INFINET wireless

Quanta 5

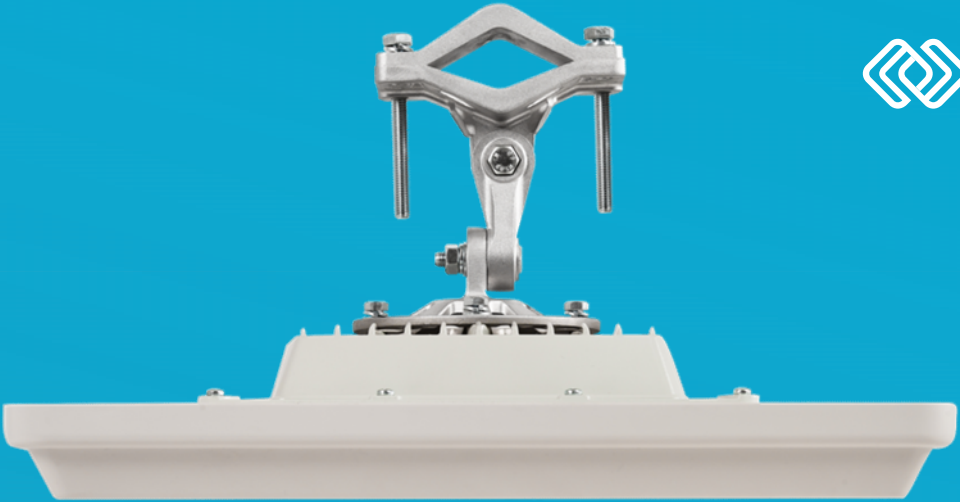Point-to-Point solution with advanced interference mitigation techniques

About

Infinet Wireless

The world's leading developer and manufacturer of Broadband Wireless Access solutions creating carrier-grade wireless backbones and access networks for service providers

More than **500,000** deployments in over **130** countries

2,500 square meters of own production facilities

100+ employees

30 offices around the world, in strategically important countries

100+ major distributors all over the world

OCTOPUS SDR — Quanta 5 | Quanta 6 | Quanta 70

Quanta family

Quanta is a new family of Point-to-Point wireless solutions with an impressive performance of up to **650** Mbps in the **5 GHz**, **6 GHz** and **70 GHz** frequency ranges.

Outstanding technical features make Quanta family attractive for businesses of any size.

Quanta family features

Frequency range, GHz (y-axis)

- 76.0
- 70.5
- 6.425
- 6.0
- 4.9

Quanta 70 (76.0 – 70.5, Zero interference)
- Up to 930,000 pps
- TDD
- ARQ
- Up to 20 km
- LOS

Quanta 6 (6.425 – 6.0, Medium interference)
- Up to 1,200,000 pps
- TDD
- ARQ
- 200+ km
- LOS, nLOS

Quanta 5 (6.0 – 4.9, High interference)
- Up to 1,200,000 pps
- TDD, H-FDD
- ARQ, Instant DFS
- 200+ km
- LOS, nLOS, NLOS

Zero interference

Medium interference

High interference

Throughput, Mbps (x-axis)
- up to 480
- up to 650

Quanta 5

Quanta 5 is a brand new record-breaking spectral efficiency 5 GHz Point-to-Point solution with an impressive performance of up to 650 Mbps in 56 MHz channel size and up to 460 Mbps in 40 MHz band.

Quanta 5 offers a unique combination of high performance, affordability and ease of installation.

Octopus SDR Platform

OCTOPUS SDR

One of the latest Infinet's achievements.
Infinet's latest Octopus Software Defined Radio (SDR) platform has been designed using a state-of-the-art proprietary SDR technology specifically aimed at increasing link performance several-fold.

Features:

Software defined radio platform

ARQ algorithm

The highest packet performance

Solves problems:

Limited spectrum availability

Growing interference

Demands for yet more capacity

Interference Mitigation Techniques

Instant DFS

Quanta 5 devices continuously perform background spectrum monitoring and seamlessly change channel to the least noisy frequency without link interruption, taking into account the spectrum conditions at the location of both connected devices

Hybrid-FDD

Different frequency channels could be used for data transmission in the uplink and downlink directions. It allows to reduce the impact of channel interference in high spectrum utilization conditions

Automatic Repeat Request (ARQ)

Enables packet re-transmission in case of previous unsuccessful delivery. The algorithm increases the connection reliability and the end services quality

Per-stream AMC

The modulation-code scheme is automatically selected separately for each data transmission direction. Interference received by one of the devices has a minimal impact on a whole communication channel

