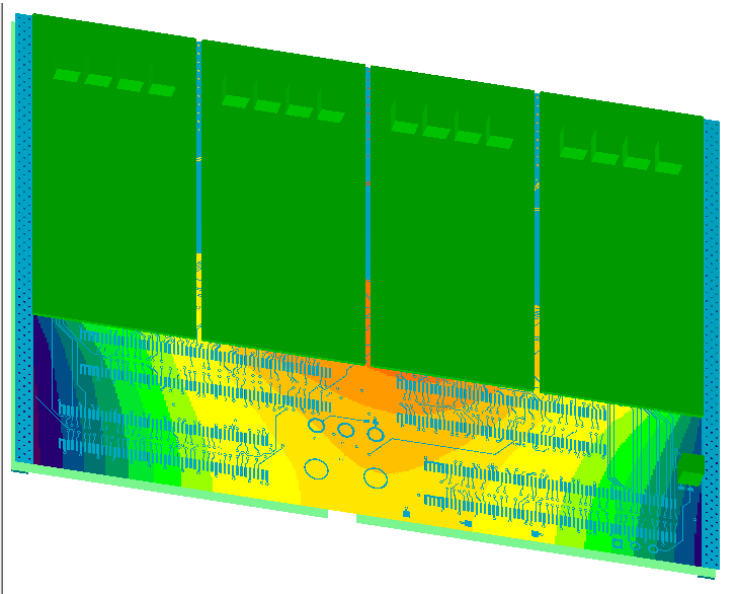
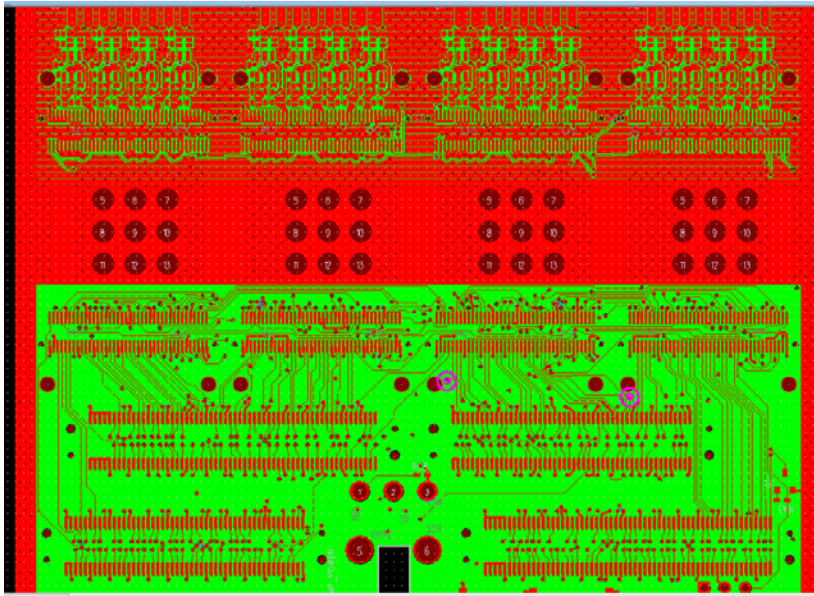


