TECHNOLOGY
DATASHEET

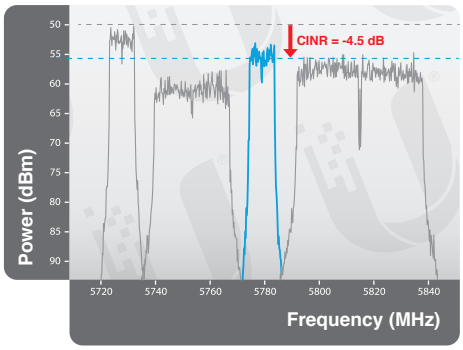
UBIQUITI NETWORKS

AIRPRISM TECHNOLOGY IMPROVES 5 GHZ PERFORMANCE IN HIGH-DENSITY AREAS

Adjacent Channel Rejection

The following spectrum analyzer interference plots compare adjacent channel rejection in three scenarios:

Antenna



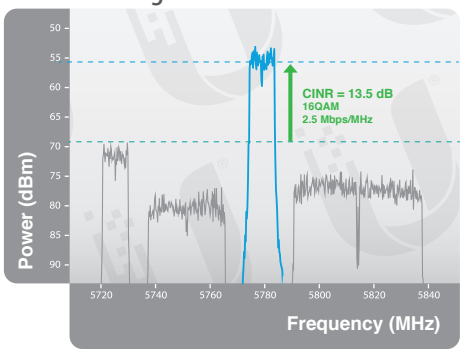
Extremely Low CINR: -4.5 dB

Signal coming from the antenna, as seen by the radio in a typical tower installation:
No filtering results in an extremely low Carrier to Interference + Noise Ratio (CINR) of -4.5 dB.

For a typical tower installation, an antenna frequently hears co-located devices as loudly – or more loudly – than the intended CPE or PtP radio. High-isolation antennas, such as the Ubiquiti® airMAX® ac antennas, help mitigate this problem by reducing the energy received by nearby radios; this problem, however, cannot be solved by the antennas alone in all cases.

Both time-synchronization and filtering can help solve this problem. Time-synchronization synchronizes transmit cycles; however, it is not always a viable solution due to non-cooperative radios. Filtering, on the other hand, requires no cooperation to be effective, improving performance even against non-cooperative interferers.

Wi-Fi Filtering

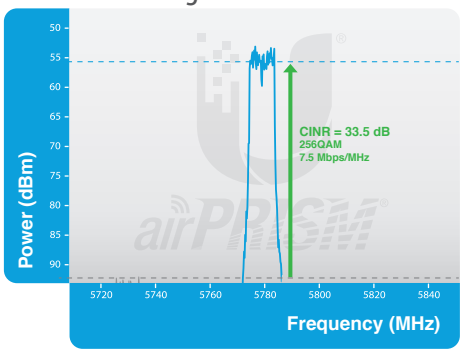


Low CINR: 13.5 dB

Signal filtered by standard Wi-Fi chipsets, as seen by the radio:
The combination of co-located, off-channel noise and standard Wi-Fi filtering performance results in a low CINR of 13.5 dB and a corresponding loss in spectral efficiency/throughput: 2.5 Mbps/MHz TCP/IP throughput.

Wi-Fi filtering is designed for indoor environments, where access points (or clients) are rarely co-located. Wi-Fi filtering offers approximately 20 dB of rejection (of out-of-band energy), which is more than sufficient for a typical Wi-Fi installation. For a tower installation, however, this filtering is often lacking. The plot displays the low CINR and a corresponding loss in throughput and overall system capacity stemming from ≈20 dB filtering by standard Wi-Fi chipsets.

airPrism Filtering*



High CINR: 33.5 dB

Signal filtered by airPrism® technology, as seen by the radio:
A high CINR of 33.5 dB from airPrism technology results in approximately 7.5 Mbps/MHz TCP/IP throughput, a 3x increase in TCP/IP throughput compared to standard Wi-Fi technologies for a typical case of co-located interference.

The Ubiquiti R&D team designed airPrism filtering as a robust solution for tower co-location interference. Requiring no communication between radios – and functioning despite noise from other vendors' radios (unlike GPS synchronization) – airPrism enables greater system capacity and overall throughput by further reducing out-of-band energy.

* airPrism on select models only

UBIQUITI NETWORKS, INC. • 2580 ORCHARD PARKWAY, SAN JOSE, CA 95131 USA • WWW.UBNT.COM