

铸尺量天

—始于1951—



中国认可  
国际互认  
检测  
TESTING  
CNAS L0002



zh1018300141

中国航空工业集团公司北京长城计量测试技术研究所  
(国防科技工业第一计量测试研究中心)

CHANGCHENG INSTITUTE OF METROLOGY & MEASUREMENT

# 检测报告

## TEST REPORT

报告编号: GFJGJL100125FK00538

Report No.

客户单位: 西安铂力特增材技术股份有限公司

Customer

地址: 陕西省西安市高新区上林苑七路1000号

Address

计量器具名称: 热处理空气实验炉 (TUS)

Instrument name

型号/规格: GWDL-XA/800°C

Model/Type

器具/管理编号: GWL20250618003-1

Serial No/Regulation No

制造单位: 洛阳炬星窑炉有限公司

Manufacturer

检测人:

Test operator

张谦

核验人:

Inspector

邢博

批准人:

Authorized signatory

李浩铭

检测专用章

(stamp)

接收日期:

Received date

2025

年

10

月

29

日

Year

Month

Day

检测日期:

Test date

2025

年

10

月

29

日

Year

Month

Day

发布日期:

Issued date

2025

年

11

月

07

日

Year

Month

Day

地址: 陕西省西安市高新区创新路5号  
新型工业园2号楼1层

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地点: 西安铂力特增材技术股份有限公司四期E3厂房

Locus

环境条件: 温度: 22.1 °C 湿度: 50 %RH 其它: /  
Environmental conditions Temperature Rel. Humidity Others

所依据/参照技术文件  
(代号、名称):

SAE AMS 2750TM (REV.H)-2024 高温测量, HB 5425-2012 航空制件热处理  
炉有效加热区测定方法

Reference documents for the test  
(Code, Name)

SAE AMS 2750TM (REV.H)-2024 Pyrometry, HB 5425-2012 Testing method for working zone of heat treatment  
furnace for aviation

使用的测量标准:

Measurement Standards used during the test

| 名称<br>Name       | 编号<br>Number | 测量范围<br>Measuring range | 准确度等级/最大允许误差/测量不确定度等<br>Accuracy class/MPE/Uncertainty, etc | 溯源机构/证书编号<br>Traceability institution<br>/Certificate No. | 有效日期<br>Valid date |
|------------------|--------------|-------------------------|-------------------------------------------------------------|-----------------------------------------------------------|--------------------|
| 温湿度巡检仪<br>(二次仪表) | 210408176    | (-80~1600) °C           | ±0.6 °C或±0.1 %t                                             | 长城计量(天津)<br>/GFJGJL1001252104017                          | 2025-12-03         |
| 测试热电偶<br>(1000m) | ZN2501       | (0~700) °C              | ±1.1 °C或±0.4 %t                                             | 长城计量(天津)<br>/GFJGJL100125FK00051                          | 2026-01-28         |
|                  |              |                         |                                                             |                                                           |                    |
|                  |              |                         |                                                             |                                                           |                    |
|                  |              |                         |                                                             |                                                           |                    |
|                  |              |                         |                                                             |                                                           |                    |

本证书的测量结果均可溯源至国家法定计量单位(含国际单位制)或国家测量标准。

This certificate's measurement results can be traceable to the national legal units of measurement(INCL SI) or national measurement standard.

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These results are only responsible for the sample tested;

3、被测计量器具修理后, 应立即重新检测;

Immediate recalibration is essential for the tested measuring instrument after its repair;

4、在使用过程中如对被检测计量器具的技术指标产生怀疑, 请重新检测;

Please test again if the technical index of the calibrated measuring instrument is doubted in use;

5、本证书封面未加盖检测专用章无效;

This certificate is not available without a seal on the front cover;

6、本证书如有最大允许误差、判定结果, 仅供参考, “P”表示符合, “F”表示不符合。

MPE & judgement result in the datasheet is only for reference, 'P' represents 'Pass' and 'F' represents 'Fail'.





