DoubleRadius WE'VE GOT YOU COVERED

Tomorrows STL's Today

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Line-of-Sight (LOS)
Up to **155 miles**

near-Line-of-Sight (nLOS)
Up to **25 miles**

Non-Line-of-Sight (NLOS)
Up to **6 miles**

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Tomorrow's STL Today!

- **Everything is IP Now!**
- **How to get better connections?**

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950 Under-build

- Increased IP Connectivity
- Lowered Latency
- Results
  - Up to 3.5Mbs

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Un-Licensed Microwave

- High Throughput
- Low Latency
- Not Full Duplex
- Interference

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Cambium Networks™

Connectorized – Front

Integrated – Back

Integrated – Front

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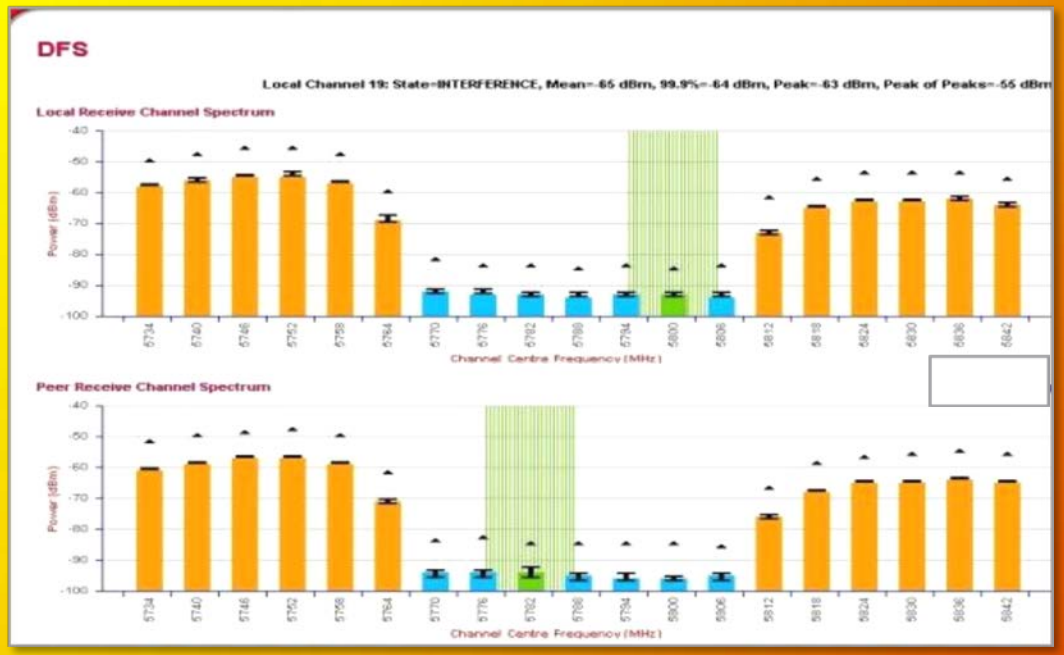

- Automatically changes channels to avoid inter-ference without dropping the link
- Narrow channels[3] – 5, 10, 15 MHz
- Spectrum analyzer – scans the band continuously
- TDD synchronization for optimal collocation density
- Proactive channel planning
- Up to 2,500 channel combinations

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Redundancy

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Tomorrow's STL Today!

- FCC Abolishes Last Link Rule
- Opens up Part 101 Frequencies
- Bi-Directional Throughput
- Mission Critical Reliability
- Radio and TV Broadcasting
- Licensed Solutions
- Greater than 1Gbs Full Duplex

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Frequencies

- 23Ghz-18GHz
  - Shorter Hops
  - Larger Channels= Faster Speeds
- 11Ghz-6Ghz
  - Longer Distances
  - Greater than 1Gbs Full Duplex

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Deployment Options

- All Indoor Solution
  - Equipment on Ground
- All Outdoor Solution
  - Cat5 up the Tower
- Split Solution
  - Best of Both Worlds
  - IF Cable Between IDU and ODU

