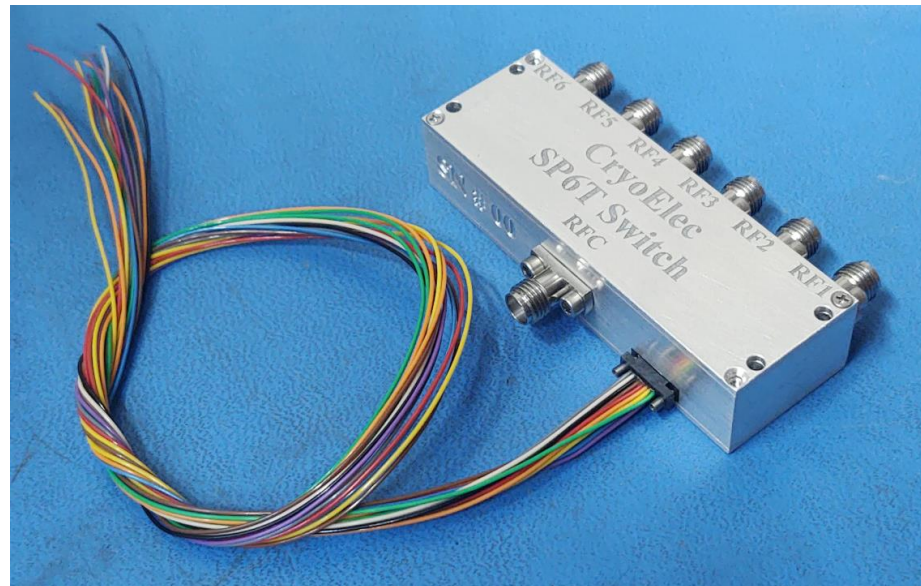


CryoElec SP6T CryoSwitch

12/2023



SP6T SN#09



Hamdi Mani
CryoElec LLC
Chandler, Arizona, USA

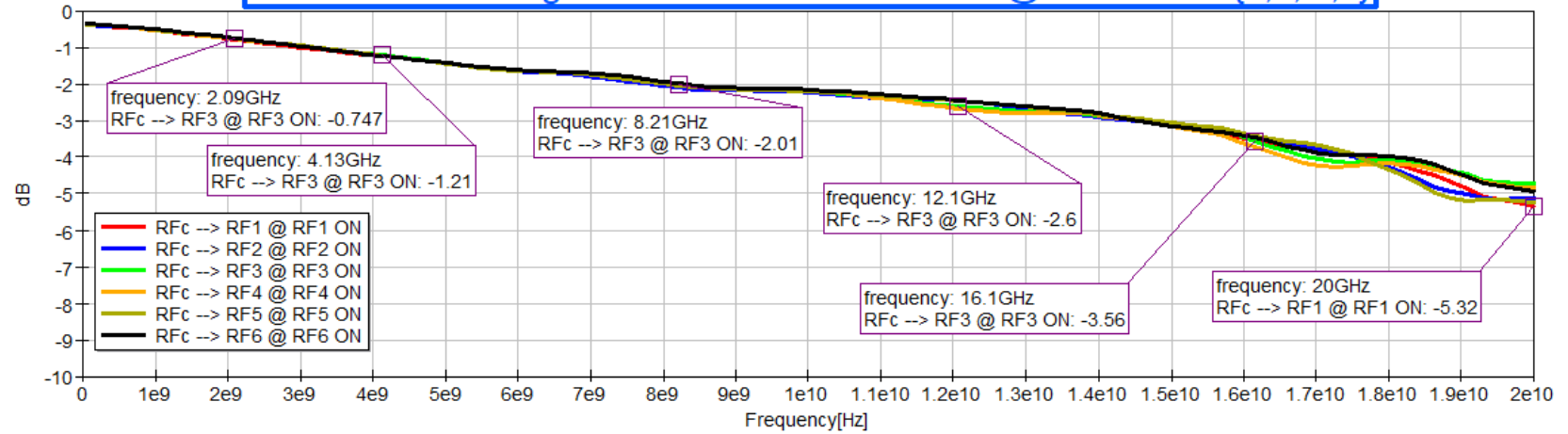
Phone: (626) 676 0143

Email: info@CryoElec.com hamdi.mani@gmail.com

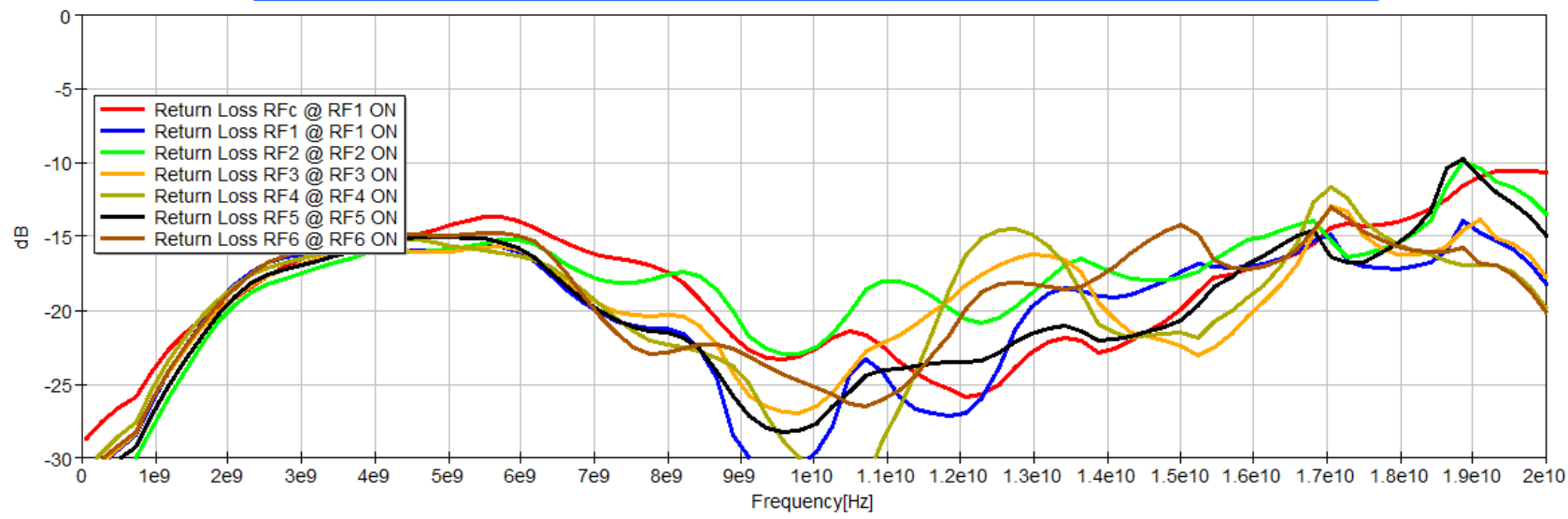
Web: www.CryoElec.com

