

## 4920/4920M Digital Assembly Test Procedure.

### Test Equipment Required.

1. 4920 Test Chassis
2. Power supply load
3. 1061 DMM
4. Dual trace Scope
5. Frequency Counter
6. FSV Box

### Abbreviations Used.

1. BUT Board Under Test
2. UUT Test Chassis
3. FSV Factory Selected Value
4. wrt With Respect To

### Notes.

1. Unless otherwise specified, scope earth and/or DMM Lo should be connected to either TP503 or D513 anode during measurements on the BUT.
2. References to Left (LH), Right (RH), Front (FR) etc. should be applied to the view from the front of the test chassis.
3. A tick list should be raised (Page 5 of this procedure.) as testing of each assembly commences. The test procedure should be carried out in the sequence listed, faults recorded and rectified as they occur.
4. Ensure the board is at the latest ECO state.
5. Safety glasses should be worn throughout this procedure.

### Procedure

- 1.0. Preliminary Checks.
  - 1.1. Visually check the board for short circuits and components correctly fitted. Pay particular attention to polarised components.
  - 1.2. Check that FSV R511 is not fitted.
  - 1.3. Move TL502 to position B (rear) and TL501 to position B (right).

- 1.4. Fit the EUT into the test chassis and connect PL5.
- 2.0. -15V and +5V Supplies.
  - 2.1. Set the load to 5V, Lo load. Connect the load +ve lead to the front pin on TL502. Connect the -ve lead to TP503.
  - 2.2. Set DMM to DCV Autorange. Connect DMM +ve lead to TP504 wrt load Lo test point.
  - 2.3. Switch on UUT. If DMM reads more +ve than -10V switch off immediately and investigate fault. Check DMM reads between -15V and -16V.  
Check for overheating components.
  - 2.4. Move DMM Hi lead to Load Hi test point. Check DMM reads between +4.85V and +5.15V. Note reading. (Use A-B on DMM).  
Switch test load to Hi load and check that voltage changes by less than 0.050V.  
Deselect A-B on DMM.  
Switch load to S/C and check that DMM reads less than 3V.  
Switch off UUT.
- 3.0. 17V Supply.
  - 3.1. Transfer load +ve lead to the left hand pin of TL501 and the -ve lead to TP501.
  - 3.2. Set load to 17V, lo load.  
Switch on UUT. Check DMM reads between +15.6V and +16.9V.  
Select FSV R511 for +17.10V to +17.17V. (Limits 39K2 to 1M58)  
Note reading (use A-B).  
Switch load to Hi and check the change is less than 0.125V.  
Cancel A-B.  
Switch load to s/c and check DMM reads less than 1.5V.  
Switch off UUT.
  - 3.3. Move TL502 to position A (front) and TL501 to position A (left).
- 4.0. Instrument Supplies.
  - 4.1. Fit PL4, PL6, PL3, PL1 and PL2. Connect DMM +ve lead to TP502 and the -ve lead to TP503.
  - 4.2. Switch on UUT. If DMM reads less than +35V or the displays are excessively bright, switch off and investigate.  
Check DMM reads between +42.75V and +47.25V.
  - 4.3. Transfer Hi lead to PL4.3 and check DMM reads between 7.3V and 8.1V.

- 4.4. Select ACV, autorange on DMM. Check that the voltage between PL4-2 and PL4-4 is between 6.4V and 7.0V. Remove DMM.
- 4.5. Check that the voltage between PL6-1 and PL6-5 is between 30.2V and 31.8V. Remove DMM.
- 4.6. Select DCV autorange on DMM. Connect DMM Hi to D516 anode (0V STBY1) and Lo to TP503. Check that DMM reads less than 100mV.
- 4.7. Transfer Hi lead to D513 cathode, and check that DMM reads between +4.875V and +5.125V. Remove DMM.
- 4.8. Set scope as follows:
- Mode : ADD, CH2 invert (Y1 and Y2 off)  
Y1 and Y2 : 100mV/cm AC coupled  
Trigger mode : Line, AC coupled
- Connect Y1 and Y2 probes either side of R502, earth to D513 anode.  
Check scope shows an asymmetrical waveform approximately 200mV to 400mV pk-pk at frequency 100Hz with no HF ringing.
- 5.0. Processor Clock
- 5.1. Connect frequency counter to TP102 wrt TP503. Check that counter shows between 7.99200MHz and 8.00800MHz. Remove frequency counter.
- 6.0 2.5V Reference.
- 6.1. Connect DMM +ve lead to TP201 and the -ve lead to TP503. Check that DMM reads between +2.4V and +2.5V. Remove DMM.
- 7.0. Power Fail Detector.
- 7.1. Short TP305 to TP503 and check that the display goes blank and then returns to its powered up state upon removal of the short.
- 8.0. Clear cal stores
- 8.1. Slide switch on the rear panel to the right hand position to enable CAL.
- 8.2. Connect the temporary battery +ve lead to R533 and the -ve lead to E502.

- 8.3. On UUT, press CAL and check that the left hand display shows the CAL legend.  
Follow the sequence of key strokes:-  
Press Spcl, Yes, ClrNV, All. The right hand display will display: Writing New BITSUMS When this message disappears press Caltrig.  
The right hand display will display: NV Ram Clear in Progress. When this message disappears press Quit twice. Press Date, and check that the right hand display shows 12.12.81.12.12. Then press Quit, Due, and Quit twice.
- 9.0. Operational Test.
- 9.1. Press Test and from the menu select OPER. The UUT will now step through the various tests and on successful completion will display "OPER TEST COMPLETED".  
Press ACV.
- 10.0. External Trigger.
- 10.1. Press ExtTrig. Momentarily short E204 to TP503 and check that the LED on the A to D board flashes. Press ExtTrig to deselect.
- ALL TESTS COMPLETE
- 11.0. Switch off UUT. remove temporary battery and solder R511.

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Serial No.:-

Operator:-

- 1. Preliminary Checks. .... ( )
- 2. -15V and +5V Supplies. .... ( )
- 3. 17V Supply. .... ( )
- 4. Instrument Supplies. .... ( )
- 5. Processor Clock. .... ( )
- 6. 2.5V Reference .... ( )
- 7. Power Fail Detector. .... ( )
- 8. Clear Cal Stores. .... ( )
- 9. Operation Test. .... ( )
- 10. External Trigger. .... ( )
- 11. Remove Battery. Solder R511 .... ( )