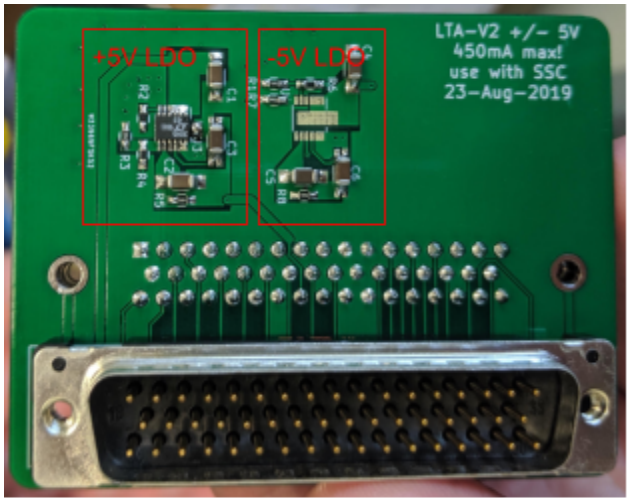
SENSEI FEE TESTING PROCEDURE

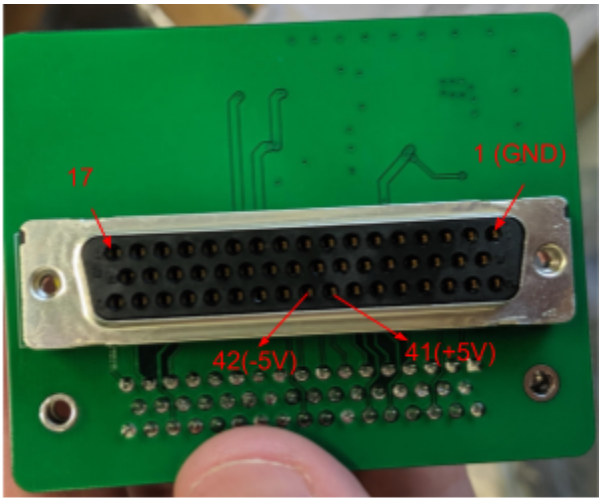
Read all the document before start running the tests.
All the following tests must be done with the LTA version 2. Nothing here applies for the LTA version 1.

Abbreviations:
FEE = Front-End Electronics
SSC = Second Stage Cable.
±5VPSB = ±5V Power Supply Board.
SSC-IDB = Second Stage Cable Inside Dewar Board.
skpCCD = Skipper-CCD.
skpCCD-sim = Skipper-CCD simulator board.

±5V power supply board (±5VPSB) test
> Connect the ±5VPSB to the M300. Run a resistivity test. Check that all the pins are isolated to the rest.