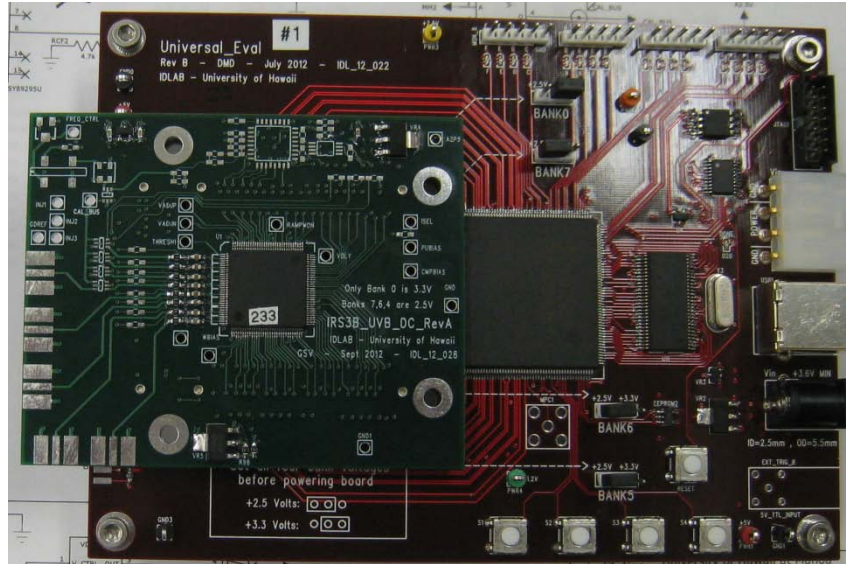
CRT Electronics Preparations



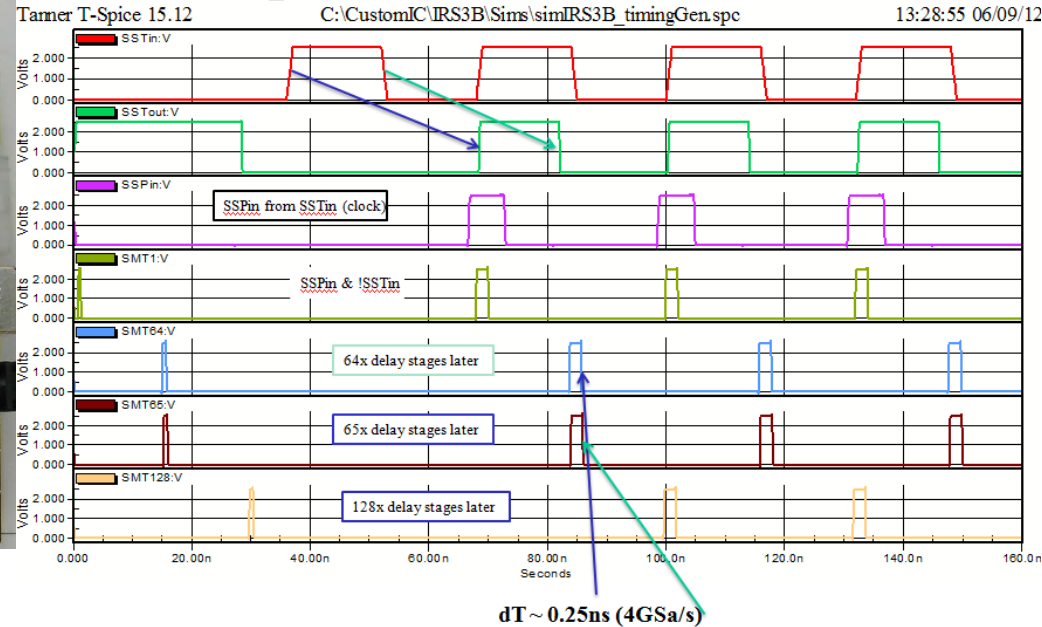
- Technical Status:
 - IRS3B testing
 - Amplifiers/simulation
 - Carrier
 - Power simulation
 - HV
- SLAC Firmware Review
- Schedule update

18-OCT-2012 edition

Further IRS3B Testing



Sample Timebase Generation

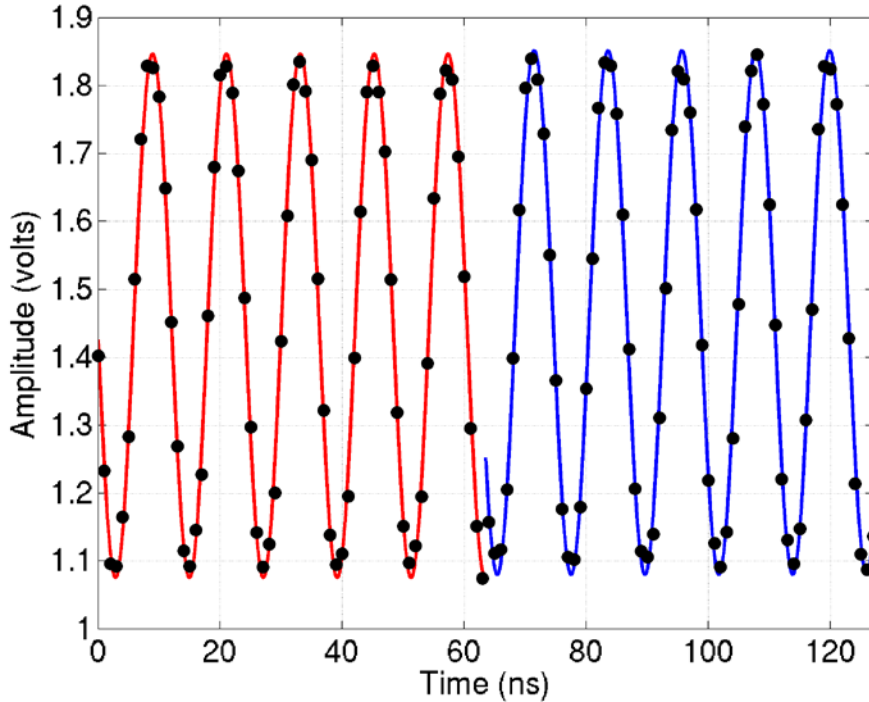


Firmware for testing being written...

- Digital working
- Waveform sampling
- Timebase locking versus temperature

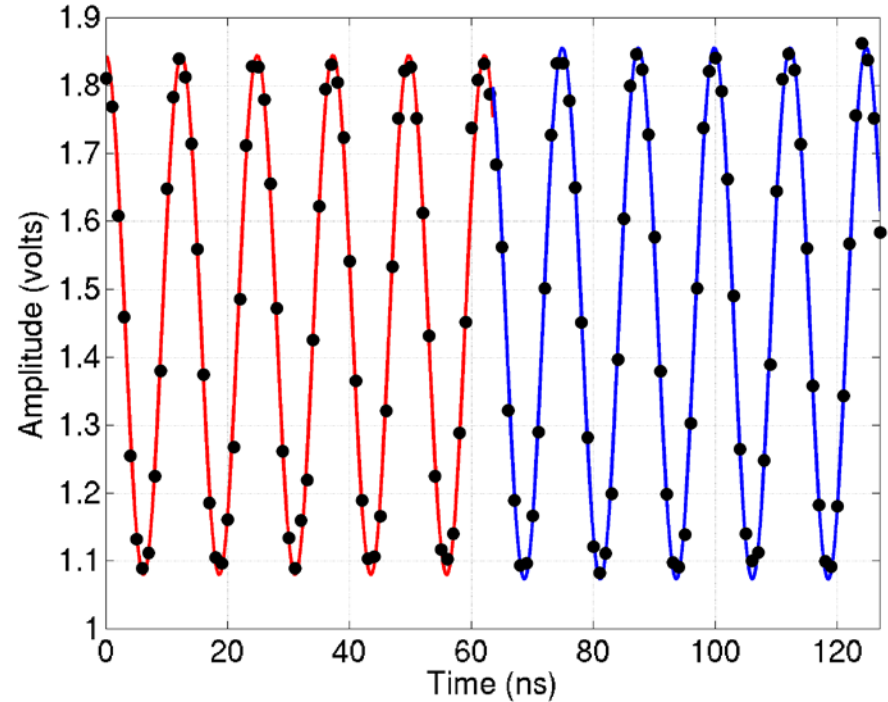
Code for timebase Adj/locking (TARGET5)

