中华人民共和国国家计量技术规范

《数字式电子探空仪校准规范》

试验报告

国家气象计量站

**1** 试验目的：

本试验报告旨在为数字式电子探空仪校准结果及不确定度评定工作，提供所需的重复性数据及其评定依据。报告的主要目的是验证《规范》报批稿中提出的校准项目和校准方法是否科学、规范且具有可操作性，并进一步确认所提出的建议要求是否符合科学合理性。

**2** 试验情况：

试验依据：《JJF××××——××××数字式电子探空仪校准规范》报批稿

试验单位：中国气象局国家气象计量站。

试验时间：2021.-2024.3

试验用标准器和配套设备：见表1

表 1 主要标准器具和配套设备

|  |  |  |
| --- | --- | --- |
| 名称 | 型号/编号 | 测量范围/准确度 |
| 标准铂电阻温度计 | WZP1/0401 | 相邻检定周期差值：不超过8mK |
| 精密露点仪 | 373精密露点仪 编号：19-0605 | 校准量程：霜/露点：:-40…70 °C  温度：50…100 °C  精度：霜/露点:≤ ± 0.1 °C  温度: ≤ ± 0.07 °C |
| 数字气压计 | 745-23A/119028 | 0-1600hPa  0.008% of Full Scale |
| 制冷恒温槽 | WLR-60D/ | 工作范围：-60℃～+80℃；  均匀性：0.02℃ |
| 湿度发生器 | SRH-3M135ADR  /2002-529 | 湿度发生范围 0 ～ 100%rh  湿度精度 ±1%rh  温度精度 ± 0.5 ℃ |
| 温压联合试验箱 | GRZ600 | 温度范围：-30℃ ～ 40℃；  调压范围：5hPa ～ 1100hPa控制点稳定度：±0.003%FS |

本次试验涉及多种类型国产数字式电子探空仪，包括卫星导航探空仪、下投式探空仪、数字式探空仪等，共计4个型号、8台探空仪进行了校准试验。试验遵循《规范》报批稿中提出的方法要求，对探空仪的温度、相对湿度和气压三个测量误差项目，在规范设定的各个校准点进行了测试，按规范方法进行了误差计算及不确定度评定。另外还选取了《规范》中建议的量程外的若干校准点进行了试验，作为探空仪性能参考。

**3 试验**数据及结果

相关计算按照《规范》征求意见稿进行,检定结果的不确定度评定方法见不确定度评定报告。

### 3.1温度试验

GTH3 /1123312130# 卫星导航探空仪 温度试验结果

| 次数 | 标准(℃) | 示值(℃) | 误差(℃) | 次数 | 标准(℃) | 示值(℃) | 误差(℃) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | -70.110 | -69.23 | 0.880 | 1 | -0.003 | 0.15 | 0.153 |
| 2 | -70.112 | -69.22 | 0.892 | 2 | -0.002 | 0.15 | 0.152 |
| 3 | -70.120 | -69.22 | 0.900 | 3 | -0.008 | 0.16 | 0.168 |
| 4 | -70.107 | -69.22 | 0.887 | 4 | -0.011 | 0.16 | 0.171 |
| 5 | -70.106 | -69.22 | 0.886 | 5 | -0.007 | 0.15 | 0.157 |
| 6 | -70.106 | -69.23 | 0.876 | 6 | -0.005 | 0.16 | 0.165 |
| 7 | -70.106 | -69.22 | 0.886 | 7 | -0.003 | 0.15 | 0.153 |
| 8 | -70.125 | -69.22 | 0.905 | 8 | -0.007 | 0.15 | 0.157 |
| 9 | -70.125 | -69.22 | 0.905 | 9 | -0.010 | 0.15 | 0.160 |
| 10 | -70.120 | -69.22 | 0.900 | 10 | -0.007 | 0.15 | 0.157 |
|  | 误差（℃） | | 0.8917 |  | 误差（℃） | | 0.1593 |
|  | 标准偏差（℃） | | 0.0013 |  | 标准偏差（℃） | | 0.0014 |
|  | U95（℃） | | 0.0237 |  | U95（℃） | | 0.0237 |
| 1 | -49.979 | -49.57 | 0.409 | 1 | 9.913 | 10.07 | 0.157 |
| 2 | -49.980 | -49.57 | 0.410 | 2 | 9.913 | 10.08 | 0.167 |
| 3 | -49.975 | -49.57 | 0.405 | 3 | 9.913 | 10.07 | 0.157 |
| 4 | -49.975 | -49.57 | 0.405 | 4 | 9.915 | 10.07 | 0.155 |
| 5 | -49.975 | -49.57 | 0.405 | 5 | 9.919 | 10.08 | 0.161 |
| 6 | -49.976 | -49.56 | 0.416 | 6 | 9.917 | 10.08 | 0.163 |
| 7 | -49.975 | -49.56 | 0.415 | 7 | 9.915 | 10.07 | 0.155 |
| 8 | -49.972 | -49.56 | 0.412 | 8 | 9.916 | 10.08 | 0.164 |
| 9 | -49.979 | -49.57 | 0.409 | 9 | 9.915 | 10.07 | 0.155 |
| 10 | -49.979 | -49.57 | 0.409 | 10 | 9.917 | 10.07 | 0.153 |
|  | 误差（℃） | | 0.4095 |  | 误差（℃） | | 0.1587 |
|  | 标准偏差（℃） | | 0.0014 |  | 标准偏差（℃） | | 0.0015 |
|  | U95（℃） | | 0.0237 |  | U95（℃） | | 0.0237 |
| 1 | -29.972 | -29.88 | 0.092 | 1 | 29.853 | 29.87 | 0.017 |
| 2 | -29.970 | -29.88 | 0.090 | 2 | 29.855 | 29.89 | 0.035 |
| 3 | -29.970 | -29.88 | 0.090 | 3 | 29.861 | 29.87 | 0.009 |
| 4 | -29.970 | -29.88 | 0.090 | 4 | 29.862 | 29.87 | 0.008 |
| 5 | -29.969 | -29.88 | 0.089 | 5 | 29.857 | 29.89 | 0.033 |
| 6 | -29.958 | -29.88 | 0.078 | 6 | 29.858 | 29.87 | 0.012 |
| 7 | -29.967 | -29.88 | 0.087 | 7 | 29.855 | 29.87 | 0.015 |
| 8 | -29.968 | -29.88 | 0.088 | 8 | 29.857 | 29.89 | 0.033 |
| 9 | -29.959 | -29.88 | 0.079 | 9 | 29.855 | 29.87 | 0.015 |
| 10 | -29.959 | -29.89 | 0.069 | 10 | 29.858 | 29.89 | 0.032 |
|  | 误差（℃） | | 0.0852 |  | 误差（℃） | | 0.0209 |
|  | 标准偏差（℃） | | 0.0009 |  | 标准偏差（℃） | | 0.0031 |
|  | U95（℃） | | 0.0237 |  | U95（℃） | | 0.0237 |
| 1 | -9.997 | -9.91 | 0.087 | 1 | 50.068 | 49.83 | -0.238 |
| 2 | -9.997 | -9.91 | 0.087 | 2 | 50.069 | 49.83 | -0.239 |
| 3 | -9.991 | -9.91 | 0.081 | 3 | 50.069 | 49.80 | -0.269 |
| 4 | -9.989 | -9.91 | 0.079 | 4 | 50.069 | 49.80 | -0.269 |
| 5 | -10.000 | -9.91 | 0.090 | 5 | 50.069 | 49.86 | -0.209 |
| 6 | -9.996 | -9.91 | 0.086 | 6 | 50.068 | 49.83 | -0.238 |
| 7 | -9.998 | -9.91 | 0.088 | 7 | 50.068 | 49.80 | -0.268 |
| 8 | -9.992 | -9.91 | 0.082 | 8 | 50.067 | 49.83 | -0.237 |
| 9 | -9.990 | -9.92 | 0.070 | 9 | 50.067 | 49.83 | -0.237 |
| 10 | -9.996 | -9.92 | 0.076 | 10 | 50.067 | 49.80 | -0.267 |
|  | 误差（℃） | | 0.0826 |  | 误差（℃） | | -0.2471 |
|  | 标准偏差（℃） | | 0.0013 |  | 标准偏差（℃） | | 0.0061 |
|  | U95（℃） | | 0.0237 |  | U95（℃） | | 0.0237 |

GTH1/22915076# 卫星导航探空仪 温度试验结果

| 次数 | 标准(℃) | 示值(℃) | 误差(℃) | 次数 | 标准(℃) | 示值(℃) | 误差(℃) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | -80.58 | -80.78 | -0.2 | 1 | 0.078 | 0.06 | -0.018 |
| 2 | -80.58 | -80.77 | -0.19 | 2 | 0.078 | 0.07 | -0.008 |
| 3 | -80.58 | -80.78 | -0.2 | 3 | 0.079 | 0.06 | -0.019 |
| 4 | -80.58 | -80.77 | -0.19 | 4 | 0.079 | 0.07 | -0.009 |
| 5 | -80.57 | -80.78 | -0.21 | 5 | 0.08 | 0.07 | -0.01 |
| 6 | -80.55 | -80.78 | -0.23 | 6 | 0.08 | 0.06 | -0.02 |
| 7 | -80.55 | -80.78 | -0.23 | 7 | 0.079 | 0.07 | -0.009 |
| 8 | -80.54 | -80.77 | -0.23 | 8 | 0.079 | 0.07 | -0.009 |
| 9 | -80.53 | -80.77 | -0.24 | 9 | 0.08 | 0.07 | -0.01 |
| 10 | -80.53 | -80.77 | -0.24 | 10 | 0.079 | 0.07 | -0.009 |
|  | 误差（℃） | | -0.2160 |  | 误差（℃） | | -0.0121 |
|  | 标准偏差（℃） | | 0.0016 |  | 标准偏差（℃） | | 0.0014 |
|  | U95（℃） | | 0.0237 |  | U95（℃） | | 0.0237 |
| 1 | -49.922 | -49.97 | -0.048 | 1 | 10.098 | 10.08 | -0.018 |
| 2 | -49.922 | -49.97 | -0.048 | 2 | 10.097 | 10.08 | -0.017 |
| 3 | -49.921 | -49.96 | -0.039 | 3 | 10.097 | 10.08 | -0.017 |
| 4 | -49.921 | -49.95 | -0.029 | 4 | 10.097 | 10.08 | -0.017 |
| 5 | -49.92 | -49.96 | -0.04 | 5 | 10.095 | 10.08 | -0.015 |
| 6 | -49.92 | -49.96 | -0.04 | 6 | 10.093 | 10.08 | -0.013 |
| 7 | -49.921 | -49.96 | -0.039 | 7 | 10.093 | 10.08 | -0.013 |
| 8 | -49.921 | -49.96 | -0.039 | 8 | 10.091 | 10.07 | -0.021 |
| 9 | -49.92 | -49.96 | -0.04 | 9 | 10.091 | 10.07 | -0.021 |
| 10 | -49.921 | -49.96 | -0.039 | 10 | 10.092 | 10.07 | -0.022 |
|  | 误差（℃） | | -0.0401 |  | 误差（℃） | | -0.0174 |
|  | 标准偏差（℃） | | 0.0017 |  | 标准偏差（℃） | | 0.0014 |
|  | U95（℃） | | 0.0237 |  | U95（℃） | | 0.0237 |
| 1 | -29.9209 | -29.94 | -0.018 | 1 | 30.136 | 30.13 | -0.006 |
| 2 | -29.922 | -29.94 | -0.018 | 2 | 30.138 | 30.13 | -0.008 |
| 3 | -29.921 | -29.94 | -0.019 | 3 | 30.14 | 30.13 | -0.01 |
| 4 | -29.921 | -29.94 | -0.019 | 4 | 30.141 | 30.13 | -0.011 |
| 5 | -29.92 | -29.94 | -0.02 | 5 | 30.142 | 30.12 | -0.022 |
| 6 | -29.92 | -29.94 | -0.02 | 6 | 30.142 | 30.12 | -0.022 |
| 7 | -29.921 | -29.93 | -0.009 | 7 | 30.145 | 30.12 | -0.025 |
| 8 | -29.921 | -29.94 | -0.019 | 8 | 30.144 | 30.12 | -0.024 |
| 9 | -29.92 | -29.94 | -0.02 | 9 | 30.144 | 30.12 | -0.024 |
| 10 | -29.921 | -29.93 | -0.009 | 10 | 30.143 | 30.12 | -0.023 |
|  | 误差（℃） | | -0.0171 |  | 误差（℃） | | -0.0175 |
|  | 标准偏差（℃） | | 0.0013 |  | 标准偏差（℃） | | 0.0015 |
|  | U95（℃） | | 0.0237 |  | U95（℃） | | 0.0237 |
| 1 | -10.118 | -10.09 | 0.028 | 1 | 50.165 | 50.15 | -0.015 |
| 2 | -10.118 | -10.1 | 0.018 | 2 | 50.162 | 50.14 | -0.022 |
| 3 | -10.119 | -10.09 | 0.029 | 3 | 50.163 | 50.15 | -0.013 |
| 4 | -10.119 | -10.1 | 0.019 | 4 | 50.166 | 50.15 | -0.016 |
| 5 | -10.12 | -10.1 | 0.02 | 5 | 50.166 | 50.15 | -0.016 |
| 6 | -10.12 | -10.09 | 0.03 | 6 | 50.164 | 50.15 | -0.014 |
| 7 | -10.119 | -10.1 | 0.019 | 7 | 50.163 | 50.15 | -0.013 |
| 8 | -10.119 | -10.1 | 0.019 | 8 | 50.167 | 50.15 | -0.017 |
| 9 | -10.12 | -10.1 | 0.02 | 9 | 50.168 | 50.15 | -0.018 |
| 10 | -10.119 | -10.1 | 0.019 | 10 | 50.167 | 50.15 | -0.017 |
|  | 误差（℃） | | 0.0221 |  | 误差（℃） | | -0.0161 |
|  | 标准偏差（℃） | | 0.0014 |  | 标准偏差（℃） | | 0.0009 |
|  | U95（℃） | | 0.0237 |  | U95（℃） | | 0.0237 |

