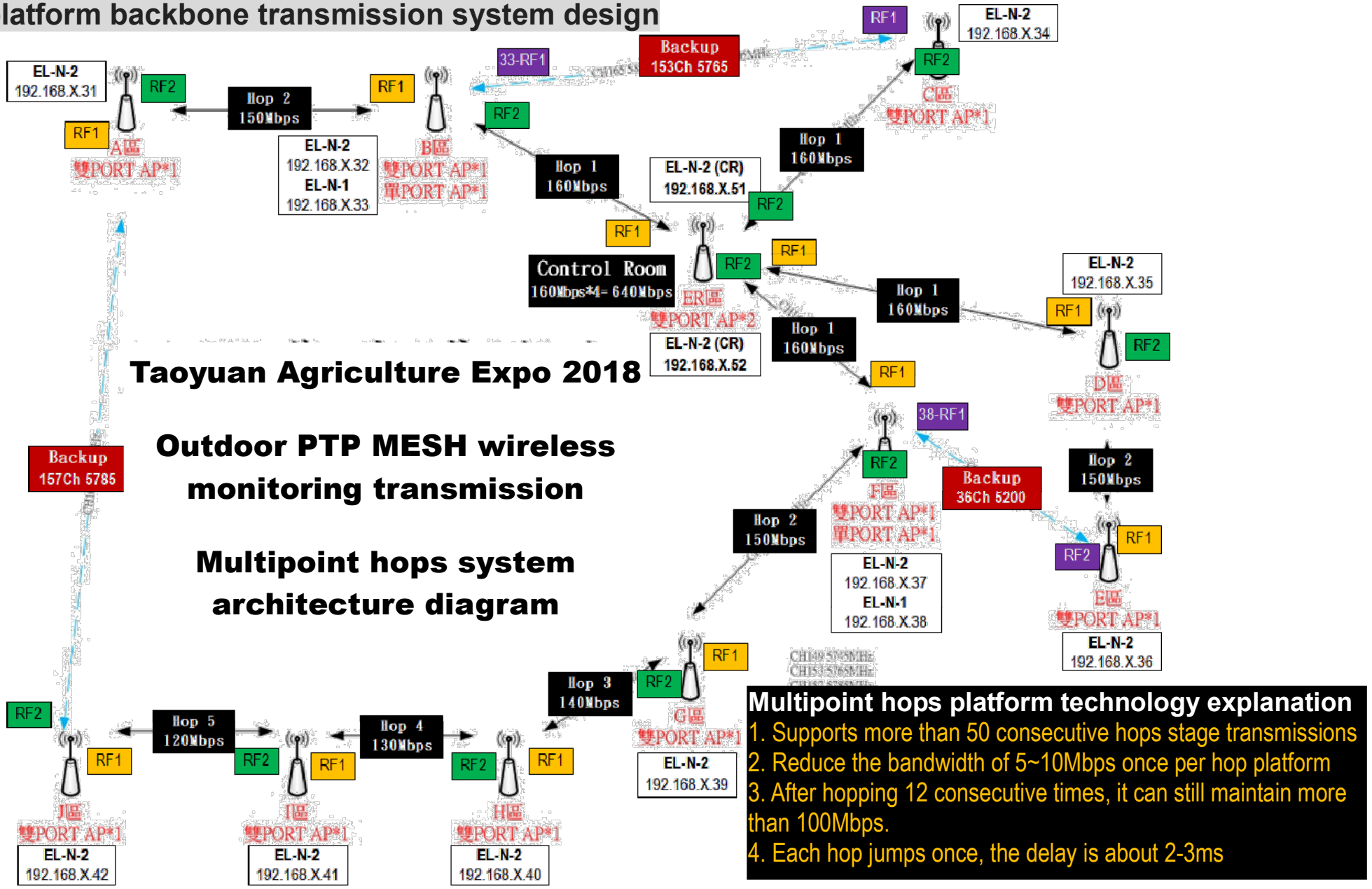
『Taoyuan Agricultural Expo 2018』wireless surveillance & video walkie-talkie and power detection control management implementation project

