![IP-COM World Wide Wireless]

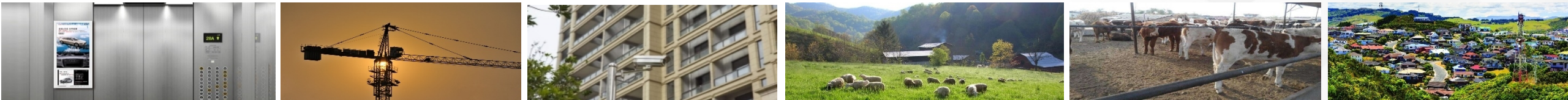# IP-COM Surveillance
Wireless Transmission Solutions

Surveillance Wireless Transmission Solution For district/factory/school
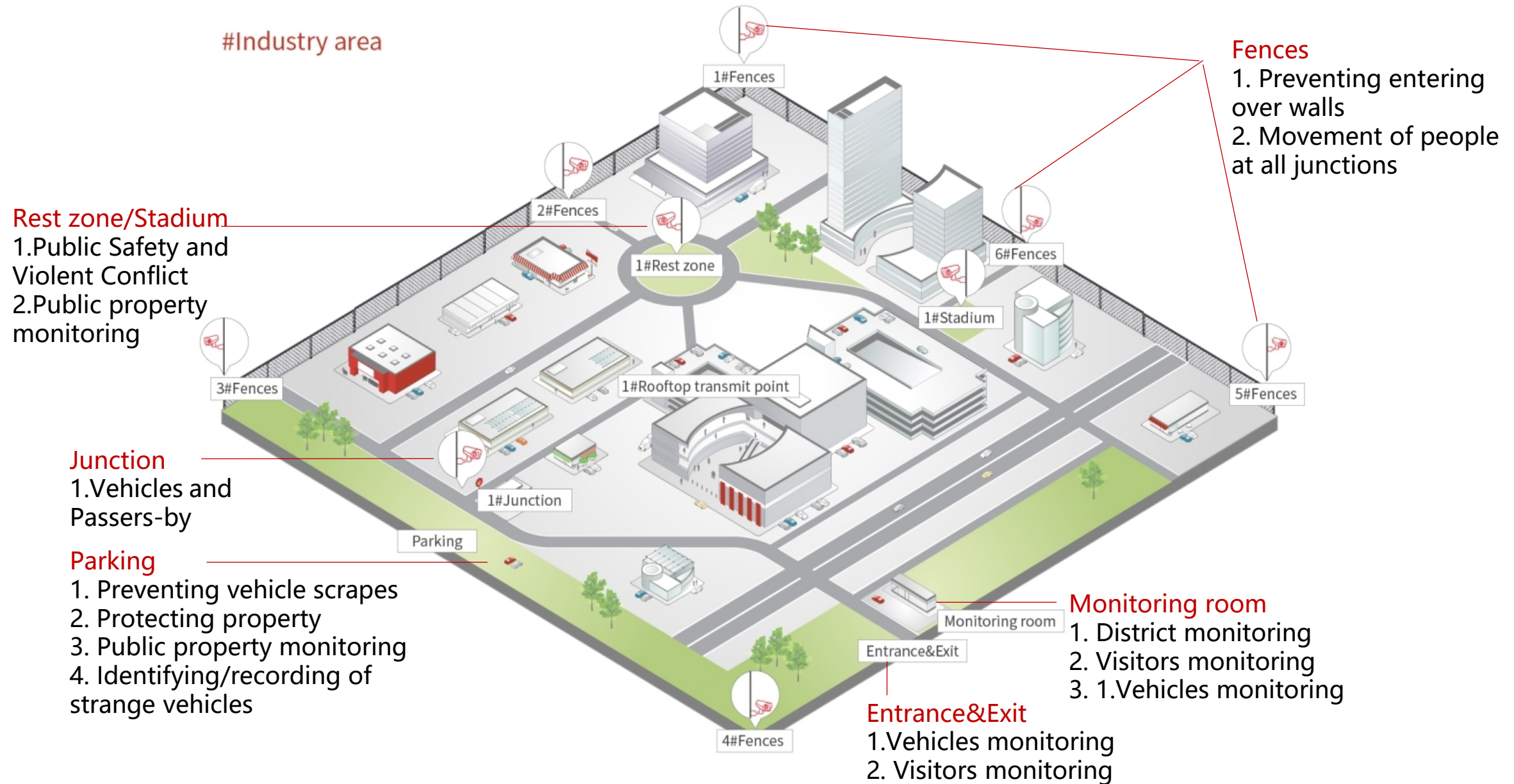
Contents

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World Wide Wireless

Industry area scenario requirements

#Industry area

Fences
1. Preventing entering over walls
2. Movement of people at all junctions

Rest zone/Stadium
1. Public Safety and Violent Conflict
2. Public property monitoring

Junction
1. Vehicles and Passers-by

Parking
1. Preventing vehicle scrapes
2. Protecting property
3. Public property monitoring
4. Identifying/recording of strange vehicles

Monitoring room
1. District monitoring
2. Visitors monitoring
3. 1.Vehicles monitoring

Entrance&Exit
1. Vehicles monitoring
2. Visitors monitoring

1#Fences
2#Fences
3#Fences
4#Fences
5#Fences
6#Fences
1#Rest zone
1#Stadium
1#Rooftop transmit point
1#Junction
Parking
Monitoring room
Entrance&Exit

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1. Requirements Summary

1 Stable video transmission for monitoring areas such as entrances and exits, road junctions, fences, outdoor parking etc.

