SUB.: TEST PROCEDURE FOR 1522 (DIGITAL WATTMETER)

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1. TITLE : TEST PROCEDURE FOR 1522. (DIGITAL WATTMETER).

2. PURPOSE : The document explains the Testing & Calibration procedure for Model 1522. (Digital Wattmeter).

3. SCOPE : This is applicable to units which have passed Q1, Q2, Q3 stage of Inspection.

4. REFERENCE DOCUMENTS :
   1. Instruction Manual.
   2. Circuit Diagrams.
   3. Calibration System (IIS-020).
   4. Quality Manual (IQM-001).
   5. Test Reports.

5. TOOLS & EQUIPMENTS :

   A. TOOLS :
   1. Soldering Iron (40 Watts).
   2. Solder Wire (0.8mm).
   3. Trimming Tools (Hozan 0-29).
   4. Resistance Decade Box (10M).
   5. Screw Driver (Cz, Philips Head & Small).
   6. Soldering Iron Stand.
   7. De-soldering Pump.
   8. IC Remover.
   9. Lead Cutter.
   10. Nose Plier (Goot >P-3).
   11. BNC to BNC Leads (3 sets).

   B. EQUIPMENTS :
   1. IC Remover.
   2. Line Voltage Controller.
   3. Oscilloscope.
   4. AC Ammeter mA.
   5. DMM (Fluke 8050A).
   6. Insulation Tester (2.5KV).
   7. Current Meter RMS 20A.
   8. Distortion & Level Meter (Aplab-2007).
   9. Bulb Load Station (500W, 200W, 100W, 60W).
   10. Calculator.

6. GENERAL REQUIREMENTS :

   1. The Technician shall maintain neat & clean environment.

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2. The Technician shall follow all safety precautions like ESD, Shocks, Burns, etc.

3. The Test Technician shall be qualified.

4. Only calibrated Test Equipments shall be used for Calibration & Testing.

7. TEST PROCEDURE FOR 1522 (DIGITAL WATTMETER) :
When the unit is taken for testing a visual check should be made for any wrongly assembled components or components which are not mounted.

A. INPUT CURRENT MEASUREMENT : Connect a AC RMS meter in Series with the Mains Input Plug of the Wattmeter & select Ammeter range to 1A of the Multimeter (DMM). Check the units mains requirement & apply AC Input to the unit of rated voltage either 115V or 230V AC.

The Acceptable Max. Input Current is Specified as follows :

Mains Input	Max. AC N/L Current
Input 115V AC	< 35mA RMS
Input 230V AC	< 75mA RMS

Connect the Input wire to the rated mains Input. Switch ON on Power ON/OFF Switch & see that DPM Reads. Now monitor the Ext. Ammeter the current Reading should be with in specified limit of 115V input & 230V input as per above chart.

B. DIGITAL PANEL METER (DPM) :
The reference voltage of the DPM is set to 1.00V. The Main PCB (WD76XX-01) has two test points marked DPM and GND. With reference to this test point (GND), measure the voltage on pin 36 of the IC1 (7107) on DPM PCB (DPM-295). Set this voltage to 1.00V by adjusting the preset PR1 on the DPM PCB.

C. MAIN PCB (WD 76XX-01) :
The Main PCB has two test points marked DPM and GND. All calibration should be done with reference to the test point marked GND.

With the Digital Wattmeter switched off, disconnect the VIN H and VIN L inputs of the Main PCB. (take care to maintain the correct connection sequence during reconnection later). Switch on the Digital Wattmeter.

D. DC OFFSET ADJUSTMENTS :
Adjust the presets as shown in the table and ensure that the DC voltage at the corresponding test point is within 0V ±1mV.

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Adjust preset	**Test Point**
PR14 (VOFF1)	TPV1
PR11 (VOFF2)	TPV2
PR6 (IOFF1)	TPI1
PR7 (IOFF2)	TPI2
PR12 (WOFF1)	TPW1
PR13 (WOFF2)	TPW2

E. COMMON MODE REJECTION :
Monitor the waveform on TPI1 on an oscilloscope and adjust preset PR5 (I-CMRR) so that the trace is flat. This can also be verified on an AC millivoltmeter. The reading will be minimum at the correct setting. With the Digital Wattmeter switched off, reconnect the VIN H and VIN L inputs on the Main PCB. Switch on the Digital Wattmeter.

F. VOLTAGE CALIBRATION :
Measure the line voltage with a multimeter (AC voltage measurement). Adjust preset PR10 (VCAL) so that the Digital Wattmeter shows the correct line voltage.

G. CURRENT CALIBRATION :
Connect a suitable resistive load across the output terminals and an AC current meter in series with it. Select the current function "A". Adjust preset PR9 (ICAL) so that the Digital Wattmeter shows the correct load current.

H. POWER (W) CALIBRATION :
Connect a suitable resistive load across the output terminals Measure the voltage and current as given above. Select the power function "W". Adjust preset PR15 (WCAL) so that the Digital Wattmeter shows the correct power as given by the following equation :

W = V * I

(Since the load is resistive, power factor is 1).

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