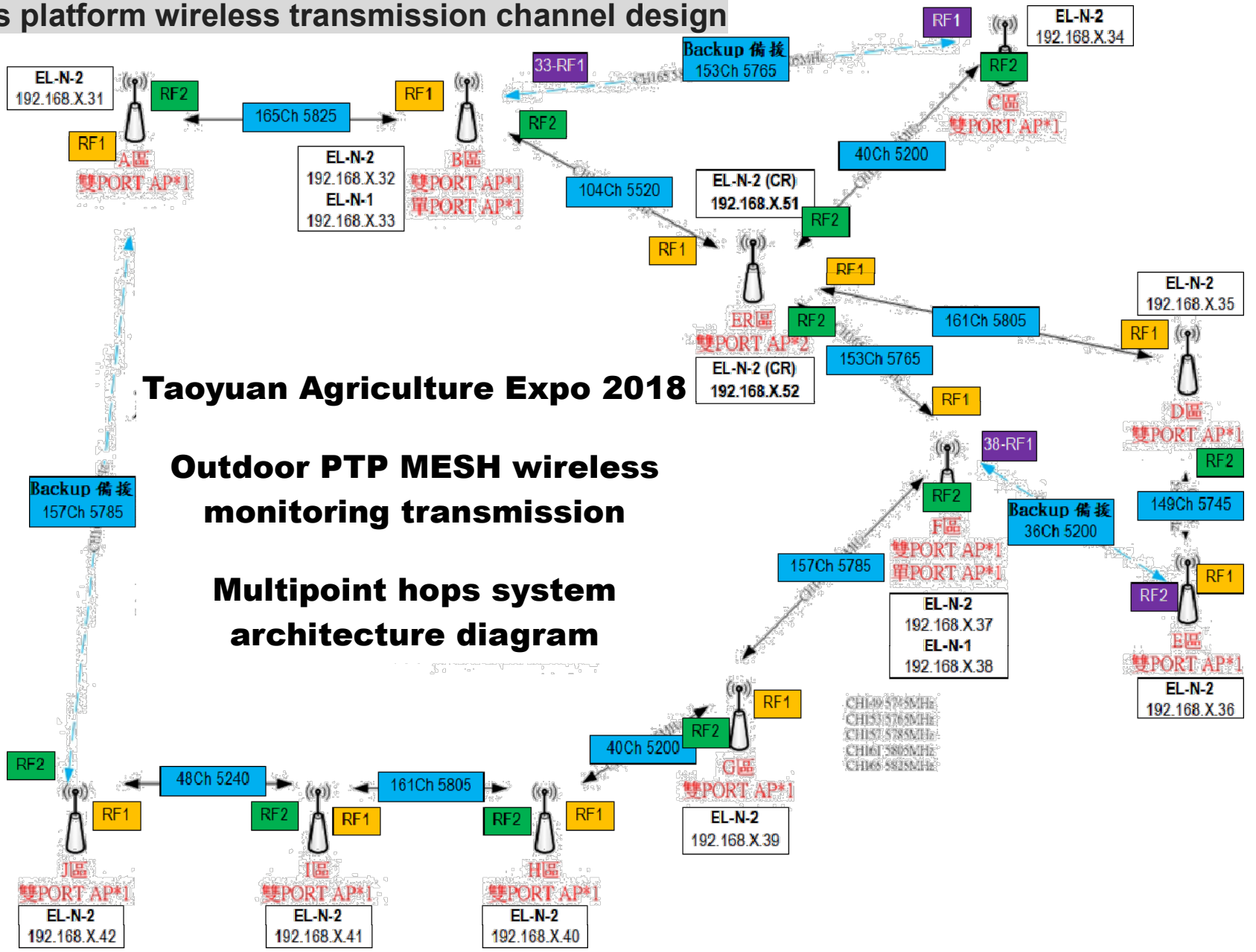
1. Environmental definition of the wireless surveillance transmission system at "Taoyuan Agricultural Expo 2018"

The project execution company:
訊谷科技有限公司

2. 『Taoyuan Agriculture Expo 2018』Wireless surveillance transmission - PTP Mesh multi-hops platform backbone transmission system design



