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Audio Path

TP1 Immediately follows the balanced receiver opamp, just before the RV6 input pot. Signal here should be 12.4dB 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 = -42.4dBu or appx 5.8mV AC
TP2 = -16.3dBu or appx 117.7mV AC
TP3 = +1.73dBu or appx 939mV AC
Module's Output = +7.75dBu

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 to its -1dB 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 voltage dropping resistor for the precision reference shunt regulator 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, set ratio to 20:1, Attack / Release fully CW to fast, Input wide open fully CW, Output to appx 7:45 and GR Off. Apply a 1kHz sine wave @ -2dBu to the input, trim Output pot to yield a 0dBu output level. When engaging GR switch, the output level should drop to appx -10dBu, yielding 10dB of gain reduction.

With 10dB of gain reduction, you should have the following:
TP4 = 470mV AC (depending on the input Z of your DMM, the output level will drop appx 0.15dBu or so when connecting your red probe)
TP5 = 3.7V AC / -6.17V DC
TP6 = 3.7V AC / -6.17V DC

Ratio Test: With the VVR FET properly biased, set ratio to 20:1, Attack / Release fully CW to fast, Input pot set to appx 2:00, Output pot to appx 9:30 and GR Off. Apply a 1kHz sine wave @ -5dBu to the input, trim Output pot to yield a 0dBu output level. When engaging the GR switch, the output level should drop to appx -1dBu. Adjust the Input and Output pots to yield **exactly** 1dB of gain reduction as done in the meter calibration step. To verify the ratios, do not change any controls except the Ratio switch. The amounts of gain reduction observed should be +/- 0.1dB of the following:

20:1 = -1dB
12:1 = -2.6dB
8:1 = -3.3dB
4:1 = -3.7dB
2:1 = -0.9dB

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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.