TK01A/305465# 数字式探空仪 温度试验结果

| 次数 | 标准(℃) | 示值(℃) | 误差(℃) | 次数 | 标准(℃) | 示值(℃) | 误差(℃) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | -69.84 | -70.0 | -0.16 | 1 | 0.25 | 0.3 | 0.05 |
| 2 | -69.84 | -70.0 | -0.16 | 2 | 0.27 | 0.3 | 0.03 |
| 3 | -69.84 | -70.0 | -0.16 | 3 | 0.28 | 0.3 | 0.02 |
| 4 | -69.84 | -69.9 | -0.06 | 4 | 0.28 | 0.3 | 0.02 |
| 5 | -69.84 | -70.0 | -0.16 | 5 | 0.29 | 0.3 | 0.01 |
| 6 | -69.84 | -70.0 | -0.16 | 6 | 0.29 | 0.3 | 0.01 |
| 7 | -69.84 | -69.9 | -0.06 | 7 | 0.30 | 0.4 | 0.1 |
| 8 | -69.84 | -70.0 | -0.16 | 8 | 0.31 | 0.3 | -0.01 |
| 9 | -69.84 | -69.9 | -0.06 | 9 | 0.32 | 0.4 | 0.08 |
| 10 | -69.84 | -70.0 | -0.16 | 10 | 0.33 | 0.4 | 0.07 |
|  | 误差（℃） | | -0.1300 |  | 误差（℃） | | 0.0380 |
|  | 标准偏差（℃） | | 0.0145 |  | 标准偏差（℃） | | 0.0145 |
|  | U95（℃） | | 0.0624 |  | U95（℃） | | 0.0624 |
| 1 | -50.04 | -50.0 | 0.04 | 1 | 20.42 | 20.4 | -0.02 |
| 2 | -50.02 | -50.0 | 0.02 | 2 | 20.41 | 20.4 | -0.01 |
| 3 | -50.01 | -50.0 | 0.01 | 3 | 20.41 | 20.4 | -0.01 |
| 4 | -50.01 | -50.0 | 0.01 | 4 | 20.42 | 20.4 | -0.02 |
| 5 | -50.01 | -50.0 | 0.01 | 5 | 20.42 | 20.4 | -0.02 |
| 6 | -50.01 | -49.9 | 0.11 | 6 | 20.41 | 20.4 | -0.01 |
| 7 | -50.02 | -50.0 | 0.02 | 7 | 20.42 | 20.4 | -0.02 |
| 8 | -50.03 | -50.0 | 0.03 | 8 | 20.41 | 20.4 | -0.01 |
| 9 | -50.02 | -50.0 | 0.02 | 9 | 20.41 | 20.4 | -0.01 |
| 10 | -50.01 | -50.0 | 0.01 | 10 | 20.41 | 20.4 | -0.01 |
|  | 误差（℃） | | 0.0280 |  | 误差（℃） | | -0.0140 |
|  | 标准偏差（℃） | | 0.0095 |  | 标准偏差（℃） | | 0.0000 |
|  | U95（℃） | | 0.0624 |  | U95（℃） | | 0.0624 |
| 1 | -29.89 | -29.8 | 0.09 | 1 | 50.50 | 50.4 | -0.1 |
| 2 | -29.88 | -29.8 | 0.08 | 2 | 50.50 | 50.4 | -0.1 |
| 3 | -29.88 | -29.8 | 0.08 | 3 | 50.50 | 50.4 | -0.1 |
| 4 | -29.88 | -29.8 | 0.08 | 4 | 50.50 | 50.4 | -0.1 |
| 5 | -29.87 | -29.7 | 0.17 | 5 | 50.50 | 50.4 | -0.1 |
| 6 | -29.87 | -29.8 | 0.07 | 6 | 50.50 | 50.4 | -0.1 |
| 7 | -29.88 | -29.8 | 0.08 | 7 | 50.50 | 50.4 | -0.1 |
| 8 | -29.88 | -29.8 | 0.08 | 8 | 50.50 | 50.4 | -0.1 |
| 9 | -29.88 | -29.8 | 0.08 | 9 | 50.50 | 50.4 | -0.1 |
| 10 | -29.88 | -29.7 | 0.18 | 10 | 50.50 | 50.4 | -0.1 |
|  | 误差（℃） | | 0.0990 |  | 误差（℃） | | -0.1000 |
|  | 标准偏差（℃） | | 0.0126 |  | 标准偏差（℃） | | 0.0000 |
|  | U95（℃） | | 0.0624 |  | U95（℃） | | 0.0624 |

下投式探空仪 CFDT15/19190117 温度试验结果

| 次数 | 标准(℃) | 示值(℃) | 误差(℃) | 次数 | 标准(℃) | 示值(℃) | 误差(℃) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | -70.58 | -70.8 | -0.22 | 1 | 0.13 | 0.1 | -0.03 |
| 2 | -70.58 | -70.7 | -0.12 | 2 | 0.13 | 0.1 | -0.03 |
| 3 | -70.58 | -70.8 | -0.22 | 3 | 0.11 | 0.2 | 0.09 |
| 4 | -70.58 | -70.7 | -0.12 | 4 | 0.12 | 0.1 | -0.02 |
| 5 | -70.57 | -70.8 | -0.23 | 5 | 0.12 | 0.1 | -0.02 |
| 6 | -70.55 | -70.8 | -0.25 | 6 | 0.12 | 0.2 | 0.08 |
| 7 | -70.55 | -70.8 | -0.25 | 7 | 0.12 | 0.1 | -0.02 |
| 8 | -70.54 | -70.7 | -0.16 | 8 | 0.13 | 0.1 | -0.03 |
| 9 | -70.53 | -70.7 | -0.17 | 9 | 0.13 | 0.1 | -0.03 |
| 10 | -70.53 | -70.7 | -0.17 | 10 | 0.13 | 0.1 | -0.03 |
|  | 误差（℃） | | -0.1910 |  | 误差（℃） | | -0.0040 |
|  | 标准偏差（℃） | | 0.0158 |  | 标准偏差（℃） | | 0.0126 |
|  | U95（℃） | | 0.0624 |  | U95（℃） | | 0.0624 |
| 1 | -29.88 | -30 | -0.12 | 1 | 20.11 | 20.1 | -0.01 |
| 2 | -29.9 | -30 | -0.1 | 2 | 20.13 | 20.1 | -0.03 |
| 3 | -29.87 | -30 | -0.13 | 3 | 20.13 | 20 | -0.13 |
| 4 | -29.88 | -30.1 | -0.22 | 4 | 20.13 | 20 | -0.13 |
| 5 | -29.91 | -30 | -0.09 | 5 | 20.11 | 20.1 | -0.01 |
| 6 | -29.9 | -30 | -0.1 | 6 | 20.12 | 20.1 | -0.02 |
| 7 | -29.9 | -30 | -0.1 | 7 | 20.12 | 20.1 | -0.02 |
| 8 | -29.91 | -30.1 | -0.19 | 8 | 20.12 | 20.1 | -0.02 |
| 9 | -29.91 | -30 | -0.09 | 9 | 20.13 | 20.1 | -0.03 |
| 10 | -29.91 | -30 | -0.09 | 10 | 20.13 | 20.1 | -0.03 |
|  | 误差（℃） | | -0.1230 |  | 误差（℃） | | -0.0430 |
|  | 标准偏差（℃） | | 0.0126 |  | 标准偏差（℃） | | 0.0126 |
|  | U95（℃） | | 0.0624 |  | U95（℃） | | 0.0624 |
| 1 | -19.44 | -19.3 | 0.14 | 1 | 50.33 | 50.3 | -0.03 |
| 2 | -19.44 | -19.4 | 0.04 | 2 | 50.33 | 50.3 | -0.03 |
| 3 | -19.43 | -19.3 | 0.13 | 3 | 50.33 | 50.3 | -0.03 |
| 4 | -19.43 | -19.4 | 0.03 | 4 | 50.35 | 50.2 | -0.15 |
| 5 | -19.46 | -19.5 | -0.04 | 5 | 50.34 | 50.2 | -0.14 |
| 6 | -19.46 | -19.4 | 0.06 | 6 | 50.34 | 50.3 | -0.04 |
| 7 | -19.47 | -19.5 | -0.03 | 7 | 50.33 | 50.3 | -0.03 |
| 8 | -19.46 | -19.5 | -0.04 | 8 | 50.34 | 50.3 | -0.04 |
| 9 | -19.47 | -19.5 | -0.03 | 9 | 50.36 | 50.2 | -0.16 |
| 10 | -19.47 | -19.5 | -0.03 | 10 | 50.35 | 50.2 | -0.15 |
|  | 误差（℃） | | 0.0230 |  | 误差（℃） | | -0.0800 |
|  | 标准偏差（℃） | | 0.0247 |  | 标准偏差（℃） | | 0.0155 |
|  | U95（℃） | | 0.0624 |  | U95（℃） | | 0.0624 |

### 6.2 气压试验结果

表2 GTH3 /23314130卫星导航探空仪#气压试验结果（+20℃）

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 正行程 | | 反行程 | | 正行程  示值误差 （hPa） | 反行程  示值误差 （hPa） |
| 次数 | 标准 （hPa） | 示值 （hPa） | 标准 （hPa） | 示值 （hPa） |
| 1 | 1059.977 | 1060.15 | 1059.990 | 1060.13 | 0.17 | -0.140 |
| 2 | 1059.977 | 1060.13 | 1060.003 | 1060.13 | 0.15 | -0.127 |
| 3 | 1059.984 | 1060.12 | 1060.003 | 1060.18 | 0.14 | -0.177 |
| 4 | 1059.987 | 1060.19 | 1059.997 | 1060.16 | 0.20 | -0.163 |
| 5 | 1060.000 | 1060.15 | 1059.991 | 1060.13 | 0.15 | -0.139 |
| 6 | 1059.997 | 1060.17 | 1059.990 | 1060.11 | 0.17 | -0.120 |
| 7 | 1060.010 | 1060.15 | 1060.003 | 1060.11 | 0.14 | -0.107 |
| 8 | 1060.020 | 1060.15 | 1060.003 | 1060.08 | 0.13 | -0.077 |
| 9 | 1060.017 | 1060.20 | 1059.997 | 1060.17 | 0.18 | -0.173 |
| 10 | 1060.014 | 1060.15 | 1059.991 | 1060.14 | 0.14 | -0.149 |
|  | 误差（hPa） | | | | 0.157 | -0.1372 |
|  | 标准偏差（hPa） | | | | 0.007376 | 0.009077 |
|  | U95（hPa） | | | | 0.1237 | 0.1237 |
| 1 | 1012.997 | 1013.16 | 1013.000 | 1013.21 | 0.16 | -0.210 |
| 2 | 1013.010 | 1013.14 | 1013.006 | 1013.21 | 0.13 | -0.204 |
| 3 | 1013.004 | 1013.17 | 1013.016 | 1013.18 | 0.17 | -0.164 |
| 4 | 1013.013 | 1013.20 | 1013.010 | 1013.21 | 0.19 | -0.200 |
| 5 | 1012.997 | 1013.20 | 1013.003 | 1013.24 | 0.20 | -0.237 |
| 6 | 1012.997 | 1013.21 | 1013.007 | 1013.22 | 0.21 | -0.213 |
| 7 | 1013.004 | 1013.20 | 1013.000 | 1013.26 | 0.20 | -0.260 |
| 8 | 1013.004 | 1013.22 | 1012.993 | 1013.17 | 0.22 | -0.177 |
| 9 | 1012.994 | 1013.16 | 1012.993 | 1013.23 | 0.17 | -0.237 |
| 10 | 1013.004 | 1013.20 | 1012.977 | 1013.21 | 0.20 | -0.233 |
|  | 误差（hPa） | | | | 0.185 | -0.2135 |
|  | 标准偏差（hPa） | | | | 0.007899 | 0.007899 |
|  | U95（hPa） | | | | 0.1237 | 0.1237 |
| 1 | 899.995 | 900.320 | 899.957 | 900.32 | 0.325 | -0.363 |
| 2 | 899.995 | 900.360 | 899.957 | 900.15 | 0.365 | -0.193 |
| 3 | 899.995 | 900.320 | 899.957 | 900.11 | 0.325 | -0.153 |
| 4 | 899.988 | 900.350 | 899.957 | 899.97 | 0.362 | -0.013 |
| 5 | 899.985 | 900.380 | 899.957 | 900.40 | 0.395 | -0.443 |
| 6 | 899.982 | 900.310 | 899.954 | 900.83 | -99.672 | -0.876 |
| 7 | 899.981 | 900.290 | 899.954 | 900.71 | 0.309 | -0.756 |
| 8 | 899.985 | 900.310 | 899.954 | 900.34 | 0.325 | -0.386 |
| 9 | 899.985 | 900.280 | 899.957 | 899.94 | 0.295 | 0.017 |
| 10 | 899.985 | 900.330 | 899.957 | 900.62 | 0.345 | -0.663 |
|  | 误差（hPa） | | | | 0.3374 | -0.3829 |
|  | 标准偏差（hPa） | | | | 0.009301 | 0.09194 |
|  | U95（hPa） | | | | 0.1237 | 0.1237 |
| 1 | 699.996 | 700.620 | 700.009 | 700.59 | 0.624 | -0.581 |
| 2 | 700.000 | 700.580 | 700.009 | 700.55 | 0.580 | -0.541 |
| 3 | 700.000 | 700.620 | 700.006 | 700.52 | 0.620 | -0.514 |
| 4 | 699.997 | 700.600 | 700.006 | 700.58 | 0.603 | -0.574 |
| 5 | 700.000 | 700.580 | 700.009 | 700.56 | 0.580 | -0.551 |
| 6 | 700.000 | 700.630 | 700.006 | 700.59 | 0.634 | -0.584 |
| 7 | 699.996 | 700.590 | 700.006 | 700.54 | 0.594 | -0.534 |
| 8 | 699.996 | 700.570 | 699.995 | 700.58 | 0.573 | -0.585 |
| 9 | 699.997 | 700.600 | 699.992 | 700.55 | 0.603 | -0.558 |
| 10 | 699.997 | 700.580 | 700.006 | 700.54 | -0.583 | -0.534 |
|  | 误差（hPa） | | | | 0.4828 | -0.5556 |
|  | 标准偏差（hPa） | | | | 0.006173 | 0.007211 |
|  | U95（hPa） | | | | 0.1237 | 0.1237 |
| 1 | 500.000 | 500.730 | 499.991 | 500.74 | 0.730 | -0.749 |
| 2 | 500.003 | 500.750 | 500.004 | 500.73 | 0.747 | -0.726 |
| 3 | 500.003 | 500.780 | 499.994 | 500.72 | 0.777 | -0.726 |
| 4 | 500.003 | 500.770 | 500.005 | 500.71 | 0.767 | -0.705 |
| 5 | 500.007 | 500.800 | 500.004 | 500.76 | 0.793 | -0.756 |
| 6 | 500.003 | 500.800 | 500.005 | 500.69 | 0.797 | -0.685 |
| 7 | 500.003 | 500.760 | 500.011 | 500.76 | 0.757 | -0.749 |
| 8 | 500.007 | 500.790 | 500.011 | 500.75 | 0.783 | -0.739 |
| 9 | 500.007 | 500.840 | 499.998 | 500.73 | 0.833 | -0.732 |
| 10 | 500.007 | 500.780 | 499.998 | 500.75 | 0.773 | -0.752 |
|  | 误差（hPa） | | | | 0.7757 | -0.7319 |
|  | 标准偏差（hPa） | | | | 0.009165 | 0.006812 |
|  | U95（hPa） | | | | 0.1237 | 0.1237 |
| 1 | 299.987 | 301.170 | 299.986 | 300.92 | 1.183 | -0.934 |
| 2 | 299.987 | 301.200 | 299.993 | 300.92 | 1.213 | -0.927 |
| 3 | 299.984 | 301.230 | 300.000 | 300.91 | 1.246 | -0.910 |
| 4 | 299.984 | 301.190 | 299.996 | 300.91 | 1.206 | -0.914 |
| 5 | 300.026 | 301.190 | 299.989 | 300.92 | 1.164 | -0.931 |
| 6 | 300.022 | 301.210 | 299.989 | 300.91 | 1.188 | -0.921 |
| 7 | 300.015 | 301.270 | 299.993 | 300.90 | 1.255 | -0.907 |
| 8 | 300.008 | 301.220 | 299.996 | 300.94 | 1.212 | -0.944 |
| 9 | 300.005 | 301.210 | 300.000 | 300.93 | 1.205 | -0.930 |
| 10 | 300.005 | 301.200 | 300.007 | 300.88 | 1.195 | -0.873 |
|  | 误差（hPa） | | | | 1.2067 | -0.9191 |
|  | 标准偏差（hPa） | | | | 0.008179 | 0.00494 |
|  | U95（hPa） | | | | 0.1237 | 0.1237 |
| 1 | 100.005 | 101.390 | 99.997 | 101.17 | 1.385 | -1.173 |
| 2 | 99.999 | 101.350 | 100.000 | 101.17 | 1.351 | -1.170 |
| 3 | 99.977 | 101.360 | 100.000 | 101.14 | 1.383 | -1.140 |
| 4 | 99.977 | 101.360 | 100.010 | 101.10 | 1.383 | -1.090 |
| 5 | 99.973 | 101.350 | 100.004 | 101.11 | 1.377 | -1.106 |
| 6 | 99.977 | 101.320 | 100.000 | 101.13 | 1.343 | -1.130 |
| 7 | 99.973 | 101.320 | 100.000 | 101.14 | 1.347 | -1.140 |
| 8 | 99.974 | 101.320 | 100.000 | 101.15 | 1.346 | -1.150 |
| 9 | 99.974 | 101.290 | 100.000 | 101.15 | 1.316 | -1.150 |
| 10 | 99.977 | 101.290 | 100.004 | 101.15 | 1.313 | -1.146 |
|  | 误差（hPa） | | | | 1.3544 | -1.1395 |
|  | 标准偏差（hPa） | | | | 0.009721 | 0.006848 |
|  | U95（hPa） | | | | 0.1237 | 0.1237 |
| 1 | 10.447 | 11.780 | 10.023 | 11.13 | 1.333 | -1.107 |
| 2 | 10.458 | 11.770 | 10.055 | 11.14 | 1.312 | -1.085 |
| 3 | 10.458 | 11.790 | 10.023 | 11.18 | 1.332 | -1.157 |
| 4 | 10.469 | 11.800 | 9.975 | 11.31 | 1.331 | -1.335 |
| 5 | 10.469 | 11.830 | 9.975 | 11.22 | 1.361 | -1.245 |
| 6 | 10.480 | 11.850 | 10.073 | 11.15 | 1.370 | -1.077 |
| 7 | 10.491 | 11.780 | 10.073 | 11.11 | 1.289 | -1.037 |
| 8 | 10.498 | 11.790 | 10.033 | 11.23 | 1.292 | -1.197 |
| 9 | 10.505 | 11.840 | 9.975 | 11.26 | 1.335 | -1.285 |
| 10 | 10.505 | 11.840 | 9.928 | 11.26 | 1.335 | -1.332 |
|  | 误差（hPa） | | | | 1.329 | -1.1857 |
|  | 标准偏差（hPa） | | | | 0.00895 | 0.020022 |
|  | U95（hPa） | | | | 0.1237 | 0.1237 |
| 1 | 5.099 | 6.160 | 5.002 | 6.44 | 1.061 | -1.438 |
| 2 | 5.096 | 6.180 | 4.999 | 6.48 | 1.084 | -1.481 |
| 3 | 5.096 | 6.150 | 5.002 | 6.54 | 1.054 | -1.538 |
| 4 | 5.096 | 6.150 | 5.002 | 6.46 | 1.054 | -1.458 |
| 5 | 5.096 | 6.140 | 5.010 | 6.42 | 1.044 | -1.410 |
| 6 | 5.093 | 6.170 | 5.010 | 6.47 | 1.077 | -1.460 |
| 7 | 5.093 | 6.120 | 5.010 | 6.46 | 1.027 | -1.450 |
| 8 | 5.089 | 6.130 | 5.010 | 6.48 | 1.041 | -1.470 |
| 9 | 5.085 | 6.140 | 5.013 | 6.52 | 1.055 | -1.507 |
| 10 | 5.086 | 6.200 | 5.010 | 6.54 | 1.114 | -1.530 |
|  | 误差（hPa） | | | | 1.0611 | -1.4742 |
|  | 标准偏差（hPa） | | | | 0.007239 | 0.012202 |
|  | U95（hPa） | | | | 0.1237 | 0.1237 |

