



LigoWave

LigoPTP RapidFire 6-N with 28dBi Itelite Dish
Antenna

CASE STUDY

Russia

Scenario

One of LigoWave's clients in Russia has set up a 7.31km PTP backhaul link to connect several base station/CPE networks. It provides internet traffic to approx. 300 clients.

The link uses 2x RapidFire 6-N bridges connected to 28dBi Itelite external dish antennas. Despite the longer distance, the network was not set to operate at maximum capacity because the 6GHz band was clear. The link ran at 20dBm Tx power over a 6.230GHz frequency (40MHz channel).

Product

The LigoPTP RapidFire 6-N is a wireless outdoor PTP bridge for long-distance heavy-duty backhaul and industrial networks. The 6-N works over the 6GHz band, allowing users to find less-crowded channels, experience zero noise and interference, and reach greater range and throughput.

The 6-N is equipped with a 1.2GHz CPU and a 30dBm radio, housed in an IP67-rated casing. It also has a 2.4GHz management radio, integrated surge protection, and a second ETH PoE Out port.

The RapidFire uses up to 256-QAM modulations and the W-Jet proprietary protocol to deliver 700+Mbps of throughput over 200,000+ packets per second. The wireless bridge also comes with a setup wizard and a single-sided configuration function to save time and money on installation.

RapidFire allows users to set very specific frequencies in 10kHz steps. There are also plans to launch non-standard channel widths such as 14MHz, 28MHz and 56MHz for specialized projects over licensed bands.

The W-Jet protocol is designed for capacity-demanding PTP scenarios to minimize interference and stabilize latency with long-distance links.

Results

Actual daily link use averages at 150Mbps and peaks at approx. 220Mbps in the evenings. The signal level is -45dBm.

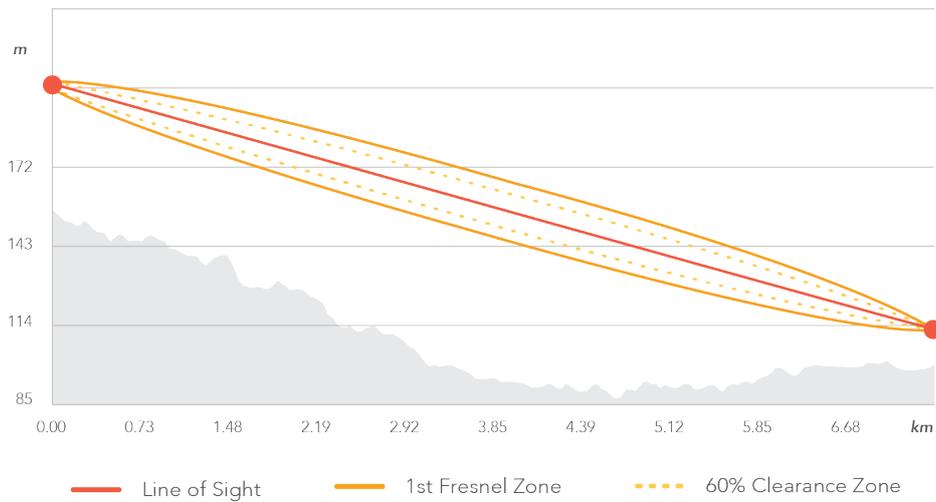
Additional real-time tests were done with increased transmit power (30dBm). Throughput reached 240Mbps with around 210,000 PPS (64b) over a 40MHz channel using TCP aggregated duplex. Signal levels remained at -45dBm.

Test results show that the 6GHz band is an ideal alternative to the often overcrowded 5GHz. Not only does it provide the needed conditions for good signal levels and great performance, but it also allows networks to operate at lower Tx parameters, this way reducing self-interference among sites. Besides that, low noise levels also mean longer potential link distance.

LigoPTP RapidFire 6-N | **7km Link** | **200,000+PPS**

PTP Link Simulator

7.31km (link)



Backhaul link path profile showing a downward wireless link with clear line of sight.