SP6T CryoSwitch: Insertion & Return Loss @ 300 Kelvin

CryoElec SP6T CryoSwitch SN#09 Insertion Loss @ 300 Kelvin
 Transmission through 6 Channels: RFc --> RFn @RFn ON n={1,2,...,6}

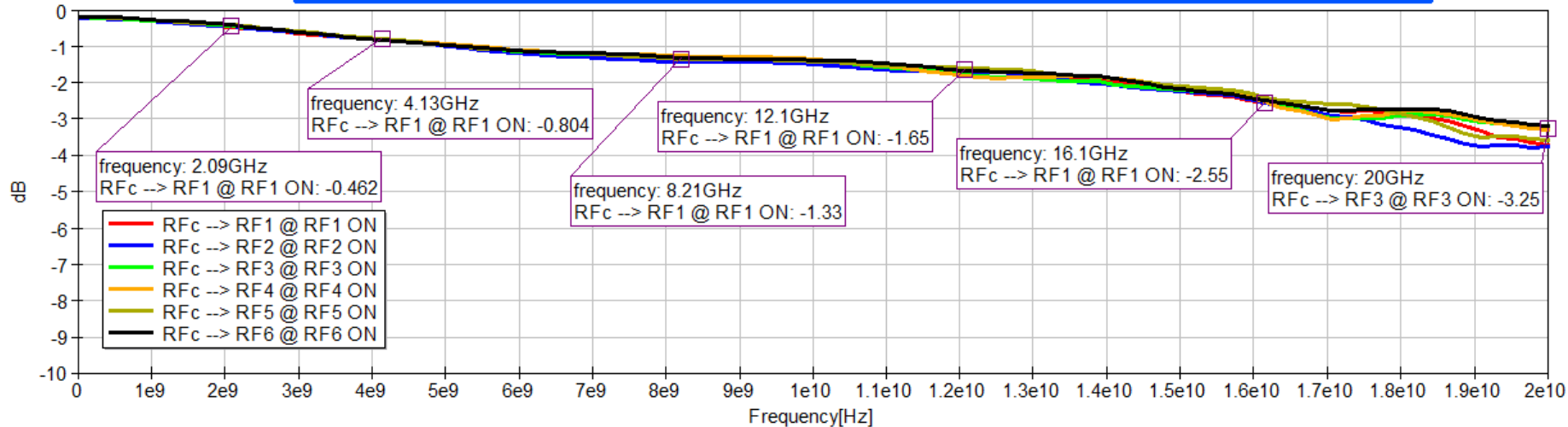


CryoElec SP6T CryoSwitch SN#09 Return Loss @ 300 Kelvin
 Return Loss @RFn ON n={1,2,...,6}

