

WAVEFORM

QuadPro

Directional 4x4 MIMO Antenna

BEFORE YOU START!

Scan this QR code to watch the setup videos, and...

- ▶ Connect to **our team of dedicated Signal Specialists** - They are eager to help!
- ▶ **Get your free Virtual Site Survey** - including a map of cell towers and where to mount your antenna.
- ▶ Access installation **guides for a wide selection of cellular routers!**
- ▶ View a **digital copy** of this manual.



setup.wf/QuadPro

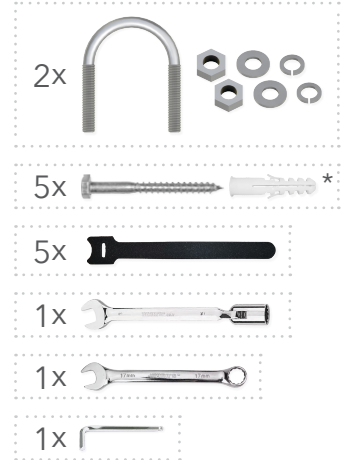
Designed by WAVEFORM in the USA

What's in the Box

QuadPro Antenna & FlexMount



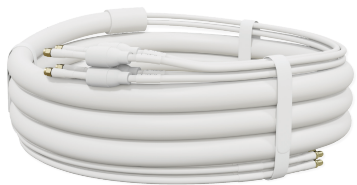
QuadPro Antenna



FlexMount w/
Assembly Hardware

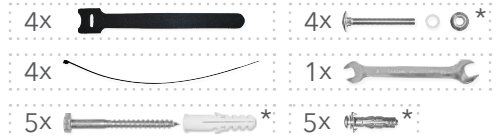
Cables, Adapters, UltraPole

Depending on the QuadPro kit you purchased, you'll also receive some or all of the following:



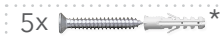
1x, 2x, or 3x UltraFlex-Quad Cables
(Kits include 10 ft and/or 20 ft lengths)

BAG



UltraPole
(Manual included in box)

BOX



Quad Window Entry Cable
(Manual included in bag)

BAG



4x U.FL Pigtail and/or 4x TS9 Adapters
(Adapters included depend on where you purchased)

BAG

* Includes extras

How Much Improvement Should You Expect?

In short: It's hard to say. **Many people see an increase in data speeds of between 50% and 200%**, but some people may only see 10%. Despite all the science, wireless signals often work in strange and magical ways.

One thing is for sure, **the more locations and directions you try the more likely you are to see a big increase in data speeds**. If you've gone through this manual and aimed your QuadPro as we suggest, but you're still not seeing much improvement, **please reach out to us for help**.

What Tools Do You Need?

Your QuadPro includes all of the tools necessary for its assembly, but you may need **additional tools** to mount it against your building.

Please refer to your mount(s) included manual or find its manual online at waveform.com/flexmount-manual and waveform.com/ultrapole-manual, respectively.

01 Install Process Overview

- 1 Read this manual**, ideally from start to finish, so that you understand the whole installation process before you begin.
- 2 Find the best antenna location and direction (Pages 6-7)**. This step is the most time-consuming, but it's worth the effort and has a huge impact on your system's performance. **Make notes of your readings in the table on page 15**.
- 3 Verify performance and connect everything (Pages 8-9)**. Before making any holes in your roof or walls you'll fully connect your system and run speed tests. If everything looks good, you'll finalize the cable runs and hard-wire everything.
- 4 Mount your QuadPro (Page 10-11)**. You'll assemble your QuadPro with its FlexMount and mount it to your building.
- 5 Tell us how your system is doing**. Nothing makes our day like hearing from customers. And if for any reason you're not seeing the results you were hoping for, we can help.

Simply visit setup.wf/QuadPro to **get connected with our team** of dedicated Signal Specialists.

02 Positioning & Aiming QuadPro

Finding the best position for your QuadPro is the most important part of the installation process. In this section, we explain the best and simplest method for positioning and aiming your QuadPro. Section 6 covers some more advanced tips for additional optimization.

