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Hi Rick,

First one has to realize that the League is testing close-in dynamic range (DR3) with a 3 Hz filter (spectrum analyzer bandwidth) to sidestep the reality that most radios today with high dynamic range are phase noise (reciprocal mixing) limited. The Eagle DR3 at 2 kHz with a real-world 500 Hz bandwidth was 90 dB, and is only modestly exaggerated to 93 dB by the 3-Hz method. The IC-7600 is exaggerated by 9 to 10 dB, while the Flex 3000 is exaggerated by 10 dB.

How the FTdx-5000 will shake out will be interesting. By the time we are in the 90 to 95 dB range with real numbers, one really has to look at the whole package of the radio, not just this one important number.

73, Rob, NC0B

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QUESTION from another group member to Rob:

Rob,  
3 Hz??  
Do you mean 3KHz?

3 cycles seems narrow for anything here.  
Maybe I'm confused? It would not be the first time :-)  
73,  
(name withheld)

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Yes 3 Hertz. Here is the deal. We try to look at the intermod with a 500 Hz filter, all most all the time the measurement is limited by reciprocal mixing (phase noise) of the radio's LO. I guess either the League or the OEMs got tired of that, so they came up with a clever way to ignore the reciprocal mixing. If one uses a spectrum analyzer to look at the audio coming out the speaker, and cranks the bandwidth down to 3 Hz, the integrated noise is reduced a lot (something in the range of 20 dB). Thus one can measure the intermodulation products even though one might not be able to hear them at all. In the case of the IC-7600 and the Flex 3000, the noise was 10 dB louder than the intermod product. Thus even though the League

published a value of 88 dB on their sample, and I got 87 dB on my sample with the 3-Hz method, the real-world number with a normal 500 Hz filter came out 78 dB. Adam Farson, a well known Icom fan, also measured the IC-7600 at 78 dB with the 500 Hz filter.

The League uses the same 3-Hz method for blocking, so I also published the 3-Hz blocking numbers so the Eagle could be compared to the other top radios. I don't get excited about blocking numbers as they are usually 30 to as much as 40 dB higher than the intermodulation overload point. In reality modern radios don't block, but the weak signal is covered up with phase noise before some stage goes into gain compression.

I don't think it is helpful to have the League publish performance numbers that have no correlation to how we operate radios in a contest / pile-up. Please note that if a radio was not synthesized, like I assume an Omni-V, the two methods would give the same number. So the post 2006 League method isn't wrong, it is just meaningless for modern radios. Maybe meaningless is too harsh, but it certainly exaggerates what one can expect in the way of performance. Unfortunately it inadvertently encourages an OEM to pay less attention to the synthesizer than he might if the older method was still being used. One could imagine some radio in the future having a really poor synthesizer that made the real numbers 15 to 20 dB worse than the measurement made with a 3-Hz filter. Thank you very much ARRL.

73, Rob, NCOB