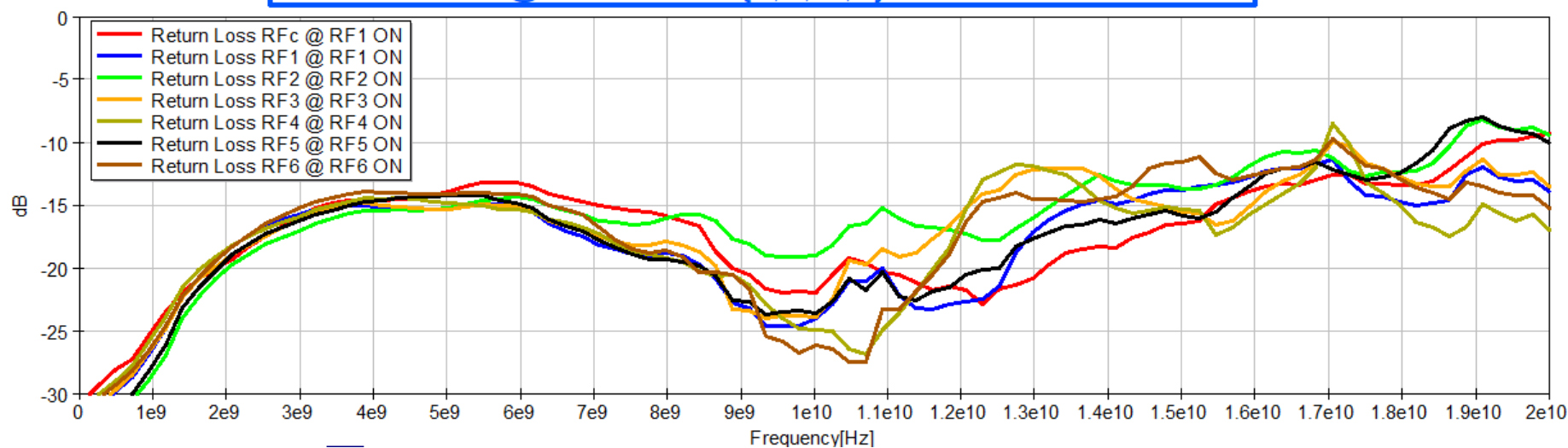


SP6T CryoSwitch: Insertion & Return Loss @ 15 Kelvin

CryoElec SP6T CryoSwitch SN#09 Insertion Loss @ 15 Kelvin
 Transmission through 6 Channels: RFc --> RFn @RFn ON n={1,2,...,6}