表2 GTH3 /23314130卫星导航探空仪#气压试验结果（-15℃）

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **正行程** | | **反行程** | | **正行程**  **示值误差 （hPa）** | **反行程**  **示值误差 （hPa）** |
| 次数 | **标准 （hPa）** | **示值 （hPa）** | **标准 （hPa）** | **示值 （hPa）** |
| 1 | 1060.001 | 1060.49 | 1059.990 | 1060.46 | 0.49 | -0.470 |
| 2 | 1059.997 | 1060.49 | 1060.004 | 1060.48 | 0.49 | -0.476 |
| 3 | 1060.014 | 1060.53 | 1060.007 | 1060.46 | 0.52 | -0.453 |
| 4 | 1060.013 | 1060.48 | 1060.004 | 1060.47 | 0.47 | -0.466 |
| 5 | 1060.014 | 1060.49 | 1060.007 | 1060.46 | 0.48 | -0.453 |
| 6 | 1060.004 | 1060.43 | 1060.007 | 1060.49 | 0.43 | -0.483 |
| 7 | 1059.994 | 1060.48 | 1060.007 | 1060.51 | 0.49 | -0.503 |
| 8 | 1060.004 | 1060.45 | 1060.020 | 1060.50 | 0.45 | -0.480 |
| 9 | 1060.001 | 1060.46 | 1060.020 | 1060.50 | 0.46 | -0.480 |
| 10 | 1059.991 | 1060.48 | 1060.013 | 1060.48 | 0.49 | -0.467 |
|  | 误差**（hPa）** | | | | 0.477 | -0.4731 |
|  | 标准偏差**（hPa）** | | | | 0.008099 | 0.005559 |
|  | U95**（hPa）** | | | | 0.123693 | 0.1237 |
| 1 | 1012.993 | 1013.52 | 1013.001 | 1013.54 | 0.53 | -0.539 |
| 2 | 1012.996 | 1013.49 | 1013.011 | 1013.49 | 0.49 | -0.479 |
| 3 | 1013.006 | 1013.47 | 1013.018 | 1013.52 | 0.46 | -0.502 |
| 4 | 1013.013 | 1013.48 | 1012.998 | 1013.56 | 0.47 | -0.562 |
| 5 | 1013.013 | 1013.47 | 1013.008 | 1013.50 | 0.46 | -0.492 |
| 6 | 1013.009 | 1013.54 | 1013.014 | 1013.52 | 0.53 | -0.506 |
| 7 | 1013.003 | 1013.54 | 1013.004 | 1013.51 | 0.54 | -0.506 |
| 8 | 1013.006 | 1013.50 | 1013.001 | 1013.50 | 0.49 | -0.499 |
| 9 | 1013.006 | 1013.49 | 1013.001 | 1013.53 | 0.48 | -0.529 |
| 10 | 1013.003 | 1013.47 | 1012.997 | 1013.54 | 0.47 | -0.543 |
|  | 误差**（hPa）** | | | | 0.492 | -0.5157 |
|  | 标准偏差**（hPa）** | | | | 0.008252 | 0.00655 |
|  | U95**（hPa）** | | | | 0.123693 | 0.1237 |
| 1 | 899.986 | 900.53 | 900.099 | 900.55 | 0.544 | -0.451 |
| 2 | 899.996 | 900.52 | 900.053 | 900.56 | 0.524 | -0.507 |
| 3 | 900.003 | 900.51 | 900.049 | 900.53 | 0.507 | -0.481 |
| 4 | 900.016 | 900.47 | 900.039 | 900.57 | 0.454 | -0.531 |
| 5 | 900.020 | 900.50 | 900.036 | 900.58 | 0.480 | -0.544 |
| 6 | 900.020 | 900.46 | 900.036 | 900.56 | 0.440 | -0.524 |
| 7 | 900.013 | 900.46 | 900.022 | 900.56 | 0.447 | -0.538 |
| 8 | 900.002 | 900.49 | 900.002 | 900.54 | 0.488 | -0.538 |
| 9 | 900.006 | 900.50 | 900.019 | 900.55 | 0.494 | -0.531 |
| 10 | 900.009 | 900.51 | 900.019 | 900.52 | 0.501 | -0.501 |
|  | 误差**（hPa）** | | | | 0.4879 | -0.5146 |
|  | 标准偏差**（hPa）** | | | | 0.007382 | 0.005441 |
|  | U95**（hPa）** | | | | 0.123693 | 0.1237 |
| 1 | 699.996 | 700.53 | 699.928 | 700.74 | 0.534 | -0.812 |
| 2 | 700.003 | 700.48 | 699.959 | 700.70 | 0.477 | -0.741 |
| 3 | 700.007 | 700.48 | 699.996 | 700.51 | 0.473 | -0.514 |
| 4 | 700.003 | 700.51 | 699.976 | 700.31 | 0.507 | -0.334 |
| 5 | 700.007 | 700.56 | 699.982 | 700.63 | 0.554 | -0.648 |
| 6 | 700.006 | 700.54 | 700.003 | 700.83 | 0.530 | -0.827 |
| 7 | 700.010 | 700.53 | 700.030 | 700.44 | 0.520 | -0.410 |
| 8 | 700.010 | 700.52 | 700.068 | 700.53 | 0.514 | -0.462 |
| 9 | 700.006 | 700.55 | 700.023 | 700.40 | 0.544 | -0.377 |
| 10 | 700.006 | 700.50 | 700.061 | 700.38 | -0.494 | -0.319 |
|  | 误差**（hPa）** | | | | 0.4159 | -0.5444 |
|  | 标准偏差**（hPa）** | | | | 0.008246 | 0.051615 |
|  | U95**（hPa）** | | | | 0.123693 | 0.1237 |
| 1 | 499.752 | 500.48 | 500.002 | 500.54 | 0.728 | -0.538 |
| 2 | 499.780 | 500.52 | 499.999 | 500.53 | 0.740 | -0.531 |
| 3 | 499.798 | 500.46 | 500.002 | 500.54 | 0.662 | -0.538 |
| 4 | 499.818 | 500.50 | 499.995 | 500.54 | 0.682 | -0.545 |
| 5 | 499.839 | 500.47 | 499.999 | 500.57 | 0.631 | -0.571 |
| 6 | 499.856 | 500.49 | 499.981 | 500.53 | 0.634 | -0.549 |
| 7 | 499.860 | 500.46 | 499.995 | 500.56 | 0.600 | -0.565 |
| 8 | 499.874 | 500.48 | 499.995 | 500.54 | 0.606 | -0.545 |
| 9 | 499.891 | 500.48 | 500.002 | 500.57 | 0.589 | -0.568 |
| 10 | 499.905 | 500.48 | 500.006 | 500.56 | 0.575 | -0.554 |
|  | 误差**（hPa）** | | | | 0.6447 | -0.5504 |
|  | 标准偏差**（hPa）** | | | | 0.005441 | 0.004648 |
|  | U95**（hPa）** | | | | 0.123693 | 0.1237 |
| 1 | 299.839 | 300.40 | 300.784 | 300.51 | 0.561 | 0.274 |
| 2 | 299.850 | 300.43 | 300.710 | 300.49 | 0.580 | 0.220 |
| 3 | 299.857 | 300.42 | 300.643 | 300.47 | 0.563 | 0.173 |
| 4 | 299.871 | 300.45 | 300.572 | 300.50 | 0.579 | 0.072 |
| 5 | 299.882 | 300.50 | 300.505 | 300.46 | 0.618 | 0.045 |
| 6 | 299.892 | 300.43 | 300.441 | 300.50 | 0.538 | -0.059 |
| 7 | 299.903 | 300.48 | 300.370 | 300.52 | 0.577 | -0.150 |
| 8 | 299.913 | 300.39 | 300.310 | 300.52 | 0.477 | -0.210 |
| 9 | 299.920 | 300.66 | 300.236 | 300.50 | 0.740 | -0.264 |
| 10 | 299.927 | 300.66 | 300.215 | 300.50 | 0.733 | -0.285 |
|  | 误差**（hPa）** | | | | 0.5966 | -0.0184 |
|  | 标准偏差**（hPa）** | | | | 0.02986 | 0.00584 |
|  | U95**（hPa）** | | | | 0.123693 | 0.1237 |
| 1 | 99.983 | 100.47 | 100.010 | 100.43 | 0.487 | -0.420 |
| 2 | 99.991 | 100.43 | 100.014 | 100.43 | 0.439 | -0.416 |
| 3 | 99.987 | 100.41 | 100.010 | 100.43 | 0.423 | -0.420 |
| 4 | 99.991 | 100.44 | 100.007 | 100.37 | 0.449 | -0.363 |
| 5 | 99.990 | 100.48 | 100.010 | 100.39 | 0.490 | -0.380 |
| 6 | 99.991 | 100.41 | 99.996 | 100.42 | 0.419 | -0.424 |
| 7 | 99.994 | 100.44 | 99.993 | 100.43 | 0.446 | -0.437 |
| 8 | 99.994 | 100.43 | 100.000 | 100.49 | 0.436 | -0.490 |
| 9 | 99.997 | 100.45 | 99.996 | 100.45 | 0.453 | -0.454 |
| 10 | 99.994 | 100.45 | 99.996 | 100.42 | 0.456 | -0.424 |
|  | 误差**（hPa）** | | | | 0.4498 | -0.4228 |
|  | 标准偏差**（hPa）** | | | | 0.006848 | 0.009612 |
|  | U95**（hPa）** | | | | 0.123693 | 0.1237 |
| 1 | 10.017 | 10.31 | 10.785 | 10.41 | 0.293 | 0.375 |
| 2 | 9.981 | 10.28 | 10.716 | 10.30 | 0.299 | 0.416 |
| 3 | 9.977 | 10.28 | 10.643 | 10.28 | 0.303 | 0.363 |
| 4 | 10.024 | 10.38 | 10.578 | 10.47 | 0.356 | 0.108 |
| 5 | 10.030 | 10.40 | 10.512 | 10.45 | 0.370 | 0.062 |
| 6 | 10.002 | 10.36 | 10.447 | 10.40 | 0.358 | 0.047 |
| 7 | 9.970 | 10.30 | 10.382 | 10.36 | 0.330 | 0.022 |
| 8 | 9.991 | 10.23 | 10.317 | 10.31 | 0.239 | 0.007 |
| 9 | 10.035 | 10.32 | 10.258 | 10.39 | 0.285 | -0.132 |
| 10 | 10.026 | 10.35 | 10.291 | 10.38 | 0.324 | -0.089 |
|  | 误差**（hPa）** | | | | 0.3157 | 0.1179 |
|  | 标准偏差**（hPa）** | | | | 0.015585 | 0.018934 |
|  | U95**（hPa）** | | | | 0.123693 | 0.1237 |
| 1 | 5.002 | 5.25 | 5.092 | 5.27 | 0.248 | -0.178 |
| 2 | 5.002 | 5.28 | 5.089 | 5.28 | 0.278 | -0.191 |
| 3 | 5.002 | 5.29 | 5.081 | 5.29 | 0.288 | -0.209 |
| 4 | 5.002 | 5.24 | 5.074 | 5.25 | 0.238 | -0.176 |
| 5 | 5.005 | 5.21 | 5.074 | 5.30 | 0.205 | -0.226 |
| 6 | 5.002 | 5.23 | 5.070 | 5.28 | 0.228 | -0.210 |
| 7 | 5.001 | 5.25 | 5.074 | 5.23 | 0.249 | -0.156 |
| 8 | 5.005 | 5.27 | 5.074 | 5.27 | 0.265 | -0.196 |
| 9 | 5.001 | 5.24 | 5.074 | 5.27 | 0.239 | -0.196 |
| 10 | 5.001 | 5.23 | 5.070 | 5.26 | 0.229 | -0.190 |
|  | 误差**（hPa）** | | | | 0.2467 | -0.1928 |
|  | 标准偏差**（hPa）** | | | | 0.007409 | 0.006 |
|  | U95**（hPa）** | | | | 0.123693 | 0.1237 |

