MMPC Test Database Variables

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Hall-D meeting, 06 September, 2011.

STAGE 1: MPPC Microscope Inspection Procedures

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STAGE 1: MPPC Microscope Inspection Procedures

1. Name of the operator, the date and the hour the procedure is carried out.
2. ID (it will serve as a database key) number of the MPPC.
3. The photo(s) of the MPPC.
4. Scanned version of the documentation of the MPPC.
5. Flag indicating whether the photo-sensitive area of the MPPC is greater than 140mm2, with notes.
6. Flag indicating whether the photo-sensitive area is in the correct location with respect to the chip border, with notes.
7. Flag indicating whether the macroscopic active area coverage is greater than 75%, with notes.
8. Flag indicating whether the output connector pins have the correct spacing and are placed in the correct location, with notes.
9. Flag indicating whether there are visible mechanical damages or abnormal mechanical conditions, with notes.
10. Flag indicating if the MPPC should pass to the PDE and Pulse shape measurement procedure, with notes.

STAGE 2: MPPC PDE and Pulse Shape Measurement Procedure

For a given MPPC ID:
Before starting:
1. Name of the operator, the date and the hour the procedure is carried out.
2. Ambient temperature.

During procedure:
3. 2(photo-diode and photo-tube)+16(cells)x(4096*12-bit ADC counts).

After:
4. Calculate and save 16(cells)x(average of the distribution; RMS of the distribution; pedestal position; pedestal RMS; PDE)

STAGE 3: MPPC Dark Box Procedures

Before:
1. Name of the operator, the date and the hour the procedure is carried out.
2. The initial temperature (room temperature).
3. Flag indicating that all electronic power supplies and the chiller and the dry nitrogen purge gas were turned off, with notes.
4. Notes about light leak test.
5. Temperature measurements from 20 sensors before and after Dark Box procedure.

Dark Current Studies
6. 32(MPPC)x3(temperature)x(values of voltage vs. current). Each graph of voltage vs. current consists of set of measurements of current for different voltages step by step increasing from 0.5V to ~73V meanwhile the current reaches to 20microA. The time interval the measurements are performed is saved as well.
7. After, 32(MPPC)x3(temperature)x(break down voltage and operation voltage).

MPPC ADC count measurements with light source off (pedestal observation)
8. 32(MPPC)x3(temperature)x(4096*12-bit ADC counts).
9. Afterwards: 32(MPPC)x3(temperature)x(the position of the pedestal; RMS of the pedestal; dark rate; dark current; noise ratio; noise excess factor; gain at nominal operating voltage).

MPPC ADC count measurements with light source on
10. 32(MPPC)x3(temperature)x(4096*12-bit ADC counts).
11. Afterwards: 32(MPPC)x3(temperature)x(the position of the pedestal; RMS of the pedestal; the position of the second peak; RMS of the second peak; gain; rise time; pulse width).