\* = Unit Under Calibration

Cert. No. : SP25026

Job No. : VC68SP0019

Pages : 4 of 4

**Result of calibration : Photometric Accuracy**

(Without adjustment)

| Material                          | Wavelength<br>(nm) | Solution<br>(mg/l) | Certified<br>Absorbance (A) | UUC* Reading<br>Absorbance (A) | Error<br>(A) | Uncertainty<br>± (A) | k<br>Factor |
|-----------------------------------|--------------------|--------------------|-----------------------------|--------------------------------|--------------|----------------------|-------------|
| Potassium<br>dichromate solutions | 235.0              | 20                 | 0.2415                      | 0.2443                         | 0.0028       | 0.0101               | 2.00        |
|                                   |                    | 40                 | 0.4866                      | 0.4871                         | 0.0005       | 0.0115               | 2.00        |
|                                   |                    | 60                 | 0.7415                      | 0.7295                         | -0.0120      | 0.0067               | 2.00        |
|                                   |                    | 80                 | 0.9854                      | 0.9844                         | -0.0010      | 0.0071               | 2.00        |
|                                   |                    | 100                | 1.2444                      | 1.2425                         | -0.0019      | 0.0073               | 2.00        |

UUC\* = Unit Under Calibration

**Condition of this result of calibration : Spectrophotometer PERKINELMER Model LAMBDA 25 S/N 501S14123010**

Resolution of Wavelength Mode 0.1 nm

Resolution of Photometric Mode 0.001 A

Parameter Setting

Measurement Mode Wavelength, Absorbance

Wavelength Scan 190 nm - 1100 nm

Scanning Speed 7.5 nm/min

Band width(Wavelength) 1.0

Band width(Vis) 1.0

Band width(Uv) 1.0

| Stray Light** UUC* Reading at 220.0 nm |               |
|----------------------------------------|---------------|
| Transimission T(%)                     | Absorbance(A) |
| 0.020                                  | 3.7032        |

\*\*Specific Acceptance :

Transmission ≤ 1.0 T(%), Absorbance ≥ 2.0 A

\*\*Stray light not TISI Accredited

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k$ , providing a level of confidence of approximately 95%

**End of Calibration Certificate**



บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด  
S.P.S. CONSULTING SERVICE CO., LTD.  
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com., www.spscon.com

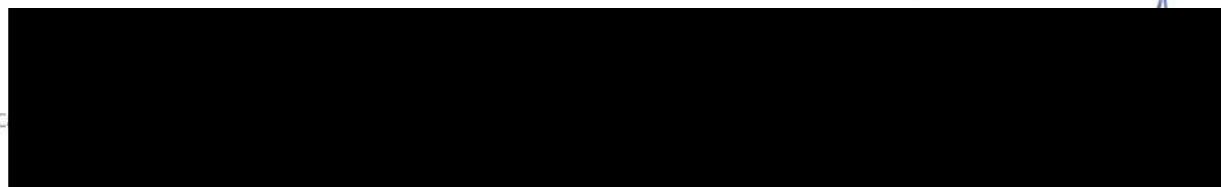
| Calibration Report                    |                                    |                              |                                 |                                 |      |
|---------------------------------------|------------------------------------|------------------------------|---------------------------------|---------------------------------|------|
| Non-Dispersive Infrared CO Analyzer   |                                    |                              |                                 |                                 |      |
| Date :                                | 07 May 2026                        | Brand :                      | API                             | Model :                         | 300E |
| No.                                   | CO-806                             |                              |                                 | Serial No.                      | 3117 |
| Calibrator (Dilution System)          |                                    |                              |                                 |                                 |      |
| Brand : API                           |                                    |                              | Model : 700                     |                                 |      |
| Last Cal. Date : 01 September 2025    |                                    |                              | Serial No. : 911                |                                 |      |
| Reference Standard Gas                |                                    |                              |                                 |                                 |      |
| Standard Gas : Carbon Monoxide (CO)   |                                    |                              | Cylinder No. : D711839          |                                 |      |
| Certified Date : 14 March 2024        |                                    | Expired Date : 14 March 2032 |                                 | Cylinder Conc. : 4,580 ppm      |      |
| Calibrating Condition                 |                                    |                              |                                 |                                 |      |
| Pressure : 1011 mmbar                 |                                    | Temp. : 24.6 °C              |                                 | % RH : 50                       |      |
| Calibration Setting                   |                                    |                              |                                 |                                 |      |
| Span                                  | Initial Reading (Before Adj.), PPM |                              |                                 | Final Reading (After Adj.), PPM |      |
| Set Point                             | Expected Concentration             | Analyzer Response            |                                 | %Dif                            |      |
| Zero                                  | 0                                  | 0.10                         |                                 | -                               |      |
| CO Span                               | 40.00                              | 39.97                        |                                 | -0.075                          |      |
| API Model 300E CO Analyzer Check List |                                    |                              |                                 |                                 |      |
| Parameter                             | Observed Value                     | Units                        | Nominal Range                   |                                 |      |
| Range                                 | 50                                 | PPM                          | 0-1000 ppm                      |                                 |      |
| Stability                             | 0.10                               | PPM                          | < 1 ppm With Zero Air           |                                 |      |
| CO Measure                            | 4015.7                             | mV                           | 2500-4800 mV                    |                                 |      |
| CO Reference                          | 3949.8                             | mV                           | 2500-4800 mV                    |                                 |      |
| Measure/Reference Ratio               | 1.179                              | -                            | 1.1-1.3 W/Zero Air              |                                 |      |
| Sample Pressure                       | 28.6                               | In-Hg-A                      | ~2" < Ambient Absolute Pressure |                                 |      |
| Sample Flow                           | 805                                | CC/Min                       | 800 ± 10%                       |                                 |      |
| Sample Temperature                    | 48.3                               | °C                           | 48 ± 4                          |                                 |      |
| Bench Temperature                     | 48.0                               | °C                           | 48 ± 2                          |                                 |      |
| Wheel Temperature                     | 68.4                               | °C                           | 68 ± 2                          |                                 |      |
| Box Temperature                       | 30.6                               | °C                           | Ambient Temp + 7 ± 10           |                                 |      |
| Photo-Drive                           | 3030.8                             | mV                           | 250 mV to 4750 mV               |                                 |      |
| Slope                                 | 1.017                              | -                            | 1.0 ± 0.3                       |                                 |      |
| Offset                                | 0.2                                | -                            | 0 ± 0.3                         |                                 |      |





บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด  
S.P.S. CONSULTING SERVICE CO., LTD.  
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com, www.spscon.com

| Calibration Report                    |                                    |                              |                                 |                                 |       |
|---------------------------------------|------------------------------------|------------------------------|---------------------------------|---------------------------------|-------|
| Non-Dispersive Infrared CO Analyzer   |                                    |                              |                                 |                                 |       |
| Date :                                | 06 May 2026                        | Brand :                      | API                             | Model :                         | 300E  |
| No.                                   | CO-B10                             |                              |                                 | Serial No.                      | 199-S |
| Calibrator (Dilution System)          |                                    |                              |                                 |                                 |       |
| Brand : API                           |                                    |                              | Model : 700                     |                                 |       |
| Last Cal. Date : 01 September 2025    |                                    |                              | Serial No. : 911                |                                 |       |
| Reference Standard Gas                |                                    |                              |                                 |                                 |       |
| Standard Gas : Carbon Monoxide (CO)   |                                    |                              | Cylinder No. : D711839          |                                 |       |
| Certified Date : 14 March 2024        |                                    | Expired Date : 14 March 2032 |                                 | Cylinder Conc. : 4,580 ppm      |       |
| Calibrating Condition                 |                                    |                              |                                 |                                 |       |
| Pressure                              | 1011                               | mmbar                        | Temp.                           | 24.6                            | °C    |
| % RH 50                               |                                    |                              |                                 |                                 |       |
| Calibration Setting                   |                                    |                              |                                 |                                 |       |
| Span                                  | Initial Reading (Before Adj.), PPM |                              |                                 | Final Reading (After Adj.), PPM |       |
| Set Point                             | Expected Concentration             | Analyzer Response            | %Dif                            | Analyzer Response               |       |
| Zero                                  | 0                                  | -0.10                        | -                               | 0                               |       |
| CO Span                               | 40.00                              | 39.94                        | -0.150                          | 40.00                           |       |
| API Model 300E CO Analyzer Check List |                                    |                              |                                 |                                 |       |
| Parameter                             | Observed Value                     | Units                        | Nominal Range                   |                                 |       |
| Range                                 | 50                                 | PPM                          | 0-1000 ppm                      |                                 |       |
| Stability                             | 0.10                               | PPM                          | < 1 ppm With Zero Air           |                                 |       |
| CO Measure                            | 4017.3                             | mV                           | 2500-4800 mV                    |                                 |       |
| CO Reference                          | 3949.5                             | mV                           | 2500-4800 mV                    |                                 |       |
| Measure/Reference Ratio               | 1.180                              | -                            | 1.1-1.3 W/Zero Air              |                                 |       |
| Sample Pressure                       | 28.7                               | In-Hg-A                      | ~2" < Ambient Absolute Pressure |                                 |       |
| Sample Flow                           | 806                                | CC/Min                       | 800 ± 10%                       |                                 |       |
| Sample Temperature                    | 48.5                               | °C                           | 48 ± 4                          |                                 |       |
| Bench Temperature                     | 48.2                               | °C                           | 48 ± 2                          |                                 |       |
| Wheel Temperature                     | 68.3                               | °C                           | 68 ± 2                          |                                 |       |
| Box Temperature                       | 30.7                               | °C                           | Ambient Temp + 7 ± 10           |                                 |       |
| Photo-Drive                           | 3025.2                             | mV                           | 250 mV to 4750 mV               |                                 |       |
| Slope                                 | 1.017                              | -                            | 1.0 ± 0.3                       |                                 |       |
| Offset                                | 0.2                                | -                            | 0 ± 0.3                         |                                 |       |



