

Project PTP 820S 2+0 Cross-Polar ACAP 2017-07-17

LINKPlanner PTP Installation Report

17 July 2017

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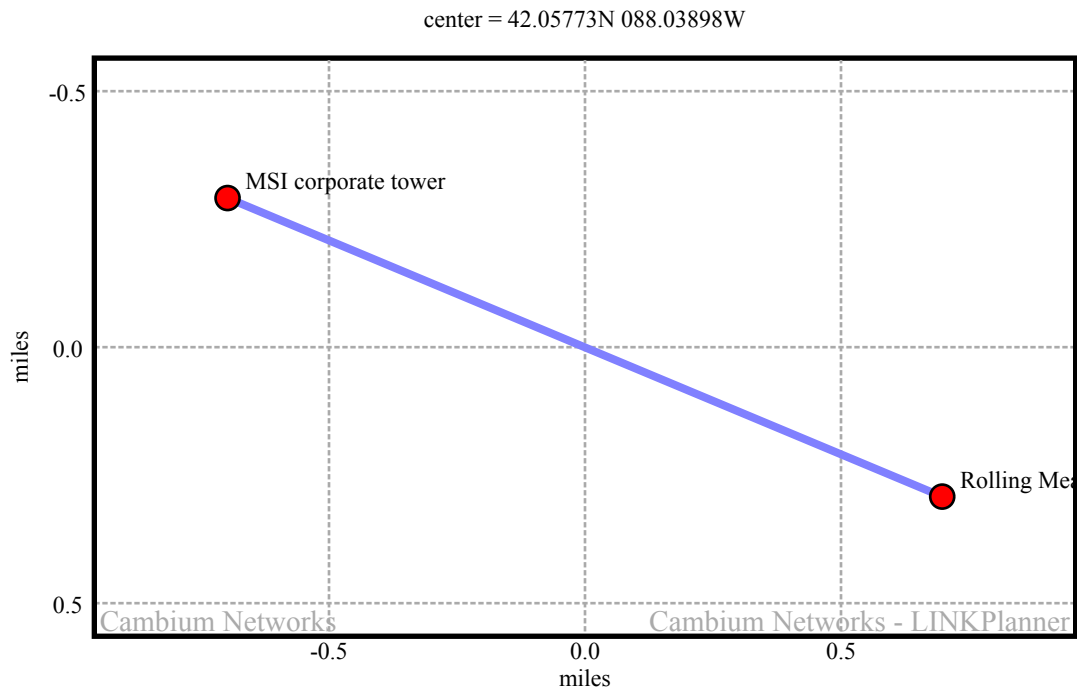


