General Update

- SRI transmits today at 17:00

- SPR
  - Ordered cable management for Analog Racks

  - VNA measurement of RFCBs
  - Investigate IF ripples

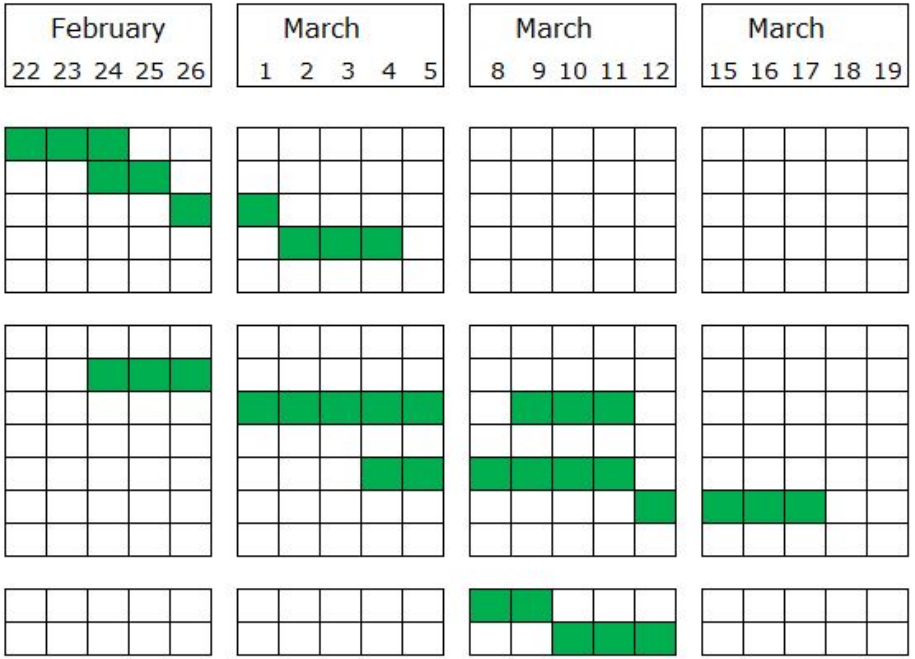
  - Power measurement after RF 4-way splitter
  - Power measurement after RF 4-way splitter using CW

  - H/C measurements with new antennas (repeated)
  - Test Antenna 3C (020)

Feed List		Feed Revision Overview							
Number	Installed Ant.	Tip-Link: R03	Temp S. Isolation	New Harness	Bellow Removed	Cryo Tuned	Firmware 5.4	Gold-Plated	Preconditioned Coax
5C4-002	Feed Lab								
5C4-003	Feed Lab		x	x	x	x	x		
5C4-004	2B	x	x	x	x	x	x	x	x
5C4-005	2A								
5C4-006	4J	x	x	x	x	x	x	x	x
5C4-007	3L	x	x	x	x	x	x	x	x
5C4-008	Feed Lab (1G)		x	x	x	x	x		
5C4-009	Feed Lab		x	x	x	x	x		
5C4-010	Feed Lab	MINEX	x	x	x	x	x	x	MINEX
5C4-011	Feed Lab (3L)	MINEX	x	x	x	x	x	x	MINEX
5C4-012	1K	x	x	x	x	x	x	x	NA
5C4-013	1H	x	x	x	x	x	x	x	x
5C4-014	Feed Lab (2J)	MINEX	x	x	x	x	x	x	MINEX
5C4-015	Feed Lab		x	x	x	x	x		
5C4-016	2E	x	x	x	x	x	x	x	x
5C4-017	Feed Lab		x	x	x	In Progress	x		
5C4-018	2H	x	x	x	x	x	x	x	NA
5C4-019	1C		x	x	x	x			
5C4-020	3C	x	x	x	x	x	x	x	x

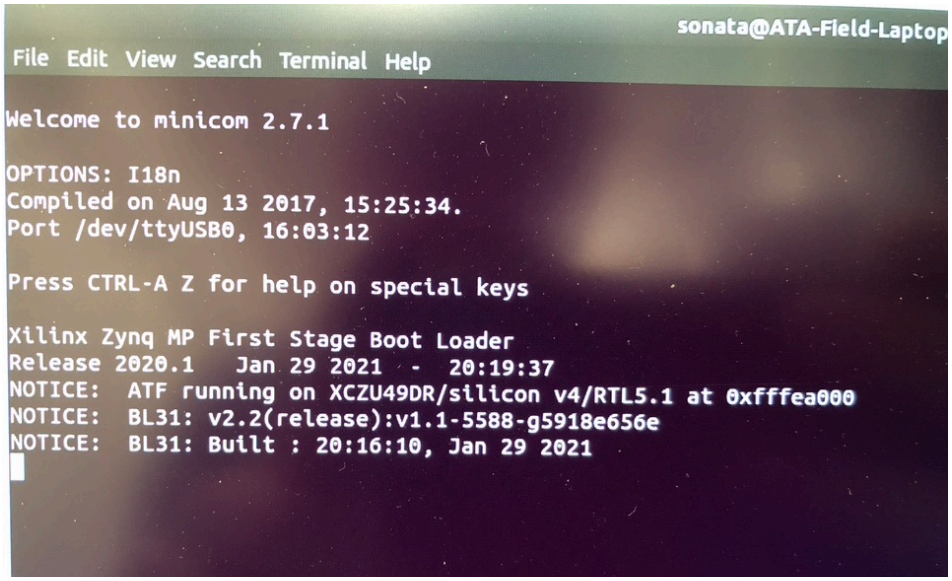
Minex Engineering Schedule for SETI Work:

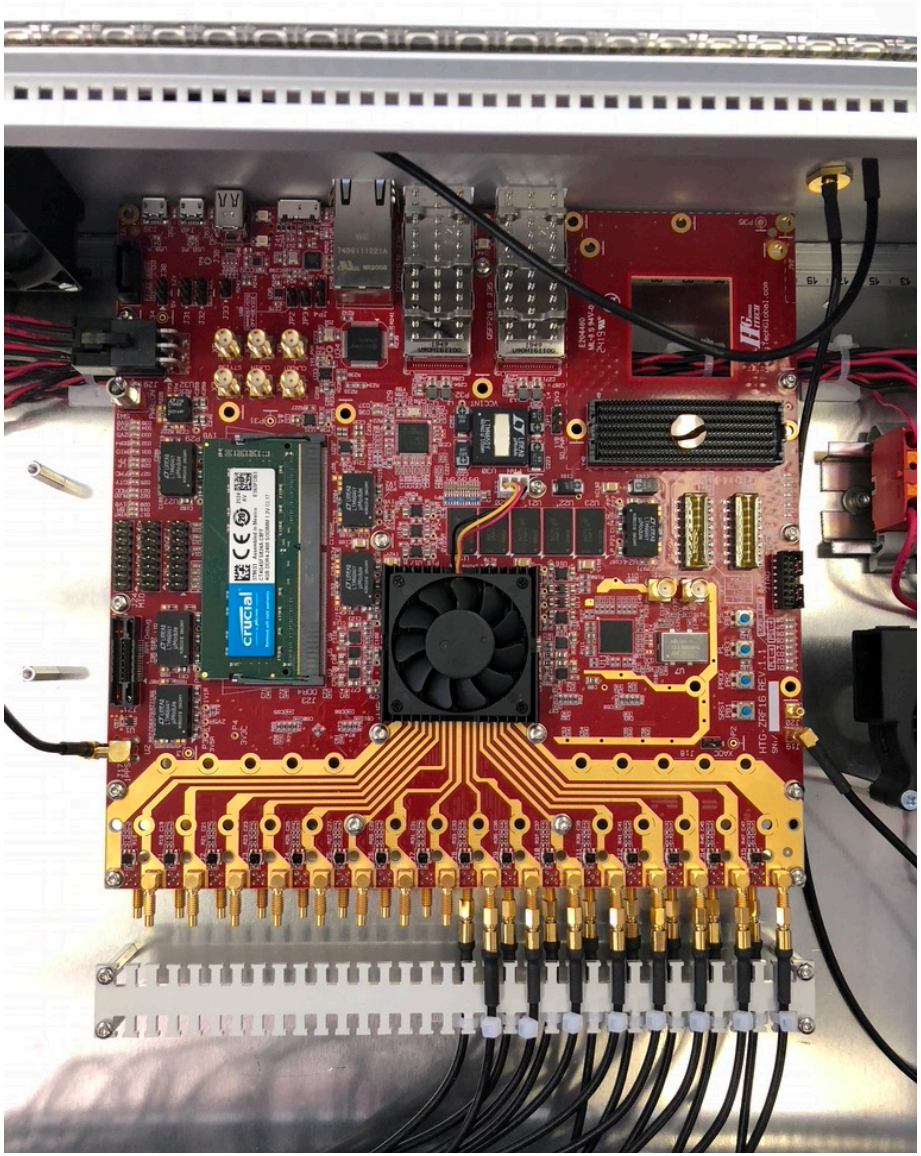
Quote	Purchase	Qty	Description
	PO 3600	40 ea	Fabricate new coax cables.
		3 ea	Install new coax on existing LNAs.
		3 ea	Fabricate new LNA Modules.
		3 ea	Feed complete with Modules & tip links.
			Feed SN 008, 011, 014
			Recive new LNAs and modify coax.
210201A	PO 3626	6 ea	Prep pyramid & arms for plating.
		6 ea	Pyramids & arms to plater.
			Feed SN 001, 003, 010, 016, 017, ???
210202A	PO 3627	6 ea	Fabricate new LNA Modules.
		6 ea	Feed complete with Modules & tip links.
			Feed SN 001, 003, 010, 016, 017, ???
210203A	PO 3628	6 ea	Pyramid, solder and complete.
		6 ea	Arm sets, solder and complete.



RFSoC

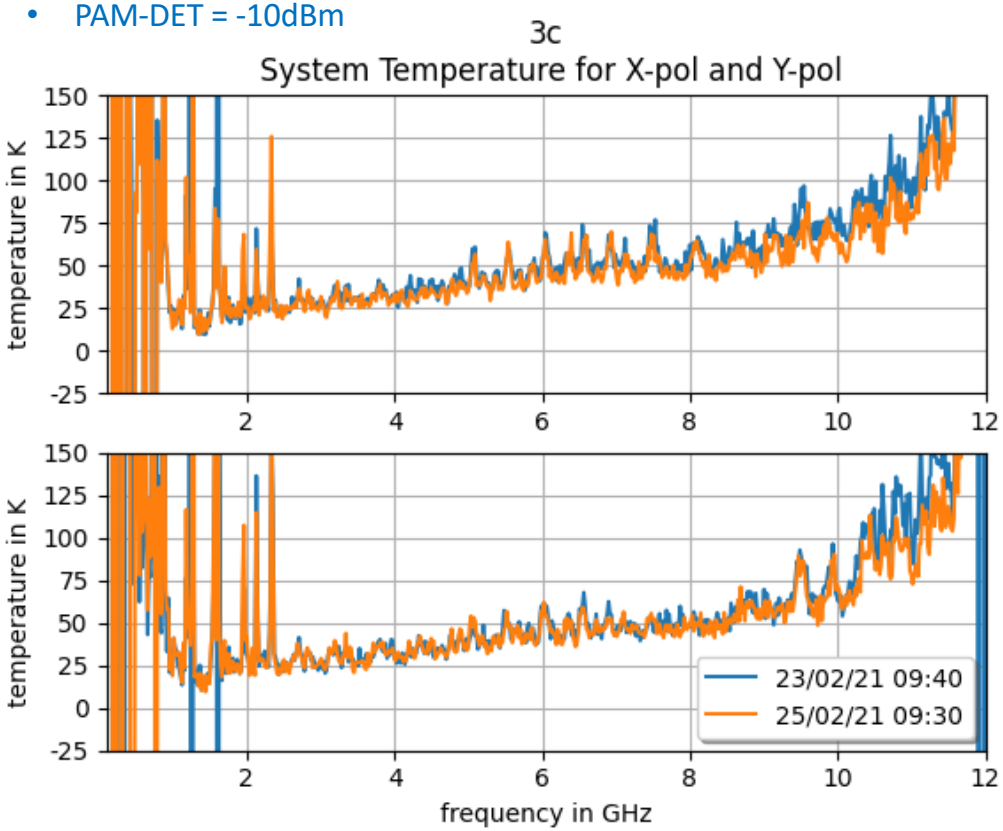
- Found SD card slot
- OS need to be updated for Rev3

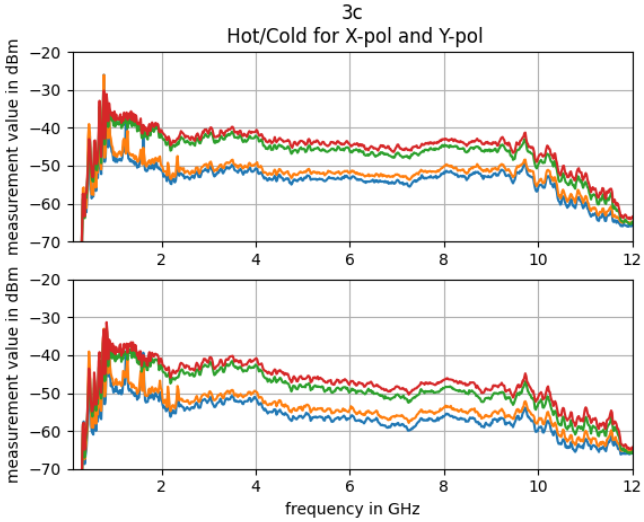


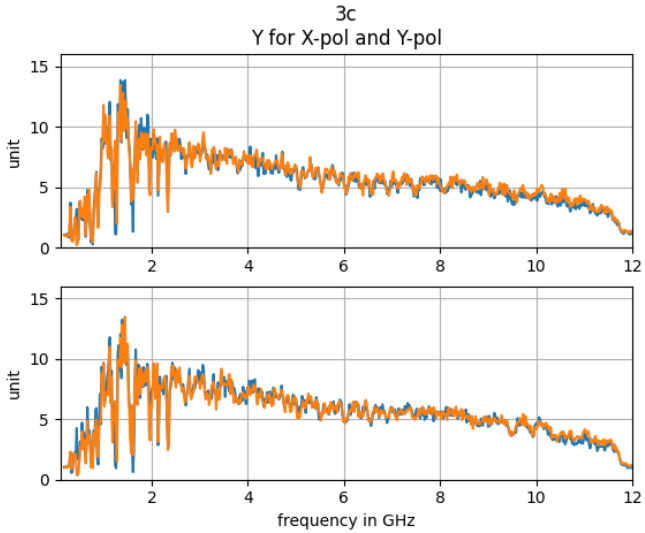


Tsys Measurements with FieldFox

- 3 measurements per day
- az=330, el=23
- PAM-DET = -10dBm







1.csv 23/02/21 09:40 [HC-STATE-FIBER] [sunny, clear, 10*C][az=330, el=23] [Thot= 287.25K, Tcold=12K] [PAM-DET=-10dBm]

