



Voltage Studies



- Follow up on earlier studies of pedestal, noise, and current for hybrid voltages ranging from 2.3 V to 2.7 V.
 - This time we're measuring voltage on the hybrid.
- Comparing data from hybrids **L2A 18** and **L2A 17**.
 - Note that **L2A 18** has a very noisy chip which affects the average noise levels.
- Searching for a functional range of operating voltages.



Test Matrix

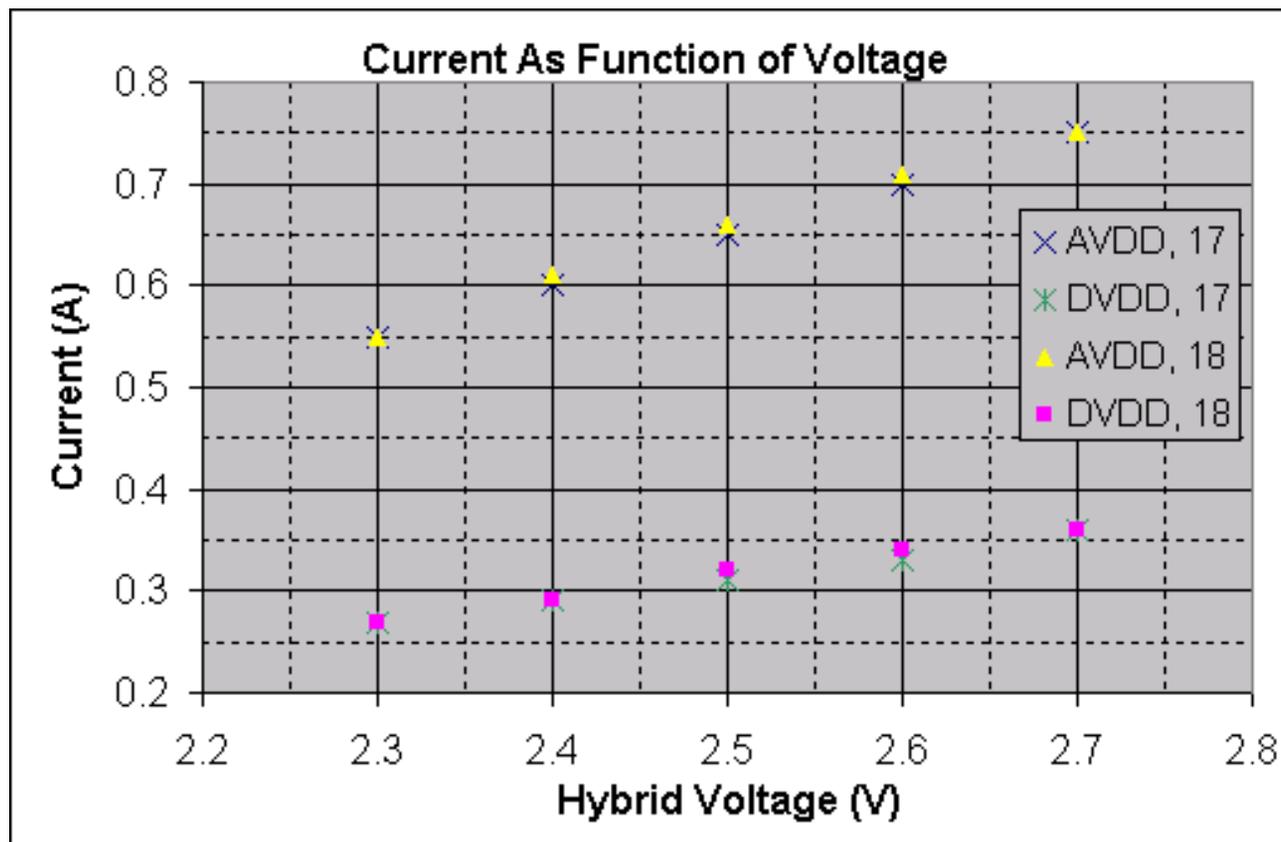


Setting	Test							
	1	2	3	4	5	6	7	8
CALINJECT:	FALSE	FALSE	FALSE	FALSE	TRUE	TRUE	TRUE	TRUE
CALVOLT:	32	32	32	32	32	32	32	32
MASK:	0	0	0	0	5	5	5	5
CALPIPE:	4	4	4	4	4	4	4	4
PIPELINE:	2	2	2	2	4	4	4	4
READ ALL:	On	Off	On	Off	On	Off	On	Off
READ NIEGHBOR:	Off	On	Off	On	Off	On	Off	On
RTPS:	Off	Off	On	On	Off	Off	On	On
PABW:	4	4	4	4	4	4	4	4

Tests 4 and 8 (sparsified mode) are currently not working.