INFORMATION

Product name: LigoPTP 6-N RapidFire
Serial number: -
Firmware version: PTP.MA-1.v7.60.63478 (Update)
System uptime: 18 days 18:23:34

Friendly name: ZK
Device location: Location
Latitude/Longitude: 0 / 0
Height AGL, m: 0

Radio

Operating mode: MASTER
Max Tx data rate, Mbps: 400 (256-QAM 5/6)
Frequency, MHz: 6230 (6220-6260)
Channel width, MHz: 40

Tx power, dBm: 20
Antenna gain, dBi: 0
Noise level, dBm: -112/-112

Link ID: LigoPTP

| Remote site | | | | | | Local site |
|----------------|-----------------------|---------------|-----------------------|------------------|--|--|
| Remote device | Link status | Tx power, dBm | Tx/Rx data rate, Mbps | Noise level, dBm | Signal level, dBm | Signal level, dBm |
| NG 00:19:3B | UP 17 days 0:18:50 | 20 | 300/360 | -111/-111 | <div style="width: 100%; height: 10px; background-color: orange;"></div> -46 <div style="width: 100%; height: 10px; background-color: grey;"></div> -46 | <div style="width: 100%; height: 10px; background-color: orange;"></div> -45 <div style="width: 100%; height: 10px; background-color: grey;"></div> -45 |

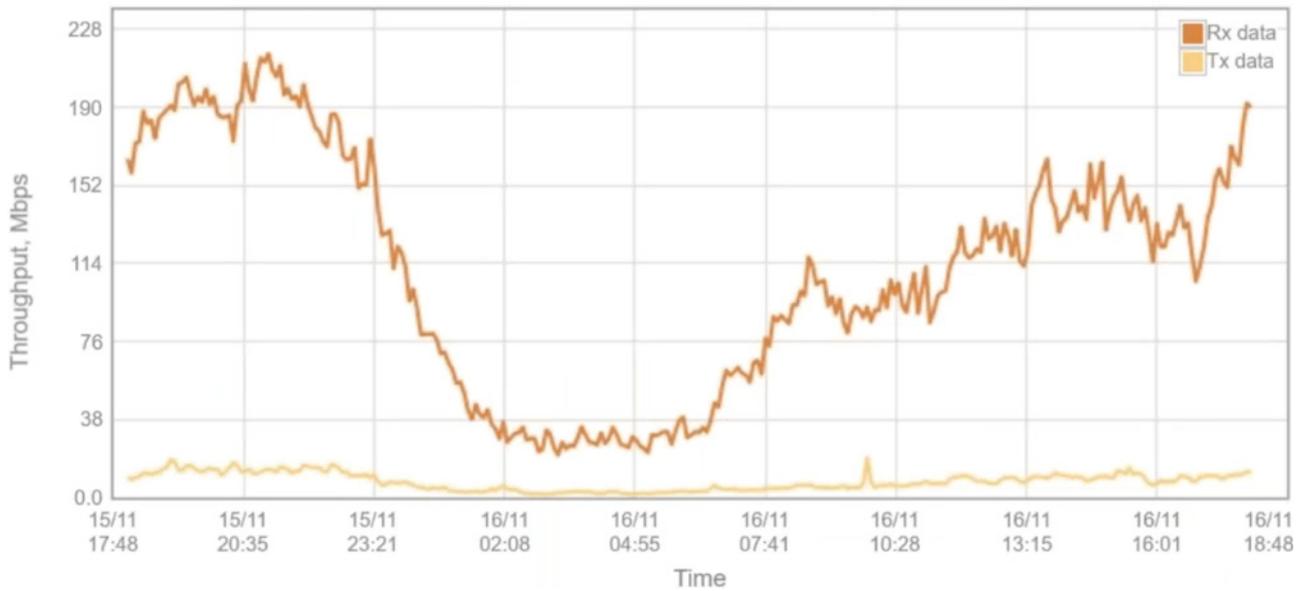
Network

IP method: Static
MAC address: 00:19:3B
IP address: 192.168.1.8
Subnet mask: 255.255.255.0
Default gateway: 192.168.1.11
DNS server 1: 8.8.8.8
DNS server 2: 8.8.4.4