3. 『Taoyuan Agriculture Expo 2018』wireless surveillance transmission - PTP Mesh multi-point hops platform wireless transmission channel design



4. 『Taoyuan Agriculture Expo 2018』wireless surveillance transmission - calculation of the attenuation formula for rain transmission signals of wireless backbone transmission systems

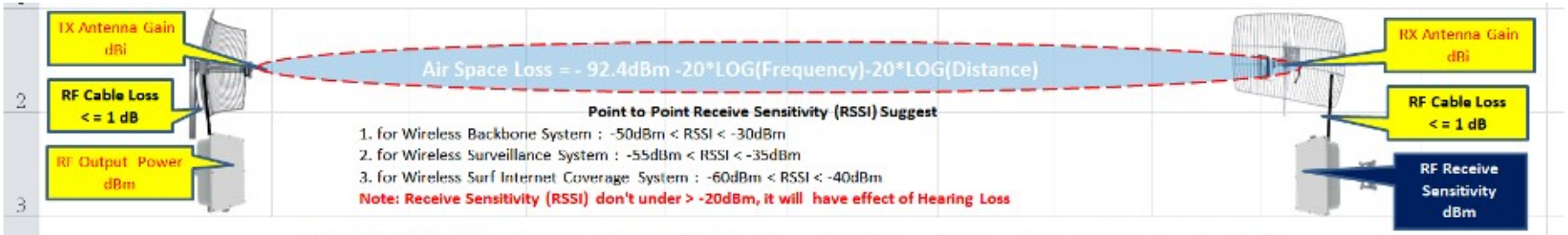
- Sets the 1Km rain attenuation value of the 5 GHz NanYe Fair Exhibition Park (most of the distance is within 500 meters)
- Rain attenuation value at 100mm/hr rainfall: 0.46dB

WiFi 2.4 ~ 2.485GHz & 5.25 ~ 5.85GHz 電波大雨衰減(Rain Attenuation)估算 單位：dB

PtP		2.4GHz ~ 2.485GHz Frequency						5GHz ~ 5.85GHz Frequency					
Rainfall Rate		100mm/hr			200mm/hr			100mm/hr			200mm/hr		
Km	EPD/Km	2.4	2.45	2.485	2.4	2.45	2.485	5.25	5.5	5.85	5.25	5.5	5.85
1	0.64	0.06	0.07	0.07	0.15	0.16	0.16	0.41	0.46	0.53	0.96	1.07	1.23
2	1.25	0.12	0.13	0.13	0.29	0.3	0.31	0.8	0.89	1.03	1.86	2.07	2.39

5. 『Taiyuan Agricultural Expo 2018』 Wireless surveillance Transmission - Point-to-point connection transmission signal estimation for wireless backbone transmission system

- **Wireless backbone hop wireless backbone transmission signal value calculation:** According to the design of multi-point hops platform, the point-to-point distance is mostly within 1Km, it is recommended that the 1Km installation point within the use of 5GHz 18dBi directional plate antenna, can obtain wireless backbone connection signal value, Estimated strength above -51dBm, can reach full-speed transmission bandwidth of 160Mbps.



無線鏈路訊號值(dBm)計算 (Wireless PtP Signal Sensitivity Calculation)

傳輸鏈路 訊號計算 (Signal Selectivity Calculation)	RF Output Power dBm (Maxmium)	RF Cable Loss dB (1m=0.6dB)	TX Antenna Gain dBi	Space Loss = 92.4	Frequence Loss GHz	Distance Loss Km	Rain Loss = 2 dB	Tree Loss 1m=5dB	RX Antenna Gain dBi	RF Cable Loss Db (1m=0.6dB)
參數定義 (Parameter Definition)	無線最大輸出功率	RF線損耗	天線增益	空間衰減	頻率衰減	距離衰減	雨衰	樹衰	天線增益	RF線損耗
請填入數據 (Please fill in your data)	23	1	18	92.4	5.85	1	0.46	0	18	1
計算結果 (Calculation Results)	-51.20									

6. 『Taoyuan Agriculture Expo 2018』wireless surveillance transmission - site partition wireless surveillance transmission system erection icon