# 检测结果

## Results of Test

炉温恒定前温度状态测试数据:

测试温度: 100.0

单位: °C

| 位置编号     | 1            | 2      | 3      | 4      | 5      | 6   | 7   | 8   | 9   |
|----------|--------------|--------|--------|--------|--------|-----|-----|-----|-----|
| 采集通道编号   | CH1          | CH2    | CH3    | CH4    | CH5    | CH6 | CH7 | CH8 | CH9 |
| 传感器编号    | ZN2501       | ZN2502 | ZN2503 | ZN2504 | ZN2505 | /   | /   | /   | /   |
| 采集时间     |              |        |        |        |        |     |     |     |     |
| 12:02:33 | 31.3         | 29.1   | 30.7   | 30.0   | 29.3   | /   | /   | /   | /   |
| 12:04:33 | 39.1         | 36.5   | 38.6   | 37.9   | 37.1   | /   | /   | /   | /   |
| 12:06:33 | 48.6         | 45.6   | 48.2   | 47.5   | 46.5   | /   | /   | /   | /   |
| 12:08:33 | 57.1         | 54.0   | 56.7   | 56.1   | 55.1   | /   | /   | /   | /   |
| 12:10:33 | 64.9         | 61.7   | 64.5   | 63.9   | 62.8   | /   | /   | /   | /   |
| 12:12:33 | 72.4         | 69.1   | 71.9   | 71.5   | 70.4   | /   | /   | /   | /   |
| 12:14:33 | 79.8         | 76.5   | 79.4   | 78.8   | 77.8   | /   | /   | /   | /   |
| 12:16:33 | 87.0         | 83.6   | 86.5   | 86.1   | 85.0   | /   | /   | /   | /   |
| 12:18:33 | 94.4         | 91.0   | 94.0   | 93.6   | 92.4   | /   | /   | /   | /   |
| 12:20:33 | 101.0        | 97.7   | 100.5  | 100.1  | 99.0   | /   | /   | /   | /   |
| 12:22:33 | 100.0        | 97.2   | 99.5   | 98.9   | 98.0   | /   | /   | /   | /   |
| 12:24:33 | 100.7        | 98.3   | 100.1  | 99.6   | 98.7   | /   | /   | /   | /   |
| 12:26:33 | 100.6        | 98.5   | 100.2  | 99.4   | 98.6   | /   | /   | /   | /   |
| 12:28:33 | 100.3        | 98.5   | 99.9   | 99.1   | 98.4   | /   | /   | /   | /   |
| 12:30:33 | 100.3        | 98.6   | 99.7   | 99.0   | 98.4   | /   | /   | /   | /   |
| 12:32:33 | 100.3        | 98.7   | 99.8   | 99.1   | 98.4   | /   | /   | /   | /   |
| 12:34:33 | 100.3        | 98.8   | 99.9   | 99.1   | 98.5   | /   | /   | /   | /   |
| 12:36:33 | 100.3        | 98.9   | 99.7   | 99.1   | 98.5   | /   | /   | /   | /   |
| 12:38:33 | 100.4        | 99.0   | 100.0  | 99.2   | 98.6   | /   | /   | /   | /   |
| 12:40:33 | 100.4        | 99.0   | 99.9   | 99.2   | 98.6   | /   | /   | /   | /   |
| 12:42:33 | 100.4        | 99.0   | 99.8   | 99.2   | 98.6   | /   | /   | /   | /   |
| 12:44:33 | 100.5        | 99.1   | 99.9   | 99.2   | 98.7   | /   | /   | /   | /   |
| 12:46:33 | 100.6        | 99.3   | 100.0  | 99.4   | 98.8   | /   | /   | /   | /   |
| 12:48:33 | 100.7        | 99.3   | 100.3  | 99.4   | 98.8   | /   | /   | /   | /   |
| 传感器修正值   | 0.3          | 0.3    | 0.3    | 0.3    | 0.3    | /   | /   | /   | /   |
| 仪表修正值    | 0.0          | 0.0    | 0.0    | 0.0    | 0.0    | /   | /   | /   | /   |
| 实际最高值    | 101.3        | 99.6   | 100.8  | 100.4  | 99.3   |     |     |     |     |
| 测试结论:    | 炉温恒定前温度无过冲现象 |        |        |        |        |     |     |     |     |

炉温恒定温度状态测试数据:

测试温度: 100.0

单位: °C

| 位置号      | 1      | 2      | 3      | 4      | 5      | 6   | 7   | 8   | 9   |
|----------|--------|--------|--------|--------|--------|-----|-----|-----|-----|
| 通道号      | CH1    | CH2    | CH3    | CH4    | CH5    | CH6 | CH7 | CH8 | CH9 |
| 传感器编号    | ZN2501 | ZN2502 | ZN2503 | ZN2504 | ZN2505 | /   | /   | /   | /   |
| 时间       |        |        |        |        |        |     |     |     |     |
| 12:50:33 | 100.7  | 99.3   | 100.3  | 99.4   | 98.8   | /   | /   | /   | /   |
| 12:52:33 | 100.7  | 99.3   | 100.2  | 99.4   | 98.8   | /   | /   | /   | /   |



