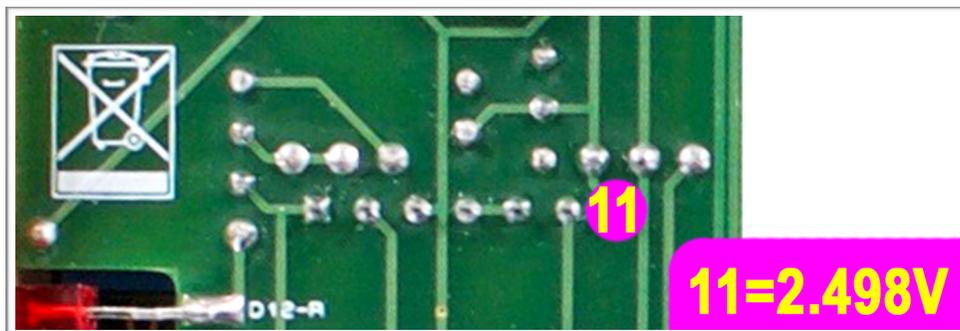


CAPI FC526-XFMR Limiter Calibration Guide Rev_1

****Pre Calibration Information****

1. Before proceeding forward with any of the calibration steps below, make sure you have between -9.98V DC and -10.02V DC at TP9. See the Test Points Guide for more info.
2. Before proceeding forward with the meter calibration steps below, make sure you have between +2.498V DC and +2.502V DC at the “top” of the the meter resistor string for the LM339 comparators, which is MTR point #11 in the pic. See the Test Points Guide for more info.



****Q_Bias of VVR****

1. Without being connected to a power source, prep the opamp sockets as shown here http://capi-gear.com/catalog/DOA_Install.php
2. Install a good, known to be working 2520 style opamp into the A3 position.
3. Turn both input and output pots fully CW to their highest positions.
4. Turn both attack and release pots fully CW to their fastest positions.
5. Set the ratio switch to 20:1.
6. Flip the Gain Reduction toggle down to off.
7. Flip the Sidechain filter up to off.
8. Flip the Bypass toggle up to BYP.
9. Power up the module and hope no silicon smoke escapes. Many of the meter LED's will be illuminated but don't worry about that at this time.
10. Apply a 1kHz sine wave @ -30dBu to the module and monitor the output level. Since we are currently in hard bypass, what goes in should be coming out.



CAPI FC526-XFMR Limiter Calibration Guide Rev_1

11. Flip the Bypass toggle to ACT.
12. The output level should be in the near proximity of +7.75dBu.
13. While watching the output level, adjust the RV2 Q_BIAS trimmer by turning **CW** until the output level does not change. It will most likely not change at all but do this just to be sure. This adjustment is taking the VVR FET safely out of its conductive range.
14. The FC526-XFMR's output level will be between +7.65dBu and +7.85dBu. If not, there is something wrong with the audio path in your build. See the Test Points Guide for more info.
15. Adjust the output of your signal generator up until the output of the FC526-XFMR is exactly +8dBu.
16. Slowly adjust the RV2 Q_BIAS trimmer **CCW** until your output level decreases to +7dBu. This 1dB loss is presetting the VVR FET into its conductive range.
17. Enable gain reduction by flipping the GR toggle up. The output level should not change.

****THD Nullification****

1. The THD nullification adjustment is not required for the FC526-XFMR build. The RV7 trimmer has been jumpered over. A median resistor value has been used instead.

****Gain Reduction Meter Calibration****

1. The goal for the next procedure is to get 7dB of gain reduction happening.
2. Start by flipping the GR toggle to off.
3. Apply a 1kHz sine wave @ +7dBu to the input.
4. Turn the input pot up to approximately 1:00.
5. Adjust the output pot so that your device monitoring the output level reads +7dBu.
6. Engage the GR toggle. Take note of the output level.
7. Disengage Gain Reduction.
8. Adjust the input pot up or down by the level amount noted in step #7 above. For example, my reading in step #7 was +0.4dBu so I will adjust my input pot up so that the level at the output is +7.4dBu. Then adjust the output pot to yield a +7dBu output level.



CAPI FC526-XFMR Limiter Calibration Guide Rev_1

9. Engage the GR toggle to verify that you have 7dB of gain reduction. If not, adjust the input an output pots as needed.
10. Once that has been verified, turn the GR toggle off.
11. At this point, your input pot should be right around 1:00 and your output pot should be at 10:00.
12. Set your DMM to read DCV. Hook your black probe onto the GND lug. Hold your red probe on pad TP10.
13. Adjust RV1 Z_ADJ thru the front panel access hole so that you have a +2.487V reading on your DMM. This is typically in a CW direction. This is a number that will not change since we are using a 2.5V precision reference for the comparator string.
14. With the red probe removed, only the green LED should be lit and glow fully illuminated.
15. Engage the GR toggle.
16. With 7dB of gain reduction, the target DCV at TP10 is +2.245V. The RV8 MTR_TRACKING trimmer will need to be adjusted to reach this goal. This can be a little tricky since it works **opposite** of how you might think. For example, if your initial reading is **more than** +2.245V, you will need to **increase** this voltage by turning RV8 in a CW direction. If your initial reading is **less than** +2.245V, you will need to **decrease** RV8 by turning in a CCW direction. **You will never get this meter calibrated if you try to adjust directly to +2.245V. The pattern should be clear after a few rounds of adjustments.** Without the red probe touching TP10, make sure that the -7dB LED is glowing fully. If not, a very slight adjustment may need to be made to compensate. The comparators are fairly sensitive. Although +2.245V has been consistent for me, there could be a a few mV difference on your build due to resistor tolerances.
17. Flip the GR toggle off and readjust RV1 Z_ADJ thru the front panel to yield a +2.487V reading at TP10.
18. Engage GR and recheck for the +2.245V target at TP10. By now you should see the pattern so rinse and repeat until you are satisfied. **The final step should always be the adjustment of RV1 thru the front panel access.**
19. If you are feeling adventurous, you can spend the time to check all of the meter LED's. With GR engaged, adjust the input pot to illuminate the specific LED you are checking. Then disengaged GR to see what the actual level difference is. I have found than each and every LED is accurate to within 0.3dB at the worst with a typical range of +/- 0.1dB.



CAPI FC526-XFMR Limiter Calibration Guide Rev_1

FYI, when switching the ratio switch to ABI, the green meter LED will not illuminate. This is normal since the FET is being taken out of its conductive range. On a properly calibrated vintage FET limiter, the VU meter will increase by the amount of loss the FET is biased to.

Due to heat, periodic adjustments may need to be made to zero out the meter's green LED. This is normal but should be pretty consistent once the module has been up and running for 45 minutes or more. The LM339 voltage comparators are fairly sensitive so a few mV of drift can be enough to turn the LED on or off.

And that is all folks! Enjoy!!