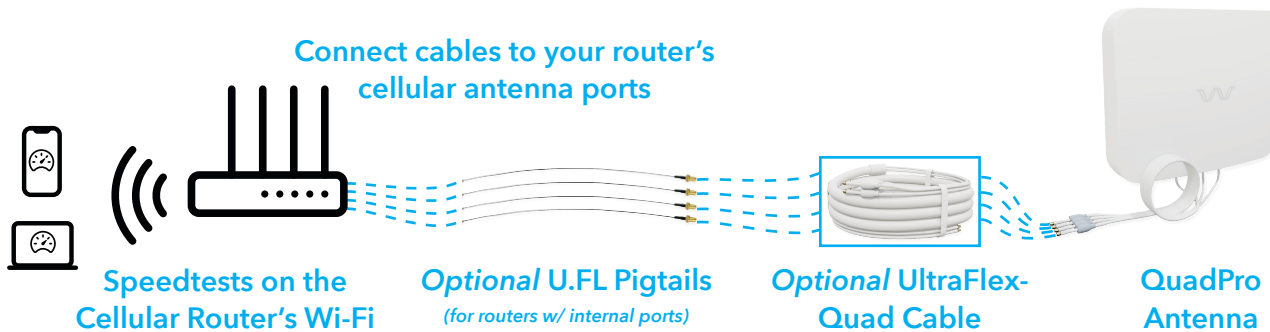
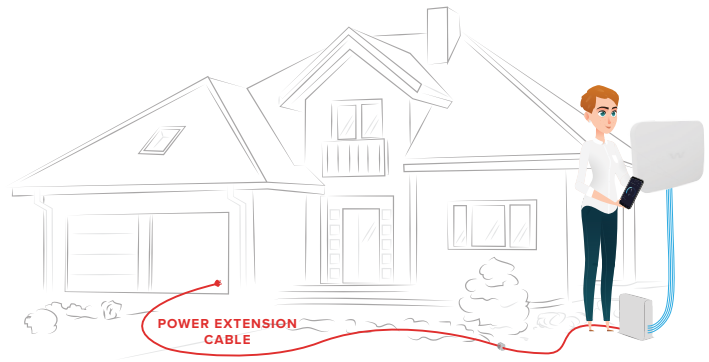
The Goal

Your goal is to find the **best location & direction** for your QuadPro. Its position should **maximize the data speeds** from your cellular router. It can take a little patience, but spending some extra time here can have a huge impact on performance - it's worth the extra effort.

1. Prepare your Test Setup

Is your cellular router battery-powered? Or, do you have a power extension cord?

If so, **connect your QuadPro directly to your cellular router** (as shown below), restart your router, and take them both outside to start testing.



Can't take your router outdoors? No problem. For your test setup, keep your router powered indoors and add the UltraFlex-Quad cable into the setup to bring your QuadPro outside.

If you're leaving your router indoors, your speed tests may be limited by the router's Wi-Fi range rather than its cellular connection. Ask someone to stay near the router so they can run speed tests as you try different positions with your QuadPro outside.

Is holding your QuadPro difficult? Follow the FlexMount's **included or online manual** at waveform.com/flexmount-manual to attach it to your QuadPro and get a better grip.

Not sure which ports to connect to? Some cellular routers have both Wi-Fi and cellular antenna ports. Make sure to attach your QuadPro to your router’s cellular ports, not Wi-Fi. Some devices only have internal antenna ports. **Refer to your router’s manual, our device-specific guides at waveform.com/hotspot-guides, or reach out to us for help if you’re unsure.**

2. Get Ready to Perform Speed Tests

Since the goal is improved data speeds for your cellular router, it makes sense to **judge the best position for your antenna by measuring your data speeds.** We recommend using Speedtest by Ookla for this. Visit waveform.com/speedtest to get there easily.