# 检测结果

## Results of Test

|          |        |      |       |      |        |   |      |   |   |
|----------|--------|------|-------|------|--------|---|------|---|---|
| 12:54:33 | 100.7  | 99.3 | 100.3 | 99.4 | 98.8   | / | /    | / | / |
| 12:56:33 | 100.7  | 99.4 | 100.3 | 99.5 | 98.9   | / | /    | / | / |
| 12:58:33 | 100.7  | 99.3 | 100.2 | 99.4 | 98.9   | / | /    | / | / |
| 13:00:33 | 100.7  | 99.3 | 100.3 | 99.4 | 98.9   | / | /    | / | / |
| 13:02:33 | 100.7  | 99.3 | 100.3 | 99.4 | 98.9   | / | /    | / | / |
| 13:04:33 | 100.8  | 99.2 | 100.2 | 99.5 | 99.0   | / | /    | / | / |
| 13:06:33 | 100.7  | 99.4 | 100.4 | 99.3 | 98.9   | / | /    | / | / |
| 13:08:33 | 100.8  | 99.4 | 100.2 | 99.3 | 98.9   | / | /    | / | / |
| 13:10:33 | 100.7  | 99.3 | 100.4 | 99.4 | 98.8   | / | /    | / | / |
| 13:12:33 | 100.7  | 99.4 | 100.4 | 99.3 | 99.0   | / | /    | / | / |
| 13:14:33 | 100.6  | 99.4 | 100.4 | 99.5 | 99.0   | / | /    | / | / |
| 13:16:33 | 100.7  | 99.4 | 100.4 | 99.5 | 99.0   | / | /    | / | / |
| 13:18:33 | 100.6  | 99.4 | 100.3 | 99.4 | 99.0   | / | /    | / | / |
| 13:20:33 | 100.8  | 99.4 | 100.3 | 99.4 | 98.9   | / | /    | / | / |
| 传感器修正值   | 0.3    | 0.3  | 0.3   | 0.3  | 0.3    | / | /    | / | / |
| 仪表修正值    | 0.0    | 0.0  | 0.0   | 0.0  | 0.0    | / | /    | / | / |
| 实际最低值    | 100.9  | 99.5 | 100.5 | 99.6 | 99.1   |   |      |   |   |
| 实际最高值    | 101.1  | 99.7 | 100.7 | 99.8 | 99.3   |   |      |   |   |
| 测试结论:    | 上偏差/℃: |      | 1.1   |      | 下偏差/℃: |   | -0.9 |   |   |

炉温恒定前温度状态测试数据:

测试温度: 400.0

单位: °C

|          |        |        |        |        |        |     |     |     |     |
|----------|--------|--------|--------|--------|--------|-----|-----|-----|-----|
| 位置号      | 1      | 2      | 3      | 4      | 5      | 6   | 7   | 8   | 9   |
| 通道号      | CH1    | CH2    | CH3    | CH4    | CH5    | CH6 | CH7 | CH8 | CH9 |
| 传感器编号    | ZN2501 | ZN2502 | ZN2503 | ZN2504 | ZN2505 | /   | /   | /   | /   |
| 时间       |        |        |        |        |        |     |     |     |     |
| 13:22:33 | 112.3  | 110.1  | 111.7  | 111.4  | 110.5  | /   | /   | /   | /   |
| 13:24:33 | 124.1  | 121.1  | 123.6  | 123.4  | 122.2  | /   | /   | /   | /   |
| 13:26:33 | 135.5  | 131.8  | 134.9  | 134.8  | 133.5  | /   | /   | /   | /   |
| 13:28:33 | 146.0  | 142.1  | 145.4  | 145.3  | 144.0  | /   | /   | /   | /   |
| 13:30:33 | 156.3  | 152.3  | 155.9  | 155.8  | 154.2  | /   | /   | /   | /   |
| 13:32:33 | 166.5  | 162.3  | 166.1  | 165.9  | 164.4  | /   | /   | /   | /   |
| 13:34:33 | 176.6  | 172.2  | 176.2  | 176.1  | 174.5  | /   | /   | /   | /   |
| 13:36:33 | 186.7  | 182.4  | 186.1  | 186.3  | 184.6  | /   | /   | /   | /   |
| 13:38:33 | 197.0  | 192.6  | 196.5  | 196.4  | 194.8  | /   | /   | /   | /   |
| 13:40:33 | 206.9  | 202.7  | 206.3  | 206.6  | 204.9  | /   | /   | /   | /   |
| 13:42:33 | 217.3  | 212.9  | 216.8  | 216.9  | 215.2  | /   | /   | /   | /   |
| 13:44:33 | 227.4  | 223.0  | 227.0  | 227.1  | 225.4  | /   | /   | /   | /   |
| 13:46:33 | 237.9  | 233.5  | 237.5  | 237.5  | 235.7  | /   | /   | /   | /   |
| 13:48:33 | 248.1  | 244.0  | 247.7  | 247.7  | 246.1  | /   | /   | /   | /   |
| 13:50:33 | 258.1  | 254.0  | 257.6  | 257.8  | 256.0  | /   | /   | /   | /   |
| 13:52:33 | 268.5  | 264.3  | 268.1  | 268.1  | 266.4  | /   | /   | /   | /   |
| 13:54:33 | 278.6  | 274.7  | 278.1  | 278.5  | 276.7  | /   | /   | /   | /   |