2 Transmission range from 50 m to 2 km

3 CPEs with cameras near monitoring room powered by PoE switches, outdoor CPE mounted on a pole/fence

4 The straight line path between the monitoring point and monitoring room is blocked by houses or trees and needs to be relayed via a network bridge

2. Requirements Summary

5 Devices, installed in high outdoor locations, need to be protected from lightning, dust and water

6 Builders do not have enough network knowledge, have to simplify installation

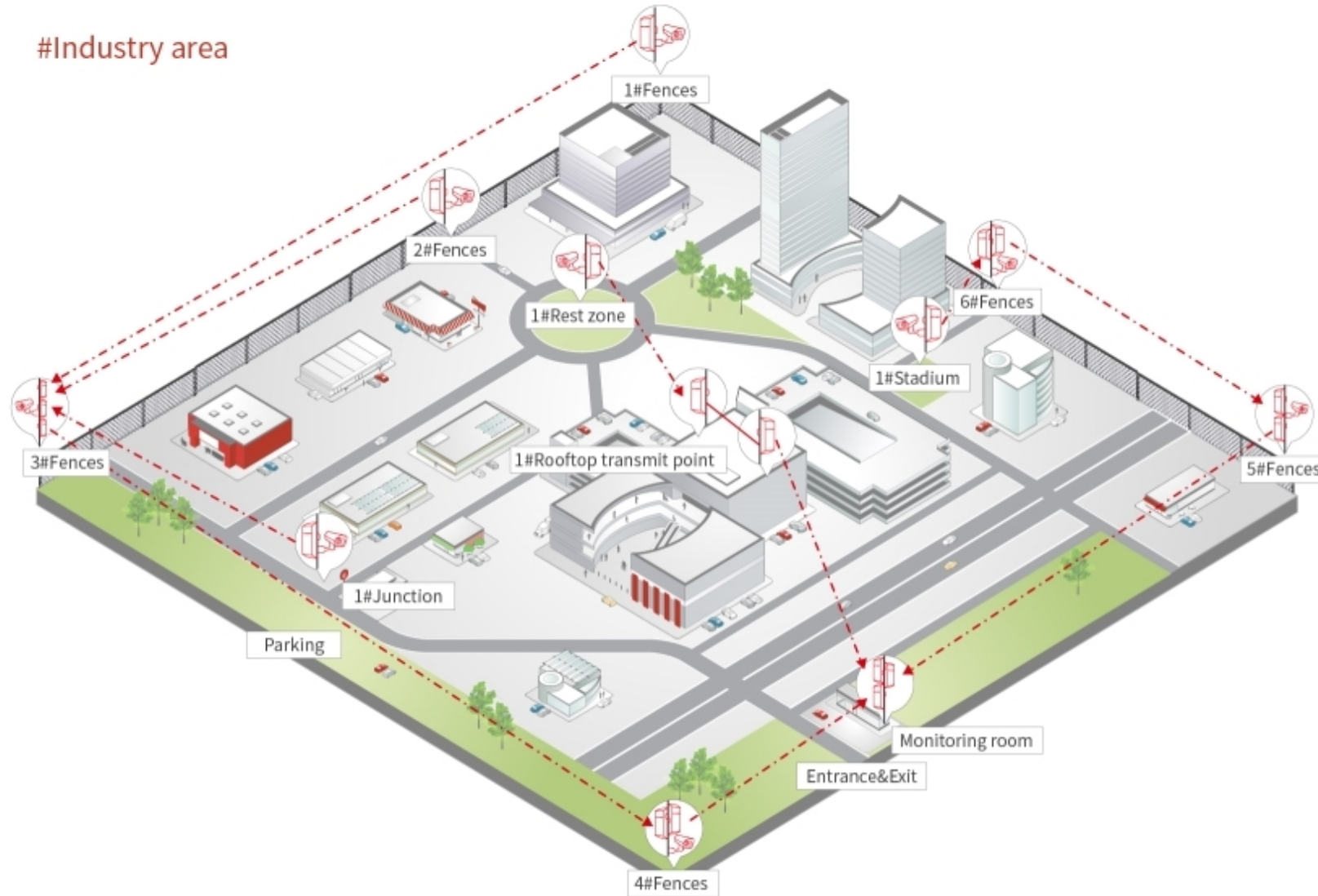**7** CPEs need strong anti-interference performance in the microdistrict environment

2 SOURCE INTERFERENCE

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Solution-1- Mark Monitoring Points and backhaul planning

Mark all surveillance cameras locations, numbers and specifications, do on-the-spot investigation and plan data backhaul routes