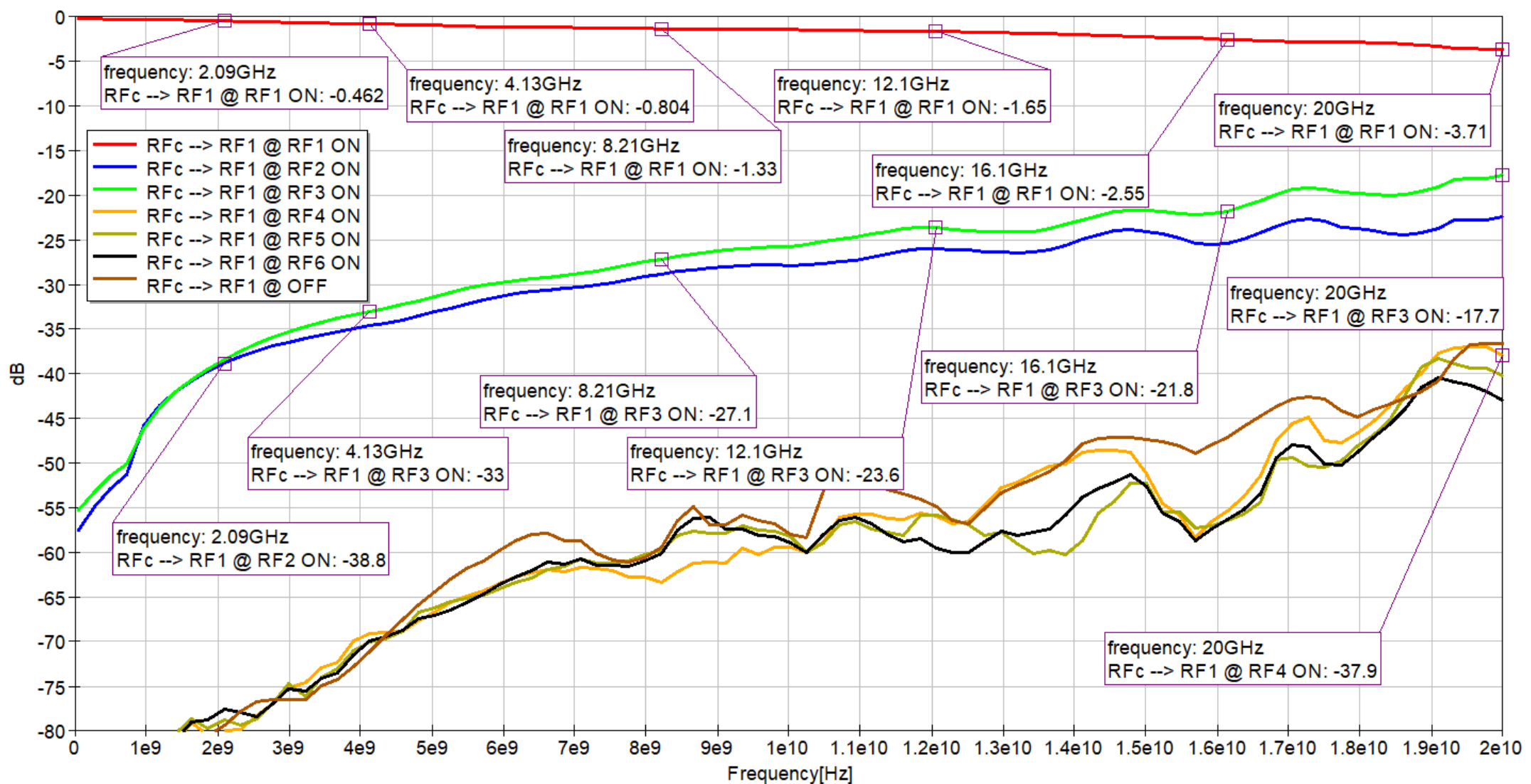


CryoElec SP6T CryoSwitch SN#09 Return Loss @ 15 Kelvin
 Return Loss @RFn ON n={1,2,...,6}



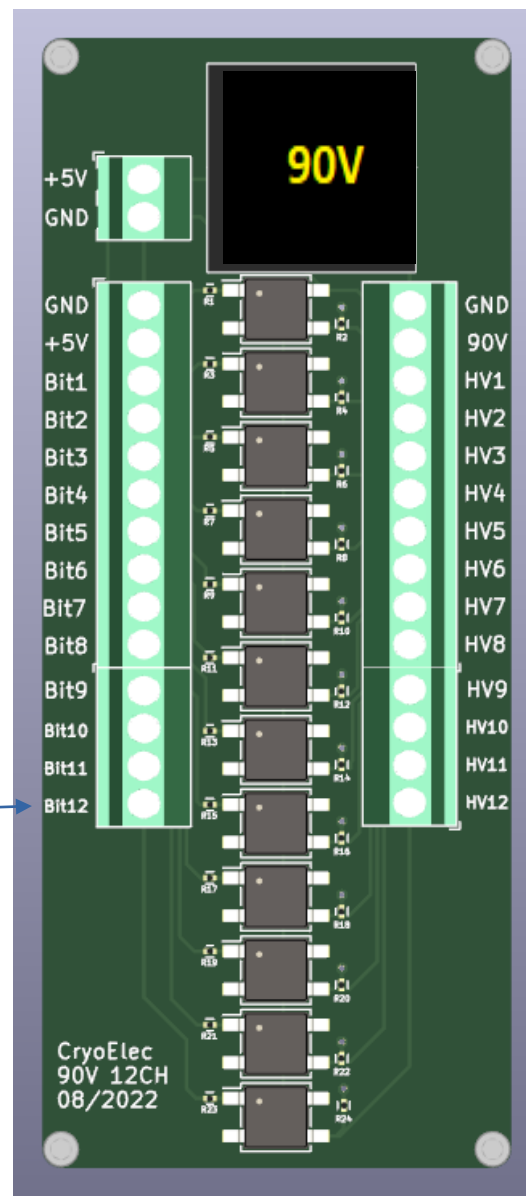
SP6T CryoSwitch: Insertion Loss and Isolation @ 15 Kelvin

CryoElec SP6T CryoSwitch SN#09 Insertion Loss @ 15 Kelvin
 Transmission: RFc --> RF1 @ RFn ON n={1,2,...,6}



SP6T CryoSwitch: 90V Control Board and Truth Table

CTRL PCB[V]	CTRL PCB [mA]								
5V	43mA	All Vg OFF	Channels OFF						
5V	57mA	4 x Vg ON	1x RF CH ON						
NanoD-15 Pin#	PCB Labels	HD-15 Pin	Function	RFC -->RF1	RFC -->RF2	RFC -->RF3	RFC -->RF4	RFC -->RF5	RFC -->RF6
1	HV1	1	VG1_1	ON	ON	ON	ON	ON	ON
8	HV2	2	VG1_2	ON	ON	ON	OFF	OFF	OFF
12	HV3	3	VG1_3	OFF	OFF	OFF	OFF	OFF	OFF
11	HV4	4	VG1_4	OFF	OFF	OFF	ON	ON	ON
9	HV5	5	VG2_1	ON	ON	ON	OFF	OFF	OFF
10	HV6	6	VG2_2	ON	OFF	OFF	OFF	OFF	OFF
6	HV7	7	VG2_3	OFF	ON	OFF	OFF	OFF	OFF
7	HV8	8	VG2_4	OFF	OFF	ON	OFF	OFF	OFF
4	HV9	9	VG3_1	OFF	OFF	OFF	ON	ON	ON
5	HV10	10	VG3_2	OFF	OFF	OFF	ON	OFF	OFF
3	HV11	11	VG3_3	OFF	OFF	OFF	OFF	ON	OFF
2	HV12	12	VG3_4	OFF	OFF	OFF	OFF	OFF	ON
13	GND	13	GND						
14		14							
15		15							



