

# CAPI FC526 Limiter Test Points Guide Rev\_2

## **\*\*Audio Path\*\***

- TP1** Immediately follows the balanced receiver opamp, just before the RV6 input pot. Signal here should be 6dB lower than the balanced signal level at the input of the module.
- TP2** Immediately follows the signal preamp opamp, just before the RV5 output pot.
- TP3** Immediately follows the output opamp, just before the T1 output transformer. Signal level here will be approximately 6dB lower than the module's balanced output.

**Audio Path Test:** With the VVR FET fully out of conductive range (RV2 fully **CW**), turn both input and output pots wide open or fully CW. Apply a 1kHz sine wave @ -30dBu to the input.

You should have the following:

**TP1** = -36.1dBu or appx 12.2mV AC

**TP2** = -9.9dBu or appx 246.2mV AC

**TP3** = +8.16dBu or appx 1.97V AC

**Module's Output** = +14.17dBu

## **\*\*Sidechain Audio Path\*\***

- TP4** Immediately follows the HP filter capacitor which is just after the ratio switch and at the input of the sidechain audio opamp's input. The audio signal is taken from the output of the signal preamp's opamp and goes thru the voltage divider string of the ratio switch before arriving here.
- TP5** Non-inverted sidechain audio taken after the sidechain opamp and just before the low-leakage rectifier diode D2.
- TP6** Inverted sidechain audio taken after the sidechain opamp and just before the low-leakage rectifier diode D1.

## **\*\*Sidechain DC Elements\*\***

- TP7** Is the VVR FET bias measurement location. If the VVR FET is properly setup in its -0.5dB conductive range, the DC at this Test Point will match what is written on the FET bag's label. FYI, I use a Fluke 177 for all FET measuring and sorting. This DMM has a very high impedance of >10MΩ. If your DMM has a lower impedance, it can greatly skew this reading causing some confusion.
- TP8** DC voltage at the wiper of RV2, the Q\_Bias trimmer.



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**TP9** -10V DC rail. **This is a critical measurement!** If this is not between -9.98V and -10.02V, nothing will operate consistently or correctly as far as the sidechain part of the circuit goes. The first few kits were incorrectly shipped with a 1k2Ω resistor for R41, the voltage dropping resistor for the precision reference shunt regulator. This has since been corrected and changed to a 750Ω resistor. This will provide a solid and consistent -10V reference from an incoming supply rail of 14.5V to 20V at the card edge. Well within the VPR spec.

**TP10** DC voltage used for the gain reduction meter's comparator string.

**TP11** Gate lead of F4 the VVR FET.

**Sidechain Test:** With the VVR FET properly biased and the THD null completed, set ratio to 20:1, Attack / Release fully CW to fast, Input wide open fully CW, Output to appx 7:30 and GR Off. Apply a 1kHz sine wave @ -10dBu to the input, trim Output pot to yield a 0dBu output level. When engaging GR switch, the output level should drop to appx -9.22dBu, yielding 9.22dB of gain reduction.

You should have the following:

**TP4** = 473.7mV AC (depending on the input Z of your DMM, the output level will drop appx 0.3dBu or so when connecting your red probe)

**TP5** = 3.7V AC / -6.17V DC

**TP6** = 3.7V AC / -6.17V DC

## **\*\*LED Gain Reduction Meter's Comparator String\*\***

Below are the DC reference voltages that each comparator channel "looks" at. When the TP10 incoming voltage from the meter amp drops just below the reference, that comparator's LED will illuminate. It takes about a 0.45% lesser voltage for the respective LED to fully illuminate. This is why we use 2.487V for the green 0dB LED. 2.487V is about 0.45% less than the 2.5V reference. This is also where 2.245V comes from to illuminate the yellow -7dB LED. 2.245V is about 0.45% less than the 2.253V reference voltage found at MTR point #3 in the below pic.

**Tip:** If your reference voltage at MTR point #11 is closer to 2.6V, there is a likely chance that card edge connectors #5 and #13 are not connected in your rack. You can easily verify this with a quick continuity test using your DMM. When these are not connected in your rack (or console), the top "dirty" ground plane (used for MTR and logic ground) gets its 0V reference thru the 10R that is added between the gold finger pads #5 and #13. This creates a small shift or offset. The easiest way to work thru this would be to clip your black probe onto the gold finger #5 end of the 10R when doing the meter calibration. Once completed and inserted into your rack you will have to re-zero the green LED by eye thru the front panel hole. No worries though as this will slightly shift the entire meter scale *equally* so your meter will still accurately track gain reduction.



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