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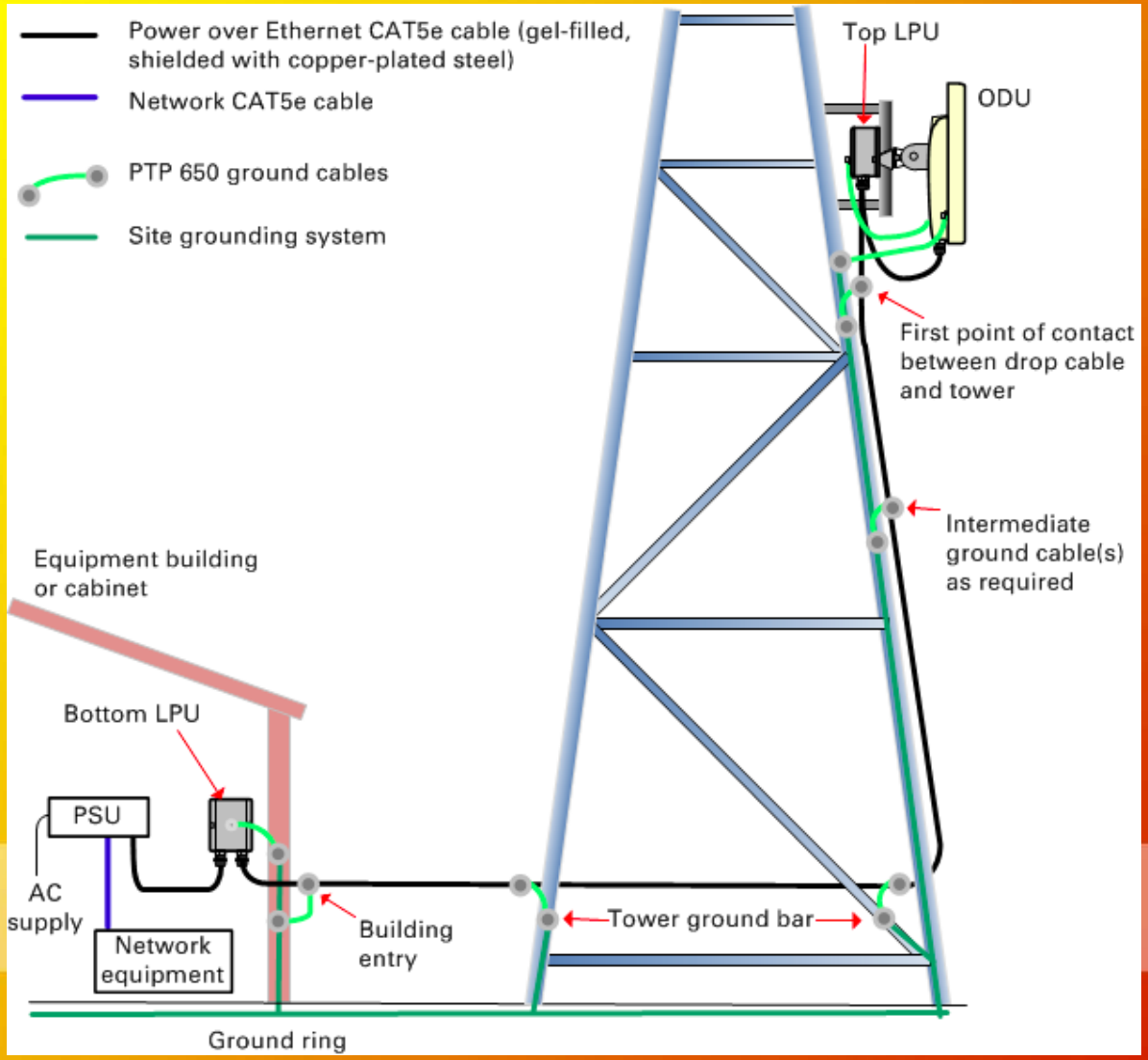

