FINAL ASSEMBLY, FACTORY ACCEPTANCE TESTING, AND VERIFICATION TEST PROCEDURE FOR SPMC009 OTEK-EP-11-01-SPMC009

Version <4.1>

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Revision History

Date	Version	Description	Author
10/18/18	1.0	First Release	Noel Smith
12/12/18	2.0	Updated Pictures and added tests per Technical Evaluation	Noel Smith
1/11/19	3.0	Corrected references of 4-20ma to 0-10VDC	Noel Smith
6/5/19	4.0	Added Conformal coating, Kapton tape and Hipot testing requirements	Noel Smith
8/13/19	4.1	Changed order of operations for better assembly process, added board wash step to section 4.3.2	Hans Fest

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1.0 PURPOSE

To provide instruction and detail on the verification and validation testing to be performed on the SPMC009 REV B externally powered panel meter. This test plan indicates the steps required to thoroughly evaluate the acceptability of each critical characteristic and its potential failure modes. The basis for the tests and inspections being performed can be found in the Technical Evaluation of the SPM document "OTEK-EP-10-TE-SPM" latest revision.

2.0 REQUIREMENTS

Kitted subassemblies received from Inventory ready for final inspection, test and assembly, 10X eye loop, appropriate revision PLDs, and termination test fixtures.

3.0 INCOMING ENGINEERING INSPECTION PROCEDURE

The final assembly process will be documented on the form shown in Attachment I of this procedure by the final assembly technician. If at any time a question or discrepancy is found alert the Engineering Manager at the time of discovery. One form will be completed per assembly.

3.1. Verify the kit from inventory includes a unique serial number for each finished good to be produced. The format follows:

XXXXxxxxxYYYYY

XXXX = Sales Order #
XXXXxxxxx = Work Order #
YYYYY = Serial #

3.2 Verify all the following boards have been received from production and appear as shown in **Figures 1 to 3** below with the appropriate revision and board title:

Board Name and Revision	Board Function
80-SPM-1 REV E	Display Board
80-SPM-16 REV B	Power and Termination Board

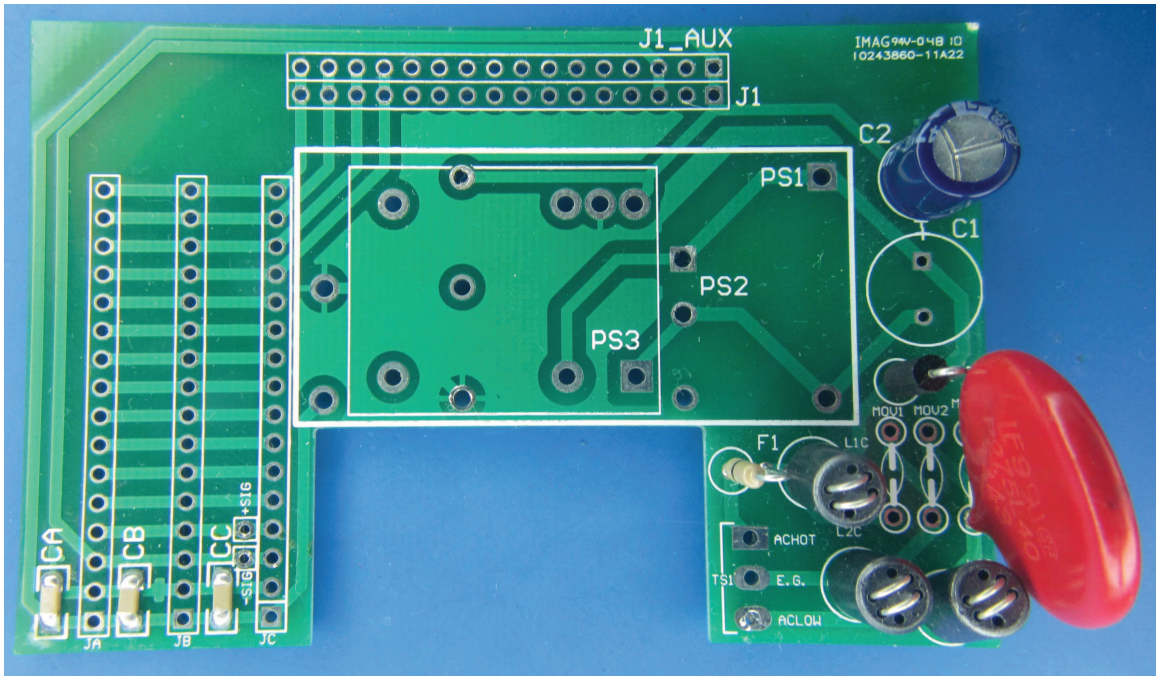

Figure 1: 80-SPM-16

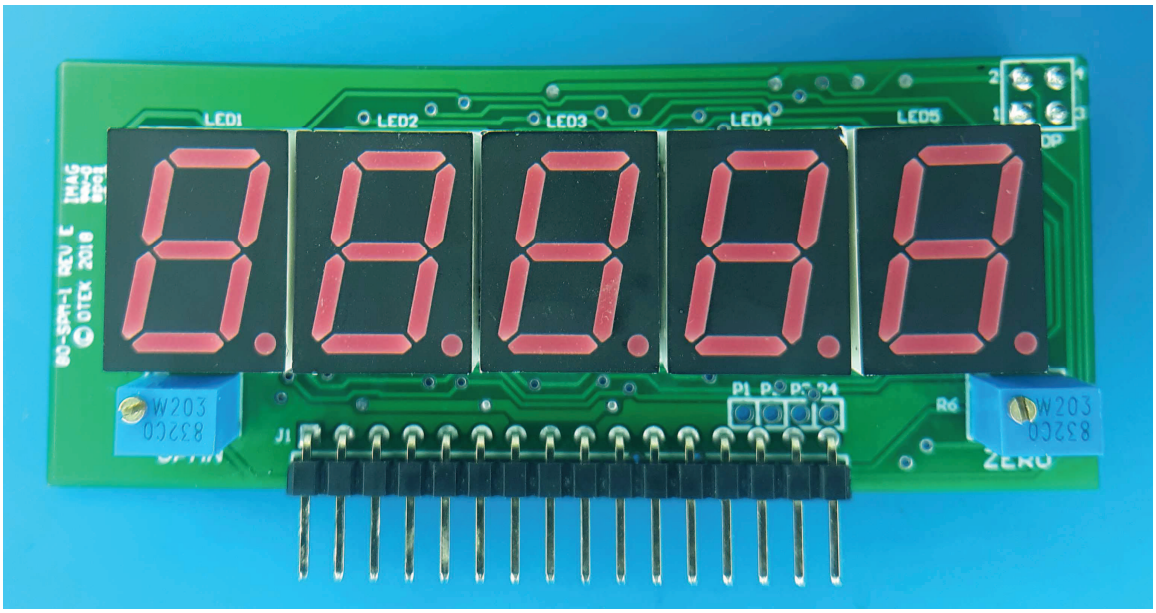

Figure 2: 80-SPM-1 (SIDE 1)