Run 56256 Event 0



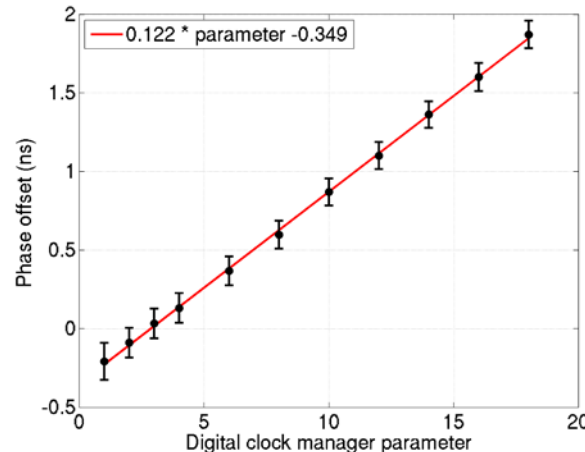
Parameter = 0x12 (1.8 ns offset)

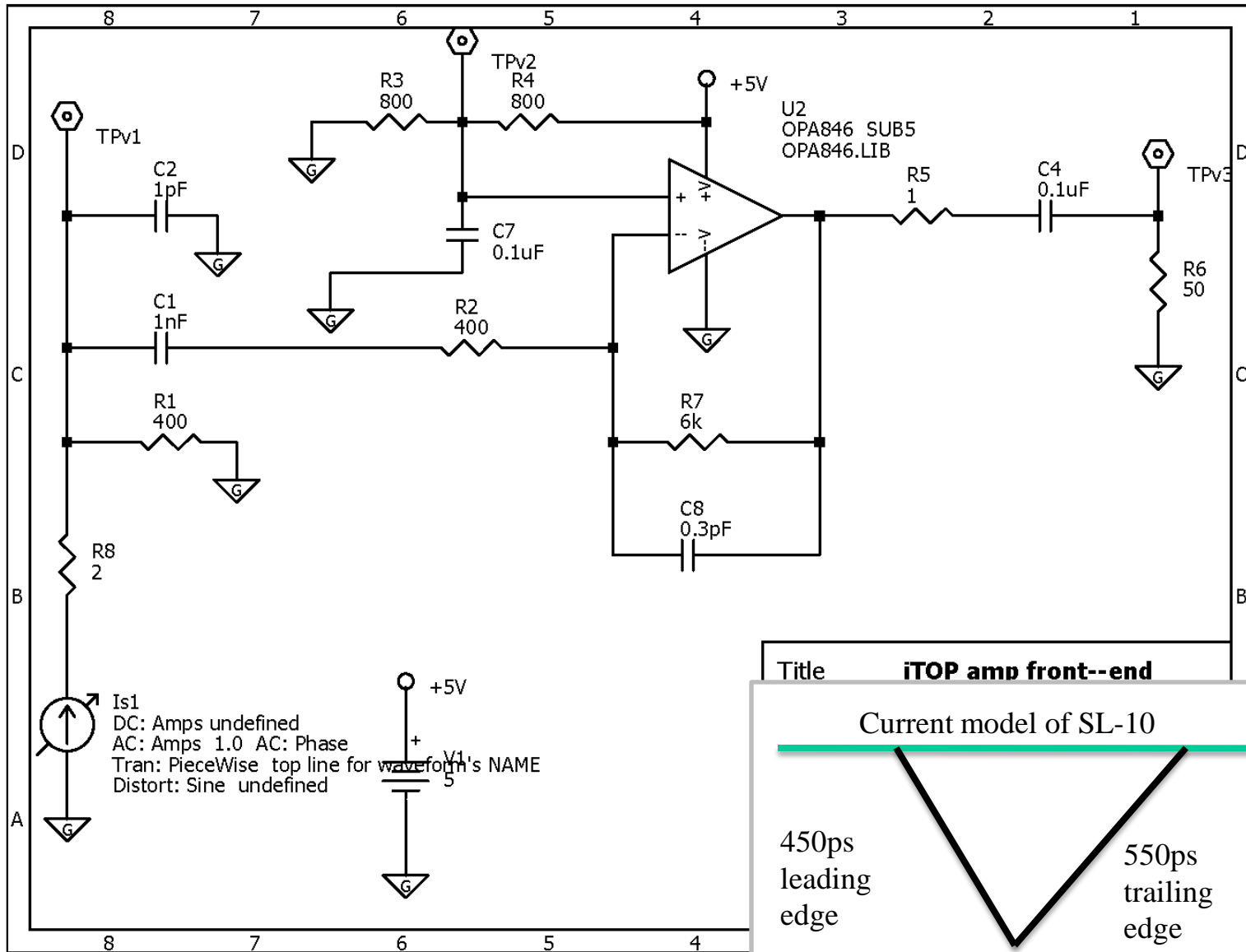
Run 56258 Event 0



Parameter = 0x03 (0.0 ns offset)

- Timebase alignment – now easily tuned
- First pass at jitter < 0.3% (fit error dominated)
- temp stable



