《电梯导轨共面性测量仪校准规范》

实验报告

（征求意见稿）

《电梯导轨共面性测量仪校准规范》编写组

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实验报告

1. **实验目的**

电梯导轨共面性测量仪校准规范属于首次制定，电梯导轨共面性测量仪是用来测量一对电梯导轨共面性的计量器具，广泛应用于特种设备安装和检测领域。为了验证电梯导轨共面性测量仪校准规范（征求意见稿）规定的主要技术指标、校准条件和校准方法的合理性和科学性，起草小组选取了不同厂家的电梯导轨共面性激光检测仪、电梯校轨尺进行了实验验证。

1. **实验方法**

参照《电梯导轨共面性测量仪校准规范》（征求意见稿）中“7校准项目和校准方法”所描述的校准方法对电梯导轨共面性激光检测仪、电梯校轨尺的全部特性进行了校准实验。

1. **校准用标准器**

根据《电梯导轨共面性测量仪校准规范》（征求意见稿）表2测量标准及其他设备的技术要求，河北院和苏州院分别采用以下标准器进行实验。

| 序号 | 校准项目 | 测量标准及其他设备 | |
| --- | --- | --- | --- |
| 河北院 | 苏州院 |
| 1 | 激光线与基准面的  平行度 | 游标高度卡尺、标准垫块、室内长度测量系统导轨：直线度0.02mm | 游标高度卡尺、标准垫块、  0级平板 |
| 2 | 标尺示值误差 | 室内长度测量系统*U*=0.1 μm | 影像测量仪MPE:±3μm |
| 3 | 仪器示值误差 | 各自定制的校准装置，技术指标要求符合规范要求。 | |
| 4 | 测量重复性 |
| 5 | 水平零位误差 | 0级平板 | |

1. **环境条件**

环境温度（20±5）℃，相对湿度≤80%。校准前，电梯导轨共面性测量仪

与标准器平衡温度时间不少于2h。

**五、实验数据**

5.1 电梯导轨共面性激光检测仪（注：本实验中被校仪器测量轨距为2m，在校准仪器示值误差时，以十字分划线为界，当光斑偏向标准导轨方向时，读数取负，另一侧取正。）

电梯导轨共面性激光检测仪试验记录-1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 型号 | | JS302 | | | | | 编号 | | | ZA250801 | | | |
| 制造厂商 | | 大连拉特激光技术开发有限公司 | | | | | | | | | | | |
| 温度℃ | | 20.1 | | | | | 相对湿度% | | 36.8 | | | |
| 实验人员 | | 张锐 卞伟 | | | | | | | | | | | |
| 实验地点 | | 河北省计量监督检测研究院9号楼负一002室 | | | | | | | | | | | |
| 1.激光线与基准面的平行度（mm） | | *h*10 | | | *h*90 | | | | |  | | | |
| 45.5 | | | 46.0 | | | | | 0.5 | | | |
| 2. 标尺示值  误差mm | 测量范围 | -5～+5 | | | | | | | | | | | |
|  | -3 | -2 | | -1 | | | 1 | | 2 | | 3 | |
|  | -3.0 | -1.9 | | -0.9 | | | 1.0 | | 2.1 | | 3.0 | |
|  | 0.0 | -0.1 | | -0.1 | | | 0.0 | | -0.1 | | 0.0 | |
|  | -3.0 | -2.0 | | -1.0 | | | 0.9 | | 2.0 | | 3.0 | |
|  | 0.0 | 0.0 | | 0.0 | | | +0.1 | | 0.0 | | 0.0 | |
| 测量范围 | 5～50 | | | | | | 0～70 | | | | | |
|  | 10 | 30 | | 50 | | | 10 | | 40 | | 70 | |
|  | 10.0 | 29.9 | | 49.8 | | | 10.0 | | 40.0 | | 69.9 | |
|  | 0.0 | +0.1 | | +0.2 | | | 0.0 | | 0.0 | | +0.1 | |
|  | 10.0 | 29.9 | | 49.9 | | | 10.0 | | 40.0 | | 69.9 | |
|  | 0.0 | +0.1 | | +0.1 | | | 0.0 | | 0.0 | | +0.1 | |
| 3.仪器示值误差  （mm） | | 位置 | △1 | | | △2 | | | |  | | | |
| 上 | +0.1 | | | +0.2 | | | | 0.2 | | | |
| 下 | +0.2 | | | -0.1 | | | | 0.0 | | | |
| 4.测量重复性（mm） | | 测量值 | | | | | | | | | 校准结果 | | |
| 0.2 | | 0.2 | | | 0.1 | | | | 0.05 | | |
| 0.2 | | 0.1 | | | 0.2 | | | |

