

Indoor Wi-Fi Commercial Controller Field Testing Performance



Peak gain and TRP tell you how an antenna radiates in free space, and little else. Throughput testing covers the full RF chain, from baseband and mixing through filtering and amplification, plus the real building the signal crosses. That's a truer read on how the product holds up in the field. This one-pager reports indoor office throughput for a commercial controller running CEL's **CMP9610-2 Wi-Fi 6 + Bluetooth** module, tested in a plastic housing with an LCD display. Learn More: [Why Antenna Specs Don't Tell the Whole RF Story](#)

TEST SETUP

- **Mounting:** DUT fixed to the anechoic chamber wall with 3M tape at 5 ft height. Powered by a variable autotransformer (setting 80) and commanded over USB with PuTTY.
- **Client:** Dell Latitude 7520 with an Intel AX201 card, on a mobile stand 3 ft off the ground. iPerf3 measured throughput.
- **Channels:** 2.4 GHz on Ch 6 (802.11g, 20 MHz). 5 GHz on Ch 48 (802.11a, DFS-free), used in place of the DFS-restricted Ch 100.
- **Method:** client moved to three locations from interior offices out toward the concrete perimeter. Three consecutive iPerf3 runs averaged at each.
- **Housing:** plastic enclosure with LCD display.

OFFICE THROUGHPUT

Location	2.4 GHz Ch 6	5 GHz Ch 48
Location 1	38.0 Mbps	51.5 Mbps
Location 2	18.5 Mbps	22.2 Mbps
Location 3	3.42 Mbps	22.2 Mbps

Average of three iPerf3 runs per location. Location 3 sits past the building's concrete outer wall. Best single reading was 51.5 Mbps on 5 GHz at Location 1.

KEY FINDINGS

Strong up close. Near the DUT, 5 GHz opens at 51.5 Mbps and 2.4 GHz at 38.0 Mbps, well above what the controller's traffic needs.

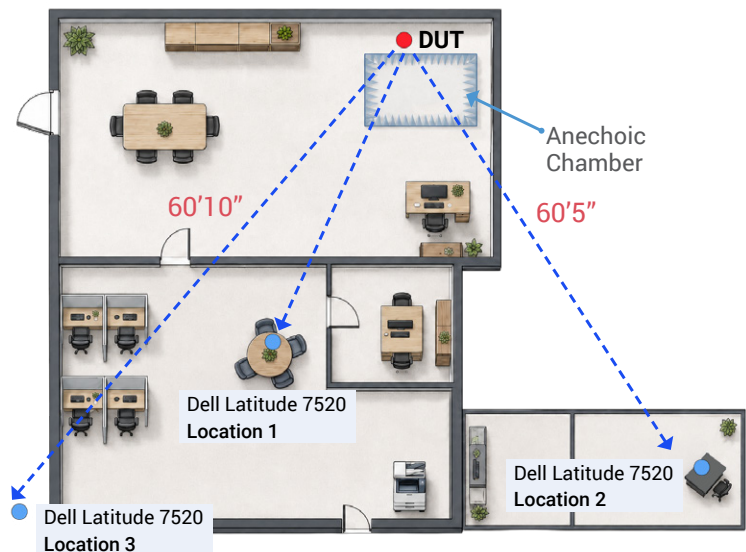
Drywall is easy. Through the interior office walls, mostly drywall, both bands stay usable at Location 2 (22.2 Mbps on 5 GHz, 18.5 Mbps on 2.4 GHz).

Concrete is the wall that matters. At Location 3, past the building's concrete perimeter, both bands fall to low single digits. That's the concrete, not the module.

Radio integration. Re-positioning the module so the short-segment side of the antenna has at least 11 mm of ground plane, and the long side segment has 3 to 5 mm of ground to its side, would improve performance.

Controller placement. Mounting the controller away from metal or a large obstacle would enhance performance.

MAP OF THROUGHPUT TESTING LOCATIONS



Commercial Controller



DUT setup on the left. Client setup on the right.

Module note. The CMP9610-2 runs about 16 dBm conducted power on both bands. Once inside a housing, typical antenna efficiency lands near -3 to -4 dB at 5 GHz and lower at 2.4 GHz, which is why 5 GHz leads at close range.

For full test results and detail case study contact CEL



Learn more about CEL's [CMP9610 Wi-Fi 6 + Bluetooth module](#)