表2 1123312130#气压试验结果

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **正行程** | | **反行程** | | **正行程**  **示值误差 （hPa）** | **反行程**  **示值误差 （hPa）** |
| 次数 | **标准 （hPa）** | **示值 （hPa）** | **标准 （hPa）** | **示值 （hPa）** |
| 1 | 1060.002 | 1059.63 | 1060.007 | 1059.61 | -0.37 | 0.397 |
| 2 | 1060.003 | 1059.56 | 1060.004 | 1059.58 | -0.44 | 0.424 |
| 3 | 1059.999 | 1059.60 | 1060.003 | 1059.61 | -0.40 | 0.393 |
| 4 | 1060.000 | 1059.63 | 1060.007 | 1059.63 | -0.37 | 0.377 |
| 5 | 1060.004 | 1059.56 | 1060.004 | 1059.59 | -0.44 | 0.414 |
| 6 | 1060.001 | 1059.56 | 1060.004 | 1059.56 | -0.44 | 0.444 |
| 7 | 1060.001 | 1059.58 | 1060.004 | 1059.59 | -0.42 | 0.414 |
| 8 | 1059.994 | 1059.61 | 1060.000 | 1059.52 | -0.38 | 0.480 |
| 9 | 1060.001 | 1059.54 | 1060.001 | 1059.61 | -0.46 | 0.391 |
| 10 | 1059.998 | 1059.57 | 1060.004 | 1059.56 | -0.43 | 0.444 |
|  | 误差**（hPa）** | | | | -0.4150 | 0.4178 |
|  | 标准偏差**（hPa）** | | | | 0.0095 | 0.0037 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |
| 1 | 1012.995 | 1012.60 | 1013.003 | 1012.61 | -0.39 | 0.393 |
| 2 | 1013.004 | 1012.63 | 1012.999 | 1012.60 | -0.37 | 0.399 |
| 3 | 1013.000 | 1012.57 | 1012.999 | 1012.64 | -0.43 | 0.359 |
| 4 | 1013.001 | 1012.61 | 1013.011 | 1012.64 | -0.39 | 0.371 |
| 5 | 1013.001 | 1012.57 | 1013.003 | 1012.69 | -0.43 | 0.313 |
| 6 | 1013.001 | 1012.61 | 1013.000 | 1012.65 | -0.39 | 0.350 |
| 7 | 1012.993 | 1012.61 | 1013.003 | 1012.64 | -0.38 | 0.363 |
| 8 | 1013.001 | 1012.57 | 1013.000 | 1012.65 | -0.43 | 0.350 |
| 9 | 1012.998 | 1012.52 | 1013.004 | 1012.61 | -0.48 | 0.394 |
| 10 | 1012.998 | 1012.65 | 1013.004 | 1012.63 | -0.49 | 0.374 |
|  | 误差**（hPa）** | | | | -0.4180 | 0.3666 |
|  | 标准偏差**（hPa）** | | | | 0.0112 | 0.0078 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |
| 1 | 899.993 | 899.71 | 900.003 | 899.78 | -0.28 | 0.223 |
| 2 | 900.004 | 899.70 | 900.003 | 899.75 | -0.30 | 0.253 |
| 3 | 899.991 | 899.73 | 900.003 | 899.79 | -0.26 | 0.213 |
| 4 | 900.002 | 899.70 | 899.996 | 899.72 | -0.30 | 0.276 |
| 5 | 899.994 | 899.72 | 900.003 | 899.76 | -0.27 | 0.243 |
| 6 | 899.998 | 899.72 | 900.000 | 899.74 | -0.28 | 0.260 |
| 7 | 899.999 | 899.69 | 899.996 | 899.77 | -0.31 | 0.226 |
| 8 | 900.003 | 899.75 | 900.008 | 899.75 | -0.25 | 0.258 |
| 9 | 900.003 | 899.73 | 900.004 | 899.77 | -0.27 | 0.234 |
| 10 | 899.999 | 899.74 | 900.004 | 899.82 | -0.26 | 0.184 |
|  | 误差**（hPa）** | | | | -0.2780 | 0.2370 |
|  | 标准偏差**（hPa）** | | | | 0.0057 | 0.0084 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |
| 1 | 700.001 | 699.94 | 700.001 | 699.92 | -0.06 | 0.081 |
| 2 | 699.997 | 699.95 | 700.002 | 699.96 | -0.05 | 0.042 |
| 3 | 699.998 | 699.96 | 699.998 | 699.95 | -0.04 | 0.048 |
| 4 | 700.002 | 699.98 | 700.002 | 699.96 | -0.02 | 0.042 |
| 5 | 699.998 | 699.98 | 700.002 | 699.96 | -0.02 | 0.042 |
| 6 | 700.002 | 700.00 | 700.002 | 699.93 | 0.00 | 0.072 |
| 7 | 699.995 | 699.97 | 700.002 | 699.99 | -0.03 | 0.012 |
| 8 | 700.002 | 699.96 | 700.002 | 700.01 | -0.03 | -0.008 |
| 9 | 699.995 | 699.91 | 700.006 | 700.00 | -0.09 | 0.006 |
| 10 | 699.996 | 700.00 | 700.003 | 699.98 | 0.00 | 0.023 |
|  | 误差**（hPa）** | | | | -0.0340 | 0.0360 |
|  | 标准偏差**（hPa）** | | | | 0.0083 | 0.0087 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |
| 1 | 499.999 | 500.21 | 500.002 | 500.07 | 0.21 | -0.068 |
| 2 | 499.995 | 500.23 | 499.998 | 500.06 | 0.24 | -0.062 |
| 3 | 499.996 | 500.18 | 500.002 | 500.08 | 0.18 | -0.078 |
| 4 | 499.995 | 500.19 | 499.998 | 500.04 | 0.19 | -0.042 |
| 5 | 499.996 | 500.22 | 499.998 | 500.02 | 0.22 | -0.022 |
| 6 | 499.996 | 500.22 | 499.998 | 500.08 | 0.22 | -0.082 |
| 7 | 499.992 | 500.14 | 500.002 | 500.09 | 0.15 | -0.088 |
| 8 | 499.996 | 500.18 | 500.003 | 500.10 | 0.18 | -0.097 |
| 9 | 499.996 | 500.19 | 500.003 | 500.08 | 0.19 | -0.077 |
| 10 | 500.000 | 500.17 | 499.999 | 500.08 | 0.17 | -0.081 |
|  | 误差**（hPa）** | | | | 0.1950 | -0.0697 |
|  | 标准偏差**（hPa）** | | | | 0.0083 | 0.0072 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |
| 1 | 300.001 | 300.38 | 300.005 | 300.17 | 0.38 | -0.165 |
| 2 | 300.002 | 300.38 | 299.998 | 300.14 | 0.38 | -0.142 |
| 3 | 299.994 | 300.45 | 299.998 | 300.13 | 0.46 | -0.132 |
| 4 | 300.001 | 300.45 | 300.002 | 300.16 | 0.45 | -0.158 |
| 5 | 300.001 | 300.40 | 299.999 | 300.14 | 0.40 | -0.141 |
| 6 | 300.001 | 300.42 | 299.998 | 300.10 | 0.42 | -0.102 |
| 7 | 300.001 | 300.39 | 299.998 | 300.15 | 0.39 | -0.152 |
| 8 | 300.001 | 300.46 | 300.003 | 300.16 | 0.46 | -0.157 |
| 9 | 300.001 | 300.42 | 300.003 | 300.21 | 0.42 | -0.207 |
| 10 | 300.001 | 300.38 | 299.999 | 300.11 | 0.38 | -0.111 |
|  | 误差**（hPa）** | | | | 0.4140 | -0.1467 |
|  | 标准偏差**（hPa）** | | | | 0.0095 | 0.0094 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |
| 1 | 100.000 | 100.65 | 100.000 | 100.65 | 0.65 | -0.650 |
| 2 | 99.996 | 100.66 | 99.996 | 100.66 | 0.66 | -0.664 |
| 3 | 99.996 | 100.70 | 99.996 | 100.70 | 0.70 | -0.704 |
| 4 | 99.992 | 100.68 | 99.992 | 100.68 | 0.69 | -0.688 |
| 5 | 100.000 | 100.65 | 100.000 | 100.65 | 0.65 | -0.650 |
| 6 | 99.996 | 100.65 | 99.996 | 100.65 | 0.65 | -0.654 |
| 7 | 100.001 | 100.66 | 100.001 | 100.66 | 0.66 | -0.659 |
| 8 | 99.993 | 100.65 | 99.993 | 100.65 | 0.66 | -0.657 |
| 9 | 99.997 | 100.62 | 99.997 | 100.62 | 0.62 | -0.623 |
| 10 | 99.997 | 100.67 | 99.997 | 100.67 | 0.67 | -0.673 |
|  | 误差**（hPa）** | | | | 0.6610 | -0.6622 |
|  | 标准偏差**（hPa）** | | | | 0.0064 | 0.0064 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |

