

Project REDES (1)

LINKPlanner Proposal Report

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1. Project Summary

Project: REDES (1)

General Information	
Customer Name	
Company Name	
Address	
Phone	
Cell Phone	
Email	

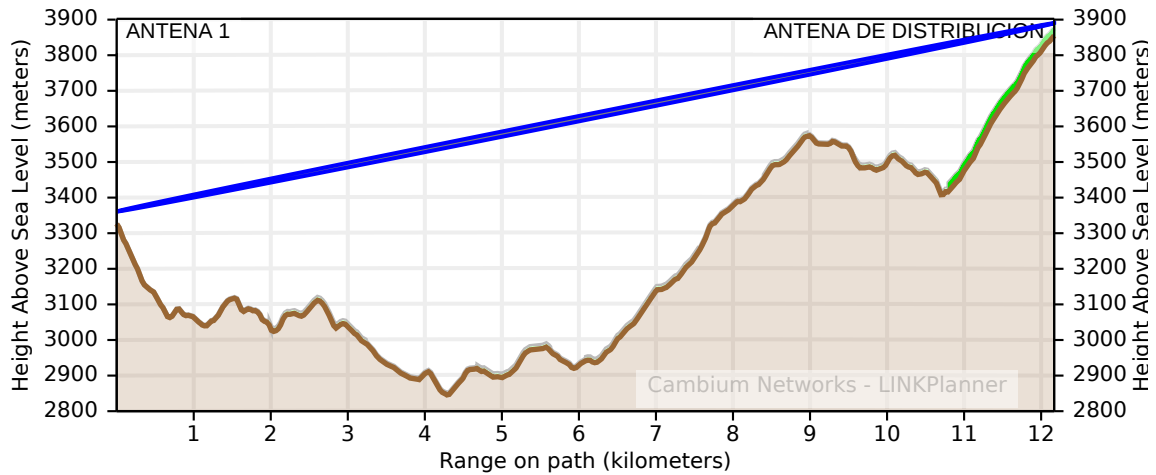
Bill of Materials : PTP Network		
Part Number	Qty	Description
01010419001	18	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
AR-E4PT6XX-WW	6	PTP 670 All Risks Advance Replacement, 4 additional years (per END)
C000065L007	6	LPU and Grounding Kit (1 kit per ODU)
C050067H016	6	PTP 670 Integrated 23dBi END with AC+DC Enhanced Supply (ROW - EU Line Cord). Kit includes ODU, power supply, mounting bracket and EU line cord
WB3176	3	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

ANTENA 1 to ANTENA DE DISTRIBUCION

Equipment: Cambium Networks PTP 670 Integrated

Cambium Networks High Gain Integrated @ 35 m

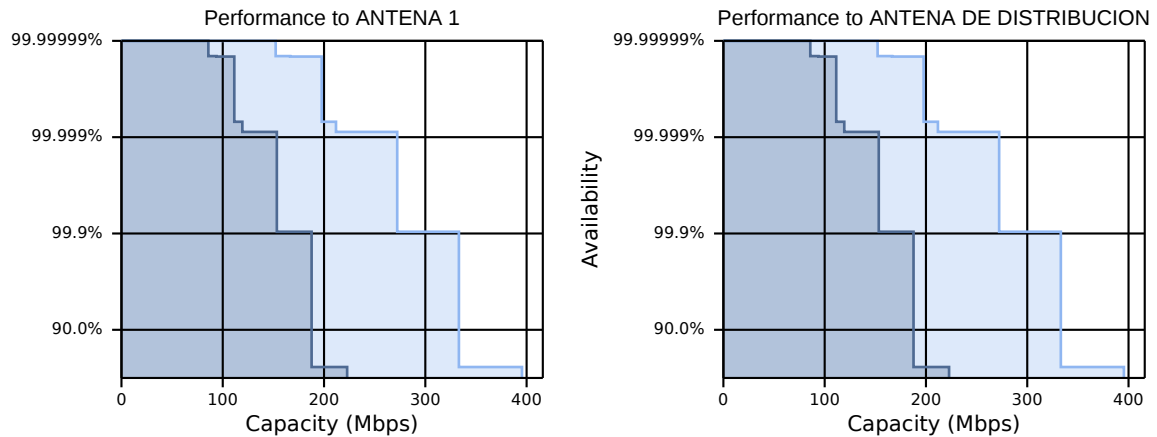
Cambium Networks High Gain Integrated @ 35 m



	Performance to ANTENA 1	Performance to ANTENA DE DISTRIBUCION
Mean IP	201.98 Mbps	201.98 Mbps
IP Availability	100.0000 % for 1.0 Mbps	100.0000 % for 1.0 Mbps