ระดับเสียงในบรรยากาศ



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

**Request No.** 21-69/0204

**MTC No.** EEL. BP. 152/0169

## CALIBRATION CERTIFICATE

**Submitted by** : S.P.S.CONSULTING SERVICE CO.,LTD.

**Address** : 7 Soi Phaholyothin 24, Phaholyothin Road, Jompol, Chatuchak, Bangkok 10900.

**Calibrated at** : Electrical and Electronic Standards Laboratory, Industrial Metrology and Testing Service Centre.  
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Rd., Muang, Samutprakan 10280.

**Instrument Calibrated :**

Description : Sound Calibrator

Manufacturer : ACO

Model : 2127

Serial No. : 130006

**Ambient Environment**

Temperature :  $(23 \pm 3) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 15) \%$

Ambient Pressure :  $(101.325 \pm 1.500) \text{ kPa}$

- Standards used :**
1. Digital Function Synthesizer NF Electronic DF-193A S/N 122037.
  2. Measuring Amplifier Bruel&Kjaer 2636 S/N 1537484.
  3. Programmable Attenuator Tamagawa TPA-303A S/N OF 2214.
  4. Digital Multimeter Agilent 34401A S/N MY44005560.
  5. Pressure Transmitter Vaisala PTB202AD S/N T0650001.
  6. Audio Analyzer Keithley 2015-P S/N 4106495.
  7. Condenser Microphone Bruel&Kjaer 4180 S/N 2889871.

**Calibration Procedure:** CP-102-04 based on IEC 60942-2003; The sound pressure level generated by sound calibrator under test shall be measured by standard microphone using an insert voltage technique.

This instrument has been calibrated against standards maintained at Electrical and Electronic Standards Laboratory (EEL), which are traceable to the International System of Units through the National Institute of Metrology (Thailand).

The information on actual reading is attached herewith and the uncertainty limits quoted refer to the measured values only.

**Date of Receipt** : 29 Jan. 2026

**Date of Calibration** : 11 Feb. 2026

1 / 2

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.5

**Head Office**

35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,  
Changwat Pathumthani 12120, Thailand  
Tel. (66) 0 2577 9036  
Fax. (66) 0 2577 9009

**Office/Laboratory**

668 Mu 2 Tambon Bangpoomai, Amphoe Muang Samutprakan,  
Changwat Samutprakan 10280, Thailand  
Tel. (66) 0 2323 1672-80 ext. 115, 116  
(66) 08 3219 9440  
E-mail : mtc@tistr.or.th Website : www.tistr.or.th

**Office**

196 Phahonyothin Road, Ladyao, Chatuchak,  
Bangkok 10900, Thailand  
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217  
(66) 08 1889 6827



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-69/0204

MTC No. EEL. BP. 152/0169

The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%.

Nominal Output of Unit Under Test = 94 dB re 20 $\mu$ Pa at 1000 Hz

Acoustic Output in dB re 20 $\mu$ Pa, Corrected to Reference Conditions: 101.325 kPa, 23.0 °C and 50 %RH.

1. Sound Pressure Level

| Standard Microphone<br>Type | Measured Sound Pressure<br>Level (dB) | Deviated value<br>(dB) | Uncertainty<br>(dB) | Tolerance limit<br>IEC60942:2003 Class 1 |
|-----------------------------|---------------------------------------|------------------------|---------------------|------------------------------------------|
| 1/2 inch Bruel&Kjaer 4180   | 93.89                                 | -0.11                  | $\pm 0.10$          | $\pm 0.40$ dB                            |

2. Frequency

| Standard Microphone<br>Type | Measured Frequency<br>(Hz) | Deviated value<br>(Hz) | Uncertainty<br>(Hz) | Tolerance limit<br>IEC60942:2003 Class 1 |
|-----------------------------|----------------------------|------------------------|---------------------|------------------------------------------|
| 1/2 inch Bruel&Kjaer 4180   | 999.9                      | -0.1                   | $\pm 1.5$           | $\pm 1.0\%$                              |

3. Total Distortion

| Standard Microphone<br>Type | Measured Total Distortion<br>(%) | Uncertainty<br>(%) | Tolerance limit<br>IEC60942:2003 Class 1 |
|-----------------------------|----------------------------------|--------------------|------------------------------------------|
| 1/2 inch Bruel&Kjaer 4180   | 1.90                             | $\pm 0.50$         | $\pm 3.0\%$                              |

Note : 1. No adjustment.

2. The calibrator pressure correction was not included.

3. The microphone volume correction was not included.

Calibrated by :

(Mr. Weerachai Deechaiyae)

Approved by :

Director

Electrical and Electronic Standards Laboratory

Industrial Metrology and Testing Service Centre

Date of Calibration : 11 Feb. 2026

Date of Issue : 12 Feb. 2026

Ref : 2011269012900497001

End of Certificate

2 / 2

The results relate only to the items tested/calibrated or value assigned.  
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FM.BL.MTC.002 Rev.5

Head Office

35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang, Changwat Pathumthani 12120, Thailand  
Tel. (66) 0 2577 9036  
Fax. (66) 0 2577 9009

Office/Laboratory

668 Mu 2 Tambon Bangpoomai, Amphoe Muang Samutprakan, Changwat Samutprakan 10280, Thailand  
Tel. (66) 0 2323 1672-80 ext. 115, 116  
(66) 08 3219 9440  
E-mail : mtc@tistr.or.th Website : www.tistr.or.th

Office

196 Phahonyothin Road, Ladyao, Chatuchak, Bangkok 10900, Thailand  
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217  
(66) 08 1889 6827



บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด  
S.P.S. CONSULTING SERVICE CO., LTD.  
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com, www.spscon.com

Noise B\_290/26

## Sound Level Meter Calibration Report

### Acoustic Calibrator Data

|                   |                |                  |                  |
|-------------------|----------------|------------------|------------------|
| Brand             | ACO            | Number           | AC 03/56         |
| Model             | 2127           | Serial No.       | 130006           |
| Calibration Range | 94 dB, 1000 Hz | Last Calibration | 11 February 2026 |
|                   |                | Due Date         | 11 February 2027 |

### Calibration Data

| Sound Level Meter Data                                                                         |         |        |            | Calibration Data |                     |                  |
|------------------------------------------------------------------------------------------------|---------|--------|------------|------------------|---------------------|------------------|
| SLM No.                                                                                        | Brand   | Model  | Serial No. | Date             | Actual Reading [dB] |                  |
|                                                                                                |         |        |            |                  | Before Adjustment   | After Adjustment |
| ACO-C1-B03                                                                                     | ACO     | 6238   | 00223040   | 21 May 2026      | 93.8                | 93.9             |
| ACO-C1-B04                                                                                     | ACO     | 6238   | 00223041   | 21 May 2026      | 93.7                | 93.9             |
| ACO-C1-B05                                                                                     | ACO     | 6238   | 00223042   | 21 May 2026      | 93.9                | 93.9             |
| ST-C1-B08                                                                                      | SCARLET | ST-12D | 10351469   | 21 May 2026      | 93.9                | 93.9             |
| ST-C1-B09                                                                                      | SCARLET | ST-12D | 10351478   | 21 May 2026      | 93.7                | 93.9             |
| ST-C1-B13                                                                                      | SCARLET | ST-12D | 10351486   | 21 May 2026      | 93.8                | 93.9             |
| ST-C1-B17                                                                                      | SCARLET | ST-12D | 10352289   | 21 May 2026      | 93.9                | 93.9             |
| ST-C1-B19                                                                                      | SCARLET | ST-12D | 10352320   | 21 May 2026      | 93.8                | 93.9             |
| ST-C1-B24                                                                                      | SCARLET | ST-12D | 10352330   | 21 May 2026      | 93.7                | 93.9             |
| ST-C1-B26                                                                                      | SCARLET | ST-12D | 10352333   | 21 May 2026      | 93.9                | 93.9             |
| ST-C1-B27                                                                                      | SCARLET | ST-12D | 10352334   | 21 May 2026      | 93.9                | 93.9             |
| Acoustic Certified Value : Thailand Institute of Scientific and Technological Research (TISTR) |         |        |            |                  | 93.89 ± 0.10 dB     |                  |

