



# Outdoor WiFi MIMO wireless network transmission in high bandwidth multiple Hops platform system

## Applied to 29 million pixels and 16 million pixel cameras system testing

### 1、Set up the Environment Map



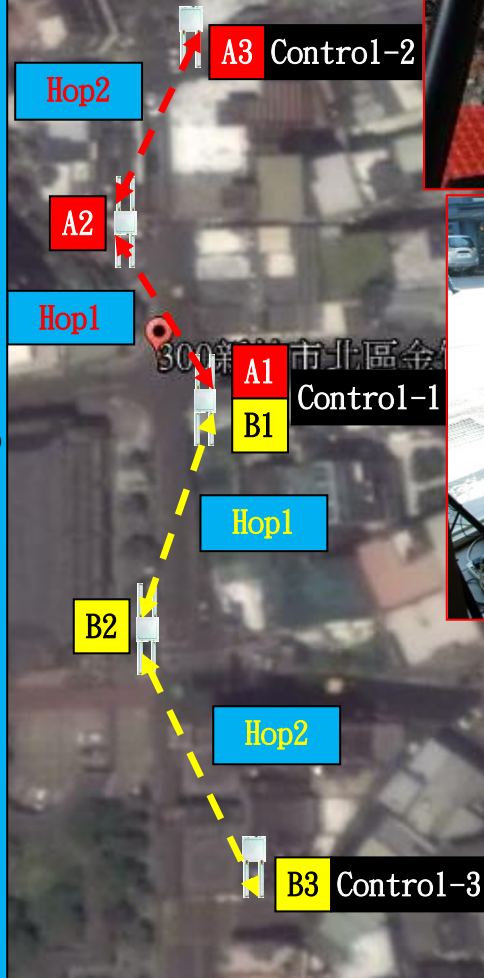


## 2、Outdoor WiFi MIMO backbone bandwidth multiple hops wireless network transmission system design

A3 ↔ B3: 4 hops  
 B3 ↔ A3: 4 hops  
 A1 ↔ A3 & B1 ↔ B3: each 2 hops

### Test application notes

1. Control-1~3 three points, there will be a police unit to watch real-time video display record
2. Images from security cameras need to send all three monitoring points to Control-1~3
3. Because of the need for simultaneous transmission of 29 million pixels and 16 million pixels and 5 million pixels, the camera picture to Control-1~3 three control points, so the use of broadcast packets transmitted
4. Even the use of broadcast packets transmitted, but 29 million-pixel single minimum 30Mbps (120Mbps maximum) traffic bandwidth, so Control-1~3 three point of transmission bandwidth of up to 100Mbps
5. Through its controlling terminal is located in the main system, wireless backbone system formed in both directions, with a total bandwidth of 300Mbps or more, to meet the 100Mbps transmission requirements.