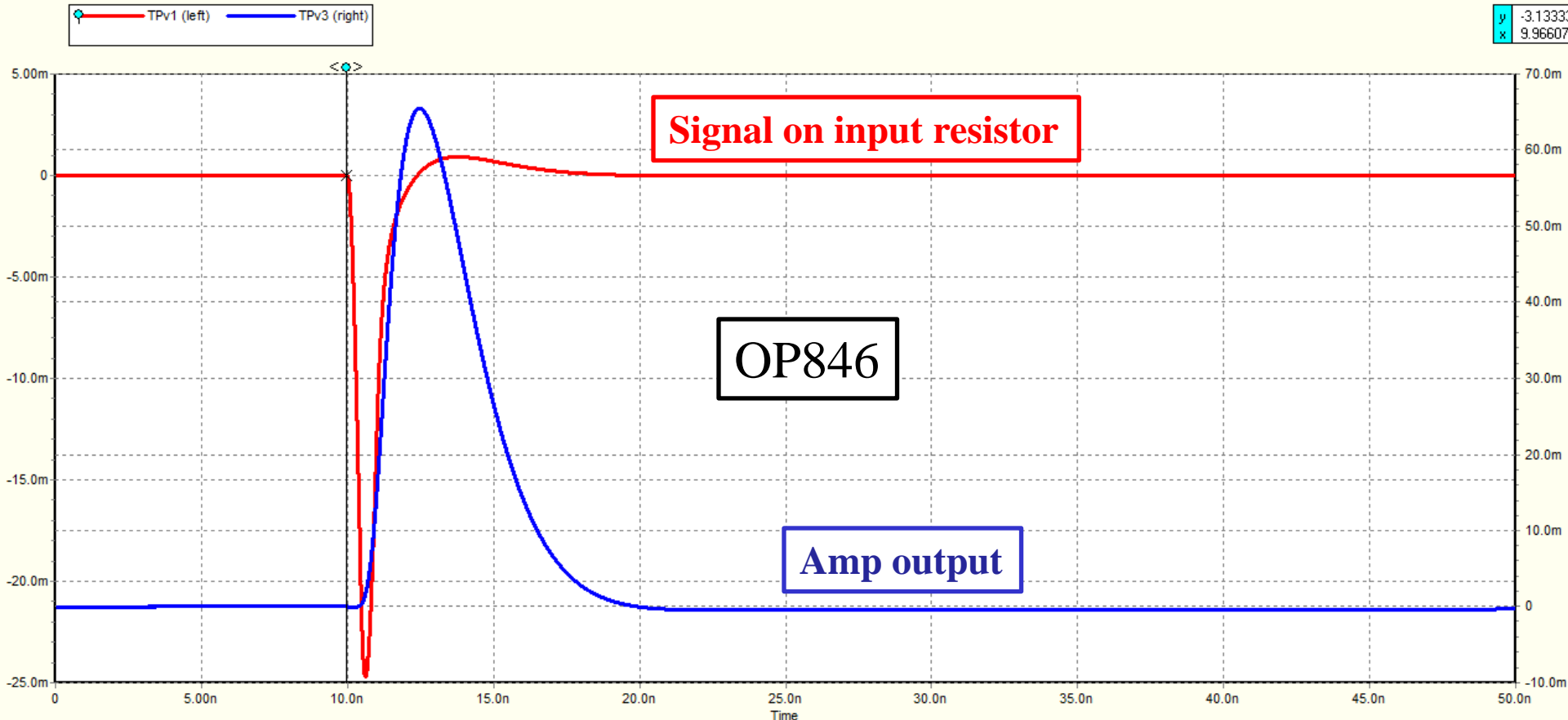


Amplifier choice studies

Gain = 5×10^5 ($160 \mu\text{A } I_{\text{peak}}$)

SPICE simulation Output

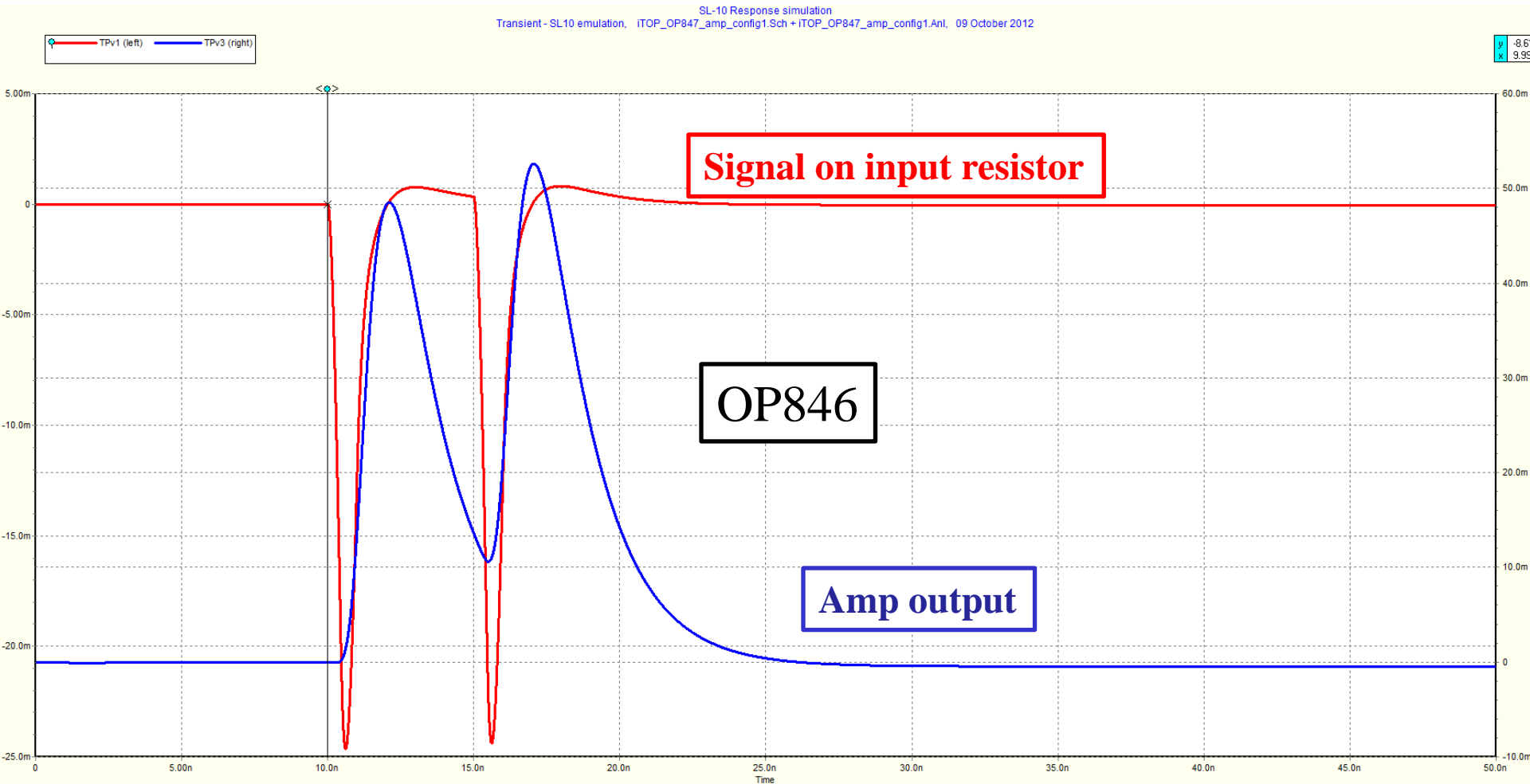
SL-10 Response simulation
Transient - SL10 emulation, ITOP_OP847_amp_config1.Sch + ITOP_OP847_amp_config1.Anl, 09 October 2012



Tuned for critically damped.