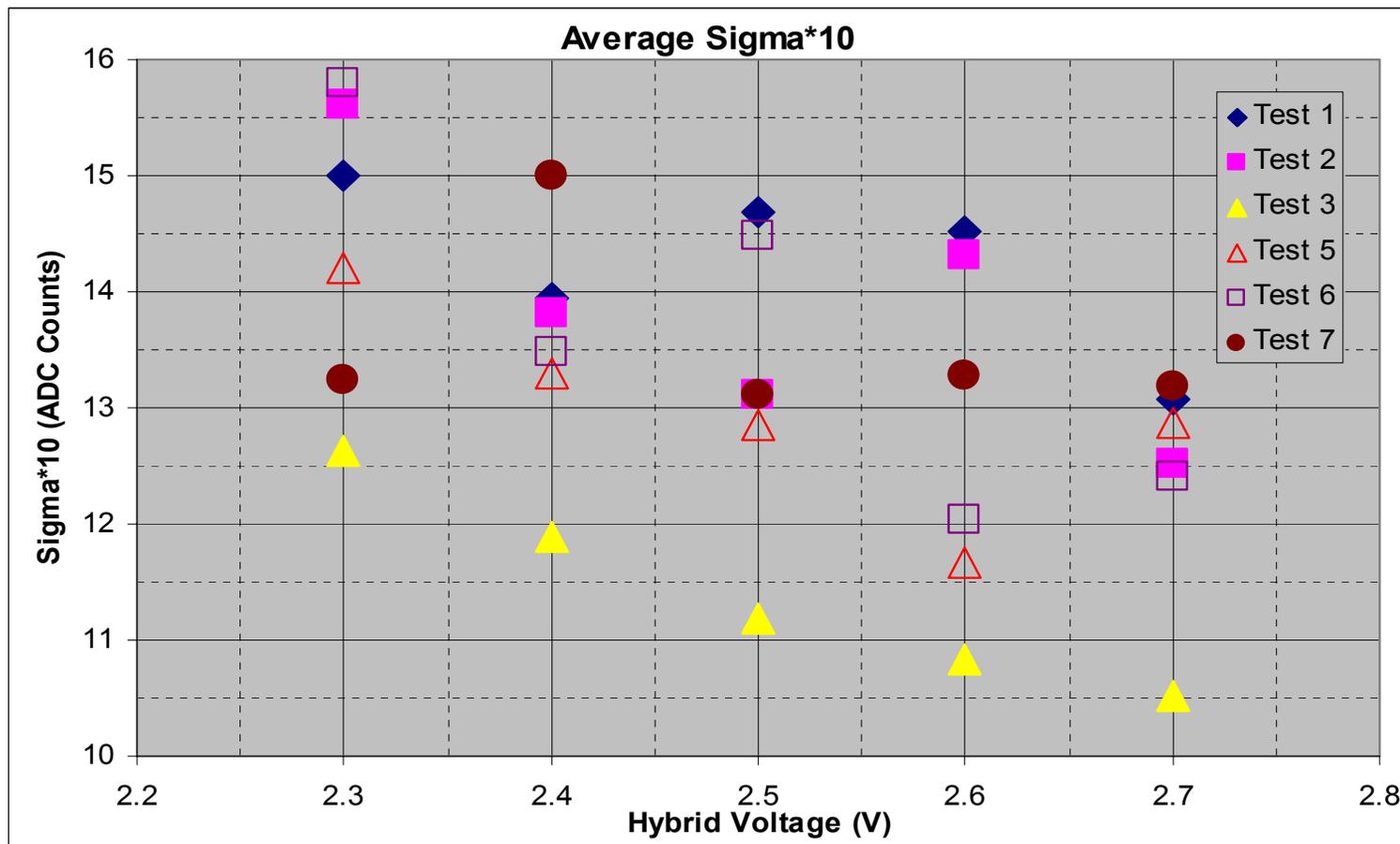
Current



No deviation in current as voltage is held constant.

