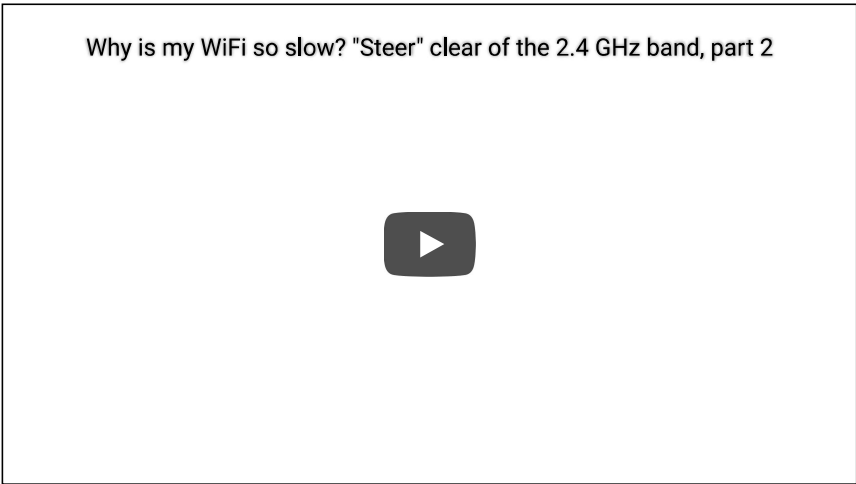


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Slow WiFi Reason 2: You Need to “Steer” Clear of the 2.4 GHz Band

This article is part of the "Why is My WiFi slow?" (/training/resources/why-is-my-wifi-slow.html) training series.

All too often, the culprit of slow WiFi is use of the 2.4 GHz band, which offers slower data rates and is often oversaturated with WiFi and non-WiFi devices, like microwave or baby monitors.



Which frequency band are you using: 2.4 GHz or 5 GHz?

Most WiFi devices are designed to steer back and forth from one band to another as they move around. Since the 2.4 GHz wavelength is longer and pierces through walls and material more easily, devices will use the 2.4 GHz band as they get farther away from the router or AP. However, sometimes they get stuck on the 2.4 GHz band even when they are close enough to use the 5 GHz.



In the example above, a ChromeCast and Apple device are associated to the 2.4 GHz band. The 1st generation ChromeCast (https://en.wikipedia.org/wiki/Chromecast#First_generation) is not capable of using the 5 GHz band and therefore won't be steering to it anytime soon. The Apple device, however, can and should steer to the 5 GHz band whenever possible.

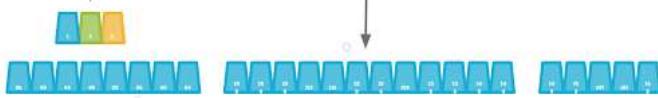
Dual-Band Wi-Fi

2.4 GHz (802.11b/g/n/ax)

- Greater Range (~300 ft)
- Universal Compatibility
- Congested with Wi-Fi
- Plagued by non-Wi-Fi interference
- 3 non-overlapping channels

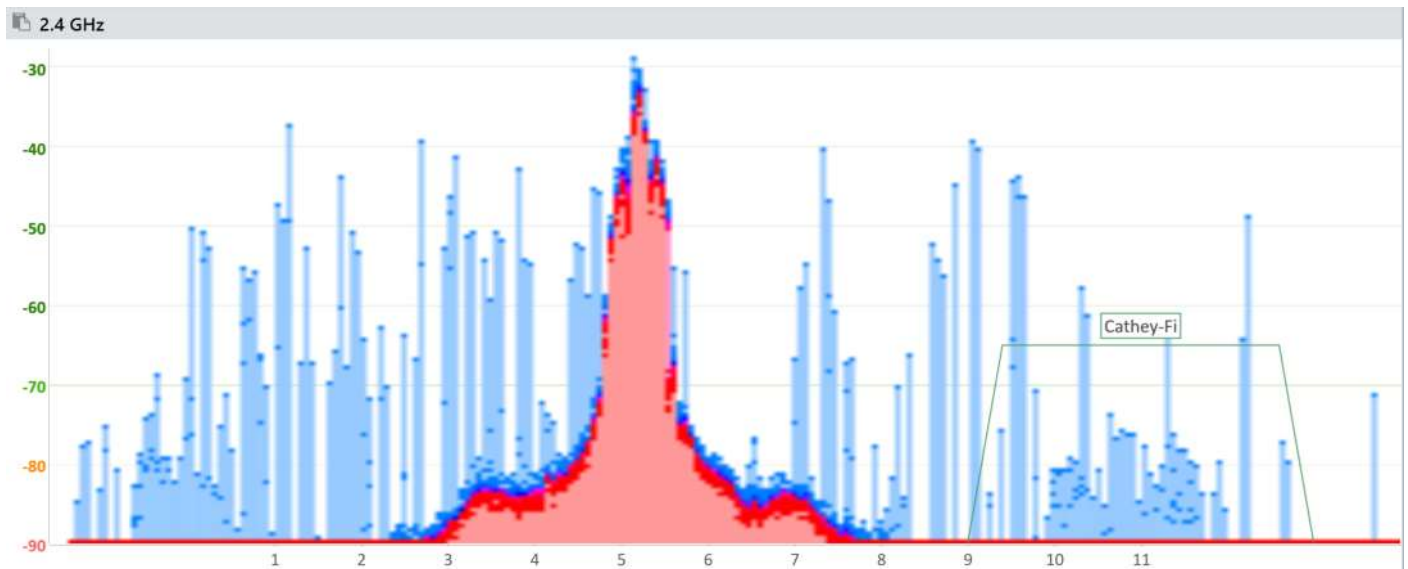
5 GHz (802.11a/n/ac/ax)