# 检测结果

## Results of Test

|          |       |       |       |       |       |   |   |   |   |
|----------|-------|-------|-------|-------|-------|---|---|---|---|
| 13:56:33 | 288.6 | 284.8 | 288.0 | 288.3 | 286.7 | / | / | / | / |
| 13:58:33 | 298.9 | 295.2 | 298.5 | 298.6 | 296.9 | / | / | / | / |
| 14:00:33 | 309.2 | 305.5 | 308.8 | 308.8 | 307.2 | / | / | / | / |
| 14:02:33 | 319.0 | 315.9 | 318.4 | 319.0 | 317.3 | / | / | / | / |
| 14:04:33 | 329.3 | 326.0 | 328.7 | 329.0 | 327.5 | / | / | / | / |
| 14:06:33 | 339.4 | 336.2 | 339.0 | 339.1 | 337.5 | / | / | / | / |
| 14:08:33 | 349.4 | 346.4 | 349.0 | 349.1 | 347.6 | / | / | / | / |
| 14:10:33 | 359.2 | 356.5 | 358.7 | 359.0 | 357.6 | / | / | / | / |
| 14:12:33 | 369.2 | 366.6 | 368.7 | 369.1 | 367.5 | / | / | / | / |
| 14:14:33 | 379.3 | 376.8 | 378.7 | 379.1 | 377.7 | / | / | / | / |
| 14:16:33 | 389.2 | 387.0 | 388.7 | 388.8 | 387.7 | / | / | / | / |
| 14:18:33 | 399.0 | 397.0 | 398.5 | 398.8 | 397.6 | / | / | / | / |
| 14:20:33 | 401.7 | 402.0 | 402.3 | 402.3 | 402.4 | / | / | / | / |
| 14:22:33 | 401.4 | 402.0 | 402.0 | 401.9 | 402.1 | / | / | / | / |
| 14:24:33 | 401.1 | 402.4 | 401.6 | 401.4 | 401.7 | / | / | / | / |
| 14:26:33 | 401.2 | 402.3 | 401.8 | 401.7 | 401.2 | / | / | / | / |
| 14:28:33 | 401.1 | 402.2 | 401.7 | 401.4 | 401.2 | / | / | / | / |
| 14:30:33 | 401.1 | 401.7 | 401.5 | 401.6 | 401.4 | / | / | / | / |
| 14:32:33 | 401.5 | 401.2 | 401.1 | 401.1 | 401.0 | / | / | / | / |
| 14:34:33 | 401.4 | 401.0 | 401.0 | 400.9 | 400.9 | / | / | / | / |
| 14:36:33 | 401.6 | 401.2 | 401.0 | 401.0 | 400.9 | / | / | / | / |
| 14:38:33 | 401.5 | 401.4 | 400.9 | 400.9 | 400.9 | / | / | / | / |
| 14:40:33 | 401.6 | 401.4 | 401.1 | 401.3 | 401.2 | / | / | / | / |
| 14:42:33 | 401.5 | 401.2 | 401.1 | 401.1 | 401.1 | / | / | / | / |
| 14:44:33 | 401.4 | 401.5 | 401.0 | 401.1 | 401.0 | / | / | / | / |
| 14:46:33 | 401.4 | 401.1 | 400.8 | 400.8 | 400.9 | / | / | / | / |
| 14:48:33 | 401.5 | 401.4 | 401.1 | 401.0 | 400.9 | / | / | / | / |
| 传感器修正值   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | / | / | / | / |
| 仪表修正值    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | / | / | / | / |
| 实际最高值    | 402.1 | 402.8 | 402.7 | 402.7 | 402.8 |   |   |   |   |