- HVn Enable/Turned “ON” when Bitn “HIGH” (3.3V -5V) n={1...12}
- Current drawn by each 90V HV line connected to Switch < 10nA
- “OFF” state: 0V: connects to GND (do not Float)
- HV Channels optically isolated from digital control Bits
- Current drawn by controller:
 - 43mA @ 5V (All Channels OFF)
 - 57mA @ 5V (ONE Channel ON – 4 90V gates ON)
- Recommended: Set compliance current (Max Current) to 150mA for 5V supply

SP6T CryoSwitch– Control PCB with Screw Terminals

90V 12CH Ver2

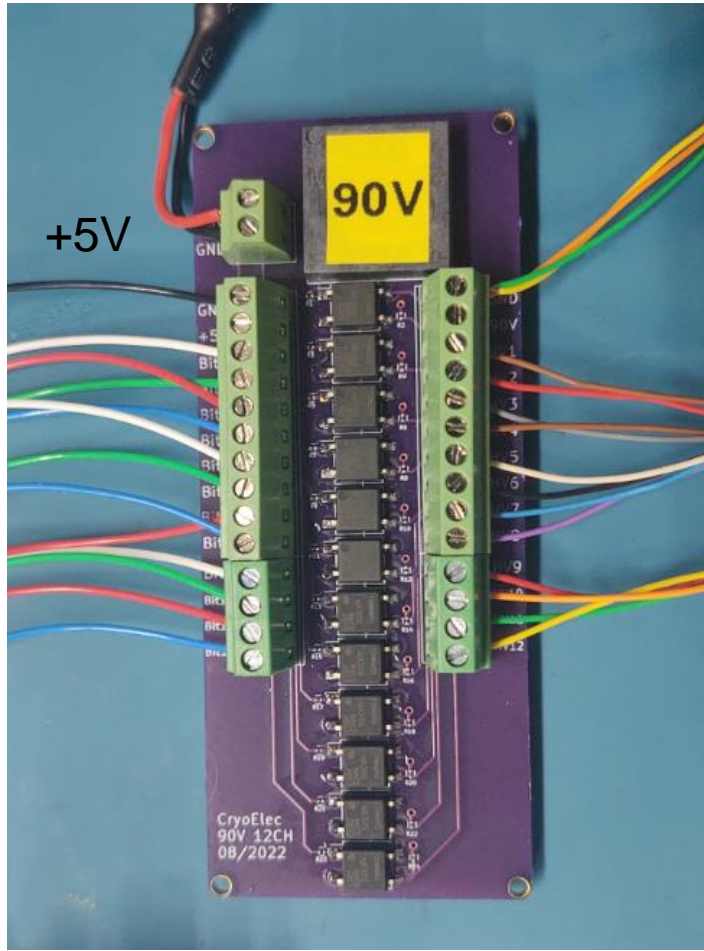
12 Channel 90V CTRL PCB
 Controlled with Raspberry-pi
 PICO (or any other General
 Purpose I/O DAQ card)
 Through a Python Script



