

s a better link, in that one can actually view the circuit schematics.

There are a few simple refinements that will dramatically improve the low frequency PSRR of the single ended JFET circuits in the HPS5.1:

1) split the 3k3 resistor feeding the green LEDs into into 2 series 1k6 resistors and bypass the common node of these 2 resistors to ground. This low pass filters the noise current flowing in the LEDs due to power supply noise.

2) It would probably be even more effective if the base of the cascode transistor were driven by a voltage equal to the JFET source voltage plus about 3.7V.

It should, for example, be possible to use a selected JFET to do this.

3) The output servo should drive the noninverting input of the opamp via a CBCS cascode (or equivalent) with a load resistor connected to the input stage positive supply rail.

This should improve the PSRR dramatically. I use something similar in one of my low noise preamps albeit with a few LEDs in series with the resistor to provide most of the voltage drop as in my case the required voltage drop is reasonably predictable. This reduces the noise contribution from the servo integrator.

Bruce

-- [view thread](#) --The noise measurements for the HPSs 5.1 preamp:
<http://www.synaesthesia.ca/LNmeasurements.html>

indicate that while the high frequency noise is about 2.2x lower than an optimised single ended 2SK369 preamp its flicker noise is far higher. If one uses 5 2SK369's connected in parallel the flicker noise should be even lower whilst the high frequency noise will be comparable/ If the feedback resistor values are reduced perhaps 3 @SK369BLs will suffice.

Even lower flicker noise should be achievable if IF9030s are substituted for the 2SK369s.

Bruce

-- [view thread](#) --With a capacitive IF port termination the mixer sensitivity increases somewhat.

It increases more when using something like an HP10514 or 10534 than with an RPD-1.

Such a termination isnt particularly useful for offsets much above 100kHz or so.

If one terminates all mixer ports in 50 ohms as some insist is the best method, then the mixer phase sensitivity is much lower, in which case a somewhat lower noise preamp may be required.

The posted plot does show (together with the noise plot for the HPS5.1 preamp) that the 2SK369 and the IF9030 have much lower flicker noise than the BF862.

For an AC coupled sound card based spectrum analyser dc frequencies much below 2Hz or so are of little interest.

Being able to calibrate the preamp + sound card frequency response using the thermal noise of a resistor is convenient.

This is more difficult to achieve with a bipolar input stage as the amplifier input current noise is significant.

Bruce