Solution-2-Distance recording, Bandwidth counting and CPE model selecting

Record the distance of each backhaul line, calculate number of cameras and bandwidth and select the appropriate models
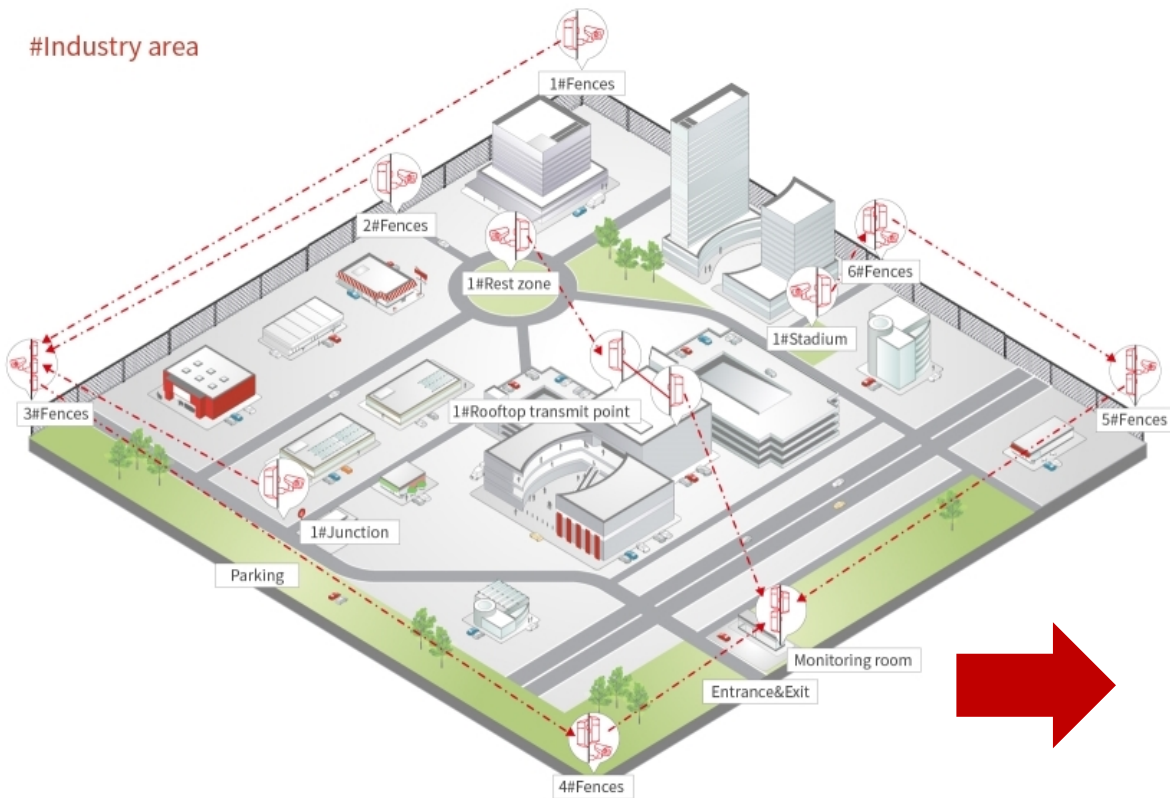

Backhaul line	Distance	Camera quantity	Bandwidth	Connection method	Transmitter	Receiver
1#Fences->3#Fences	200m	1	4Mbps	P2P	CPE5	CPE5
2#Fences->3#Fences	100m	2	8Mbps	P2P	CPE5	CPE5
1#Junction->3#Fences	260m	2	8Mbps	P2P	CPE5	CPE5
3#Fences->4#Fences	600m	6	20Mbps	P2P	CPE6S	CPE6S
4#Fences->Monitoring room	100m	8	32Mbps	P2P	MS-5AC	MS-5AC
1#Stadium->6#Fences	100m	3	12Mbps	P2P	CPE5	CPE5
6#Fences->5#Fences	300m	5	20Mbps	P2P	CPE6S	CPE6S
5#Fences->Monitoring room	100m	8	32Mbps	P2P	MS-5AC	MS-5AC
1#Rest zone->1#Rooftop transmit point	200m	3	12Mbps	P2P	CPE6S	CPE6S
1#Rooftop transit point->Monitoring room	300m	10	40Mbps	P2MP	MS-5AC	MS-5AC

Solution-3-How to ensure long distance data transmission
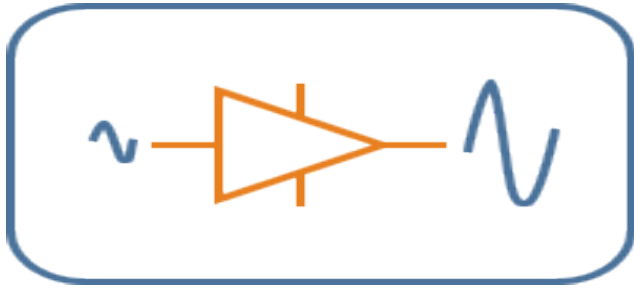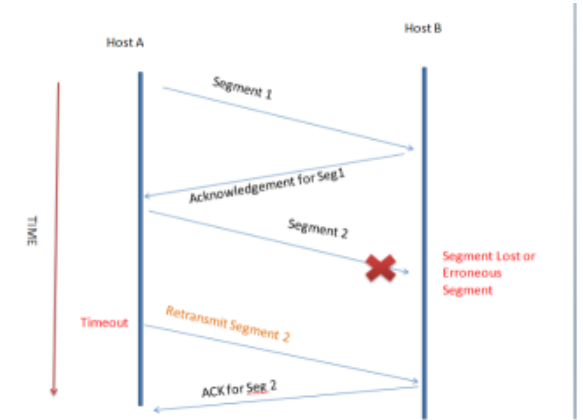

External signal amplifier

Enhances wirelessly transferable energy
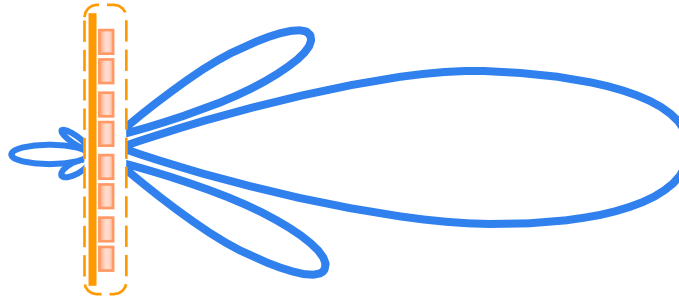
Directional antenna

Focuses energy on a specific direction of emission and reception of electromagnetic waves, increasing effective signal utilization

