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**Reference Design for Wireless Video Surveillance Backhaul**

700ft LOS 5GHz Wireless Video Backhaul for 4+ Camera Nodes  
JOB # BWA-40880-xxxx  
Section 1.0: System Overview

DRAWN BY: RT (Engr) APPROVED BY:	SIZE	LIC NO AZ ROC # 253407	DWG NO DWG-BW-40880-xxxx-001	REV 1A
FREQ(s): 2.4GHz ISM/ 5GHz ISM/UNII	SCALE	<b>NO SCALE</b>	FRN: 0018086041	SHEET 1 OF 1

Bill of Materials				
ITEM	QTY.	RFWEL SKU	DESCRIPTION	
1	1	CLARC-PA5823B01	4.9-5.85 GHz 23dBi Panel Antenna, N-Female	
2	2	CT-LMR4006F-NM	6' LMR-400 Low loss coax, N-M/N-M	
3	1	LPNFN276V	Coax Lightning protector DC-6GHz, IL<0.7dB, 276VDC, N-Fem	
4	5	EOC-5610	Engenius 600mW 802.11a/b/g Outdoor AP/CB	
5	4	AXIS225FD+	Axis 225FD Fixed Dome IP Camera w/ Pole Mounting Kit	
NOTE2.0	1	PIGRPSMAMNF	RP-SMA-Male/ N-Female Pigtail	

NOTES:  
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1.0 Ground per NEC-2005 Art820 using 14AWG+ grounding electrode  
  
2.0 Radio has RP-SMA-Female port so include RP-SMA-Male/N-Female adapter Pigtail to interface N-Male/N-Male coax. Need small dia pigtail to allow connector to be completely enclosed by radio weather-shield cover.  
  
3.0 Designed for a >200m (~700ft) Line-of-Sight link (70% 1<sup>st</sup> Fresnel Zone Clearance). A Careful RF link analysis required if any of the paths from Subscriber Units (Camera Nodes) to Base station unit (backhaul node) is fully or partially obstructed.  
  
4.0 100m (330ft) Run to POE Injector and LAN. For >100m consider an Ethernet Extender/ POE Repeater such as SKU: VOR-OR01

**Section 1: IP Video Wireless Backhaul Using 5GHZ PTMP LOS Link (~660ft)**

**Network Operations Center Site, Base-Station/ AP**

5GHz, 23dBi panel antenna, mount on 3/4"-2" OD Pole, N-Female, 10°/10° AZ/EL 3dB Beamwidth

NOTE 2.0  
LMR400 Cable, N-Male/N-Male, 10.8dB/100ft attenuation @ 5.8GHz (0.6dB for 6ft run)

Lightning discharge device DC-6GHz, N-Fem, 50Ω (OPTIONAL)

Outdoor dualband Wireless Client Bridge/ Access point

Outdoor dualband Wireless Client Bridge/ Access point, Use 13dBi Integ'd 5.1-5.8GHz antenna, 42°/21° AZ/EL 3dB Beamwidth

CAT5/6 to POE/LAN

Axis PTZ w/ Pole Mount + Enclosure

NOTE 4.0

PVC-Coated Rigid Steel Conduit, 1 1/2" OD

PVC Rooftop Sleepers

Concrete block ballast, 100 lbs per side

Rubber mat kit

