

ANALOG VS. DIGITAL RADIOS: WHAT'S THE DIFFERENCE?

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I've recently received some inquiries from patrols asking if they should be looking at digital radios as replacements for non-narrowband-capable units. Because of the great amount of misinformation in the marketplace, here are the facts.

A "digital radio" is a radio that uses "digital modulation" to transmit speech. The radio converts your voice to data, transmits that data, and the receiving radio converts the radio signal from data back to voice. A "digital radio" is NOT a radio with a digital display showing the channel name or number, nor a radio employing sophisticated electronic components to transmit (analog) voice signals. Ski patrols have traditionally used "analog" radios.

Different manufacturers employ a variety of digital transmission techniques to lock the buyer into a particular brand or model. At the top end, "public safety" market radios, typically sold to large police, fire and EMS customers, have to comply with a set of industry standards

(referred to as APCO Project 25, or just P25 in North America) in order to qualify for DHS grant funds. These radios are very expensive (\$1500+), and can theoretically communicate with other P25-compliant radios, regardless of brand. Most of these high-end radios are also analog capable for interoperability.

Low-priced digital radios are specifically designed to communicate only with similar models from the same manufacturer, because they don't have to be P25-compliant. Some, but not all, models have analog capability.

Because they're transmitting data instead of voice, digital radios offer features that analog radios cannot. Direct unit-to-unit "private" calling, group calling, alerting (paging) specific units and dispatch (text) messaging to specific radios are some examples of digital features.

Analog transmission gets noisier as the signal gets weaker due to terrain, low battery or a defective antenna, but the person receiving the message can

still understand it, even though it may have static. Since digital radios transmit packets of data, if too many packets are missing, the reconstructed voice may be garbled or absent; it depends on the "packet loss rate."

For reasons of interoperability, most "common channels" are, and likely will remain, analog. The FCC has not required, and is not requiring, radio licensees to convert from analog to digital radios.

The FCC's narrowbanding requirement is scheduled to take effect Jan. 1, 2013. There is no need to migrate to narrowband before then. Keep in mind that narrowbanding of other licensees with which you communicate may force you to take action sooner.

Finally, there is NO NEED to pay money to anyone to modify your license from the existing wideband to narrowband. The FCC is working on a no-cost administrative solution. All NSP licenses will be modified for your patrol. +



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