ระดับเสียงในสถานที่ทำงาน





THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

**Request No.** 21-69/0204

**MTC No.** EEL. BP. 152/0169

## CALIBRATION CERTIFICATE

**Submitted by** : S.P.S.CONSULTING SERVICE CO.,LTD.

**Address** : 7 Soi Phaholyothin 24, Phaholyothin Road, Jompol, Chatuchak, Bangkok 10900.

**Calibrated at** : Electrical and Electronic Standards Laboratory, Industrial Metrology and Testing Service Centre.  
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Rd., Muang, Samutprakan 10280.

**Instrument Calibrated :**

Description : Sound Calibrator

Manufacturer : ACO

Model : 2127

Serial No. : 130006

**Ambient Environment**

Temperature :  $(23 \pm 3) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 15) \%$

Ambient Pressure :  $(101.325 \pm 1.500) \text{ kPa}$

- Standards used :**
1. Digital Function Synthesizer NF Electronic DF-193A S/N 122037.
  2. Measuring Amplifier Bruel&Kjaer 2636 S/N 1537484.
  3. Programmable Attenuator Tamagawa TPA-303A S/N OF 2214.
  4. Digital Multimeter Agilent 34401A S/N MY44005560.
  5. Pressure Transmitter Vaisala PTB202AD S/N T0650001.
  6. Audio Analyzer Keithley 2015-P S/N 4106495.
  7. Condenser Microphone Bruel&Kjaer 4180 S/N 2889871.

**Calibration Procedure:** CP-102-04 based on IEC 60942-2003; The sound pressure level generated by sound calibrator under test shall be measured by standard microphone using an insert voltage technique.

This instrument has been calibrated against standards maintained at Electrical and Electronic Standards Laboratory (EEL), which are traceable to the International System of Units through the National Institute of Metrology (Thailand).

The information on actual reading is attached herewith and the uncertainty limits quoted refer to the measured values only.

**Date of Receipt** : 29 Jan. 2026

**Date of Calibration** : 11 Feb. 2026

1 / 2

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FM.BL.MTC.002 Rev.5

**Head Office**

35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,  
Changwat Pathumthani 12120, Thailand  
Tel. (66) 0 2577 9036  
Fax. (66) 0 2577 9009

**Office/Laboratory**

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(66) 08 1889 6827

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-69/0204

MTC No. EEL. BP. 152/0169

The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%.

Nominal Output of Unit Under Test = 94 dB re 20 $\mu$ Pa at 1000 Hz

Acoustic Output in dB re 20 $\mu$ Pa, Corrected to Reference Conditions: 101.325 kPa, 23.0 °C and 50 %RH.

1. Sound Pressure Level

| Standard Microphone<br>Type | Measured Sound Pressure<br>Level (dB) | Deviated value<br>(dB) | Uncertainty<br>(dB) | Tolerance limit<br>IEC60942:2003 Class 1 |
|-----------------------------|---------------------------------------|------------------------|---------------------|------------------------------------------|
| 1/2 inch Bruel&Kjaer 4180   | 93.89                                 | -0.11                  | $\pm 0.10$          | $\pm 0.40$ dB                            |

2. Frequency

| Standard Microphone<br>Type | Measured Frequency<br>(Hz) | Deviated value<br>(Hz) | Uncertainty<br>(Hz) | Tolerance limit<br>IEC60942:2003 Class 1 |
|-----------------------------|----------------------------|------------------------|---------------------|------------------------------------------|
| 1/2 inch Bruel&Kjaer 4180   | 999.9                      | -0.1                   | $\pm 1.5$           | $\pm 1.0\%$                              |

3. Total Distortion

| Standard Microphone<br>Type | Measured Total Distortion<br>(%) | Uncertainty<br>(%) | Tolerance limit<br>IEC60942:2003 Class 1 |
|-----------------------------|----------------------------------|--------------------|------------------------------------------|
| 1/2 inch Bruel&Kjaer 4180   | 1.90                             | $\pm 0.50$         | $\pm 3.0\%$                              |

Note : 1. No adjustment.

2. The calibrator pressure correction was not included.

3. The microphone volume correction was not included.

Calibrated by :

(Mr. Weerachai Deechaiyae)

Approved by :

(Mr. Prawate Kluaypa)

Director

Electrical and Electronic Standards Laboratory

Industrial Metrology and Testing Service Centre

Date of Calibration : 11 Feb. 2026

Date of Issue : 12 Feb. 2026

Ref : 2011269012900497001

End of Certificate

2 / 2

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FM.BL.MTC.002 Rev.5

Head Office

35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang, Changwat Pathumthani 12120, Thailand  
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Noise B\_068/26

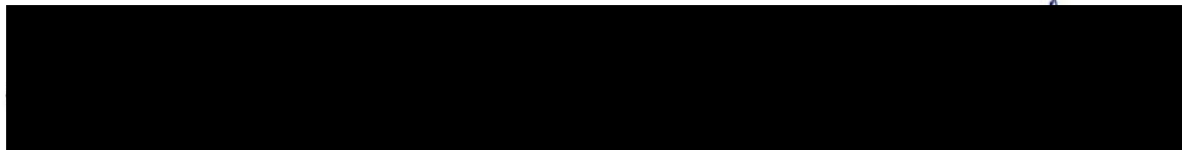
## Sound Level Meter Calibration Report

### Acoustic Calibrator Data

|                   |                |                  |                  |
|-------------------|----------------|------------------|------------------|
| Brand             | ACO            | Number           | AC 03/56         |
| Model             | 2127           | Serial No.       | 130006           |
| Calibration Range | 94 dB, 1000 Hz | Last Calibration | 11 February 2026 |
|                   |                | Due Date         | 11 February 2027 |

### Calibration Data

| Sound Level Meter Data                                                                         |       |       |            | Calibration Data |                     |                  |
|------------------------------------------------------------------------------------------------|-------|-------|------------|------------------|---------------------|------------------|
| SLM No.                                                                                        | Brand | Model | Serial No. | Date             | Actual Reading [dB] |                  |
|                                                                                                |       |       |            |                  | Before Adjustment   | After Adjustment |
| ACO-B18                                                                                        | ACO   | 6236  | 00172048   | 03 March 2026    | 93.8                | 93.9             |
| ACO-B29                                                                                        | ACO   | 6236  | 00182011   | 03 March 2026    | 93.9                | 93.9             |
| ACO-B33                                                                                        | ACO   | 6236  | 00182015   | 03 March 2026    | 93.8                | 93.9             |
| ACO-B36                                                                                        | ACO   | 6236  | 00192027   | 03 March 2026    | 93.7                | 93.9             |
| ACO-B41                                                                                        | ACO   | 6236  | 00192032   | 03 March 2026    | 93.8                | 93.9             |
| ACO-B43                                                                                        | ACO   | 6236  | 00192034   | 03 March 2026    | 93.9                | 93.9             |
| ACO-R40                                                                                        | ACO   | 6236  | 00192052   | 03 March 2026    | 93.8                | 93.9             |
| ACO-R41                                                                                        | ACO   | 6236  | 00192053   | 03 March 2026    | 93.8                | 93.9             |
| Acoustic Certified Value : Thailand Institute of Scientific and Technological Research (TISTR) |       |       |            |                  | 93.89 ± 0.10 dB     |                  |







บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด  
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7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72 Fax : (662) 513-4221 E-mail : sale@spscon.com, www.spscon.com

Noise B\_313/26

## Sound Level Meter Calibration Report

### Acoustic Calibrator Data

|                   |                |                  |                  |
|-------------------|----------------|------------------|------------------|
| Brand             | ACO            | Number           | AC 03/56         |
| Model             | 2127           | Serial No.       | 130006           |
| Calibration Range | 94 dB, 1000 Hz | Last Calibration | 11 February 2026 |
|                   |                | Due Date         | 11 February 2027 |