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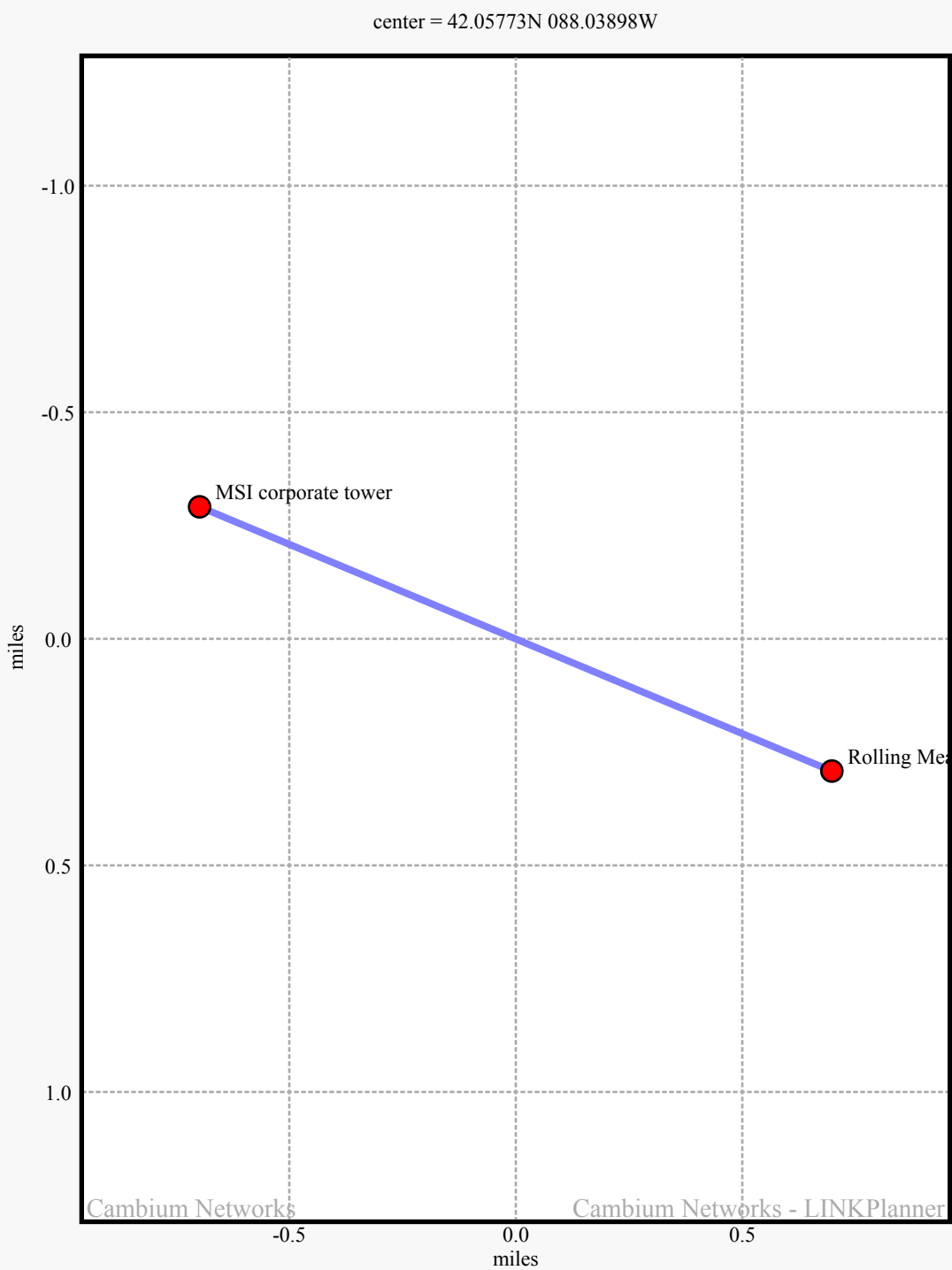
1. Project Summary