电梯导轨共面性激光检测仪试验记录-2

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 型号 | | JS302 | | | | | 编号 | | | ZA250802 | | |
| 制造厂商 | | 大连拉特激光技术开发有限公司 | | | | | | | | | | |
| 温度℃ | | 20.2 | | | | | 相对湿度% | | 42.3 | | | |
| 实验人员 | | 张锐 卞伟 | | | | | | | | | | |
| 实验地点 | | 河北省计量监督检测研究院9号楼负一002室 | | | | | | | | | | |
| 1.激光线与基准面的平行度（mm） | | *h*10 | | | *h*90 | | | | |  | | |
| 45.5 | | | 46.7 | | | | | 1.2 | | |
| 2. 标尺示值  误差mm | 测量范围 | -5～+5 | | | | | | | | | | |
|  | -3 | -2 | | -1 | | | 1 | | 2 | | 3 |
|  | -3.0 | -2.0 | | -1.0 | | | 1.0 | | 2.0 | | 3.0 |
|  | 0.0 | 0.0 | | 0.0 | | | 0.0 | | 0.0 | | 0.0 |
|  | -2.9 | -1.9 | | -1.0 | | | 1.0 | | 2.0 | | 3.1 |
|  | -0.1 | -0.1 | | 0.0 | | | 0.0 | | 0.0 | | -0.1 |
| 测量范围 | 5～50 | | | | | | 0～70 | | | | |
|  | 10 | 30 | | 50 | | | 10 | | 40 | | 70 |
|  | 10.0 | 29.9 | | 49.9 | | | 10.0 | | 39.9 | | 69.9 |
|  | 0.0 | +0.1 | | +0.1 | | | 0.0 | | +0.1 | | +0.1 |
|  | 10.0 | 30.0 | | 50.0 | | | 9.9 | | 39.9 | | 69.8 |
|  | 0.0 | 0.0 | | 0.0 | | | +0.1 | | +0.1 | | +0.2 |
| 3.仪器示值误差  （mm） | | 位置 | △1 | | | △2 | | | |  | | |
| 上 | -0.1 | | | -0.5 | | | | 0.3 | | |
| 下 | -0.2 | | | -0.3 | | | | 0.2 | | |
| 4.测量重复性（mm） | | 测量值 | | | | | | | | | 校准结果 | |
| -0.1 | | -0.1 | | | -0.2 | | | | 0.05 | |
| -0.2 | | -0.2 | | | -0.1 | | | |