If feedback parasitic capacitance increases, overshoot

Double pulse separation



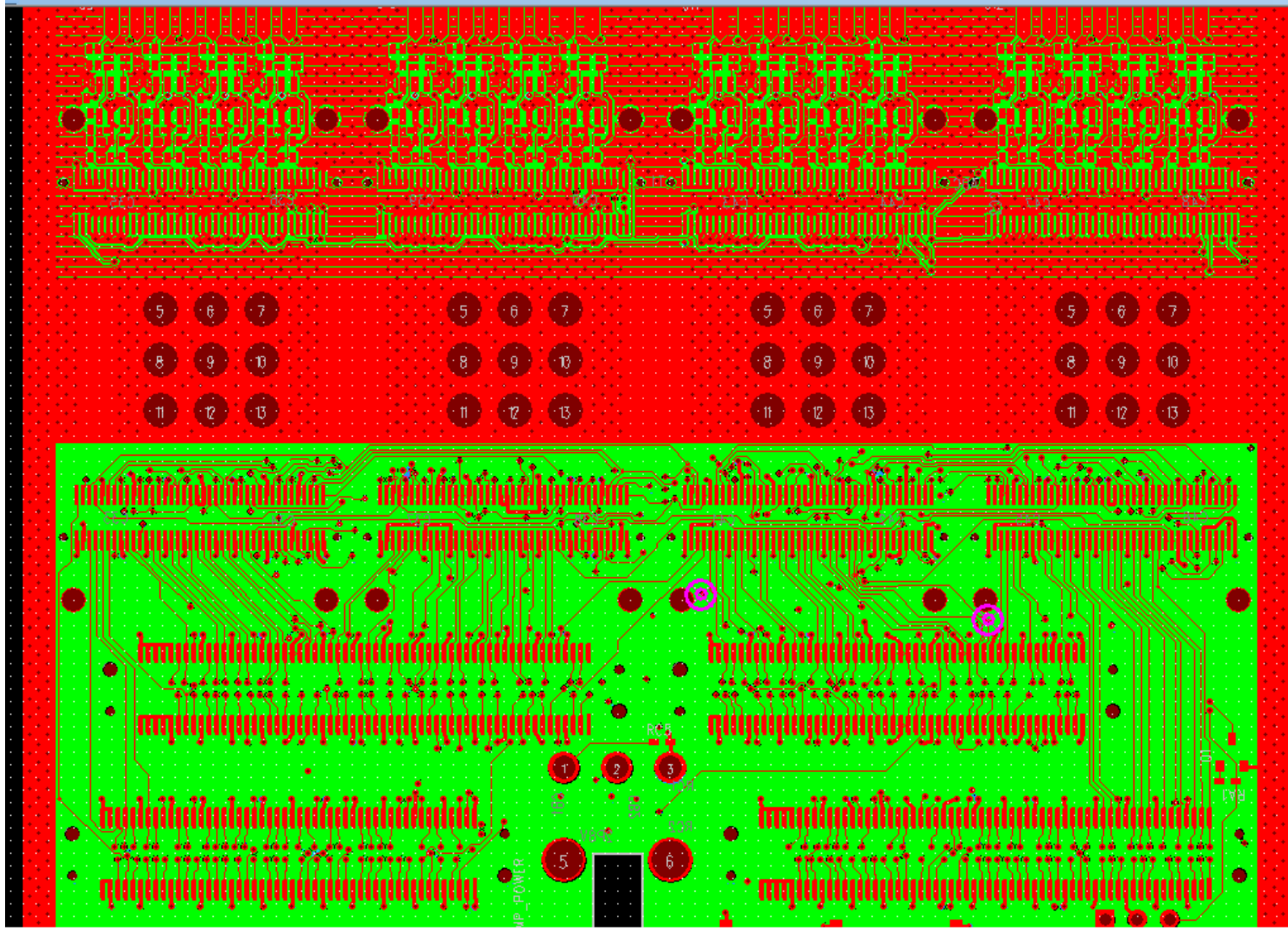
5ns between signals

Clearly separated – can fit for 2nd pulse (reduced timing resolution)