Project: PTP 820S 2+0 Cross-Polar ACAP 2017-07-17

General Information
Customer Name
Company Name
Address
Phone
Cell Phone
Email



Network Map



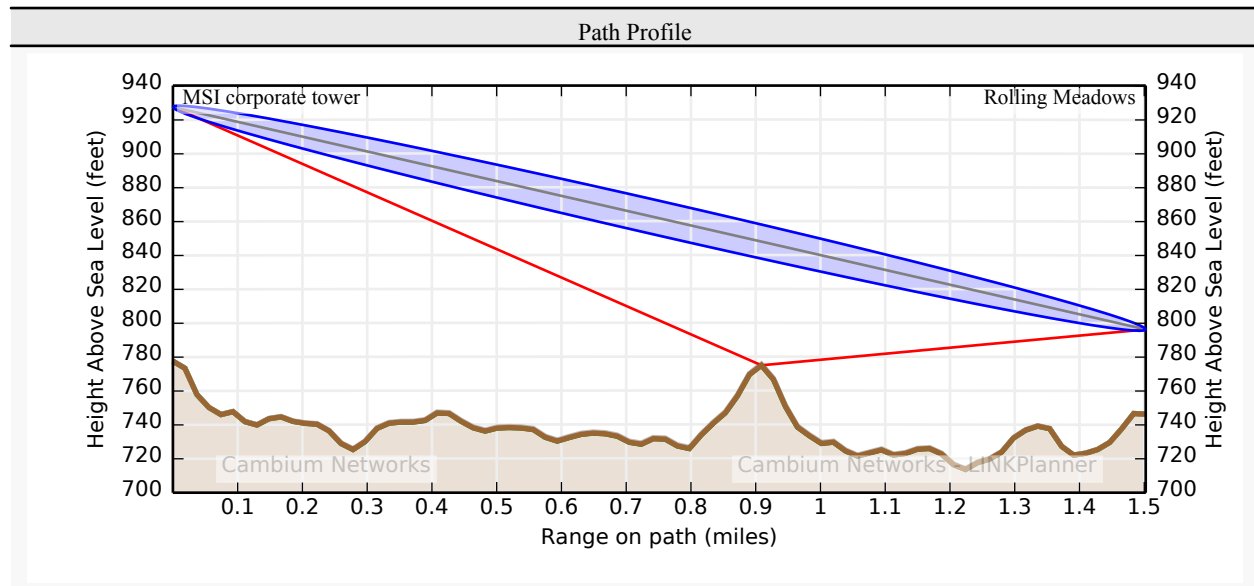


Link name	Product	Primary Local antenna	Primary Remote antenna	Max aggregate IP throughput
MSI corporate tower to Rolling Meadows	PTP11820S (Narrow)	Cambium Networks 3ft Single Pol (NA & CALA Only) N110082D098 - Direct	Cambium Networks 3ft Single Pol (NA & CALA Only) N110082D098 - Direct	694.55 Mbps

Bill of Materials : PTP Network		
Part Number	Qty	Description
(no part number)	4	Unspecified Power Lead. (set the region in the Bill of Materials options)
C000000L033	8	Gigabit Surge Suppressor (56V)
C110082B001	2	PTP 820S Radio 11GHz,TR500,Ch1W6,Hi,11185-11485MHz. Please select a TX frequency
C110082B002	2	PTP 820S Radio 11GHz,TR500,Ch1W6,Lo,10695-10955MHz. Please select a TX frequency
N000065L001	4	AC Power Injector 56V
N000082L014	4	PTP 820 Glands_x5_KIT
N000082L016	2	PTP 820 CAT5E Outdoor 100m drum
N000082L017	8	PTP 820 Grounding Kit for CAT5e F/UTP 8mm cable. Add 2 additional kits per PoE Injector that is installed outdoors
N000082L033	4	PTP 820S Act.Key - Capacity 500M with ACM Enabled, per Tx Chan
N000082L073	2	PTP 820 GBE_Connector_kit
N000082L116	4	PTP 820 GROUND CABLE FOR IDU and ODU
N000082S081	4	PTP 820S (End Only) Extended Warranty, 2 Yr, include first year
N110082D098	2	PTP 820 3' ANT,SP,11GHz,RFU-C TYPE&UBR100 - Radiowave. Only available for order in North America and CALA regions
N110082L091	2	PTP 820 RFU-C 10_11GHz OMT DM KIT
N110082L103	2	PTP 820 RFU-C 10_11GHz OMT Interface-Radiowave

2. MSI corporate tower to Rolling Meadows

Summary	
Link Name	MSI corporate tower to Rolling Meadows
Profile Type	Line-of-Sight
Equipment Type	PTP11820S (Narrow)
Maximum Obstruction	0 feet
Link Distance	1.502 miles
Free Space Path Loss	121.10 dB
Excess Path Loss	0.00 dB
User IP Throughput Expectation Aggregate Paths	Aggregate 1389.09 Mbps assuming PTP-820 Series running the Release 9.0 software
RF Frequency Band	11 GHz (10700 to 11700 MHz)
RF Channel Bandwidth	40 MHz
optional	No