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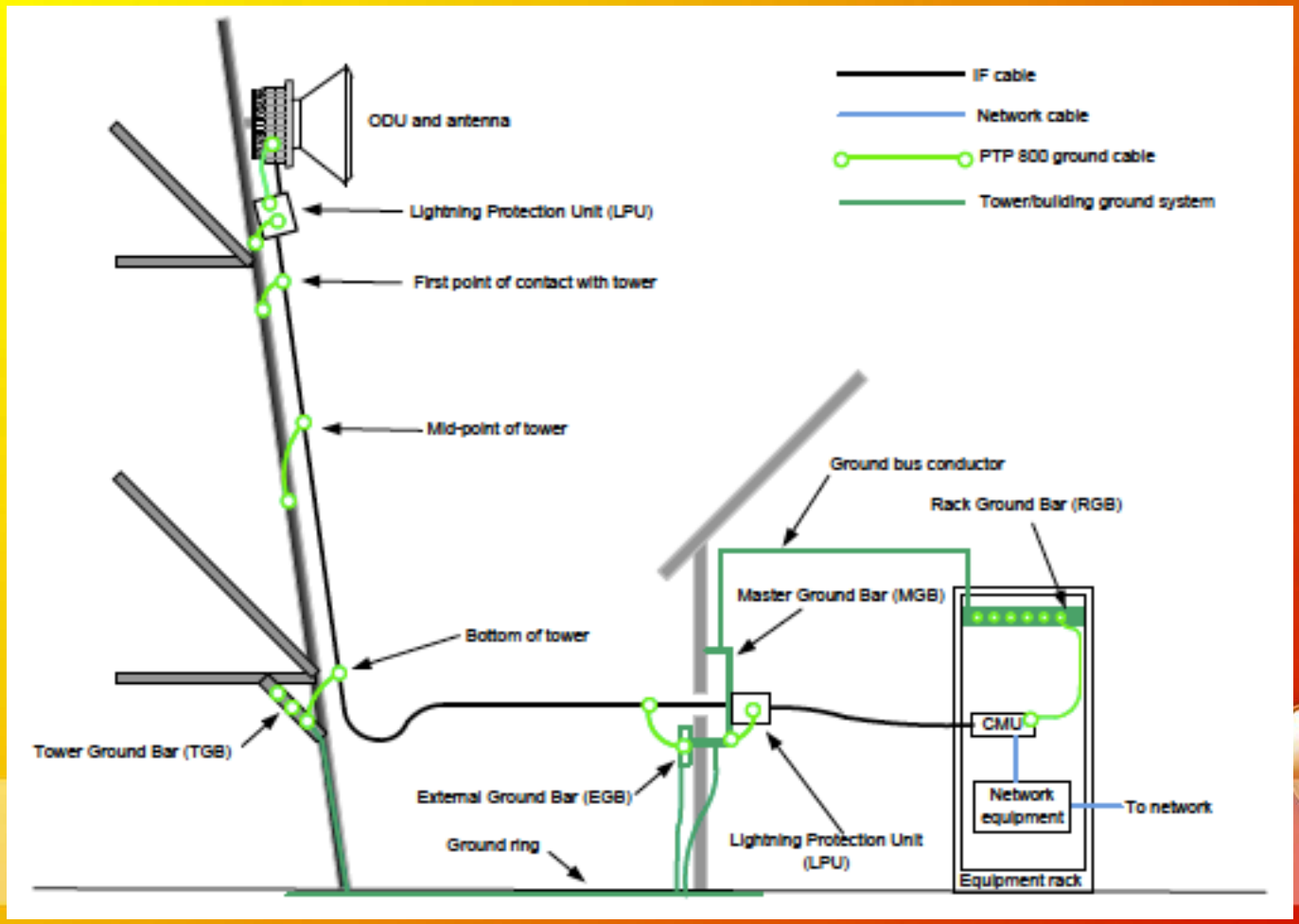