ACK-Timeout Optimisation

Indoor APs or routers can only transmit up to 300 metres, while ACK-Timeout Optimisation extends limitation up to 25km
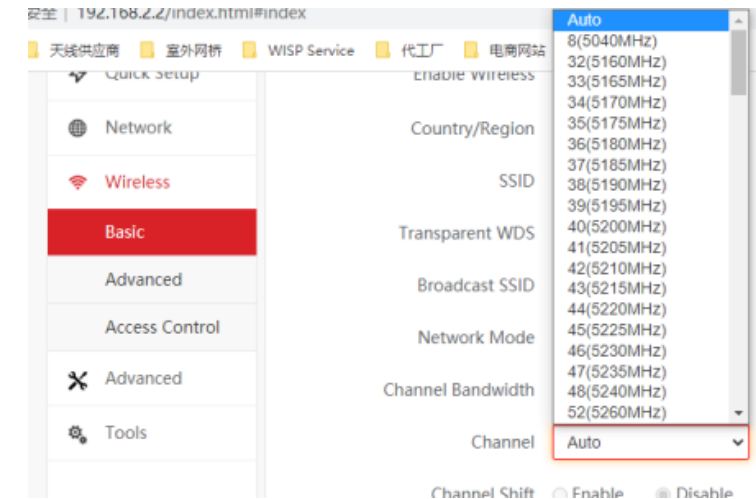
Solution-4-How to ensure the capacity can meet surveillance requirements
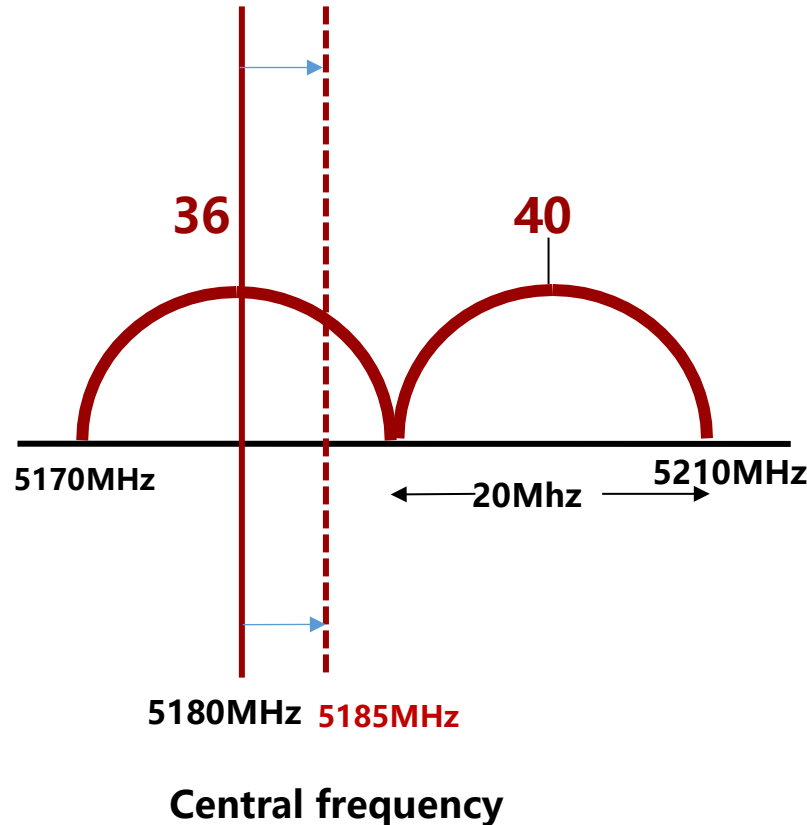
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1 With 5Ghz 11AC technology to enhance wireless maximum speed up to 867Mbps

2 Adopts wireless frequency bias anti-interference mechanism to reduce the interference from circumferential devices to the connection and improves the capacity

3 Provides more optional non-overlapping channels

867Mbps 5GHz

36 **40**

5170MHz ← 20Mhz → 5210MHz

5180MHz   **5185MHz**

Central frequency

安全 | 192.168.2.2/index.html#index

天线供应商 室外网桥 WISP Service 代工厂 电商网站

Quick Setup — Enable Wireless
Network — Country/Region
Wireless — SSID
Basic — Transparent WDS
Advanced — Broadcast SSID
Access Control — Network Mode
Advanced — Channel Bandwidth
Tools — Channel Auto
Channel Shift Enable Disable