表2 GTH3/23915076# 探空仪 气压试验结果

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **正行程** | | **反行程** | | **正行程**  **示值误差 （hPa）** | **反行程**  **示值误差 （hPa）** |
| **次数** | **标准 （hPa）** | **示值 （hPa）** | **标准 （hPa）** | **示值 （hPa）** |
| 1 | 1060.02 | 1059.66 | 1060.02 | 1060.47 | -0.36 | 0.45 |
| 2 | 1060 | 1059.61 | 1059.98 | 1060.48 | -0.39 | 0.5 |
| 3 | 1060.01 | 1059.64 | 1060.02 | 1060.45 | -0.37 | 0.43 |
| 4 | 1059.99 | 1059.7 | 1060 | 1060.4 | -0.29 | 0.4 |
| 5 | 1059.99 | 1059.61 | 1060.03 | 1060.46 | -0.38 | 0.43 |
| 6 | 1060 | 1059.61 | 1059.98 | 1060.44 | -0.39 | 0.46 |
| 7 | 1060 | 1059.6 | 1059.99 | 1060.48 | -0.4 | 0.49 |
| 8 | 1060 | 1059.64 | 1060 | 1060.5 | -0.36 | 0.5 |
| 9 | 1060.02 | 1059.59 | 1060 | 1060.44 | -0.43 | 0.44 |
| 10 | 1060 | 1059.64 | 1059.99 | 1060.49 | -0.36 | 0.5 |
|  | 误差**（hPa）** | | | | -0.3730 | 0.4600 |
|  | 标准偏差**（hPa）** | | | | 0.0099 | 0.0089 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |
| 1 | 1013 | 1012.62 | 1013 | 1013.41 | -0.38 | 0.41 |
| 2 | 1013 | 1012.72 | 1013.01 | 1013.41 | -0.28 | 0.4 |
| 3 | 1012.98 | 1012.56 | 1012.98 | 1013.35 | -0.42 | 0.37 |
| 4 | 1013.02 | 1012.73 | 1013.02 | 1013.43 | -0.29 | 0.41 |
| 5 | 1012.99 | 1012.63 | 1013 | 1013.35 | -0.36 | 0.35 |
| 6 | 1013 | 1012.67 | 1012.99 | 1013.4 | -0.33 | 0.41 |
| 7 | 1013.01 | 1012.67 | 1013.02 | 1013.44 | -0.34 | 0.42 |
| 8 | 1012.99 | 1012.63 | 1013.02 | 1013.42 | -0.36 | 0.4 |
| 9 | 1013.02 | 1012.56 | 1012.99 | 1013.42 | -0.46 | 0.43 |
| 10 | 1012.98 | 1012.51 | 1013.01 | 1013.39 | -0.47 | 0.38 |
|  | 误差**（hPa）** | | | | -0.3690 | 0.3980 |
|  | 标准偏差**（hPa）** | | | | 0.0214 | 0.0093 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |
| 1 | 900.01 | 899.75 | 900.01 | 900.25 | -0.26 | 0.24 |
| 2 | 900.01 | 899.76 | 900 | 900.32 | -0.25 | 0.32 |
| 3 | 900.01 | 899.78 | 900.01 | 900.31 | -0.23 | 0.3 |
| 4 | 900 | 899.71 | 900 | 900.33 | -0.29 | 0.33 |
| 5 | 900 | 899.79 | 900 | 900.31 | -0.21 | 0.31 |
| 6 | 900.01 | 899.82 | 900 | 900.34 | -0.19 | 0.34 |
| 7 | 900.02 | 899.79 | 900 | 900.23 | -0.23 | 0.23 |
| 8 | 899.99 | 899.81 | 900.02 | 900.28 | -0.18 | 0.26 |
| 9 | 899.98 | 899.77 | 899.98 | 900.23 | -0.21 | 0.25 |
| 10 | 899.99 | 899.82 | 900.02 | 900.28 | -0.17 | 0.26 |
|  | 误差**（hPa）** | | | |  |  |
|  | 标准偏差**（hPa）** | | | |  |  |
|  | U95**（hPa）** | | | |  |  |
| 1 | 700.02 | 700.03 | 700.02 | 700.18 | 0.01 | 0.16 |
| 2 | 700.02 | 700.04 | 700 | 700.1 | 0.02 | 0.1 |
| 3 | 699.99 | 700.01 | 699.98 | 700.05 | 0.02 | 0.07 |
| 4 | 699.99 | 700.03 | 700.02 | 700.11 | 0.04 | 0.09 |
| 5 | 700.03 | 700.02 | 699.99 | 700.11 | -0.01 | 0.12 |
| 6 | 699.99 | 700.03 | 700.02 | 700.16 | 0.04 | 0.14 |
| 7 | 700.02 | 700.02 | 700.02 | 700.04 | 0 | 0.02 |
| 8 | 699.99 | 699.99 | 700.01 | 700.07 | 0 | 0.06 |
| 9 | 700 | 699.94 | 699.98 | 700.02 | -0.06 | 0.04 |
| 10 | 699.99 | 700.09 | 700.01 | 700.1 | 0.1 | 0.09 |
|  | 误差**（hPa）** | | | | -0.2220 | 0.2840 |
|  | 标准偏差**（hPa）** | | | | 0.0103 | 0.0121 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |
| 1 | 500 | 500.26 | 500.01 | 499.95 | 0.26 | -0.06 |
| 2 | 500.01 | 500.29 | 500 | 500.01 | 0.28 | 0.01 |
| 3 | 499.98 | 500.24 | 499.99 | 499.93 | 0.26 | -0.06 |
| 4 | 500.02 | 500.28 | 499.99 | 499.97 | 0.26 | -0.02 |
| 5 | 500 | 500.22 | 500.01 | 500.08 | 0.22 | 0.07 |
| 6 | 499.99 | 500.29 | 499.97 | 499.92 | 0.3 | -0.05 |
| 7 | 500.02 | 500.27 | 500 | 499.97 | 0.25 | -0.03 |
| 8 | 500.02 | 500.27 | 500.01 | 499.92 | 0.25 | -0.09 |
| 9 | 499.99 | 500.27 | 499.97 | 499.98 | 0.28 | 0.01 |
| 10 | 500.01 | 500.24 | 500 | 499.98 | 0.23 | -0.02 |
|  | 误差**（hPa）** | | | | 0.2590 | -0.0240 |
|  | 标准偏差**（hPa）** | | | | 0.0069 | 0.0145 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |
| 1 | 300.01 | 300.44 | 300.005 | 299.93 | 0.43 | -0.08 |
| 2 | 300 | 300.45 | 299.998 | 299.89 | 0.45 | -0.11 |
| 3 | 300.01 | 300.49 | 299.998 | 299.92 | 0.48 | -0.08 |
| 4 | 300 | 300.55 | 300.002 | 299.89 | 0.55 | -0.11 |
| 5 | 300 | 300.43 | 299.999 | 299.91 | 0.43 | -0.09 |
| 6 | 300 | 300.5 | 299.998 | 299.97 | 0.5 | -0.03 |
| 7 | 300 | 300.49 | 299.998 | 299.88 | 0.49 | -0.12 |
| 8 | 300.02 | 300.51 | 300.003 | 299.84 | 0.49 | -0.16 |
| 9 | 299.98 | 300.41 | 300.003 | 299.82 | 0.43 | -0.18 |
| 10 | 300.02 | 300.45 | 299.999 | 299.97 | 0.43 | -0.03 |
|  | 误差**（hPa）** | | | | 0.4680 | -0.0990 |
|  | 标准偏差**（hPa）** | | | | 0.0129 | 0.0142 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |
| 1 | 100 | 100.69 | 100 | 99.38 | 0.69 | -0.62 |
| 2 | 100 | 100.71 | 99.996 | 99.39 | 0.71 | -0.61 |
| 3 | 100.01 | 100.76 | 99.996 | 99.31 | 0.75 | -0.69 |
| 4 | 100.01 | 100.73 | 99.992 | 99.37 | 0.72 | -0.62 |
| 5 | 100.01 | 100.71 | 100 | 99.37 | 0.7 | -0.63 |
| 6 | 100 | 100.73 | 99.996 | 99.39 | 0.73 | -0.61 |
| 7 | 100 | 100.68 | 100.001 | 99.35 | 0.68 | -0.65 |
| 8 | 100.01 | 100.71 | 99.993 | 99.36 | 0.7 | -0.63 |
| 9 | 99.99 | 100.61 | 99.997 | 99.41 | 0.62 | -0.59 |
| 10 | 100.01 | 100.74 | 99.997 | 99.33 | 0.73 | -0.67 |
|  | 误差**（hPa）** | | | | 0.7030 | -0.6320 |
|  | 标准偏差**（hPa）** | | | | 0.0124 | 0.0090 |
|  | U95**（hPa）** | | | | 0.1237 | 0.1237 |

下投式探空仪XT-16-AQ/21445 气压试验结果

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **次数** | 标准  **（hPa）** | 示值  **（hPa）** | 误差  **（hPa）** | **次数** | 标准  **（hPa）** | 示值  **（hPa）** | 误差  **（hPa）** |
| 1 | 1080.02 | 1080.3 | 0.3 | 1 | 300.00 | 299.6 | -0.4 |
| 2 | 1079.98 | 1080.2 | 0.2 | 2 | 300.00 | 299.6 | -0.4 |
| 3 | 1080.02 | 1080.2 | 0.2 | 3 | 300.01 | 299.6 | -0.4 |
| 4 | 1080.00 | 1080.1 | 0.1 | 4 | 300.01 | 299.6 | -0.4 |
| 5 | 1080.03 | 1080.2 | 0.2 | 5 | 300.00 | 299.7 | -0.3 |
| 6 | 1079.98 | 1080.2 | 0.2 | 6 | 300.00 | 299.6 | -0.4 |
| 7 | 1079.99 | 1080.2 | 0.2 | 7 | 300.00 | 299.5 | -0.5 |
| 8 | 1080.00 | 1080.3 | 0.3 | 8 | 300.00 | 299.6 | -0.4 |
| 9 | 1080.00 | 1080.3 | 0.3 | 9 | 300.00 | 299.5 | -0.5 |
| 10 | 1079.99 | 1080.2 | 0.2 | 10 | 300.00 | 299.6 | -0.4 |
|  | 误差**（hPa）** | | 0.22 |  | 误差**（hPa）** | | -0.41 |
|  | 标准偏差**（hPa）** | | 0.02 |  | 标准偏差**（hPa）** | | 0.02 |
|  | U95**（hPa）** | | 0.13 |  | U95**（hPa）** | | 0.13 |
| 1 | 700.02 | 700.0 | 0.0 | 1 | 100.01 | 100.1 | 0.1 |
| 2 | 700.00 | 700.0 | 0.0 | 2 | 100.00 | 100.1 | 0.1 |
| 3 | 699.98 | 700.0 | 0.0 | 3 | 100.00 | 100.1 | 0.1 |
| 4 | 700.02 | 700.1 | 0.1 | 4 | 100.01 | 100.0 | 0.0 |
| 5 | 699.99 | 699.9 | -0.1 | 5 | 100.00 | 100.0 | 0.0 |
| 6 | 700.02 | 699.9 | -0.1 | 6 | 99.99 | 100.0 | 0.0 |
| 7 | 700.02 | 700.1 | 0.1 | 7 | 100.01 | 100.1 | 0.1 |
| 8 | 700.01 | 699.9 | -0.1 | 8 | 100.00 | 100.0 | 0.0 |
| 9 | 699.98 | 699.9 | -0.1 | 9 | 100.01 | 100.0 | 0.0 |
| 10 | 700.01 | 700.0 | 0.0 | 10 | 100.00 | 100.0 | 0.0 |
|  | 误差**（hPa）** | | -0.02 |  | 误差**（hPa）** | | 0.04 |
|  | 标准偏差**（hPa）** | | 0.02 |  | 标准偏差**（hPa）** | | 0.02 |
|  | U95**（hPa）** | | 0.13 |  | U95**（hPa）** | | 0.13 |
| 1 | 500.01 | 499.7 | -0.3 | 1 |  |  |  |
| 2 | 500.00 | 499.7 | -0.3 | 2 |  |  |  |
| 3 | 499.99 | 499.7 | -0.3 | 3 |  |  |  |
| 4 | 499.99 | 499.7 | -0.3 | 4 |  |  |  |
| 5 | 500.01 | 499.7 | -0.3 | 5 |  |  |  |
| 6 | 499.97 | 499.7 | -0.3 | 6 |  |  |  |
| 7 | 500.00 | 499.7 | -0.3 | 7 |  |  |  |
| 8 | 500.01 | 499.7 | -0.3 | 8 |  |  |  |
| 9 | 499.97 | 499.7 | -0.3 | 9 |  |  |  |
| 10 | 500.00 | 499.7 | -0.3 | 10 |  |  |  |
|  | 误差**（hPa）** | | -0.30 |  | 误差**（hPa）** | |  |
|  | 标准偏差**（hPa）** | | 0.00 |  | 标准偏差**（hPa）** | |  |
|  | U95**（hPa）** | | 0.13 |  | U95**（hPa）** | |  |

下投式探空仪XT-16-AQ/21210 气压试验结果

| **次数** | 标准**（hPa）** | 示值**（hPa）** | 误差**（hPa）** | **次数** | 标准**（hPa）** | 示值**（hPa）** | 误差**（hPa）** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 1080.02 | 1080.5 | 0.5 | 1 | 300.01 | 299.9 | -0.1 |
| 2 | 1080.00 | 1080.5 | 0.5 | 2 | 300.00 | 299.8 | -0.2 |
| 3 | 1080.01 | 1080.5 | 0.5 | 3 | 300.01 | 299.9 | -0.1 |
| 4 | 1079.99 | 1080.5 | 0.5 | 4 | 300.00 | 299.9 | -0.1 |
| 5 | 1079.99 | 1080.6 | 0.6 | 5 | 300.00 | 299.9 | -0.1 |
| 6 | 1080.00 | 1080.5 | 0.5 | 6 | 300.00 | 299.9 | -0.1 |
| 7 | 1080.00 | 1080.6 | 0.6 | 7 | 300.00 | 300.0 | 0.0 |
| 8 | 1080.00 | 1080.6 | 0.6 | 8 | 300.02 | 299.9 | -0.1 |
| 9 | 1080.02 | 1080.5 | 0.5 | 9 | 299.98 | 299.9 | -0.1 |
| 10 | 1080.00 | 1080.5 | 0.5 | 10 | 300.02 | 299.8 | -0.2 |
|  | 误差**（hPa）** | | 0.5300 |  | 误差**（hPa）** | | 0.5300 |
|  | 标准偏差**（hPa）** | | 0.0145 |  | 标准偏差**（hPa）** | | 0.0145 |
|  | U95**（hPa）** | | 0.1237 |  | U95**（hPa）** | | 0.1237 |
| 1 | 700.02 | 700.1 | 0.1 | 1 | 100.00 | 100.5 | 0.5 |
| 2 | 700.02 | 700.2 | 0.2 | 2 | 100.00 | 100.5 | 0.5 |
| 3 | 699.99 | 700.2 | 0.2 | 3 | 100.01 | 100.5 | 0.5 |
| 4 | 699.99 | 700.2 | 0.2 | 4 | 100.01 | 100.5 | 0.5 |
| 5 | 700.03 | 700.2 | 0.2 | 5 | 100.01 | 100.5 | 0.5 |
| 6 | 699.99 | 700.2 | 0.2 | 6 | 100.00 | 100.4 | 0.4 |
| 7 | 700.02 | 700.2 | 0.2 | 7 | 100.00 | 100.5 | 0.5 |
| 8 | 699.99 | 700.2 | 0.2 | 8 | 100.01 | 100.5 | 0.5 |
| 9 | 700.00 | 700.2 | 0.2 | 9 | 99.99 | 100.4 | 0.4 |
| 10 | 699.99 | 700.2 | 0.2 | 10 | 100.01 | 100.5 | 0.5 |
|  | 误差**（hPa）** | | 0.1900 |  | 误差**（hPa）** | | 0.5300 |
|  | 标准偏差**（hPa）** | | 0.0095 |  | 标准偏差**（hPa）** | | 0.0145 |
|  | U95**（hPa）** | | 0.1237 |  | U95**（hPa）** | | 0.1237 |
| 1 | 500.00 | 500.0 | 0.0 | 1 |  |  |  |
| 2 | 500.01 | 500.0 | 0.0 | 2 |  |  |  |
| 3 | 499.98 | 499.9 | -0.1 | 3 |  |  |  |
| 4 | 500.02 | 500.0 | 0.0 | 4 |  |  |  |
| 5 | 500.00 | 500.0 | 0.0 | 5 |  |  |  |
| 6 | 499.99 | 499.9 | -0.1 | 6 |  |  |  |
| 7 | 500.02 | 499.9 | -0.1 | 7 |  |  |  |
| 8 | 500.02 | 500.0 | 0.0 | 8 |  |  |  |
| 9 | 499.99 | 499.9 | -0.1 | 9 |  |  |  |
| 10 | 500.01 | 499.9 | -0.1 | 10 |  |  |  |
|  | 误差**（hPa）** | | -0.0500 |  | 误差**（hPa）** | |  |
|  | 标准偏差**（hPa）** | | 0.0158 |  | 标准偏差**（hPa）** | |  |
|  | U95**（hPa）** | | 0.1237 |  | U95**（hPa）** | |  |