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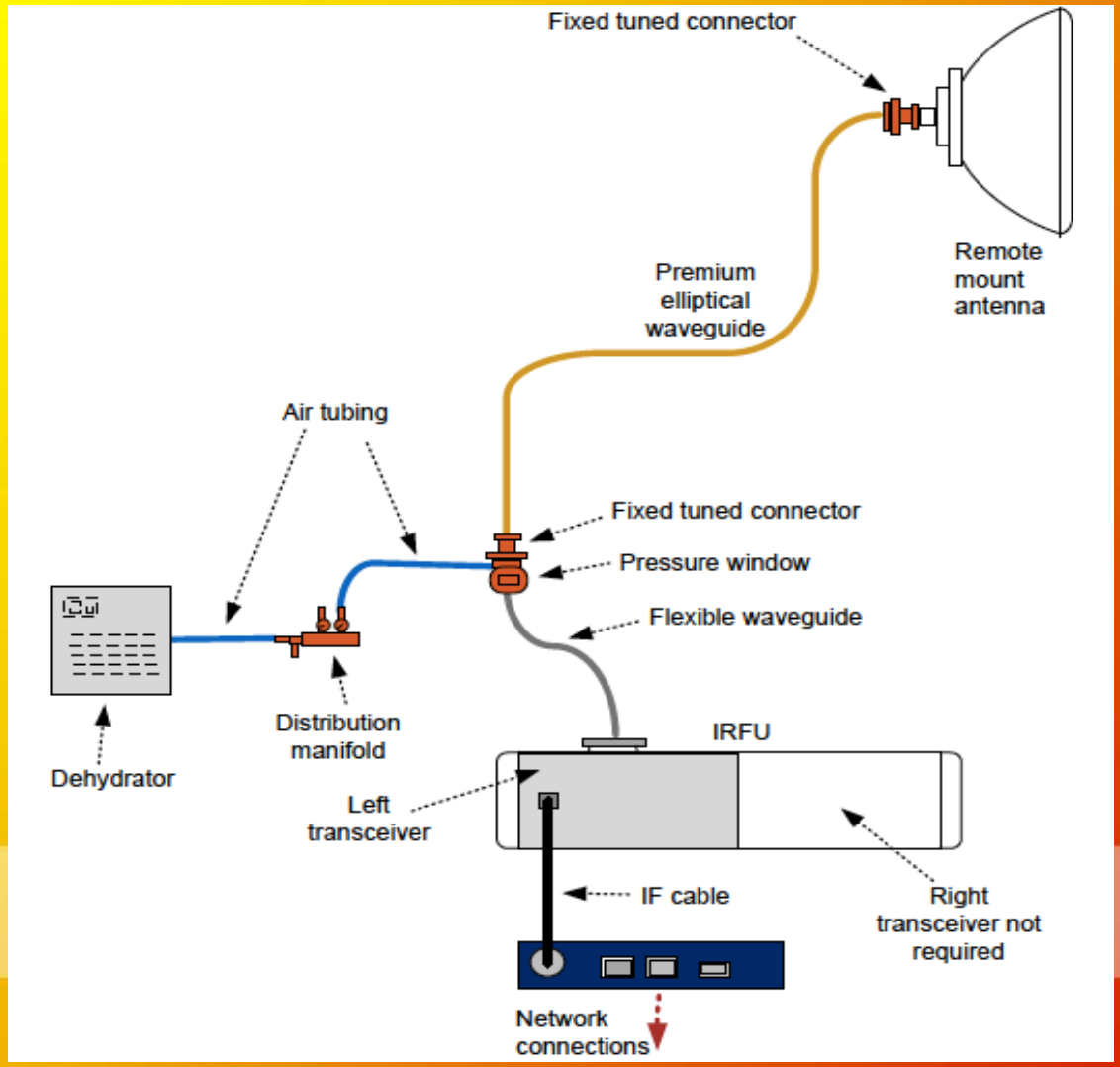

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CAMBIUM **PTP 800** SERIES

CAMBIUM **PTP 810**

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What is Adaptive Modulation?

