**D R A F T, rev.4**

**June 19, 2017**

**Electrical Quality Assurance**

**MQXF Magnet Tests**

Comments:

* Hipot test: set the maximum leakage current threshold to **1 µA** (10 µA when 1 µA doesn’t work). The maximum leakage current must not be exceeded neither during Ramp up nor at Plateau (30 s Plateau).

Test parameters:

* Magnet inductance (L&Q) measurements at 20 Hz, 100 Hz and 1000 Hz
* Magnet resistance (R) measurements at 1 A
* Impulse tests with direct polarity (High OL – Ground IL) at 500 V, 1000 V, 1500 V, 2000 V and then with 100 V steps up to 2500 V, 2 test pulses applied at each step
* Impulse tests with reversed polarity (High IL – Ground OL) at 500 V, 1000 V, 1500 V, 2000 V and then with 100 V steps up to 2500 V, 2 test pulses applied at each step

Tests at room temperature, magnet not connected to the header assembly yet:

1. Coil-to-Gnd Hipot 3700 V
2. Heater-to-Coil Hipot 3000 V
3. Heater-to-Gnd Hipot 2500 V
4. Impulse (discharge) test on coil 2500 V

Tests after cool-down to 1.9 K:

1. Coil-to-Gnd Hipot 1800 V
2. Heater-to-Coil Hipot 2300 V
3. Heater-to-Gnd Hipot 1000 V

**Attachment**

*Final for Fabrication:*

 *Coil RLQ*

 *Voltage tap & heater resistances,*

*Impulse test at 2500 V*

*Hipots:*

*Coil-to-Heaters 3200 V*

*Coil-to-Endshoe 1000 V*

*Coil-to-Central Island 500 V*

*Heater-to-Endshoe 2500 V*

*Endshoe-to-Endshoe 1000 V*