Exponential Converter Tuning

The following equipment is recommended:

* Precision voltage source, accurate or better than +/- 0.0008V, or a settable voltage source and a 5.5 digit (or better) bench DMM.
* Frequency counter to 6 digits or more
* Calculator or spreadsheet

Procedure:

1. Set transpose potentiometer to have in output the minimum frequency value expected from the VCO, for example 27.5 Hz, which is the MIDI note A0.
2. Apply CV of 1.000V to the control voltage input
3. Measure frequency = "FA"
4. Apply CV of 5.000V to the control voltage input; maintain for step 14
5. Measure frequency = "FB"
6. Calculate A = log2(FA)
7. Calculate B = log2(FB)
8. Calculate dy = B - A
9. Given the previous choices, let dx = 5 - 1 = 4
10. Calculate I = A - dy/dx
11. Let desired Slope = dx/dy = 1V/oct
12. Calculate T = I + 5 \* Slope = I + 5
13. Calculate Target Frequency = 2T
14. With control voltage input still set to 5.000V, adjust trimpot R28 (Expo Scale Adj Low) until the SSI2130 is generating the target frequency
15. Apply CV of 9.000V to the control voltage input
16. Calculate set frequency as 16 times the target frequency from step 13
17. Adjust trimpot R48 (Expo Scale Adj High) until the set frequency is reached.
18. Go back to step 2 and repeat the procedure until R28 and R48 do't need to be adjusted anymore. At that point, stop.