Tsys Measurements with FieldFox

- 3 measurements per day
- az=330, el=23
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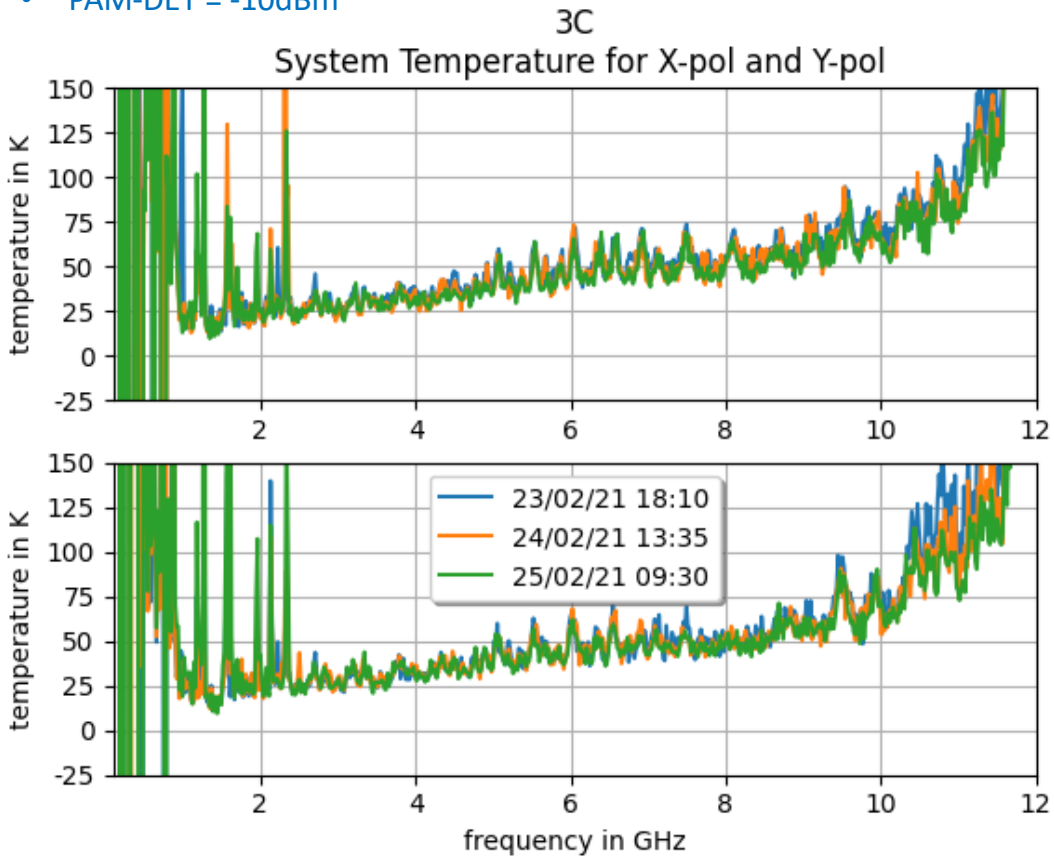

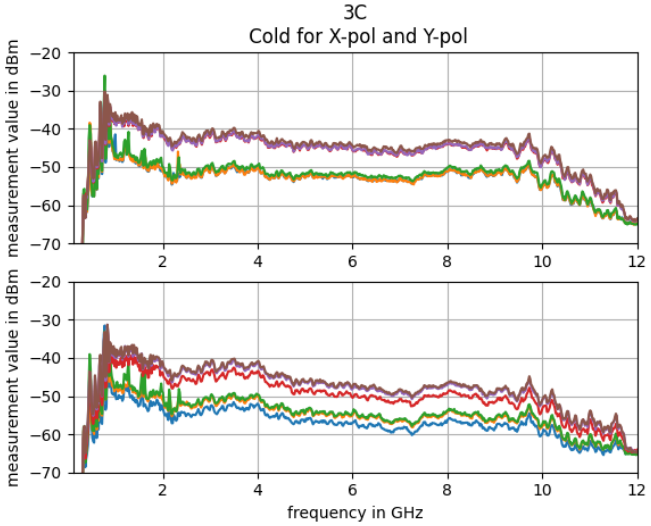

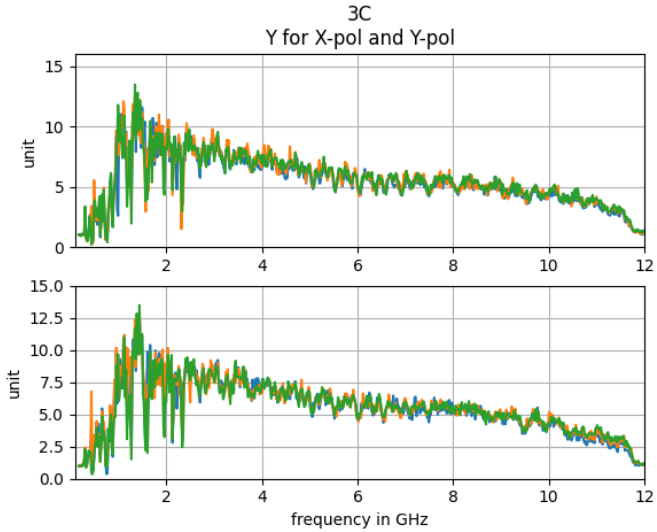

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Power Measurement

Verify Cascaded Gain Model!

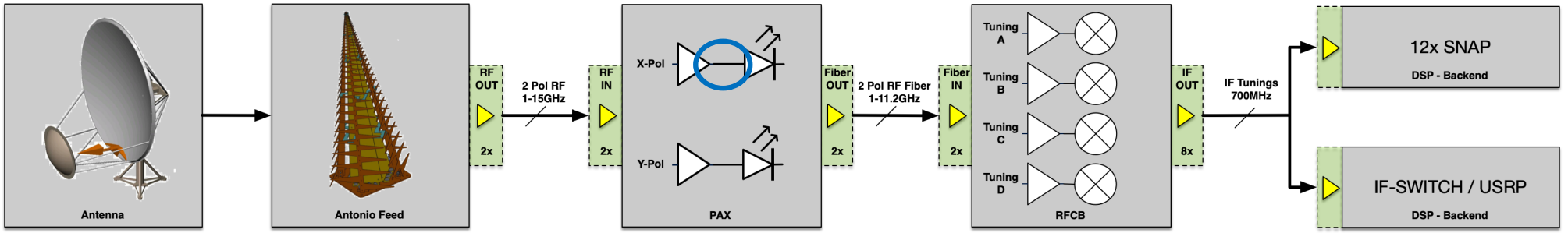
Two Measurements:

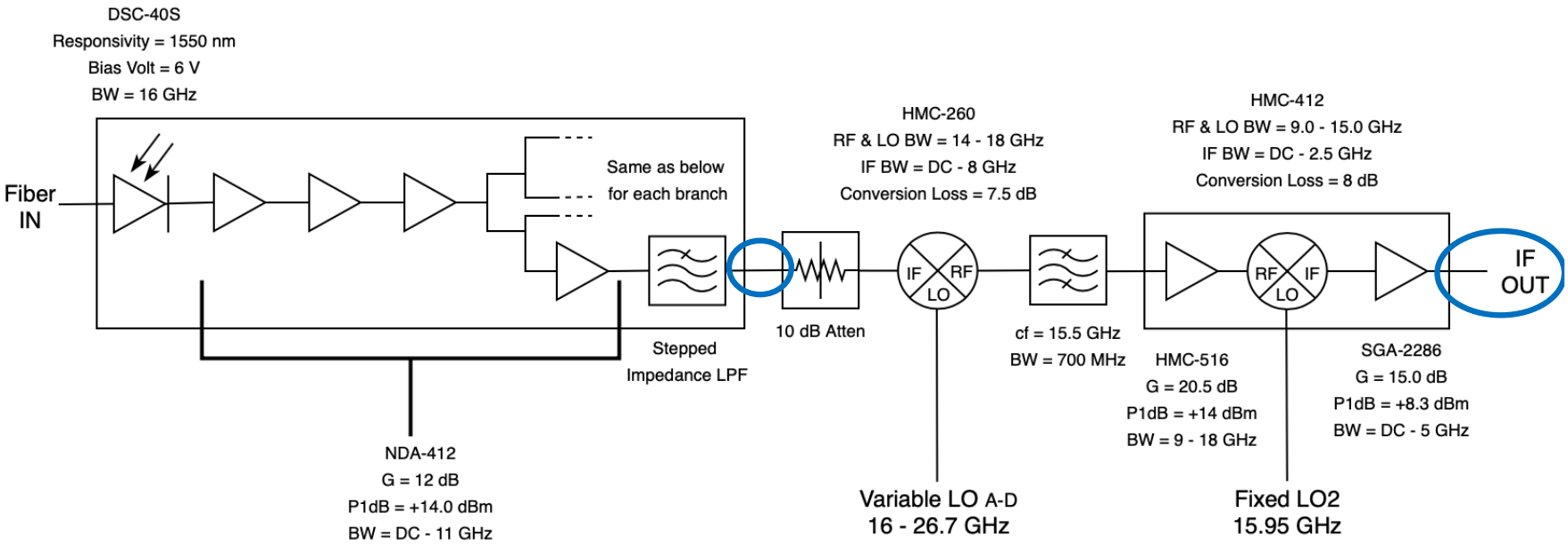
Sky as input.

CW as input.

Component	Gain dB	Power at this stage (dBm)	(P1dB)	Dynamic Range (dB)	Y-factor	Tsys (K)	Notes
CMB	**0.000**	-92.53	-	-	2.70	2.700	
Atmosphere	**-0.060**	-89.30	-	-	5.76	5.761	
Dish	**-0.020**	-88.40	-	-	7.12	7.118	
Mirror	**-0.020**	-87.66	-	-	8.48	8.481	
Radome	**0.000**	-87.66	-	-	8.48	8.481	
Feed	**-0.040**	-87.32	-	-	9.24	9.239	
Link-Capacitor	**-0.300**	-85.48	-	-	15.15	15.148	
Cable1	**-0.100**	-85.02	-	-	17.21	17.210	
LNA	**38.000**	-43.38	-10.00	33.38	39.86	39.858	LNF Low Noise Amplifier
SS cable	**-1.500**	-44.87	-	-	39.86	39.864	
Feedthu SMA	**-0.100**	-44.97	-	-	39.87	39.865	Output of the cryostat.
SS cable	**-2.000**	-46.97	-	-	39.91	39.909	
Bandwith red. 12/15 GHz	**-1.000**	-47.97	-	-	39.91	39.909	
NDA-412	**12.000**	-35.93	14.00	49.93	40.24	40.235	Amplifier
Filter	**-3.000**	-38.93	-	-	40.24	40.235	High Pass Filter
HMC424	**-4.000**	-42.93	22.00	64.93	40.24	40.235	Variable attenuator 0-31.5dB
NDA-412	**12.000**	-30.92	14.00	44.92	40.34	40.339	Amplifier
Slope Compensator	**-2.000**	-32.92	-	-	40.34	40.339	
NDA-412	**12.000**	-20.92	14.00	34.92	40.35	40.349	Amplifier
Slope Compensator	**-2.000**	-22.92	-	-	40.35	40.349	
NDA-412	**12.000**	-10.92	14.00	24.92	40.35	40.350	Amplifier
HMC424	**-20.000**	-30.92	22.00	52.92	40.35	40.350	Variable attenuator 0-31.5dB
NDA-412	**12.000**	-18.92	14.00	32.92	40.36	40.356	Amplifier
Slope Compensator	**-2.000**	-20.92	-	-	40.36	40.356	
NDA-412	**12.000**	-8.92	14.00	22.92	40.36	40.357	Amplifier
PAM output cable to OTX	**0.000**	-8.92	-	-	40.36	40.357	Measured by detector diode
NX8560LJ-CC189	**0.000**	-8.92	11.60	20.52	40.36	40.357	Fiber Transmitter
Fiber cable	**-35.000**	-43.86	-	-	40.89	40.892	Fiber Link
DSC-40S	**0.000**	-43.86	-	-	40.89	40.892	Fiber Detector
NDA-412	**12.000**	-31.85	14.00	45.85	41.02	41.021	Amplifier
NDA-412	**12.000**	-19.85	14.00	33.85	41.03	41.030	Amplifier
NDA-412	**12.000**	-7.85	14.00	21.85	41.03	41.030	Amplifier
4-way Wilkinson Divider	**-6.000**	-13.85	-	-	41.03	41.030	Power Divider
NDA-412	**12.000**	-1.85	14.00	15.85	41.03	41.030	Amplifier
Stepped Impedance Filter	**-1.000**	-2.85	-	-	41.03	41.030	LPF
Fixed Attenuator	**-10.000**	-12.85	-	-	41.03	41.030	Fixed Attenuator
HMC260	**-7.500**	-20.35	12.00	32.35	41.03	41.030	Mixer UP
BPF 700MHz	**-3.500**	-23.85	-	-	41.03	41.031	Filter
Bandwith red. 0.7/12 GHz	**-12.300**	-36.15	-	-	41.03	41.031	
HMC516	**20.500**	-15.65	14.00	29.65	41.04	41.037	Amplifier
HMC412	**-8.000**	-23.65	11.50	35.15	41.04	41.037	Mixer DOWN
SGA-2286	**15.000**	-8.65	8.30	16.95	41.04	41.038	Amplifier
RFCB output cable	**-0.100**	-8.75	-	-	41.04	41.038	
LMR-240 25ft	**-1.500**	-10.25	-	-	41.04	41.038	
AA06-xxH	**-10.000**	-20.25	-	-	41.04	41.038	Fixed Attenuator
ZX60-43-S+	**22.000**	1.75	17.30	15.55	41.04	41.039	Amplifier
ZX76-31R5A-SPS+	**-19.000**	-17.25	22.00	39.25	41.04	41.039	Variable attenuator 0-31.5dB
AFX-CA-141-xx	**-0.100**	-17.35	-	-	41.04	41.039	
EVA8AQ160 ADC	**-0.050**	-17.40	0.00	17.40	41.04	41.039	SNAP ADC