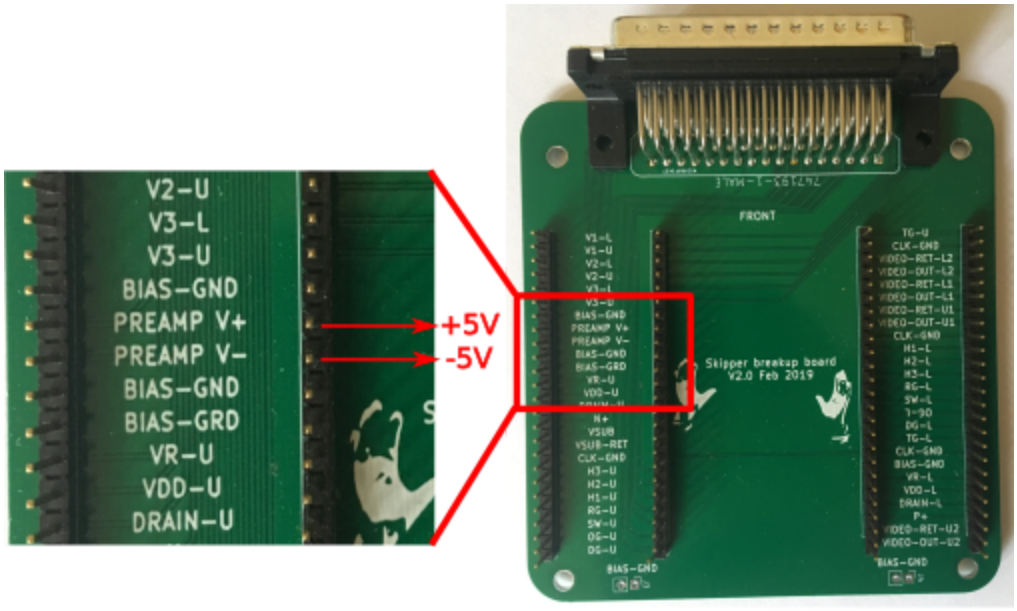


5VPSB LTAv2 side



5VPSB dewar side

> Connect the ±5VPSB to the LTAv2.
> Connect the break-out board to the female DB50 of the ±5VPSB dewar side. Turn ON the LTAv2. In the pins labeled as “PREAMP V+” and “PREAMP V-” of the breakout board you should measure +5V and -5V respectively.



LTAv2 breakup board

> Connect a 200ohms (⅛ W) resistor between “PREAMP V+” and BIAS-GND. Check if you continue having +5V in “PREAMP V+”. (200 ohms is the equivalent charge of a SSC, ~25mA.)
> Connect a 200ohms (⅛ W) resistor between “PREAMP V-” and BIAS-GND. Check if you continue having -5V in “PREAMP V-”.
> Connect the LTAv2, with the ±5VPSB, to the M300 and run a:

>>resistance (remember that LTAv2 must be OFF!)
>>and voltages test.

This will check if all the clocks signals are in the correct position of the female-DB50 of the ±5VPSB and should measure ±5V instead of ±15V.

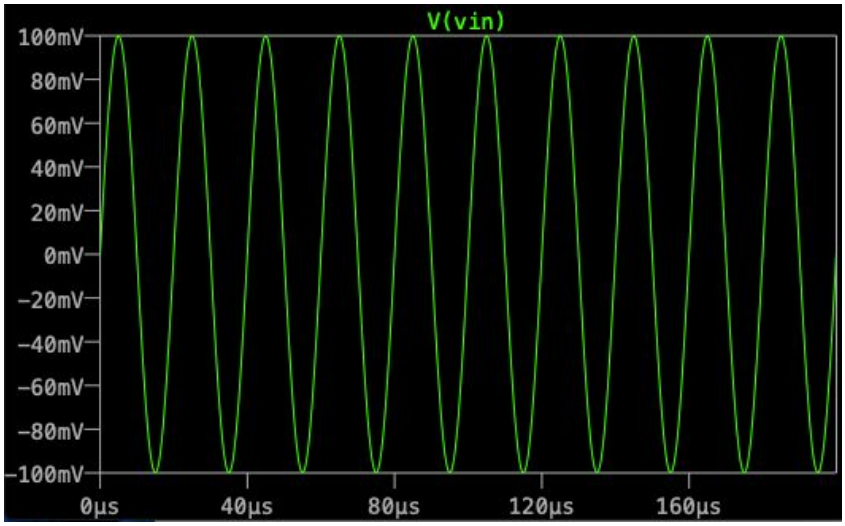
SSC passive test

> Connect the LTAv2 side of the SSC to the M300 and run a short-circuit test.
> In the skpCCD side of the SSC connect a shorting-connector and run a continuity test with the M300. Remember that this is a passive test and all must be OFF. Finished this test, REMOVE the shorting-connector

