

The effect of RG-180 cable length on purity monitor signal levels.

Revised: 04Nov09 WFJ

Test done 30 Oct 2009 using material test station (Luke) with PM DAQ.

Reference cable, 1.4 Meters
Anode signal 12 mV
Cathode 10 mV
Lifetime 5.137 mSec

15 Meter cable (Percentage is from the average of reference cable levels before and after test cable run)
Anode 7 mV, 58.3%
Cathode 6 mV, 60%
Lifetime 4.439 mSec, 85.2%

Reference cable, 1.4 Meters
Anode 12 mV
Cathode 10 mV
Lifetime 5.274 mSec

Test done 02 Nov 2009 using material test station (Luke) with PM DAQ. Lifetimes decreasing due to Argon filter tests.

Reference cable 1.4 Meters
Anode signal 7 mV
Cathode 8 mV
Lifetime 1.847 mSec

10 Meter cable (Percentage is from the average of reference cable levels before and after test cable run)
Anode 4.5 mV, 66.7%
Cathode 5 mV, 64.5%
Lifetime 1.579 mSec, 87.2%

Reference cable, 1.4 Meters
Anode 6.5 mV
Cathode 7.5 mV
Lifetime 1.774 mSec

5 Meter cable (Percentage is from the average of reference cable levels before and after test cable run)
Anode 5.5 mV, 84.6%,
Cathode 6.5 mV, 86.7%
Lifetime 1.674 mSec, 95%

Reference cable, 1.4 Meters
Anode 6.5 mV
Cathode 7.5 mV
Lifetime 1.748 mSec

The effects of changes in cable lengths are not linear in this series of tests. This may be due to the instabilities in the material test station that were happening on the 2nd of November. It is recommended that this test should be redone with a stable LAr system and signal levels of 10mVolts or greater.

Test done 04 November 2009 using material test station (Luke) with PM DAQ.

Reference cable, 1.4 Meters

Anode signal 9.298 mV

Cathode 7.688 mV

Lifetime 8.845 mSec

15 Meter cable (Percentage is from the average of reference cable levels before and after test cable run)

Anode 4.917 mV, 53.7%

Cathode 4.449 mV, 58.5%

Lifetime 6.832 mSec, 79.4%

Reference cable, 1.4 Meters

Anode 9.015 mV

Cathode 7.522 mV

Lifetime 8.366 mSec

10 Meter cable (Percentage is from the average of reference cable levels before and after test cable run)

Anode 5.902 mV, 66%

Cathode 5.200 mV, 69.7%

Lifetime 8.622 mSec, 99%

Reference cable, 1.4 Meters

Anode 8.878 mV

Cathode 7.395 mV

Lifetime 9.002 mSec

5 Meter cable (Percentage is from the average of reference cable levels before and after test cable run)

Anode 7.190 mV, 81.7%,

Cathode 6.166 mV, 83.6%

Lifetime 8.676mSec, 104%

Reference cable, 1.4 Meters

Anode 8.732 mV

Cathode 7.346 mV

Lifetime 7.687mSec

When the series of test done on the 4th of November where done the LAr material test station was very stable with good lifetimes. The readings taken on the 30th of October and the 2nd of November where done by manually reading the amplitude of the scope trace. The readings on the 4th of November where done by using the readout of the DAQ system. There is a 5% or less difference in the percentages from the average of reference cable levels before and after test cable runs.