Radio subsystem
Technical Specifications

Modulation	SC-FDE
Modulation coding schemes	14 MCS, from QPSK 1/4 to QAM256 7/8
Frequency range	4900–6000 MHz
Channel width	3.5, 5, 7, 10, 14, 15, 20, 28, 30, 40, 50, 56 MHz
Center frequency adjustment step	1 MHz
Transmit power	up to 27 dBm
Receiver sensitivity	up to -101 dBm
Duplex scheme	TDD, H-FDD
Antenna	Integrated dual polarization flat panel 18, 23, 25 and 28 dBi 2x type-N connectors for external dual polarization antenna
Maximal range	200+ km
Air frame	from 1 to 10 ms
Proprietary technologies	ARQ, Instant DFS

Quanta 5 Advantages

- A wide set of channel widths allows to flexibly allocate the frequency at the radio network planning stage

- 14 modulation-code schemes allow to adapt to the radio deterioration by performance reduction with a small step

- Air frame range allows to control payload transmission and latency, especially for latency sensitive applications like PTZ cameras, IPTV, etc.

Link budget

Quanta 5 devices have a link budget of up to 174 dB which allows to achieve reliable connectivity at a distance of 40 km in clear line-of-sight conditions, as well as provides sufficient margin for near- and non-LOS deployments at shorter distances.

Transmit power at the highest modulations is also one of the key performance metrics, allowing devices to achieve the highest performance over long distances and in noisy spectrum. Quanta 5 transmit power at QAM256 is up to 24 dBm.

Model	Antenna gain, dBi	Link budget, dB	Maximal range, km
Q5-18	18	164	up to 20
Q5-23	23	174	up to 40
Q5-25	25	178	up to 60
Q5-28	28	184	up to 70
Q5-E	-	from 128	200+

Quanta 5 Advantages

- Available with a wide range of integrated antennas 18, 23, 25 and 28 dBi, as well as a connectorized version for using with 3rd party external antennas, Quanta 5 family is the ideal choice for a large array of applications

- A high sensitivity gives possibility to operate at maximum modulations with a lower transmit power. Due to this, interference is reduced allowing it to achieve much higher density of collocated wireless units

Performance

Quanta 5 packet performance does not depend on the packet size and provides a reliable real-time traffic transmission.

Packet performance	up to 1,200,000 pps
Throughput	up to 650 Mbps
Latency	up to 1.7* ms

* For the air frame 1 ms

Quanta 5 Advantages

- Quanta 5 performance reaches 650 Mbps which meets the needs of most last mile links, as well as trunk channels of the light and medium networks

- Quanta 5 devices provide high-quality operation of various end-user services due to the high packet performance regardless of the traffic type

Network Functionality

Support of up to 9,038 bytes on jumbo frames allows to reduce the service traffic and increase the useful data volume.

For optimal integration into existing networks, Quanta 5 supports VLAN. To provide high-quality services for trunk and last mile channels there are tools for smart traffic prioritization and shaping.

Wired interfaces	Combo: 1xGE(RJ45), 1xSFP
Jumbo frame	9,038 bytes
QoS	8 priority queues
Packet classification	IEEE 802.1 p
Network protocols	VLAN support

Quanta 5 Advantages

- Quanta 5 devices support necessary network functionality for organizing end-user communication channels. It has the ability to isolate traffic at the datalink layer and prioritize various services traffic

- Quanta 5 could be integrated into existing optical networks thanks to second SFP port

Security options

Thanks to a built-in rich security features, traffic security is under full control.

|	
Management	HTTPS, SSH, SNMP v3
Radio security	Link ID, Access key
Authentication	Password protection, RADIUS
Syslog	Supported
Access limitation	Network access whitelist

16

Quanta 5 Advantages

- Wireless connection is secured using reliable features that reduce scenarios of link establishment with an attacker's device
- Secure web and command-line access via HTTPS and SSH protocols
- Centralized authentication, authorization and account management using the RADIUS protocol
- Access to the management interface limitation using an access whitelist option