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Combats fading due to obstruction movement or temporary signal fade

Allows for higher availability with lower fade margins compared to conventional radios

Radios automatically upshift and downshift modulation modes as needed without dropping packets

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Modulation	30Mhz	40Mhz	50Mhz	60Mhz	80Mhz
QPSK	43	56	73	87	113
8 PSK	63	81	106	127	165
16 QAM	88	113	147	175	227
32 QAM	115	148	194	230	298
64 QAM	141	182	238	282	366
128 QAM	170	219	287	341	441
256 QAM	195	252	331	394	505
512QAM	208	269	356	423	553
1024 QAM(strong)	226	293	387	460	587
1024 QAM(light)	240	310	411	489	624
2048QAM	**260**	**341**	**446**	**530**	-
De-duplication (+30%)	**338**	**443**	**580**	**690**	**830**

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Mode	Max Aggregate User IP Throughput (Mbps)	Max User IP Throughput in Either Direction (Mbps)	Forum Bldg			KXJZ		
			Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.80	473.22	236.61	19.83	99.9776	99.9776	19.83	99.9776	99.9776
128QAM 0.82	412.74	206.37	26.33	99.9949	0.0173	26.33	99.9949	0.0173
64QAM 0.87	360.12	180.06	29.00	99.9972	0.0023	29.00	99.9972	0.0023
32QAM 0.92	300.94	150.47	31.23	99.9983	0.0011	31.23	99.9983	0.0011
16QAM 0.85	222.40	111.20	36.17	99.9995	0.0011	36.17	99.9995	0.0011
8PSK 0.80	157.16	78.58	38.09	99.9997	0.0002	38.09	99.9997	0.0002
QPSK 0.80	104.98	52.49	45.42	99.9999	0.0003	45.42	99.9999	0.0003

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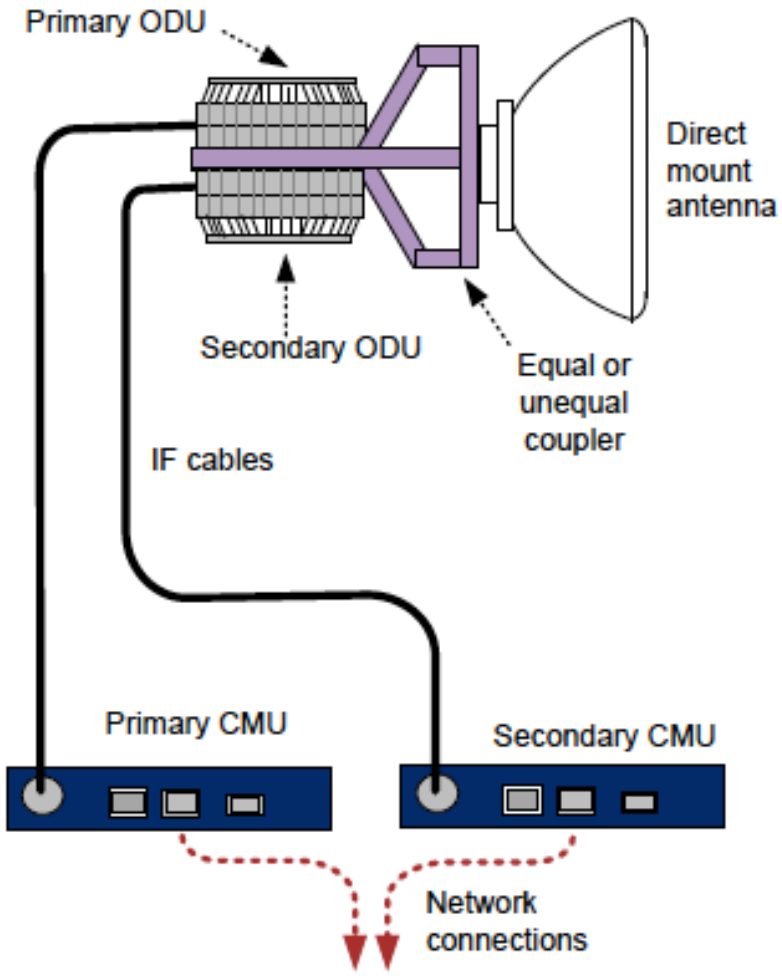