下投式探空仪XT-16-AQ/21149 气压试验结果

| **次数** | 标准**（hPa）** | 示值**（hPa）** | 误差**（hPa）** | **次数** | 标准**（hPa）** | 示值**（hPa）** | 误差**（hPa）** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 1080.00 | 1080.2 | 0.2 | 1 | 300.00 | 299.6 | -0.4 |
| 2 | 1080.00 | 1080.2 | 0.2 | 2 | 300.01 | 299.6 | -0.4 |
| 3 | 1079.98 | 1080.2 | 0.2 | 3 | 300.00 | 299.6 | -0.4 |
| 4 | 1080.02 | 1080.2 | 0.2 | 4 | 300.00 | 299.6 | -0.4 |
| 5 | 1079.99 | 1080.3 | 0.3 | 5 | 300.00 | 299.7 | -0.3 |
| 6 | 1080.00 | 1080.2 | 0.2 | 6 | 300.00 | 299.6 | -0.4 |
| 7 | 1080.01 | 1080.2 | 0.2 | 7 | 300.00 | 299.5 | -0.5 |
| 8 | 1079.99 | 1080.2 | 0.2 | 8 | 300.01 | 299.6 | -0.4 |
| 9 | 1080.02 | 1080.1 | 0.1 | 9 | 300.00 | 299.5 | -0.5 |
| 10 | 1079.98 | 1080.2 | 0.2 | 10 | 300.01 | 299.6 | -0.4 |
|  | 误差**（hPa）** | | 0.2000 |  | 误差**（hPa）** | | -0.4100 |
|  | 标准偏差**（hPa）** | | 0.0141 |  | 标准偏差**（hPa）** | | 0.0170 |
|  | U95**（hPa）** | | 0.1237 |  | U95**（hPa）** | | 0.1237 |
| 1 | 700.01 | 699.9 | -0.1 | 1 | 100.01 | 100.2 | 0.2 |
| 2 | 700.01 | 699.8 | -0.2 | 2 | 100.00 | 100.3 | 0.3 |
| 3 | 700.01 | 699.8 | -0.2 | 3 | 100.00 | 100.3 | 0.3 |
| 4 | 700.00 | 699.8 | -0.2 | 4 | 100.01 | 100.3 | 0.3 |
| 5 | 700.00 | 699.8 | -0.2 | 5 | 100.00 | 100.3 | 0.3 |
| 6 | 700.01 | 699.7 | -0.3 | 6 | 99.99 | 100.3 | 0.3 |
| 7 | 700.02 | 699.9 | -0.1 | 7 | 100.01 | 100.4 | 0.4 |
| 8 | 699.99 | 699.9 | -0.1 | 8 | 100.00 | 100.4 | 0.4 |
| 9 | 699.98 | 699.8 | -0.2 | 9 | 100.01 | 100.3 | 0.3 |
| 10 | 699.99 | 699.8 | -0.2 | 10 | 100.00 | 100.3 | 0.3 |
|  | 误差**（hPa）** | | -0.1800 |  | 误差**（hPa）** | | 0.3100 |
|  | 标准偏差**（hPa）** | | 0.0190 |  | 标准偏差**（hPa）** | | 0.0170 |
|  | U95**（hPa）** | | 0.1237 |  | U95**（hPa）** | | 0.1237 |
| 1 | 500.00 | 499.6 | -0.4 | 1 |  |  |  |
| 2 | 500.01 | 499.7 | -0.3 | 2 |  |  |  |
| 3 | 500.01 | 499.6 | -0.4 | 3 |  |  |  |
| 4 | 500.00 | 499.6 | -0.4 | 4 |  |  |  |
| 5 | 499.98 | 499.7 | -0.3 | 5 |  |  |  |
| 6 | 500.01 | 499.7 | -0.3 | 6 |  |  |  |
| 7 | 500.02 | 499.6 | -0.4 | 7 |  |  |  |
| 8 | 499.99 | 499.6 | -0.4 | 8 |  |  |  |
| 9 | 500.01 | 499.5 | -0.5 | 9 |  |  |  |
| 10 | 499.99 | 499.6 | -0.4 | 10 |  |  |  |
|  | 误差**（hPa）** | | -0.3800 |  | 误差**（hPa）** | |  |
|  | 标准偏差**（hPa）** | | 0.0190 |  | 标准偏差**（hPa）** | |  |
|  | U95**（hPa）** | | 0.1237 |  | U95**（hPa）** | |  |

### 6.3 湿度试验结果

#1123312130#探空仪 相对湿度试验结果（+25℃）

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 次数 | 露点温度  （℃） | 霜点温度  （℃） | 环境温度  （℃） | 标准值  （%RH） | 被测示值  (相对湿度%RH） | 误差  (%RH） |
| 1 | -8.3 | -7.4 | 25.02 | 10.32 | 14.2 | 3.88 |
| 2 | -8.3 | -7.4 | 25.01 | 10.32 | 13.7 | 3.38 |
| 3 | -8.3 | -7.4 | 25.01 | 10.32 | 13.9 | 3.58 |
| 4 | -8.3 | -7.4 | 25.01 | 10.33 | 14.0 | 3.67 |
| 5 | -8.3 | -7.4 | 25.01 | 10.33 | 14.0 | 3.67 |
| 6 | -8.3 | -7.4 | 25.01 | 10.33 | 13.9 | 3.57 |
| 7 | -8.3 | -7.4 | 25.01 | 10.33 | 13.9 | 3.57 |
| 8 | -8.3 | -7.4 | 25.01 | 10.33 | 13.9 | 3.57 |
| 9 | -8.3 | -7.4 | 25.01 | 10.35 | 13.9 | 3.55 |
| 10 | -8.3 | -7.4 | 25.01 | 10.35 | 13.8 | 3.45 |
|  | 相对湿度误差**（hPa）** | | | | | 3.59 |
|  | 标准偏差**（hPa）** | | | | | 0.04 |
|  | U95**（hPa）** | | | | | 0.373024 |
| 1 | 0.3 | 0.3 | 25.00 | 19.53 | 24.3 | 4.77 |
| 2 | 0.3 | 0.3 | 25.00 | 19.54 | 24.2 | 4.66 |
| 3 | 0.3 | 0.3 | 25.00 | 19.72 | 24.2 | 4.48 |
| 4 | 0.3 | 0.3 | 25.01 | 19.75 | 24.3 | 4.55 |
| 5 | 0.3 | 0.3 | 24.99 | 19.78 | 24.6 | 4.82 |
| 6 | 0.3 | 0.3 | 24.99 | 19.79 | 24.6 | 4.81 |
| 7 | 0.3 | 0.3 | 24.99 | 19.77 | 24.7 | 4.93 |
| 8 | 0.3 | 0.3 | 24.99 | 19.79 | 24.6 | 4.81 |
| 9 | 0.3 | 0.3 | 24.99 | 19.79 | 24.6 | 4.81 |
| 10 | 0.3 | 0.3 | 24.99 | 19.79 | 24.6 | 4.81 |
|  | 相对湿度误差**（hPa）** | | | |  | 4.75 |
|  | 标准偏差**（hPa）** | | | |  | 0.06 |
|  | U95**（hPa）** | | | |  | 0.424918 |
| 1 | 6.2 | 6.2 | 25.00 | 29.84 | 34.1 | 4.26 |
| 2 | 6.2 | 6.2 | 25.00 | 29.87 | 34.1 | 4.23 |
| 3 | 6.3 | 6.3 | 25.00 | 29.88 | 34.1 | 4.22 |
| 4 | 6.2 | 6.2 | 25.00 | 29.89 | 34.1 | 4.21 |
| 5 | 6.3 | 6.3 | 25.00 | 29.95 | 34.0 | 4.05 |
| 6 | 6.3 | 6.3 | 24.99 | 30.10 | 34.1 | 4 |
| 7 | 6.3 | 6.3 | 25.00 | 30.09 | 34.1 | 4.01 |
| 8 | 6.2 | 6.2 | 25.00 | 30.18 | 34.1 | 3.92 |
| 9 | 6.2 | 6.2 | 25.00 | 30.22 | 34.1 | 3.88 |
| 10 | 6.3 | 6.3 | 25.00 | 30.22 | 34.2 | 3.98 |
|  | 误差**（hPa）** | | | |  | 4.08 |
|  | 标准偏差**（hPa）** | | | |  | 0.01 |
|  | U95**（hPa）** | | | |  | 0.470964 |
| 1 | 13.9 | 13.9 | 25.01 | 49.96 | 53.5 | 3.54 |
| 2 | 13.9 | 13.9 | 25.01 | 49.96 | 53.4 | 3.44 |
| 3 | 13.9 | 13.9 | 25.01 | 49.96 | 53.5 | 3.54 |
| 4 | 13.9 | 13.9 | 25.01 | 49.96 | 53.6 | 3.64 |
| 5 | 13.9 | 13.9 | 25.01 | 49.97 | 53.5 | 3.53 |
| 6 | 13.9 | 13.9 | 25.01 | 49.97 | 53.5 | 3.53 |
| 7 | 13.9 | 13.9 | 25.01 | 49.97 | 53.5 | 3.53 |
| 8 | 13.9 | 13.9 | 25.01 | 49.97 | 53.6 | 3.63 |
| 9 | 13.9 | 13.9 | 25.01 | 49.97 | 53.5 | 3.53 |
| 10 | 13.9 | 13.9 | 25.01 | 49.97 | 53.6 | 3.63 |
|  | 误差**（hPa）** | | | |  | 3.55 |
|  | 标准偏差**（hPa）** | | | |  | 0.02 |
|  | U95**（hPa）** | | | |  | 0.618579 |
| 1 | 19.1 | 19.1 | 25.01 | 69.65 | 70.7 | 1.05 |
| 2 | 19.1 | 19.1 | 25.01 | 69.65 | 70.9 | 1.25 |
| 3 | 19.1 | 19.1 | 25.01 | 69.65 | 71.0 | 1.35 |
| 4 | 19.1 | 19.1 | 25.01 | 69.65 | 71.0 | 1.35 |
| 5 | 19.1 | 19.1 | 25.01 | 69.65 | 70.8 | 1.15 |
| 6 | 19.1 | 19.1 | 25.01 | 69.65 | 70.8 | 1.15 |
| 7 | 19.1 | 19.1 | 25.01 | 69.65 | 70.9 | 1.25 |
| 8 | 19.1 | 19.1 | 25.01 | 69.65 | 70.7 | 1.05 |
| 9 | 19.1 | 19.1 | 25.01 | 69.65 | 70.8 | 1.15 |
| 10 | 19.1 | 19.1 | 25.01 | 69.65 | 70.7 | 1.05 |
|  | 误差**（hPa）** | | | |  | 1.18 |
|  | 标准偏差**（hPa）** | | | |  | 0.03 |
|  | U95**（hPa）** | | | |  | 0.781172 |
| 1 | 21.3 | 21.3 | 25.01 | 79.66 | 79.7 | 0.04 |
| 2 | 21.3 | 21.3 | 25.01 | 79.65 | 79.6 | -0.05 |
| 3 | 21.3 | 21.3 | 25.01 | 79.65 | 79.5 | -0.15 |
| 4 | 21.3 | 21.3 | 25.01 | 79.66 | 79.6 | -0.06 |
| 5 | 21.3 | 21.3 | 25.01 | 79.66 | 79.6 | -0.06 |
| 6 | 21.3 | 21.3 | 25.01 | 79.66 | 79.7 | 0.04 |
| 7 | 21.3 | 21.3 | 25.01 | 79.65 | 79.8 | 0.15 |
| 8 | 21.3 | 21.3 | 25.01 | 79.65 | 79.6 | -0.05 |
| 9 | 21.3 | 21.3 | 25.01 | 79.65 | 79.7 | 0.05 |
| 10 | 21.3 | 21.3 | 25.01 | 79.65 | 79.7 | 0.05 |
|  | 误差**（hPa）** | | | |  | 0.00 |
|  | 标准偏差**（hPa）** | | | |  | 0.03 |
|  | U95**（hPa）** | | | |  | 0.862782 |
| 1 | 24.0 | 24.0 | 25.02 | 94.22 | 92.8 | -1.42 |
| 2 | 24.0 | 24.0 | 25.02 | 94.22 | 92.9 | -1.32 |
| 3 | 24.0 | 24.0 | 25.02 | 94.22 | 92.9 | -1.32 |
| 4 | 24.0 | 24.0 | 25.02 | 94.23 | 92.8 | -1.43 |
| 5 | 24.0 | 24.0 | 25.02 | 94.23 | 92.9 | -1.33 |
| 6 | 24.1 | 24.1 | 25.02 | 94.25 | 92.9 | -1.35 |
| 7 | 24.1 | 24.1 | 25.02 | 94.25 | 92.9 | -1.35 |
| 8 | 24.1 | 24.1 | 25.01 | 94.40 | 92.9 | -1.5 |
| 9 | 24.1 | 24.1 | 25.02 | 94.40 | 92.9 | -1.5 |
| 10 | 24.1 | 24.1 | 25.02 | 94.40 | 92.9 | -1.5 |
|  | 误差**（hPa）** | | | |  | -1.40 |
|  | 标准偏差**（hPa）** | | | |  | 0.01 |
|  | U95**（hPa）** | | | |  | 0.99189 |