Link Summary			
Link Length	12.169 km	System Gain	161.28 dB
Band	5.8 GHz	System Gain Margin	31.80 dB
Regulation	Other	Mean Aggregate Data Rate	403.96 Mbps
Modulation	Adaptive	Annual Link Availability	100.0000 %
Bandwidth	45 MHz	Annual Link Unavailability	1 secs/year
Total Path Loss	129.47 dB	Prediction Model	ITU-R P.530-17

Performance Charts



	High Capacity, assumes there is no load in the other direction
	Symmetrical Capacity, assumes a saturated load in the other direction

Climatic Factors, Losses and Standards			
dN/dH not exceeded for 1% of time	-180.35 N units/km	Free Space Path Loss	129.42 dB
Area roughness 110x110km	982.78 meter	Gaseous Absorption Loss	0.05 dB
Geoclimatic factor	5.11e-06	Link Type	Line-of-Sight
Fade Occurrence Factor (P0)	5.72e-08	Excess Path Loss	0.00 dB
Path inclination	43.48 mr	Atmospheric Gasses	ITU-R P.676-13, ITU-R P.835-7
Value of K Exceeded for 99.99% (ke)	0.45	Diffraction Loss	ITU-R P.526-15
Excess Path Loss at ke	0.00 dB	Propagation	ITU-R P.530-17
0.01% Rain rate	35.82 mm/hr	Rain Rate	ITU-R P.837-7
Rain Attenuation	0.12 dB/km	Refractivity Index	ITU-R P.453-14

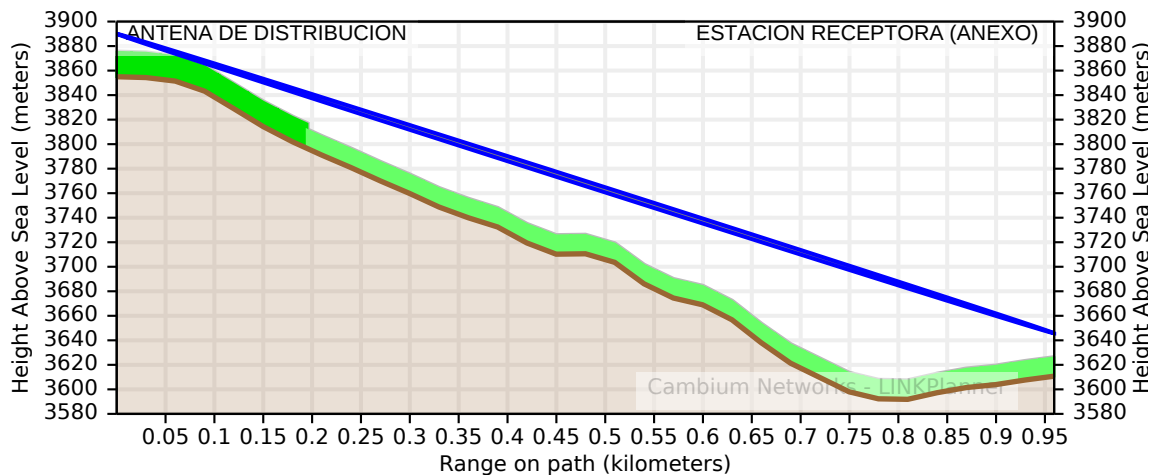
Bill of Materials		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
AR-E4PT6XX-WW	2	PTP 670 All Risks Advance Replacement, 4 additional years (per END)
C000065L007	2	LPU and Grounding Kit (1 kit per ODU)
C050067H016	2	PTP 670 Integrated 23dBi END with AC+DC Enhanced Supply (ROW - EU Line Cord). Kit includes ODU, power supply, mounting bracket and EU line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

ANTENA DE DISTRIBUCION to ESTACION RECEPTORA (ANEXO)