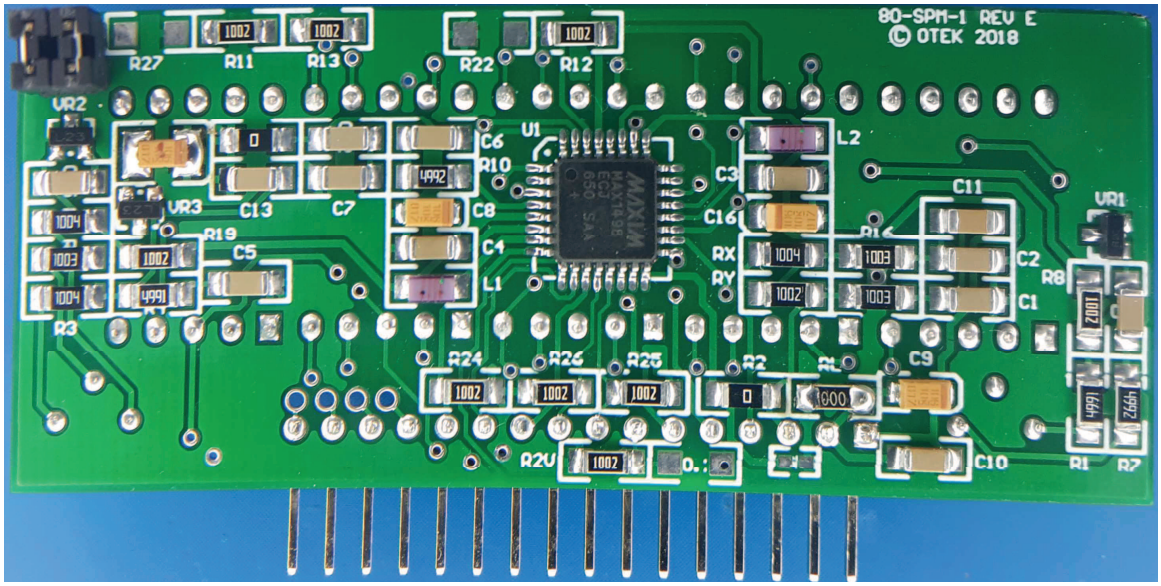

Figure 3: 80-SPM-1 (SIDE 2)

3.3. Inspect each assembled PCB's conformance to IPC-A-610F Acceptability of Electronic Assemblies:

- Section 4.1 Hardware Installation
  - 4.1.1 Electrical Clearance
  - 4.1.2 Interference
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10.6.3 Chlorides, Carbonates and White Residues
10.6.4 Flux Residues - No-Clean Process - Appearance
10.6.5 Surface Appearance
- Section 10.7 Solder Mask Coating
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10.7.2 Voids, Blisters, Scratches
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10.7.4 Discoloration
- Section 10.8 Conformal Coating
10.8.1 General
10.8.2 Coverage
10.8.3 Thickness
10.8.4 Electrical Insulation Coating

4.0 SUB ASSEMBLY TEST AND ASSEMBLY PROCEDURE

4.1 Hardware Configuration

4.1.1 Configure the appropriate jumper configuration of the SPMC009 as shown in **Figure 4** below. This will set the decimal point in the correct location for 1 significant digit after the decimal point to correctly display the range of 0.0 to 100.0.

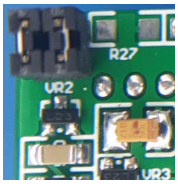

Figure 4: DIP switch hardware configuration

4.2 Sub-Assembly Testing

4.2.1 Secure the 80-SPM-1 Display Board into the production test fixture as in **Figure 5** below.

Figure 5: Production test fixture

4.2.2 Provide the appropriate designated power to the motherboard, in this case AC Volts. Verify the functionality of the 80-SPM-1 Display Board by performing a rough calibration. The unit should be scalable such that 0.0 to 10.0 DC Volts equals 0.0 to 100.0 on the display.

4.2.3 Check the display board by observing a zero scale, half scale, and full scale input and verify all the numerical LEDs are functioning properly.

4.2.4 Check the voltage reference VR1 to confirm it is operating at 2.5 DC Volts. The test points are shown below in **Figure 6**.

4.2.5

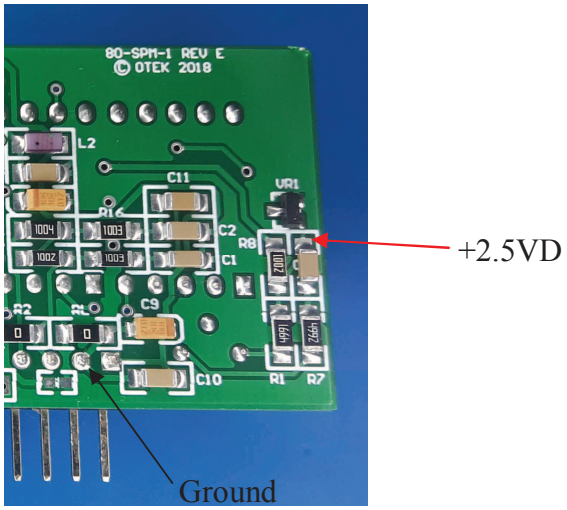

Figure 6: VR1 Test Points

4.2.6 Check the voltage references VR2 and VR3 to confirm they are operating at 1.2 DC Volts. The test points are shown below in **Figure 7**.

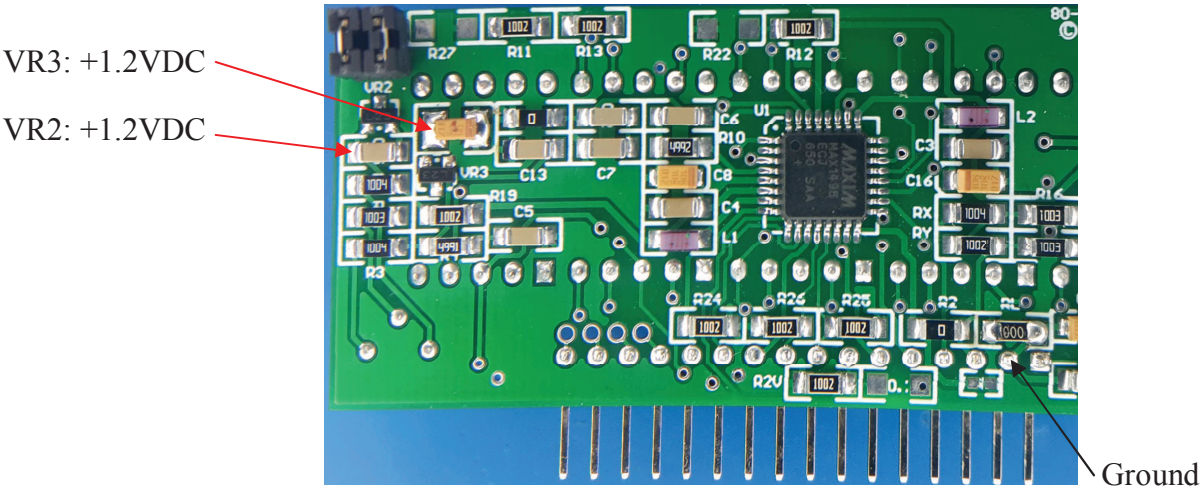

Figure 7: VR2 and VR3 Test Points

4.3 Electronic Assembly

4.3.1 Locate the corresponding (by serial number) 80-SPM-16 Power and Termination Board and solder the two (2) boards together as shown below in **Figure 8**.

