FCC Narrowbanding FAQs

30 Apr 2012

Q: How do I know if my license is for 12.5 or 25 kHz operation?

A: The license indicates the emission designator for each frequency you are permitted to use. The emission designator is usually a seven-character code starting with one or two digits, a "K" and a third or fourth digit. The "K" stands for kilobits per second and also represents the decimal place for the digits. Thus "19K6" means you may transmit 19.6 kbps maximum occupied bandwidth. This is the emission designator for Pacific Crest 25 kHz radios. The emission designators for our 12.5 kHz radios vary but are all less than 11.5 kbps ("11K5"). But even if you have a 25 kHz license, after 1/1/13, you must transmit in 12.5 kHz channels or in 25 kHz channels at ≥ 19.2 kbps.

Q: I have a 25 kHz PDL radio. Is it 25 kHz only?

A: Yes. PDL radios' channel bandwidth is hardware-set in the factory. ADL-generation radios, on the other hand, are software-derived radios that are user-configurable for operation in either 12.5 or 25 kHz channels. You can continue to use 25 kHz PDL radios (HPBs, LPBs, EDLs, GFUs, etc.) until your license expires, but after December 31, 2012, you must transmit with a radio link rate of 19200 bps.

Q: I have a 25 kHz PDL radio. Can I legally use it as a transmitter after 1/1/13?

A: Yes but only with a radio link rate of 19200 bps. PDL radios support 19200 bps only with Transparent EOT/EOC, Packet Switched or Fast Async protocols and only with 4FSK modulation. Both the transmitter and receiver must be configured the same way.

Q: Will the FCC's Narrowbanding requirements decrease the range of **25** kHz PDL radios?

A: Unfortunately, yes. You must use 4FSK modulation to transmit 19200 bps in a 25 kHz channel with a PDL radio. However, PDL radios were optimized to operate with GMSK modulation, and using 4FSK modulation with PDL radios diminishes range. This is a big reason for the introduction of the ADL radio line beginning in 2008. If you have a 25 kHz PDL radio, you should replace it with an ADL-generation radio before 1/1/13.

Q: Will the FCC's Narrowbanding requirements decrease the range of **12.5** kHz PDL radios?

A: It depends on the speed of the radio link rate. A 12.5 kHz PDL radio can transmit at 4800 bps and stay within the Narrowbanding restrictions. And the radio can use GMSK modulation when set to 4800 bps, so there is no degradation of range. However, RTK surveyors are reporting that 4800 bps is too slow for standard CMR+ or RTCM 3.0 corrections. They must either use CMRx or ATOM corrections when transmitting at 4800 bps, or switch to 2 second update rates.

Q: How can I tell if my PDL radio transmits in 12.5 kHz or 25 kHz channels?

A: For LPBs, Sitecoms, EDLs and GRUs, look at the model number on the side of the radio. If it ends in "12" it's a 12.5 kHz model. If it ends in "25" it's a 25 kHz model. For HPBs, look at the part number on the label.

The following are 25 kHz HPB part numbers:

- A02531
- A02533
- A02535
- 56651-42-00
- 56651-44-00
- 56651-46-00
- 56651-44-10
- 56651-46-03

All other HPB part numbers are 12.5 kHz models.

You can also connect your PDL radios to PDLCONF configuration software. The channel bandwidth is displayed on the program's Identification screen.

Q: All of my radios are receivers. How does any of this affect me?

A: It doesn't directly affect you because the FCC regulates only radio transmission. But it indirectly affects you because your receiver must be configured the same way as your transmitter: the same protocol, same modulation, same radio link rate, etc.

Q: Will a 25 kHz radio receive data from a 12.5 kHz transmitter?

A: Yes. The only problem might arise if someone else is transmitting in an adjacent 12.5 kHz channel. If your 25 kHz receiver receives both signals simultaneously, the mixing of the two signals will make both unintelligible. However, this is not likely to happen outside of densely populated areas because the migration of licenses from 25 to 12.5 kHz will affect only the width of the channel and not the central frequency of the channel.

Q: Will I be able to continue using an ADL radio after 1/1/13 even though it is capable of transmitting in a 25 kHz channel?

A: Yes. All radios sold before 1/1/13 will remain legal. The narrowbanding restrictions affect the use of the radio, not the radio. On 1/1/13, you must transmit either in 12.5 kHz channels or in 25 kHz channels at 19200 bps.

Q: How fast can I operate in 12.5 kHz channels?

A: This depends on the protocol and modulation type you select. The following table shows what link rates are supported in 12.5 kHz channels by various radio protocols:

Radio Protocol	Link Rates (bps)
Transparent FST	9600
Transparent EOT/EOC and Packet Switched	4800
TRIMTALK 450s	4800, 8000
TRIMMARK II/IIe	4800
TT450S (HW)	4800
TRIMMARK 3	9600

Q: How does the narrowbanding policy affect my GPS receiver?

A: If your GPS receiver includes an internal UHF radio transmitter, the same FCC rules apply to it as to stand-alone transmitters: after 1/1/13 you must transmit either in 12.5 kHz channels (at any speed) or in 25 kHz channels at 19200 bps. If your GPS receiver's internal radio only receives, there is no effect as the FCC's narrowbanding policies affect only transmitters. To see what type of radio you have, use the receiver's radio configuration software to connect to the radio. The channel bandwidth is usually displayed on an identification screen.

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Q: Will there be a future requirement to use only 6.25 kHz channels?

A: Perhaps, but at present the FCC has no plans to do this. Note that the FCC continued to license 25 kHz operation for 15 years after they announced the plan to migrate to 12.5 kHz. If such a day comes, Pacific Crest will have radios certified to support 6.25 kHz channels.