17

Operation

The wireless link reliability and performance depends on the installation and alignment quality. The adjustment can be performed using the MONT-KIT-85 mounting kit and the LED indication on the device case.
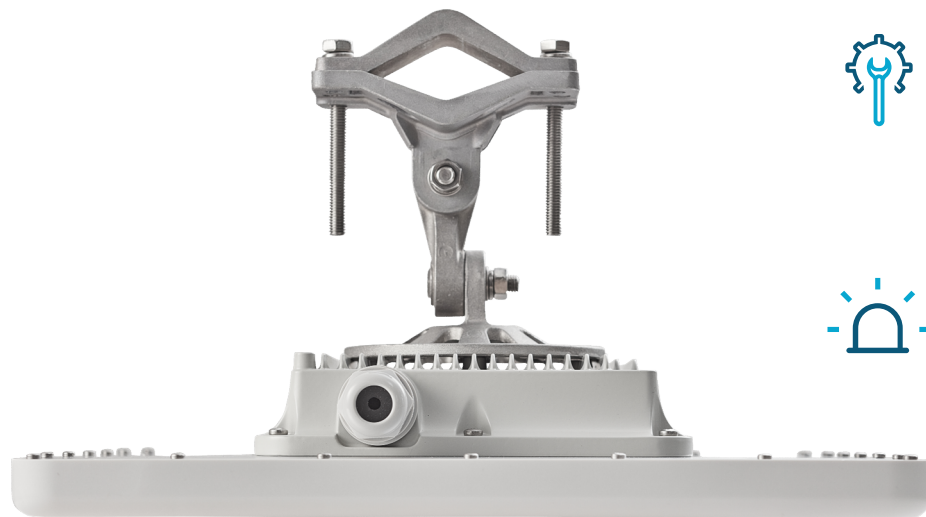
High-precision azimuth and elevation adjustment

Mounting kit with horizontal and vertical alignment

RSSI level, power, wired and wireless link indicator

The power status, wired and wireless link status, RSSI level LED indication on the device case

Technical Specifications

| Operating temperature range	from -55 °C to +60 °C*
Dust and water protection	IP66 IP67
Wind load	160 km/h – operational 200 km/h – survival
Power supply	IDU-CPE-G IDU-CPE-G(24W) IDU-BS-G (60W) IDU-LA-G(V.01) AUX-ODU-INJ-G
PoE	802.3at proprietary passive PoE
Power consumption	up to 15 W

Models with "t" index in PN

Quanta 5 Advantages

- Low power consumption compared to competitors extends battery life in case of an accident and reduces power supply costs. In addition, the low power consumption allows to use Quanta 5 devices in solar power supply schemes

- The wide temperature range and compliance with IP66 and IP67 allow to deploy reliable wireless links in adverse climatic conditions

- Built-in lightning protection increases reliability and durability of Quanta 5 devices

20

Management. Web interface

User-friendly web interface with HTTPS protocol support.
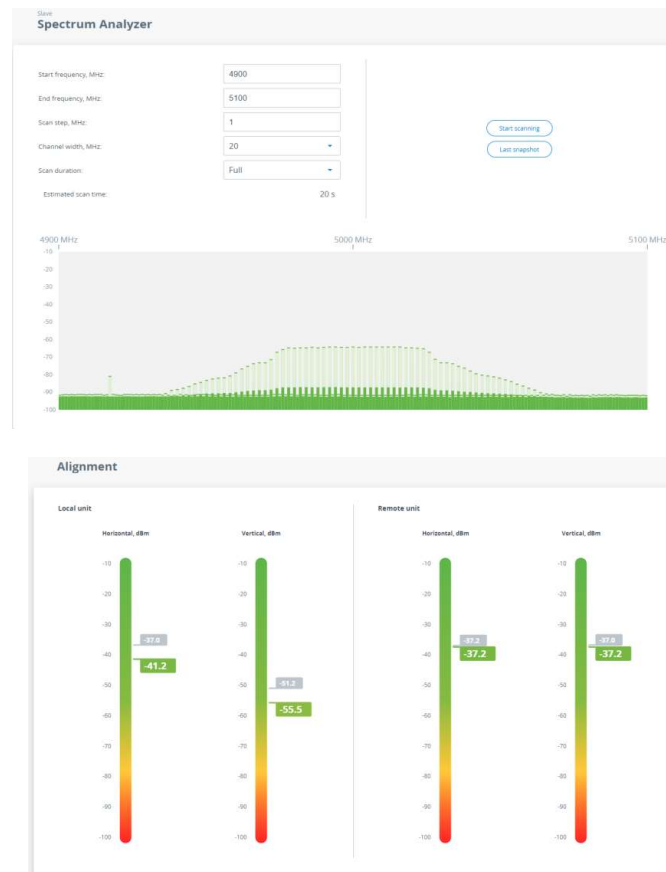
Management protocols

SNMP

SNMP

General settings

Enabled:

Contact person:

Location:

SNMP v1/v2c

Enabled (read only):

Community:

public

SNMP v3

User Name	Password	Security	Readonly	Admin	Privacy Password	Privacy Protocol
mobiletest1	-	No auth / No privacy	Yes	No	-	DES

SSH, Telnet

Command line interface

SSH:

Telnet:

