How far can my node reach?

Range varies enormously by terrain, antenna height, modem preset, and local conditions.

Realistic ranges

The figures below are approximate field estimates gathered from community experience, not hardware specifications or guaranteed numbers. Actual range depends heavily on antenna height at both ends, modem preset (e.g. LongFast vs. a slower long-range preset), Fresnel-zone clearance, and line of sight. Treat them as rough order-of-magnitude planning aids, and always confirm with a real on-site range test. The longer brackets assume clear line of sight between elevated antennas; the over-water figure in particular is an exceptional best-case shot, not a typical result.

Scenario	Typical Range (approximate, line-of-sight dependent)
Ground level, dense urban	200 m - 1 km
Ground level, suburban	0.5 - 2 km
Rooftop or upper floor (line of sight)	2 - 8 km
Hilltop to hilltop, clear line of sight	10 - 30 km
Mountain repeater to valley (clear line of sight)	15 - 40 km
Over water (lake, bay), unobstructed line of sight	30 - 80+ km (exceptional best case, not typical)

The dominant factor: antenna height

Radio waves travel in straight lines. Elevation beats everything else. Even 3 extra meters of height meaningfully extends the radio horizon. A mediocre antenna on a hilltop outperforms an excellent antenna at ground level.

Best approach: test it

Deploy the node, walk or drive around with a second device, and observe where packets stop arriving. The Meshtastic Range Test module (Config - Module - Range Test) automates this by logging position and signal data to a CSV file. Because the figures above are only approximate, an on-site range test is the only reliable way to know your actual coverage.

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