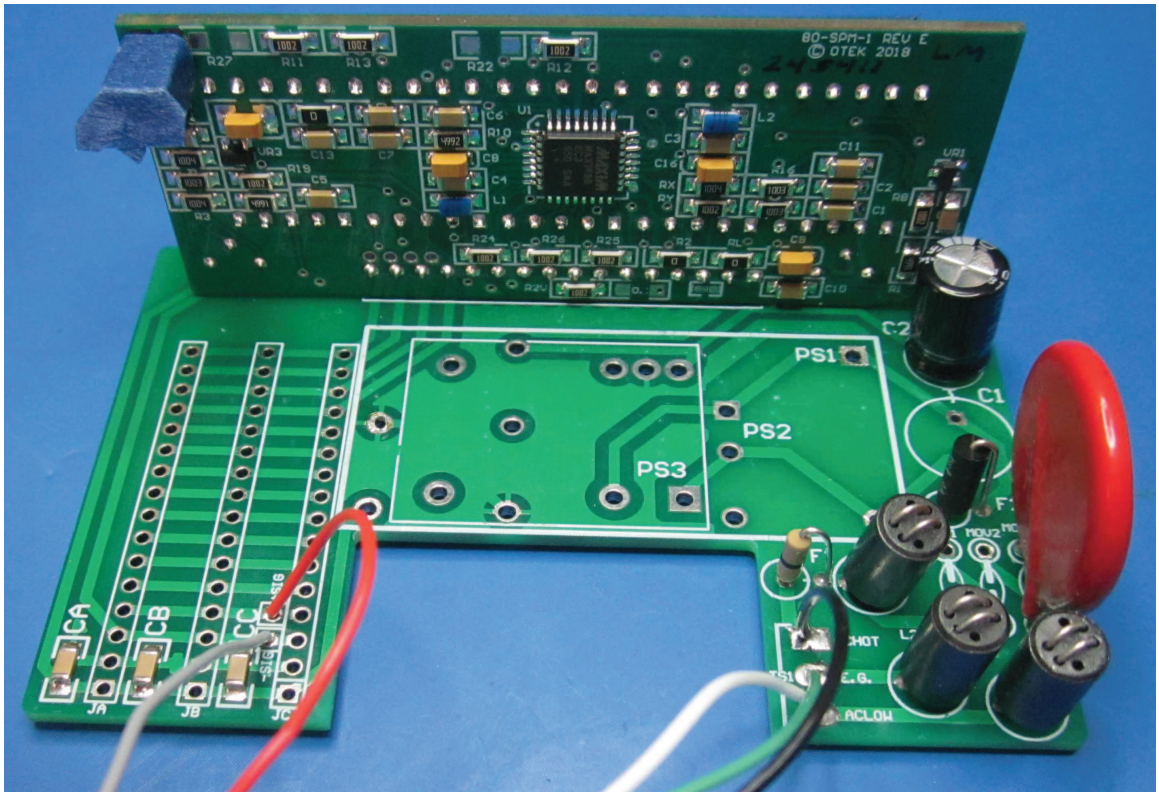

Figure 8: 80-SPM-1 installed on 80-SPM-16

4.3.2 Install and solder the wires used to jumper the 80-SPM-16 to the Terminal Barrier Strips located on the back plate. The wiring diagram and picture showing the assembly is shown in **Figures 8 and 9.** Wash the entire assembly in isopropyl alcohol to remove all flux residue.

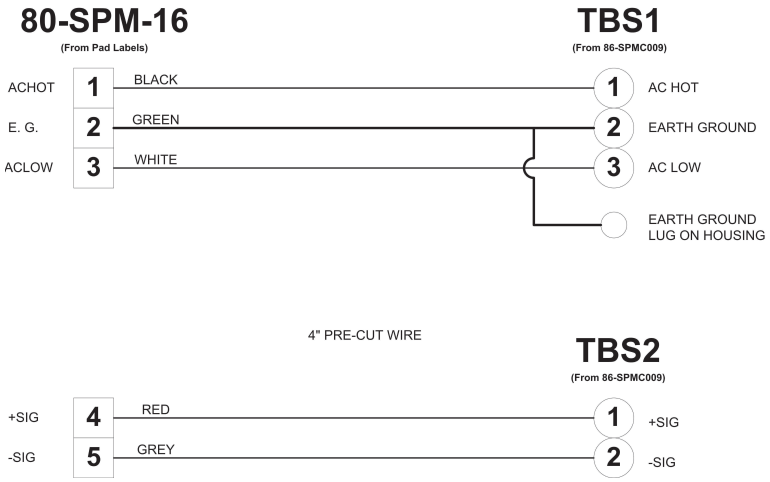

Figure 9: Wiring Diagram

4.3.3 Using the Kapton tape found in the kit from inventory, mask off the numeric LEDs and decimal point selection jumpers. This is shown in **Figures 10 and 11**.

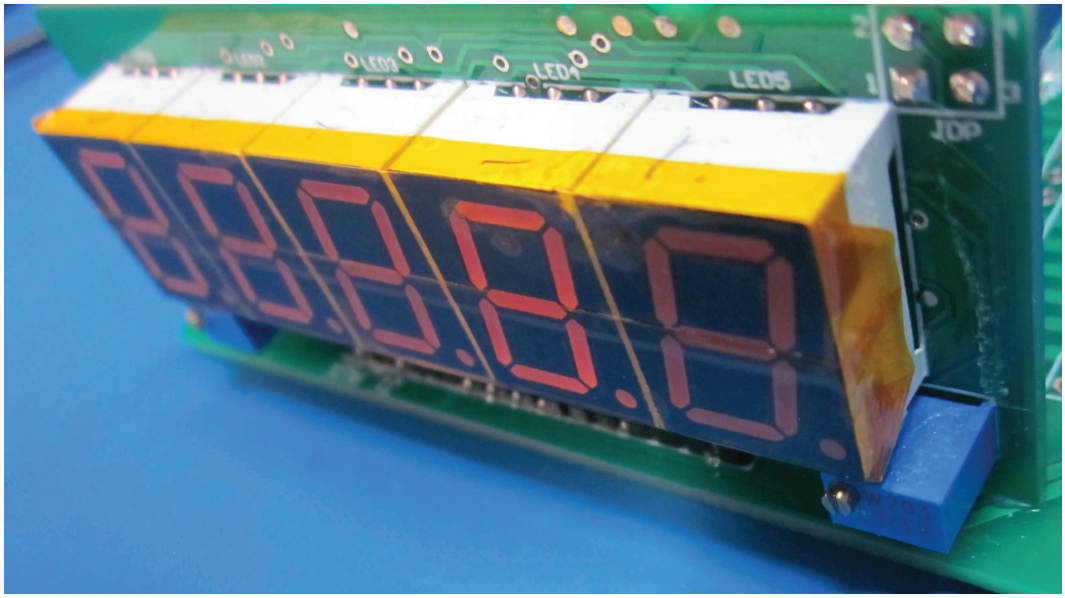

Figure 10: Kapton Tape on LEDs

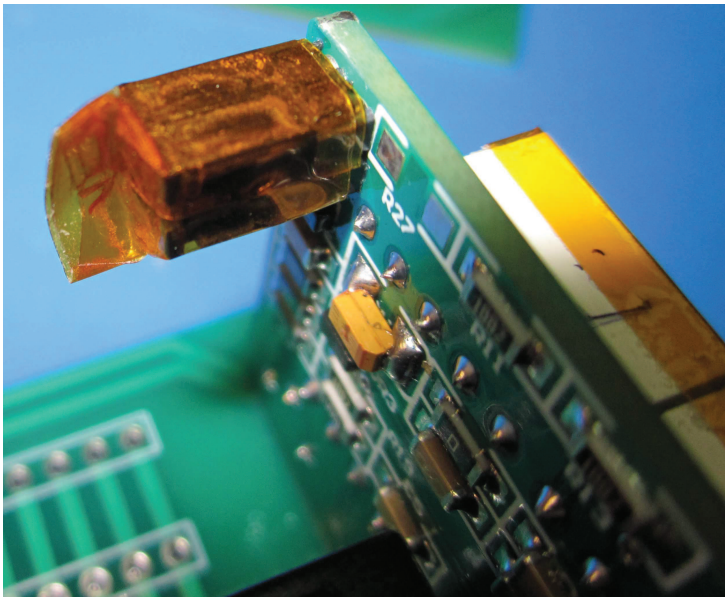

Figure 11: Kapton Tape on Jumpers

4.3.4 Apply 3 layers of Conformal coating to the top (component side) of the 80-SPM-16 and both sides of the 80-SPM-1. Refer to the manufactures recommended drying time between coats, typically 1 hour minimum.

4.3.5 After the last (3rd) layer of Conformal coating has dried for a minimum of one hour the power supply can be installed. Insert and solder the power supply and clean off the flux residue using isopropyl alcohol and cotton tip applicators. This is shown in **Figure 12**.

Figure 12: Power Supply Installed

4.3.6 Apply 3 layers of Conformal coating to the bottom (solder side) of the 80-SPM-16. Refer to the manufactures recommended drying time between coats, typically 1 hour minimum.

4.3.7 Remove the Kapton tape from the numeric LEDs and decimal point selection jumpers.

4.3.8 Inspect each assembly's conformance to IPC-A-610F Acceptability of Electronic Assemblies as shown in **Section 3.3** above.

