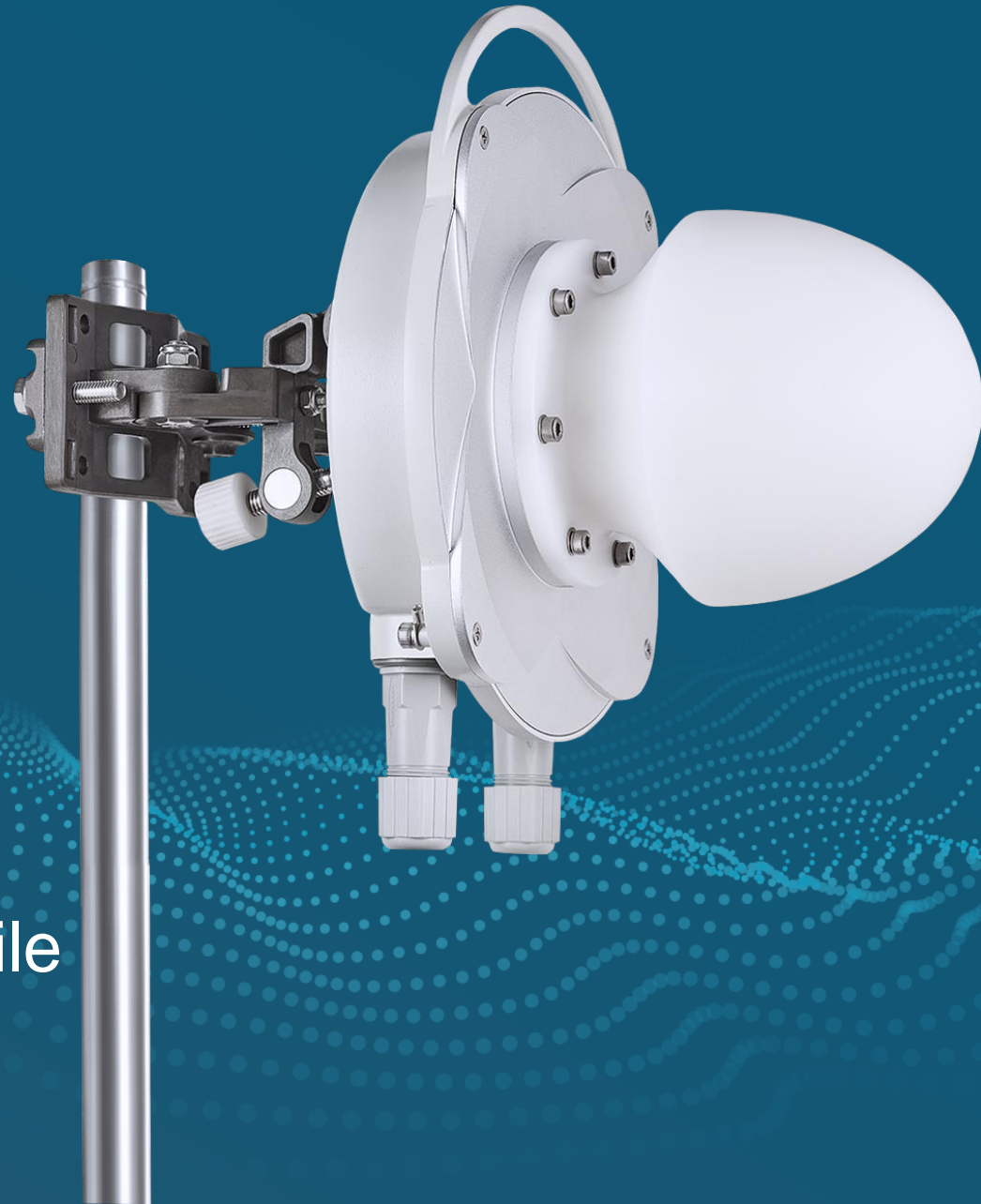




Quanta 70

Point-to-Point solution for last-mile
access immune to interference

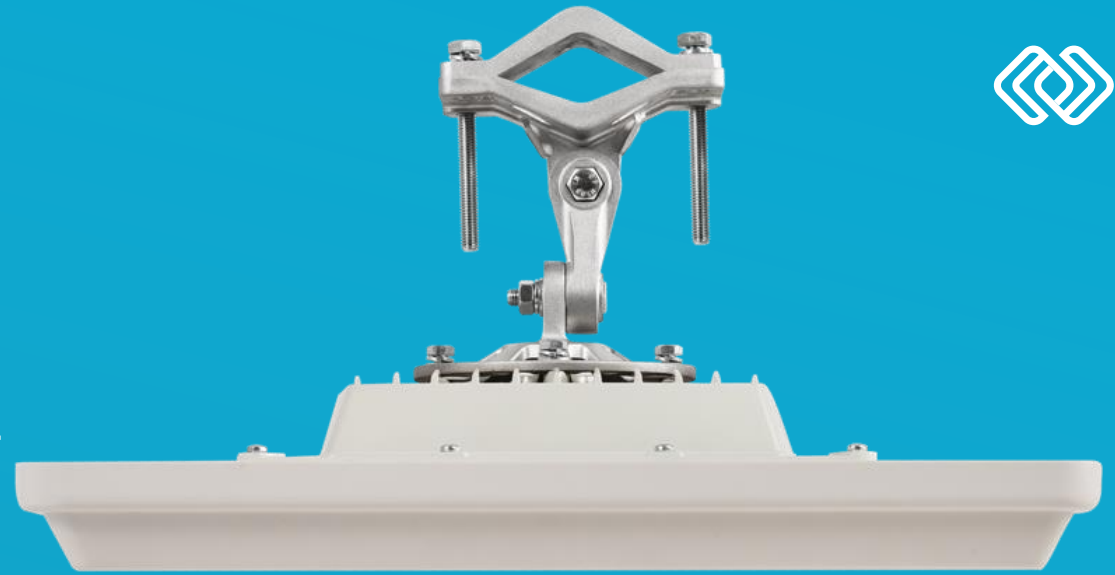


About



Infinet Wireless

The world's leading developer and manufacturer of Broadband Wireless Access solutions used to create 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