测试结论: 炉温恒定前温度无过冲现象

炉温恒定温度状态测试数据:

|             |        |        |        |        |        |     |     |     |     |
|-------------|--------|--------|--------|--------|--------|-----|-----|-----|-----|
| 测试温度: 400.0 |        |        |        |        | 单位: °C |     |     |     |     |
| 位置号         | 1      | 2      | 3      | 4      | 5      | 6   | 7   | 8   | 9   |
| 通道号         | CH1    | CH2    | CH3    | CH4    | CH5    | CH6 | CH7 | CH8 | CH9 |
| 传感器编号       | ZN2501 | ZN2502 | ZN2503 | ZN2504 | ZN2505 | /   | /   | /   | /   |
| 时间          |        |        |        |        |        |     |     |     |     |
| 14:50:33    | 401.5  | 401.2  | 401.0  | 400.9  | 400.9  | /   | /   | /   | /   |
| 14:52:33    | 401.5  | 401.7  | 401.1  | 401.0  | 400.9  | /   | /   | /   | /   |
| 14:54:33    | 401.4  | 401.4  | 401.0  | 401.1  | 401.0  | /   | /   | /   | /   |
| 14:56:33    | 401.3  | 401.5  | 400.9  | 400.9  | 400.9  | /   | /   | /   | /   |
| 14:58:33    | 401.4  | 401.3  | 400.9  | 400.8  | 400.9  | /   | /   | /   | /   |



# 检测结果

## Results of Test

|          |        |       |       |       |       |        |   |   |     |
|----------|--------|-------|-------|-------|-------|--------|---|---|-----|
| 15:00:33 | 401.4  | 401.2 | 401.0 | 400.8 | 400.8 | /      | / | / | /   |
| 15:02:33 | 401.2  | 401.3 | 400.7 | 400.8 | 400.7 | /      | / | / | /   |
| 15:04:33 | 401.1  | 401.3 | 400.7 | 400.9 | 400.9 | /      | / | / | /   |
| 15:06:33 | 401.2  | 401.2 | 400.7 | 400.7 | 400.8 | /      | / | / | /   |
| 15:08:33 | 401.1  | 401.3 | 400.5 | 400.8 | 400.8 | /      | / | / | /   |
| 15:10:33 | 401.1  | 401.3 | 400.6 | 400.7 | 400.8 | /      | / | / | /   |
| 15:12:33 | 401.1  | 401.2 | 400.5 | 401.0 | 400.8 | /      | / | / | /   |
| 15:14:33 | 401.3  | 401.1 | 400.7 | 400.7 | 400.7 | /      | / | / | /   |
| 15:16:33 | 401.3  | 401.4 | 400.7 | 400.7 | 400.8 | /      | / | / | /   |
| 15:18:33 | 401.2  | 401.3 | 400.6 | 400.8 | 400.9 | /      | / | / | /   |
| 15:20:33 | 401.2  | 401.2 | 400.6 | 400.6 | 400.8 | /      | / | / | /   |
| 传感器修正值   | 0.4    | 0.4   | 0.4   | 0.4   | 0.4   | /      | / | / | /   |
| 仪表修正值    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | /      | / | / | /   |
| 实际最低值    | 401.5  | 401.5 | 400.9 | 401.0 | 401.1 |        |   |   |     |
| 实际最高值    | 401.9  | 402.1 | 401.5 | 401.5 | 401.4 |        |   |   |     |
| 测试结论:    | 上偏差/℃: |       |       | 2.1   |       | 下偏差/℃: |   |   | 0.9 |

炉温恒定前温度状态测试数据:

测试温度: 700.0

单位: °C

|          |        |        |        |        |        |     |     |     |     |
|----------|--------|--------|--------|--------|--------|-----|-----|-----|-----|
| 位置号      | 1      | 2      | 3      | 4      | 5      | 6   | 7   | 8   | 9   |
| 通道号      | CH1    | CH2    | CH3    | CH4    | CH5    | CH6 | CH7 | CH8 | CH9 |
| 传感器编号    | ZN2501 | ZN2502 | ZN2503 | ZN2504 | ZN2505 | /   | /   | /   | /   |
| 时间       |        |        |        |        |        |     |     |     |     |
| 15:22:33 | 410.5  | 412.2  | 410.0  | 410.4  | 410.0  | /   | /   | /   | /   |
| 15:24:33 | 421.3  | 422.0  | 420.7  | 421.2  | 420.7  | /   | /   | /   | /   |
| 15:26:33 | 431.7  | 431.9  | 431.1  | 431.5  | 430.9  | /   | /   | /   | /   |
| 15:28:33 | 441.6  | 441.4  | 441.0  | 441.3  | 440.9  | /   | /   | /   | /   |
| 15:30:33 | 451.5  | 451.3  | 451.1  | 451.6  | 450.8  | /   | /   | /   | /   |
| 15:32:33 | 461.2  | 461.0  | 460.8  | 461.1  | 460.5  | /   | /   | /   | /   |
| 15:34:33 | 471.3  | 470.6  | 470.7  | 471.0  | 470.4  | /   | /   | /   | /   |
| 15:36:33 | 480.9  | 480.4  | 480.3  | 480.5  | 480.1  | /   | /   | /   | /   |
| 15:38:33 | 490.6  | 490.1  | 490.1  | 490.2  | 489.9  | /   | /   | /   | /   |
| 15:40:33 | 500.5  | 500.1  | 499.9  | 500.0  | 499.9  | /   | /   | /   | /   |
| 15:42:33 | 510.1  | 509.8  | 509.5  | 509.8  | 509.5  | /   | /   | /   | /   |
| 15:44:33 | 519.8  | 519.4  | 519.3  | 519.5  | 519.3  | /   | /   | /   | /   |
| 15:46:33 | 529.9  | 529.3  | 529.4  | 529.3  | 529.2  | /   | /   | /   | /   |
| 15:48:33 | 539.4  | 539.0  | 538.8  | 538.9  | 538.9  | /   | /   | /   | /   |
| 15:50:33 | 549.2  | 548.5  | 548.6  | 548.6  | 548.6  | /   | /   | /   | /   |
| 15:52:33 | 559.1  | 558.6  | 558.5  | 558.7  | 558.6  | /   | /   | /   | /   |
| 15:54:33 | 568.7  | 568.6  | 568.1  | 568.2  | 568.4  | /   | /   | /   | /   |
| 15:56:33 | 578.3  | 578.1  | 577.7  | 577.9  | 578.1  | /   | /   | /   | /   |
| 15:58:33 | 588.3  | 588.1  | 587.9  | 587.8  | 588.0  | /   | /   | /   | /   |
| 16:00:33 | 598.1  | 597.7  | 597.6  | 597.5  | 597.8  | /   | /   | /   | /   |





# 检测结果

## Results of Test

|          |       |       |       |       |       |   |   |   |   |
|----------|-------|-------|-------|-------|-------|---|---|---|---|
| 16:02:33 | 608.0 | 608.0 | 607.5 | 607.5 | 607.6 | / | / | / | / |
| 16:04:33 | 617.7 | 617.8 | 617.2 | 616.9 | 617.5 | / | / | / | / |
| 16:06:33 | 627.7 | 627.3 | 627.2 | 627.1 | 627.2 | / | / | / | / |
| 16:08:33 | 637.4 | 637.3 | 636.8 | 636.9 | 637.3 | / | / | / | / |
| 16:10:33 | 647.1 | 646.5 | 646.5 | 646.6 | 646.9 | / | / | / | / |
| 16:12:33 | 657.0 | 656.6 | 656.5 | 656.6 | 656.9 | / | / | / | / |
| 16:14:33 | 666.9 | 666.5 | 666.5 | 666.1 | 666.6 | / | / | / | / |
| 16:16:33 | 676.7 | 676.1 | 676.2 | 675.8 | 676.2 | / | / | / | / |
| 16:18:33 | 686.5 | 685.7 | 686.1 | 685.8 | 686.2 | / | / | / | / |
| 16:20:33 | 696.5 | 696.5 | 695.9 | 696.0 | 696.5 | / | / | / | / |
| 16:22:33 | 697.2 | 697.2 | 696.8 | 696.1 | 696.9 | / | / | / | / |
| 16:24:33 | 697.2 | 697.9 | 696.8 | 696.6 | 697.4 | / | / | / | / |
| 16:26:33 | 697.2 | 698.5 | 696.8 | 696.5 | 697.5 | / | / | / | / |
| 16:28:33 | 697.8 | 699.1 | 697.4 | 696.9 | 698.2 | / | / | / | / |
| 16:30:33 | 697.6 | 699.6 | 697.2 | 697.0 | 698.3 | / | / | / | / |
| 16:32:33 | 697.7 | 699.8 | 697.1 | 697.1 | 698.3 | / | / | / | / |
| 16:34:33 | 697.7 | 698.9 | 697.1 | 696.9 | 698.2 | / | / | / | / |
| 16:36:33 | 697.6 | 699.9 | 697.0 | 697.1 | 698.3 | / | / | / | / |
| 16:38:33 | 697.6 | 699.5 | 697.2 | 697.1 | 698.2 | / | / | / | / |
| 16:40:33 | 697.7 | 699.8 | 697.2 | 697.1 | 698.3 | / | / | / | / |
| 16:42:33 | 697.8 | 699.6 | 697.3 | 697.5 | 698.4 | / | / | / | / |
| 16:44:33 | 698.0 | 700.1 | 697.5 | 697.4 | 698.6 | / | / | / | / |
| 16:46:33 | 697.7 | 700.1 | 697.3 | 697.1 | 698.3 | / | / | / | / |
| 16:48:33 | 697.7 | 700.0 | 697.2 | 697.2 | 698.3 | / | / | / | / |
| 传感器修正值   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | / | / | / | / |
| 仪表修正值    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | / | / | / | / |
| 实际最高值    | 698.5 | 700.6 | 698.0 | 698.0 | 699.1 |   |   |   |   |