Models Configuration

Models	Q5-18	Q5-23	Q5-25	Q5-28	Q5-E
Frequency range			4.9–6.0 GHz		
Antenna gain | Beamwidth	18 dBi 18 ×18 deg	23 dBi 10 ×10 deg	25 dBi 8 × 8 deg	28 dBi 5 × 5 deg	external
Size and weight	188 × 188 × 45 mm 1.3 kg	305 × 305 × 66 mm 1.75 kg	350 × 350 × 71.5 mm 2.3 kg	600 × 600 × 68 mm 5.8 kg	180 x 190 × 86 mm 1.2 kg
Wired interfaces			1xGE(RJ45)		

Outdoor testing of Q5-23

The devices show stable performance at distances of up to 30 km in the 20 MHz band and up to 13 km in the 40 MHz band.

20 MHz

40 MHz
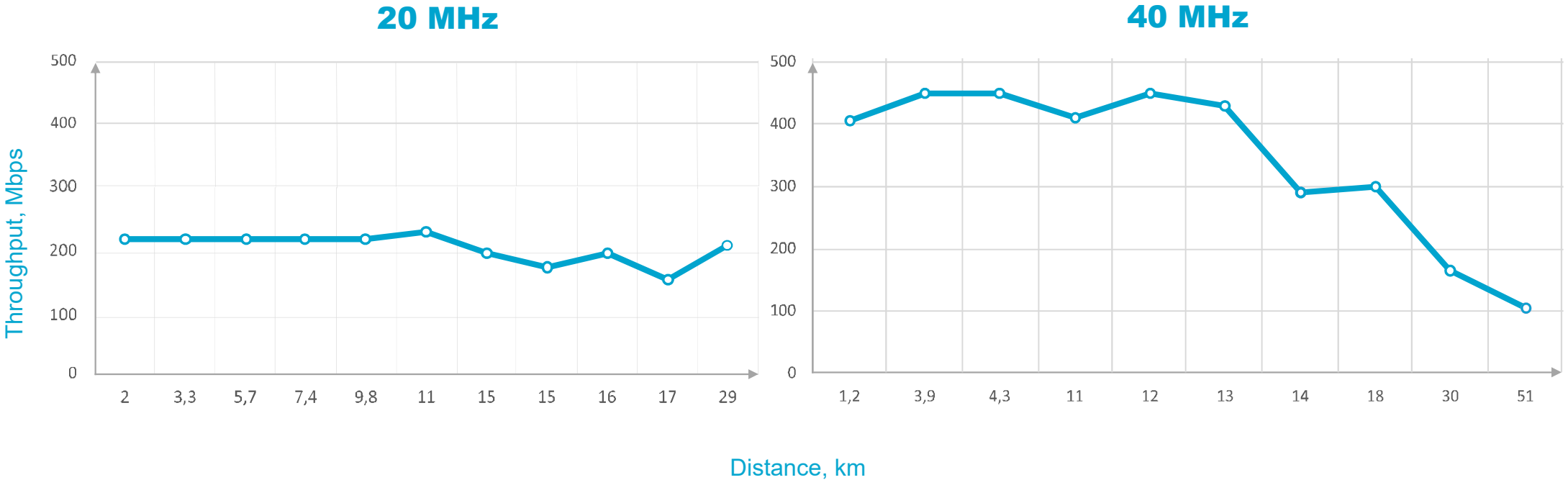
Distance, km

Applications

Geographically distributed enterprises in LoS, nLoS, NLoS conditions

Building-to-building enterprise use

Redundancy links

Telecom operators trunk channels at a distance of several kilometers

Comparison Quanta 5 with InfiLINK Evolution

Parameter		Quanta 5	InfiLINK Evolution
Frequency range, MHz		4900–6000	4900–6050 4900–6425
Channel width, MHz		3.5, 5, 7, 10, 14, 15, 20, 28, 30, 40, 50, 56	20, 40, 80
Transmit power, dBm		up to 27	up to 25
Interference Mitigation Techniques		Instant DFS Hybrid-FDD Per-stream AMC Extended set of MCS	Instant DFS
Throughput, Mbps	40 MHz	up to 460	up to 305
	Max value	up to 650	up to 650

Quanta 5 Advantages

The advantages realized in Quanta 5 devices compared to the InfiLINK Evolution are directly related to the use of the Octopus SDR platform:

- extended set of modulation-code schemes
- extended set of channel width
- wide set of interference mitigation techniques