Power Measurement





Power Measurement

- Sky input:
- Initial measurement

Component	Gain dB	Power at this stage (dBm)	Measured Power (dBm)	(P1dB)	Dynamic Range (dB)
Bandwith red. 12/15 GHz	-1.000	-47.97		-	-
NDA-412	12.000	-35.93		14.00	49.93
Filter	-3.000	-38.93		-	-
HMC424	-4.000	-42.93		22.00	64.93
NDA-412	12.000	-30.92		14.00	44.92
Slope Compensator	-2.000	-32.92		-	-
NDA-412	12.000	-20.92		14.00	34.92
Slope Compensator	-2.000	-22.92		-	-
NDA-412	12.000	-10.92		14.00	24.92
HMC424	-20.000	-30.92		22.00	52.92
NDA-412	12.000	-18.92		14.00	32.92
Slope Compensator	-2.000	-20.92		-	-
NDA-412	12.000	-8.92		14.00	22.92
PAM output cable to OTX	0.000	-8.92		-	-
NX8560LJ-CC189	0.000	-8.92	-10.10	11.60	20.52
Fiber cable	-35.000	-43.86		-	-
DSC-40S	0.000	-43.86		-	-
NDA-412	12.000	-31.85		14.00	45.85
NDA-412	12.000	-19.85		14.00	33.85
NDA-412	12.000	-7.85		14.00	21.85
4-way Wilkinson Divider	-6.000	-13.85		-	-
NDA-412	12.000	-1.85		14.00	15.85
Stepped Impedance Filter	-1.000	-2.85	-2.70	-	-
Fixed Attenuator	-10.000	-12.85		-	-
HMC260	-7.500	-20.35		12.00	32.35
BPF 700MHz	-3.500	-23.85		-	-
Bandwith red. 0.7/12 GHz	-12.300	-36.15		-	-
HMC516	20.500	-15.65		14.00	29.65
HMC412	-8.000	-23.65		11.50	35.15
SGA-2286	15.000	-8.65		8.30	16.95
RFCB output cable	-0.100	-8.75	0.0|-8.0|-12.2|-8.6	-	-

1GHz | 2GHz | 5GHz | 10GHz

Power Measurement

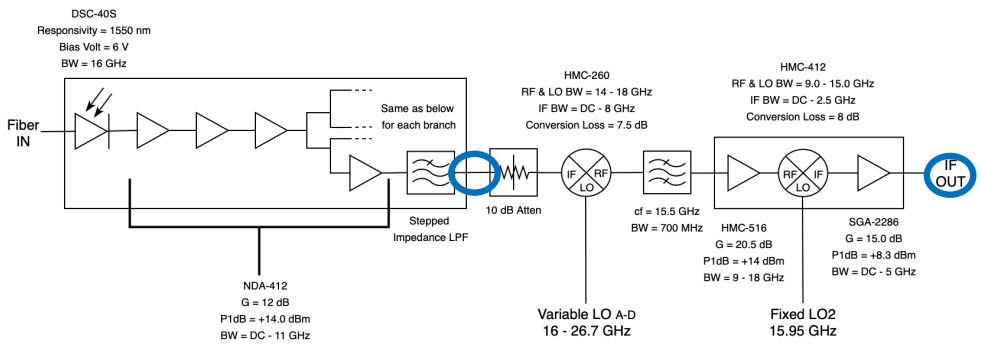
- Sky input:
- Corrected measurement

Component	Gain dB	Power at this stage (dBm)	Measured Power (dBm)	(P1dB)	Dynamic Range (dB)
Bandwith red. 12/15 GHz	-1.000	-47.97		-	-
NDA-412	12.000	-35.93		14.00	49.93
Filter	-3.000	-38.93		-	-
HMC424	-5.000	-43.93		22.00	65.93
NDA-412	12.000	-31.92		14.00	45.92
Slope Compensator	-2.000	-33.92		-	-
NDA-412	12.000	-21.92		14.00	35.92
Slope Compensator	-2.000	-23.92		-	-
NDA-412	12.000	-11.92		14.00	25.92
HMC424	-20.000	-31.92		22.00	53.92
NDA-412	12.000	-19.92		14.00	33.92
Slope Compensator	-2.000	-21.92		-	-
NDA-412	12.000	-9.92		14.00	23.92
PAM output cable to OTX	0.000	-9.92		-	-
NX8560LJ-CC189	0.000	-9.92	-10.10	11.60	21.52
Fiber cable	-35.000	-44.85		-	-
DSC-40S	0.000	-44.85		-	-
NDA-412	12.000	-32.83		14.00	46.83
NDA-412	12.000	-20.83		14.00	34.83
NDA-412	12.000	-8.83		14.00	22.83
4-way Wilkinson Divider	-6.000	-14.83		-	-
NDA-412	12.000	-2.83		14.00	16.83
Stepped Impedance Filter	-1.000	-3.83	-2.70	-	-
Fixed Attenuator	-10.000	-13.83		-	-
HMC260	-7.500	-21.33		12.00	33.33
BPF 700MHz	-3.500	-24.83		-	-
Bandwith red. 0.7/12 GHz	-12.300	-37.13		-	-
HMC516	20.500	-16.63		14.00	30.63
HMC412	-8.000	-24.63		11.50	36.13
SGA-2286	15.000	-9.63		8.30	17.93
RFCB output cable	-0.100	-9.73	0.0|-8.0|-12.2|-8.6	-	-

1GHz | 2GHz | 5GHz | 10GHz

Power Measurement

- Sky input:
- Dynamic range based on RF power setting:

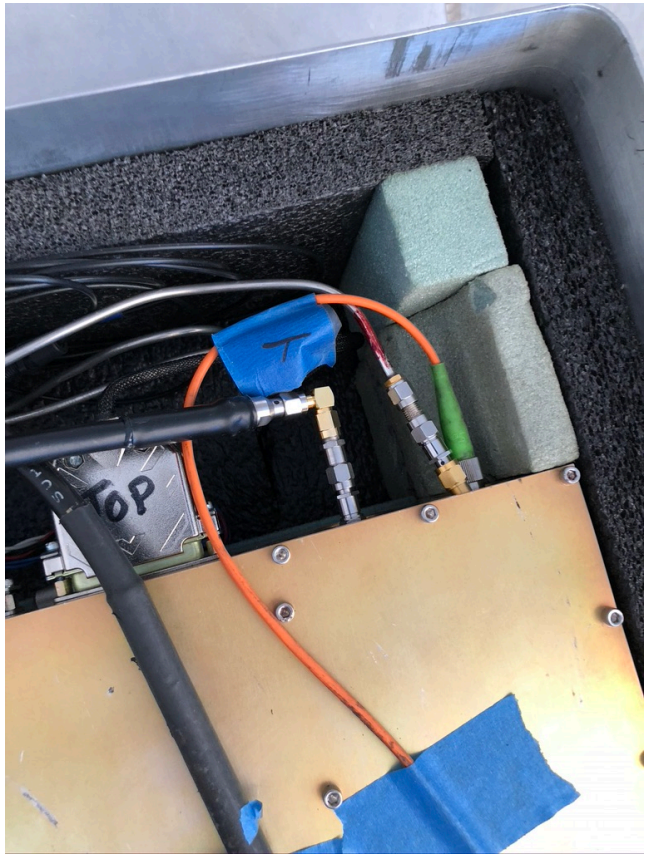


Sky input measurement

Measurement	Component	Measured Power (dBm)	(P1dB)	Dynamic Range (dB)
#1				
	PAM output cable to OTX	-18.4	11.60	30.00
	Output RFCB power splitter	-10.2	13	23.20
	RFCB out @ 1GHz	-8.0	8.3	16.30
	RFCB out @ 2GHz	-15.5	8.3	23.80
	RFCB out @ 5GHz	-20.3	8.3	28.60
	RFCB out @ 10GHz	-16.1	8.3	24.40
#2				
	PAM output cable to OTX	-14.8	11.60	26.40
	Output RFCB power splitter	-7.0	13	20.00
	RFCB out @ 1GHz	-5.0	8.3	13.30
	RFCB out @ 2GHz	-12.2	8.3	20.50
	RFCB out @ 5GHz	-16.6	8.3	24.90
	RFCB out @ 10GHz	-12.9	8.3	21.20
#3				
	PAM output cable to OTX	-10.1	11.60	21.70
	Output RFCB power splitter	-2.7	13	15.70
	RFCB out @ 1GHz	0.0	8.3	8.30
	RFCB out @ 2GHz	-8.0	8.3	16.30
	RFCB out @ 5GHz	-12.2	8.3	20.50
	RFCB out @ 10GHz	-8.6	8.3	16.90
#4				
	PAM output cable to OTX	-4.8	11.60	16.40
	Output RFCB power splitter	2.7	13	10.30
	RFCB out @ 1GHz	4.0	8.3	4.30
	RFCB out @ 2GHz	-2.4	8.3	10.70
	RFCB out @ 5GHz	-6.7	8.3	15.00
	RFCB out @ 10GHz	-3.4	8.3	11.70
#5				
	PAM output cable to OTX	0.3	11.60	11.30
	Output RFCB power splitter	7.4	13	5.60
	RFCB out @ 1GHz	8.5	8.3	-0.20
	RFCB out @ 2GHz	2.2	8.3	6.10
	RFCB out @ 5GHz	-1.9	8.3	10.20
	RFCB out @ 10GHz	1.6	8.3	6.70

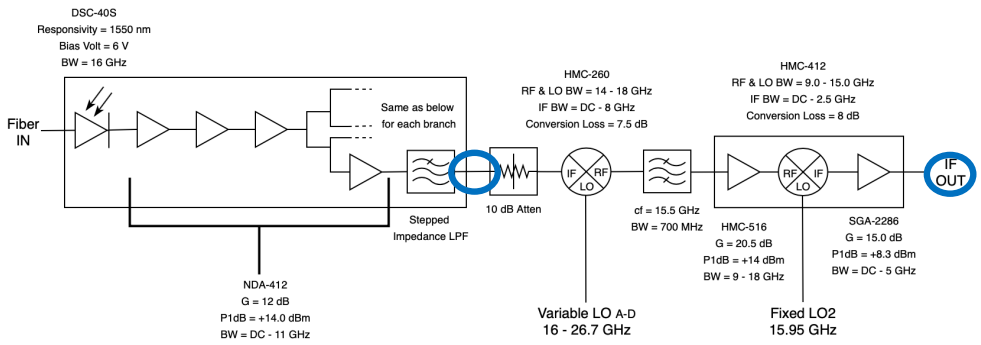
Power Measurement

- CW input:



Power Measurement

- CW input:
- Dynamic range based on RF power setting:



CW input measurement @2.1GHz

Measurement	Component	Measured Power (dBm)	(P1dB)	Dynamic Range (dB)
#1				
	PAM output cable to OTX	-18.2	11.60	29.80
	Output RFCB power splitter	-12.5	13	25.50
	RFCB out @ 2GHz	-2.4	8.3	10.70
	RFCB out @ 5GHz	-30.0	8.3	38.30
#2				
	PAM output cable to OTX	-15.4	11.60	27.00
	Output RFCB power splitter	-9.7	13	22.70
	RFCB out @ 2GHz	0.3	8.3	8.00
	RFCB out @ 5GHz	-27.0	8.3	35.30
#3				
	PAM output cable to OTX	-9.8	11.60	21.40
	Output RFCB power splitter	-4.3	13	17.30
	RFCB out @ 2GHz	5.8	8.3	2.50
	RFCB out @ 5GHz	-22.8	8.3	31.10
#4				
	PAM output cable to OTX	-4.7	11.60	16.30
	Output RFCB power splitter	1.0	13	12.00
	RFCB out @ 2GHz	10.7	8.3	-2.40
	RFCB out @ 5GHz	-17.0	8.3	25.30
#5				
	PAM output cable to OTX	-0.2	11.60	11.80
	Output RFCB power splitter	5.9	13	7.10
	RFCB out @ 2GHz	13.0	8.3	-4.70
	RFCB out @ 5GHz	-12.0	8.3	20.30

Power Measurement

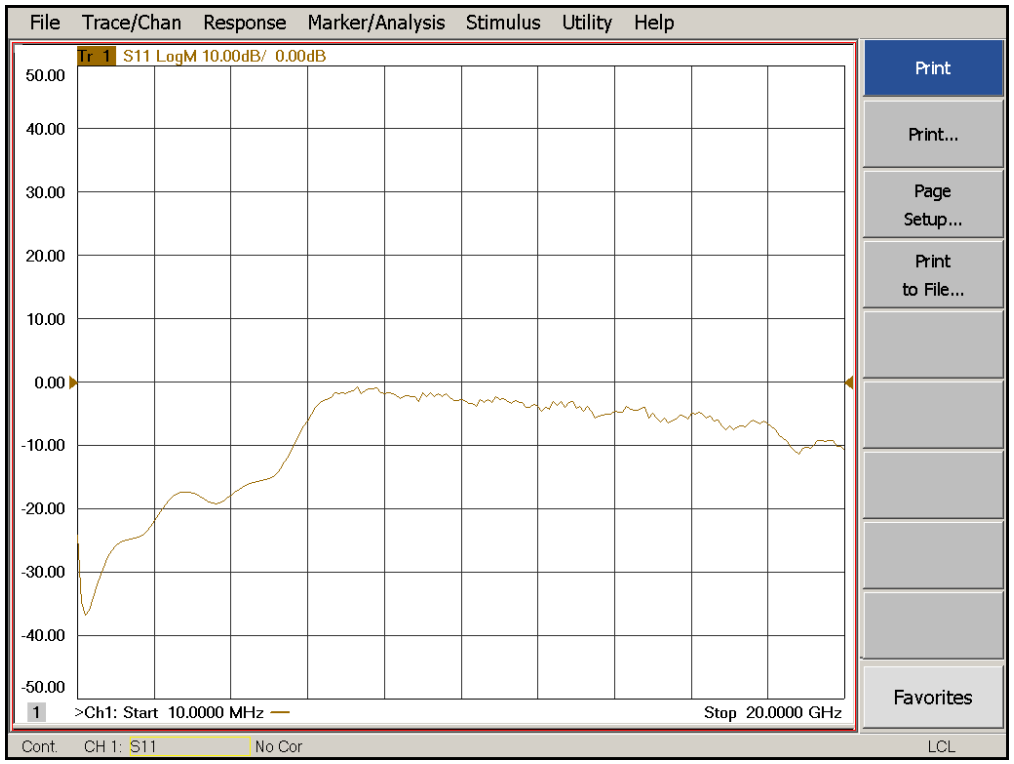
- NEXT:
  - Tsys decrease based on RF Power setting for:
    -10dBm, -15dBm, -20dBm
  - Agree on minimum required dynamic range:
    e.g.: 10dB?