测试结论: 炉温恒定前温度无过冲现象

炉温恒定温度状态测试数据:

测试温度: 700.0

单位: °C

|          |        |        |        |        |        |     |     |     |     |
|----------|--------|--------|--------|--------|--------|-----|-----|-----|-----|
| 位置号      | 1      | 2      | 3      | 4      | 5      | 6   | 7   | 8   | 9   |
| 通道号      | CH1    | CH2    | CH3    | CH4    | CH5    | CH6 | CH7 | CH8 | CH9 |
| 传感器编号    | ZN2501 | ZN2502 | ZN2503 | ZN2504 | ZN2505 | /   | /   | /   | /   |
| 时间       |        |        |        |        |        |     |     |     |     |
| 16:50:33 | 697.5  | 699.8  | 697.0  | 697.1  | 698.4  | /   | /   | /   | /   |
| 16:52:33 | 697.7  | 699.9  | 697.1  | 697.2  | 698.5  | /   | /   | /   | /   |
| 16:54:33 | 697.7  | 700.1  | 697.2  | 697.2  | 698.4  | /   | /   | /   | /   |
| 16:56:33 | 697.6  | 699.9  | 697.0  | 697.1  | 698.3  | /   | /   | /   | /   |
| 16:58:33 | 697.6  | 699.5  | 697.1  | 697.1  | 698.4  | /   | /   | /   | /   |
| 17:00:33 | 697.7  | 699.7  | 697.2  | 697.2  | 698.2  | /   | /   | /   | /   |
| 17:02:33 | 697.6  | 699.8  | 697.2  | 697.0  | 698.1  | /   | /   | /   | /   |
| 17:04:33 | 697.6  | 700.0  | 697.1  | 697.2  | 698.3  | /   | /   | /   | /   |



# 检测结果

## Results of Test

|          |            |       |       |       |             |   |   |   |   |
|----------|------------|-------|-------|-------|-------------|---|---|---|---|
| 17:06:33 | 697.5      | 700.0 | 697.0 | 697.1 | 698.3       | / | / | / | / |
| 17:08:33 | 697.8      | 699.9 | 697.2 | 697.2 | 698.4       | / | / | / | / |
| 17:10:33 | 697.7      | 700.3 | 697.2 | 697.2 | 698.5       | / | / | / | / |
| 17:12:33 | 697.5      | 700.0 | 696.9 | 697.0 | 698.2       | / | / | / | / |
| 17:14:33 | 697.6      | 699.9 | 697.0 | 697.1 | 698.2       | / | / | / | / |
| 17:16:33 | 697.5      | 699.6 | 697.0 | 696.9 | 698.4       | / | / | / | / |
| 17:18:33 | 697.5      | 699.6 | 697.0 | 697.0 | 698.2       | / | / | / | / |
| 17:20:33 | 697.7      | 700.1 | 697.2 | 697.3 | 698.4       | / | / | / | / |
| 传感器修正值   | 0.5        | 0.5   | 0.5   | 0.5   | 0.5         | / | / | / | / |
| 仪表修正值    | 0.0        | 0.0   | 0.0   | 0.0   | 0.0         | / | / | / | / |
| 实际最低值    | 698.0      | 700.0 | 697.4 | 697.4 | 698.6       |   |   |   |   |
| 实际最高值    | 698.3      | 700.8 | 697.7 | 697.8 | 699.0       |   |   |   |   |
| 测试结论:    | 上偏差/℃: 0.8 |       |       |       | 下偏差/℃: -2.6 |   |   |   |   |