■ **Zone A: 192.168.X.31 - EL-N-2 Loop Backup - 5x 2MP IR IP Cam Cameras + Video Emergency Intercom + Power and Temperature Management System**




■ **Zone B: 192.168.X.32-EL-N-2–12x 2MP IR IP Cam +192.168.X.33-EL-N-1 Loop Backup + Power Supply and Temperature Detection Management System**




■ Zone C : 192.168.X.34 - EL-N-2 - 4x 2MP IR IP Cam Camera + Video Emergency Intercom + Power Supply and Temperature Detection Management System




■ Zone D : 192.168.X.35 - EL-N-2 - 5x 2MP IR IP Cam Cameras + Video Emergency Intercom + Power Supply and Temperature Management System




■ Zone E : 192.168.X.36 - EL-N-2 - 4 2MP IR IP Cam Cameras + Video Emergency Intercom + Power Supply and Temperature Management System



■ Zone F: 192.168.X.37-EL-N-2–6 2MP IR IP Cam Cameras +192.168.X.38-EL-N-1 Loop Backup + Power Supply and Temperature Detection Management System

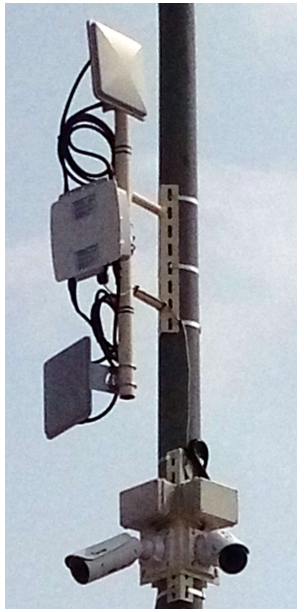



■ **Zone G : 192.168.X.39 - EL-N-2 - 3x 2MP IR IP Cam Cameras + Video Emergency Intercom + Power Supply and Temperature Detection Management System**



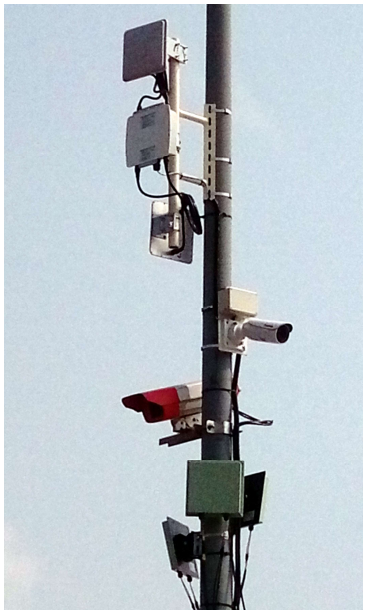
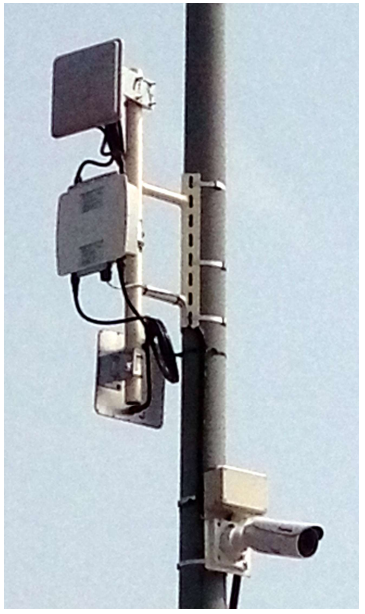

■ **Zone H : 192.168.X.40 - EL-N-2 - Five 2MP IR IP Cam Cameras + Video Emergency Intercom + Power and Temperature Management System**



■ **Zone I : 192.168.X.41 - EL-N-2 - 3x 2MP IR IP Cam Camera + Video Emergency Intercom + Power and Temperature Management System**