- Lower Indoor Range (~90 ft)
- Limited Compatibility (a/n/ac/ax)
- 24 non-overlapping channels



The FCC allows WiFi to operate in two different frequency bands: the 2.4 and 5 GHz.

How do you know if the 2.4 GHz band is oversaturated? Well, you can't... unless you have a spectrum analyzer. Since RF is invisible to the naked eye, you must use a spectrum analyzer like the Wi-Spy DBx (<https://shop.metageek.com/products/wi-spy-dbx>) plugged in, inSSIDer will show you exactly how much the spectrum is being utilized and display any significant interferers. The image below shows a cordless phone wreaking havoc on channels 3-7. The interference from this cordless phone would be invisible without a Wi-Spy.



This interferer will slow WiFi down on channels 3-7

OK, how do you know if any clients are using the 2.4 GHz band? Luckily, with a MetaGeek Plus (<https://my.metageek.com/pricing>) subscription and compatible wireless adapter, inSSIDer can show you this.

Step 1: Get a WiFi Adapter

Grab a compatible WiFi adapter from this list. (<https://support.metageek.com/hc/en-us/articles/203627620-What-packet-capture-adapters-can-I-use-for-Eye-P-A-and-inSSIDer->) We recommend the Edimax EW-7833UAC

([https://www.amazon.com/gp/product/B01G51FBF6/ref=as_li_tl?](https://www.amazon.com/gp/product/B01G51FBF6/ref=as_li_tl?ie=UTF8&camp=1789&creative=9325&creativeASIN=B01G51FBF6&linkCode=as2&tag=metageek06-20&linkId=c21aec4228cdd653e748af78ed867a35)

[ie=UTF8&camp=1789&creative=9325&creativeASIN=B01G51FBF6&linkCode=as2&tag=metageek06-20&linkId=c21aec4228cdd653e748af78ed867a35](https://www.amazon.com/gp/product/B01G51FBF6/ref=as_li_tl?ie=UTF8&camp=1789&creative=9325&creativeASIN=B01G51FBF6&linkCode=as2&tag=metageek06-20&linkId=c21aec4228cdd653e748af78ed867a35)) because it's small and powerful.



Step 2: Fire it up

Plug the adapter into your computer and open inSSIDer.



Step 3: Find your network

Find your wireless network's name, or SSID, and dive into the Network Details by clicking the 🔍 binoculars icon.

inSSIDer with MetaGeek Plus Pro

File View Help

Dashboard Networks Devices Channels

SSID	Utilization	Signal	Radios	Clients	Channels
★ Cathey-Fi	3.8%	-64 dBm	3	11	11, 42 [48]
ItHertzWhenIP	0.0%		1	-	10
CGNM-7948	0.0%		1	-	6
CenturyLink3990	0.0%		1	3	1
Go7ags	0.0%		1	4	9
CenturyLink2243	0.2%		1	3	1

-55 dBm indicates good coverage

Step 4: Find your radio

Keep an eye on the clients column and see how many clients are on each radio on your network. Find your 2.4 GHz radio (hint: it will be on channel 1-13) and click the binoculars icon again.

File View Help

NETWORKS CHANNELS

🏠 > Cathey-Fi

RADIO	UTILIZATION	SIGNAL	CLIENTS	CHA...	WIDTH	SECURITY	MOD	B/ R/	MAX RATE
📶 Studio 2.4 GHz	0.0%		1	11	20 Mhz		b/g/n	11	144.4
📶 Living Room 5 GHz	3.0%	-62 dBm	7	42 [48]	80 Mhz		n/ac	24	1,300.0
📶 Living Room 2.4 GHz	2.1%	-50 dBm	2	11	20 Mhz		b/g/n	11	216.7

