Specification # 5520-ES-318967
May 28, 2013
Rev. A

Fermi National Accelerator Laboratory
Batavia, IL 60510

Electrical Inspection Procedure:

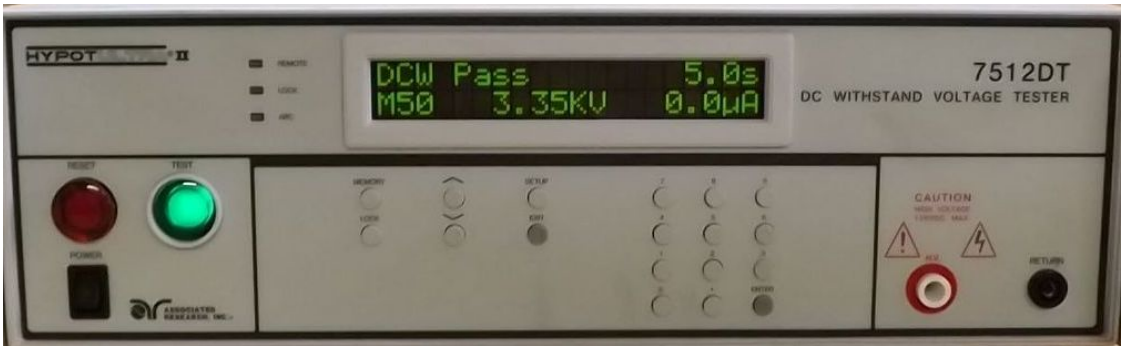
D.C. Voltage Hipot Test

Prepared by: W. Isiminger, J. Szal

Title	Signature	Date
TD/Q&M Process Engineering	***Jan Szal*** Jan Szal/Designee	***5/28/2013***
TD/MS Engineer	***Luciano Elementi*** Luciano Elementi/Designee	***5/28/2013***
TD/MS Production Supervisor	***Oliver Kiemschies*** Oliver Kiemschies/Designee	***5/28/2013***
TD/MS Manager	***George Velev*** George Velev/Designee	***5/28/2013***

1. Scope

1.1. This general document describes the electrical inspection procedure: DC Voltage Hipot Test using HypotULTRA II MODEL 7512DT.



2. Supporting Documentation

2.1. For safety, setup and proper operating procedure of the equipment refer to: 464127 HypotULTRA II MODEL 7512DT OPERATION AND SERVICE MANUAL and 333865 Generic Hipot Procedure/Hazard Analysis.

3. Safety Precautions

3.1. Only authorized and trained personnel can operate the equipment.

3.2. Considerable amount of electrical charge is supplied to the device during the testing procedure.

3.3. Becoming in contact with the Hi-voltage during the test is potentially dangerous and could be lethal.

3.4. If the device is not properly discharged after the test the stored energy in the form of electrical charge can also be potentially dangerous and could be lethal.

4. Initial set-up

4.1. Ensure a safety (red) warning light is placed at the far end of the unit being tested.

4.2. If you are unable to see any area around the device you must rope-off the area or use additional person(s) to guard that area to prevent contact by casual observers during testing.

4.3. The unit being tested should be insulated from ground if possible.

4.4. Ensure all leads of the unit being tested are Insulated from ground and each other.

5. Testing Procedure

5.1. Ensure the Hipot tester is within calibration.

5.2. Connect the Hipot tester to the ac power source (if not already connected).

5.3. Turn the unit ON (if not already ON). 

5.4. Press the red RESET 

button to ensure the hi-voltage is OFF.

5.5. Set the test voltage, current (**Note: the current limit should never be set to more than 5µA unless specifically requested by the test specification**) and ramp time to specified values. Use longer ramp values on highly capacitive devices.

5.6. Connect the black lead to a suitable ground or the second named circuit element in the test specifications (if ground is not specified as one of the Circuit elements). 

5.7. Connect the power lead (high voltage/red) to the first named circuit element on the unit being tested. 

5.8. Ensure the area is free and clear and no one is in contact or in close proximity to the device being tested.

5.9. Press the green TEST 

button and observe the following precautions:

5.9.1. Watch the ampere meter while the voltage is increasing if the value hits the current limit before the test voltage is reached, you may have to increase the voltage ramp time to offset for the capacitive load.

5.9.2. If the voltage and amperage readings are not within the specified limits, BREAKDOWN or ARK are detected, initiate a discrepancy report.

5.9.3. Record the amperage readings in the applicable traveler or vendor/requisitioner documentation.

6. Post Testing Procedure

6.1. After testing each position, use the following procedure to short (or discharge) the unit under test:

6.2. Press the red RESET 

button to ensure the hi-voltage is OFF

6.2.1. Attach a jumper lead between the black (power-lead) and red (power-lead) attach point.

6.2.2. Leave the jumper in place for at least thirty seconds.

6.2.3. Upon completion of the Hipot testing of all required positions, disconnect all leads and perform the following steps:

6.2.3.1. Connect jumper leads from all previously energized coil elements to a common Ground point (this will discharge all the coil elements).

Warning: Previously discharged coil elements may have been re-charged by capacitive coupling to the coil elements tested later in the test.

6.2.3.2. Leave the jumpers in place for two minutes before disconnecting.