电梯导轨共面性激光检测仪试验记录-3

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 型号 | | JS302 | | | | | 编号 | | | ZA240462 | | |
| 制造厂商 | | 大连莱特光电精密仪器有限公司 | | | | | | | | | | |
| 温度℃ | | 20.1 | | | | | 相对湿度% | | 39.8 | | | |
| 实验人员 | | 卞伟 刘钊 | | | | | | | | | | |
| 实验地点 | | 河北省计量监督检测研究院9号楼负一002室 | | | | | | | | | | |
| 1.激光线与基准面的平行度（mm） | | *h*10 | | | *h*90 | | | | |  | | |
| 45.6 | | | 45.4 | | | | | 0.2 | | |
| 2. 标尺示值  误差mm | 测量范围 | -5～+5 | | | | | | | | | | |
|  | -3 | -2 | | -1 | | | 1 | | 2 | | 3 |
|  | -2.8 | -1.9 | | -1.0 | | | 1.0 | | 2.1 | | 3.1 |
|  | -0.2 | -0.1 | | 0.0 | | | 0.0 | | -0.1 | | -0.1 |
|  | -2.9 | -2.0 | | -1.0 | | | 1.0 | | 1.9 | | 2.8 |
|  | -0.1 | 0.0 | | 0.0 | | | 0.0 | | +0.1 | | +0.2 |
| 测量范围 | 5～50 | | | | | | 0～70 | | | | |
|  | 10 | 30 | | 50 | | | 10 | | 40 | | 70 |
|  | 10.1 | 30.1 | | 50.2 | | | 10.0 | | 40.1 | | 70.2 |
|  | -0.1 | -0.1 | | -0.2 | | | 0.0 | | -0.1 | | -0.2 |
|  | 9.9 | 30.0 | | 49.8 | | | 10.0 | | 39.8 | | 69.8 |
|  | +0.1 | 0.0 | | +0.2 | | | 0.0 | | +0.2 | | +0.2 |
| 3.仪器示值误差  （mm） | | 位置 | △1 | | | △2 | | | |  | | |
| 上 | 1.0 | | | 0.6 | | | | 0.8 | | |
| 下 | -1.0 | | | -0.3 | | | | 0.6 | | |
| 4.测量重复性（mm） | | 测量值 | | | | | | | | | 校准结果 | |
| 1.0 | | 1.0 | | | 0.9 | | | | 0.08 | |
| 1.0 | | 0.9 | | | 0.8 | | | |

电梯导轨共面性激光检测仪试验记录-4

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 型号 | | JS302 | | | | | 编号 | | | ZA219951 | | |
| 制造厂商 | | 大连中科启联测量仪器有限公司 | | | | | | | | | | |
| 温度℃ | | 20.3 | | | | | 相对湿度% | | 45.5 | | | |
| 实验人员 | | 卞伟 刘钊 | | | | | | | | | | |
| 实验地点 | | 河北省计量监督检测研究院9号楼负一002室 | | | | | | | | | | |
| 1.激光线与基准面的平行度（mm） | | *h*10 | | | *h*90 | | | | |  | | |
| 45.0 | | | 46.8 | | | | | 1.8 | | |
| 2. 标尺示值  误差mm | 测量范围 | -5～+5 | | | | | | | | | | |
|  | -3 | -2 | | -1 | | | 1 | | 2 | | 3 |
|  | -3.2 | -2.1 | | -1.1 | | | 1.1 | | 2.1 | | 3.1 |
|  | +0.2 | +0.1 | | +0.1 | | | -0.1 | | -0.1 | | -0.1 |
|  | -3.1 | -2.0 | | -1.1 | | | 1.1 | | 2.1 | | 3.1 |
|  | +0.1 | 0.0 | | +0.1 | | | -0.1 | | -0.1 | | -0.1 |
| 测量范围 | 5～50 | | | | | | 0～70 | | | | |
|  | 10 | 30 | | 50 | | | 10 | | 40 | | 70 |
|  | 10.1 | 30.2 | | 50.2 | | | 10.1 | | 40.2 | | 70.2 |
|  | -0.1 | -0.2 | | -0.2 | | | -0.1 | | -0.2 | | -0.2 |
|  | 10.0 | 30.1 | | 50.1 | | | 10.1 | | 40.2 | | 70.2 |
|  | 0.0 | -0.1 | | -0.1 | | | -0.1 | | -0.2 | | -0.2 |
| 3.仪器示值误差  （mm） | | 位置 | △1 | | | △2 | | | |  | | |
| 上 | 1.0 | | | 1.2 | | | | 1.1 | | |
| 下 | 1.0 | | | 1.5 | | | | 1.2 | | |
| 4.测量重复性（mm） | | 测量值 | | | | | | | | | 校准结果 | |
| 1.2 | | 1.0 | | | 1.1 | | | | 0.08 | |
| 1.2 | | 1.2 | | | 1.2 | | | |

