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Trimble 450MHz Radio Systems (USA Only)

Frequently Asked Questions

What are the FCC's narrowbanding requirements for UHF data radios?

The Federal Communications Commission (FCC) has dictated that on 1 January 2013 all radio users transmitting data between 421 and 512 MHz within the United States must operate within 12.5 kHz channels or transmit using the bits per second (bps) settings 19200 bps when using a 25 kHz channels.

Will a license with an expiration date later than 12/31/12 still be valid on 1/1/13?

Existing licenses will remain valid until their expiration date and existing radios will remain legal as long as you transmit in either of the two narrowband modes.

Do I have to contact the FCC to modify my existing license or get a new one?

No, existing licenses will remain valid. However, on 1/1/13 narrowbanding requirements will supersede the terms of your license and you must transmit in either of the two narrowband modes regardless of what your current license says. You will not need to contact the FCC until you wish to renew or modify an existing license or apply for a new license.

Will the FCC grant licenses for the 25 kHz/19200 bps narrowbanding mode even in congested areas of the country?

If you currently have a 25 kHz license, when you modify or renew the license or apply for a new one, it will probably allow transmitting 19200 bps in 25 kHz channels. You will also be able to transmit at any speed in 12.5 kHz channels. But if your current license restricts operation to 12.5 kHz channels any future license will likely have the same restriction.

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

The license indicates the emission designator for each frequency you are permitted to use. The emission designator is usually a four-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 with 19.6 kbps maximum occupied bandwidth. This is the emission designator for Trimble 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.

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I have a 25 kHz HPB450 or PDL450 radio. Is it 25 kHz only?

Yes. HPB450 or PDL450 radios' channel bandwidth is hardware-set in the factory. The TDL450 and TDL450H 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 radios (HPB450 or PDL450) until your license expires, but after December 31, 2012, you must transmit with a radio link rate of 19200 bps.

I have a 25 kHz HPB450 or PDL450 radio. Can I legally use it as a transmitter after 1/1/13?

Yes but only with a radio link rate of 19200 bps. HPB450 or PDL450 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.

Will the FCC's Narrowbanding requirements decrease the range of 25 kHz HPB450 or PDL450 radios?

Unfortunately, yes. You must use 4FSK modulation to transmit 19200 bps in a 25 kHz channel with a HPB450 or PDL450 radio. However, HPB450 or PDL450 radios were optimized to operate with GMSK modulation, and using 4FSK modulation with HPB450 or PDL450 radios diminishes range. This is a big reason for the introduction of the TDL450 radio line beginning in 2008. If you have a 25 kHz HPB450 or PDL450 radio, you should replace it with a TDL450-generation radio before 1/1/13.

Will the FCC's Narrowbanding requirements decrease the range of 12.5 kHz HPB450 or PDL450 radios?

It depends on the speed of the radio link rate. A 12.5 kHz HPB450 or PDL450 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 use CMRx corrections when transmitting at 4800 bps.

How can I tell if my HPB450 or PDL450 radio transmits in 12.5 kHz or 25 kHz channels?

You can also connect your HPB450 or PDL450 radios to PDLCONF configuration software. The channel bandwidth is displayed on the program's Identification screen.

All of my radios are receive only. How does any of this affect me?

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.

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

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.

Will I be able to continue using an TDL450 series radio after 1/1/13 even though it is capable of transmitting in a 25 kHz channel?

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

How fast can I operate in 12.5 kHz channels?

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

How does the narrowbanding policy affect my GPS receiver?

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.

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

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, Trimble will have radios certified to support 6.25 kHz channels.