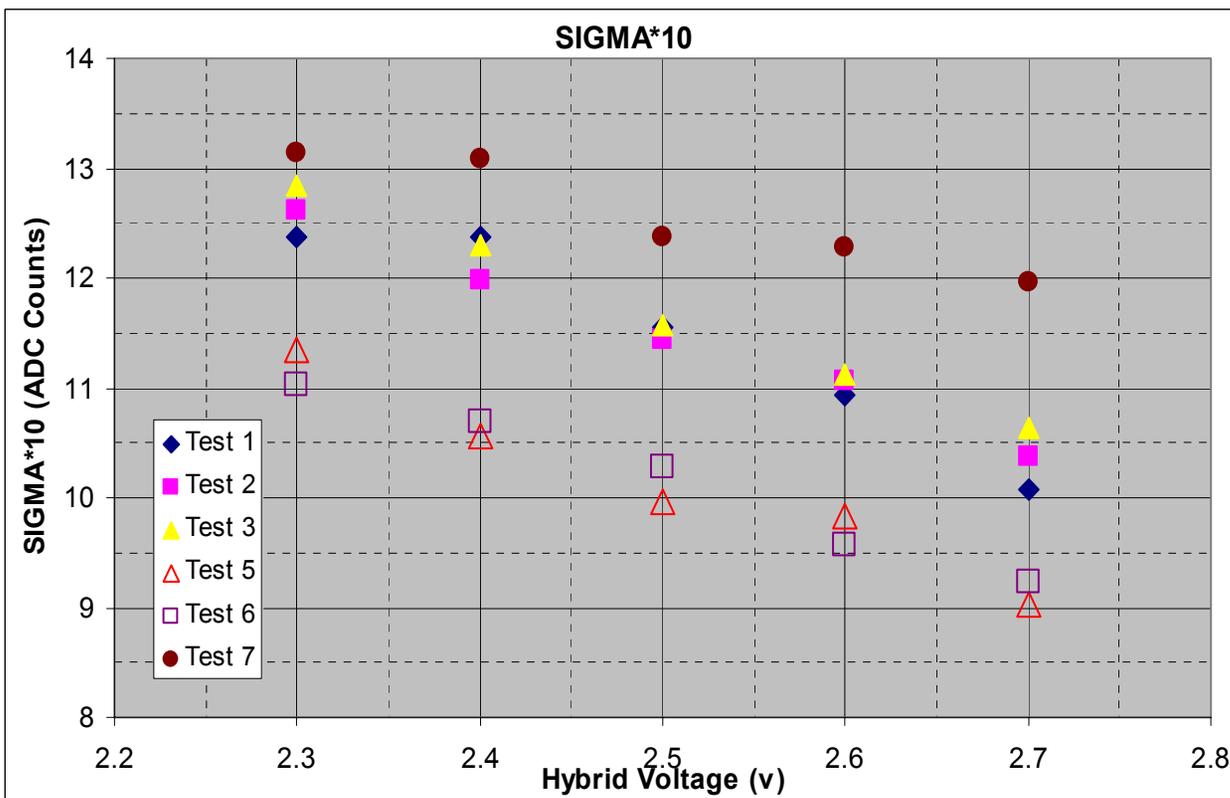


Standard Deviation Vs Voltage, #18





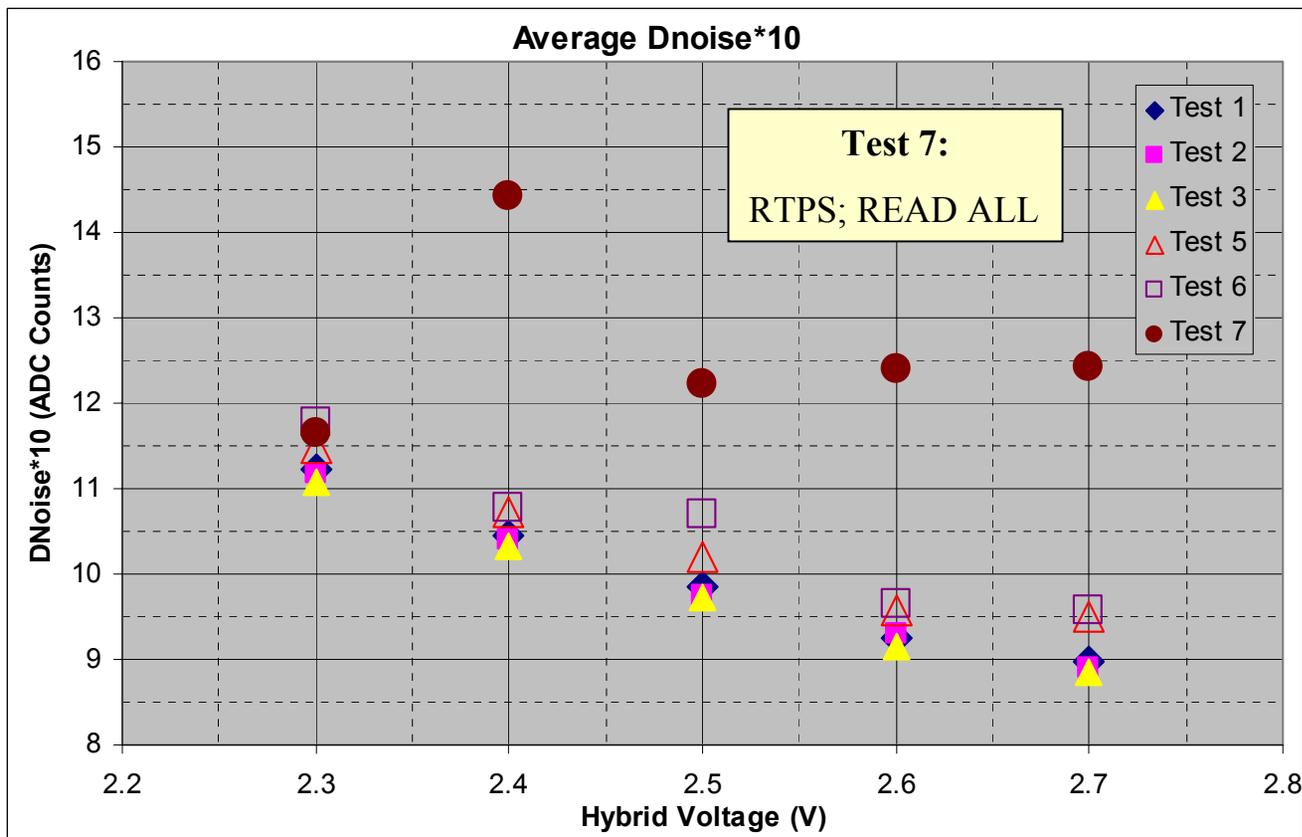
Standard Deviation Vs Voltage, #17



- Both hybrids exhibit same decreasing trend.
- Standard deviation is more linear for L2A 17. Recall that L2A 18 has a noisy chip.
- Error bars are too small to be seen.