180 employees



30 offices around the world, in strategically important countries



100+ major distributors all over the world



Quanta 5



Quanta 6



Quanta 70

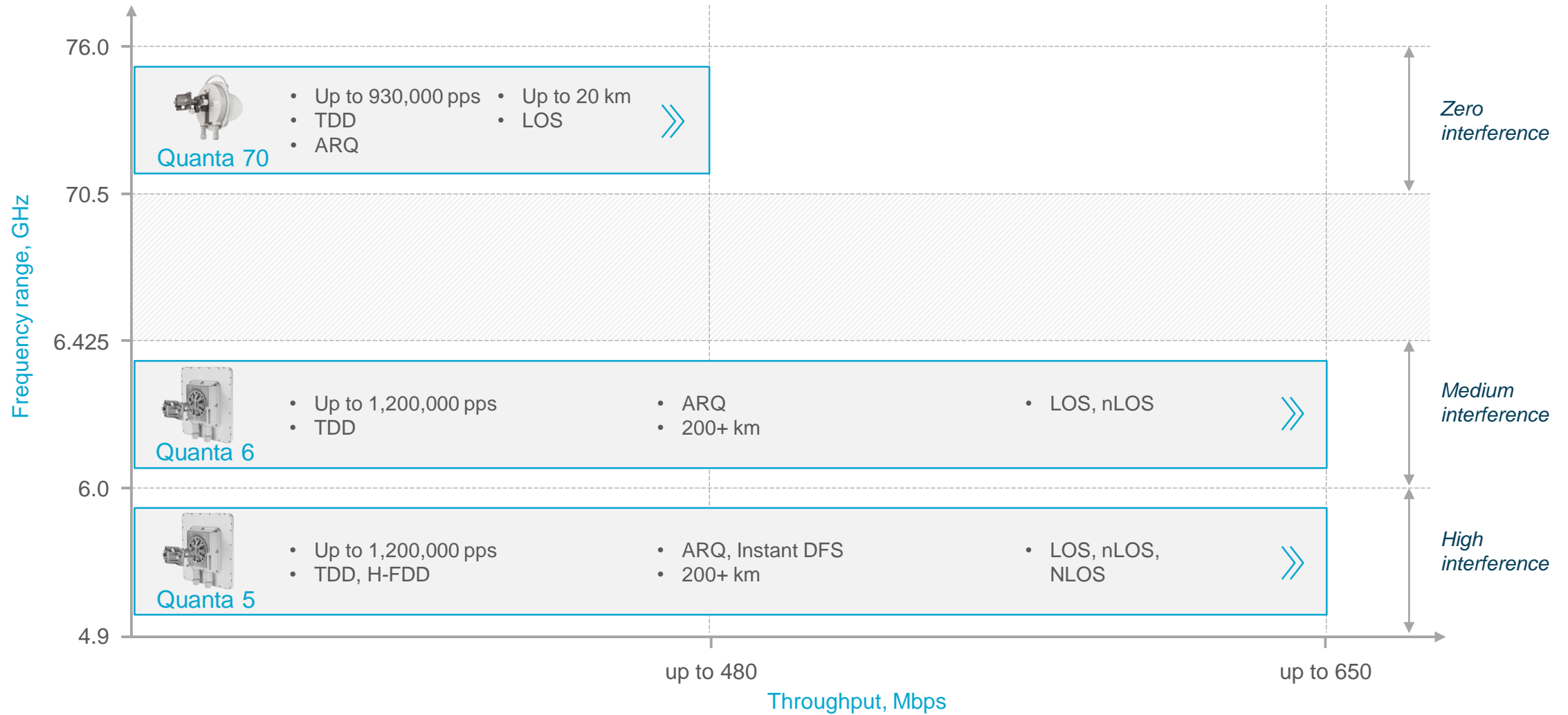
Quanta family

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





Quanta 70

Quanta 70 has been designed for the last mile access and “light” trunk channels in the 70.5–76 GHz frequency range with the throughput of up to 480 Mbps.

The 70.5–76 GHz spectrum is lightly licensed or sometimes even unlicensed in a number of countries and therefore enables the deployment of high-density networks in urban areas, with nearly zero interference.





E band Advantages

The radio signals attenuation in the 30–300 GHz range is influenced by water and oxygen molecules. The attenuation coefficient from interaction with oxygen molecules is determined by the radio signal frequency.

At a distance of 5 km the corresponding loss in the 60 GHz band is **50 dB**, while in the 70 GHz band the loss is only **1 dB**.

Band	Attenuation coefficient	Distance
60 GHz (V band)	10 dB/km	Hundreds of meters
70 GHz (E band)	0,2 dB/km	A few kilometers



Octopus SDR Platform



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



Minimal or zero interference

Supporting 40 non-overlapping frequency channels and having an integrated antenna with a pencil-wide narrow beam, Quanta 70 shows minimal or zero impact from external interference. It allows to achieve much higher density of collocated wireless units when compared to lower frequency bands.



Automatic Repeat Request (ARQ)