### Calibration Data

| Sound Level Meter Data                                                                         |         |        |            | Calibration Data |                     |                  |
|------------------------------------------------------------------------------------------------|---------|--------|------------|------------------|---------------------|------------------|
| SLM No.                                                                                        | Brand   | Model  | Serial No. | Date             | Actual Reading [dB] |                  |
|                                                                                                |         |        |            |                  | Before Adjustment   | After Adjustment |
| ACO-B18                                                                                        | ACO     | 6236   | 00172048   | 09 June 2026     | 93.8                | 93.9             |
| ACO-B29                                                                                        | ACO     | 6236   | 00182011   | 09 June 2026     | 93.9                | 93.9             |
| ACO-B33                                                                                        | ACO     | 6236   | 00182015   | 09 June 2026     | 93.8                | 93.9             |
| ACO-C1-B05                                                                                     | ACO     | 6238   | 00223042   | 09 June 2026     | 93.9                | 93.9             |
| ST-C1-B07                                                                                      | SCARLET | ST-12D | 10351464   | 09 June 2026     | 93.8                | 93.9             |
| ST-C1-B08                                                                                      | SCARLET | ST-12D | 10351469   | 09 June 2026     | 93.7                | 93.9             |
| ST-C1-B09                                                                                      | SCARLET | ST-12D | 10351478   | 09 June 2026     | 93.9                | 93.9             |
| ST-C1-B14                                                                                      | SCARLET | ST-12D | 10351488   | 09 June 2026     | 93.9                | 93.9             |
| Acoustic Certified Value : Thailand Institute of Scientific and Technological Research (TISTR) |         |        |            |                  | 93.89 ± 0.10 dB     |                  |

ระดับความร้อนในสถานที่ทำงาน



## Certificate of Calibration

Certificate Number : SPR25100063-9

Page : 1 of 3

Customer : S.P.S. CONSULTING SERVICE CO., LTD.

7 Soi Phaholyothin 24 Phaholyothin Road., Jompol, Chatuchak,  
Bangkok 10900

Equipment Name : Area Heat Stress Monitor

Manufacturer : Quest Technologies

Model : QUESTemp 34

Serial Number : TEH060047

ID. Number : B05

### Environmental Conditions

Ambient Temperature :  $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$

Relative Humidity :  $50\% \pm 15\%$

Location of Calibration : In-Lab

Calibration Procedure : SP-CPT-04-13

Received Date : 06 Oct 2025

Calibration Date : 29 Oct 2025

Recommend Due Date : 29 Oct 2026

Date of Issue : 30 Oct 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr.Surasak Ritthikaew

Calibration Officer

Approved by



( Mr.Worapong Sinthusopa )

Authorized Signatory





## Calibration Report

Certificate Number : SPR25100063-9

Page : 2 of 3

### Reference Standards

| Equipment Name               | Model               | Serial No.      | Certificate No. | Due. Date   |
|------------------------------|---------------------|-----------------|-----------------|-------------|
| THERMO-HYGROMETER            | 5020A               | A47046          | TMU2500342      | 29 Jan 2026 |
| Temp & Humidity Test Chamber | TEMI1500-01/SD/N/N/ | S7110ZL742 1014 | SPR25040010-13  | 20 Apr 2026 |

### Traceability

This certification is traceable to the International System of Unit maintained at :

NA - NA Caltechnologies Co., Ltd.

SP Metrology - SP Metrology system (Thailand) Co.Ltd.



## Result of Calibration

Certificate Number : SPR25100063-9

Page : 3 of 3

Temperature Accuracy in the Measurement. (WET)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error | Uncertainty ( ± ) |
|---------------------|------------------|-------------|-------|-------------------|
| 30.0                | 30.018           | 30.1        | 0.082 | 0.20              |
| 35.0                | 35.014           | 35.1        | 0.086 | 0.20              |
| 40.0                | 40.011           | 40.1        | 0.089 | 0.21              |

Temperature Accuracy in the Measurement. (DRY)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.021           | 30.1        | 0.079  | 0.20              |
| 35.0                | 35.015           | 35.0        | -0.015 | 0.20              |
| 40.0                | 40.010           | 40.0        | -0.010 | 0.21              |

Temperature Accuracy in the Measurement. (GLOVE)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error | Uncertainty ( ± ) |
|---------------------|------------------|-------------|-------|-------------------|
| 30.0                | 30.022           | 30.1        | 0.078 | 0.20              |
| 35.0                | 35.018           | 35.1        | 0.082 | 0.20              |
| 40.0                | 40.013           | 40.1        | 0.087 | 0.21              |

### Note :

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2$ , providing a level of confidence approximately 95%.

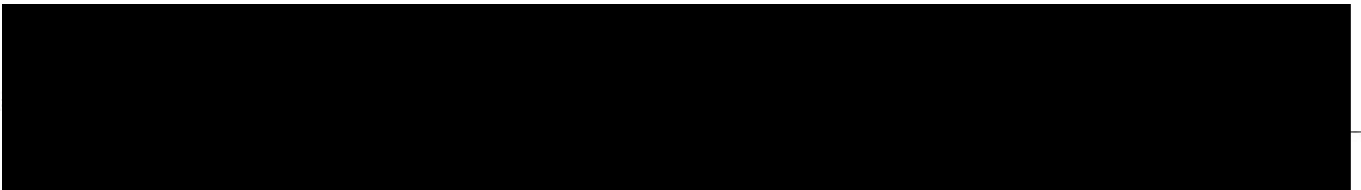
- End of Certificate -



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7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com., www.spscon.com

Heat B\_069\_1

| Heat Stress WBGT Meter Verification Report                                    |                            |                     |                      |
|-------------------------------------------------------------------------------|----------------------------|---------------------|----------------------|
| Verification Data                                                             |                            |                     |                      |
| Heat Stress WBGT Meter No.                                                    | : B05                      | Verification Date   | : 03 March 2026      |
| Brand                                                                         | : Quest Technologies       | Ambient Temp.       | : 24.5 °C            |
| Model                                                                         | : QUESTemp <sup>o</sup> 34 | Barometric Pressure | : 1011 mmbar         |
| Serial No.                                                                    | : TEH060047                | Relative Humidity   | : 49 %               |
| Verification Module (Electronic Sensor Check) :                               |                            |                     |                      |
| Verification Module No. : 21    WB = 12.5 °C,    DB = 47.1 °C,    G = 69.3 °C |                            |                     |                      |
| Result of Verification : Without Adjustment                                   |                            |                     |                      |
| Wet Probe Temperature Measurement                                             |                            |                     |                      |
| Verification Module Reading (°C)                                              | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 12.5                                                                          | 12.4                       | 0.1                 | ± 0.5                |
| Dry Probe Temperature Measurement                                             |                            |                     |                      |
| Verification Module Reading (°C)                                              | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 47.1                                                                          | 47.1                       | 0.0                 | ± 0.5                |
| Globe Probe Temperature Measurement                                           |                            |                     |                      |
| Verification Module Reading (°C)                                              | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 69.3                                                                          | 69.4                       | -0.1                | ± 0.5                |
| UUC* = UNIT UNDER CALIBRATION                                                 |                            |                     |                      |







## Certificate of Calibration

Certificate Number : SPR26010387-5

Page : 1 of 3

Customer : S.P.S. CONSULTING SERVICE CO., LTD.

7 Soi Phaholyothin 24 Phaholyothin Road., Jompol, Chatuchak,  
Bangkok 10900

Equipment Name : Area Heat Stress Monitor

Manufacturer : Quest Technologies

Model : QUESTemp 34

Serial Number : TEG040059

ID. Number : B07

### Environmental Conditions

Ambient Temperature :  $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$

Relative Humidity :  $50\% \pm 15\%$

Location of Calibration : In-Lab

Calibration Procedure : SP-CPT-04-13

Received Date : 30 Jan 2026

Calibration Date : 03 Feb 2026

Recommend Due Date : 03 Feb 2027

Date of Issue : 04 Feb 2026

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr. Jirasak Pumbut

Calibration Officer

Approved by

( Mr. Worapong Sinthusopa )

Authorized Signatory





## Calibration Report

Certificate Number : SPR26010387-5

Page : 2 of 3

### Reference Standards

| Equipment Name               | Model               | Serial No.      | Certificate No. | Due. Date   |
|------------------------------|---------------------|-----------------|-----------------|-------------|
| THERMO-HYGROMETER            | 5020A               | A47046          | TMU2500342      | 29 Jan 2027 |
| Temp & Humidity Test Chamber | TEMI1500-01/SD/N/N/ | S7110ZL742 1014 | SPR25040010-13  | 20 Apr 2026 |

### Traceability

This certification is traceable to the International System of Unit maintained at :

NA - NA Caltechnologies Co., Ltd.