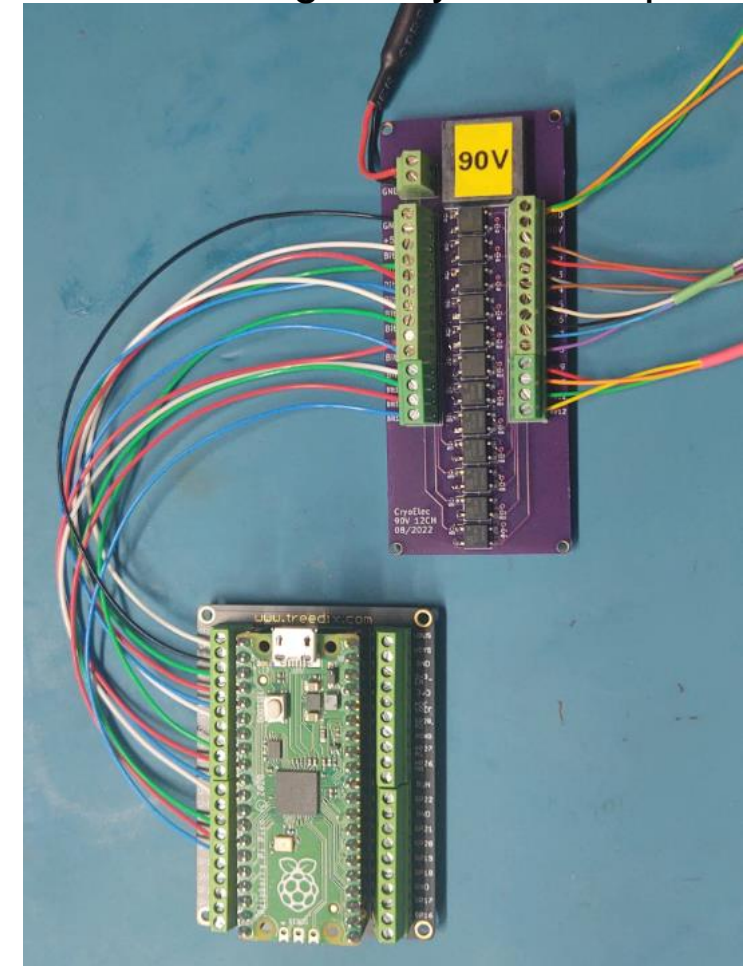
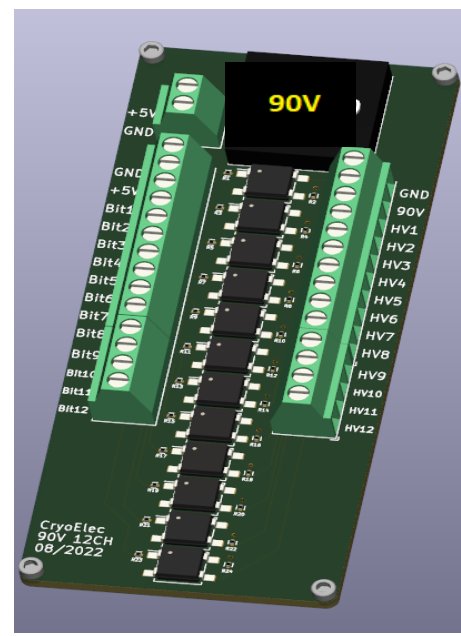
HIGH VOLTAGE

**Warning: 90V High Voltage
 Do Not touch**

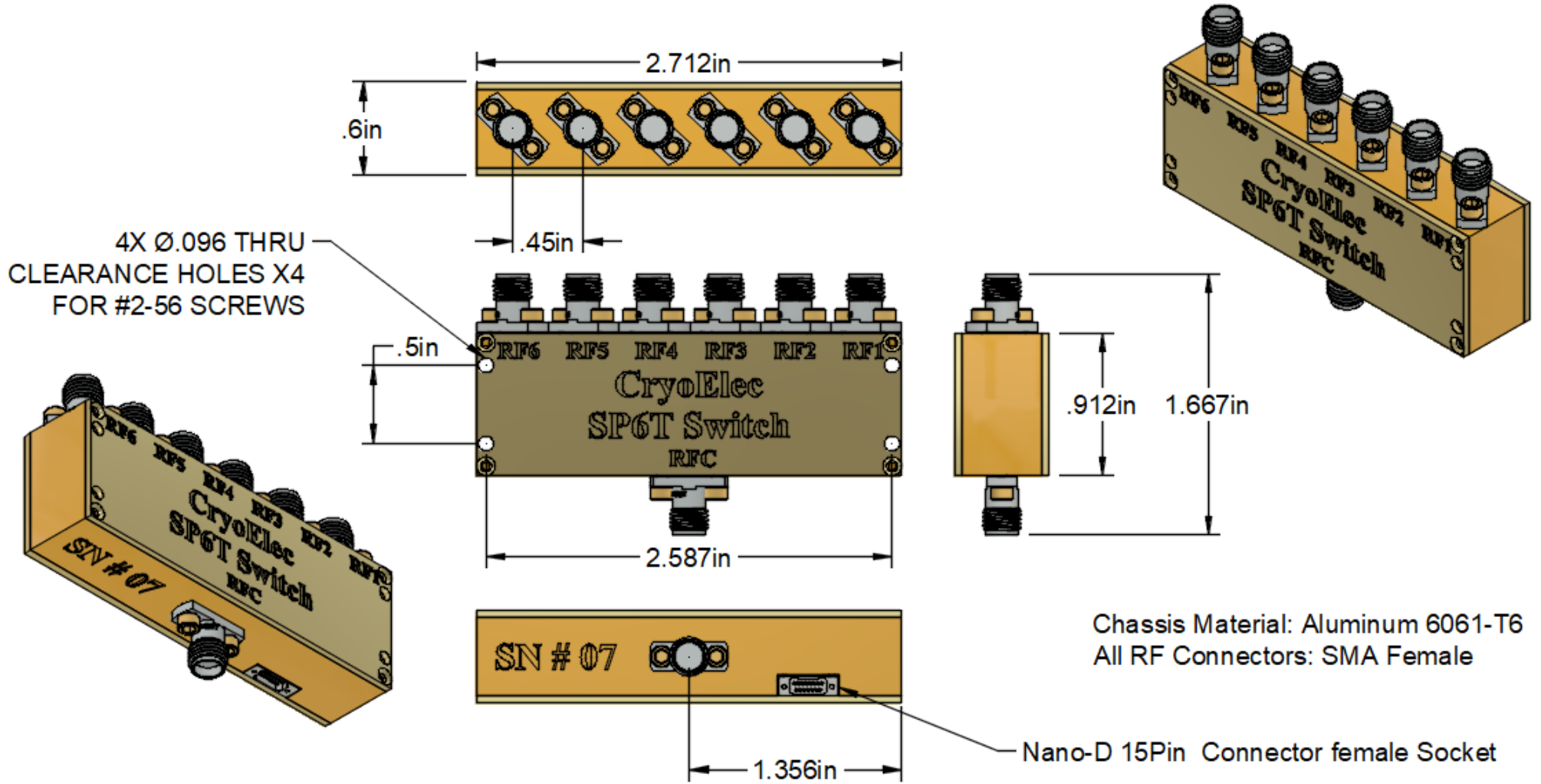
CONTROL
 BITS(12)