电梯导轨共面性激光检测仪试验记录-5

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 型号 | | JS-302 | | | | | 编号 | | | 1205170300 | | |
| 制造厂商 | | 大连经济技术开发区拉特激光技术开发有限公司 | | | | | | | | | | |
| 温度℃ | | 20.1℃ | | | | | 相对湿度% | | 55.5% | | | |
| 实验人员 | | 郭郑来、胡雁凯 | | | | | | | | | | |
| 实验地点 | | 苏州市计量测试院有限公司C幢212室 | | | | | | | | | | |
| 1.激光线与基准面的平行度（mm） | | *h*10 | | | *h*90 | | | | |  | | |
| 35.3 | | | 36.0 | | | | | 0.7 | | |
| 2. 标尺示值  误差mm | 测量范围 | -5～+5 | | | | | | | | | | |
|  | -3 | -2 | | -1 | | | 1 | | 2 | | 3 |
|  | -3.2 | -2.0 | | -1.0 | | | 1.0 | | 2.0 | | 3.1 |
|  | 0.2 | 0.0 | | 0.0 | | | 0.0 | | 0.0 | | -0.1 |
|  | -3.1 | -2.0 | | -1.0 | | | 1.0 | | 2.1 | | 3.0 |
|  | 0.1 | 0.0 | | 0.0 | | | 0.0 | | -0.1 | | 0.0 |
| 测量范围 | 5～50 | | | | | | 0～70 | | | | |
|  | 10 | 30 | | 50 | | | 10 | | 40 | | 70 |
|  | 10.0 | 30.0 | | 50.0 | | | 10.0 | | 40.1 | | 70.1 |
|  | 0.0 | 0.0 | | 0.0 | | | 0.0 | | -0.1 | | -0.1 |
|  | 10.0 | 30.0 | | 50.1 | | | 10.0 | | 40.1 | | 70.1 |
|  | 0.0 | 0.0 | | -0.1 | | | 0.0 | | -0.1 | | -0.1 |
| 3.仪器示值误差  （mm） | | 位置 | △1 | | | △2 | | | |  | | |
| 上 | 0.3 | | | -0.1 | | | | 0.2 | | |
| 下 | 0.4 | | | 0.0 | | | | 0.2 | | |
| 4.测量重复性（mm） | | 测量值 | | | | | | | | | 校准结果 | |
| 0.1 | | 0.0 | | | -0.2 | | | | 0.1 | |
| 0.0 | | 0.1 | | | 0.0 | | | |

电梯导轨共面性激光检测仪试验记录-6

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 型号 | | JS-302 | | | | | 编号 | | | LP-GA-011 | | |
| 制造厂商 | | 大连经济技术开发区拉特激光技术开发有限公司 | | | | | | | | | | |
| 温度℃ | | 20.1℃ | | | | | 相对湿度% | | 55.5% | | | |
| 实验人员 | | 郭郑来、胡雁凯 | | | | | | | | | | |
| 实验地点 | | 苏州市计量测试院有限公司C幢212室 | | | | | | | | | | |
| 1.激光线与基准面的平行度（mm） | | *h*10 | | | *h*90 | | | | |  | | |
| 35.2 | | | 36.0 | | | | | 0.8 | | |
| 2. 标尺示值  误差mm | 测量范围 | -5～+5 | | | | | | | | | | |
|  | -3 | -2 | | -1 | | | 1 | | 2 | | 3 |
|  | -3.0 | -2.0 | | -1.0 | | | 1.0 | | 2.0 | | 3.0 |
|  | 0.0 | 0.0 | | 0.0 | | | 0.0 | | 0.0 | | 0.0 |
|  | -3.0 | -2.0 | | -1.0 | | | 1.0 | | 2.0 | | 3.0 |
|  | 0.0 | 0.0 | | 0.0 | | | 0.0 | | 0.0 | | 0.0 |
| 测量范围 | 5～50 | | | | | | 0～70 | | | | |
|  | 10 | 30 | | 50 | | | 10 | | 40 | | 70 |
|  | 10.0 | 30.0 | | 50.1 | | | 10.0 | | 40.1 | | 70.2 |
|  | 0.0 | 0.0 | | -0.1 | | | 0.0 | | -0.1 | | -0.2 |
|  | 10.0 | 30.0 | | 50.1 | | | 10.0 | | 40.1 | | 70.1 |
|  | 0.0 | 0.0 | | -0.1 | | | 0.0 | | -0.1 | | -0.1 |
| 3.仪器示值误差  （mm） | | 位置 | △1 | | | △2 | | | |  | | |
| 上 | -0.4 | | | -0.6 | | | | 0.5 | | |
| 下 | -0.6 | | | -0.8 | | | | 0.7 | | |
| 4.测量重复性（mm） | | 测量值 | | | | | | | | | 校准结果 | |
| 0.1 | | 0.0 | | | 0.1 | | | | 0.1 | |
| -0.1 | | 0.1 | | | 0.0 | | | |

