

Dear TI Tech Support:

I am currently working on a preamplifier board as seen in the attached files. The original boards contained LTC6363 chips as the first stage amplifiers and exhibits no peculiarities. Due to chip shortages and supply issues we have assembled the latest batch of boards with your THS4561 chip as the first stage amplifier. The preamp is normally connected to a 3 dimensional receiver coil (3 separate coils, X, Y, and Z orthogonally wound on a cube) which is exposed to a momentary on, momentary off magnetic field. We have noticed several issues with this batch:

- 1) Upon power application of +/- 5Vdc with coils attached, some outputs of the 4561 have extremely high DC offsets (+ or - 1.3 Vdc or more). This offset disappears (outputs return to 0 Vdc +/- 200mV) when the coil is disconnected and reappears upon coil connection.
- 2) If after power is applied and the outputs are close to 0 Vdc (normal operation) when we introduce a signal into the receiver coils the 4561 output exhibits what appears as DC offsets. This can be seen in the "Peculiar Waveform" file attached.

Things attempted and/or noticed: (output refers to THS4561 output, not LTC1992 output)

- 1) Connecting a scope probe (X10 or X1 attenuation) to either output (+ or -) with scope ground connected to the pseudo-gnd (derived as mid point between + and - 5 Vdc supplies) the output peculiarity disappears. This happens with probe connected or disconnected from the scope.
- 2) Adding a capacitor (47 pF or 100 pF) from one output to pseudo-gnd eliminates the peculiarity but affects the decay in late times (10mS - 25 mS).
- 3) Adding a 10 pF capacitor from one output to the other output causes the outputs to go to rail upon power up. One output goes to negative rail while the other goes to positive rail. This is with or without the coils connected.
- 4) Removing Pin 2 (VOCM) from the pseudo-gnd had NO effect on the peculiarity.
- 5) Providing a stiff gnd (from the +/- 5V supply) had NO effect on the peculiarity.