SP Metrology - SP Metrology system (Thailand) Co.Ltd.



## Result of Calibration

Certificate Number : SPR26010387-5

Page : 3 of 3

Temperature Accuracy in the Measurement. (WET)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.009           | 29.8        | -0.209 | 0.20              |
| 35.0                | 35.012           | 34.8        | -0.212 | 0.20              |
| 40.0                | 40.017           | 39.8        | -0.217 | 0.21              |

Temperature Accuracy in the Measurement. (DRY)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.009           | 29.7        | -0.309 | 0.20              |
| 35.0                | 35.012           | 34.7        | -0.312 | 0.20              |
| 40.0                | 40.017           | 39.7        | -0.317 | 0.21              |

Temperature Accuracy in the Measurement. (GLOBE)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.009           | 29.8        | -0.209 | 0.20              |
| 35.0                | 35.012           | 34.8        | -0.212 | 0.20              |
| 40.0                | 40.017           | 39.8        | -0.217 | 0.21              |

### Note :

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2$ , providing a level of confidence approximately 95%.

- End of Certificate -





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7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com., www.spscon.com

Heat B\_069\_2

| Heat Stress WBGT Meter Verification Report                                    |                            |                     |                      |
|-------------------------------------------------------------------------------|----------------------------|---------------------|----------------------|
| Verification Data                                                             |                            |                     |                      |
| Heat Stress WBGT Meter No.                                                    | : B07                      | Verification Date   | : 03 March 2026      |
| Brand                                                                         | : Quest Technologies       | Ambient Temp.       | : 24.5 °C            |
| Model                                                                         | : QUESTemp <sup>o</sup> 34 | Barometric Pressure | : 1011 mmbar         |
| Serial No.                                                                    | : TEG040059                | Relative Humidity   | : 49 %               |
| Verification Module (Electronic Sensor Check) :                               |                            |                     |                      |
| Verification Module No. : 21    WB = 12.5 °C,    DB = 47.1 °C,    G = 69.3 °C |                            |                     |                      |
| Result of Verification : Without Adjustment                                   |                            |                     |                      |
| Wet Probe Temperature Measurement                                             |                            |                     |                      |
| Verification Module Reading (°C)                                              | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 12.5                                                                          | 12.6                       | -0.1                | ± 0.5                |
| Dry Probe Temperature Measurement                                             |                            |                     |                      |
| Verification Module Reading (°C)                                              | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 47.1                                                                          | 47.3                       | -0.2                | ± 0.5                |
| Globe Probe Temperature Measurement                                           |                            |                     |                      |
| Verification Module Reading (°C)                                              | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 69.3                                                                          | 69.2                       | 0.1                 | ± 0.5                |
| UUC* = UNIT UNDER CALIBRATION                                                 |                            |                     |                      |

V



## Certificate of Calibration

Certificate Number : SPR25100063-10

Page : 1 of 3

Customer : S.P.S. CONSULTING SERVICE CO., LTD.

7 Soi Phaholyothin 24 Phaholyothin Road., Jompol, Chatuchak,  
Bangkok 10900

Equipment Name : Area Heat Stress Monitor

Manufacturer : Quest Technologies

Model : QUESTemp 32

Serial Number : TPA100010

ID. Number : B12

### Environmental Conditions

Ambient Temperature :  $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$

Relative Humidity :  $50\% \pm 15\%$

Location of Calibration : In-Lab

Calibration Procedure : SP-CPT-04-13

Received Date : 06 Oct 2025

Calibration Date : 29 Oct 2025

Recommend Due Date : 29 Oct 2026

Date of Issue : 30 Oct 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr.Surasak Ritthikaew

Calibration Officer

Approved by



( Mr.Worapong Sinthusopa )

Authorized Signatory



## Calibration Report

Certificate Number : SPR25100063-10

Page : 2 of 3

### Reference Standards

| Equipment Name               | Model               | Serial No.      | Certificate No. | Due. Date   |
|------------------------------|---------------------|-----------------|-----------------|-------------|
| THERMO-HYGROMETER            | 5020A               | A47046          | TMU2500342      | 29 Jan 2026 |
| Temp & Humidity Test Chamber | TEMI1500-01/SD/N/N/ | S7110ZL742 1014 | SPR25040010-13  | 20 Apr 2026 |

### Traceability

This certification is traceable to the International System of Unit maintained at :

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## Result of Calibration

Certificate Number : SPR25100063-10

Page : 3 of 3

Temperature Accuracy in the Measurement. (WET)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.019           | 30.1        | 0.081  | 0.20              |
| 35.0                | 35.013           | 35.1        | 0.087  | 0.20              |
| 40.0                | 40.009           | 40.0        | -0.009 | 0.21              |

Temperature Accuracy in the Measurement. (DRY)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.022           | 30.1        | 0.078  | 0.20              |
| 35.0                | 35.016           | 35.1        | 0.084  | 0.20              |
| 40.0                | 40.010           | 40.0        | -0.010 | 0.21              |

Temperature Accuracy in the Measurement. (GLOVE)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error | Uncertainty ( ± ) |
|---------------------|------------------|-------------|-------|-------------------|
| 30.0                | 30.024           | 30.1        | 0.076 | 0.20              |
| 35.0                | 35.019           | 35.1        | 0.081 | 0.20              |
| 40.0                | 40.011           | 40.1        | 0.089 | 0.21              |

### Note :

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

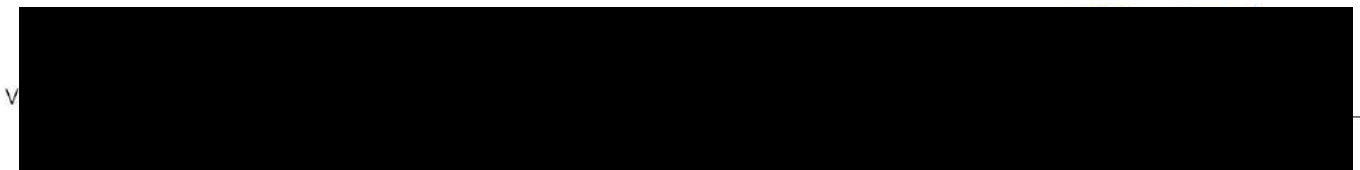
The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2$ , providing a level of confidence approximately 95%.

- End of Certificate -



Heat B\_069\_3

| Heat Stress WBGT Meter Verification Report                                    |                            |                     |                      |
|-------------------------------------------------------------------------------|----------------------------|---------------------|----------------------|
| Verification Data                                                             |                            |                     |                      |
| Heat Stress WBGT Meter No.                                                    | : B12                      | Verification Date   | : 03 March 2026      |
| Brand                                                                         | : Quest Technologies       | Ambient Temp.       | : 24.5 °C            |
| Model                                                                         | : QUESTemp <sup>o</sup> 32 | Barometric Pressure | : 1011 mmbar         |
| Serial No.                                                                    | : TPA100010                | Relative Humidity   | : 49 %               |
| Verification Module (Electronic Sensor Check) :                               |                            |                     |                      |
| Verification Module No. : 21    WB = 12.5 °C,    DB = 47.1 °C,    G = 69.3 °C |                            |                     |                      |
| Result of Verification : Without Adjustment                                   |                            |                     |                      |
| Wet Probe Temperature Measurement                                             |                            |                     |                      |
| Verification Module Reading (°C)                                              | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 12.5                                                                          | 12.5                       | 0.0                 | ± 0.5                |
| Dry Probe Temperature Measurement                                             |                            |                     |                      |
| Verification Module Reading (°C)                                              | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 47.1                                                                          | 47.3                       | -0.2                | ± 0.5                |
| Globe Probe Temperature Measurement                                           |                            |                     |                      |
| Verification Module Reading (°C)                                              | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 69.3                                                                          | 69.2                       | 0.1                 | ± 0.5                |
| UUC* = UNIT UNDER CALIBRATION                                                 |                            |                     |                      |





## Certificate of Calibration

Certificate Number : SPR26010387-3

Page : 1 of 3

Customer : S.P.S. CONSULTING SERVICE CO., LTD.