5.2 电梯校轨尺 试验记录-1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 型号 | | / | | | | 编号 | | | ZB250723 | | | |
| 制造厂商 | | 大连福润德机电设备有限公司 | | | | | | | | | | |
| 温度℃ | | 20.1 | | | | 相对湿度% | | 41.6 | | | | |
| 实验人员 | | 张锐 卞伟 | | | | | | | | | | |
| 实验地点 | | 河北省计量监督检测研究院9号楼负一002室 | | | | | | | | | | |
| 1. 标尺示值  误差mm | 测量范围 | -10～+10 | | | | | | | | | | |
|  | -10 | -5 | | -1 | | 1 | | 5 | | | 10 |
|  | -10.2 | -5.1 | | -1.0 | | 1.1 | | 5.0 | | | 10.1 |
| -10.1 | -5.0 | | -1.0 | | 1.0 | | 5.1 | | | 10.1 |
|  | +0.2 | +0.1 | | 0.0 | | -0.1 | | 0.0 | | | -0.1 |
| +0.1 | 0.0 | | 0.0 | | 0.0 | | -0.1 | | | -0.1 |
| 测量范围 | 0～30 | | | | | 40～70 | | | | | |
|  | 10 | 20 | | 30 | | 40～50 | | 40～60 | | | 40～70 |
|  | 10.1 | 20.2 | | 30.2 | | 10.2 | | 20.2 | | | 30.2 |
| 10.0 | 19.9 | | 29.9 | | 10.1 | | 20.1 | | | 29.9 |
|  | -0.1 | -0.2 | | -0.2 | | -0.2 | | -0.2 | | | -0.2 |
| 0.0 | +0.1 | | +0.1 | | -0.1 | | -0.1 | | | +0.1 |
| 测量范围 | 50～140 | | | | | / | | / | | / | |
|  |  | 50～80 | 50～110 | | 50～140 | | / | | / | | / | |
|  | 30.2 | 60.2 | | 90.2 | | / | | / | | / | |
| 30.1 | 60.1 | | 90.2 | | / | | / | | / | |
|  | -0.2 | -0.2 | | -0.2 | | / | | / | | / | |
| -0.1 | -0.1 | | -0.2 | | / | | / | | / | |
| 2.仪器示值误差  （mm） | | *e*1 | | | *e*2 | | | |  | | | |
| 0.0 | | | 0.0 | | | | 0.0 | | | |
| 3.测量重复性（mm） | | 测量值 | | | | | | | | 校准结果 | | |
| 0.0 | | 0.1 | | 0.0 | | | | 0.05 | | |
| 0.1 | | 0.1 | | 0.0 | | | |
| 4.水平零位误差 | | a1/mm | | a2/mm | | 校准结果/mm | | | | 水平零位误差 | | |
| 0 | | -1.0 | | 0.5 | | | | 0.5 | | |
| 0 | | -0.8 | | 0.4 | | | |