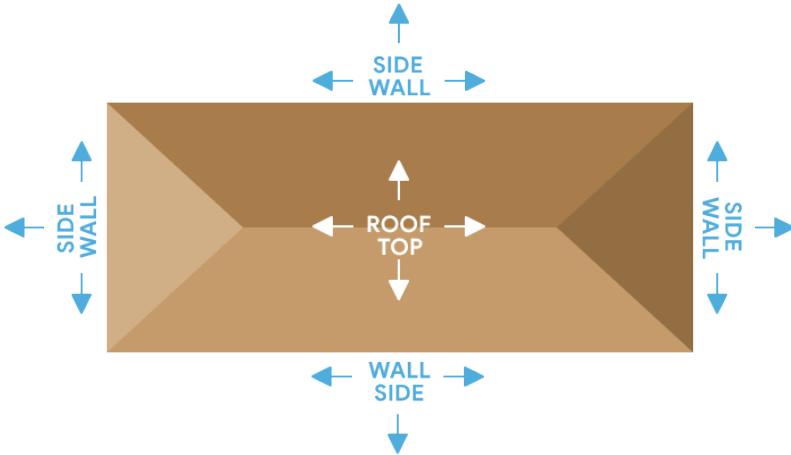
Once your test setup is ready and your testing phone or laptop is connected to your cellular router, **you’ll have everything you need to start testing** at different positions outside.

Go ahead and **run a couple of speed tests to get a baseline.** You’ll notice your results fluctuate a between tests - that’s completely normal.

3. Take Outdoor Measurements

With each new location, restart your cellular router by disconnecting and reconnecting the power. This forces the device to connect to the best bands available at that location.

We recommend **running 2-3 speed tests at each of the following outdoor positions** with your QuadPro, and writing each of your results in the table on page 15.



Don’t just go to the highest point of the roof! While signal is generally stronger the higher you go, there’s also often more interference. We’ve found it’s often better to mount QuadPro on the side of the building where antennas are better shielded from interference.

If you’re running into issues, we’d love to help. Simply visit setup.wf/QuadPro to **get connected with our team** of dedicated Signal Specialists.

03 Connecting Your System

Once you've identified the best position for your QuadPro, it's time to hook everything up.

Don't drill any holes in your walls yet! Start with a temporary install and test performance first.

Keep your QuadPro at the position you've identified, but move your router indoors and perform a final round of tests to make sure everything is performing optimally.

If you purchased your QuadPro as a complete kit, follow the steps below to assemble and install your kit. If you only purchased a standalone QuadPro, your assembly may look a little different.

Getting the Complete Kit Set Up

Refer to the diagram to the right as needed.

- 1 Place your QuadPro** near the best position you found in section 2.
- 2 Connect your QuadPro to your UltraFlex-Quad cable** and run the cable into your building.

*If you don't want to drill holes into your walls or roof to route your cables, **install your Coax Window Entry cable** in a window, and **connect it to your QuadPro and/or UltraFlex-Quad cables.***

