705(-ATEX), 705+(-ATEX) FINAL ASSEMBLY

\*This is a Manufacturer’s Document related to a product that has been approved by a notifying body for use in an explosive environment.  This document shall be reviewed by Engineering and the ISP Manager before it is released or revised.  Any changes to this document could result in modifications to approved design that could result in an unsafe condition.

**1.0 PURPOSE AND SCOPE**

This document outlines the final assembly and test procedure for the 705, 705-ATEX, 705+ and 705+-ATEX instruments. All employees who have responsibility for testing these products are required the follow the instructions detailed in this procedure.

**2.0 AFFECTED DEPARTMENTS**

Manufacturing

**3.0 REFERENCE DOCUMENTS**

* Final assembly drawing S705.10 or S705.10-ATEX.
* Digital test procedure D0001.8131-IS.
* Analog Board test procedure D0001.8132-IS.
* MetCal procedure D0001.8375.

**4.0 RESPONSIBILITIES & AUTHORITY**

The technician has the following responsibilities and authority:

* Verify compliance of the product under test to specifications.
* Troubleshoot and correct product as required.
* Communicate concerns to the Supervisor of Quality Assurance.
* Request management review of product concerns.
* Follow established ESD standards.

**5.0 DEFINITIONS**

Several of the following test procedures require that an electrical test adapter be connected to the input of the Spark instrument being tested. Spark instruments use the MPR001 or MPR001-ATEX mic/preamp, which has a Knowles BL-7046 microphone (LD# 6610.0005). ***Therefore, the ADP046 (with CBL118) is the electrical test adapter that is to be used when testing Spark instruments.***

The term “analog board” will be used in this document to refer to board assemblies A705.12 or A705.22.

The term “digital board” will be used in this document to refer to board assemblies A705.11 or A705.21.

**6.0 SAFETY PRECAUTIONS**

Safety glasses when soldering, lead clipping, or testing power supplies.

**7.0 EQUIPMENT AND MATERIALS**

## DC Power Supply.

* CBL066 (BNC to BNC cables).
* IR Communications interface module (DVX008/DVX009 IR Dongle) or equivalent.
* Computer (PC that is compatible with Windows ME, 2000, XP or later).
* SLMTest.exe Windows software (Part #5499.0004 – current version).
* Larson Davis Test Station (2900, 2209/2239, Computer).
* MetCal Test Station.
* Electrical Test Adapter ADP046 with a CBL118.

**8.0 INSTRUCTIONS**

* 1. **Board preparation**

1. Test the Digital Board following procedure D0001.8131-IS.
2. Test the Analog Board following procedure D0001.8132-IS.
3. The A705.11 board assembly needs a conformal coating. For the A705.21 (ATEX versions), move onto section 8.2. The A705.11 needs to be conformal coated on the main processor side (A quick spray covering the whole surface to begin, and then a full coat that flows around the components (See the instructions on the can for further details)). Cover the main board connector (P1) and the IR chip (U8) with Kapton tape before spraying to prevent conformal coating of these areas. Allow 10-15 minutes to air dry and the coating will be tack free. Once dry, remove the Kapton tape and discard it.
   1. **Assemble the Instrument**

A. Assemble the instrument according to the appropriate assembly drawing.

* 1. **Final Calibration**

1. Connect the ADP046 test adapter to the input of the Spark found on the analog board (Use a CBL118). Connect the input of the ADP046 test adapter to the signal output of the 2209 / 2239 (Use a CBL066).
2. Open the SLMtest software and follow these steps to start testing.
   1. Make sure the Spark is in front of the IR interface module and that the Spark is on.
   2. Click the connect icon or open the **Commands** menu and select **Connect**. The software will report if it has successfully connected to the Spark.
   3. Select the LogLin and Do-Scale-offset checkboxes.
   4. Click the run icon and let the test run and finish.
   5. After the test, click the disconnect icon and disconnect the unit from the test station.
   6. **Final Test of the Instrument with the MetCal Test Software**
3. Enter the SPARK units into MetCal. Refer to MetCal procedure D0001.8375.
4. Install fresh batteries in the unit or setup the DC power supply with the voltage = 1.5V and current limit = 500mV. (Limit the current if the power supply used has this capability). Power the Spark.

1. Connect the ADP046 test adapter to the input of the SPARK found on the analog board. Connect the input of the ADP046 test adapter to the signal output of the USB attenuator.
2. Make sure the SPARK is in front of the IR interface module and that the SPARK is on.
3. Run the SPARK test in MetCal. Refer to MetCal procedure D0001.8375.

SwitchCraft connector for output signal

BNC connector for input signal

Switch

Move switch to this position for “INPUT”

Switch position for “NOISE”

**Figure 1: Top View of ADP046**

1. If any tests fail, fix the problem before proceeding.
2. Finish the work order in MetCal. Refer to MetCal procedure D0001.8375.

**9.0 INSPECTION**

Inspect the finished unit for any obvious defects.

**10.0 RECORDS**

The test data is stored in the MetCal database.

**11.0 DISTRIBUTION**

Manufacturing

**12.0 ATTACHMENTS**

Not applicable to this procedure.

**13.0 REVISION HISTORY**

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| --- | --- | --- | --- | --- |
| **DCO #** | **REV** | **DATE** | **INITIALS** | **CHANGES MADE** |
| 1856 | A | 10/09/18 | JGG | Initial release of intrinsic safe procedure. This is an updated version of D0001.8133. Changed from certifying the unit using the SLMTest software to using MetCal. Added intrinsic safe note. Added –IS to the end of the document number. |
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