Link Configuration	
Link Type	2+0 Cross-Polar (ACAP)
Path Aggregation	Aggregate Paths
T/R Spacing	490 MHz
Bandwidth	40 MHz
Modulation Mode	Adaptive
Maximum Mod Mode	10 - 2048QAM
Minimum Mod Mode	0 - QPSK



Link Configuration (continued)	
ATPC	Disabled
Header Compression	Disabled
Hi	MSI corporate tower
Lo	Rolling Meadows

Bill of Materials		
Part Number	Qty	Description
(no part number)		Unspecified Power Lead.
	4	(set the region in the Bill of Materials options)
C000000L033	8	Gigabit Surge Suppressor (56V)
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Physical Installation Notes for MSI corporate tower	
Link Name	MSI corporate tower to Rolling Meadows
Latitude	42.06192N
Longitude	088.05246W
Site Elevation	778 feet AMSL
Antenna Configuration	Common Dual Polar Antenna (Direct Mount)
Polarization (Link A)	Vertical
Polarization (Link B)	Horizontal
Hardware Platform (Link A)	PTP11820S (Narrow) - C110082B001
Hardware Platform (Link B)	PTP11820S (Narrow) - C110082B001



Physical Installation Notes for MSI corporate tower (continued)	
Antenna Type	Cambium Networks 3ft Single Pol (NA & CALA Only) N110082D098 - Direct
Antenna Beamwidth	2.1°
Antenna Gain	38.5 dBi
Antenna Height	150.0 feet AGL
Antenna Tilt angle	-1.0° (downtilt)
Bearing to Rolling Meadows	112.66° from True North 116.27° from Magnetic North
Magnetic Declination	3.60° W \pm 0.37° changing by 0.06° W per year
RF Feeder Loss (Link A)	0.3 dB
RF Feeder Loss (Link B)	0.3 dB

Physical Installation Notes for Rolling Meadows	
Link Name	MSI corporate tower to Rolling Meadows
Latitude	42.05353N
Longitude	088.02551W
Site Elevation	746 feet AMSL
Antenna Configuration	Common Dual Polar Antenna (Direct Mount)
Polarization (Link A)	Vertical
Polarization (Link B)	Horizontal
Hardware Platform (Link A)	PTP11820S (Narrow) - C110082B002
Hardware Platform (Link B)	PTP11820S (Narrow) - C110082B002
Antenna Type	Cambium Networks 3ft Single Pol (NA & CALA Only) N110082D098 - Direct
Antenna Beamwidth	2.1°
Antenna Gain	38.5 dBi
Antenna Height	50.0 feet AGL
Antenna Tilt angle	0.9° (uptilt)
Bearing to MSI corporate tower	292.68° from True North 296.31° from Magnetic North
Magnetic Declination	3.62° W \pm 0.37° changing by 0.06° W per year
RF Feeder Loss (Link A)	0.3 dB
RF Feeder Loss (Link B)	0.3 dB

Radio Commissioning Notes for MSI corporate tower	
Radio Interface (Link A)	Radio:Slot 2, port 1
Radio Interface (Link B)	Radio:Slot 2, port 1
Tx Frequency (Link A)	Unknown (port 1)
Rx Frequency (Link A)	Unknown (port 1)
Tx Frequency (Link B)	Unknown (port 1)
Rx Frequency (Link B)	Unknown (port 1)
Tx to Rx Frequency Separation	490.000 MHz



Radio Commissioning Notes for MSI corporate tower (continued)	
Tx Level (Link A)	14 dBm (port 1)
Tx Level (Link B)	14 dBm (port 1)
MRMC Script	FCC 1507
MRMC Script Operational Mode	Adaptive
MRMC Script Maximum Profile	10, 2048QAM
MRMC Script Minimum Profile	0, QPSK
Adaptive Tx Power Admin	Enable
ATPC Configuration	Disabled
Header Compression	Disabled
BNC Voltage (Link A)	1.27 to 1.35 Volts
BNC Voltage (Link B)	1.27 to 1.35 Volts
Predicted Receive Power (Link A)	-31 dBm \pm 4 dB while aligning
Predicted Receive Power (Link B)	-31 dBm \pm 4 dB while aligning
County	Harris
Fiber Site	
LTE Ant Height	120
Status	Planning