Technology which enables packet re-transmission in case of previous unsuccessful delivery, allows to achieve reliable connectivity even in highly congested spectrum.



Technical Specifications

Modulation	SC-FDE
Modulation coding schemes	8 MCS, from BPSK 1/4 to QAM64 5/6
Frequency range	70.5–76 GHz
Channel width	125 MHz
Center frequency adjustment step	125 MHz
Transmit power	up to 11 dBm
Receiver sensitivity	up to -86 dBm
Duplex scheme	TDD
Antenna	Lens antenna 39 dBi Cassegrain antenna 50 dBi
Maximal range	up to 20 km
Air frame	from 0.1 to 5 ms



Quanta 70 Advantages





- Due to the low interference level in the 70.5–76 GHz band, the use of a 125 MHz channel width provides better sensitivity compared to wider channels, increasing the link budget and wireless link reliability.
- 8 MCS support allows to seamlessly reduce the channel performance in case of external conditions degradation, providing a connection with the maximum achievable performance. The large number of supported MCS increases the link efficiency over long distances.
- Due to the radio signal high sensitivity to the weather conditions in the range of 70.5–76 GHz, stable operation at modulations above QAM64 over long distances becomes almost impossible.
- The ARQ technology ensures the wireless link reliability during precipitation by re-transmission damaged radio frames.



Link budget

The link budget is particularly important for the 70.5–76 GHz band, as the attenuation coefficient is significantly higher than in the 5 GHz band. The following are the budget values for the Quanta 70 models, indicating the maximum ranges with the availability level of 99.99%.