New Carrier1– submitted today

Amps on
Carrier
Card

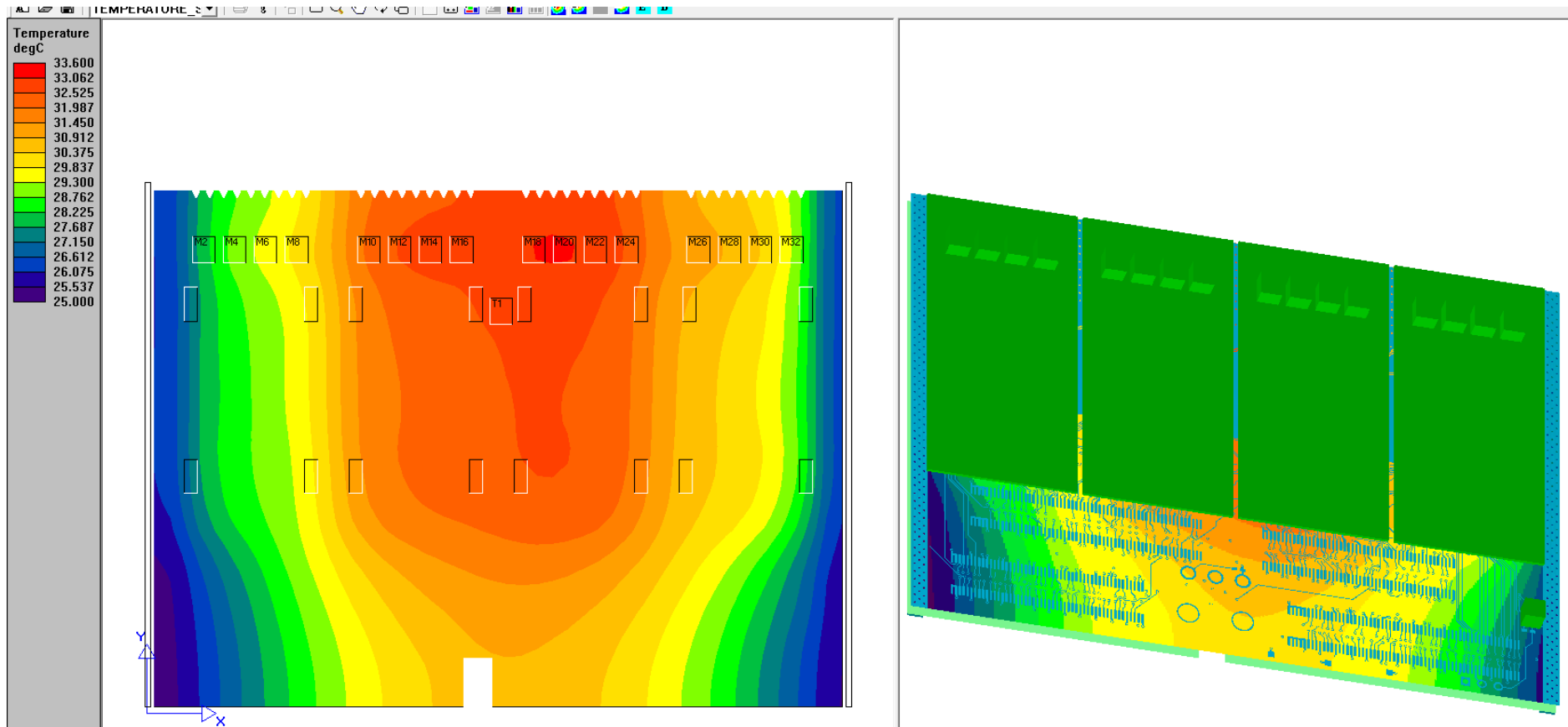
No cal
circuit
this
version
(to be
added)



Focus on testing amps

Test new DC version of IRS3B → remove daughtercards eventually

Thermal Simulation (first go)

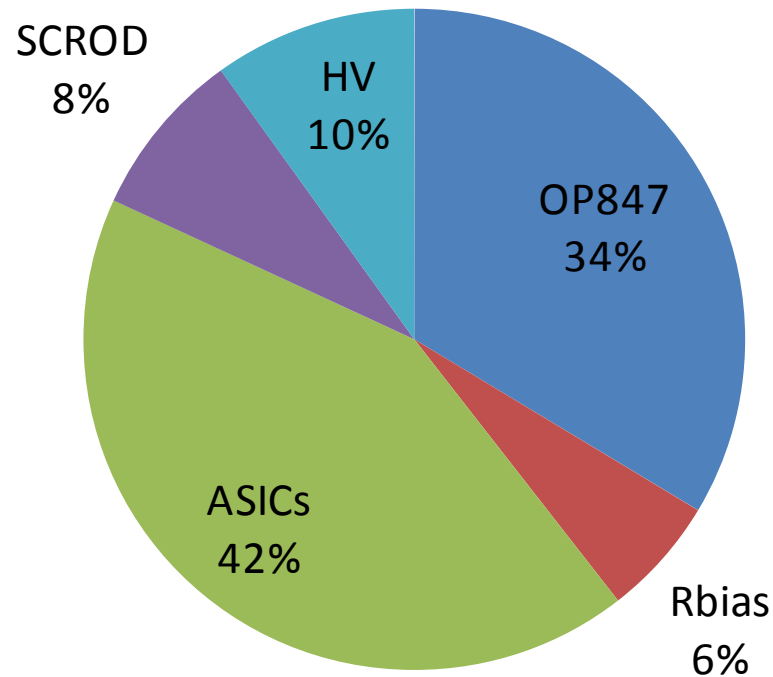


- No air flow (without good side coupling >100 C!)
- Aluminum sidewalls held @ 25C with 0.4C/W coupling
- Can add refinements (just learning the tool)

Updated Power Dissipation

iTOP Power (137W/bar box)

OP847	46.1W
Rbias	8W
ASICs	58.1W
SCROD	11.2W
HV	13.6W
	137W

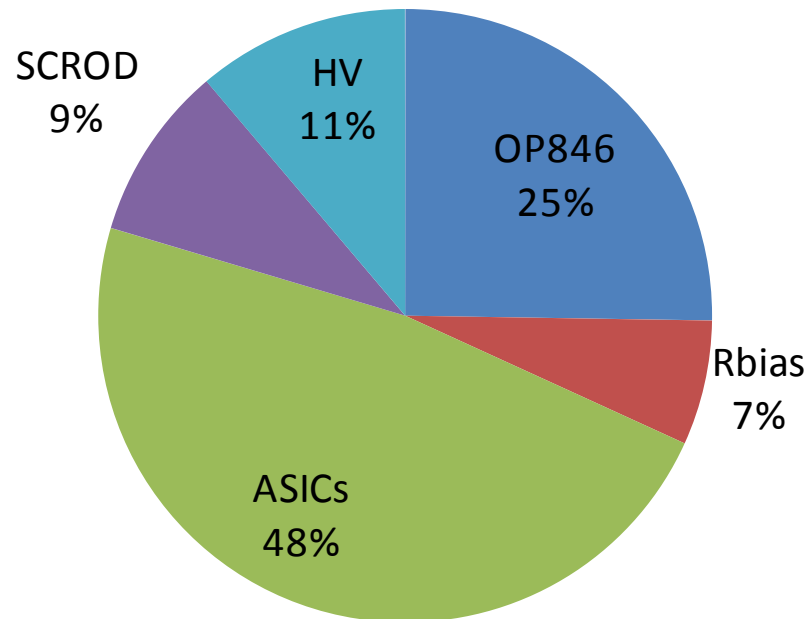


Most conservative

Power Dissipation (OP846 option)

iTOP Power (122W/bar box)