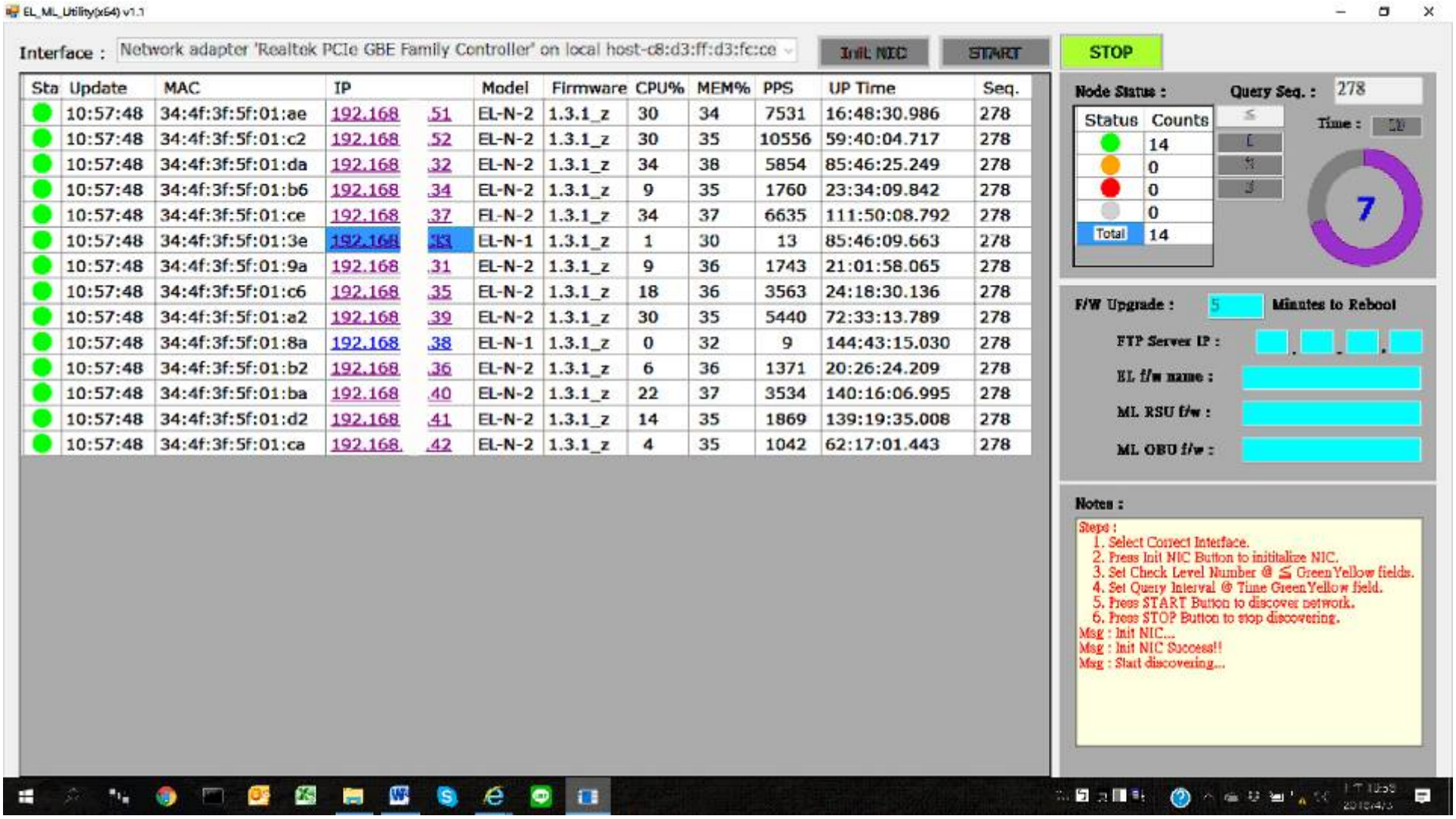



■ **Zone J : 192.168.X.42 - EL-N-2 Loop Backup -3x 2MP IR IP Cam + Video Emergency Intercom + Power Supply and Temperature Detection Management System**




■ **ER Area : 192.168.X.51-EL-N-2 & 192.168.X.52-EL-N-2 –Wireless surveillance and transmission backbone with 4 line and 50 cameras**

7. 『Taoyuan Agriculture Expo 2018』 wireless surveillance transmission - Simple Network Scanning Management System Operation Diagram