Model	Antenna gain, dBi	Link budget, dB	Maximal range, km
 Q70-39	39	175	up to 10
 Q70-50	50	197	up to 20

Quanta 70 Advantages



- The Quanta 70 models with integrated high-gain antennas help to achieve a link budget of 175 dB. It allows to get maximum performance over a distance of several km using compact 39 dBi antennas.
- The high receiver sensitivity allows to reduce the transmission power, while maintaining a high link budget. Together with integrated high-gain antennas, the mutual devices influence is reduced providing conditions for their high density deployment.

Performance



The Quanta 70 packet performance does not depend on the packet size and provides a reliable real-time traffic transmission.



Packet performance

up to 930 000 pps

Throughput

up to 480 Mbps

Latency

between 0.3* and 8.1 ms

* For 0.1 ms air frame

Quanta 70 Advantages



- The Quanta 70 performance reaches 480 Mbps that meets the needs of most “last mile” links, trunk channels of the “light” and “medium” networks.
- In case of external conditions degradation, the Quanta 70 devices maintain a throughput of 24 Mbps upon minimal modulation.
- Quanta 70 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. Quanta 70 can be easily integrated into the existing optical infrastructure due to the fact that such models with the SFP modules don't have any restrictions. It allows to reduce costs and avoid interference on Ethernet port.



Wired interfaces

1 Gigabit Ethernet (RJ45) port, 1 SFP port

Jumbo frame

9,038 bytes

Network timing

IEEE 1588v2 transparent clock*

QoS

8 priority queues

Packet classification

IEEE 802.1 p

Network protocols

VLAN support

Q-in-Q technology support*

* Roadmap

Quanta 70 Advantages





- Quanta 70 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.
- Q-in-Q technology is used for the trunk channels deployment.



Operation

Integrated antennas with a pencil-wide narrow beam use allow to get a high antenna gain and increase the link budget. It is especially important for communication channels in the range of 70.5–76 GHz due to the high attenuation coefficient.

Model	Antenna beamwidth, deg.	Antenna gain, dBi
 <p>Q70-39</p>	2x2	39
 <p>Q70-50</p>	0.5x0.5	50

Operation



A narrow beam requires precise alignment to ensure the communication channel quality.



High-precision azimuth and elevation adjustment

High-precision mounting kit with horizontal and vertical alignment



RSSI value indication in dBm

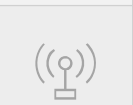
RSSI value indicator in the device case



Power, wired and wireless link indicator

The power status, wired and wireless link status LED indication in the cable glands

Technical Specifications



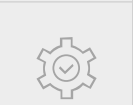
Operating temperature range

from -40 °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(24W)
IDU-BS-G()
IDU-LA-G(V.01)
AUX-ODU-INJ-G



PoE

802.3at
proprietary passive PoE



Power consumption

up to 15 W

Quanta 70 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 70 devices in solar power supply schemes.
- Extremely accurate and easy adjustment on azimuth and elevation thanks to precision mounting kit and RSSI indicator.
- Small form factor model allows low visual impact deployments.



Management. Web interface

User-friendly web interface with HTTPS protocol support.

Device status

Type: **Master**

Status: **Connected**

Device uptime: 15188d 09:18:20

Firmware version: H21514-OCTOPUS_PTPv1.0.2-11

Wired interface ge0

Status: ● Up

Name: ge0

Mode: 1000BaseTX

Media: copper

Traffic: TX **162 kbps**

Traffic: RX **8 kbps**

Runt packets: **0**

Oversize packets: **0**

FCS errors: **0**

Port overflow errors: **0**

[Clear counters](#)

Wireless link status

Link ID: **0**

Distance: 0 metres

Link uptime: 13206d 03:10:00

Center frequency: **71125 MHz**

Channel width: **125 MHz**

Traffic:

Downlink ⬇

Capacity 137 Mbps

0 kbps

Uplink ⬆

Capacity 137 Mbps

0 kbps

Frame length: **1 ms**

TX power: **5 dBm**

DL / UL ratio: **50/50 %**

Remote TX power: **5 dBm**

[Clear AMC statistics](#) [Clear counters](#)

MCS		RSSI, dBm		EVM, dB		ARQ		Frame loss	
Downlink ⬇	Uplink ⬆	Downlink ⬇	Uplink ⬆	Downlink ⬇	Uplink ⬆	Downlink ⬇	Uplink ⬆	Downlink ⬇	Uplink ⬆
16-QAM-3/4	16-QAM-3/4	-59,6	-60,2	-17,9	-18,4	0,0e+0 (0,0%)	0,0e+0 (0,0%)	0,0e+0 (0,0%)	0,0e+0 (0,0%)
MCS: 5	MCS: 5							0	0