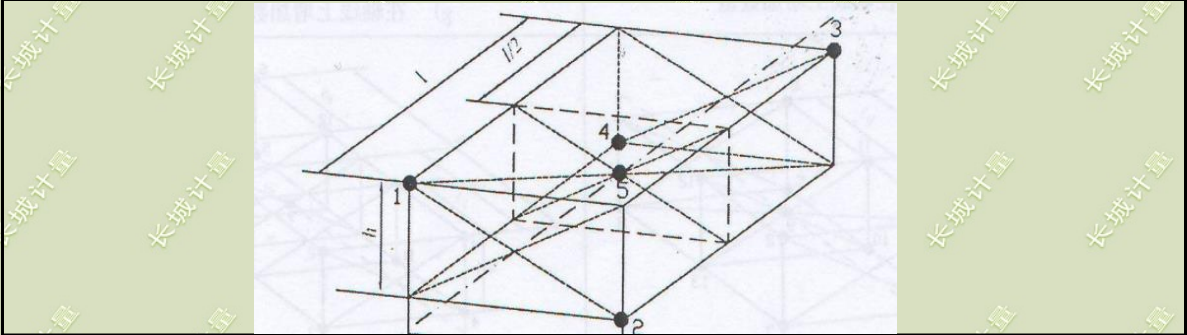
# 检测结果

## Results of Test

|                    |     |     |     |
|--------------------|-----|-----|-----|
| 设定值/℃              | 比例P | 积分I | 微分D |
| 100                | 2.3 | 180 | 40  |
| 400                | 2.3 | 180 | 40  |
| 700                | 2.3 | 180 | 40  |
| 注：测温前后未对仪表控制参数进行调整 |     |     |     |

|         |                   |              |                  |                                                                                      |                      |
|---------|-------------------|--------------|------------------|--------------------------------------------------------------------------------------|----------------------|
| 热处理炉名称  | 热处理空气实验炉<br>(TUS) | 型号           | GWDL-XA/800<br>℃ | 编号                                                                                   | GWL202506180<br>03-1 |
| 使用温度    | (100~700)℃        | 加热介质         |                  | 空气                                                                                   |                      |
| 测试负载    | 空载                | 测试说明         |                  | 初始测试                                                                                 |                      |
| 检测开始时间  | 12:02:33          | 检测结束时间       |                  | 17:20:33                                                                             |                      |
| 仪表类型    | D类                | 仪表调整说明       |                  | 无调整                                                                                  |                      |
| 是否过冲    | 否                 | 有效加热区温度均匀性要求 |                  | ±3℃                                                                                  |                      |
| 温度均匀性说明 |                   |              |                  | 热处理炉类别                                                                               |                      |
| 设定值/℃   | 上偏差/℃             | 下偏差/℃        |                  | 符合《SAE AMS 2750TM<br>(REV.H)-2024 高温测量,HB<br>5425-2012 航空制件热处理<br>炉有效加热区测定方法》<br>I类炉 |                      |
| 100     | 1.1               | -0.9         |                  |                                                                                      |                      |
| 400     | 2.1               | 0.9          |                  |                                                                                      |                      |
| 700     | 0.8               | -2.6         |                  |                                                                                      |                      |

有效加热区及检测点图示



有效加热区位置/mm

|     |    |     |     |     |     |
|-----|----|-----|-----|-----|-----|
| 上   | 下  | 左   | 右   | 前   | 后   |
| 150 | 50 | 100 | 100 | 150 | 150 |

有效加热区尺寸/mm

|     |     |     |
|-----|-----|-----|
| L   | d   | h   |
| 300 | 300 | 300 |

|      |             |          |             |
|------|-------------|----------|-------------|
| 检测日期 | 2025年10月29日 | 建议下次检测日期 | 2025年11月28日 |
|------|-------------|----------|-------------|

下次送检时请带此证书或复印件

Please take the certificate or its copies next test

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