



The Amateur in You, Part 2

What have you been pondering?



Desensitization

When trying to talk with somebody on the radio through a repeater, and both of you are in the same building, you might have found that you both sound garbled or one can't hear the other at all. If so, you two were probably the victims of a phenomenon known as *de-sen-si-ti-zation*, or **desense** for short. It's an issue that can catch an operator off-guard, prompting the person to check the offset, the tone, the squelch level, and other settings that seem to be adjusted correctly.

Desense can occur when a transceiver is attempting to receive a strong signal in the presence of another strong signal on a nearby frequency, making your transceiver seem *less sensitive to the desired signal*. For example, say you and a household member both have handhelds that are set to the 146.780 repeater. While you listen on 146.780 MHz, the repeater output, your household member presses the PTT and communicates to the repeater on 146.180 MHz, the repeater input. While your handheld is attempting to demodulate (interpret) the repeater signal on 146.780 MHz, the other signal from your household member on nearby 146.180 MHz is much closer to your handheld, and much stronger than the repeater signal.

The stronger signal over-powers your radio, causing it to prefer the stronger signal, even though it's off-frequency from the one you're listening to. This can result in you hearing the stronger, off-frequency signal, sounding garbled, and maybe even a little bit mixed with the weaker signal arriving from the repeater. Desensitization is not confined to handheld radios, and can also be experienced by mobile radios in two adjacent vehicles rolling down the highway, both tuned to the same repeater.

Because both the stronger nearby signal and

the weaker distant signal of two of the **same** frequencies don't tend to exhibit this effect, desense is not typically a problem when communicating on simplex. But it can still occur on HF (which is typically only simplex) especially during a contest, in which strong, near-by-frequency signals are competing for your attention with another that you're tuned to. It's just that FM repeaters (and therefore our transceivers) require a much larger bandwidth to communicate, making the problem more obvious.

So, how do you solve the problem of desense? Probably the most immediately easy way is by separating the receiving and transmitting radios by some distance, like a hundred or more feet. If that's not easy or possible, try lowering the output power of the transmitting radio. And if that's not practical, set the receiving radio on reverse, so that it's listening on the repeater input, placing your two radios essentially on simplex with each other.

Some HTs are more susceptible to desense than others, because of lower front-end selectivity (ability to pick up signals of selected frequencies while rejecting undesirable signals). While all HTs exhibit some level of desensitization, Baofeng HTs seem to be affected a little more by it than Yaesu HTs, for example. That's not to say you should avoid Baofeng HTs; it just means you should be aware of this phenomenon if you use one for repeater communication.