Auto
8(5040MHz)
32(5160MHz)
33(5165MHz)
34(5170MHz)
35(5175MHz)
36(5180MHz)
37(5185MHz)
38(5190MHz)
39(5195MHz)
40(5200MHz)
41(5205MHz)
42(5210MHz)
43(5215MHz)
44(5220MHz)
45(5225MHz)
46(5230MHz)
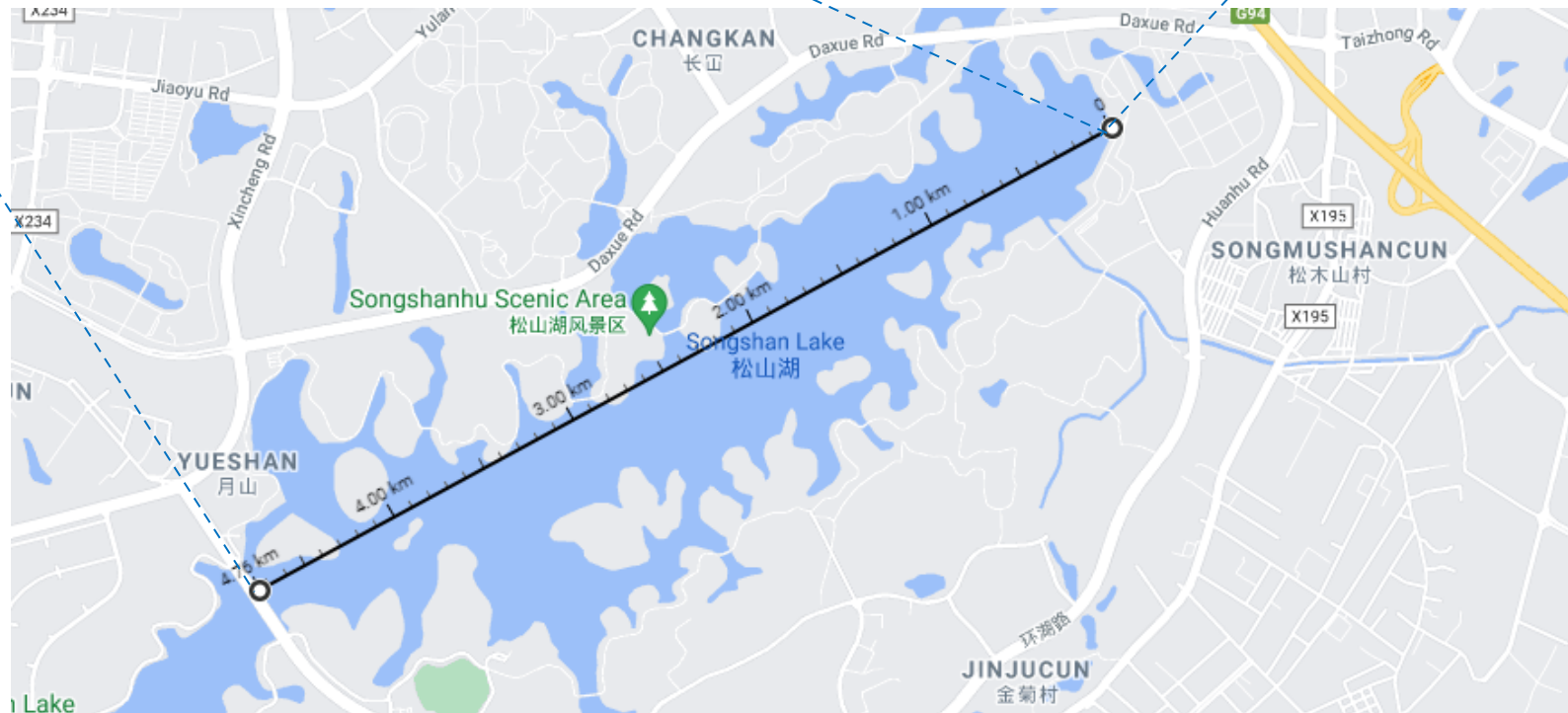47(5235MHz)
48(5240MHz)
52(5260MHz)

The devices support 12V/24V passive PoE, 12V1A DC power supply and standard PoE power supply and can draw power directly from the surrounding utility poles, solar panels or wind power integrated systems
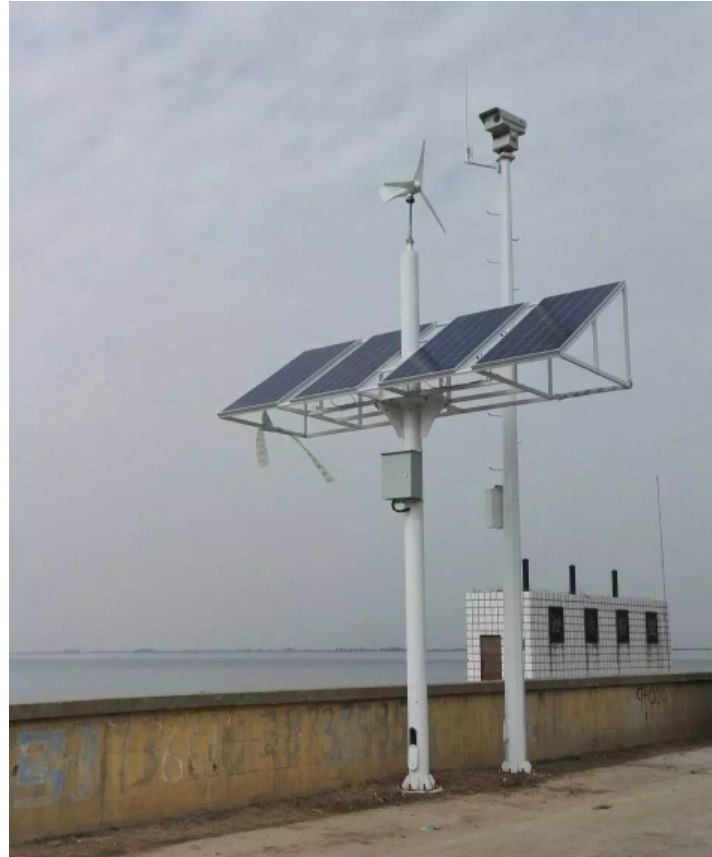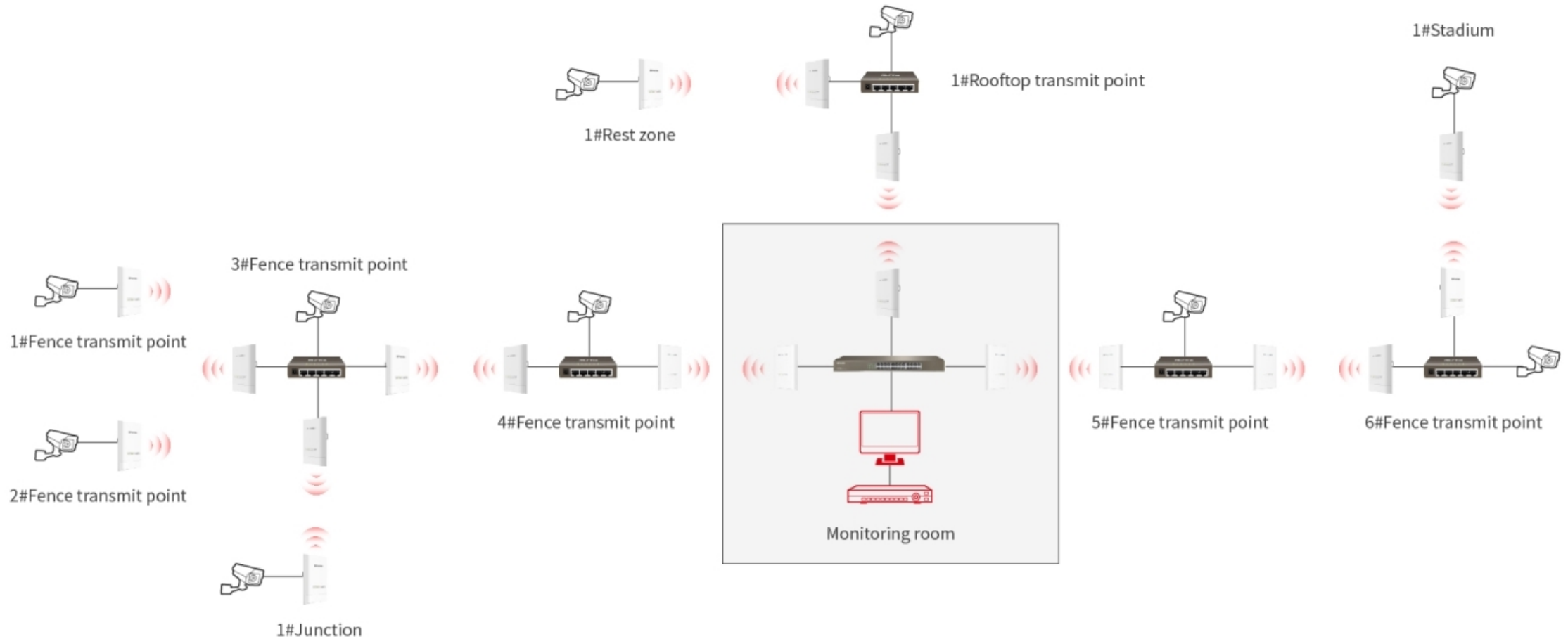
Solution-6-How to align the devices

