

If receiver noise floor is 10 dB below band noise, the receiver is contributing less than 0.5 dB of the total noise.

Band noise varies by band over 30 dB, 160-10 meters. It also varies by direction and time of day, plus what the sun is doing. In an noisy urban environment it is anybody's guess as to your band noise level.

A simple test is to see how much the noise coming out your speaker increases when you switch between a dummy load and your antenna, when tuned to a dead spot on the band.

Example on 10 meters at my rural QTH, IC-756 Pro III: preamp OFF, noise goes up 3 dB. That means the receiver is contributing half the noise. Preamp 1 ON, band noise goes up 9.5 dB.

Almost all legacy receivers are designed for 10 meters, and attenuation is desirable on the low HF bands. Most SDR receivers have a preamp in the circuit all the time to buffer the antenna connection to the ADC. The Flex 6000 radios can have the preamp out of the circuit, and will need the preamp enabled on some bands at certain times of day.

If you can barely hear your antenna connect, you are not going to hear weak signals. That was the case with a Flex 6300 a year ago on 75 meters at 8:30 AM a year ago because the radio had no preamp below 30 meters. That problem has been corrected with an engineering change order about a month ago.

During the recent ARRL 160m CW contest I ran a TS-990S with 18 dB of attenuation and an IC-7300 with 20 dB attenuation. That put band noise about 10 dB above receiver noise. Band noise was also significantly below AGC threshold which significantly reduced fatigue. Occasionally I would have to turn up the AF gain on a weak signal, but that was rare.

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