Radio Commissioning Notes for Rolling Meadows	
Radio Interface (Link A)	Radio:Slot 2, port 1
Radio Interface (Link B)	Radio:Slot 2, port 1
Tx Frequency (Link A)	Unknown (port 1)
Rx Frequency (Link A)	Unknown (port 1)
Tx Frequency (Link B)	Unknown (port 1)
Rx Frequency (Link B)	Unknown (port 1)
Tx to Rx Frequency Separation	490.000 MHz
Tx Level (Link A)	14 dBm (port 1)
Tx Level (Link B)	14 dBm (port 1)
MRMC Script	FCC 1507
MRMC Script Operational Mode	Adaptive
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County	Harris
Fiber Site	
LTE Ant Height	120



Radio Commissioning Notes for Rolling Meadows (continued)

Status	Planning
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Regulatory Conditions

Regulation	FCC
Band	11 GHz
Max EIRP	52.20 dBm
Output Power	14.00 dBm

Installation Instruction

Perform the following checks during the installation (Check the deployment guide and the User Guide.)

1. Check with a GPS that you are installing at the correct location.
2. Check carefully the direction to the other end of the link. Either use a corrected compass or use the GPS waypoint feature about 300 meters from the installation location.
3. When aligning antennas, it is important to find the centre of the main beam. This is done by adjusting the antenna at each end of the link in turn and monitoring the receive level until the peak is found. Once the peak level is found, it should be checked against the predicted receive power to ensure that the antennas have not been aligned on a side lobe.
4. An hour after alignment is complete, if ATPC is disabled, check that the mean value for the RSL is as predicted (see previous tables). Also check that the received power is not greater than -30dBm with ATPC enabled or disabled.

MSI corporate tower Performance (Aggregated) *

Frame Size	1518 Bytes
Mean IP Throughput Predicted	694.55 Mbps
Mean IP Throughput Required	100.00 Mbps
Minimum IP Throughput Required	100.00 Mbps
Minimum IP Throughput Availability Predicted	100.0000% (unavailable for 0 secs/year)

Rolling Meadows Performance (Aggregated) *

Frame Size	1518 Bytes
Mean IP Throughput Predicted	694.55 Mbps
Mean IP Throughput Required	100.00 Mbps
Minimum IP Throughput Required	100.00 Mbps
Minimum IP Throughput Availability Predicted	100.0000% (unavailable for 0 secs/year)

* Multipath availability calculated using Vigants-Barnett



Mode	Max Aggregate User IP Throughput (Mbps)	Max User IP Throughput in Either Direction (Mbps)	MSI corporate tower - Aggregated			Rolling Meadows - Aggregated		
			Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
10	1389.09	694.55	22.51	99.9999	99.9999	22.51	99.9999	99.9999
9	1284.49	642.24	25.51	99.9999	0.0001	25.51	99.9999	0.0001
8	1209.64	604.82	26.51	99.9999	0.0000	26.51	99.9999	0.0000
7	1066.66	533.33	30.01	100.0000	0.0000	30.01	100.0000	0.0000
6	973.71	486.85	32.51	100.0000	0.0000	32.51	100.0000	0.0000
5	905.77	452.88	35.01	100.0000	0.0000	35.01	100.0000	0.0000
4	748.78	374.39	37.51	100.0000	0.0000	37.51	100.0000	0.0000
3	609.71	304.85	40.51	100.0000	0.0000	40.51	100.0000	0.0000
2	462.69	231.35	44.01	100.0000	0.0000	44.01	100.0000	0.0000
1	339.74	169.87	45.51	100.0000	0.0000	45.51	100.0000	0.0000
0	227.67	113.84	55.26	100.0000	0.0000	55.26	100.0000	0.0000

* Multipath availability calculated using Vigants-Barnett

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