SSC amplification test

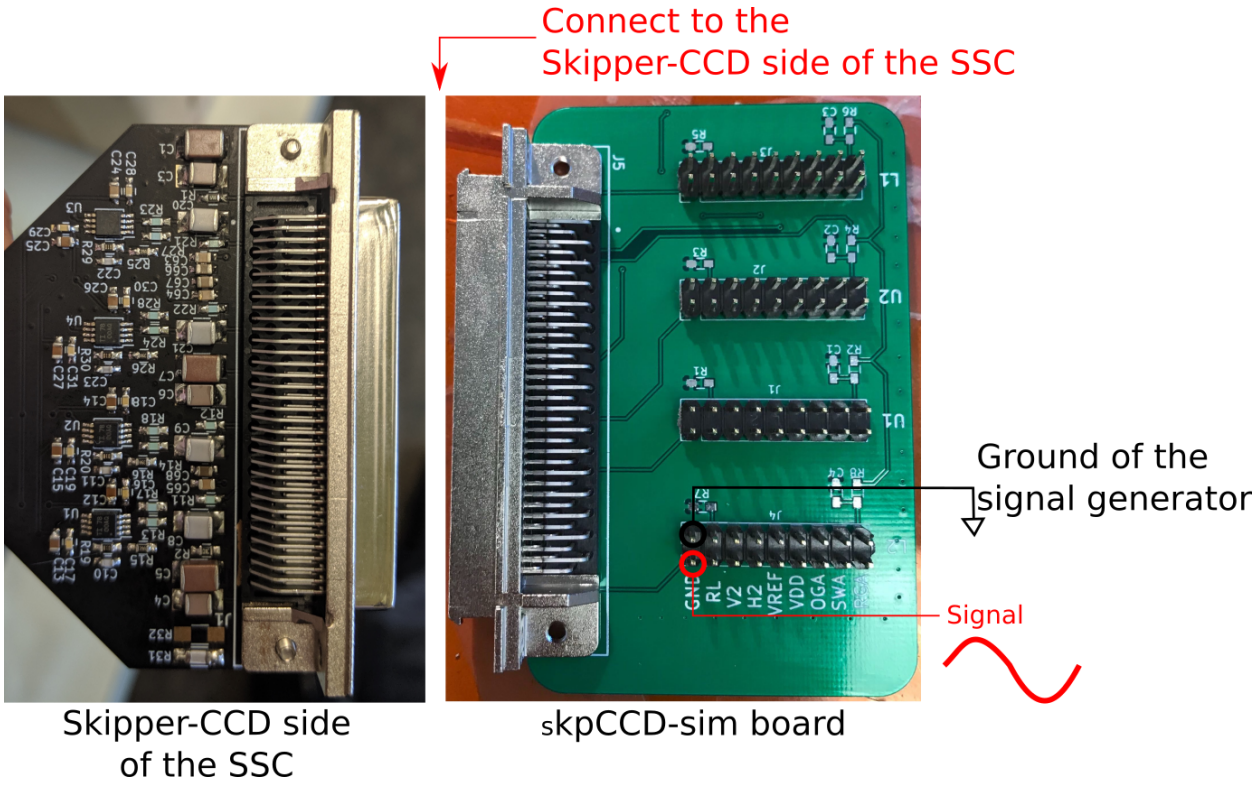
> Set a signal generator with the following parameters:

> sin wave,
> period of 20us (50kHz),
> 0V offset,
> Vpp=200mV (peak-to-peak voltage).