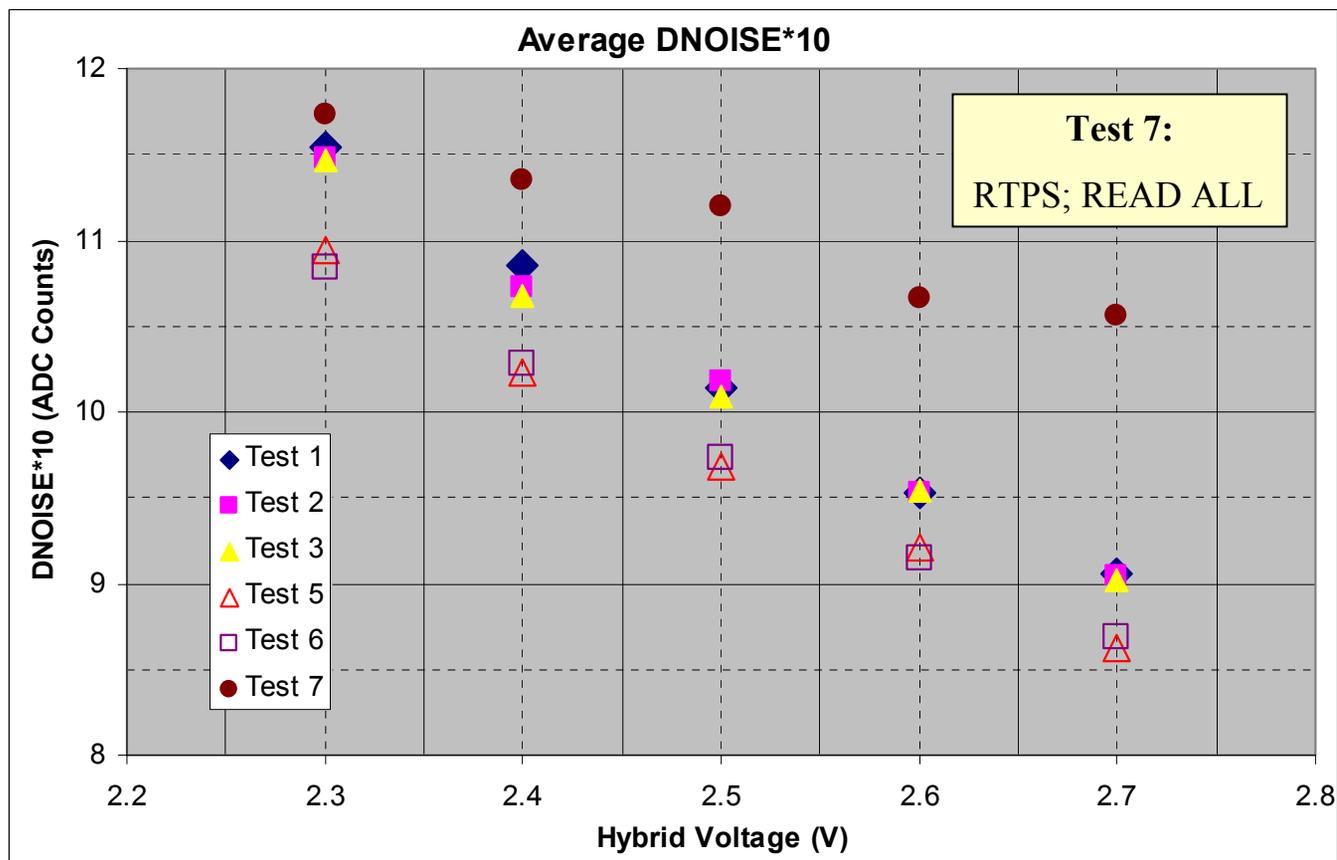


Dnoise Vs Voltage, #18



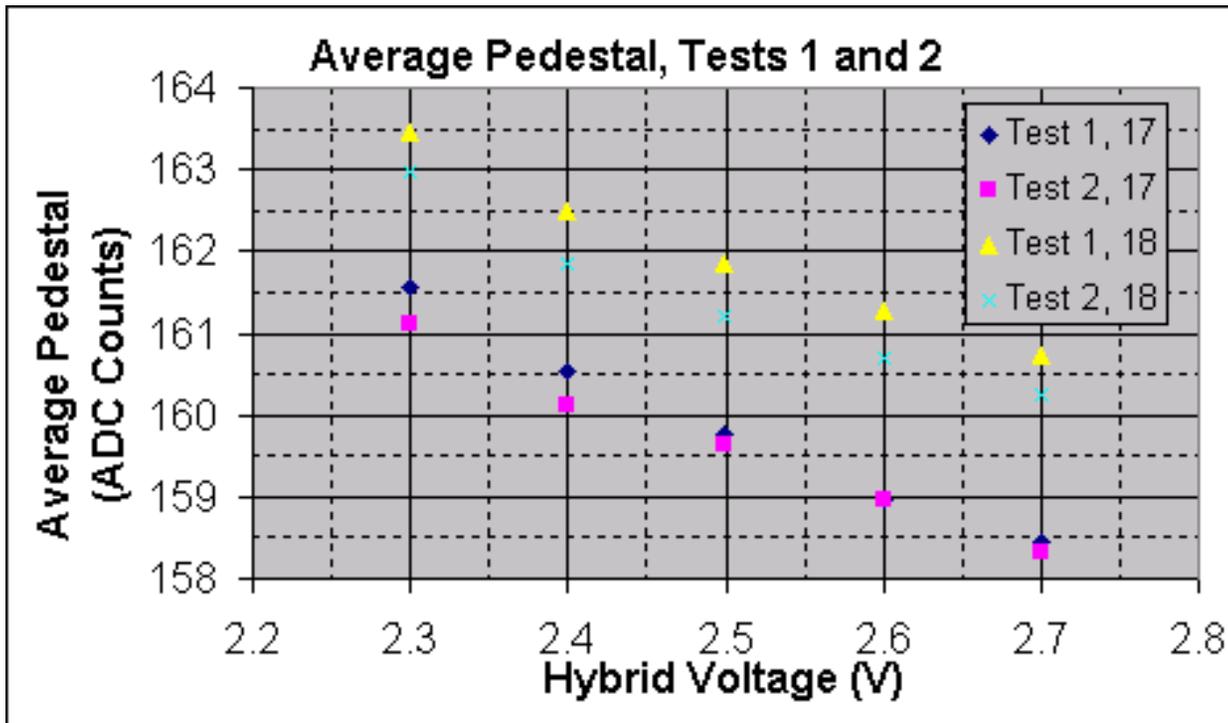


Dnoise*10 Vs Voltage, #17



- Differential noise has decreasing trend.
- Test 7 looks a little cleaner for L2A 17 than for L2A 18.
- Error bars are too small to be seen.