电梯校轨尺试验记录-2

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 型号 | | / | | | | 编号 | | | ZB240618 | | | |
| 制造厂商 | | 大连拉特激光技术开发有限公司 | | | | | | | | | | |
| 温度℃ | | 20.2 | | | | 相对湿度% | | 48.9 | | | | |
| 实验人员 | | 卞伟 刘钊 | | | | | | | | | | |
| 实验地点 | | 河北省计量监督检测研究院9号楼负一002室 | | | | | | | | | | |
| 1. 标尺示值  误差mm | 测量范围 | -10～+10 | | | | | | | | | | |
|  | -10 | -5 | | -1 | | 1 | | 5 | | | 10 |
|  | -9.9 | -4.9 | | -1.0 | | 1.0 | | 5.0 | | | 10.0 |
| -9.9 | -5.0 | | -1.0 | | 1.0 | | 5.0 | | | 10.1 |
|  | -0.1 | -0.1 | | 0.0 | | 0.0 | | 0.0 | | | 0.0 |
| -0.1 | 0.0 | | 0.0 | | 0.0 | | 0.0 | | | -0.1 |
| 测量范围 | 0～30 | | | | | 40～70 | | | | | |
|  | 10 | 20 | | 30 | | 40～50 | | 40～60 | | | 40～70 |
|  | 10.1 | 20.1 | | 30.1 | | 9.9 | | 19.9 | | | 29.8 |
| 10.0 | 20.0 | | 30.1 | | 10.0 | | 19.8 | | | 29.8 |
|  | -0.1 | -0.1 | | -0.1 | | +0.1 | | +0.1 | | | +0.2 |
| 0.0 | 0.0 | | -0.1 | | 0.0 | | +0.2 | | | +0.2 |
| 测量范围 | 50～140 | | | | | / | | / | | / | |
|  |  | 50～80 | 50～110 | | 50～140 | | / | | / | | / | |
|  | 30.1 | 60.1 | | 90.2 | | / | | / | | / | |
| 30.0 | 59.8 | | 59.8 | | / | | / | | / | |
|  | -0.1 | -0.1 | | -0.2 | | / | | / | | / | |
| 0.0 | +0.2 | | +0.2 | | / | | / | | / | |
| 2.仪器示值误差  （mm） | | *e*1 | | | *e*2 | | | |  | | | |
| 0.3 | | | 0.5 | | | | 0.5 | | | |
| 3.测量重复性（mm） | | 测量值 | | | | | | | | 校准结果 | | |
| 0.2 | | 0.3 | | 0.2 | | | | 0.05 | | |
| 0.3 | | 0.3 | | 0.3 | | | |
| 4.水平零位误差 | | a1/mm | | a2/mm | | 校准结果/mm | | | | 水平零位误差 | | |
| 0.8 | | 0 | | 0.4 | | | | 0.4 | | |
| 0 | | -0.8 | | 0.4 | | | |

电梯校轨尺试验记录-3

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 型号 | | LS300 | | | | 编号 | | | 20210231 | | | |
| 制造厂商 | | 艾策仪器有限公司 | | | | | | | | | | |
| 温度℃ | | 20.1℃ | | | | 相对湿度% | | 55.5% | | | | |
| 实验人员 | | 郭郑来、胡雁凯 | | | | | | | | | | |
| 实验地点 | | 苏州市计量测试院有限公司C幢212室 | | | | | | | | | | |
| 1. 标尺示值  误差mm | 测量范围 | -10～+10 | | | | | | | | | | |
|  | -10 | -5 | | -1 | | 1 | | 5 | | | 10 |
|  | -10.1 | -5.0 | | -1.0 | | 1.0 | | 5.0 | | | 10.0 |
| -10.1 | -5.0 | | -1.0 | | 1.0 | | 5.0 | | | 10.1 |
|  | 0.1 | 0.0 | | 0.0 | | 0.0 | | 0.0 | | | 0.0 |
| 0.1 | 0.0 | | 0.0 | | 0.0 | | 0.0 | | | -0.1 |
| 测量范围 | 0～30 | | | | | 40～70 | | | | | |
|  | 10 | 20 | | 30 | | 40～50 | | 40～60 | | | 40～100 |
|  | 10.3 | 20.3 | | 30.4 | | 50.1 | | 60.1 | | | 100.4 |
| 10.1 | 20.2 | | 30.3 | | 50.1 | | 60.1 | | | 100.4 |
|  | -0.3 | -0.3 | | -0.4 | | -0.1 | | -0.1 | | | -0.4 |
| -0.1 | -0.2 | | -0.3 | | -0.1 | | -0.1 | | | -0.4 |
| 测量范围 | 50～140 | | | | | / | | / | | / | |
|  |  | 50～80 | 50～110 | | 50～140 | | / | | / | | / | |
|  | 79.9 | 109.9 | | 139.9 | | / | | / | | / | |
| 80.0 | 110.1 | | 140.1 | | / | | / | | / | |
|  | 0.1 | 0.1 | | 0.1 | | / | | / | | / | |
| 0.0 | -0.1 | | -0.1 | | / | | / | | / | |
| 2.仪器示值误差  （mm） | | *e*1 | | | *e*2 | | | |  | | | |
| 0.6 | | | 0.2 | | | | 0.6 | | | |
| 3.测量重复性（mm） | | 测量值 | | | | | | | | 校准结果 | | |
| 0.1 | | 0.2 | | 0.1 | | | | 0.1 | | |
| -0.1 | | -0.1 | | 0.0 | | | |
| 4.水平零位误差 | | a1/mm | | a2/mm | | 校准结果/mm | | | | 水平零位误差 | | |
| 0.4 | | 0.2 | | 0.1 | | | | 0.2 | | |
| 0.5 | | 0.1 | | 0.2 | | | |