4.3.9 Install Kapton Tape along the top edge of the 80-SPM-1. You should be left with a finished electronic assembly shown below in **Figures 13 to 15**.

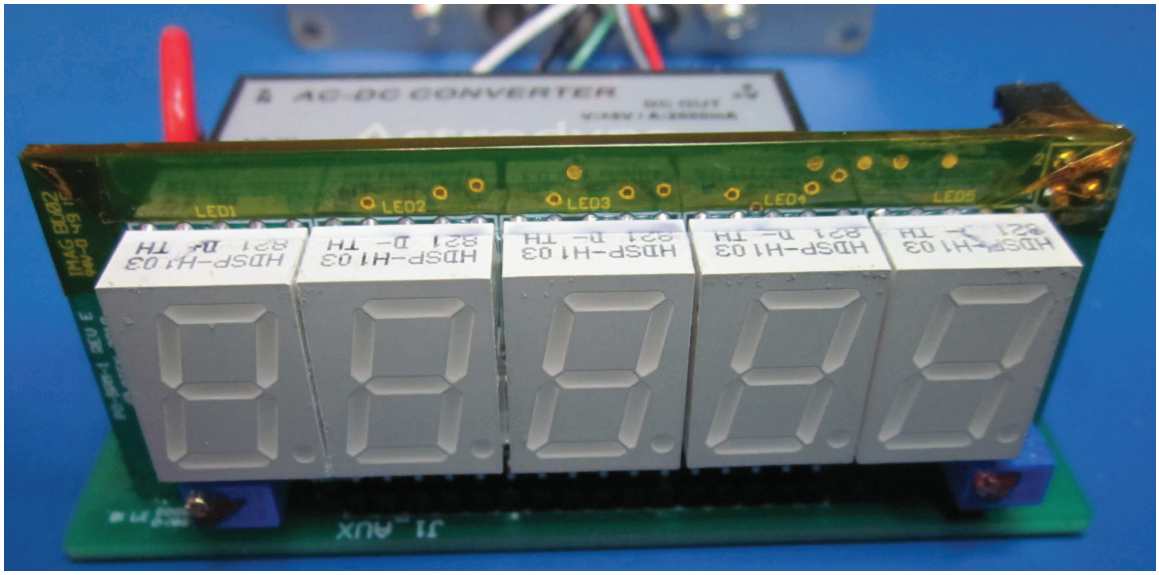

Figure 13: Final electronic assembly front view

Figure 14: Final assembly top view

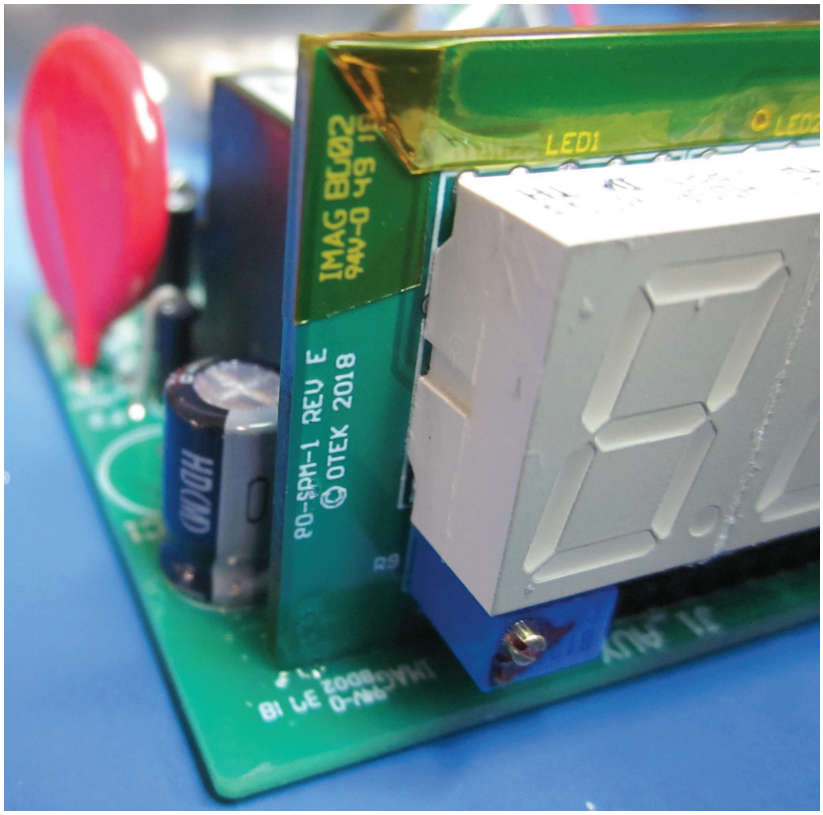

Figure 15: Final assembly side view

4.3.10 Apply the designated power, in this case AC Volts. Verify the output on pins J1:1(+VDC) and J1:2(-VDC) is between 4.9 and 5.1 DC Volts. The exact location of the test points is shown in **Figure 16**. It is important not to puncture the Conformal coating near the edge or on the bottom side of the assembly.

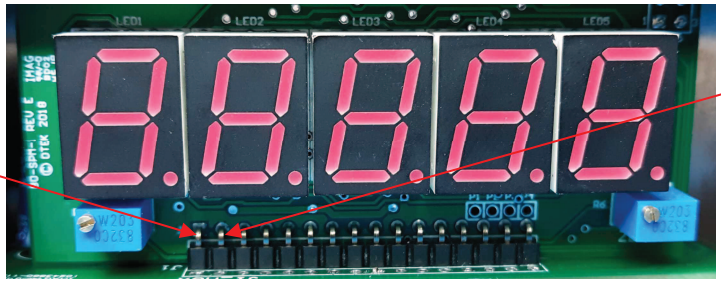

Figure 16: Power Supply Test Points

4.3.11 The two position Terminal Barrier Strip will need to be trimmed to clear the power supply, the final length should be approximately 0.200 inches. This is shown in **Figure 17**.

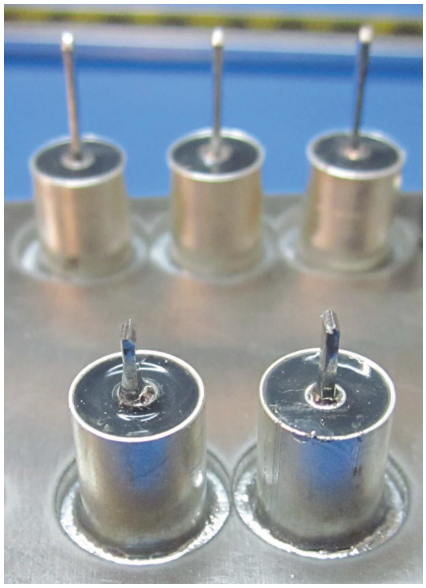

Figure 17: Trimmed Terminal Barrier Strip

4.3.12 Solder the wires that connect the Terminal Barrier Strips to the electronic assembly. The wiring diagram can be found in **Figure 9** and a picture of the finished assembly is in **Figure 18**.