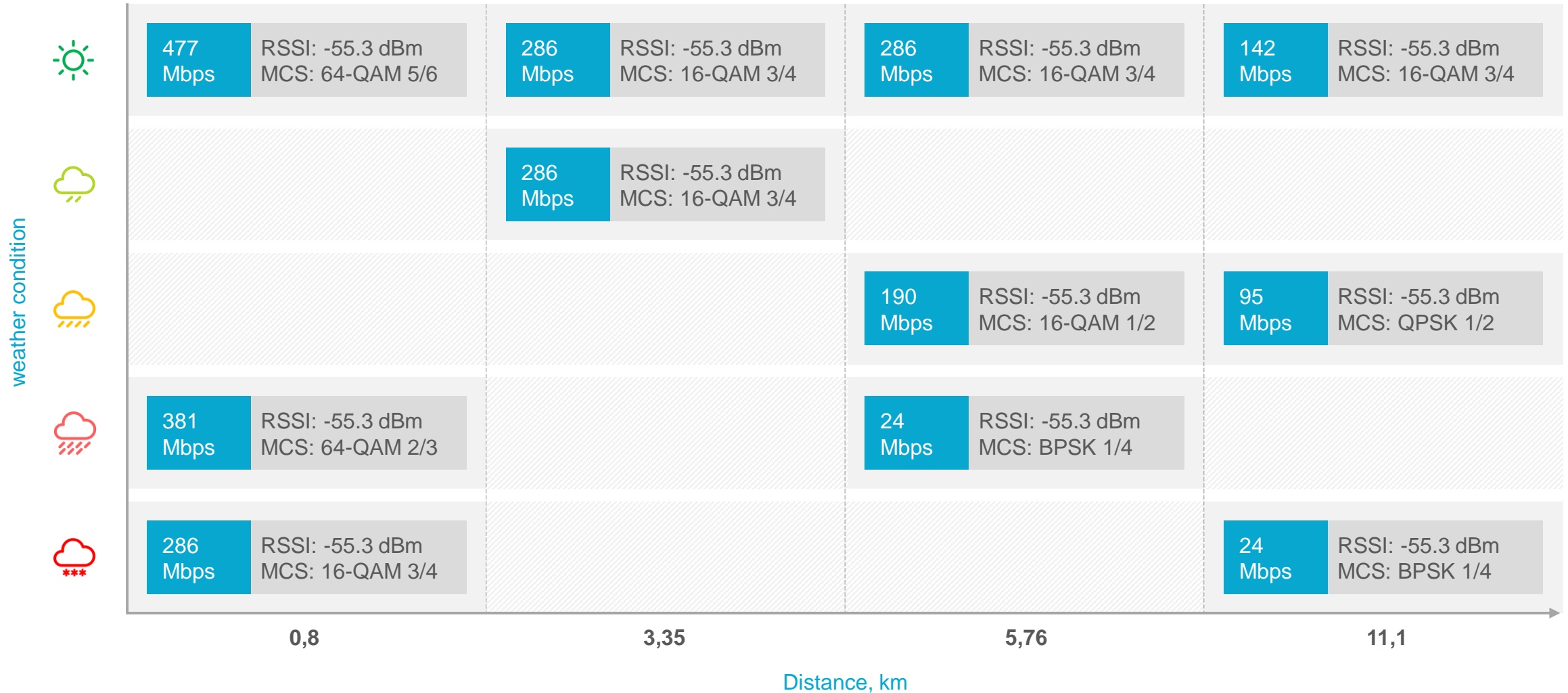


Models Configuration

Models	Q70-39	Q70-50
Frequency range	70,5-76 GHz	
Antenna gain Beamwidth	39 dBi 2x2 deg.	50 dBi 0.5x0.5 deg.
Size and weight	255 × 226 × 189 mm 3.1 kg	Ø 655 × 430 mm 13.2 kg
Wired interfaces	Combo: 1xGE(RJ45) 1x SFP port	