电梯校轨尺试验记录-4

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 型号 | | 300型 | | | | 编号 | | | HFB102311 | | | |
| 制造厂商 | | 宏鑫电梯配件 | | | | | | | | | | |
| 温度℃ | | 20.1℃ | | | | 相对湿度% | | 55.5% | | | | |
| 实验人员 | | 郭郑来、胡雁凯 | | | | | | | | | | |
| 实验地点 | | 苏州市计量测试院有限公司C幢212室 | | | | | | | | | | |
| 1. 标尺示值  误差mm | 测量范围 | -10～+10 | | | | | | | | | | |
|  | -10 | -5 | | -1 | | 1 | | 5 | | | 10 |
|  | -10.1 | -5.0 | | -1.0 | | 1.0 | | 5.0 | | | 10.1 |
| -10.0 | -5.0 | | -1.0 | | 1.0 | | 5.0 | | | 10.0 |
|  | 0.1 | 0.0 | | 0.0 | | 0.0 | | 0.0 | | | -0.1 |
| 0.0 | 0.0 | | 0.0 | | 0.0 | | 0.0 | | | 0.0 |
| 测量范围 | 0～30 | | | | | 40～70 | | | | | |
|  | 10 | 20 | | 30 | | 40～50 | | 40～60 | | | 40～100 |
|  | 10.2 | 20.2 | | 30.4 | | 50.1 | | 60.1 | | | 100.4 |
| 10.1 | 20.2 | | 30.3 | | 50.1 | | 60.1 | | | 100.3 |
|  | -0.2 | -0.2 | | -0.4 | | -0.1 | | -0.1 | | | -0.4 |
| -0.1 | -0.2 | | -0.3 | | -0.1 | | -0.1 | | | -0.3 |
| 测量范围 | 50～140 | | | | | / | | / | | / | |
|  |  | 50～80 | 50～110 | | 50～140 | | / | | / | | / | |
|  | 80.1 | 110.0 | | 139.9 | | / | | / | | / | |
| 80.0 | 110.1 | | 140.2 | | / | | / | | / | |
|  | -0.1 | 0.0 | | 0.1 | | / | | / | | / | |
| 0.0 | -0.1 | | -0.2 | | / | | / | | / | |
| 2.仪器示值误差  （mm） | | *e*1 | | | *e*2 | | | |  | | | |
| 0.6 | | | 0.4 | | | | 0.6 | | | |
| 3.测量重复性（mm） | | 测量值 | | | | | | | | 校准结果 | | |
| 0.1 | | 0.2 | | 0.1 | | | | 0.1 | | |
| 0.1 | | 0.0 | | 0.1 | | | |
| 4.水平零位误差 | | a1/mm | | a2/mm | | 校准结果/mm | | | | 水平零位误差 | | |
| 0.4 | | 0.0 | | 0.2 | | | | 0.2 | | |
| 0.1 | | 0.5 | | 0.2 | | | |