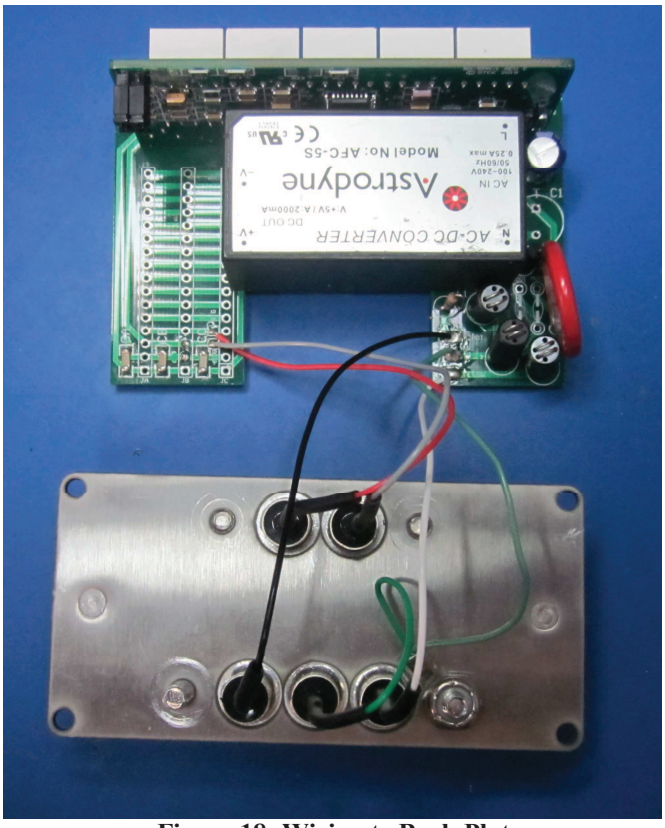

Figure 18: Wiring to Back Plate

4.3.13 Perform a basic functionality test of each assembly prior to inserting the electronic assembly into each enclosure. Connect the appropriate signal and power cables to the unit under test.

4.3.14 Check to ensure the unit properly powers on.

4.3.15 Apply the appropriate input signal to the unit. Calibration is not necessary at this point; however, confirm linearity and behavior of the input signal.

4.3.16 Perform a 1500VAC Hipot test between the power input and signal input.

4.4 Enclosure Assembly

4.4.1 Install the electronic assembly into the enclosure as shown below in **Figures 19 and 20.**

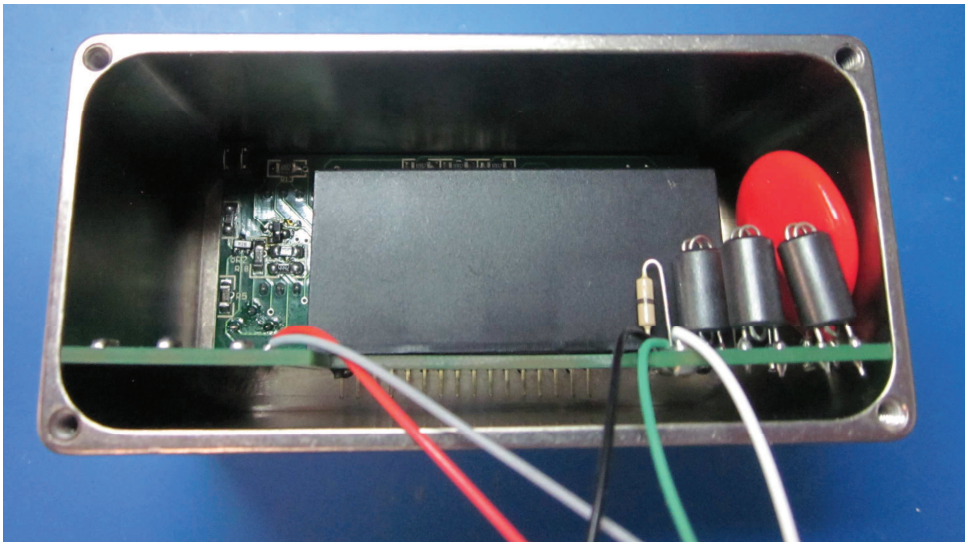

Figure 19: Assembly in housing rear

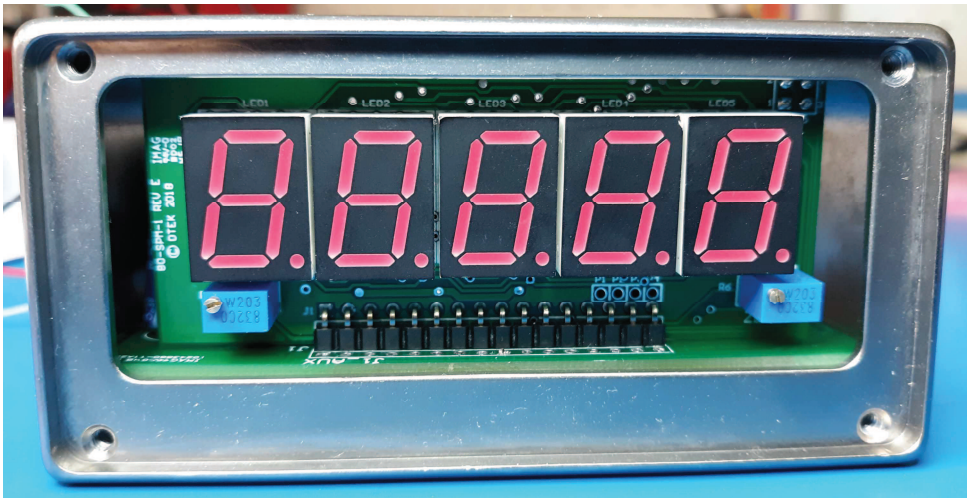

Figure 20: Assembly in housing front

4.4.2 Install the back plate onto the housing using the provided 4-40 by 1/4" pan head phillips screws.

4.4.3 Apply the appropriate product label with the serial number correlating to the unit.

4.4.4 Perform a 1500VAC Hipot test between all terminals and the housing

4.5 Initial Calibration of the unit

4.5.1 Apply power to the unit, in this case AC Volts.

4.5.2 Factory calibrate the unit to read "0.0" at 0.00 DC Volts and "100.0" at 10.00 DC Volts. Calibrate the "ZERO" first and then the

"SPAN". If necessary alternate between these values until the unit is calibrated.

4.5.3 Record the values on the test data sheet.

4.6 Scale Plate Installation

After the "POST-BURN-IN BASELINE FUNCTIONALITY VERIFICATION TEST" in section 14 perform the following. Once installed the scale plate cannot be removed.

4.6.1 Prepare the appropriate **EMI/RFI mesh, shield** and **scale plate** for the SPMC009. The required scale plate for this model is OTEK's standard P/N: 45-SPM-1.

4.6.2 Install the mesh on the front of the instrument using the provided 2-56 by 3/16" flat head screws.

4.6.3 Install the scale plate on the unit using the provided adhesive (45-SPM-2).

5.0 TEST PLAN OVERVIEW

The primary failure mode of the SPMC009 is an improper value displayed on the seven-segment numeric display. A failure to display the correct value would result in a failure for the end user to properly execute the safety function that the instrument is required to maintain.

The unit is dedicated in accordance with the following guidelines:

EPRI NP-5652
EPRI TR-106439

The complete unit part number to be tested is listed below:

SPM-N06-040-9009:	Nuclear Grade
	±20 VDC
	No Serial I/O
	Isolated 90-265 VAC Power
	No Control Outputs
	Custom Housing
	4½ Digit 0.6" Red LED
	Custom Calibration

6.0 MEASUREMENT AND TEST EQUIPMENT

All test equipment and instrumentation to be used in the performance of this test program shall be calibrated in accordance with OTEK's Nuclear Quality Assurance Program. The total systematic error of the functional test setup and measurement and test equipment shall be less than 4X the error of the equipment being tested. All measurement and test equipment utilized in the performance of this test program shall be listed on the Test Data Sheet at the end of this document.

7.0 TEST PROCEDURE

7.1 Baseline Functionality Verification Test (Pre-Burn-In)

7.1.1 Perform a Hipot test at 1500VAC, with a current limit of 6mA for 60 seconds between the following terminals:

- AC Line and Neutral (strapped together) to Earth Ground
- AC Line and Neutral (strapped together) to +Signal and -Signal (strapped together).