1123312130#探空仪 相对湿度试验结果（-30℃）

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 露点温度  （℃） | 霜点温度  （℃） | 环境温度  （℃） | 标准值  （%RH） | 被测示值  (相对湿度%RH） | 误差  (%RH） |
| -53.7 | -49.4 | -29.73 | 10.84 | 12.2 | 1.36 |
| -53.7 | -49.4 | -29.73 | 10.90 | 12.2 | 1.3 |
| -53.7 | -49.4 | -29.73 | 10.93 | 12.2 | 1.27 |
| -53.7 | -49.4 | -29.73 | 10.93 | 12.1 | 1.17 |
| -53.7 | -49.4 | -29.73 | 10.93 | 12.1 | 1.17 |
| -53.7 | -49.4 | -29.73 | 10.92 | 12.0 | 1.08 |
| -53.7 | -49.4 | -29.73 | 10.92 | 12.0 | 1.08 |
| -53.7 | -49.4 | -29.73 | 10.91 | 12.0 | 1.09 |
| -53.7 | -49.4 | -29.73 | 10.89 | 12.0 | 1.11 |
| -53.7 | -49.4 | -29.73 | 10.88 | 11.9 | 1.02 |
| 相对湿度误差**（hPa）** | | | | | 1.17 |
| 标准偏差**（hPa）** | | | | | 0.03 |
| U95**（hPa）** | | | | | 0.392519 |
| -48.1 | -44.1 | -29.73 | 20.42 | 20.7 | 0.28 |
| -48.1 | -44.1 | -29.73 | 20.46 | 20.7 | 0.24 |
| -48.1 | -44.1 | -29.73 | 20.48 | 20.8 | 0.32 |
| -48.1 | -44.1 | -29.73 | 20.51 | 20.8 | 0.29 |
| -48.1 | -44.1 | -29.73 | 20.56 | 20.8 | 0.24 |
| -48.1 | -44.1 | -29.73 | 20.61 | 20.7 | 0.09 |
| -48.1 | -44.1 | -29.73 | 20.64 | 20.7 | 0.06 |
| -48.1 | -44.1 | -29.73 | 20.66 | 20.7 | 0.04 |
| -48.1 | -44.1 | -29.73 | 20.67 | 20.7 | 0.03 |
| -48.1 | -44.1 | -29.73 | 20.68 | 20.7 | 0.02 |
| 相对湿度误差**（hPa）** | | | |  | 0.16 |
| 标准偏差**（hPa）** | | | |  | 0.01 |
| U95**（hPa）** | | | |  | 0.484804 |
| -44.5 | -40.7 | -29.73 | 30.46 | 29.4 | -1.06 |
| -44.5 | -40.7 | -29.73 | 30.48 | 29.3 | -1.18 |
| -44.5 | -40.7 | -29.73 | 30.51 | 29.3 | -1.21 |
| -44.5 | -40.7 | -29.73 | 30.53 | 29.4 | -1.13 |
| -44.5 | -40.7 | -29.73 | 30.55 | 29.4 | -1.15 |
| -44.5 | -40.7 | -29.73 | 30.55 | 29.4 | -1.15 |
| -44.5 | -40.7 | -29.73 | 30.56 | 29.3 | -1.26 |
| -44.5 | -40.7 | -29.73 | 30.56 | 29.4 | -1.16 |
| -44.5 | -40.7 | -29.73 | 30.56 | 29.3 | -1.26 |
| -44.5 | -40.7 | -29.73 | 30.56 | 29.3 | -1.26 |
| 误差**（hPa）** | | | |  | -1.18 |
| 标准偏差**（hPa）** | | | |  | 0.02 |
| U95**（hPa）** | | | |  | 0.604165 |
| -39.8 | -36.2 | -29.73 | 50.05 | 45.6 | -4.45 |
| -39.8 | -36.2 | -29.73 | 50.12 | 45.7 | -4.42 |
| -39.8 | -36.2 | -29.73 | 50.16 | 45.7 | -4.46 |
| -39.8 | -36.2 | -29.73 | 50.19 | 45.8 | -4.39 |
| -39.8 | -36.2 | -29.73 | 50.22 | 45.7 | -4.52 |
| -39.8 | -36.2 | -29.73 | 50.26 | 45.7 | -4.56 |
| -39.8 | -36.2 | -29.73 | 50.25 | 45.6 | -4.65 |
| -39.8 | -36.2 | -29.73 | 50.22 | 45.7 | -4.52 |
| -39.8 | -36.2 | -29.73 | 50.20 | 45.7 | -4.5 |
| -39.8 | -36.2 | -29.73 | 50.19 | 45.7 | -4.49 |
| 误差**（hPa）** | | | |  | -4.50 |
| 标准偏差**（hPa）** | | | |  | 0.02 |
| U95**（hPa）** | | | |  | 1.302813 |
| -36.5 | -33.2 | -29.73 | 69.69 | 61.1 | -8.59 |
| -36.5 | -33.2 | -29.73 | 69.68 | 61.1 | -8.58 |
| -36.5 | -33.2 | -29.73 | 69.62 | 61.1 | -8.52 |
| -36.5 | -33.2 | -29.73 | 69.61 | 61.2 | -8.41 |
| -36.5 | -33.2 | -29.73 | 69.59 | 61.1 | -8.49 |
| -36.5 | -33.2 | -29.73 | 69.63 | 61.1 | -8.53 |
| -36.5 | -33.2 | -29.73 | 69.68 | 61.2 | -8.48 |
| -36.5 | -33.2 | -29.73 | 69.69 | 61.2 | -8.49 |
| -36.5 | -33.2 | -29.73 | 69.70 | 61.2 | -8.5 |
| -36.5 | -33.2 | -29.73 | 69.75 | 61.3 | -8.45 |
| 误差**（hPa）** | | | |  | -8.50 |
| 标准偏差**（hPa）** | | | |  | 0.02 |
| U95**（hPa）** | | | |  | 1.119591 |

GTH1/22915076# 探空仪 相对湿度试验结果（25℃）

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 次数 | 露点温度  （℃） | 环境温度  （℃） | 标准值  （%RH） | 被测示值  (相对湿度%RH） | 误差  (%RH） |
| 1 | -11.1 | 25.00 | 8.3 | 9.1 | 0.8 |
| 2 | -11.1 | 25.00 | 8.3 | 9.1 | 0.8 |
| 3 | -11.1 | 25.00 | 8.29 | 9.1 | 0.81 |
| 4 | -11.1 | 25.00 | 8.28 | 9.1 | 0.82 |
| 5 | -11.1 | 25.00 | 8.28 | 9.1 | 0.82 |
| 6 | -11.1 | 25.00 | 8.27 | 9.1 | 0.83 |
| 7 | -11.1 | 25.00 | 8.27 | 9.1 | 0.83 |
| 8 | -11.1 | 25.00 | 8.26 | 9.1 | 0.84 |
| 9 | -11.1 | 25.00 | 8.25 | 9.1 | 0.85 |
| 10 | -11.1 | 25.00 | 8.25 | 9.1 | 0.85 |
| 相对湿度误差**（hPa）** | | | | | 0.83 |
| 标准偏差**（hPa）** | | | | | 0.00 |
| U95**（hPa）** | | | | | 0.369149 |
| 1 | 6.6 | 25.00 | 30.91 | 32 | 1.09 |
| 2 | 6.6 | 25.00 | 30.88 | 32 | 1.12 |
| 3 | 6.6 | 25.00 | 30.91 | 32 | 1.09 |
| 4 | 6.6 | 25.00 | 30.88 | 32 | 1.12 |
| 5 | 6.6 | 25.00 | 30.91 | 31.9 | 0.99 |
| 6 | 6.6 | 25.00 | 30.91 | 31.9 | 0.99 |
| 7 | 6.6 | 25.00 | 30.91 | 31.9 | 0.99 |
| 8 | 6.6 | 25.00 | 30.91 | 31.9 | 0.99 |
| 9 | 6.6 | 25.00 | 30.91 | 31.9 | 0.99 |
| 10 | 6.6 | 25.00 | 30.91 | 31.9 | 0.99 |
| 相对湿度误差**（hPa）** | | | |  | 1.04 |
| 标准偏差**（hPa）** | | | |  | 0.02 |
| U95**（hPa）** | | | |  | 0.470964 |
| 1 | 13.9 | 25.00 | 50.07 | 47.6 | -2.47 |
| 2 | 13.9 | 25.00 | 50.01 | 47.6 | -2.41 |
| 3 | 13.9 | 25.00 | 50.02 | 47.6 | -2.42 |
| 4 | 13.9 | 25.00 | 50.07 | 47.6 | -2.47 |
| 5 | 13.9 | 25.00 | 50.02 | 47.6 | -2.42 |
| 6 | 13.9 | 24.99 | 50.07 | 47.6 | -2.47 |
| 7 | 13.9 | 25.00 | 50.07 | 47.6 | -2.47 |
| 8 | 13.9 | 25.00 | 50.02 | 47.6 | -2.42 |
| 9 | 13.9 | 25.00 | 50.07 | 47.6 | -2.47 |
| 10 | 13.9 | 25.00 | 50.07 | 47.6 | -2.47 |
| 误差**（hPa）** | | | |  | -2.45 |
| 标准偏差**（hPa）** | | | |  | 0.00 |
| U95**（hPa）** | | | |  | 0.618579 |
| 1 | 19.2 | 25.00 | 70.12 | 68.8 | -1.32 |
| 2 | 19.2 | 25.00 | 70.12 | 68.8 | -1.32 |
| 3 | 19.2 | 25.00 | 70.12 | 68.8 | -1.32 |
| 4 | 19.2 | 25.00 | 70.12 | 68.8 | -1.32 |
| 5 | 19.2 | 25.00 | 70.11 | 68.8 | -1.31 |
| 6 | 19.2 | 25.00 | 70.12 | 68.8 | -1.32 |
| 7 | 19.2 | 25.00 | 70.12 | 68.8 | -1.32 |
| 8 | 19.2 | 25.00 | 70.11 | 68.8 | -1.31 |
| 9 | 19.2 | 25.00 | 70.12 | 68.8 | -1.32 |
| 10 | 19.2 | 25.00 | 70.12 | 68.8 | -1.32 |
| 误差**（hPa）** | | | |  | -1.32 |
| 标准偏差**（hPa）** | | | |  | 0.00 |
| U95**（hPa）** | | | |  | 0.780227 |
| 1 | 21.4 | 25.00 | 80.33 | 78.5 | -1.83 |
| 2 | 21.4 | 25.00 | 80.33 | 78.5 | -1.83 |
| 3 | 21.4 | 25.00 | 80.33 | 78.5 | -1.83 |
| 4 | 21.4 | 25.00 | 80.33 | 78.5 | -1.83 |
| 5 | 21.4 | 25.00 | 80.32 | 78.5 | -1.82 |
| 6 | 21.4 | 25.00 | 80.33 | 78.5 | -1.83 |
| 7 | 21.4 | 25.00 | 80.33 | 78.5 | -1.83 |
| 8 | 21.4 | 25.00 | 80.32 | 78.5 | -1.82 |
| 9 | 21.4 | 25.00 | 80.33 | 78.5 | -1.83 |
| 10 | 21.4 | 25.00 | 80.33 | 78.5 | -1.83 |
| 误差**（hPa）** | | | |  | -1.83 |
| 标准偏差**（hPa）** | | | |  | 0.00 |
| U95**（hPa）** | | | |  | 0.862782 |
| 1 | 23.7 | 25.00 | 92.4 | 89.96 | -2.44 |
| 2 | 23.7 | 25.00 | 92.4 | 89.96 | -2.44 |
| 3 | 23.7 | 25.00 | 92.4 | 89.96 | -2.44 |
| 4 | 23.7 | 25.00 | 92.4 | 89.96 | -2.44 |
| 5 | 23.7 | 25.00 | 92.3 | 89.96 | -2.34 |
| 6 | 23.7 | 25.00 | 92.4 | 89.96 | -2.44 |
| 7 | 23.7 | 25.00 | 92.4 | 89.96 | -2.44 |
| 8 | 23.7 | 25.00 | 92.3 | 89.96 | -2.34 |
| 9 | 23.7 | 25.00 | 92.4 | 89.96 | -2.44 |
| 10 | 23.7 | 25.00 | 92.4 | 89.96 | -2.44 |
| 误差**（hPa）** | | | |  | -2.42 |
| 标准偏差**（hPa）** | | | |  | 0.00 |
| U95**（hPa）** | | | |  | 0.99189 |

GTH1/22915076# 探空仪 相对湿度试验结果（-30℃）

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 次数 | 露点温度  （℃） | 环境温度  （℃） | 标准值  （%RH） | 被测示值  (相对湿度%RH） | 误差  (%RH） |
| 1 | -50.0 | -30 | 12.6 | 11.4 | -1.2 |
| 2 | -50.0 | -30 | 12.61 | 11.4 | -1.21 |
| 3 | -50.0 | -30 | 12.61 | 11.4 | -1.21 |
| 4 | -50.0 | -30 | 12.61 | 11.4 | -1.21 |
| 5 | -50.0 | -30 | 12.61 | 11.4 | -1.21 |
| 6 | -50.0 | -30 | 12.62 | 11.4 | -1.22 |
| 7 | -50.0 | -30 | 12.63 | 11.4 | -1.23 |
| 8 | -50.0 | -30 | 12.64 | 11.4 | -1.24 |
| 9 | -50.0 | -30 | 12.65 | 11.4 | -1.25 |
| 10 | -50.0 | -30 | 12.66 | 11.4 | -1.26 |
| 相对湿度误差**（hPa）** | | | | | -1.22 |
| 标准偏差**（hPa）** | | | | | 0.00 |
| U95**（hPa）** | | | | | 0.391657 |
| 1 | -45.5 | -30 | 20.84 | 19.8 | -1.04 |
| 2 | -45.5 | -30 | 20.83 | 19.7 | -1.13 |
| 3 | -45.5 | -30 | 20.82 | 19.8 | -1.02 |
| 4 | -45.5 | -30 | 20.82 | 19.8 | -1.02 |
| 5 | -45.5 | -30 | 20.81 | 19.7 | -1.11 |
| 6 | -45.5 | -30 | 20.81 | 19.7 | -1.11 |
| 7 | -45.5 | -30 | 20.81 | 19.7 | -1.11 |
| 8 | -45.5 | -30 | 20.81 | 19.7 | -1.11 |
| 9 | -45.5 | -30 | 20.8 | 19.7 | -1.1 |
| 10 | -45.5 | -30 | 20.81 | 19.7 | -1.11 |
| 相对湿度误差**（hPa）** | | | |  | -1.09 |
| 标准偏差**（hPa）** | | | |  | 0.01 |
| U95**（hPa）** | | | |  | 0.484804 |
| 1 | -41.9 | -30 | 30.72 | 28.2 | -2.52 |
| 2 | -41.9 | -30 | 30.74 | 28.2 | -2.54 |
| 3 | -41.9 | -30 | 30.76 | 28.2 | -2.56 |
| 4 | -41.9 | -30 | 30.77 | 28.2 | -2.57 |
| 5 | -41.9 | -30 | 30.78 | 28.2 | -2.58 |
| 6 | -41.9 | -30 | 30.81 | 28.2 | -2.61 |
| 7 | -41.8 | -30 | 30.84 | 28.2 | -2.64 |
| 8 | -41.8 | -30 | 30.86 | 28.2 | -2.66 |
| 9 | -41.8 | -30 | 30.88 | 28.2 | -2.68 |
| 10 | -41.8 | -30 | 30.88 | 28.2 | -2.68 |
| 误差**（hPa）** | | | |  | -2.60 |
| 标准偏差**（hPa）** | | | |  | 0.00 |
| U95**（hPa）** | | | |  | 0.604165 |
| 1 | -36.9 | -30 | 51.08 | 47.9 | -3.18 |
| 2 | -36.9 | -30 | 51.11 | 47.9 | -3.21 |
| 3 | -36.9 | -30 | 51.13 | 47.9 | -3.23 |
| 4 | -36.9 | -30 | 51.15 | 47.9 | -3.25 |
| 5 | -36.9 | -30 | 51.17 | 47.9 | -3.27 |
| 6 | -36.9 | -30 | 51.19 | 47.9 | -3.29 |
| 7 | -36.9 | -30 | 51.2 | 47.9 | -3.3 |
| 8 | -36.9 | -30 | 51.23 | 47.9 | -3.33 |
| 9 | -36.9 | -30 | 51.23 | 47.9 | -3.33 |
| 10 | -36.9 | -30 | 51.23 | 47.9 | -3.33 |
| 误差**（hPa）** | | | |  | -3.27 |
| 标准偏差**（hPa）** | | | |  | 0.00 |
| U95**（hPa）** | | | |  | 1.302813 |
| 1 | -33.7 | -30 | 70.18 | 66.1 | -4.08 |
| 2 | -33.7 | -30 | 70.18 | 66 | -4.18 |
| 3 | -33.7 | -30 | 70.17 | 66.1 | -4.07 |
| 4 | -33.7 | -30 | 70.2 | 66.1 | -4.1 |
| 5 | -33.7 | -30 | 70.19 | 66.1 | -4.09 |
| 6 | -33.7 | -30 | 70.19 | 66.1 | -4.09 |
| 7 | -33.7 | -30 | 70.19 | 66.1 | -4.09 |
| 8 | -33.7 | -30 | 70.18 | 66 | -4.18 |
| 9 | -33.7 | -30 | 70.18 | 66 | -4.18 |
| 10 | -33.7 | -30 | 70.17 | 66 | -4.17 |
| 误差**（hPa）** | | | |  | -4.12 |
| 标准偏差**（hPa）** | | | |  | 0.02 |
| U95**（hPa）** | | | |  | 1.119591 |