IPv6 method: Disabled

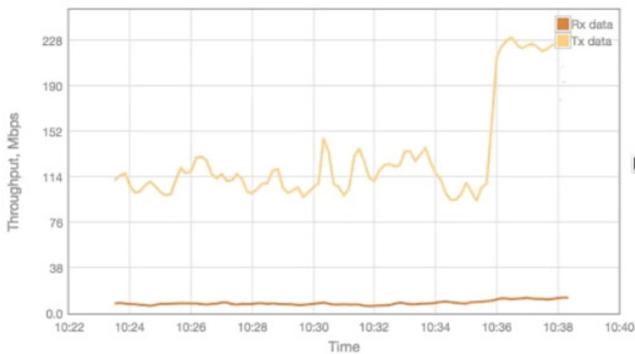
Since the 6GHz band was clear, it allowed for stable and optimal signal levels. During tests, signal levels remained within the -35dBm ~ -45dBm range.

Wireless data throughput (last 1 day)

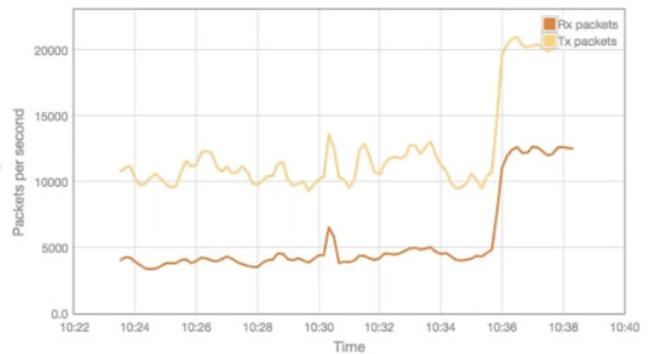


Actual network use over a 24-hour period. The average throughput aggregated from 300 clients reached ~150Mbps during the day and peaked at ~220Mbps in the evenings.

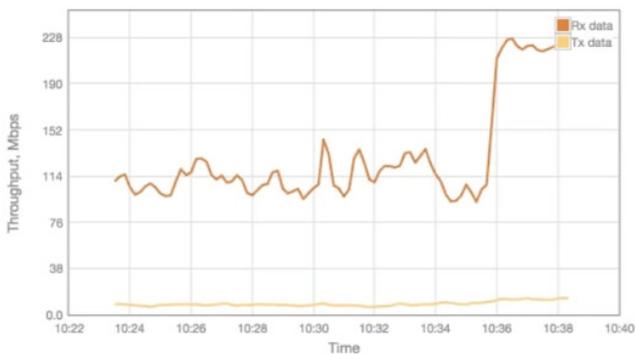
Wireless data throughput (last 15 min)



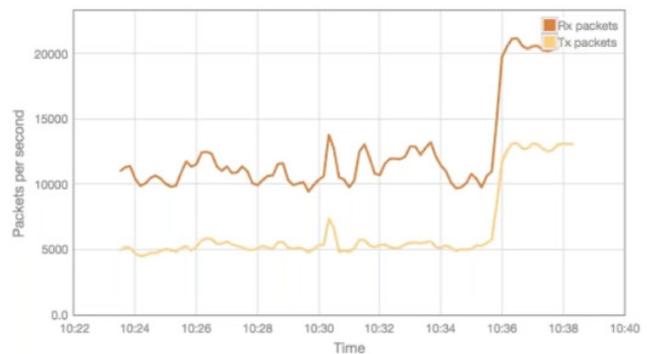
Wireless packets per second (last 15 min)



ETH1 data throughput (last 15 min)



ETH1 Packets per second (last 15 min)



Additional tests showed that the link could operate at up to 240Mbps with over 210,000 packets per second, if needed.



Contact Us

Need a 6GHz wireless network solution for your projects?
Get in touch: sales@ligowave.com

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Case Study of LigoPTP RapidFire 6-N

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