### 3、Outdoor WiFi MIMO bandwidth multiple hops wireless transmission backbone system set up

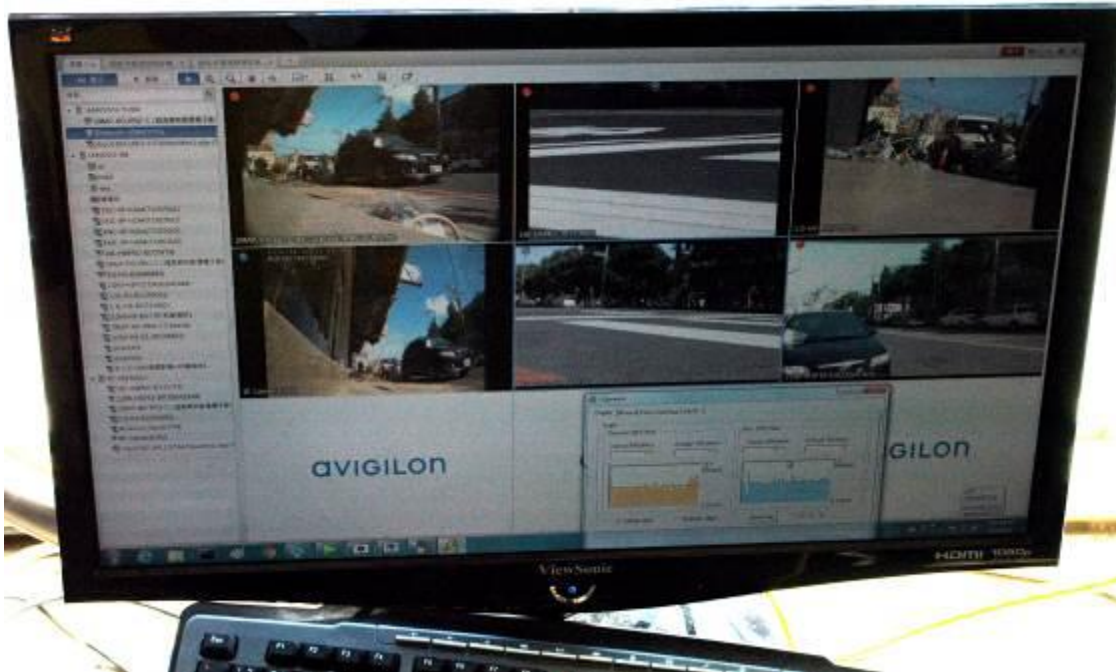
A3 ↔ B3: 4 hops  
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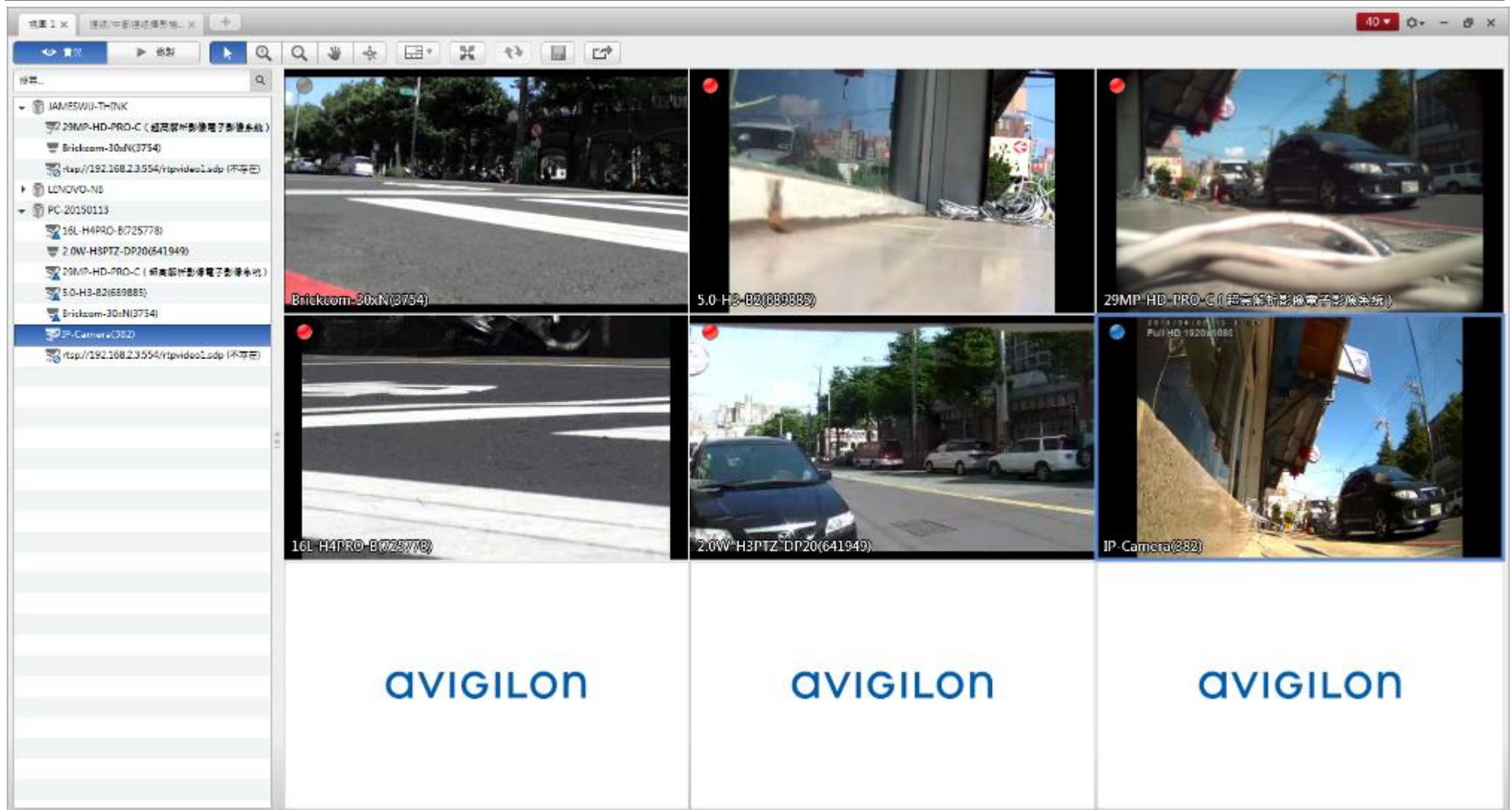
The diagram illustrates the system setup on an aerial map of a city street. Three control points are marked: Control-1 (A1, B1), Control-2 (A3), and Control-3 (B3). A red dashed line connects Control-2 to Control-1, and a yellow dashed line connects Control-1 to Control-3. Nodes are labeled as AP (Access Point) and WS (Wireless Station). Photographs around the map show the physical installation of these nodes on utility poles and street corners.





