Application note: APNT25001

OUTPUT LEVEL CONTROL IN AHO AMPLIFIERS

AH0 and AH0C amplifiers include a sample output that can be used for output level control. The P3090 board performs an ALC on the output signal so that this output can be adjusted to a constant power to compensate for the drift of the amplifier and the drift of the signal source.

This is especially important for amplifiers operated close to class C since the gain depends on the drive level. It is also important for amplifiers that display drifts in their semiconductors such as those using GAN transistors.



Figure 1:50W Class AB 2.45GHz amplifier with external ALC board

The P3090 board uses a fast attack slow decay detector. The fast attack allows it to respond fast to a signal surge, the slow decay holds the level for enough time so that it does not respond to the signal modulation.

The P3090 board can be used for example with the P2920 amplifier (50W, 2.4-2.5GHz).

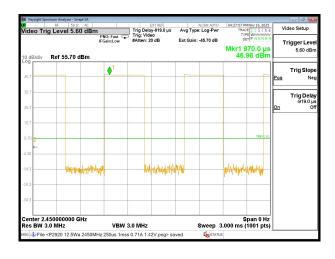


Figure 2: P2920 + P3090; 50W CW pulses 500µs / 1ms; 25Waverage

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OUTPUT LEVEL CONTROL IN AHO AMPLIFIERS

The CW signal is switched On/Off with the internal fast On/Off command of amplifier P2920.

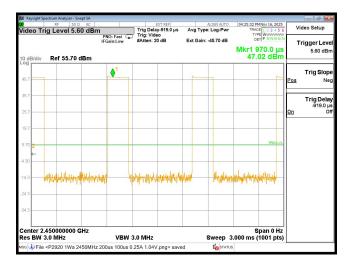


Figure 3: P2920 + P3090; 50W CW pulses 250µs / 1ms; 12.5W average

The hold time of P2990 is around 1ms so that in figure 2 and 3 the ALC command is held constant during respectively 500µs and 750µs during which the signal is Off.

When used with a class A amplifier the slow decay time of P3090 permits a linear amplification of signals with a modulation greater than 1kHz without generation of intermodulation products (figure 4).

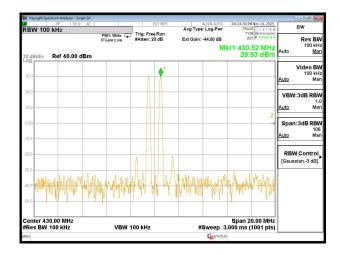


Figure 4: P3120+P3090; 2 tones 1W each under limitation

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