7.1.2 Record the results on the Test Data Sheet.

7.1.3 The unit under test (UUT) shall be connected to the test circuit as shown in **Figure 21** below.

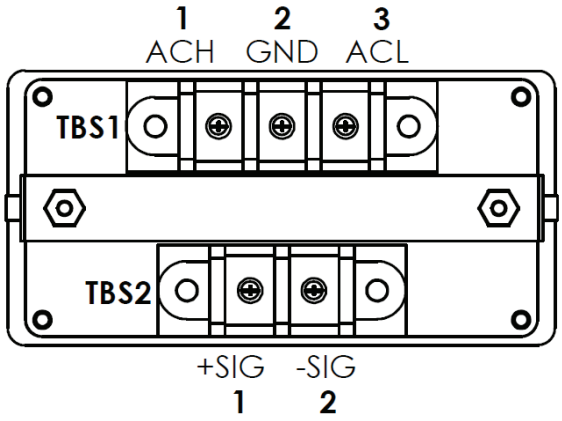

Figure 21: SPMC009 connection diagram

7.1.4 The UUT shall be energized with 120 VAC (nominal power voltage) as according to the model number.

7.1.5 Verify the accuracy/linearity of the UUT's digital display by cycling through the input signal from a minimum value of 0.0 VDC and a maximum value of 10.0 VDC.

7.1.6 Record the results on the Test Data Sheet.

7.1.7 Remove the VAC power to the unit and allow for a 20 second reset time.

7.1.8 Verify that the UUT performs a Power-on-Reset when power is cycled. The UUT should power-on, display an over range condition (1----), and then display a valid reading.

7.1.9 Record the results on the Test Data Sheet.

7.2 Validation of Analog to Digital Converter and Integrated Display Driver Failure modes (Pre-Burn-In)

7.2.1 Connect two test leads with "mini grabber" clips to J1:5 (-REF) and J1:6 (+REF). Take care to only puncture the conformal coating directly on the pins on the top of the 80-SPM-16. The conformal coating must remain intact on the bottom (solder side) of the PCB.

7.2.2 Apply a positive 90 mV DC to the reference pins and set the signal input to 10 VDC. Verify the display displays a positive over range condition (1----).

7.2.3 Record the results on the Test Data Sheet.

7.2.4 Apply a negative 90 mV DC to the reference pins and set the signal input to -10 VDC. Verify the display displays a negative under range condition (-1----).

7.2.5 Record the results on the Test Data Sheet.

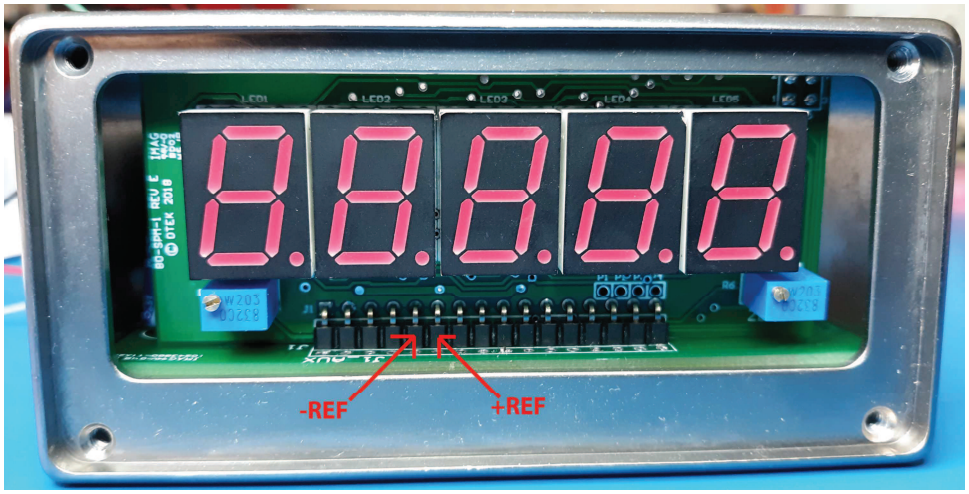

Figure 22: Display Failure Test Points

7.3 Burn-In

7.3.1 Put the unit into the burn in rack. Apply rated nominal voltage to unit and rated load (as applicable). Allow the unit to operate for a minimum of 50 hours at ambient temperature. Record start time and date on test data sheet.

7.3.2 After 50 hours or more remove unit from burn in rack and record end time and date on test data sheet.

7.4 Baseline Functionality Verification Test (Post-Burn-In)

7.4.1 Perform a Hipot test at 1500VAC, with a current limit of 6mA for 60 seconds between the following terminals:

- AC Line and Neutral (strapped together) to Earth Ground
- AC Line and Neutral (strapped together) to +Signal and

-Signal (strapped together).

7.4.2 Record the results on the Test Data Sheet.

7.4.3 The unit under test (UUT) shall be connected to the test circuit as shown in **Figure 21** above.

7.4.4 The UUT shall be energized with 120 VAC as according to the model number.

7.4.5 Verify the accuracy/linearity of the UUT's digital display by cycling through the input signal from a minimum value of 0.0 VDC and a maximum value of 10.0 VDC.

7.4.6 Record the results on the Test Data Sheet.

7.4.7 Remove the VAC power to the unit and allow for a 20 second reset time.

7.4.8 Verify that the UUT performs a Power-on-Reset when power is cycled. The UUT should power-on, display an over range condition (1----), and then display a valid reading.

7.4.9 Record the results on the Test Data Sheet.

7.5 Validation of Analog to Digital Converter and Integrated Display Driver Failure modes (Post-Burn-In)

7.5.1 Connect two test leads with "mini grabber" clips to J1:5 (-REF) and J1:6 (+REF) (See **Figure 22**). Take care to only puncture the conformal coating directly on the pins on the top of the 80-SPM-16. The conformal coating must remain intact on the bottom (solder side) of the PCB.

7.5.2 Apply a positive 90 mV DC to the reference pins and set the signal input to 10 VDC. Verify the display displays a positive over range condition (1----).

7.5.3 Record the results on the Test Data Sheet.

7.5.4 Apply a negative 90 mV DC to the reference pins and set the signal input to -10 VDC. Verify the display displays a negative under range condition (-1----).

7.5.5 Record the results on the Test Data Sheet.

7.6 Final Calibration Test Procedure (Post-Burn-In)

7.6.1 After unit has been burned in perform a final calibration check.

7.6.2 Power up the unit at the lowest AC power input within the specified range.

7.6.3 Record the actual AC power input on the test data sheet.

7.6.4 Check unit at 0.0 VDC, 2.5 VDC, 5 VDC, 7.5 VDC, and 10.0 VDC for linearity and accuracy (0, ¼, ½, ¾, and 1 of full scale for other inputs).

7.6.5 Record results on the test data sheet.

7.6.6 Power up the unit at the highest AC power input within the specified range.
7.6.7 Record the actual AC power input on the test data sheet.
7.6.8 Check unit at 0.0 VDC, 2.5 VDC, 5 VDC, 7.5 VDC, and 10.0 VDC for linearity and accuracy (0, ¼, ½, ¾, and 1 of full scale for other inputs).
7.6.9 Record results on the test data sheet.
7.6.10 Compare with the results from Section 4.5 to confirm that no drift over time of the component values has occurred. The displayed analog values should be within 0.1 counts.

7.7 Repeat Final Calibration Test Procedure (Post-Burn-In)
7.7.1 Repeat the final calibration check by another individual at a nominal power input range.
7.7.2 Record the actual AC power input on the test data sheet.
7.7.3 Check unit at 0.0 VDC, 2.5 VDC, 5 VDC, 7.5 VDC, and 10.0 VDC for linearity and accuracy (0, ¼, ½, ¾, and 1 of full scale for other inputs).
7.7.4 Record results on the test data sheet.

7.8 Mechanical Enclosure Verification Procedure
Install the scale plate at this point if the UUT has passed all preceding testing (See **Section 4.6** for instruction).
7.8.1 Observe incoming units for the overall quality of the unit. There should be no defects in or on the surface of the enclosure so as to avoid any potential physical and electronic hazards that may impact the safety function and practical handling of the unit by the tester or end user. Additionally, observing for any deformities or defects in the housing is sufficient for the IEEE 323-1974 mild environmental standard.
7.8.2 Measure the width, height and depth using properly designated measurement and test equipment (M&TE). For details on the which measurement reflects what dimension, observe the mechanical drawing snapshot shown in **Figure 23** below.