OP846	OP846	30.7W
	Rbias	8W
	ASICs	58.1W
	SCROD	11.2W
	HV	13.6W
Total		122W

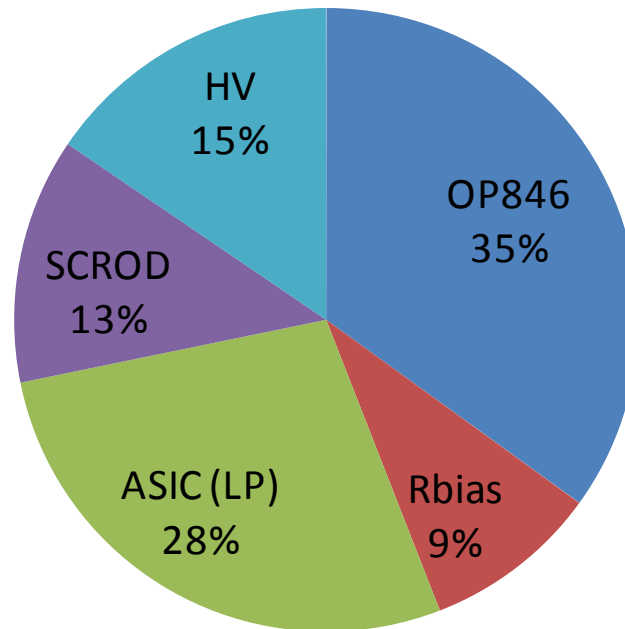


Fairly conservative

Updated Power Dissipation

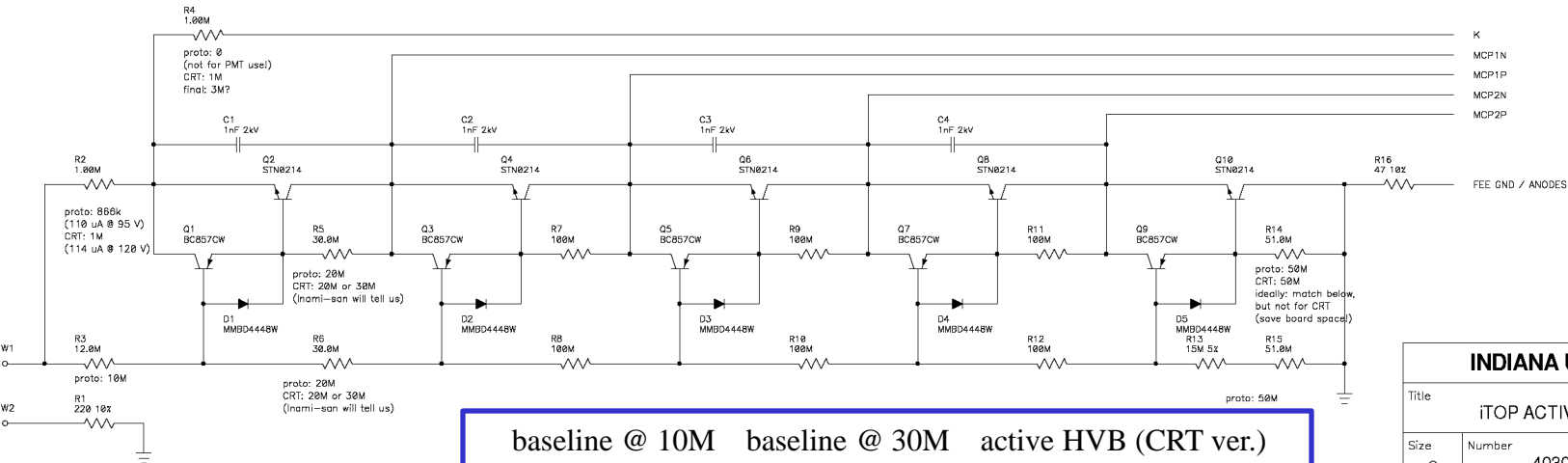
iTOP Power (88W/bar box)

OP846	OP846	30.7W
	Rbias	8W
	ASIC (LP)	24.3W
	SCROD	11.2W
	HV	13.6W
Total		88W



Reduced ASIC buffer power (possibly reduce Rbias by 50%?)

HV Update



INDIANA UNIVERSITY CEEM			
Title: iTOP ACTIVE DIVIDER HV BOARD			
Size: C	Number: 4030xx	Rev: -	
Date: 10/17/2012	Drawn by: G. VISSER	Eng. G. VISSER	
Filename: 40300xx_ITOP_HVB.sch			Sheet: 1 of 1

	baseline @ 10M	baseline @ 30M	active HVB (CRT ver.)
K	-3830 V	-3559 V	-3582 V
(delta)	(230)	(199)	(270)
MCP1N	-3600	-3360	-3312
(delta)	(900)	(900)	(900)
MCP1P	-2700	-2460	-2412
(delta)	(1125)	(975)	(900)
MCP2N	-1575	-1485	-1512
(delta)	(900)	(900)	(900)
MCP2P	-675	-585	-612
(delta)	(675)	(585)	(612)
A	0	0	0
current	450 uA	390 uA	117 uA
total pwr 8-ch	13.8 W	11.1 W	3.45 W (3690 V in)

Tweaking the final values based upon available HV Resistors

SLAC Firmware Review

US Belle II Firmware Self-Review



Location: SLAC, Building 84 (Central Lab Annex), Ballam Room

Date: October 12, 2012

Time: 1:30 p.m. - 6 p.m.