SIGNAL STRENGTH

Step 5: Find the problem device

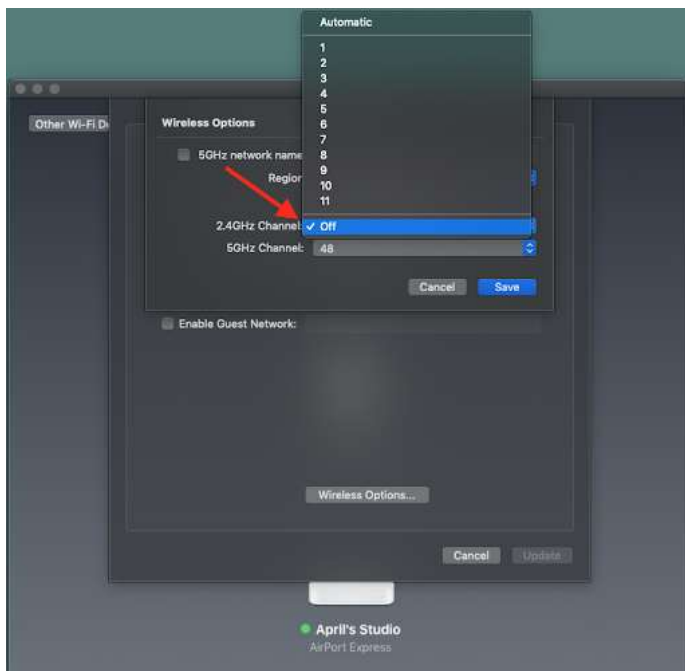
If the problematic device is listed under your 2.4 GHz radio, try turning the WiFi on that device off and on again to ensure it's choosing the optimal band.



If turning the WiFi off and on again doesn't help, try moving the client device and router closer to each other

Step 6: Configure your router

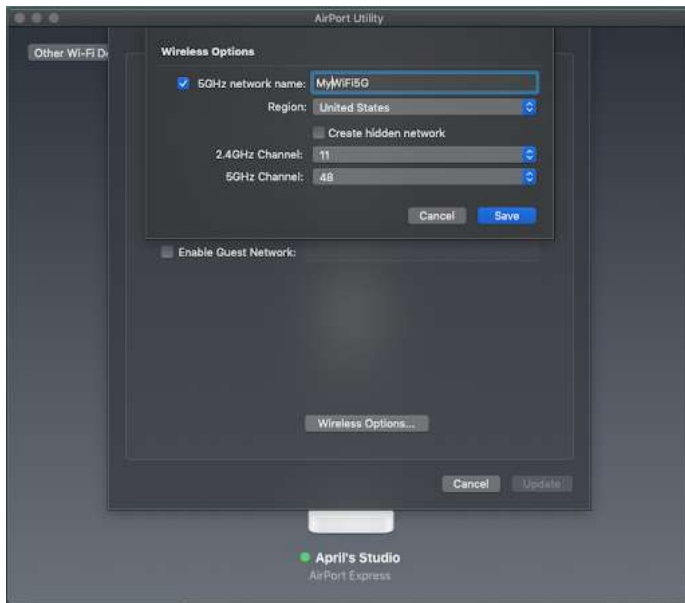
If your device is still stuck to the 2.4 GHz band, see if you can log in to your router configuration utility (</training/resources/change-wireless-router-settings.html>) and disable the 2.4 GHz radio entirely, forcing all traffic to the 5 GHz band. Not recommended if you have really old devices like a Nintendo Wii (https://en-americas-support.nintendo.com/app/answers/detail/a_id/498/~/compatible-wireless-modes-and-wireless-security-types) or 1st generation ChromeCast! Not all routers will let you do this. If yours doesn't, go to Step 7.



Apple routers allow the 2.4 GHz radio to be turned off via AirPort Utility

Step 7: Name your bands

From your router configuration utility, give each band its own SSID name in order to segment clients and to ensure they don't steer down to the 2.4 GHz band. For example, name your 2.4 GHz network *MyWiFi* and name your 5 GHz network *MyWiFi5G*.



Step 8: Move device to 5 GHz

Associate your problematic device to the 5 GHz network. Now it won't connect to the 2.4 GHz network! Once your devices are using the frequency band that you want, be sure to choose non-overlapping channels (<https://support.metageek.com/hc/en-us/articles/200970984-Designing-a-Dual-Band-Wireless-Network>).

Next Lesson: → Slow WiFi Reason #3: Insufficient Client and Router Capabilities (</training/resources/device-capabilities.html>)

PRODUCTS

[Wi-Spy Air \(/products/wi-spy-air/\)](/products/wi-spy-air/)

[MetaGeek Complete \(/products/complete/\)](/products/complete/)

[Chanalyzer + Wi-Spy \(/products/wi-spy/\)](/products/wi-spy/)

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[TamoGraph Site Survey \(/products/map-plan/tamograph\)](/products/map-plan/tamograph/)

[inSSIDer & MetaGeek Plus \(//metageek.link/inssider-product-page\)](//metageek.link/inssider-product-page)

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