Radio Channel and Transmit Frequency Configuration

This note addresses the following topics:

Understanding Radio Channels and Frequencies

By default, the channel selected by Cisco wireless devices is the one that is least congested. At startup and by default, wireless devices passively scan for and select the least-congested channel. The channel settings on wireless devices correspond to the frequencies available in your regulatory domain.

In the European Telecommunications Standards Institute (ETSI) domain, the regulatory agencies do not allow the channel to be set on 5.0 GHz (802.11a/h) radios by the users. However, channel groups can be *blocked* on wireless devices running ETSI images. When a wireless device boots from an ETSI image, it automatically selects the least congested channel where radar is not detected by using Dynamic Frequency Selection (DFS).

Transmission Power Control (TPC) is used to automatically adjust the transmission power level on 5.0-GHz radios, also to avoid interfering with radar.

To set the radio channel for dynamic frequency selection (DFS), see Dynamic Frequency Selection.

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Determining the Radio Type

Determine the radio type to establish the frequency range of the radio. Use the **show controllers dot11Radio** command to show the radio type, frequency, and current channel for the wireless device. For example:

```
bridge#show controller dot11 interfaceNum
!
interface Dot11Radio0
Radio ATHEROS AR5414, Base Address 0017.0fe0.b6d0, BBlock version 0.00, Software version
3.00.0
Serial number: FOC10452M68
Number of supported simultaneous BSSID on Dot11Radio0: 1
TXQ_LOCK = 0, DOT11_DEAD = 0

Carrier Set: ETSI Outdoor (OFDM) (EU)
Uniform Spreading Required: Yes
Current Frequency: 5260 MHz  Channel 52 (DFS enabled)
Allowed Frequencies: 5260(52) 5280(56) 5300(60) 5320(64) 5500(100) 5520(104) 5540(108)
5560(112) 5580(116) 5600(120) 5620(124) 5640(128) 5660(132) 5680(136) 5700(140)
Listen Frequencies: 5260(52) 5280(56) 5300(60) 5320(64) 5500(100) 5520(104) 5540(108)
5560(112) 5580(116) 5600(120) 5620(124) 5640(128) 5660(132) 5680(136) 5700(140)
```

Configuring a Channel or Frequency

To set the channel, follow these steps:

- Determine the radio type to verify that the radio manual setting of the channel and to verify that the wireless device is not operating in a regulatory domain that requires DFS.
- Configure the radio channel or frequency to eliminate overlapping channels on models that allow user-set channel selection.

Configuring the Radio Channel or Frequency

To set the radio channel by number or frequency, use the following command, beginning in privileged EXEC mode:

channel {*channel_number* | *frequency* | **least_congested**}

	Command	Purpose
Step 1	**configure terminal**	Enters global configuration mode.
Step 2	**interface dot11radio** *port*	Enters interface configuration mode for the radio interface.

	Command	Purpose
Step 3	**channel** {*channel_number* | *frequency* | **least_congested**}	Sets the channel for the wireless device radio. You can specify which channel to use by providing the channel's number or frequency. To automatically search for the least congested channel on startup and use this channel for the wireless device radio, use the **least-congested** option. When specifying a frequency, enter the center frequency for the radio channel. The valid frequencies and channel numbers depend on the channels allowed in the regulatory domain.
Step 4	**end**	Returns to privileged EXEC mode.

Configuring the Radio Channel Spacing

To set the radio channel width, use the following command, beginning in privileged EXEC mode:

channel {**width** {**5** | **10** | **20**} | *channel_number* | *frequency* | **least_congested**}

	Command	Purpose
Step 1	**configure terminal**	Enters global configuration mode.
Step 2	**interface dot11radio** *port*	Enters interface configuration mode for the radio interface.
Step 3	**channel** {**width** {**5** | **10** | **20**} | *channel_number* | *frequency* | **least_congested**}	Sets the channel **width** to 5 MHz, 10 MHz, or 20 MHz. Sets the channel number or frequency for the wireless device radio. Or, you can set the device to seek the least congested channel.
Step 4	**end**	Returns to privileged EXEC mode.

Configuring Radio Channel Spacing on Releases Before 12.3(2)JL

To set the radio channel spacing on earlier releases (12.3(2)JL), use the following command:

spacing {**5** | **10** | **20**} **channel**

Additional Information

For general information on channel selection and transmit power, see the "FCC Regulations Update For 2004" white paper at:

http://www.cisco.com/en/US/products/hw/wireless/ps4555/products_white_paper0900aecd801c4a88.shtml

Additional information on DFS and TPC can be found in the Cisco "Dynamic Frequency Selection and IEEE 802.11h Transmit Power Control" document available at:

http://www.cisco.com/en/US/products/ps6441/products_feature_guide09186a008060f7c2.html

For additional information on the 4.9 GHz (public safety) band, see the "Cisco Support for 4.9 GHz Public Safety Broadband Spectrum in the US" white paper at:

http://www.cisco.com/en/US/products/hw/routers/ps272/prod_brochure0900aecd802d816e.html