

Channel spacing vs. channel width

Channel spacing:

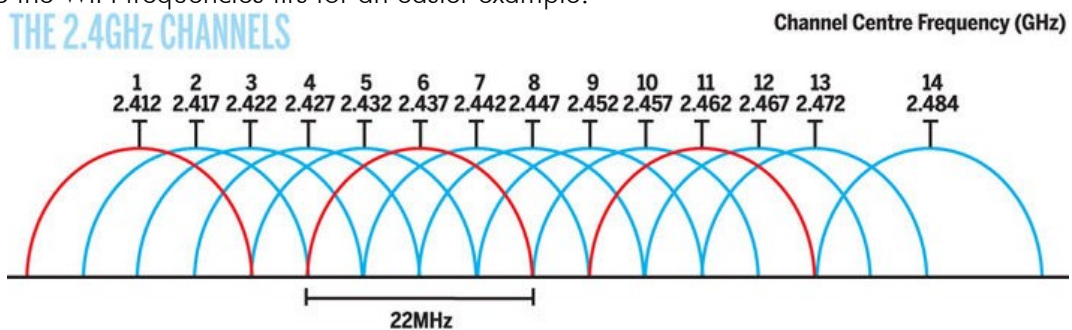
Defines the frequency difference between adjacent radio channels in the radio modem.

Channel Width:

Occupied channel bandwidth. Typically channel spacing is the same in the radio modems as the channel width.

In the context of Satel radio modems it defines also the width of the radio channel. *) The only exception is that SATELLINE radio modems with 20 kHz channel spacing uses 12.5 kHz channel width.

Let's take the WiFi frequencies first for an easier example:



Picture 1. WiFi channels

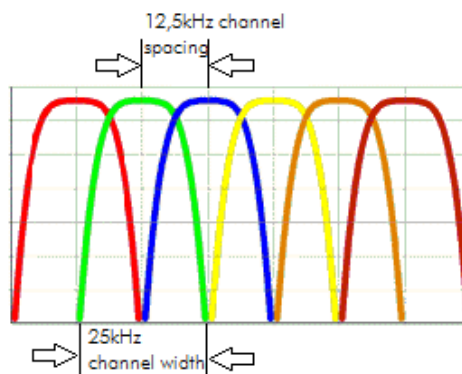
WiFi channel spacing: 5 MHz

WiFi channel width: 22 MHz

Channel Spacing (width) with Satel products:

- SATELLINE-3AS product family (SATELLINE-3AS, -3AS Epic, -3AS Epic Pro, -3AS NMS, -3AS Epic NMS, -3AS VHF) → always fixed, 25, 20*, 12.5 kHz
- SATELLINE-EASy product family (SATELLINE-EASy, -EASy Pro, -M3-TR1, SATEL Compact-Proof and EASy-Proof) → Adjustable 25, 20*, 12.5 kHz
- SATELLAR XT 5R / 5RC products → Adjustable 150, 25 and 12.5 kHz
- SATELLINE-M3-R3 / -TR3 / -TR4 products → Adjustable 25, 12.5 kHz

In the below seen picture, each colored curve represents frequency bandwidth.



Picture 2, channel spacing vs. channel width.



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With SATELLINE M3-R3 / -TR3 / -TR4 products the RF frequency can be set in 6.25 kHz steps with all available channel spacing (width) options, @12.5 kHz and @ 25kHz.

With SATELLAR XT 5R / RC products the RF frequency can be set in 6.25 kHz steps with all available channel spacing (width) options, @ 12.5kHz, @ 25 kHz and @ 150 kHz.

With SATELLINE-EASy product family products, including the previously mentioned models, the RF frequency can be set in 6.25 kHz steps @ 12.5 kHz and @ 25 kHz channel spacing (width). @ 20kHz channel spacing (width) the frequency step is 10 kHz.

NOTE 1! These rules apply to the firmware version 3.63 (released 16.03.2015) and onwards with SATELLINE-EASy product family.

NOTE 2! With SATELLINE-EASy 869 and SATELLINE-M3-TR1 869 the channel spacing (width) is limited to 25 kHz. It is possible to change the channel raster of the device by settings the Reference frequency first to the desired channel raster (12.5 or 25 kHz) before changing the operating frequencies.

Example 1:

Frequency 420.00000 MHz, channel spacing 12.5 kHz. Next available frequencies upwards with SATELLINE-EASy product family products (manually changed, overlapping):

- 420.00625 MHz
- 420.01250 MHz
- 420.01875 MHz
- ...

Example 2:

Frequency 420.00000 MHz, channel spacing 20 kHz. Next available frequencies upwards with SATELLINE-EASy product family products (manually changed, overlapping):

- 420.01000 MHz
- 420.02000 MHz
- 420.03000 MHz
- ...

Example 3:

Frequency 420.00000 MHz, channel spacing 25 kHz. Next available frequencies upwards with SATELLINE-EASy product family products (manually changed, overlapping):

- 420.00625 MHz
- 420.01250 MHz
- 420.01875 MHz
- ...

NOTE 3! Changing the channel to the next available via SL-commands, the modem follows next available channel –rule exactly by the channel spacing, taking the reference frequency into account. Reference frequency with SATELLINE-EASy product family and variants can be considered as equivalency to the center frequency of Classic SATELLINE-3AS product family with this matter.



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With SATELLINE- 3AS product family the RF frequency can be set:

- 12.5 kHz steps @ 12.5 kHz channel spacing
- 25 kHz steps @ 25 kHz channel spacing
- 20 kHz steps @ 20 kHz channel spacing

NOTE 4! The factory set center frequency rules the channel raster. The channel spacing (width) with SATELLINE-3AS products is HW coded in the Satel factory premises.

Example 1:

Center frequency 420.00000 MHz, channel spacing 12.5 kHz. Next available frequencies upwards with SATELLINE-3AS products:

- 420.01250 MHz
- 420.02500 MHz
- 420.03750 MHz
- ...

Example 2:

Center frequency 420.00625 MHz, channel spacing 12.5 kHz. Next available frequencies upwards with SATELLINE-3AS products:

- 420.01875 MHz
- 420.03125 MHz
- 420.04375 MHz
- ...

Example 3:

Center frequency 420.01000 MHz, channel spacing 20 kHz. Next available frequencies upwards with SATELLINE-3AS products:

- 420.03000 MHz
- 420.05000 MHz
- 420.07000 MHz
- ...

Example 4:

Center frequency 420.02000 MHz, channel spacing 20 kHz. Next available frequencies upwards with SATELLINE-3AS products:

- 420.04000 MHz
- 420.06000 MHz
- 420.08000 MHz
- ...

Example 5:

Center frequency 420.0000 MHz, channel spacing 25 kHz. Next available frequencies upwards with SATELLINE-3AS products:

- 420.02500 MHz
- 420.05000 MHz
- 420.07500 MHz
- ...

NOTE 5! If the center frequency has been set to fit the channel raster of 12.5 / 25 kHz, the operating frequency can't be set to 6.25 kHz channel raster with SATELLINE-3AS product family.