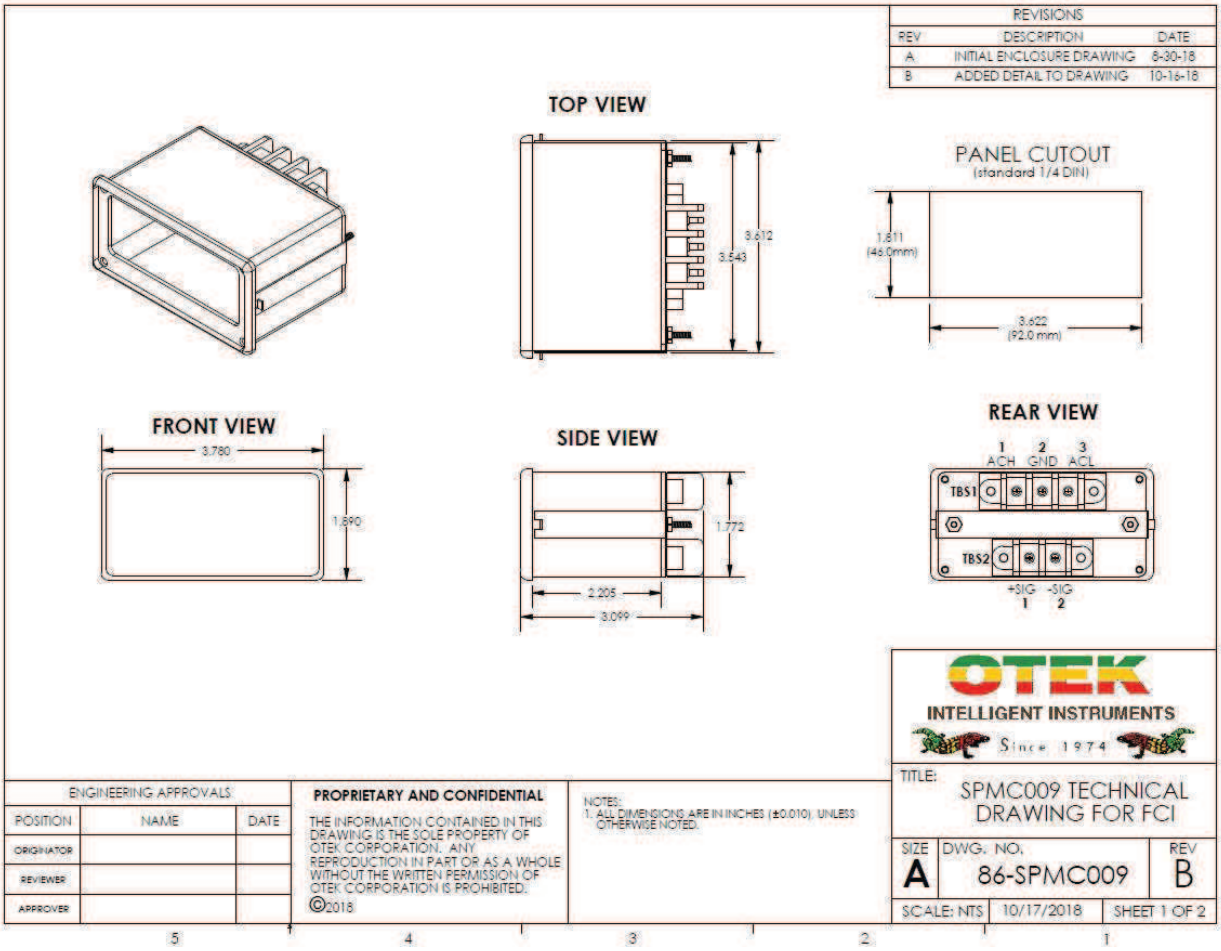

Figure 23: SPMC009 Housing Dimensions

7.8.3 Record results on the Test Data Sheet.

7.8.4 The standard scale plate is shown in **Figure 24** below.
7.8.5 Verify that this scale plate is used and applied correctly and confirm the presence of the EMI/RFI mesh.
7.8.6 Record results on the Test Data Sheet.

Figure 24: SPMC009 scale plate

Attachment I
ASSEMBLY AND FINAL ACCEPTANCE TEST DATA SHEET

8.0 ENGINEERING INSPECTION AND ASSEMBLY CHECKLIST

Verify the kit from inventory includes a unique serial number for each finished good to be produced per **Section 3.1**. Enter serial Number for Finished Assembly:

SALES ORDER #	
WORK ORDER #	
SERIAL#	

Verify the kit from inventory contains all subassemblies listed on the Work Order in the correct quantity per **Section 3.2**. All sub-assemblies must match these requirements of their incoming inspection test to pass this section.

BOARD NAME AND REVISION	BOARD FUNCTION	BOARD SUPPLIED IN KIT?
80-SPM-1 Rev E	Display Board	Y / N
80-SPM-16 Rev B	Power and Termination Board	Y / N

Inspect each assembled PCB's conformance to IPC-A-610F Acceptability of Electronic Assemblies per **Section 3.3**. The PCBs must conform to IPC-A-610F Acceptability of Electronic Assemblies to pass this section.

DO THE RECEIVED PCBS CONFORM TO IPC-A-610F ACCEPTABILITY OF ELECTRONIC ASSEMLBIES?	Y / N

Verify that the correct hardware configuration. The unit must be configured as according to **Section 4.1.1** to pass this section.

JUMPER SETTINGS (Designate ON or OFF; an empty box will indicate OFF state)		
JUMPER	**1&2**	**3&4**
JDP		

Verify that the 80-SPM-1 sub-assembly has been tested per **Section 4.2**.

BOARD NAME AND REVISION	BOARD FUNCTION	DOES THE UNIT PASS THE SUB-ASSEMBLY TEST?
80-SPM-1 Rev E	Display Board	Y / N

9.0 ELECTRICAL COMPONENT INSTALLATION VERIFICATION

Verify that the correct components have been installed below. The component designator and corresponding board are indicated below. The values must match the values shown in order to pass this section (both confirmation from production and independent QC).

	PRODUCTION	
COMPONENT	**MANUFACTURER**	**P/N**
Analog to Digital Converter and Integrated Display Driver (U1 on 80-SPM-1 REV E P/N: MAX1498ECJ+)		
AC Power Supply (PS1 on 80-SPM-16 REV B P/N: AFC-5S)		
Metal Oxide Varistor (MOVs) (MOV3 on 80-SPM-16 REV B P/N: V275LA40AP)		
Fair-Rites (Bead-on-Lead Inductors) (L3C on 80-SPM-16 REV B P/N: 2944666651)		
2 Position Filtered Terminal Barrier Strip (Mounted on back plate P/N: 52-257-002)		
3 Position Filtered Terminal Barrier Strip (Mounted on back plate P/N: 52-257-003)		

	INDEPENDENT QC	
COMPONENT	**MANUFACTURER**	**P/N**
Analog to Digital Converter and Integrated Display Driver (U1 on 80-SPM-1 REV E P/N: MAX1498ECJ+)		
AC Power Supply (PS1 on 80-SPM-16 REV B P/N: AFC-5S)		
Metal Oxide Varistor (MOVs) (MOV3 on 80-SPM-16 REV B P/N: V275LA40AP)		
Fair-Rites (Bead-on-Lead Inductors) (L3C on 80-SPM-16 REV B P/N: 2944666651)		
2 Position Filtered Terminal Barrier Strip (Mounted on back plate P/N: 52-257-002)		
3 Position Filtered Terminal Barrier Strip (Mounted on back plate P/N: 52-257-003)		

Have all key components been verified?	Y / N

Completion of the sections below is acknowledgement that the section has been completed and passes.

☐ Complete Final assembly per **Sections 4.3 (ELECTRONIC ASSEMBLY)**.

Verify that the finished electronic assembly has been assembled per **Section 4.3**.