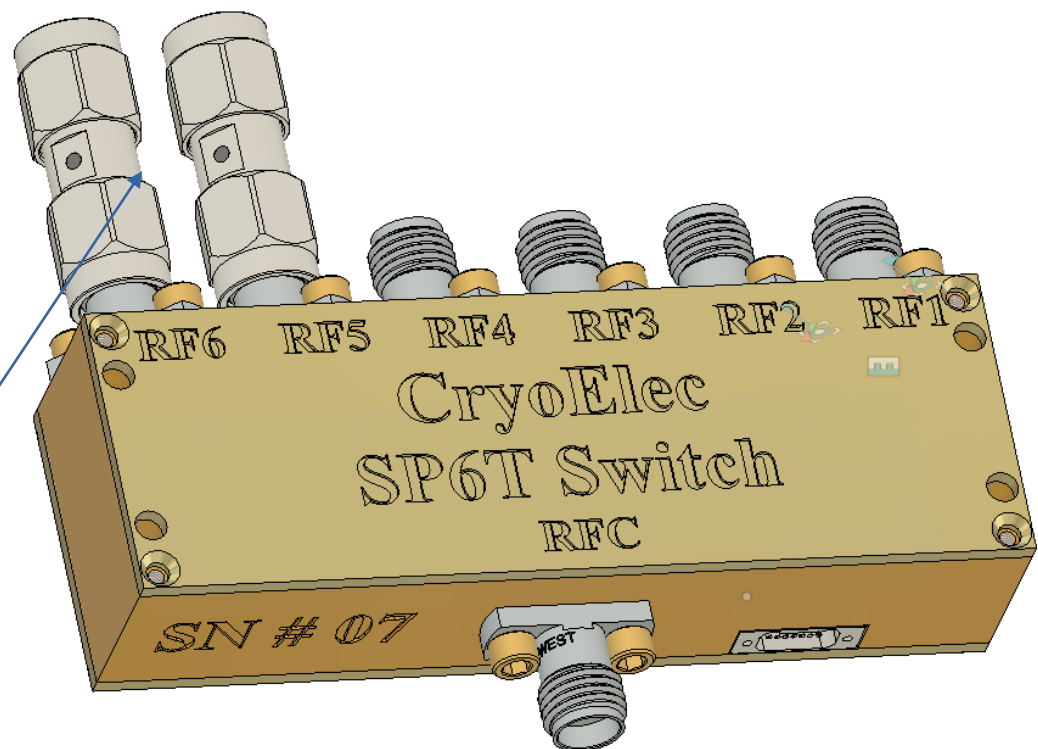
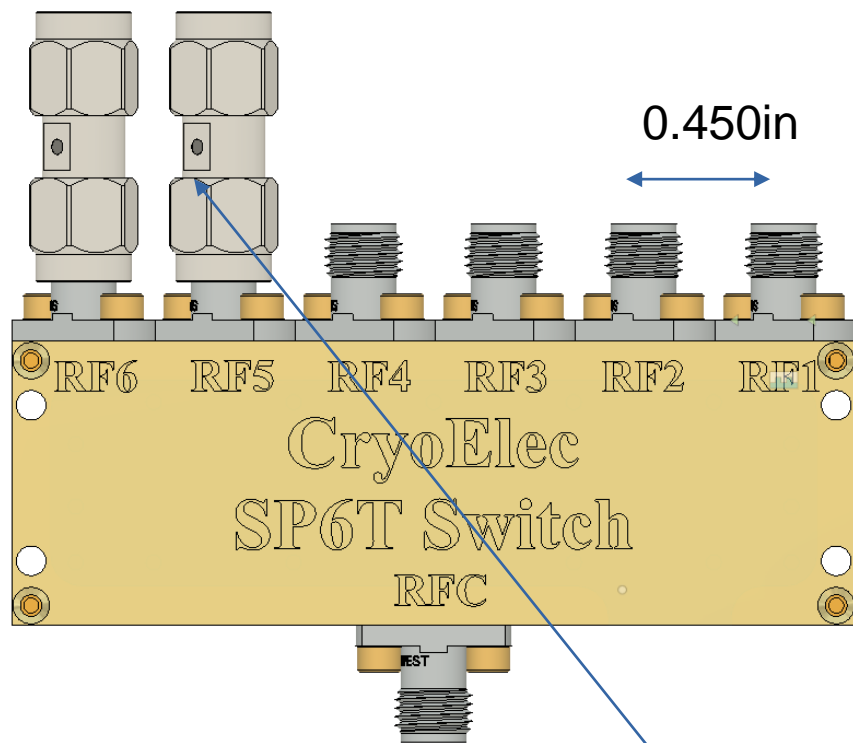
90V
 Outputs
 (12CH)