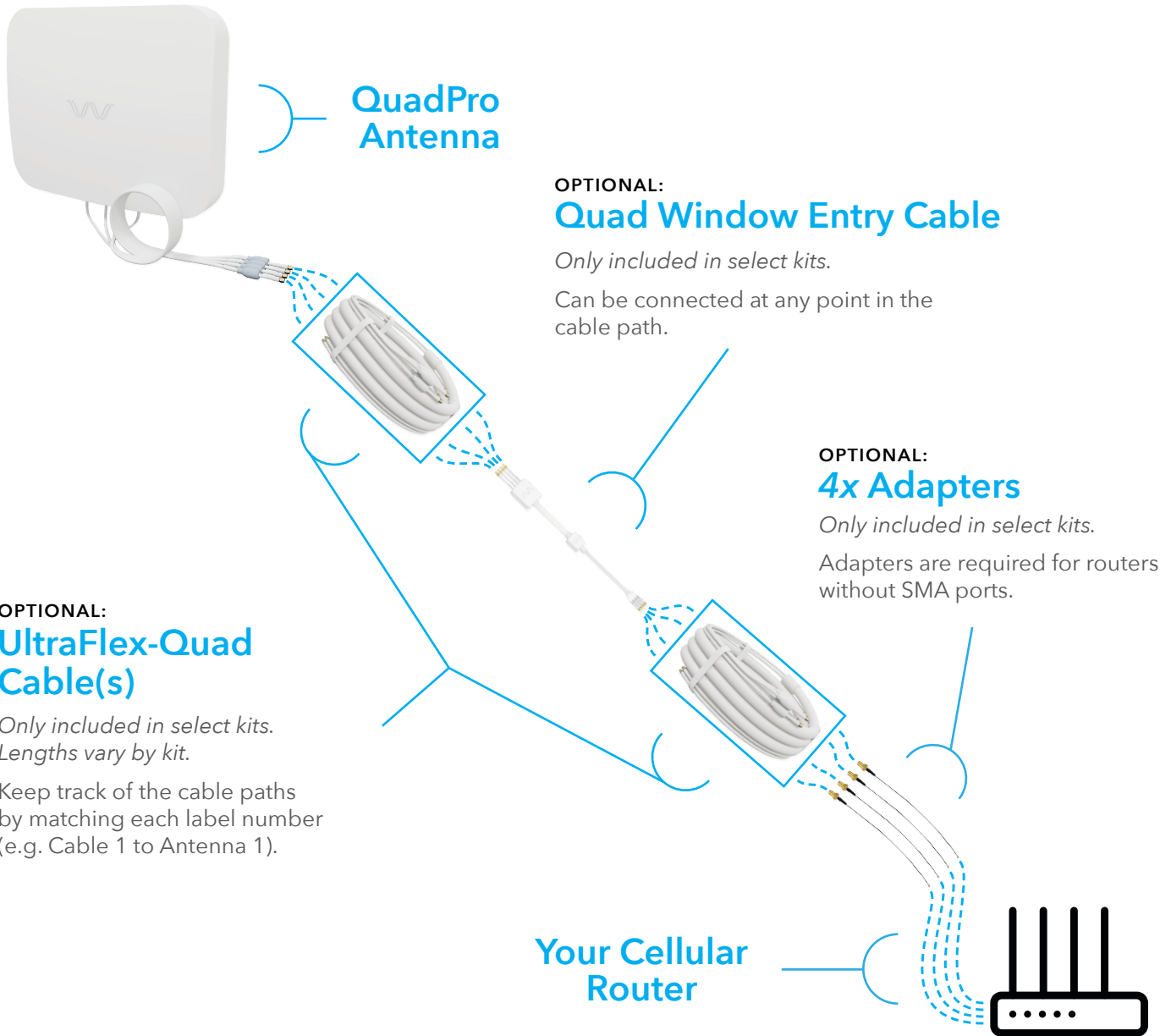
- 3 Connect your cables** to your router's cellular antenna ports and hand-tighten the connections.

*If your cellular router only has internal U.FL ports, **install the included U.FL pigtail adapters,** and connect them to your UltraFlex-Quad cable.*

- 4 Restart your cellular router,** wait for it to reconnect, then perform 1-2 speed tests to verify that you are happy with your system's performance.

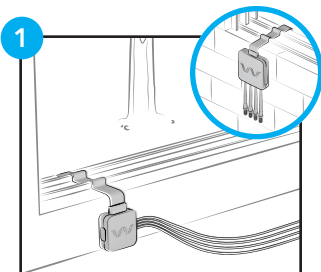
Install Tips

- **Before attempting to route the cables through your building,** lay the UltraFlex-Quad cable out flat to straighten it. This will make it easier to work with.
- **A finger-tight connection is sufficient** to secure the connectors. Tools are not required to tighten them and may cause damage.
- **Unsure how your cables connect to your router?** Refer to your router's manual, our device-specific guides at waveform.com/hotspot-guides, or reach out to us for assistance.

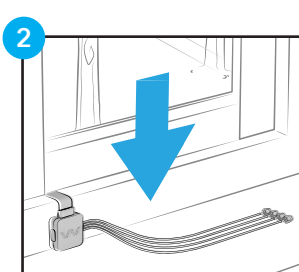


• How to Install the Quad Window Entry Cable •

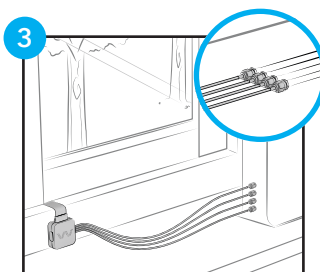
Your Quad Window Entry Cable can be connected at any point in your system as needed. Follow the manual included or find it online at waveform.com/window-entry-manual



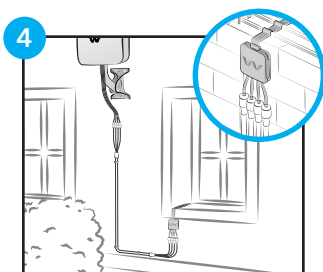
1 Loosely position the window entry cable in your window frame, with its larger case outside.