Sta	Update	MAC	IP	Model	Firmware	CPU%	MEM%	PPS	UP Time	Seq.
●	10:57:48	34:4f:3f:5f:01:ae	192.168 .51	EL-N-2	1.3.1_z	30	34	7531	16:48:30.986	278
●	10:57:48	34:4f:3f:5f:01:c2	192.168 .52	EL-N-2	1.3.1_z	30	35	10556	59:40:04.717	278
●	10:57:48	34:4f:3f:5f:01:da	192.168 .32	EL-N-2	1.3.1_z	34	38	5854	85:46:25.249	278
●	10:57:48	34:4f:3f:5f:01:b6	192.168 .34	EL-N-2	1.3.1_z	9	35	1760	23:34:09.842	278
●	10:57:48	34:4f:3f:5f:01:ce	192.168 .37	EL-N-2	1.3.1_z	34	37	6635	111:50:08.792	278
●	10:57:48	34:4f:3f:5f:01:3e	192.168 .33	EL-N-1	1.3.1_z	1	30	13	85:46:09.663	278
●	10:57:48	34:4f:3f:5f:01:9a	192.168 .31	EL-N-2	1.3.1_z	9	36	1743	21:01:58.065	278
●	10:57:48	34:4f:3f:5f:01:c6	192.168 .35	EL-N-2	1.3.1_z	18	36	3563	24:18:30.136	278
●	10:57:48	34:4f:3f:5f:01:a2	192.168 .39	EL-N-2	1.3.1_z	30	35	5440	72:33:13.789	278
●	10:57:48	34:4f:3f:5f:01:8a	192.168 .38	EL-N-1	1.3.1_z	0	32	9	144:43:15.030	278
●	10:57:48	34:4f:3f:5f:01:b2	192.168 .36	EL-N-2	1.3.1_z	6	36	1371	20:26:24.209	278
●	10:57:48	34:4f:3f:5f:01:ba	192.168 .40	EL-N-2	1.3.1_z	22	37	3534	140:16:06.995	278
●	10:57:48	34:4f:3f:5f:01:d2	192.168 .41	EL-N-2	1.3.1_z	14	35	1869	139:19:35.008	278
●	10:57:48	34:4f:3f:5f:01:ca	192.168 .42	EL-N-2	1.3.1_z	4	35	1042	62:17:01.443	278

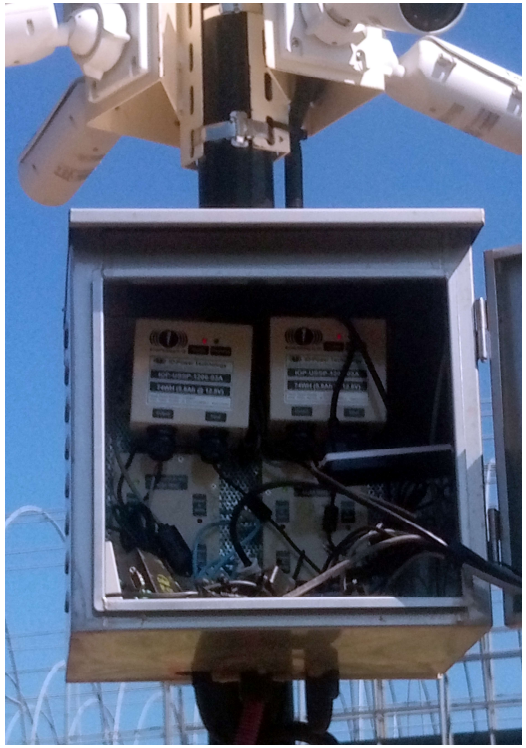
8. 『Taoyuan Agriculture Expo 2018』wireless surveillance transmission - the central control room integrates the bandwidth transmission bandwidth

- **Bringing together a total of four backbone for 50-camera wireless monitor transmission bandwidths over 100Mbps**

9. 『Taoyuan Agriculture Expo 2018』- DC UPS power supply system diagram for wireless devices, IP cameras and emergency video intercoms