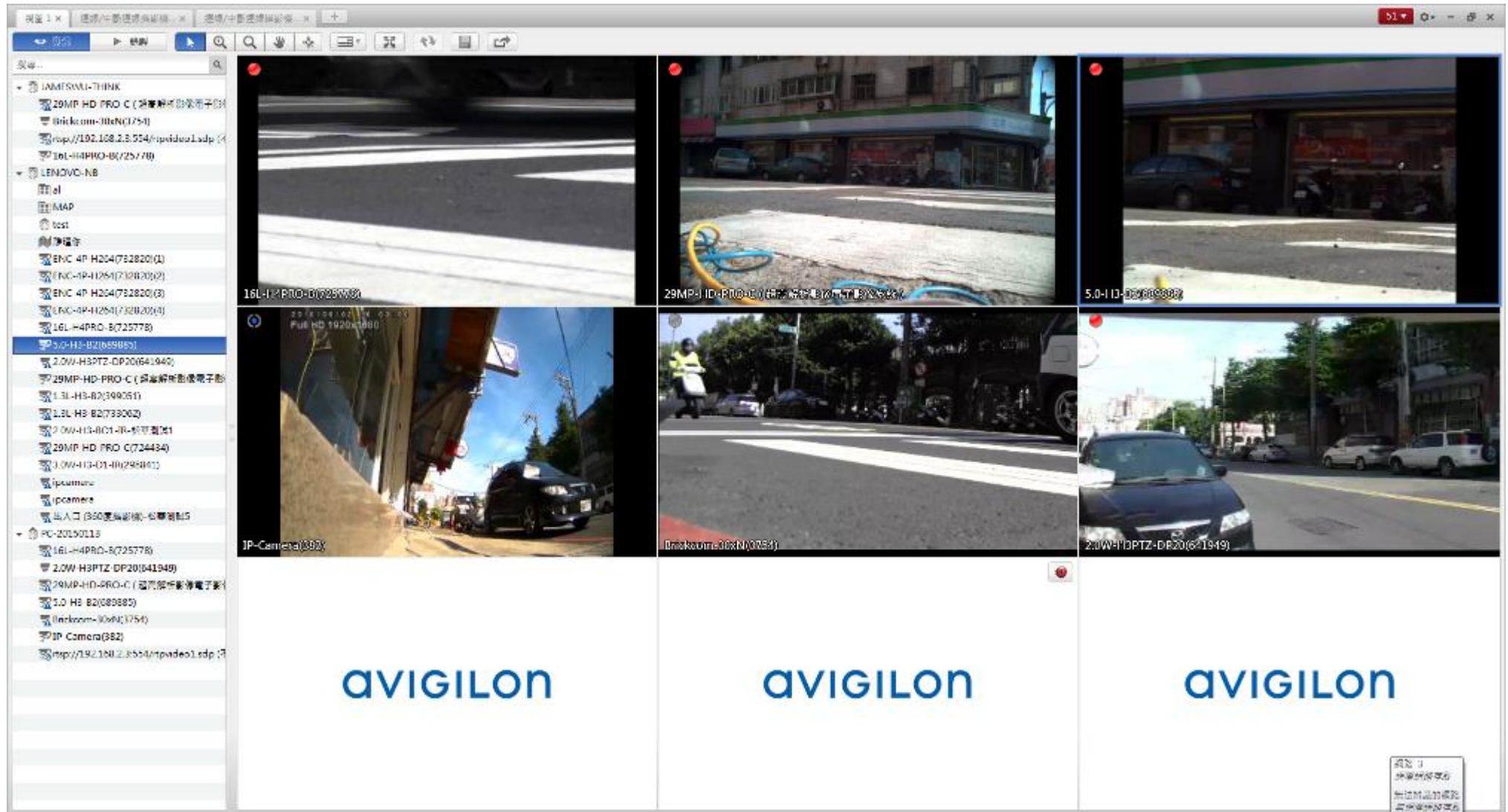
## 4、Outdoor WiFi MIMO wireless network transmission in high bandwidth multiple hops system testing





Test video download (254MB) : [20150602 i7 0007.avi](#)





Test video download (159MB) : [20150602\\_i7\\_0008.avi](#)



## 5、Outdoor WiFi MIMO wireless network transmission in high bandwidth multiple hops system – test result

5-1. Multiple Hops wireless backbone transmission, suggest to use directional Panel antenna, if used 360 degrees of Omni antenna, very easy produced "Signal strength not stable", and "by from 360 degrees environment in the of interference source", and "easy caused each other wireless signals interference", and "vertical angle had small led to each other online not stable"... And so on, resulting in 360 degree Omni antenna the total bandwidth of the transmission will only 80-120Mbps, directional Panel antenna 120-160Mbps about 30% of bandwidth.

5-2. Not accurate in this case limited to improvised horizontal angle and set up the height of the pole is not high enough, caused by passing vehicles during the test signal blocks and multiple reflection, interference, resulting in key online is relatively unstable and bandwidth cannot be raised if improving erection height will help enhance bandwidth enhancement and transmission stability.

5-3. This case of network line needed bear over 80Mbps above of flow transmission, by match of computer also needed has 100Mbps above network bandwidth and the more higher performance of CPU processor and the video processing capacity; test during occurred times cable joint and the computer network port of match problem, highlights wired network of using problem exists many variable, test personal needed patience to step by step of clear problem, do not began on put problem lock in wireless transmission problem.