7 Soi Phaholyothin 24 Phaholyothin Road., Jompol, Chatuchak,  
Bangkok 10900

Equipment Name : Area Heat Stress Monitor

Manufacturer : Metrosonics

Model : hs-32

Serial Number : MCE030011

ID. Number : B21

### Environmental Conditions

Ambient Temperature :  $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$

Relative Humidity :  $50\% \pm 15\%$

Location of Calibration : In-Lab

Calibration Procedure : SP-CPT-04-13

Received Date : 30 Jan 2026

Calibration Date : 03 Feb 2026

Recommend Due Date : 03 Feb 2027

Date of Issue : 04 Feb 2026

### Method of Calibration

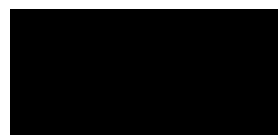
This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr.Jirasak Pumbut

Calibration Officer

Approved by



( Mr.Worapong Sinthusopa )

Authorized Signatory







## Calibration Report

Certificate Number : SPR26010387-3

Page : 2 of 3

### Reference Standards

| Equipment Name               | Model               | Serial No.      | Certificate No. | Due. Date   |
|------------------------------|---------------------|-----------------|-----------------|-------------|
| THERMO-HYGROMETER            | 5020A               | A47046          | TMU2500342      | 29 Jan 2027 |
| Temp & Humidity Test Chamber | TEMI1500-01/SD/N/N/ | S7110ZL742 1014 | SPR25040010-13  | 20 Apr 2026 |

### Traceability

This certification is traceable to the International System of Unit maintained at :  
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## Result of Calibration

Certificate Number : SPR26010387-3

Page : 3 of 3

Temperature Accuracy in the Measurement. (WET)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.009           | 29.7        | -0.309 | 0.20              |
| 35.0                | 35.012           | 34.7        | -0.312 | 0.20              |
| 40.0                | 40.017           | 39.8        | -0.217 | 0.21              |

Temperature Accuracy in the Measurement. (DRY)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.009           | 29.6        | -0.409 | 0.20              |
| 35.0                | 35.012           | 34.6        | -0.412 | 0.20              |
| 40.0                | 40.017           | 39.7        | -0.317 | 0.21              |

Temperature Accuracy in the Measurement. (GLOBE)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.009           | 29.7        | -0.309 | 0.20              |
| 35.0                | 35.012           | 34.7        | -0.312 | 0.20              |
| 40.0                | 40.017           | 39.8        | -0.217 | 0.21              |

### Note :

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2$ , providing a level of confidence approximately 95%.

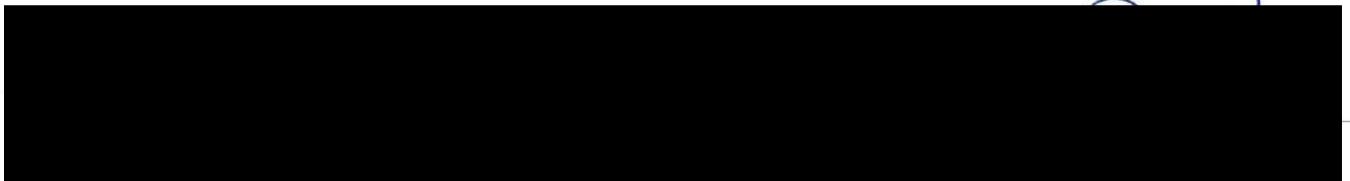
- End of Certificate -



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7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com., www.spscon.com

Heat B\_069\_4

| Heat Stress WBGT Meter Verification Report                           |                   |                     |                      |
|----------------------------------------------------------------------|-------------------|---------------------|----------------------|
| Verification Data                                                    |                   |                     |                      |
| Heat Stress WBGT Meter No.                                           | : B21             | Verification Date   | : 03 March 2026      |
| Brand                                                                | : METROSNICS      | Ambient Temp.       | : 24.5 °C            |
| Model                                                                | : hs-32           | Barometric Pressure | : 1011 mmbar         |
| Serial No.                                                           | : MCE030011       | Relative Humidity   | : 49 %               |
| Verification Module (Electronic Sensor Check) :                      |                   |                     |                      |
| Verification Module No. : 21 WB = 12.5 °C, DB = 47.1 °C, G = 69.3 °C |                   |                     |                      |
| Result of Verification : Without Adjustment                          |                   |                     |                      |
| Wet Probe Temperature Measurement                                    |                   |                     |                      |
| Verification Module Reading (°C)                                     | UUC* Reading (°C) | Correction (°C)     | Tolerance Limit (°C) |
| 12.5                                                                 | 12.7              | -0.2                | ± 0.5                |
| Dry Probe Temperature Measurement                                    |                   |                     |                      |
| Verification Module Reading (°C)                                     | UUC* Reading (°C) | Correction (°C)     | Tolerance Limit (°C) |
| 47.1                                                                 | 47.0              | 0.1                 | ± 0.5                |
| Globe Probe Temperature Measurement                                  |                   |                     |                      |
| Verification Module Reading (°C)                                     | UUC* Reading (°C) | Correction (°C)     | Tolerance Limit (°C) |
| 69.3                                                                 | 69.4              | -0.1                | ± 0.5                |
| UUC* = UNIT UNDER CALIBRATION                                        |                   |                     |                      |







## Certificate of Calibration

Certificate Number : SPR25100063-2

Page : 1 of 3

Customer : S.P.S. CONSULTING SERVICE CO., LTD.

7 Soi Phaholyothin 24 Phaholyothin Road., Jompol, Chatuchak,  
Bangkok 10900

Equipment Name : Area Heat Stress Monitor

Manufacturer : Quest Technologies

Model : QUESTemp 32

Serial Number : TPH050019

ID. Number : B25

### Environmental Conditions

Ambient Temperature :  $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$

Received Date : 06 Oct 2025

Relative Humidity :  $50\% \pm 15\%$

Calibration Date : 08 Oct 2025

Location of Calibration : In-Lab

Recommend Due Date : 08 Oct 2026

Calibration Procedure : SP-CPT-04-13

Date of Issue : 09 Oct 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr. Navaporn Uengseng

Approved by

Calibration Officer



( Mr. Pootthipong A. )

Authorized Signatory

SP-FM-04-15 rev.0



## Calibration Report

Certificate Number : SPR25100063-2

Page : 2 of 3

### Reference Standards

| Equipment Name               | Model               | Serial No.      | Certificate No. | Due. Date   |
|------------------------------|---------------------|-----------------|-----------------|-------------|
| THERMO-HYGROMETER            | 5020A               | A47046          | TMU2500342      | 29 Jan 2026 |
| Temp & Humidity Test Chamber | TEMI1500-01/SD/N/N/ | S7110ZL742 1014 | SPR25040010-13  | 20 Apr 2026 |

### Traceability

This certification is traceable to the International System of Unit maintained at :

NA - NA Caltechnologies Co., Ltd.

SP Metrology - SP Metrology system (Thailand) Co.Ltd.



## Result of Calibration

Certificate Number : SPR25100063-2

Page : 3 of 3

Temperature Accuracy in the Measurement. (WET)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.014           | 30.0        | -0.014 | 0.20              |
| 35.0                | 35.012           | 35.0        | -0.012 | 0.20              |
| 40.0                | 40.018           | 40.0        | -0.018 | 0.20              |

Temperature Accuracy in the Measurement. (DRY)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.014           | 29.9        | -0.114 | 0.20              |
| 35.0                | 35.012           | 34.9        | -0.112 | 0.20              |
| 40.0                | 40.018           | 39.9        | -0.118 | 0.20              |

Temperature Accuracy in the Measurement. (GLOVE)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.014           | 30.0        | -0.014 | 0.20              |
| 35.0                | 35.012           | 35.0        | -0.012 | 0.20              |
| 40.0                | 40.018           | 40.0        | -0.018 | 0.20              |

### Note :

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2$ , providing a level of confidence approximately 95%.

- End of Certificate -





บริษัท เอส.พี.เอส. คอนซัลติ้ง เซอร์วิส จำกัด

S.P.S. CONSULTING SERVICE CO., LTD.