Equipment: Cambium Networks PTP 670 Integrated

Cambium Networks High Gain Integrated @ 35 m

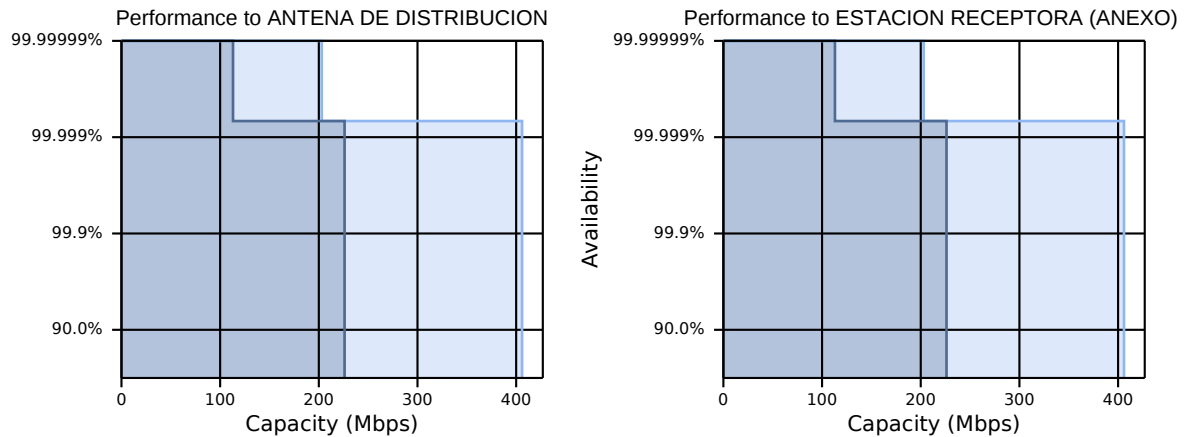
Cambium Networks High Gain Integrated @ 35 m



	Performance to ANTENA DE DISTRIBUCION	Performance to ESTACION RECEPTORA (ANEXO)
Mean IP	226.11 Mbps	226.11 Mbps
IP Availability	100.0000 % for 1.0 Mbps	100.0000 % for 1.0 Mbps

Link Summary			
Link Length	0.959 km	System Gain	160.28 dB
Band	5.8 GHz	System Gain Margin	52.91 dB
Regulation	Other	Mean Aggregate Data Rate	452.23 Mbps
Modulation	Adaptive	Annual Link Availability	100.0000 %
Bandwidth	45 MHz	Annual Link Unavailability	1 secs/year
Total Path Loss	107.36 dB	Prediction Model	ITU-R P.530-17

Performance Charts



	High Capacity, assumes there is no load in the other direction
	Symmetrical Capacity, assumes a saturated load in the other direction

Climatic Factors, Losses and Standards			
dN/dH not exceeded for 1% of time	-176.86 N units/km	Free Space Path Loss	107.36 dB
Area roughness 110x110km	976.02 meter	Gaseous Absorption Loss	0.00 dB
Geoclimatic factor	5.02e-06	Link Type	Line-of-Sight
Fade Occurrence Factor (P0)	9.99e-13	Excess Path Loss	0.00 dB
Path inclination	254.59 mr	Atmospheric Gasses	ITU-R P.676-13, ITU-R P.835-7
Value of K Exceeded for 99.99% (ke)	0.40	Diffraction Loss	ITU-R P.526-15
Excess Path Loss at ke	0.00 dB	Propagation	ITU-R P.530-17
0.01% Rain rate	36.06 mm/hr	Rain Rate	ITU-R P.837-7
Rain Attenuation	0.12 dB/km	Refractivity Index	ITU-R P.453-14

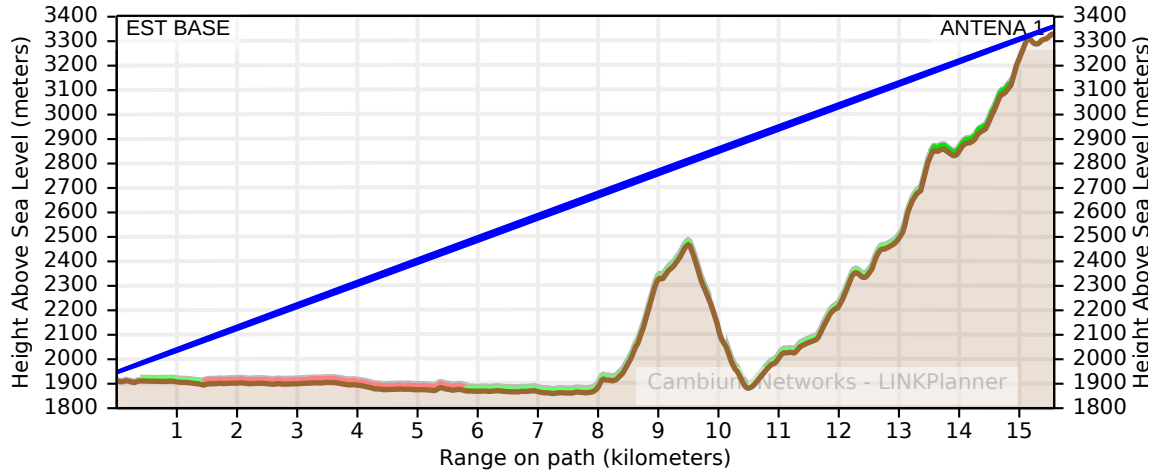
Bill of Materials		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
AR-E4PT6XX-WW	2	PTP 670 All Risks Advance Replacement, 4 additional years (per END)
C000065L007	2	LPU and Grounding Kit (1 kit per ODU)
C050067H016	2	PTP 670 Integrated 23dBi END with AC+DC Enhanced Supply (ROW - EU Line Cord). Kit includes ODU, power supply, mounting bracket and EU line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

