Subject: Re: Class A, AB1, B, C Operation/Modes
Posted by Wayne Parham on Sun, 05 Mar 2023 14:05:01 GMT
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I connect signal ground to chassis ground, but at only one location.

Any device that is remote must be isolated in some way, without having grounds connected. The isolator can be a transformer or something like an opto-isolator.

Where this can become tricky is in the definition of "remote." Some might think of this as a physical distance, and in fact, that is often the case. But in fact, what makes a device "remote" is the resistance and reactance of the ground conductor.

If all devices had a hypothetical perfect zero resistance connection between grounds, there would be no possibility of the condition we call a ground loop. What causes the problem is the difference between the local ground potentials at each device. And this is due to the resistance between them.

So I try to limit resistance between ground connections everywhere that's possible. That's the case inside a chassis as well as outside. But if resistance cannot be reduced to very, very low levels - close to perfect zero ohms - then isolation is necessary.

And that includes reactive effects too, which makes things even trickier. A resistance of zero ohms at DC doesn't matter much if the circuit is operated at 10Mhz and there is reactance in the ground conductor, making it higher than zero ohms in the passband of the circuit. Where there is any resistance or relevant reactance in the ground conductor, we must abandon the approach of connecting the circuits and instead completely isolate them by transformer or opto-isolator.