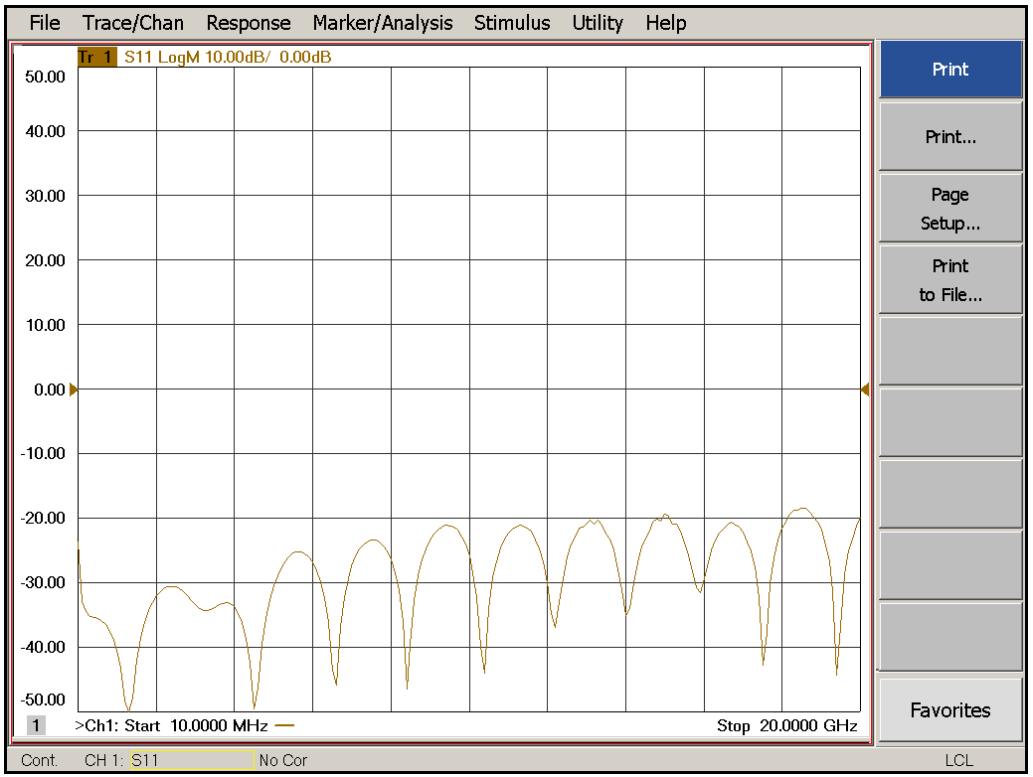
Tsys based on PAX output power

	Component	Power (dBm) (dBm)	Tsys (Kelvin)	Tsys Increase (Kelvin)
#1				
	PAM output cable to OTX	-5.0	40.5	0.00
	PAM output cable to OTX	-10.0	41.0	0.50
	PAM output cable to OTX	-15.0	43.0	2.50
	PAM output cable to OTX	-20.0	50.0	9.50
	PAM output cable to OTX	-25.0	72.0	31.50

Other issues discovered during measurement:

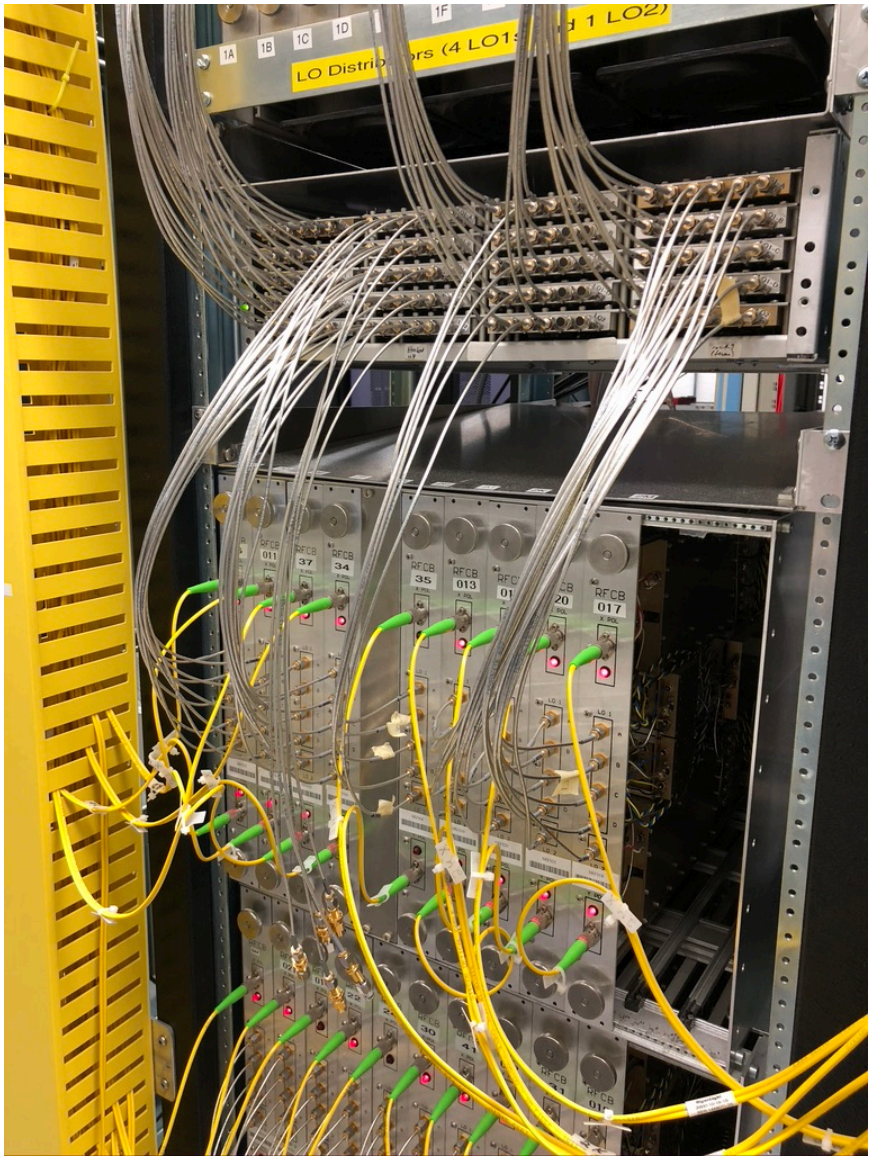
- LO Termination!
- RFCB issue!