10. The number of equipment erected in this project

No.	Device name	Equipment model	Brief specifications	Amount	Remarks
1	**PTP wireless Mesh network base station**	EL-N-1 (1 Module) 	1. One WiFi MIMO 2 * 2 4.9 ~ 6.1GHz wireless single-band RF module (802.11an) 2. System Operation PTP Mesh Point-to-point multipath network connection transmission 3. Wireless output power single-frequency network card 25dBm (maximum) 4. Support PTP Mesh / AP / AP-STA modes 5. After 10 times the hops, still can maintain the following response delay of 15ms 6. Support IGMP broadcast packet protocol features 7. The largest backbone bandwidth 200Mbps (40MHz) 8. Wireless with cable cascading> = 8hops maximum bandwidth 150Mbps(40MHz)	**2**	
2	**PTP wireless Mesh network base station**	EL-N-2 (2 Modules) 	1. Two WiFi MIMO 2 * 2 4.9 ~ 6.1GHz wireless single-band RF module (802.11an) 2. System Operation PTP Mesh Point-to-point multipath network connection transmission 3. Wireless output power single-frequency network card 25dBm (maximum) 4. Support PTP Mesh / AP / AP-STA modes 5. After 10 times the hops, still can maintain the following response delay of 15ms 6. Support IGMP broadcast packet protocol features 7. The largest backbone bandwidth 300Mbps (40MHz) 8. Wireless with cable cascading> = 8hops maximum bandwidth 150Mbps(40MHz)	**12**	
3	**Base station with MIMO antenna Plane-Oriented Medium Gain Antenna**	IOP-PANJO-5M1602422 	1. Pointing plate antenna 2.5GHz 15-16dBi Outdoor Antenna 3. Frequency range: 5.150-5.875GHz 4. Horizontal / Vertical Angle: Horizontal: 17-24° / Vertical : 17-24° 5. Connector: RG233, 70cm & N Jack × 2 6. Dimensions: 210 x 210 x 73 mm 7. IPX5, resistant to wind pressure 216Km/hr	**28**	

4	**In/Outdoor DC UPS Power System IOP-USSP-12V02 06-II**	IOP-USSP-1206-03A 	1.Product type: in/outdoor ultra long-term UPS power system/IP66 resistance to fire beam head/iron shell 2.Supported battery type: Explosion-proof Relief-type C-LiFePO4 Lithium Batteries 3.Built in battery power capacity: 74WH (5.8Ah @12.8V) 4.Load voltage/current: DC 11.7~14.2V+-3% 6A Max 5.Battery charging voltage: 14.4V+-3% 6.Operation Temperature : - 35℃ ~ + 75℃ 7. Charge & Discharge Life Cycle: 2000 times (around 6 years) 8.Outdoor Waterproof and Dustproof Rating: IP66	**20**	
5	**Outdoor DC12V to 48VDC 4 Port PoE Switch (OSW1248)**	IOP-DPOE-OSW1248-4 	1.Input DC Voltage : 12~24VDC (28V Max) 2.Input DC Current : 12VDC 6A (8A Max) / 24VDC 6A (8A Max) 3.Output PoE DC Voltage : 48VDC (56VDC Max) 4.Output DC Current & Watts : 0.62A Max / 30W Max 5.12VDC Input, 4 Port Output : 15W+15W+15W+15W or 30W+15W+7W+7W 6.24VDC Input, 4 Port Output : 30W+30W+30W+30W 7.Support Each Ethernet Bandwidth :10/100/1000Mbps (1Gbps) Bandwidth 8.Compatible with IEEE802.3 / 802.3u / 802.3af / 802.3at PoE Standard 9.Operating Temperature : -40°C ~ +80°C 10.Dust & Waterproof Rate : IP67	**22**	
6	**Outdoor 12~24VDC Auto Power Selector Output 8A Max (DAPS)**	IOP-DAPS-I3O18A-1 	1.Input DC Voltage : 12~24VDC (28V Max) 2.Input DC Current : 12VDC 6A (8A Max) / 24VDC 6A (8A Max) 3.Output DC Voltage : Same Input highest DC Voltage 4.Output DC Current : 6A (8A Max) 5.Support Parallel Connection Mode & Redundant Power Back up 6.Support Multi System Stack Function 7.Operating Temperature : -40°C ~ +70°C	**1**	