SP6T CryoSwitch: Mechanical Drawing

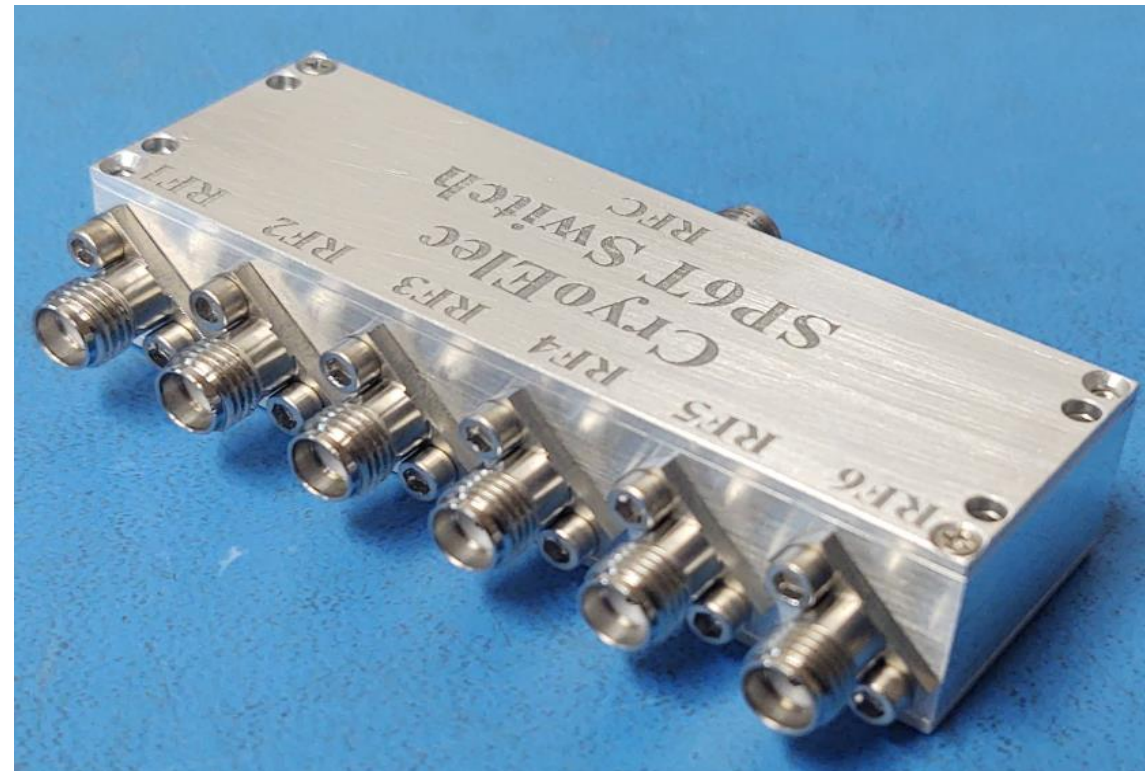


SP6T CryoSwitch: SMA Connectors Pitch: 0.450 in



SMA Male Mating connectors
Enough Clearance to tighten SMA Male connectors with Mini-circuits HT series SMA wrench or similar wrenches:
<https://www.minicircuits.com/pdfs/HT-2-SMA.pdf>

SP6T CryoSwitch: Photos of Chassis





Contact Information

Hamdi Mani
Engineer
CryoElec LLC

Chandler, Arizona 85225
Phone: 626-676-0143

www.CryoElec.com

Info@CryoElec.com

Hamdi.mani@gmail.com