

## Report on Tests Conducted on CAEN SY4527 Crates and A7030TN High Voltage Modules

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The Detector Support Group developed voltage stability, current stability, current trip, and voltage ramp tests to determine whether the CAEN SY4527 crates and A7030TN high voltage modules for Hall C performed as per manufacturer's specifications. Thirty-four modules were tested, each with 36 channels.

All 36 channels of each module were connected to 2 M $\Omega$  resistors for testing. The tests indicated that module #297 is non-functional and several other modules had pin issues that had to be repaired prior to testing.

Voltage stability tests were performed over a 24 hour period to verify that the channels of each module operated within specifications during this period. Channel 13 of module #349 did not ramp up above 75 V. All channels of module #353 were outside specifications.

Current stability tests were performed over a period of 24 hours. Readback current of channel 9 for 31 of the modules tested was on average  $\sim 1.6$   $\mu\text{A}$  above manufacturer's specification. Two modules could not be tested—module #297 (non-functional) and module #299 (pin issues).

For the current trip test, each channel's current limit and the time-over-threshold were set to 740  $\mu\text{A}$  and 1 s, respectively. Channels of all modules were ramped from 0 V to 1500 V. Two channels—channel 15 of module #128 and channel 13 of module #349—did not trip. A few channels tripped after being in an over current state for longer than 1 s, and a few failed to ramp down to 0 V or 0  $\mu\text{A}$ .

For the voltage ramp test, all channels of each module were simultaneously ramped up, then down, three times (from 0 V  $\rightarrow$  1500 V  $\rightarrow$  0 V). This test was to confirm that there were no ramp up or down latencies between channels. No latencies were observed, however, channel 13 of module #349 failed to ramp above 75 V.

In summary, all CAEN high voltage modules, with the exception of module #297 and module #299 (stability test unable to be performed), were tested. Most of the modules were within manufacturer's specifications. Modules with issues will be sent back to CAEN for repairs.