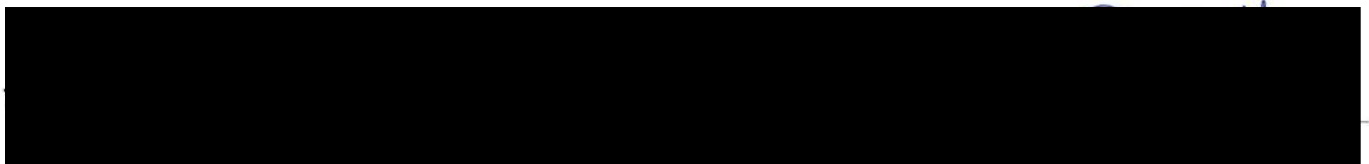
7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900

7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900

Tel : (662) 939-4370-72, Fax : (662) 513-4221, E-mail : sale@spscon.com., www.spscon.com

Heat B\_069\_5

| Heat Stress WBGT Meter Verification Report                           |                            |                     |                      |
|----------------------------------------------------------------------|----------------------------|---------------------|----------------------|
| Verification Data                                                    |                            |                     |                      |
| Heat Stress WBGT Meter No.                                           | : B25                      | Verification Date   | : 03 March 2026      |
| Brand                                                                | : Quest Technologies       | Ambient Temp.       | : 24.5 °C            |
| Model                                                                | : QUESTemp <sup>o</sup> 32 | Barometric Pressure | : 1011 mmbar         |
| Serial No.                                                           | : TPH050019                | Relative Humidity   | : 49 %               |
| Verification Module (Electronic Sensor Check) :                      |                            |                     |                      |
| Verification Module No. : 21 WB = 12.5 °C, DB = 47.1 °C, G = 69.3 °C |                            |                     |                      |
| Result of Verification : Without Adjustment                          |                            |                     |                      |
| Wet Probe Temperature Measurement                                    |                            |                     |                      |
| Verification Module Reading (°C)                                     | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 12.5                                                                 | 12.6                       | -0.1                | ± 0.5                |
| Dry Probe Temperature Measurement                                    |                            |                     |                      |
| Verification Module Reading (°C)                                     | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 47.1                                                                 | 47.1                       | 0.0                 | ± 0.5                |
| Globe Probe Temperature Measurement                                  |                            |                     |                      |
| Verification Module Reading (°C)                                     | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 69.3                                                                 | 69.2                       | 0.1                 | ± 0.5                |
| UUC* = UNIT UNDER CALIBRATION                                        |                            |                     |                      |





## Certificate of Calibration

Certificate Number : SPR26030173-2

Page : 1 of 3

Customer : S.P.S. CONSULTING SERVICE CO., LTD.

7 Soi Phaholyothin 24 Phaholyothin Road., Jompol, Chatuchak,  
Bangkok 10900

Equipment Name : Area Heat Stress Monitor

Manufacturer : Quest Technologies

Model : QUESTemp 34

Serial Number : TPH050041

ID. Number : B26

### Environmental Conditions

Ambient Temperature :  $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$

Relative Humidity :  $50\% \pm 15\%$

Location of Calibration : In-Lab

Calibration Procedure : SP-CPT-04-13

Received Date : 11 Mar 2026

Calibration Date : 14 Mar 2026

Recommend Due Date : 14 Mar 2027

Date of Issue : 15 Mar 2026

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs. The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr. Witthawat Jansuwan

Approved by

Calibration Officer



( Mr. Worapong Sinthusopa )

Authorized Signatory

SP-FM-04-15 rev.0



## Calibration Report

Certificate Number : SPR26030173-2

Page : 2 of 3

### Reference Standards

| Equipment Name               | Model               | Serial No.      | Certificate No. | Due. Date   |
|------------------------------|---------------------|-----------------|-----------------|-------------|
| THERMO-HYGROMETER            | 5020A               | A47046          | TMU2600443      | 01 Feb 2027 |
| Temp & Humidity Test Chamber | TEMI1500-01/SD/N/N/ | S7110ZL742 1014 | SPR25040010-13  | 20 Apr 2026 |

### Traceability

This certification is traceable to the International System of Unit maintained at :

NA - NA Caltechnologies Co., Ltd.

SP Metrology - SP Metrology system (Thailand) Co.Ltd.





## Result of Calibration

Certificate Number : SPR26030173-2

Page : 3 of 3

Temperature Accuracy in the Measurement. (WET)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.013           | 30.1        | 0.087  | 0.20              |
| 35.0                | 35.012           | 35.0        | -0.012 | 0.20              |
| 40.0                | 40.015           | 40.1        | 0.085  | 0.21              |

Temperature Accuracy in the Measurement. (DRY)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.013           | 30.0        | -0.013 | 0.20              |
| 35.0                | 35.012           | 35.1        | 0.088  | 0.20              |
| 40.0                | 40.015           | 40.1        | 0.085  | 0.21              |

Temperature Accuracy in the Measurement. (GLOBE)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.013           | 30.1        | 0.087  | 0.20              |
| 35.0                | 35.012           | 35.0        | -0.012 | 0.20              |
| 40.0                | 40.015           | 39.9        | -0.115 | 0.21              |

### Note :

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2$ , providing a level of confidence approximately 95%.

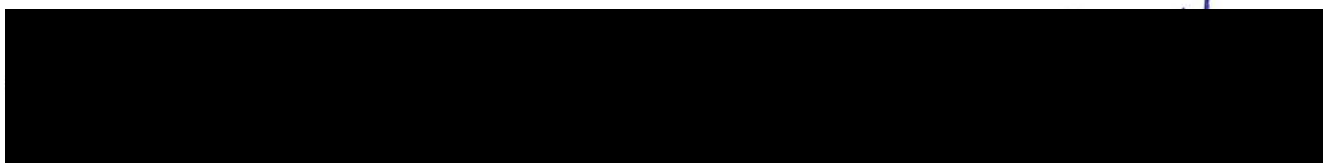
- End of Certificate -



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7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72. Fax : (662) 513-4221. E-mail : sale@spscon.com., www.spscon.com

Heat B\_314\_5

| Heat Stress WBGT Meter Verification Report                           |                            |                     |                      |
|----------------------------------------------------------------------|----------------------------|---------------------|----------------------|
| Verification Data                                                    |                            |                     |                      |
| Heat Stress WBGT Meter No.                                           | : B26                      | Verification Date   | : 09 June 2026       |
| Brand                                                                | : Quest Technologies       | Ambient Temp.       | : 24.5 °C            |
| Model                                                                | : QUESTemp <sup>®</sup> 34 | Barometric Pressure | : 1011 mmbar         |
| Serial No.                                                           | : TPH050041                | Relative Humidity   | : 49 %               |
| Verification Module (Electronic Sensor Check) :                      |                            |                     |                      |
| Verification Module No. : 21 WB = 12.5 °C, DB = 47.1 °C, G = 69.3 °C |                            |                     |                      |
| Result of Verification : Without Adjustment                          |                            |                     |                      |
| Wet Probe Temperature Measurement                                    |                            |                     |                      |
| Verification Module Reading (°C)                                     | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 12.5                                                                 | 12.6                       | -0.1                | ± 0.5                |
| Dry Probe Temperature Measurement                                    |                            |                     |                      |
| Verification Module Reading (°C)                                     | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 47.1                                                                 | 47.3                       | -0.2                | ± 0.5                |
| Globe Probe Temperature Measurement                                  |                            |                     |                      |
| Verification Module Reading (°C)                                     | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 69.3                                                                 | 69.2                       | 0.1                 | ± 0.5                |
| UUC* = UNIT UNDER CALIBRATION                                        |                            |                     |                      |





## Certificate of Calibration

Certificate Number : SPR25110089-4

Page : 1 of 3

Customer : S.P.S. CONSULTING SERVICE CO., LTD.

7 Soi Phaholyothin 24 Phaholyothin Road., Jompol, Chatuchak,  
Bangkok 10900

Equipment Name : Area Heat Stress Monitor

Manufacturer : Quest Technologies

Model : QUESTemp 32

Serial Number : TPH050047

ID. Number : B31

### Environmental Conditions

Ambient Temperature :  $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$

Relative Humidity :  $50\% \pm 15\%$

Location of Calibration : In-Lab

Calibration Procedure : SP-CPT-04-13

Received Date : 07 Nov 2025

Calibration Date : 01 Dec 2025

Recommend Due Date : 01 Dec 2026

Date of Issue : 02 Dec 2025

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr.Chatchai Kittisopha

Calibration Officer

Approved by



( Mr.Worapong Sinthusopa )

Authorized Signatory

SP-FM-04-15 rev.0





## Calibration Report

Certificate Number : SPR25110089-4

Page : 2 of 3

### Reference Standards

| Equipment Name               | Model               | Serial No.      | Certificate No. | Due. Date   |
|------------------------------|---------------------|-----------------|-----------------|-------------|
| THERMO-HYGROMETER            | 5020A               | A47046          | TMU2500342      | 29 Jan 2026 |
| Temp & Humidity Test Chamber | TEMI1500-01/SD/N/N/ | S7110ZL742 1014 | SPR25040010-13  | 20 Apr 2026 |

### Traceability

This certification is traceable to the International System of Unit maintained at :

NA - NA Caltechnologies Co., Ltd.

SP Metrology - SP Metrology system (Thailand) Co.Ltd.