Guanajuato University, Mexico

Tasks

Trunk channel with a maximum range
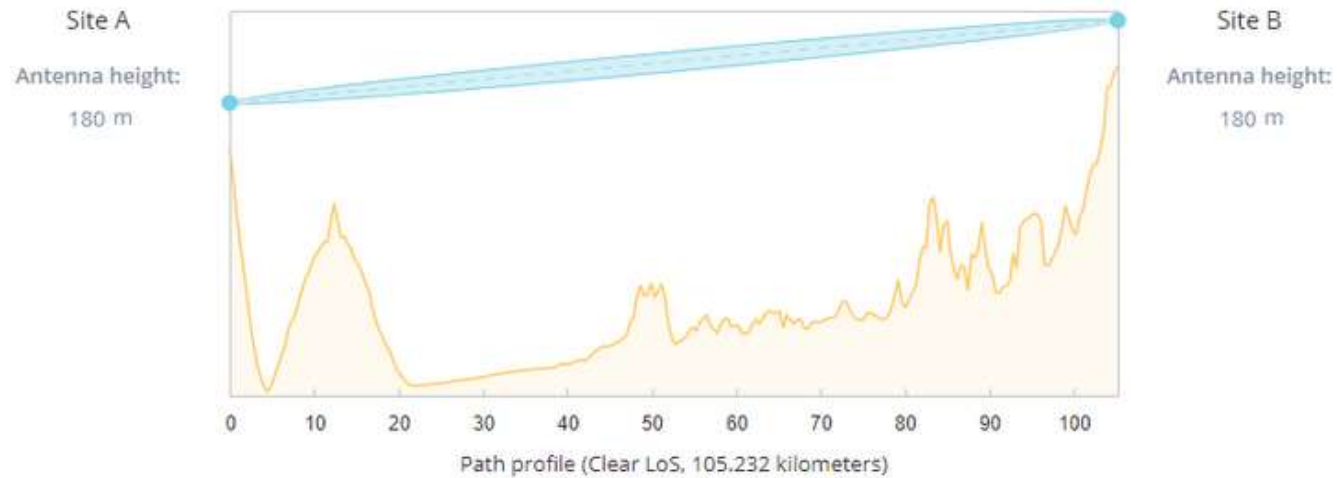
Stable data transmission

Solution

Quanta 5

- Q5-E models

- External antenna with 35 dBi gain

Advantages

A wireless link with a range of 105 km

Communication channel performance up to 400 Mbps

Site A

Antenna height:
180 m

Site B

Antenna height:
180 m

Path profile (Clear LoS, 105.232 kilometers)

Video surveillance in Celeste, France

Tasks

Video surveillance for security assurance

High density

High interference

Solution

Quanta 5
- Q5-23 models

Advantages

40 video surveillance cameras with a video traffic prioritized

Reliable communication channels with the required performance in interference environment
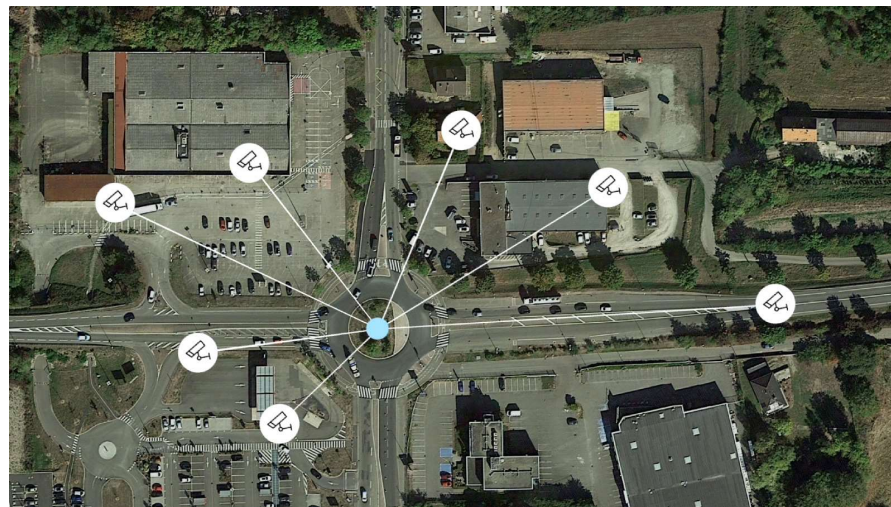
IW Ecosystem

Infinet Wireless develops services to make the process of interaction with the Quanta 5 family devices as simple and convenient as possible. These services are designed to support product operation at all stages.

	Planning	Deployment	Operation
Service Desk	✓	✓	✓
InfiPLANNER	✓	✓	
InfiMONITOR			✓
IW Academy	✓	✓	✓
Mobile App	✓	✓	✓

INFINET
wireless

https://infinetwireless.com/   +356 2034-15-14   SalesGlobal@infinetwireless.com