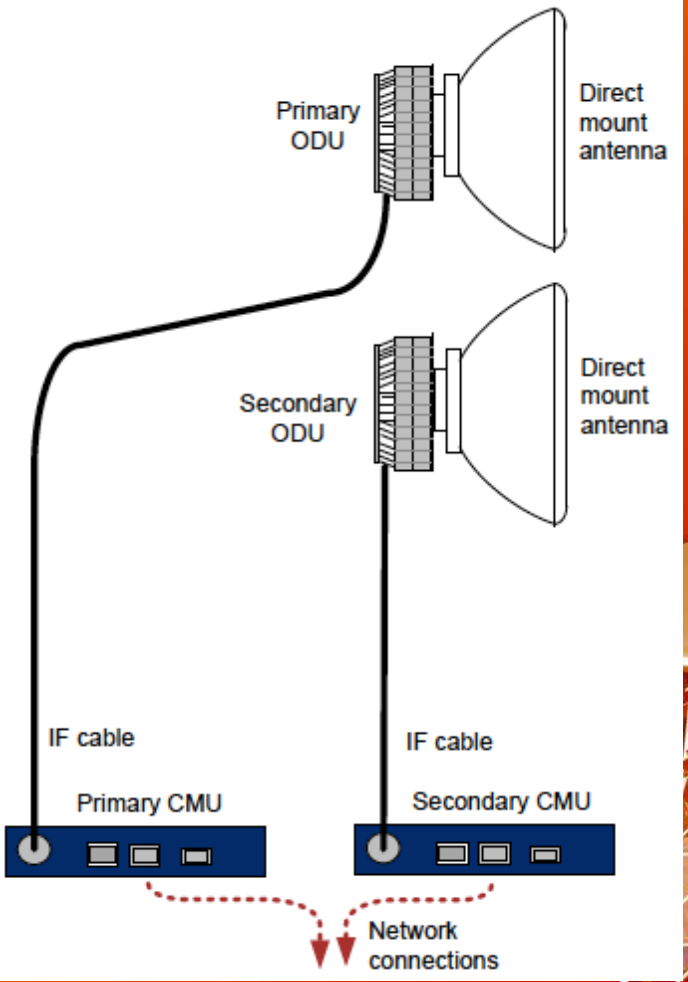

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Part 101 and ASI

Split Mount Design

Up to 4 ASI Ports

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Path Profiles/Conversion

- Design
  - 99.999% Reliability
  - Minimum of 20dB of Fade Margin
  - Terrain Studies
  - LOS Verification
- Conversion
  - Radio/TV Codec

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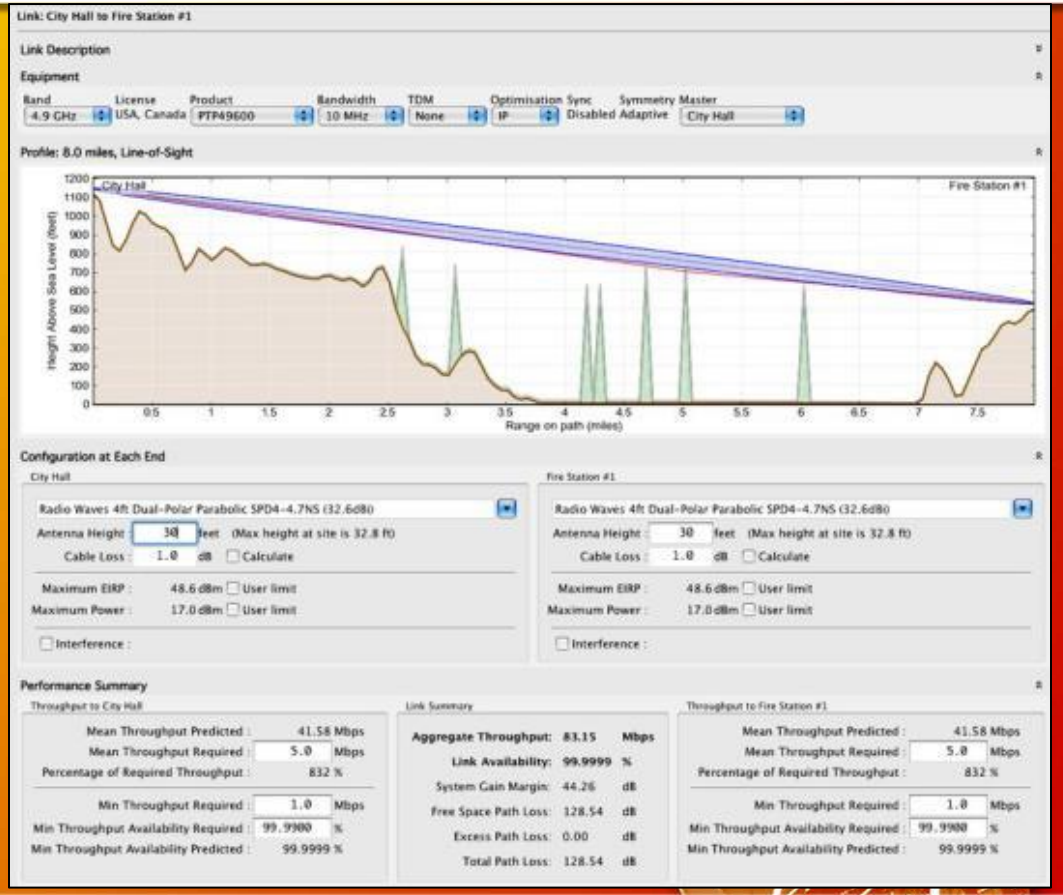
Predict Performance Prior to Purchase