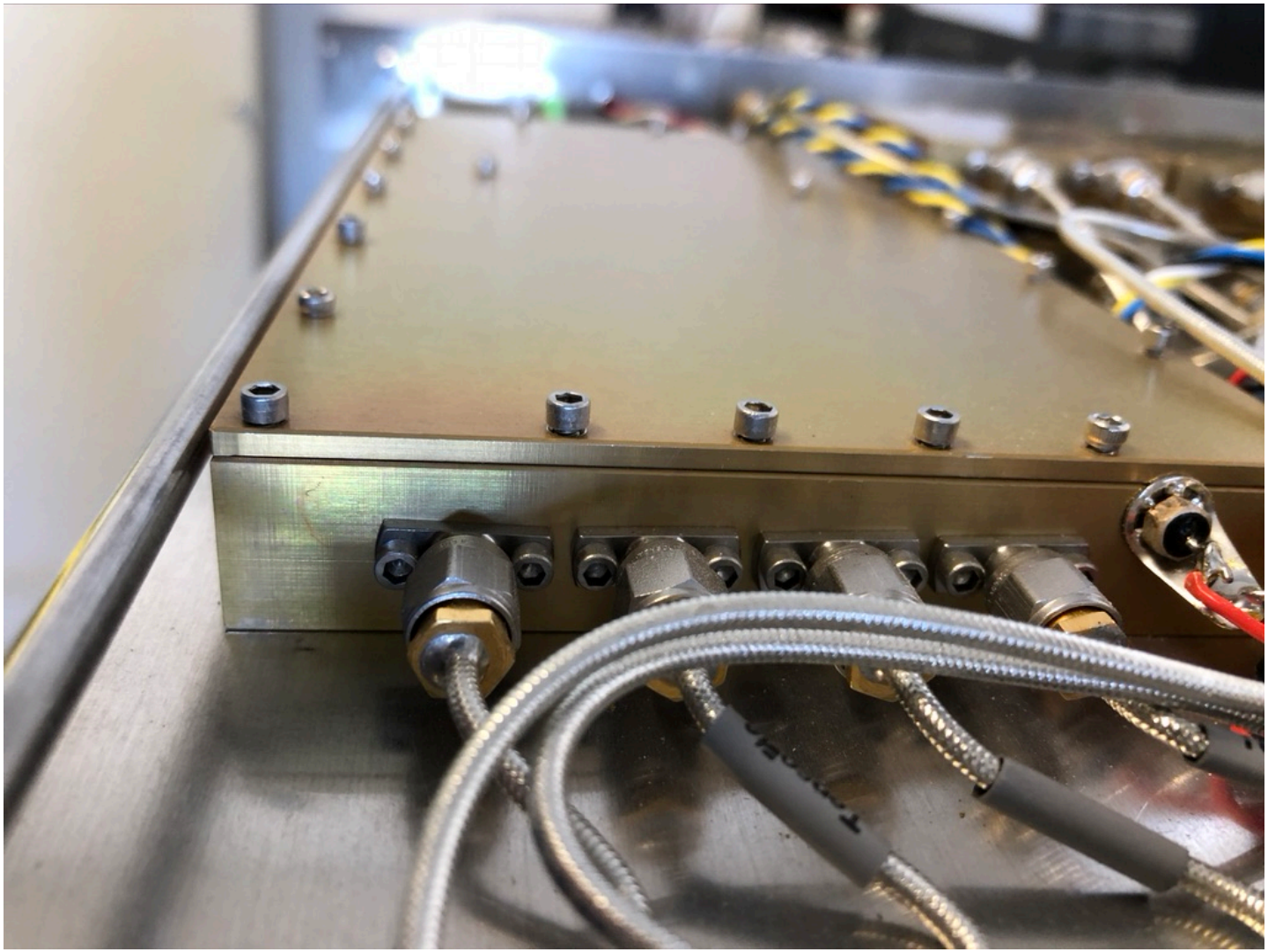
Other issues discovered during measurement:

- LO Termination!
- RFCB issue!

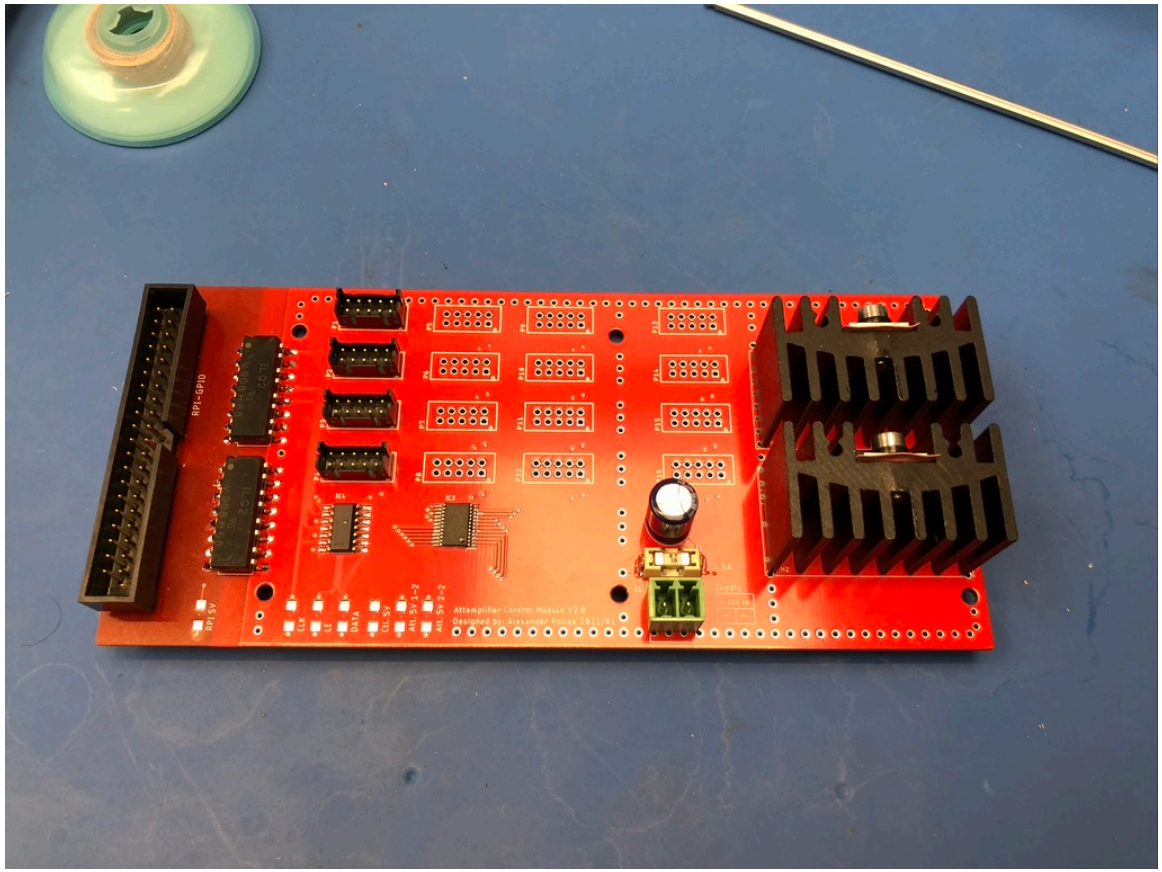


Other issues discovered during measurement:

- LO Termination!
- RFCB issue!



Attemplifier Board Arrived



Main Outlets for DSP and Analog Rack Installed

Parts missing for final build out

- Feed Base
  - 4 Glass Domes ORDERED (04/21)
  - Diaphragm Pumps ARRIVED
- 2 new build pyramids (20 total)
- 6 SS coax cables from LNA to base ORDERED
- 3 48V power supplies to be installed at antennas (collected from Minex)
- 4 LNAs (6 ordered)
- Feed 002 Base Plate