DESCRIPTION	**FUNCTION**	**DOES THE UNIT PASS THE FINISHED ELECTRONIC ASSEMBLY TEST?**
Finished Electronic Assembly	Finished Analog to Digital Converter with 7 Segment Display Module Assembly	Y / N

☐ Complete Final assembly per **4.4 (ENCLOSURE ASSEMBLY)**.

☐ Calibration of unit per customer's P.O. per **Section 4.5**.

Initial Calibration Results

Perform the initial calibration test per **Section 4.5**. An allowable of ±0.1 difference between Actual and Display on the 7 segment display is allowed.

	INPUT	ACTUAL DISPLAY VALUE	DISPLAY
NOMINAL POWER INPUT _____VAC	0.0 VDC	0.0	
	2.5 VDC	25.0	
	5.0 VDC	50.0	
	7.5 VDC	75.0	
	10.0 VDC	100.0	

TEST DATA SHEET

10.0 MEASUREMENT AND TEST EQUIPMENT

Verify that the correct measurement and test equipment is used per **Section 6.0**. The test equipment must not be past the calibration due date to pass this section.

DESCRIPTION	SERIAL NUMBER	CALIBRATION DUE DATE
Fluke Calibrator		
DMM		
Hipot		

11.0 UNIT UNDER TEST MODEL AND SERIAL NUMBER

Verify that the correct model number and serial number is applied to the unit. The model # should be SPMC009 and the serial number should conform per **Section 3.1** to pass this section.

MODEL#	
SERIAL#	

12.0 PRE-BURN-IN BASELINE FUNCTIONALITY VERIFICATION TEST

Perform a Hipot test per **Section 7.1.1**.

Hipot Test Duration	Output Level	Connection Between Terminals	Measured Leakage Current	Result
60 seconds	1500VAC	AC Line and Neutral to Earth Ground		Pass / Fail
60 seconds	1500VAC	AC Line and Neutral to + Signal and - Signal		Pass / Fail

Perform the pre-burn-in baseline functionality test per **Sections 7.1 through 7.2**. The unit must pass all baseline functionality tests to pass this section.

ITEM	RESULTS	METHOD OF VERIFICATION	ACCEPTANCE CRITERIA
ACCURACY, LINEARITY OF DISPLAY	PASS FAIL	DIRECT MEASUREMENT	± 0.05% OF F.S. ± 1 LSD FOR DISPLAY
ANALOG TO DIGITAL CONVERTER AND INTEGRATED DISPLAY DRIVER POWER-ON RESET	PASS FAIL	DIRECT MEASUREMENT	PER SECTION 7.2
ANALOG TO DIGITAL CONVERTER AND INTEGRATED DISPLAY DRIVER OVERRANGE DETECTION (1----)	PASS FAIL	DIRECT MEASUREMENT	PER SECTION 7.3
ANALOG TO DIGITAL CONVERTER AND INTEGRATED DISPLAY DRIVER UNDERRANGE DETECTION (-1----)	PASS FAIL	DIRECT MEASUREMENT	PER SECTION 7.3

Does the unit pass the pre-burn-in baseline functionality verification?	Y / N

13.0 BURN-IN

Perform the burn-in per **Section 7.3**. The unit must complete the minimum stated burn-on duration to pass this section.

ITEM	RESULTS
BURN-IN AVERAGE TEMPERATURE (AMBIENT TEMPERATURE)	
BURN-IN DURATION (50 HOUR MINIMUM)	
START (DAY/TIME)	
STOP (DAY/TIME)	

Does the unit pass the burn-in?	Y / N

14.0 POST-BURN-IN BASELINE FUNCTIONALITY VERIFICATION TEST

Perform a Hipot test per **Section 7.4.1**.

Hipot Test Duration	Output Level	Connection Between Terminals	Measured Leakage Current	Result
60 seconds	1500VAC	AC Line and Neutral to Earth Ground		Pass / Fail
60 seconds	1500VAC	AC Line and Neutral to + Signal and - Signal		Pass / Fail

Perform the post-burn-in baseline functionality test per **Sections 7.4 through 7.5**. The unit must pass all baseline functionality tests to pass this section.

ITEM	RESULTS	METHOD OF VERIFICATION	ACCEPTANCE CRITERIA
ACCURACY, LINEARITY OF DISPLAY	PASS FAIL	DIRECT MEASUREMENT	± 0.05% OF F.S. ± 1 LSD FOR DISPLAY
ANALOG TO DIGITAL CONVERTER AND INTEGRATED DISPLAY DRIVER POWER-ON RESET	PASS FAIL	DIRECT MEASUREMENT	PER SECTION 7.2
ANALOG TO DIGITAL CONVERTER AND INTEGRATED DISPLAY DRIVER OVERRANGE DETECTION (1----)	PASS FAIL	DIRECT MEASUREMENT	PER SECTION 7.3
ANALOG TO DIGITAL CONVERTER AND INTEGRATED DISPLAY DRIVER UNDERRANGE DETECTION (-1----)	PASS FAIL	DIRECT MEASUREMENT	PER SECTION 7.3

Does the unit pass the post-burn-in baseline functionality verification?	Y / N

15.0 FINAL CALIBRATION TEST

Perform the final calibration test per **Section 7.6**. An allowable error of ±0.1 on the 7 segment display is allowed.

	INPUT	ACTUAL DISPLAY VALUE	DISPLAY
LOW POWER INPUT _____VAC	0.0 VDC	0.0	
	2.5 VDC	25.0	
	5.0 VDC	50.0	
	7.5 VDC	75.0	
	10.0 VDC	100.0	
HIGH POWER INPUT _____VAC	0.0 VDC	0.0	
	2.5 VDC	25.0	
	5.0 VDC	50.0	
	7.5 VDC	75.0	
	10.0 VDC	100.0	

Does the unit pass the final calibration test?	Y / N
Did the unit drift more than the allowable error of ±0.1on the 7 segment display when compared with the pre-burn-in calibration check.	Y / N

16.0 REPEAT FINAL CALIBRATION TEST

Perform the final calibration test per **Section 7.7**. An allowable error of ±0.1 on the 7 segment display is allowed.

	INPUT	ACTUAL DISPLAY VALUE	DISPLAY
NOMINAL POWER INPUT _____VAC	0.0 VDC	0.0	
	2.5 VDC	25.0	
	5.0 VDC	50.0	
	7.5 VDC	75.0	
	10.0 VDC	100.0	

Does the unit pass the repeat final calibration test?	Y / N

17.0 MECHANICAL ENCLOSURE VERIFICATION

Perform the mechanical enclosure verification per **Section 7.8** and referencing **Figure 23**. All measurements must pass within the allowable dimensions noted, all enclosure assembly verifications must be observed, and the correct scale plate per **Section 7.8** referencing **Figure 24** to pass this section.

DIMENSION	REQUIRED	ALLOWABLE ERROR RANGE	MEASURED
Bezel Width	3.78 inches	3.73 to 3.83 inches	
Bezel Height	1.89 inches	1.84 to 1.94 inches	
Housing Width	3.54 inches	3.49 to 3.59 inches	
Housing Height	1.77 inches	1.72 to 1.82 inches	
Housing Depth	2.27 inches	2.22 to 2.32 inches	
Housing Depth with Terminal Barrier Strips	2.91 inches	2.71 to 3.11 inches	

Verify the Following:	
Is there a fine metal mesh underneath the scale plate?	Y / N
Is the mounting hardware installed?	Y / N
Is the serial number and product label affixed to the side of the unit?	Y / N
Is a standard scale plate installed?	Y / N

Does the unit pass the mechanical enclosure specifications?	Y / N

18.0 ADDITIONAL DR OR NC (IF APPLICABLE)

Qualified QA staff must sign off on this section to pass if any Discrepancy Reports or Nonconformance Reports are applicable to this order.

DR# (Discrepancy Report)	NC# (Nonconformance Report)	Acceptable	Qualified QA Staff	
			Initials	Date
		Y / N		
		Y / N		

PERFORMED BY: _____ Date:_____

REVIEWED BY: _____ Date:_____

APPROVED BY: _____ Date:_____