Dial-in information: (866) 740-1260, Access code 8147808#

Scope: Firmware and associated system architecture for the imaging Time-of-Propagation Counter (iTOP) and the scintillating fiber portion of the K-Long and Muon (KLM) subsystems.

Purpose: Review existing and planned firmware/system architecture, known problems, unresolved issues, scheduling, manpower needs and constraints, and partition of labor. Components of both systems are planned for utilization for upcoming cosmic ray tests at KEK and an iTOP beam tests at a location to-be-decided. **The review will focus on short term needs for these cosmic ray and beam tests.** We will also form a tentative plan for long term operations that target the final Belle II configuration.

As nearly all participants are currently or soon-to-be involved with the US Belle II firmware effort, this is primarily a "self-review" and an opportunity to coordinate and partition work, in particular determining how newly assigned firmware developers will be integrated into the effort.

Desired Outcomes:

- Short term (on the scale of the next six months) needs and plans:
 - A set of required specifications for short term use.
 - A list of firmware components to-be developed and tested, including responsible parties.
 - A list of suitable testing benchmarks/milestones to be demonstrated.
 - A list of documentation to be provided, responsible parties, and associated deadlines.
 - A proposed schedule of short term firmware development.
- Longer term development plans (on the scale of the next year and beyond).

Participant List (unconfirmed):

Local:

- Brandon Kunkler (Indiana)
- Kurtis Nishimura (Hawaii)
- Leonid Sapozhnikov (SLAC)
- Gary Varner (Hawaii)
- Lynn Wood (PNNL)

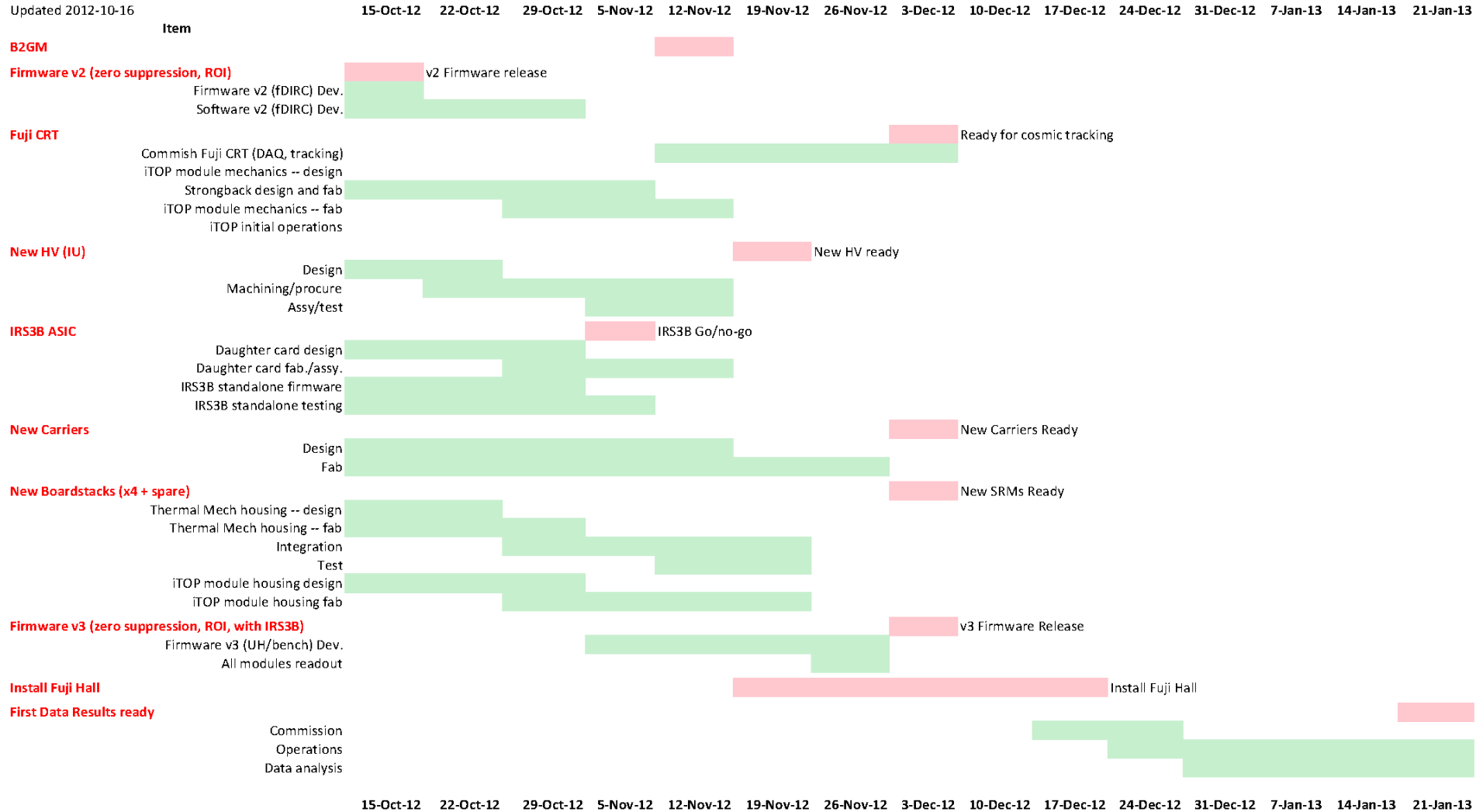
Remote:

- Status of work to date
- Identify scope/tasks that are underserved
- Addl manpower: Leonid (SLAC) & Brandon (Indiana)

CRT Schedule Update

CRT scheduling -- to meet CD-3b/CD-2&3

Schedule to first CRT run



Hawaii SciFi Tracker (detailed schedule in back-up) in mid-December

Summary

- Board designs and testing will be critical path
- Schedule is very tight
- A lot of progress, but a long way to go
- Working to address all short-comings of first integration effort, which takes time
- Shortfall in firmware manpower recognized and being addressed as resources allow

Back-up slides