Outdoor testing of Q70-39





Applications



“Last mile” in case of free frequencies absence in 5 GHz



Geographically distributed enterprises



Building-to-building enterprise use



Redundancy links*



“Light” trunk channels at a distance of several kilometers



Temporary links with rapid deployment



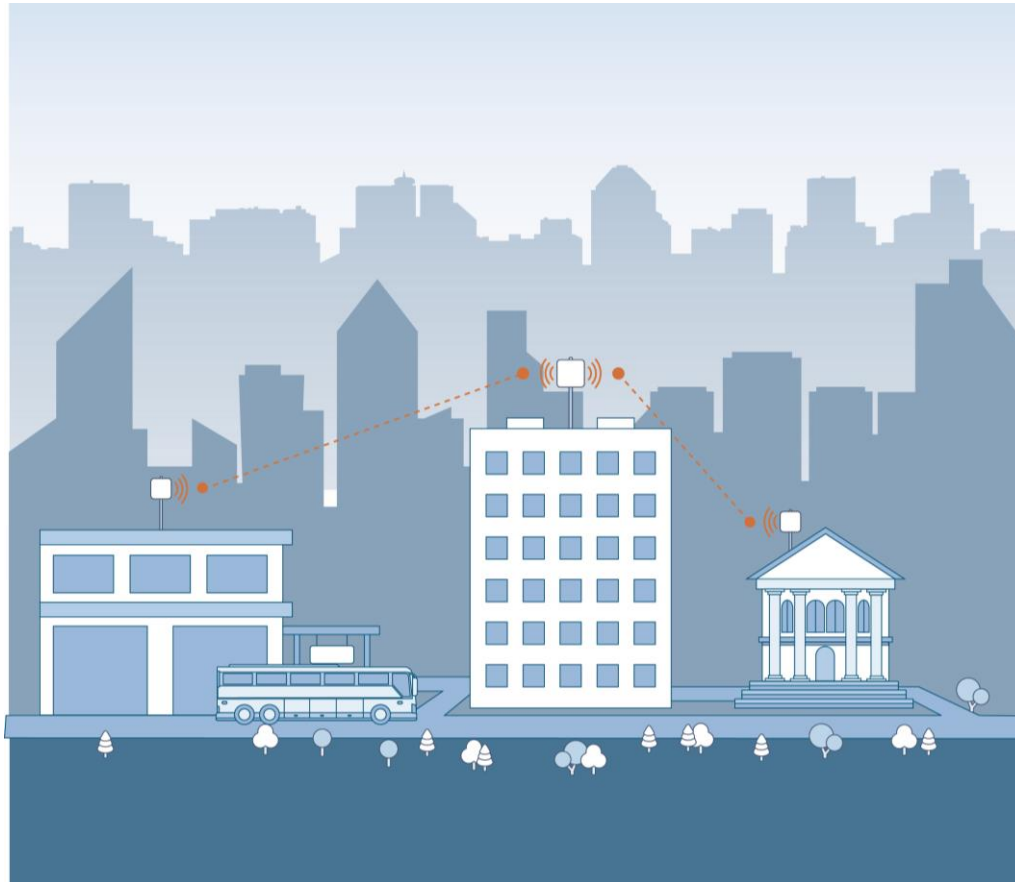
* The reliability requirements for redundancy links are lower than for the main ones, so the Quanta 70 devices can be used over longer distances

Video surveillance



- Backbones for video transmission in real time
- Links covering distances of up to 10 km in urban conditions
- Video transmission from fixed cameras to the control center
- Installation and maintenance in hard-to-reach places

Enterprise network



- Telecom services for corporate customers in urban conditions
- Coverage range up to 10 km
- Internet access, VoIP and video services
- Centralized monitoring and management
- Reliable equipment operation in adverse weather conditions

Last mile for small cell



- Ability to connect a large number of small cells to backhaul in a dense urban area
- High throughput and low latency
- Internet access, VoIP and video services
- Easy installation and quick commissioning



Flex: Record-breaking 51 km trunk

Tasks

Long-range trunk channel in unlicensed range

Stable data transmission

Solution

Quanta 70

- Throughput of 22 Mbps
- Antennas with 50 dBi gain

Advantages

A wireless link with a range of 51 km was deployed between Klin and Dubna towns of the Moscow region

The unlicensed range is used






The required signal level was reached with the antenna beamwidth of only 0.5x0.5 deg.





IW Ecosystem

Infinet develops services to make the process of interaction with the Quanta 70 family devices as simple and convenient as possible. These services are designed to support all stages of product operation.

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



INFINET
wireless



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