下投式探空仪XT-16-AQ/21451湿度试验结果

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **次数** | 标准  **（%RH）** | 示值  **（%RH）** | 误差  **（%RH）** | **次数** | 标准  **（%RH）** | 示值  **（%RH）** | 误差  **（%RH）** |
| 1 | 8.3 | 9.1 | 0.8 | 1 | 54.91 | 54.5 | -0.41 |
| 2 | 8.3 | 9.1 | 0.8 | 2 | 54.88 | 54.5 | -0.38 |
| 3 | 8.29 | 9.1 | 0.81 | 3 | 54.91 | 54.5 | -0.41 |
| 4 | 8.28 | 9.1 | 0.82 | 4 | 54.88 | 54.5 | -0.38 |
| 5 | 8.28 | 9.1 | 0.82 | 5 | 54.91 | 54.4 | -0.51 |
| 6 | 8.27 | 9.1 | 0.83 | 6 | 54.91 | 54.4 | -0.51 |
| 7 | 8.27 | 9.1 | 0.83 | 7 | 54.91 | 54.4 | -0.51 |
| 8 | 8.26 | 9.1 | 0.84 | 8 | 54.91 | 54.4 | -0.51 |
| 9 | 8.25 | 9.1 | 0.85 | 9 | 54.91 | 54.4 | -0.51 |
| 10 | 8.25 | 9.1 | 0.85 | 10 | 54.91 | 54.4 | -0.51 |
|  | 误差**（%RH）** | | 0.83 |  | 误差**（%RH）** | | -0.46 |
|  | 标准偏差**（%RH）** | | 0.00 |  | 标准偏差**（%RH）** | | 0.02 |
|  | U95**（%RH）** | | 0.4 |  | U95**（%RH）** | | 0.7 |
| 1 | 21.1 | 21.9 | 0.8 | 1 | 92.07 | 89.6 | -2.47 |
| 2 | 21.1 | 21.9 | 0.8 | 2 | 92.01 | 89.6 | -2.41 |
| 3 | 21.1 | 21.9 | 0.8 | 3 | 92.02 | 89.6 | -2.42 |
| 4 | 21.1 | 21.9 | 0.8 | 4 | 92.07 | 89.6 | -2.47 |
| 5 | 21.1 | 21.9 | 0.8 | 5 | 92.02 | 89.6 | -2.42 |
| 6 | 21.1 | 21.9 | 0.8 | 6 | 92.07 | 89.6 | -2.47 |
| 7 | 21.11 | 21.9 | 0.79 | 7 | 92.07 | 89.6 | -2.47 |
| 8 | 21.11 | 21.9 | 0.79 | 8 | 92.02 | 89.6 | -2.42 |
| 9 | 21.11 | 21.9 | 0.79 | 9 | 92.07 | 89.6 | -2.47 |
| 10 | 21.11 | 21.9 | 0.79 | 10 | 92.07 | 89.6 | -2.47 |
|  | 误差**（%RH）** | | 0.80 |  | 误差**（%RH）** | | -2.45 |
|  | 标准偏差**（%RH）** | | 0.00 |  | 标准偏差**（%RH）** | | 0.00 |
|  | U95**（%RH）** | | 0.5 |  | U95**（%RH）** | | 1.0 |
| 1 | 32.13 | 30.3 | -1.83 | 1 |  |  |  |
| 2 | 32.13 | 30.3 | -1.83 | 2 |  |  |  |
| 3 | 32.13 | 30.3 | -1.83 | 3 |  |  |  |
| 4 | 32.13 | 30.3 | -1.83 | 4 |  |  |  |
| 5 | 32.13 | 30.3 | -1.83 | 5 |  |  |  |
| 6 | 32.13 | 30.3 | -1.83 | 6 |  |  |  |
| 7 | 32.14 | 30.3 | -1.84 | 7 |  |  |  |
| 8 | 32.14 | 30.3 | -1.84 | 8 |  |  |  |
| 9 | 32.14 | 30.3 | -1.84 | 9 |  |  |  |
| 10 | 32.14 | 30.3 | -1.84 | 10 |  |  |  |
|  | 误差**（%RH）** | | -1.83 |  | 误差**（%RH）** | |  |
|  | 标准偏差**（%RH）** | | 0.00 |  | 标准偏差**（%RH）** | |  |
|  | U95**（%RH）** | | 0.5  0.13 |  | U95**（%RH）** | |  |

下投式探空仪XT-16-AQ/21118 湿度试验结果

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **次数** | 标准  **（%RH）** | 示值  **（%RH）** | 误差  **（%RH）** | **次数** | 标准  **（%RH）** | 示值  **（%RH）** | 误差  **（%RH）** |
| 1 | 8.25 | 8.6 | 0.35 | 1 | 70.63 | 69.8 | -0.83 |
| 2 | 8.26 | 8.5 | 0.24 | 2 | 70.61 | 69.8 | -0.81 |
| 3 | 8.27 | 8.5 | 0.23 | 3 | 70.62 | 69.7 | -0.92 |
| 4 | 8.28 | 8.5 | 0.22 | 4 | 70.63 | 69.7 | -0.93 |
| 5 | 8.28 | 8.5 | 0.22 | 5 | 70.61 | 69.7 | -0.91 |
| 6 | 8.28 | 8.5 | 0.22 | 6 | 70.63 | 69.7 | -0.93 |
| 7 | 8.29 | 8.5 | 0.21 | 7 | 70.63 | 69.6 | -1.03 |
| 8 | 8.29 | 8.5 | 0.21 | 8 | 70.61 | 69.6 | -1.01 |
| 9 | 8.3 | 8.5 | 0.2 | 9 | 70.63 | 69.6 | -1.03 |
| 10 | 8.3 | 8.5 | 0.2 | 10 | 70.63 | 69.6 | -1.03 |
|  | 误差**（%RH）** | | 0.23 |  | 误差**（%RH）** | | -0.94 |
|  | 标准偏差**（%RH）** | | 0.01 |  | 标准偏差**（%RH）** | | 0.02 |
|  | U95**（%RH）** | | 0.4 |  | U95**（%RH）** | | 0.8 |
| 1 | 30.91 | 29.8 | -1.11 | 1 | 92.07 | 88.7 | -3.37 |
| 2 | 30.88 | 29.8 | -1.08 | 2 | 92.05 | 88.7 | -3.35 |
| 3 | 30.91 | 29.7 | -1.21 | 3 | 92.06 | 88.7 | -3.36 |
| 4 | 30.88 | 29.7 | -1.18 | 4 | 92.07 | 88.7 | -3.37 |
| 5 | 30.91 | 29.7 | -1.21 | 5 | 92.05 | 88.8 | -3.25 |
| 6 | 30.91 | 29.7 | -1.21 | 6 | 92.07 | 88.8 | -3.27 |
| 7 | 30.91 | 29.6 | -1.31 | 7 | 92.07 | 88.8 | -3.27 |
| 8 | 30.91 | 29.6 | -1.31 | 8 | 92.05 | 88.8 | -3.25 |
| 9 | 30.91 | 29.6 | -1.31 | 9 | 92.07 | 88.8 | -3.27 |
| 10 | 30.91 | 29.6 | -1.31 | 10 | 92.07 | 88.8 | -3.27 |
|  | 误差**（%RH）** | | -1.22 |  | 误差**（%RH）** | | -3.30 |
|  | 标准偏差**（%RH）** | | 0.02 |  | 标准偏差**（%RH）** | | 0.02 |
|  | U95**（%RH）** | | 0.5 |  | U95**（%RH）** | | 1.0 |
| 1 | 54.8 | 54.1 | -0.7 | 1 |  |  |  |
| 2 | 54.77 | 54.1 | -0.67 | 2 |  |  |  |
| 3 | 54.8 | 54 | -0.8 | 3 |  |  |  |
| 4 | 54.77 | 54 | -0.77 | 4 |  |  |  |
| 5 | 54.8 | 54 | -0.8 | 5 |  |  |  |
| 6 | 54.8 | 54 | -0.8 | 6 |  |  |  |
| 7 | 54.8 | 53.9 | -0.9 | 7 |  |  |  |
| 8 | 54.8 | 53.9 | -0.9 | 8 |  |  |  |
| 9 | 54.8 | 53.9 | -0.9 | 9 |  |  |  |
| 10 | 54.8 | 53.9 | -0.9 | 10 |  |  |  |
|  | 误差**（%RH）** | | -0.81 |  | 误差**（%RH）** | |  |
|  | 标准偏差**（%RH）** | | 0.02 |  | 标准偏差**（%RH）** | |  |
|  | U95**（%RH）** | | 0.7  0.13 |  | U95**（%RH）** | |  |

下投式探空仪XT-16-AQ/21428 湿度试验结果

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **次数** | 标准  **（%RH）** | 示值  **（%RH）** | 误差  **（%RH）** | **次数** | 标准  **（%RH）** | 示值  **（%RH）** | 误差  **（%RH）** |
| 1 | 7.97 | 8.1 | 0.13 | 1 | 70.91 | 69.7 | -1.21 |
| 2 | 7.97 | 8.1 | 0.13 | 2 | 70.88 | 69.7 | -1.18 |
| 3 | 7.97 | 8.1 | 0.13 | 3 | 70.91 | 69.7 | -1.21 |
| 4 | 7.97 | 8.1 | 0.13 | 4 | 70.88 | 69.7 | -1.18 |
| 5 | 7.97 | 8.1 | 0.13 | 5 | 70.91 | 69.6 | -1.31 |
| 6 | 7.97 | 8.1 | 0.13 | 6 | 70.91 | 69.6 | -1.31 |
| 7 | 7.97 | 8.1 | 0.13 | 7 | 70.91 | 69.6 | -1.31 |
| 8 | 7.98 | 8.1 | 0.12 | 8 | 70.91 | 69.5 | -1.41 |
| 9 | 7.98 | 8.1 | 0.12 | 9 | 70.91 | 69.5 | -1.41 |
| 10 | 7.98 | 8.1 | 0.12 | 10 | 70.91 | 69.5 | -1.41 |
|  | 误差**（%RH）** | | 0.13 |  | 误差**（%RH）** | | -1.29 |
|  | 标准偏差**（%RH）** | | 0.00 |  | 标准偏差**（%RH）** | | 0.03 |
|  | U95**（%RH）** | | 0.4 |  | U95**（%RH）** | | 0.8 |
| 1 | 30.03 | 32.1 | 2.07 | 1 | 92.07 | 88.2 | -3.87 |
| 2 | 30 | 32.1 | 2.1 | 2 | 92.05 | 88.2 | -3.85 |
| 3 | 30.03 | 32.2 | 2.17 | 3 | 92.06 | 88.3 | -3.76 |
| 4 | 30 | 32.2 | 2.2 | 4 | 92.07 | 88.3 | -3.77 |
| 5 | 30.03 | 32.2 | 2.17 | 5 | 92.05 | 88.3 | -3.75 |
| 6 | 30.03 | 32.2 | 2.17 | 6 | 92.07 | 88.3 | -3.77 |
| 7 | 30.03 | 32.2 | 2.17 | 7 | 92.07 | 88.3 | -3.77 |
| 8 | 30.03 | 32.1 | 2.07 | 8 | 92.05 | 88.2 | -3.85 |
| 9 | 30.03 | 32.1 | 2.07 | 9 | 92.07 | 88.2 | -3.87 |
| 10 | 30.03 | 32.2 | 2.17 | 10 | 92.07 | 88.3 | -3.77 |
|  | 误差**（%RH）** | | 2.14 |  | 误差**（%RH）** | | -3.80 |
|  | 标准偏差**（%RH）** | | 0.02 |  | 标准偏差**（%RH）** | | 0.02 |
|  | U95**（%RH）** | | 0.5 |  | U95**（%RH）** | | 1.0 |
| 1 | 50.18 | 49.1 | -1.08 | 1 |  |  |  |
| 2 | 50.16 | 49.1 | -1.06 | 2 |  |  |  |
| 3 | 50.17 | 49.2 | -0.97 | 3 |  |  |  |
| 4 | 50.18 | 49.2 | -0.98 | 4 |  |  |  |
| 5 | 50.16 | 49.2 | -0.96 | 5 |  |  |  |
| 6 | 50.18 | 49.2 | -0.98 | 6 |  |  |  |
| 7 | 50.18 | 49.2 | -0.98 | 7 |  |  |  |
| 8 | 50.16 | 49.1 | -1.06 | 8 |  |  |  |
| 9 | 50.18 | 49.1 | -1.08 | 9 |  |  |  |
| 10 | 50.18 | 49.2 | -0.98 | 10 |  |  |  |
|  | 误差**（%RH）** | | -1.01 |  | 误差**（%RH）** | |  |
|  | 标准偏差**（%RH）** | | 0.02 |  | 标准偏差**（%RH）** | |  |
|  | U95**（%RH）** | | 0.7  0.13 |  | U95**（%RH）** | |  |

## 4.结论

根据JJF1094-2002《测量仪器特性评定》，对本次试验的测量结果及不确定度进行验证，合格判据为。式中，为被测试传感器最大允许误差的绝对值。

根据《征求意见稿》可知探空仪温度、湿度、气压各要素的，得到对本次试验的测量结果及不确定度进行验证的合格判据：

|  |  |  |
| --- | --- | --- |
| 要素 | 最大允许误差 | 合格判据（） |
| 温度 |  |  |
| 湿度 | （环境温度≥-25℃）  （环境温度﹤-25℃） | （环境温度≥-25℃）  （环境温度﹤-25℃） |
| 气压 | ，, | ， |

由上述试验结果可知：

探空仪温度校准采用标准铂电阻温度计为标准器，恒温液槽为配套设备的系统，其为0.04℃，可以满足校准需求。



探空仪相对湿度校准采用一级精密露点仪为标准器，湿度发生器为配套设备的系统，其最大为1.6%RH，可以满足的校准需求。



探空仪气压校准采用数字气压计为标准器，气压检定箱为配套设备的系统，其最大为0.14hPa，可以满足校准需求。



本次试验的所有测试结果及不确定度评定结果全部满足判据要求，我们认为本征求意见稿的校准方法是科学合理有效的。