2 Check that your window fully closes. If not, please reach out to us for assistance.



3 Connect its indoor connectors to your router or UltraFlex cable.



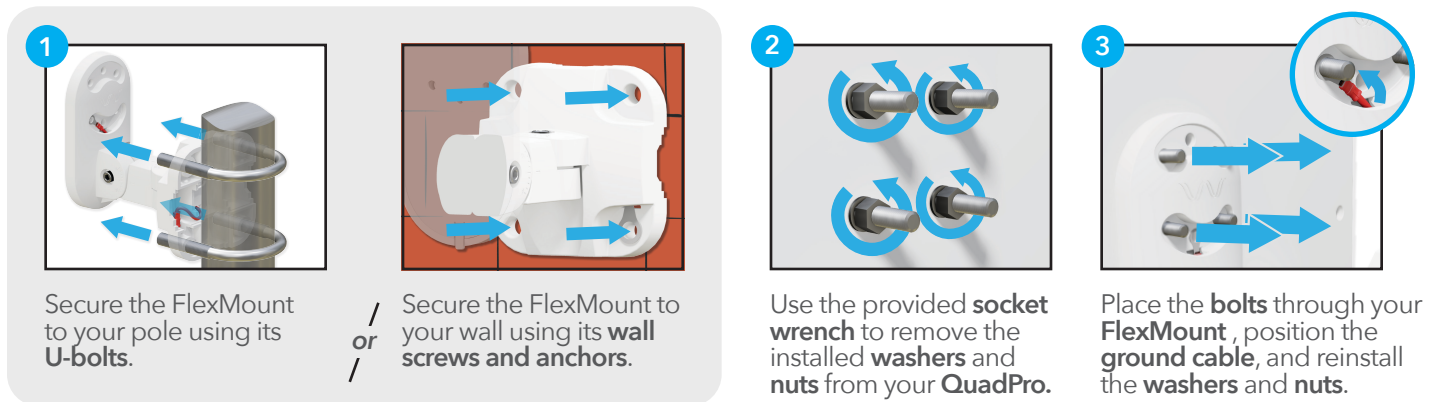
4 Connect its outdoor connectors to your QuadPro or UltraFlex cable.

04 Mounting Your QuadPro

Now that you have all the components in your system connected and **you've verified that you are happy with your data speeds**, it's time to permanently mount your QuadPro!

Your QuadPro, equipped with the FlexMount, can be **installed against a pole or directly onto the exterior of your building**.

Mounting your QuadPro with its FlexMount



1 Secure the FlexMount to your pole using its **U-bolts**.

or

Secure the FlexMount to your wall using its **wall screws and anchors**.

2 Use the provided **socket wrench** to remove the installed **washers** and **nuts** from your **QuadPro**.

3 Place the **bolts** through your **FlexMount**, position the **ground cable**, and reinstall the **washers** and **nuts**.

For the full instructions, follow the FlexMount's **included manual**, or find it online at waveform.com/flexmount-manual, then **resume this manual** to complete your installation.

If your kit includes the **UltraPole**, refer to its included manual, or find it online at waveform.com/ultrapole-manual for additional instructions on its assembly for your system.

Install Tips

- Mount the QuadPro with its cables facing downward **to ensure proper weatherproofing**.
- **Create a small "drip-loop" in your cables** before they enter your building to help prevent water from entering your building.
- **When wall mounting**, position your FlexMount against the wall and mark the locations of its holes with a pencil or marker before drilling any holes.

We're Here to Help!

We know that every use case is different and the steps for mounting your antenna may differ for your unique location. **Don't worry!** If you're running into issues, or have any questions, just reach out.

05 Protecting Your System

There are a couple of final steps before your installation is complete.

In this section we'll describe how to weatherproof and properly ground your system. **These steps are crucial** to ensuring the longevity of your system by protecting it from the elements.

