

DSG-NPS R&D Meeting Minutes

Date: April 06, 2021

Time: 11:00AM – 01:30 PM

Attendees: Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, Marc McMullen, and Amrit Yegneswaran

1. HV Supply Cable fabrication and testing

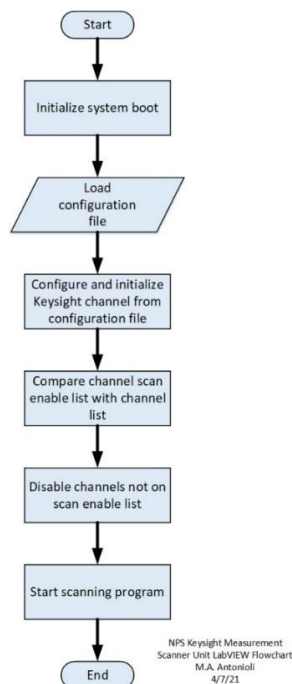
Peter Bonneau, Aaron Brown, Brian Eng, George Jacobs, Mindy Leffel, and Marc McMullen

1. Testing five HV Supply cables; no load at 2400 V
 - Current observed $\sim 3 \mu\text{A}$
 - Plan to turn off two channels of each module and observe the current of adjacent channels to see whether the current in the adjacent channels changed due to the potential difference
 - Connector channel #: 0,1,2,...,16,17,18,...,33,34,35 (e.g. turn off channel 17 and observe whether the currents changed due to the potential difference between channels 16 and 17, and 17 and 18)
2. Plan to generate strip charts from 2400 V data for each of the five cables tested
3. Assembling prototype plastic test chassis
 - Screws provided with chassis to connect top and bottom panels snapped
 - Will reassemble chassis with larger screws
4. A more robust test chassis (possibly thicker plastic, or metal) will be procured

2. Hardware Interlock System development

Mary Ann Antonioli, Peter Bonneau, and Aaron Brown

1. Reviewed first draft of flowchart for LabVIEW subroutine for scanning with the Keysight measurement unit



Flowchart for the Keysight measurement unit scanning subroutine

2. Reviewed updated signal list for Keysight scanning program; 179 signals total

Location	Signal Type	Qty	Sensor	Comments
Crystal Array	Temperature	112	Type K thermocouples	Within NPS crystal array (56 front - 56 Rear)
Crystal zone cooling circuit	Temperature	4	4-wire RTDs	Dual sensors on input and output coolant manifolds
Electronics zone cooling circuit	Temperature	4	4-wire RTDs	Dual sensors on input and output coolant manifolds
		4		Dual sensors on top and bottom heat exchangers
Detector internal frame	Humidity	20	Relative humidity (voltage output)	Dual humidity sensors in 10 locations
	Temperature	20	4-wire RTDs	Dual temperature sensors in 10 locations
In NPS frame	Switch on/off	2	Coolant leak sensor	Monitors for leaks in the cooling circuits
On frame access panel	Switch on/off	2	Contact micro switch	Protects personnel from HV when servicing
Chiller shielded enclosure	Voltage	1	N/A	Monitors humidity sensor power supply (+5V)
External ambient (Hall)	Temperature	2	4-wire RTDs	
	Humidity	2	Relative humidity (voltage output)	
External to chiller in radiation shielded enclosure	Coolant Temperature	1	4-wire RTD	Monitors electronics zone chiller
	Coolant Pressure	1	Pressure (voltage output)	
	Coolant Flow	1	Flow (voltage output)	
External to chiller in radiation shielded enclosure	Coolant Temperature	1	4-wire RTD	Monitors crystal array zone chiller
	Coolant Pressure	1	Pressure (voltage output)	
	Coolant Flow	1	Flow (voltage output)	

112	Total Type K thermocouples
36	Total RTD's
22	Total humidity sensors (voltage)
9	Total flow/pressure/other (voltage)

179 Total Keysight Channels

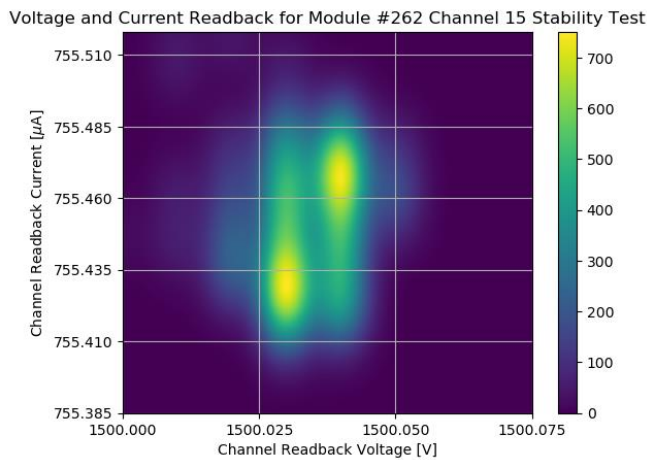
Updated signal list for Keysight scanning program

3. Reviewed channel scan enable list for Keysight scanning program
- List details which channels of all Keysight multiplexers will be used in scanning program

3. Voltage and Current Density plots

Aaron Brown and George Jacobs

1. Resolved plot size issue; auto-saved plots are appropriate size and all axes titles and main title are fully visible



Voltage and current density plot for module #262 channel #15 indicates voltage readback has a resolution of 10 mV

2. Plots will be generated for each channel of all CAEN A7030TN modules

4. VME LED Driver Module

Aaron Brown

1. Reviewed manual section 4 – Specification Sheet