

Tarana G1 vs the Competition



At Tarana, we like to say, “Seeing is believing,” and we love it when our customers put this to the test. Recently, an integrator named WISP Services decided to perform a head-to-head comparison between Tarana’s Gigabit 1 (G1) and another system we’ll refer to here as Vendor C. The goal was to determine the best coverage and throughput in a typical rural environment.

As part of the testing, they discovered that Tarana’s G1 delivered up to 10x the download performance of Vendor C’s equipment. G1 could also connect in two locations where Vendor C could not establish a link.

The Setup

For the test, a CBRS (3 GHz) G1 base node and a CBRS AP from Vendor C were mounted at the same azimuth and roughly same location on a tower in a rural town in Michigan. Vendor C’s AP was an 8x8 massive MU-MIMO system with a maximum bandwidth of 40 MHz on a single carrier. For Tarana, the G1 base node is a 16x16 distributed massive MU-MIMO system with two 40 MHz carriers for a total of 80 MHz of bandwidth.

Each base station was set to use the same frequencies. To avoid the equipment interfering with each other, only one was powered up at a time during actual tests. Because the Vendor C equipment only supported a maximum of 40 MHz of bandwidth, G1 was run in single carrier operation. Typically, G1 supports 80 MHz operation, but they wanted an equal comparison in this case.

The test locations were typical of this area, with many trees and near- or non-line-of-sight

conditions. At each location, a G1 remote node and a Vendor C high-gain subscriber module were mounted at the same height on a telescoping pole mount. **It should be noted that using the high-gain version of vendor C's equipment gave it an advantage over the RN in terms of uplink performance.**

Locations were selected based on indicated coverage using the Google Network Planner tool.

Location 1 (Baseline)

The first test location was 1.85 miles from the tower and line-of-sight. This test was performed in a less challenging environment in order to determine a reasonable performance baseline for each vendor. As seen in the results below, Tarana G1 delivers 2x the download performance of the Vendor C product in these relatively straightforward conditions.



Vendor C		Tarana	
Download	Upload	Download	Upload
99.32 Mbps	56.27 Mbps	266.06 Mbps	47.38 Mbps

Although it was not part of the formal test, they also ran G1 in full 80 MHz mode, which yielded a throughput of 492.97/93.37 Mbps.

Location 2

Location 2 was 2.37 miles from the tower and took advantage of a utility easement to get a near-line-of-sight connection to the tower through dense trees. Under these conditions, Tarana G1 delivered a solid connection with almost 2x the download performance of Vendor C.



Vendor C		Tarana	
Download	Upload	Download	Upload
115.24 Mbps	42.01 Mbps	197.43 Mbps	20.91 Mbps

Although it was not part of the formal test, they also ran G1 in full 80 MHz mode, which yielded a throughput of 309.42/58.53 Mbps.

Location 3

Location 3 was a near-line-of-sight link 2.47 miles from the tower. It was similar in terms of foliage to the previous test locations. The difference at this location was the presence of strong interference in the CBRS band from a nearby tower (pictured below). Thanks to innovative interference cancellation techniques, Tarana G1 delivered performance similar to the baseline and over 10x the download performance of the other vendor.



Vendor C		Tarana	
Download	Upload	Download	Upload
19.30 Mbps	28.09 Mbps	210.11 Mbps	26.05 Mbps

Although it was not part of the formal test, they also ran G1 in full 80 MHz mode, which yielded a throughput of 399.85/58.98 Mbps.

Location 4

For location 4, a link length of 2.16 miles was selected. The non-line-of-sight link transmitted through a stand of trees in order to reach the tower. In this instance, the Vendor C subscriber module was not able to establish a link or complete the test. The results below are for G1 operating in full 80 MHz mode.



Vendor C		Tarana	
Download	Upload	Download	Upload
-	-	257.30	19.60

Location 5

The final location was a 5.96-mile link from a farm to the tower. Once again, this was a near-line-of-sight link. In this case, the Vendor C subscriber module could not establish a connection or complete the test.

To further test G1's multipath performance, a second test was performed in which the remote node was oriented toward the barn (center of photo) using a reflection to reach the tower. The results below are for G1 operating in full 80 MHz mode.



Vendor C		Tarana (Direct, 80 MHz)		Tarana (Reflected, 80 MHz)	
Download	Upload	Download	Upload	Download	Upload
–	–	265.62 Mbps	28.34 Mbps	220.19 Mbps	26.36 Mbps

Summary

Unlike other products that utilize repurposed technologies, G1 was purpose-built to deliver end-game performance. As these tests show, G1's performance is unrivaled for overall throughput at different link lengths and in the presence of heavy interference.

Link	Vendor C	Tarana
1.85 miles LoS	Download: 99.32 Mbps Upload: 56.27 Mbps	Download: 266.06 Mbps Upload: 47.38 Mbps
2.37 miles nLoS, foliage	Download: 115.24 Mbps Upload: 42.01 Mbps	Download: 197.43 Mbps Upload: 20.91 Mbps
2.47 miles nLoS, foliage	Download: 19.30 Mbps Upload: 28.09 Mbps	Download: 210.11 Mbps Upload: 26.05 Mbps
2.16 miles NLoS, foliage	Download: – Upload: –	Download: 257.30 Mbps Upload: 19.60 Mbps
5.96 miles nLoS, foliage	Download: – Upload: –	Download: 265.62 Mbps Upload: 28.34 Mbps

About WISP Services

WISP Services has made the success of wireless internet providers their mission. They've spent over a decade partnering with fixed and mobile wireless broadband providers to sell, configure, install, and support a wide variety of wireless vendors.

Visit wispervices.net for more on their services.

Tarana's mission is to accelerate the deployment of fast, affordable internet access around the world. Through a decade of R&D and more than \$400M of investment, the Tarana team has created a unique next-generation fixed wireless access (ngFWA) technology instantiated in its first commercial platform, Gigabit 1 (G1). It delivers a game-changing advance in broadband economics in both mainstream and underserved markets, using either licensed or unlicensed spectrum. G1 started production in mid-2021 and has been embraced by more than 200 operators in 21 countries and 45 states. Tarana is headquartered in Milpitas, California, with additional research and development in Pune, India.