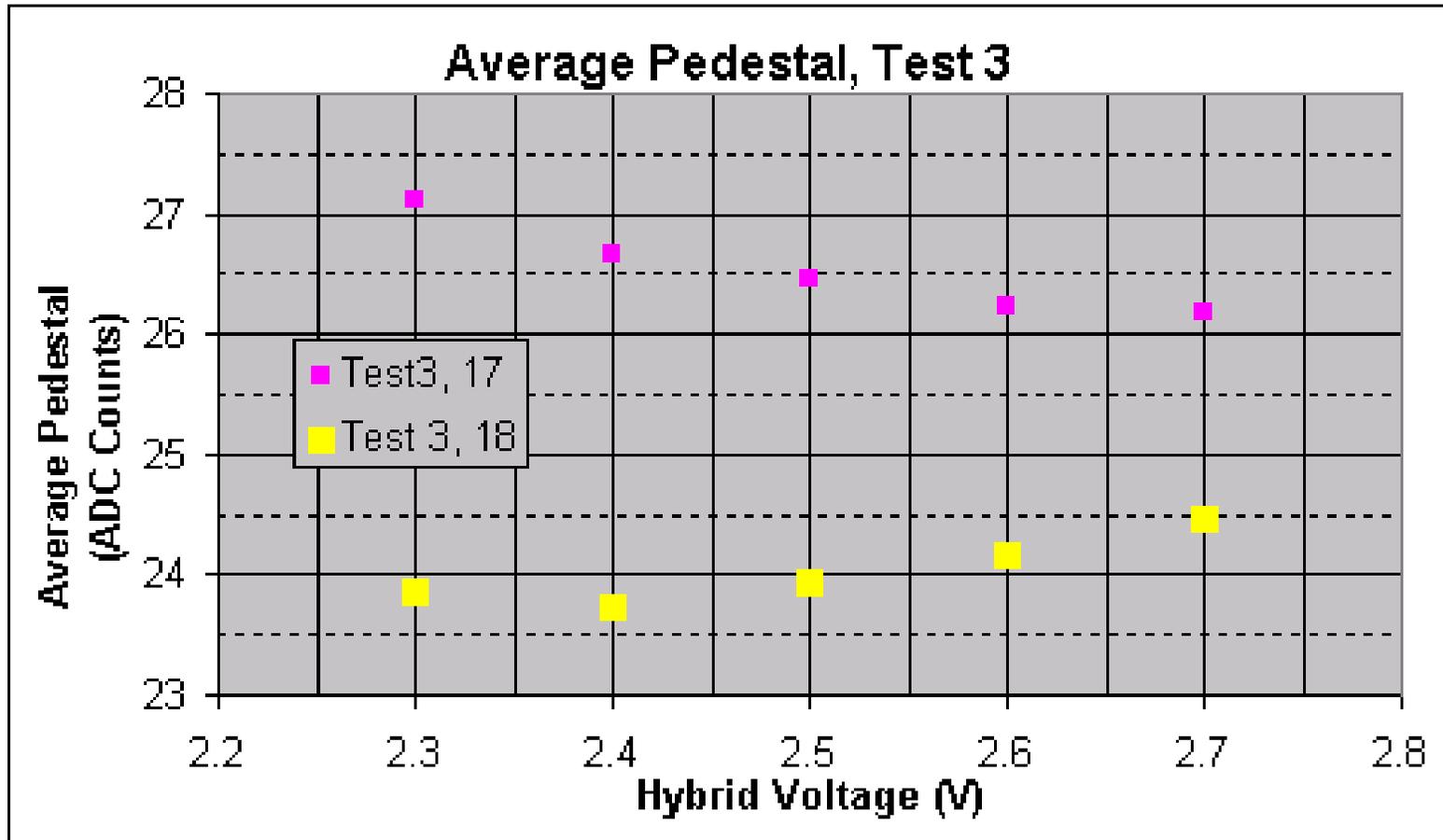
DO Pedestal Vs Voltage, Tests 1-2



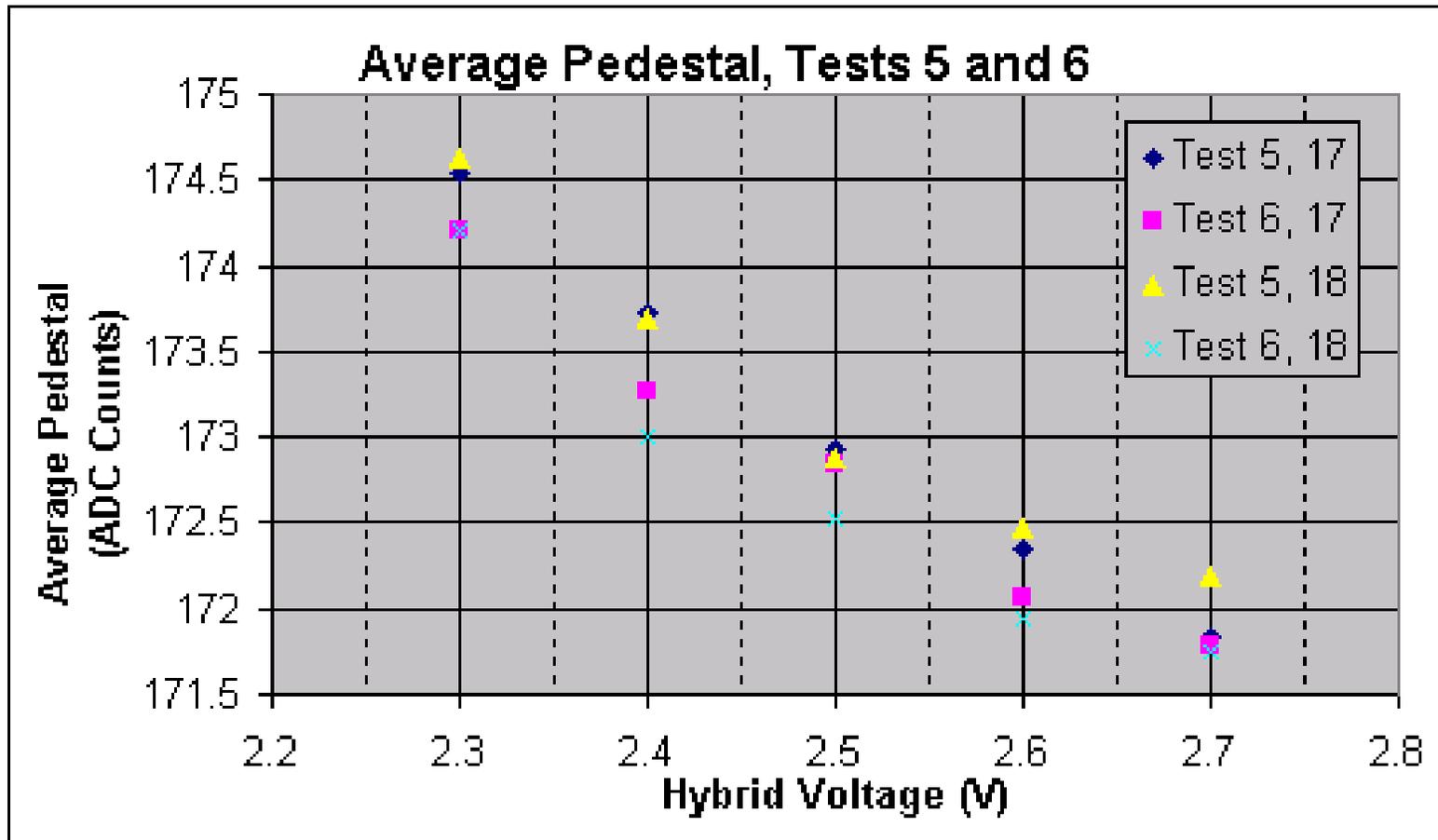
- **Tests 1 and 2**
- Overall both 17 and 18 both have a similar trend.
- 18 does have a higher pedestal average than 17.