EST BASE to ANTENA 1

Equipment: Cambium Networks PTP 670 Integrated

Cambium Networks High Gain Integrated @ 35 m

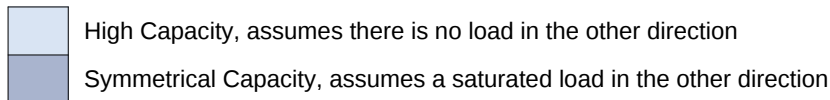
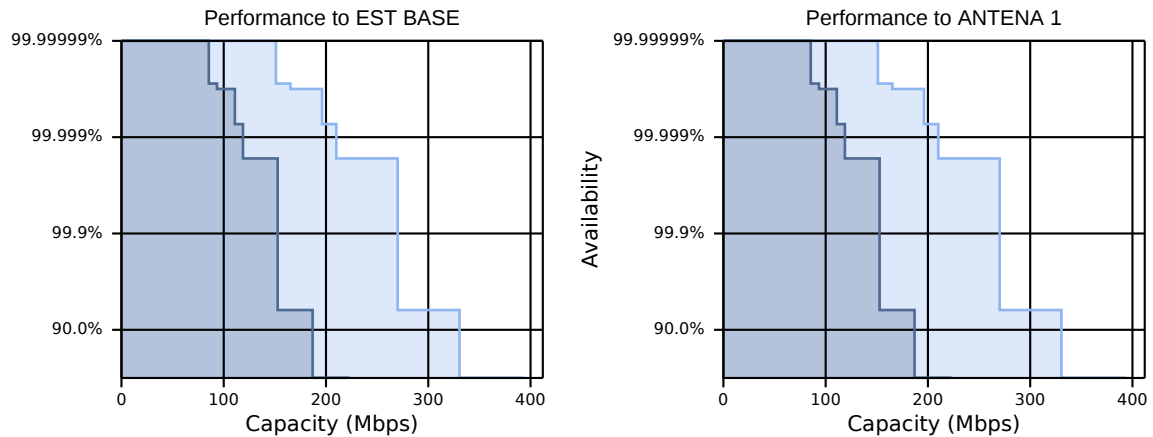
Cambium Networks High Gain Integrated @ 35 m



	Performance to EST BASE	Performance to ANTENA 1
Mean IP	185.89 Mbps	185.89 Mbps
IP Availability	100.0000 % for 1.0 Mbps	100.0000 % for 1.0 Mbps

Link Summary			
Link Length	15.579 km	System Gain	161.28 dB
Band	5.8 GHz	System Gain Margin	29.63 dB
Regulation	Other	Mean Aggregate Data Rate	371.78 Mbps
Modulation	Adaptive	Annual Link Availability	100.0000 %
Bandwidth	45 MHz	Annual Link Unavailability	1 secs/year
Total Path Loss	131.65 dB	Prediction Model	ITU-R P.530-17

Performance Charts



Climatic Factors, Losses and Standards			
dN/dH not exceeded for 1% of time	-179.69 N units/km	Free Space Path Loss	131.57 dB
Area roughness 110x110km	953.12 meter	Gaseous Absorption Loss	0.08 dB
Geoclimatic factor	5.16e-06	Link Type	Line-of-Sight
Fade Occurrence Factor (P0)	7.53e-07	Excess Path Loss	0.00 dB
Path inclination	90.76 mr	Atmospheric Gasses	ITU-R P.676-13, ITU-R P.835-7
Value of K Exceeded for 99.99% (ke)	0.52	Diffraction Loss	ITU-R P.526-15
Excess Path Loss at ke	0.00 dB	Propagation	ITU-R P.530-17
0.01% Rain rate	30.97 mm/hr	Rain Rate	ITU-R P.837-7
Rain Attenuation	0.09 dB/km	Refractivity Index	ITU-R P.453-14

Bill of Materials		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
AR-E4PT6XX-WW	2	PTP 670 All Risks Advance Replacement, 4 additional years (per END)
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