- Easy, fast PTP link calculations[1]
- Plan and fine tune single or multiple links simultaneously
- Accurate predictions of link performance
- Detailed performance report simplifies deployment
- Display wireless network via Google™ Earth



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Common details							
Mode:	256QAM	128QAM	64QAM	32QAM	16QAM	8PSK	QPSK
Code rate:	0.80	0.82	0.88	0.83	0.85	0.80	0.80
Max Aggregate IP Throughput (Mbps):	354.88	309.52	271.96	205.22	166.76	117.84	78.70
Performance to KTNV Trnsmit							
Max IP Throughput (Mbps):	177.44	154.76	135.98	102.61	83.38	58.92	39.35
Fade Margin (dB):	16.20	23.16	25.49	29.50	32.88	34.80	42.04
Mode Availability (%):	99.9822	99.9964	99.9979	99.9992	99.9996	99.9998	99.9999
Receive time in Mode (%):	99.9822	0.0142	0.0015	0.0013	0.0005	0.0001	0.0002
Performance to Stratosphere							
Max IP Throughput (Mbps):	177.44	154.76	135.98	102.61	83.38	58.92	39.35
Fade Margin (dB):	16.20	23.16	25.49	29.50	32.88	34.80	42.04
Mode Availability (%):	99.9822	99.9964	99.9979	99.9992	99.9996	99.9998	99.9999
Receive time in Mode (%):	99.9822	0.0142	0.0015	0.0013	0.0005	0.0001	0.0002

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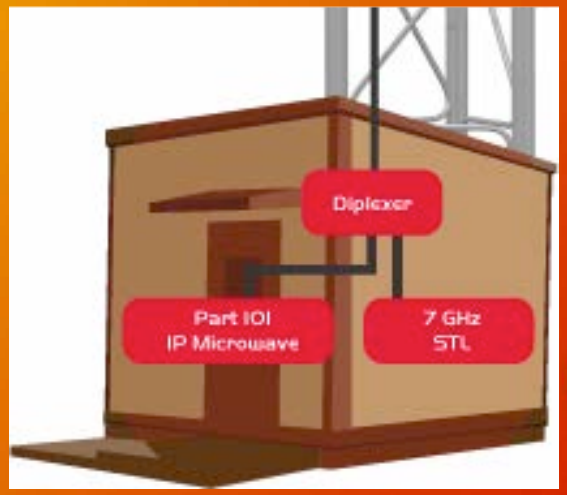
7GHZ under build



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Cambium Networks

DragonWave

SAF

PLATINUM ConnectedPartner
A Cambium Networks Program

UBIQUITI NETWORKS

Xalt™

BridgeWave COMMUNICATIONS

TRANZEO® WIRELESS TECHNOLOGIES INC.

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