Weatherproofing Your Outdoor Connections

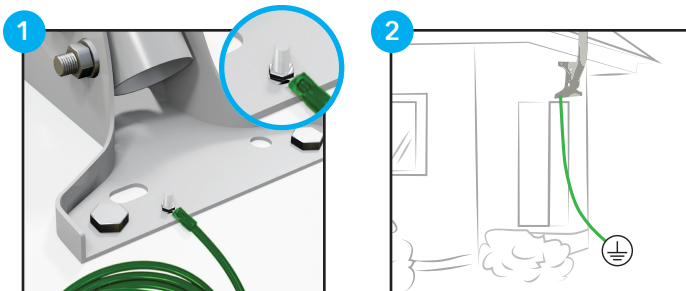
Your QuadPro and UltraFlex-Quad cables come with weatherproofing boots to help waterproof each outdoor cable connection. Once your connectors are tightened, **slide the weatherproofing boots over all of the outdoor cable connections**. Sliding these boots takes a bit of strength so don't be scared to put some elbow-grease into it!



Grounding Your System

It's important to ground your FlexMount and UltraPole (optional in the complete kit) to a suitable electrical ground in order to help protect your equipment. Equipment mounted outdoors can be prime targets for lightning strikes. Grounding a mounting pole with a **10 AWG or lower gauge (thicker) grounding cable** (not included) is required by the National Electric Code (NEC).

Follow the instructions within the manuals included with your FlexMount and UltraPole to properly ground them for your system. The general steps are described below:



Attach a **ground wire** to your **pole**. e.g. Some mounting poles use a **grounding bolt & nut**.

Attach the **Ground Wire** to a suitable **Electrical Ground**.

Grounding Tips

- If you're unsure about your grounding setup, **reach out to an electrical contractor**.
- **Expanded instructions** on grounding and **examples of suitable electrical grounds** can be found at waveform.com/grounding

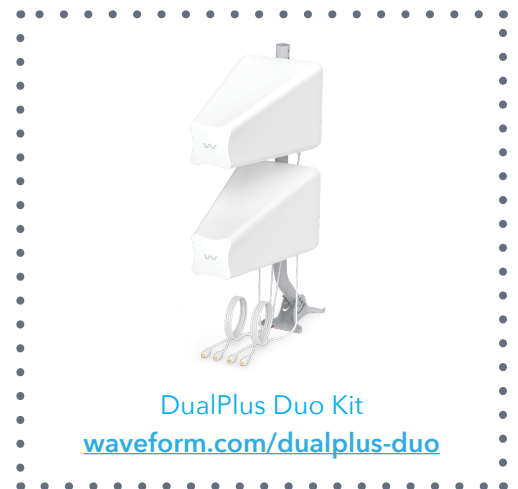
07 Need Help with Adapters?

- > **Having difficulties connecting your U.FL pigtails to internal antenna connectors?** U.FL connectors are small and can be difficult to install on the first try. We suggest that you **use a tweezer to hold the cable in place** and a **pencil eraser to push the U.FL connector down**.
- > **Does your cellular router need different adapters for its cellular antenna ports?** If so, please reach out to our team so we can help you obtain the parts you need.

08 Have Line of Sight with Your Cell Tower?

If you have direct line of sight to your nearest cell tower, the two DualPlus antennas in our DualPlus Duo Kit may provide you with **superior performance over the QuadPro**:

- » **For large buildings/hills/mountains/etc.**, you'd mount its two antennas horizontally side-by-side.
- » **For large fields/plains/etc.**, you'd mount its two antennas vertically top-to-bottom.



09 Some Final Tips

- > **Don't judge your signal by signal strength or quality alone.**
You may find that your RSRP signal strength and SINR/RSRQ haven't improved much, but that your data speeds are meaningfully better. There's much more to an antenna than just gain: our antennas are optimized for MIMO isolation to get you the best 5G data speeds possible.
- > **If data speeds decrease over time, consider re-optimizing your system.**
Occasionally carriers will update their towers to broadcast different bands, light up new towers, or simply turn off existing towers altogether. If your data speeds get worse, try repositioning and re-aiming your QuadPro to get the best results.



WAVEFORM

Need help? We're ready and waiting.

MIMO Antennas, like the QuadPro, aren't always easy to install. But the end result is worth it.

One of the benefits of buying from Waveform is our **lifetime technical support** on every system we sell. We can walk you through troubleshooting and fine-tuning your installation for best results.

Simply **scan this QR code** to visit setup.wf/QuadPro to **connect with our team** of dedicated Signal Specialists, get your **free Virtual Site Survey**, access **installation guides**, watch our **setup videos**, and more!



We love helping solve tricky install problems.



v3.0.0



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3411 W. Lake Center Dr.,
Santa Ana, CA 92704



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