## Result of Calibration

Certificate Number : SPR25110089-4

Page : 3 of 3

Temperature Accuracy in the Measurement. (WET)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.006           | 29.5        | -0.506 | 0.20              |
| 35.0                | 35.009           | 34.6        | -0.409 | 0.20              |
| 40.0                | 40.008           | 39.5        | -0.508 | 0.21              |

Temperature Accuracy in the Measurement. (DRY)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.006           | 29.5        | -0.506 | 0.20              |
| 35.0                | 35.009           | 34.6        | -0.409 | 0.20              |
| 40.0                | 40.008           | 39.6        | -0.408 | 0.21              |

Temperature Accuracy in the Measurement. (GLOVE)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.006           | 29.6        | -0.406 | 0.20              |
| 35.0                | 35.009           | 34.7        | -0.309 | 0.20              |
| 40.0                | 40.008           | 39.7        | -0.308 | 0.21              |

### Note :

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2$ , providing a level of confidence approximately 95%.

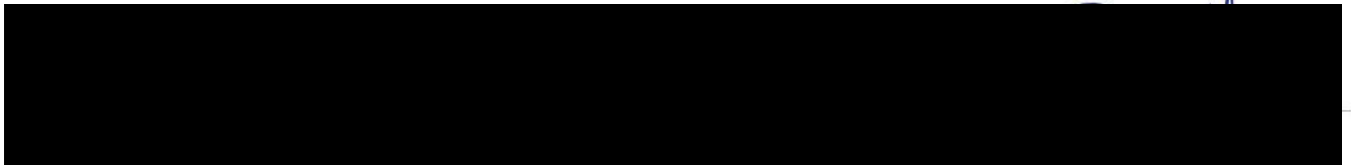
- End of Certificate -



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7 ซอยพหลโยธิน 24 ถนนพหลโยธิน แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900  
7 Soi Phaholyothin 24, Phaholyothin Rd., Jompol, Chatuchak, Bangkok 10900  
Tel : (662) 939-4370-72. Fax : (662) 513-4221. E-mail : sale@spscon.com., www.spscon.com

Heat B\_314\_3

| Heat Stress WBGT Meter Verification Report                                    |                            |                     |                      |
|-------------------------------------------------------------------------------|----------------------------|---------------------|----------------------|
| Verification Data                                                             |                            |                     |                      |
| Heat Stress WBGT Meter No.                                                    | : B31                      | Verification Date   | : 09 June 2026       |
| Brand                                                                         | : Quest Technologies       | Ambient Temp.       | : 24.5 °C            |
| Model                                                                         | : QUESTemp <sup>o</sup> 32 | Barometric Pressure | : 1011 mmbar         |
| Serial No.                                                                    | : TPH050047                | Relative Humidity   | : 49 %               |
| Verification Module (Electronic Sensor Check) :                               |                            |                     |                      |
| Verification Module No. : 21    WB = 12.5 °C,    DB = 47.1 °C,    G = 69.3 °C |                            |                     |                      |
| Result of Verification : Without Adjustment                                   |                            |                     |                      |
| Wet Probe Temperature Measurement                                             |                            |                     |                      |
| Verification Module Reading (°C)                                              | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 12.5                                                                          | 12.4                       | 0.1                 | ± 0.5                |
| Dry Probe Temperature Measurement                                             |                            |                     |                      |
| Verification Module Reading (°C)                                              | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 47.1                                                                          | 47.1                       | 0.0                 | ± 0.5                |
| Globe Probe Temperature Measurement                                           |                            |                     |                      |
| Verification Module Reading (°C)                                              | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 69.3                                                                          | 69.4                       | -0.1                | ± 0.5                |
| UUC* = UNIT UNDER CALIBRATION                                                 |                            |                     |                      |







## Certificate of Calibration

Certificate Number : SPR26010387-4

Page : 1 of 3

Customer : S.P.S. CONSULTING SERVICE CO., LTD.

7 Soi Phaholyothin 24 Phaholyothin Road., Jompol, Chatuchak,  
Bangkok 10900

Equipment Name : Area Heat Stress Monitor

Manufacturer : Quest Technologies

Model : QUESTemp 32

Serial Number : TPH050015

ID. Number : B32

### Environmental Conditions

Ambient Temperature :  $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$

Received Date : 30 Jan 2026

Relative Humidity :  $50\% \pm 15\%$

Calibration Date : 03 Feb 2026

Location of Calibration : In-Lab

Recommend Due Date : 03 Feb 2027

Calibration Procedure : SP-CPT-04-13

Date of Issue : 04 Feb 2026

### Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by : Mr.Jirasak Pumbut

Approved by

Calibration Officer



( Mr.Worapong Sinthusopa )

Authorized Signatory

SP-FM-04-15 rev.0



## Calibration Report

Certificate Number : SPR26010387-4

Page : 2 of 3

### Reference Standards

| Equipment Name               | Model               | Serial No.      | Certificate No. | Due. Date   |
|------------------------------|---------------------|-----------------|-----------------|-------------|
| THERMO-HYGROMETER            | 5020A               | A47046          | TMU2500342      | 29 Jan 2027 |
| Temp & Humidity Test Chamber | TEMI1500-01/SD/N/N/ | S7110ZL742 1014 | SPR25040010-13  | 20 Apr 2026 |

### Traceability

This certification is traceable to the International System of Unit maintained at :

NA - NA Caltechnologies Co., Ltd.

SP Metrology - SP Metrology system (Thailand) Co.Ltd.



## Result of Calibration

Certificate Number : SPR26010387-4

Page : 3 of 3

Temperature Accuracy in the Measurement. (WET)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.009           | 29.8        | -0.209 | 0.20              |
| 35.0                | 35.012           | 34.8        | -0.212 | 0.20              |
| 40.0                | 40.017           | 39.8        | -0.217 | 0.21              |

Temperature Accuracy in the Measurement. (DRY)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error  | Uncertainty ( ± ) |
|---------------------|------------------|-------------|--------|-------------------|
| 30.0                | 30.009           | 29.9        | -0.109 | 0.20              |
| 35.0                | 35.012           | 34.9        | -0.112 | 0.20              |
| 40.0                | 40.017           | 39.9        | -0.117 | 0.21              |

Temperature Accuracy in the Measurement. (GLOBE)

Unit : °C

| Temperature Setting | Standard Reading | UUC Reading | Error | Uncertainty ( ± ) |
|---------------------|------------------|-------------|-------|-------------------|
| 30.0                | 30.009           | 30.1        | 0.091 | 0.20              |
| 35.0                | 35.012           | 35.1        | 0.088 | 0.20              |
| 40.0                | 40.017           | 40.1        | 0.083 | 0.21              |

### Note :

The result of calibration was found accurate as show on date and place of calibration only.  
This Certificate is not certified for any commercial transaction.

### Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor  $k = 2$ , providing a level of confidence approximately 95%.

- End of Certificate -





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Tel : (662) 939-4370-72. Fax : (662) 513-4221. E-mail : sale@spscon.com., www.spscon.com

Heat B\_314\_4

| Heat Stress WBGT Meter Verification Report                           |                            |                     |                      |
|----------------------------------------------------------------------|----------------------------|---------------------|----------------------|
| Verification Data                                                    |                            |                     |                      |
| Heat Stress WBGT Meter No.                                           | : B32                      | Verification Date   | : 09 June 2026       |
| Brand                                                                | : Quest Technologies       | Ambient Temp.       | : 24.5 °C            |
| Model                                                                | : QUESTemp <sup>o</sup> 32 | Barometric Pressure | : 1011 mmbar         |
| Serial No.                                                           | : TPH050015                | Relative Humidity   | : 49 %               |
| Verification Module (Electronic Sensor Check) :                      |                            |                     |                      |
| Verification Module No. : 21 WB = 12.5 °C, DB = 47.1 °C, G = 69.3 °C |                            |                     |                      |
| Result of Verification : Without Adjustment                          |                            |                     |                      |
| Wet Probe Temperature Measurement                                    |                            |                     |                      |
| Verification Module Reading (°C)                                     | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 12.5                                                                 | 12.7                       | -0.2                | ± 0.5                |
| Dry Probe Temperature Measurement                                    |                            |                     |                      |
| Verification Module Reading (°C)                                     | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 47.1                                                                 | 47.2                       | -0.1                | ± 0.5                |
| Globe Probe Temperature Measurement                                  |                            |                     |                      |
| Verification Module Reading (°C)                                     | UUC* Reading (°C)          | Correction (°C)     | Tolerance Limit (°C) |
| 69.3                                                                 | 69.2                       | 0.1                 | ± 0.5                |
| UUC* = UNIT UNDER CALIBRATION                                        |                            |                     |                      |

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