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Outdoor CPEs usually have directional antennas, and angular misalignment will result in poor wireless signal quality. Installation can be done with the help of maps and reference points.

1 Drawing connection with AP site and station site

2 Look for landmarks near two points, install CPE in line with the landmarks.

3 Install client site with the landmark building. Adjust CPE according to signal LED or signal status on the web management

Solution-Topography

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#Industry area

1#Stadium

1#Rest zone

1#Rooftop transmit point

3#Fence transmit point

1#Fence transmit point

2#Fence transmit point

4#Fence transmit point

5#Fence transmit point

6#Fence transmit point

Monitoring room

1#Junction

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1. Stability is of Top Priority

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As the surveillance video needs to be uploaded to the monitoring room 24 hours a day, stability of the CPEs' wireless connection is the most important guarantee in the application scenario of video surveillance wireless transmission.

Stability tests with cameras over 30 days
in a real environment

7*24 hours, -30°~+60° temperature
cycle aging test

2. Wireless performance optimisation technology for over 20% improvement in capacity

1 Channel redefinition to provide more optional non-overlapping channels
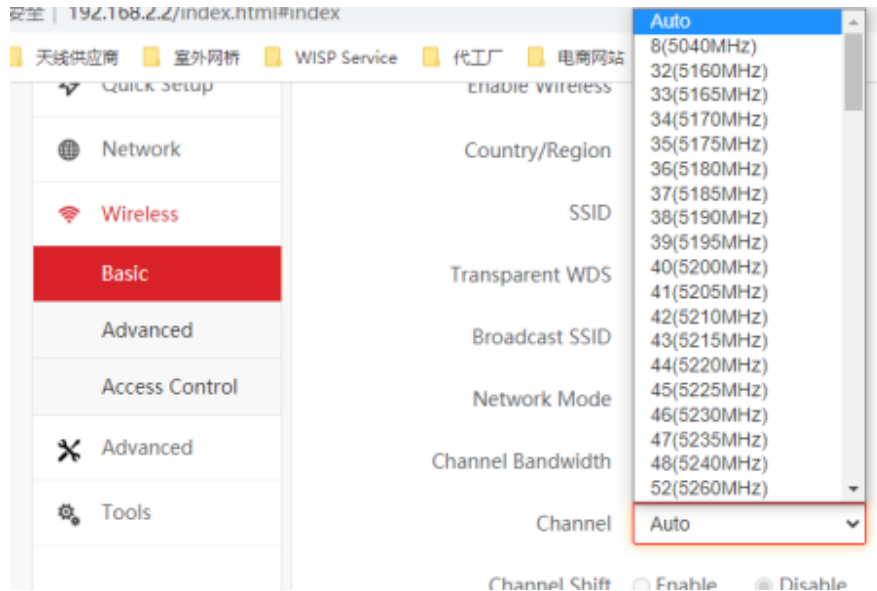
2 ipMAX point-to-multipoint user capacity optimisation
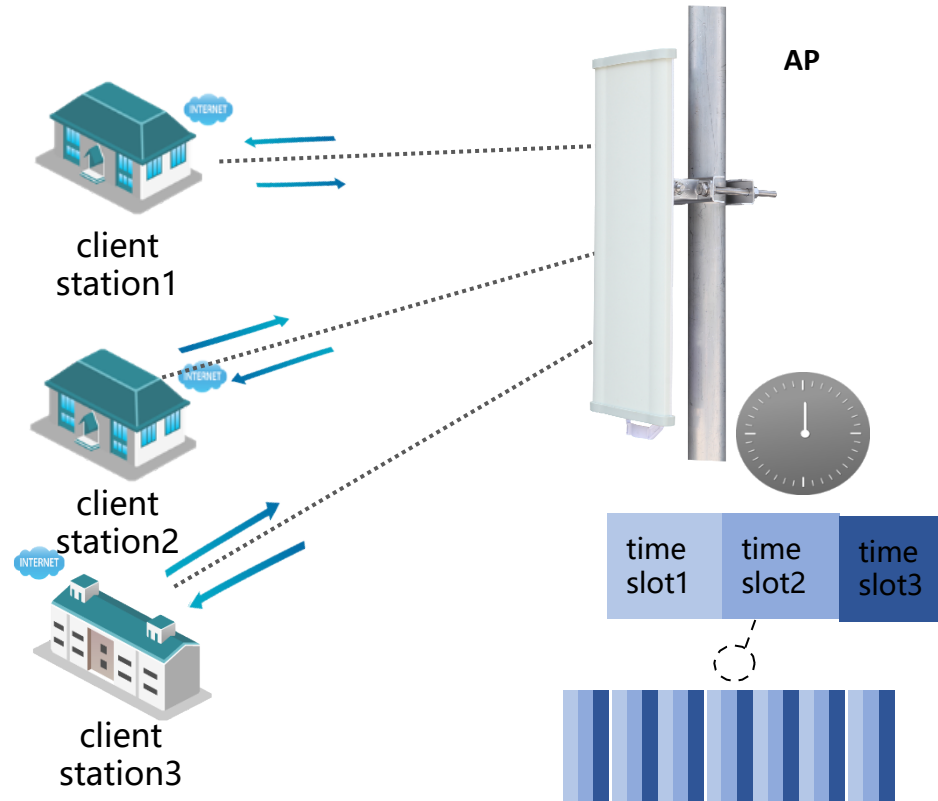
3. Simple installation and easy configuration