Pedestal Vs Voltage, Test 3

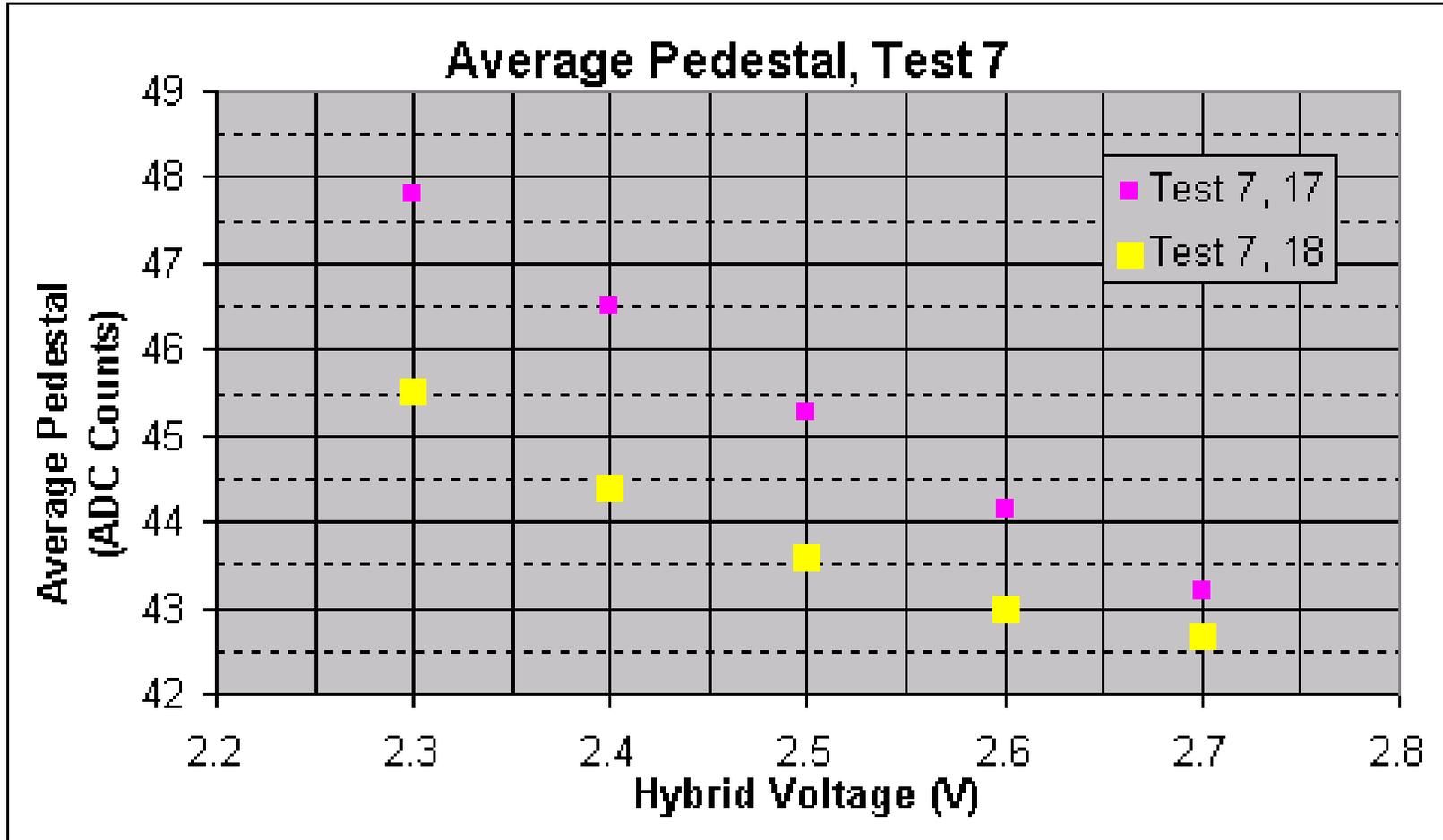


DO Pedestal Vs Voltage, Tests 5-6



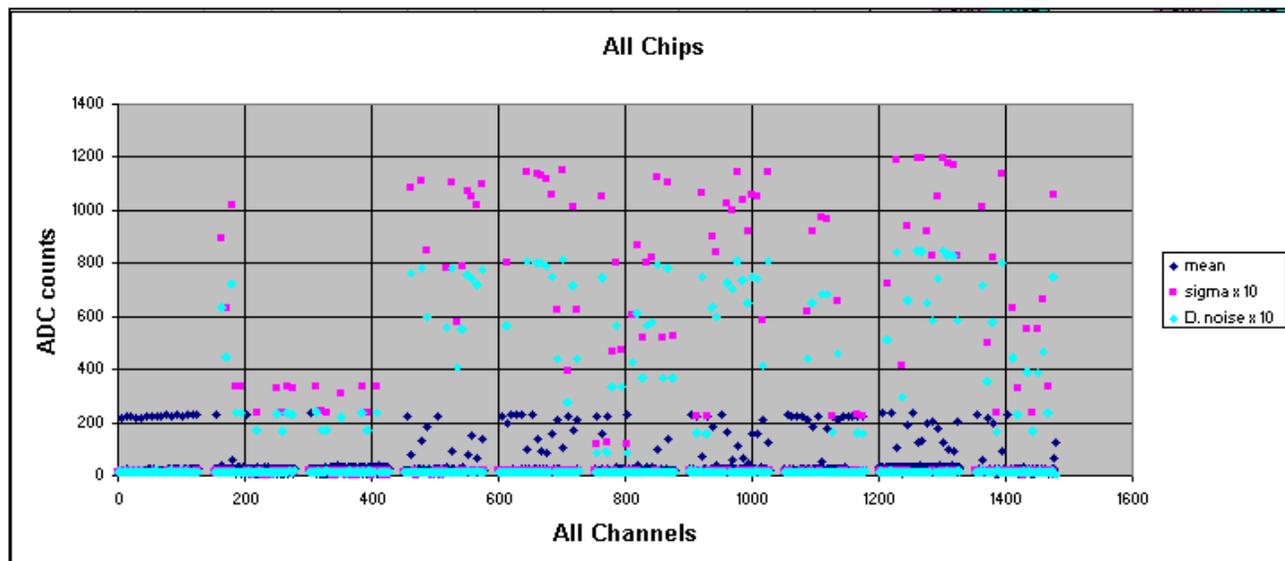


Pedestal Vs Voltage, Test 7





Voltage Floor



Test 7:
Calinject on
Read All on
RTPS on

- The purple card only allows 1.9 V when dropping the voltage at the hybrid.
- The only test that seems to bottom out is test 7 as shown above. It looks normal again at 2.2 V.
- This was the same for both hybrids.



Voltage Ceiling



- The purple card only allows 2.9 V when raising the voltage at the hybrid.
- At 2.9 V none of the tests failed for either of the hybrids.



Conclusions



- Overall the trends are very similar for both the hybrids except for Test 3's pedestals.
- There were different values for each test, but not such that one hybrid always had a lesser or greater value than the other.
- A floor of 2.2 V was found for one test, but the purple card wouldn't let us bring down the voltage any further.
- There were no ceilings established.
- Still trying to get tests 4 and 8 working.