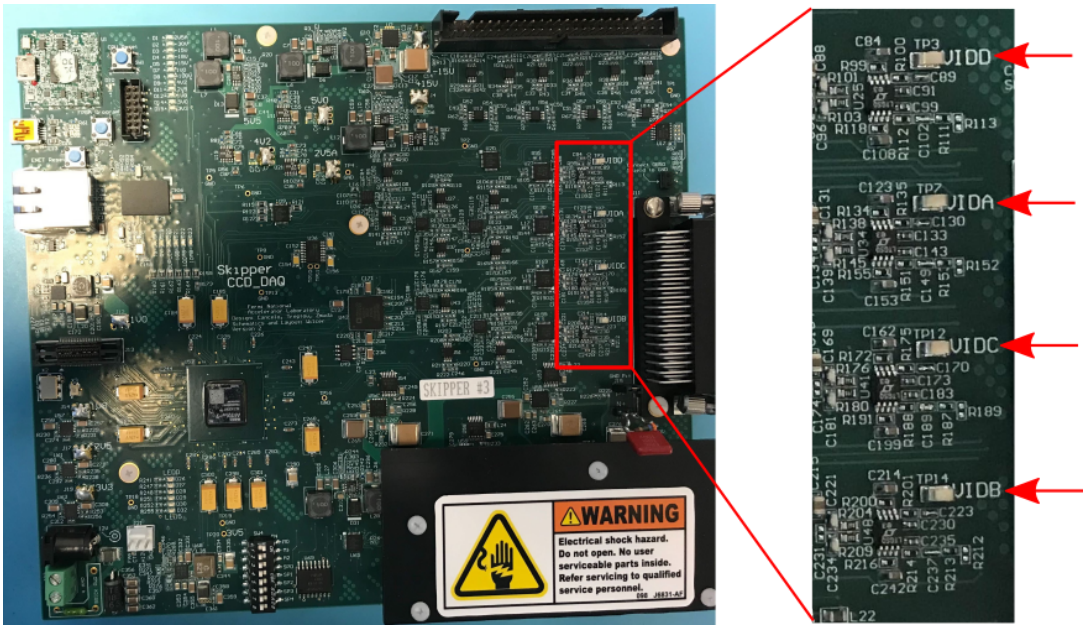


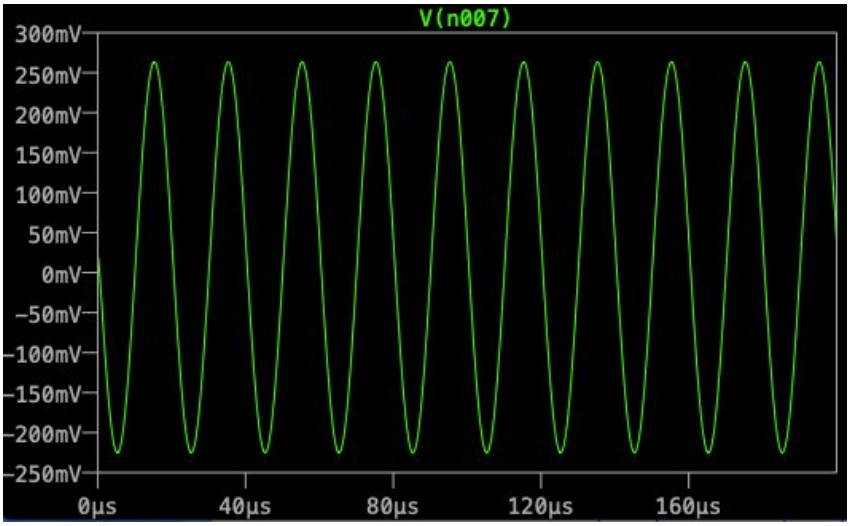
Signal generator output

> Remove all the jumpers of the skpCCD-sim board. It must look like in the next picture.
> Connect the LTAv2 OFF, the ±5VPSB (do not forget this board), a DB50 vacuum feedthrough, the SSC-IDB and the SSC with a skpCCD-sim.
> plug the signal generator in the skpCCD-sim, like the next picture.



> Turn on the LTAv2.
> In one of the LTA test points: (VIDA, VIDB, VIDC or VIDD), you should have the signal of the next image.





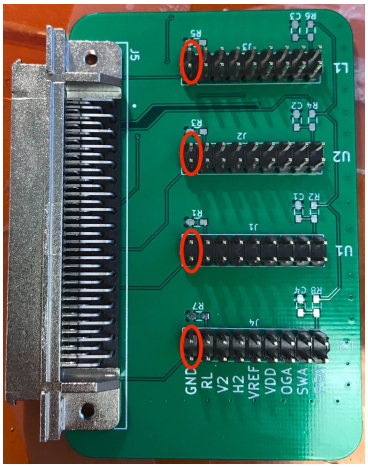
Signal at one of the LTAv2 test points.

> Repeat this measurement for the other three channels (U1, U2, L2 in the skpCCD-sim board).

SSC noise test

> Connect the LTAv2 OFF, the ±5VPSB (do not forget this board), a DB50 vacuum feedthrough, the SSC-IDB and the SSC with a skpCCD-sim.

> Connect the skpCCD-sim with jumpers in the positions indicated with a red oval in the next image:



> Run a noise test.

As a benchmark, could be useful to run this same test with the same LTA and a working Mistica board (or blue board).