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1 **Plug and Play Kit**
The kits can be installed directly by factory default

| NVR | Camera |
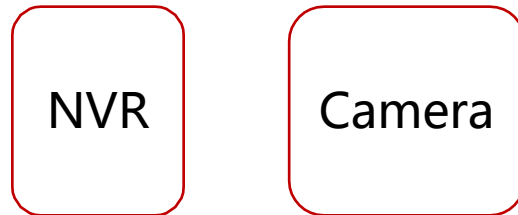
2 **Automatic pairing and bridging**
By default, two devices are automatically paired and bridged after powering on, instead of entering management page

AP ←- - - - - -→ STA
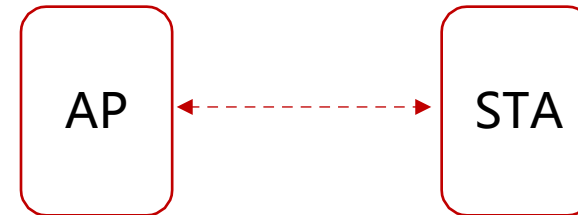
3 **P2MP auto-bridging**
Every single device supports automatic bridging. Once the two devices are automatically paired, others can join easily.

AP
STA
STA
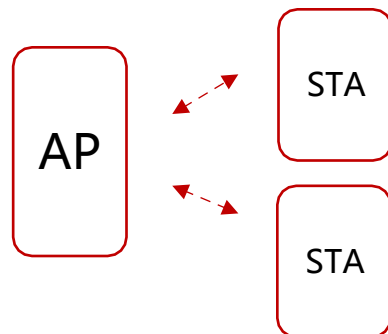
4 **Bridging indicator**
Bridge LED can be used to recognize bridge status and signal strength

PoE/LAN   LED1   LED2
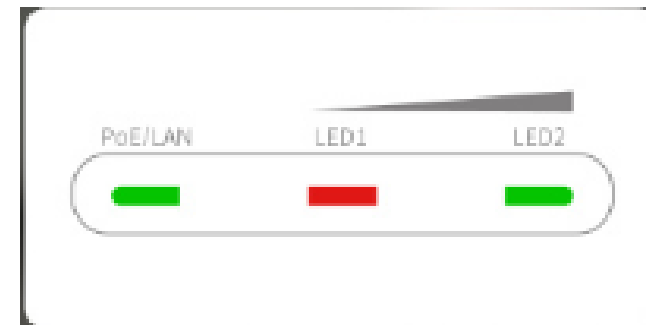
4. Three types of power supply available, low labor cost

1 **Passive PoE**

When the device is installed on the roof, it can be powered directly by the 12V/24V passive PoE Injector.
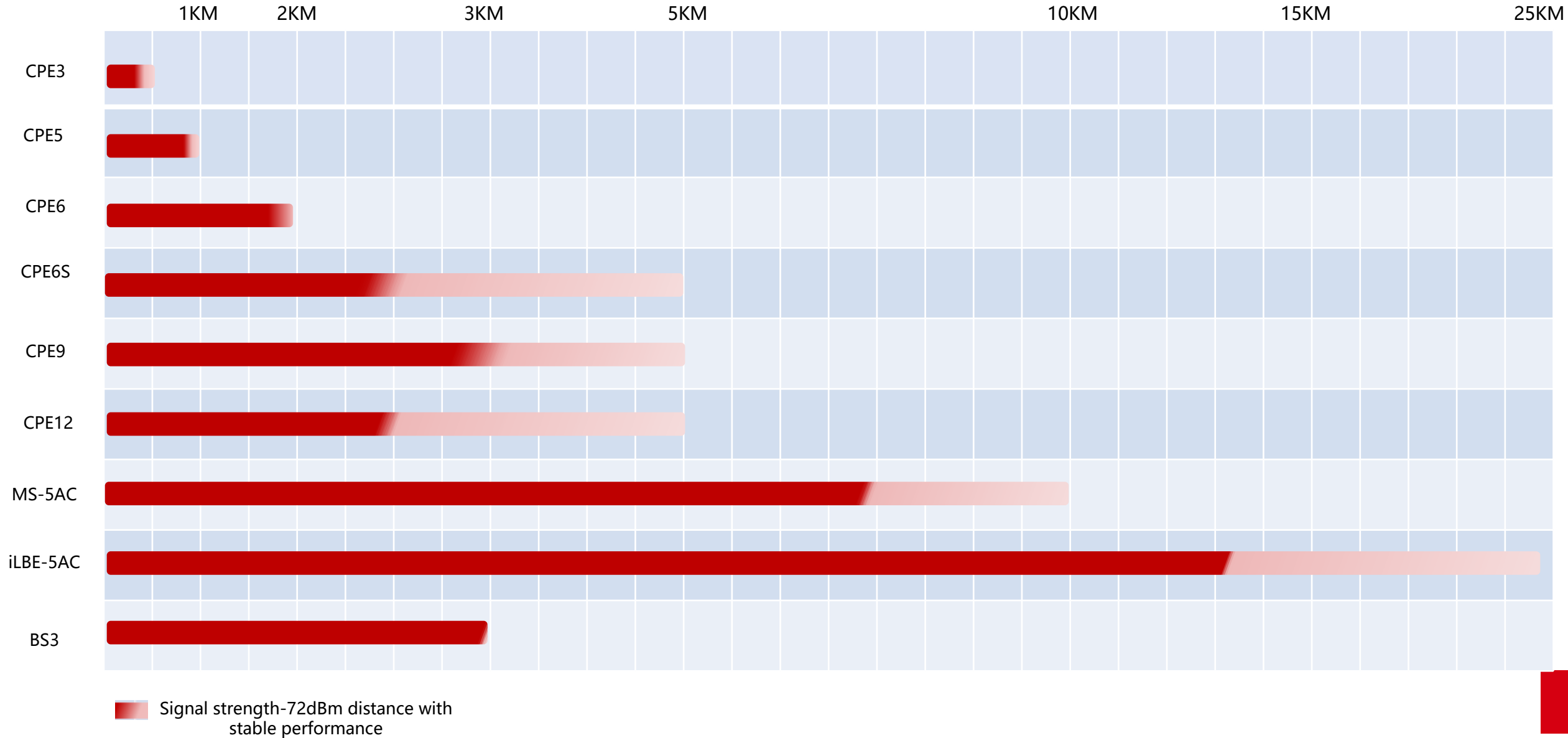
2 **Standard PoE switch power supply**

When the installation point is close to the monitoring room, device can share power by PoE switch

3 **12V1A DC power supply**

The device can be powered directly with 12V1A DC solar panels outdoors, no inverter conversion is required

5. A product portfolio solution

Chart showing signal strength distances for IP-COM products:

Product	1KM	2KM	3KM	5KM	10KM	15KM	25KM
CPE3							
CPE5							
CPE6							
CPE6S							
CPE9							
CPE12							
MS-5AC							
iLBE-5AC							
BS3							

Legend: Signal strength-72dBm distance with stable performance

6.More useful tools

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1 Wireless Data Capacity Test

2 Frequency analysis for optimal channel selection

3 Automatic distance calculation between CPEs

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Product Recommendations - Cost-Effective Solutions

Scene	Device	Model	Image	Features	Layer
Monitoring room	Switch	G1124P-24-250W		➢ 24*10/100/1000M RJ45 ports ➢ All 24 ports support af/at PoE power supply ➢ Whole device PoE Power Supply: 250W	Access layer
Monitoring room	CPE	MS-Loco5AC		➢ Transmission range 5km ➢ 5GHz 11AC 867Mbps ➢ 2*Gigabit Ethernet port ➢ Standard PoE/24V0.5A/12V1A DC ➢ 2km point to point with 20 cameras	Access layer
Transmit point	CPE	MS-Loco5AC			
Transmit point	Switch	G1005		➢ 5 *10/100/1000Mbps ports ➢ All ports 6KV lightning protection	Access layer
Fences	CPE	CPE5		➢ Transmission range 1km ➢ 5GHz 11AC 867Mbps ➢ 1*FE port ➢ 12V1A DC/Passive PoE ➢ 1km point to point with 8 cameras	Access layer
Rest zone	CPE	CPE5			
Stadium	CPE	CPE5			

Product Recommendations - High-Performance Solutions

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Scene	Device	Model	Image	Features	Layer
Monitoring room	Switch	G1124P-24-250W		➢ 24*10/100/1000M RJ45 ports ➢ All 24 ports support af/at PoE ➢ Whole device PoE Power Supply: 250W	Access layer
Monitoring room	CPE	MS-5AC		➢ Transmission range 5km ➢ 5GHz 11AC 867Mbps ➢ 2*Gigabit Ethernet port ➢ Standard PoE/24V0.5A/12V1A DC ➢ 2km point to point with 20 cameras	Access layer
Transmit point	CPE	MS-5AC			
Transmit point	Switch	G1005		➢ 5 *10/100/1000Mbps ports ➢ All ports 6KV lightning protection	Access layer
Fences	CPE	CPE6S		➢ Transmission range 5km ➢ 5GHz 11AC 867Mbps ➢ 4*FE ports ➢ 12V1A DC/Passive PoE ➢ 2km point to point with 8 cameras	Access layer
Rest zone	CPE	CPE6S			
Stadium	CPE	CPE6S			

IP-COM / THANKS

WORLD WIDE WIRELESS