Project Patdi Final Including Zinzuwada
LINKPlanner PTP Installation Report

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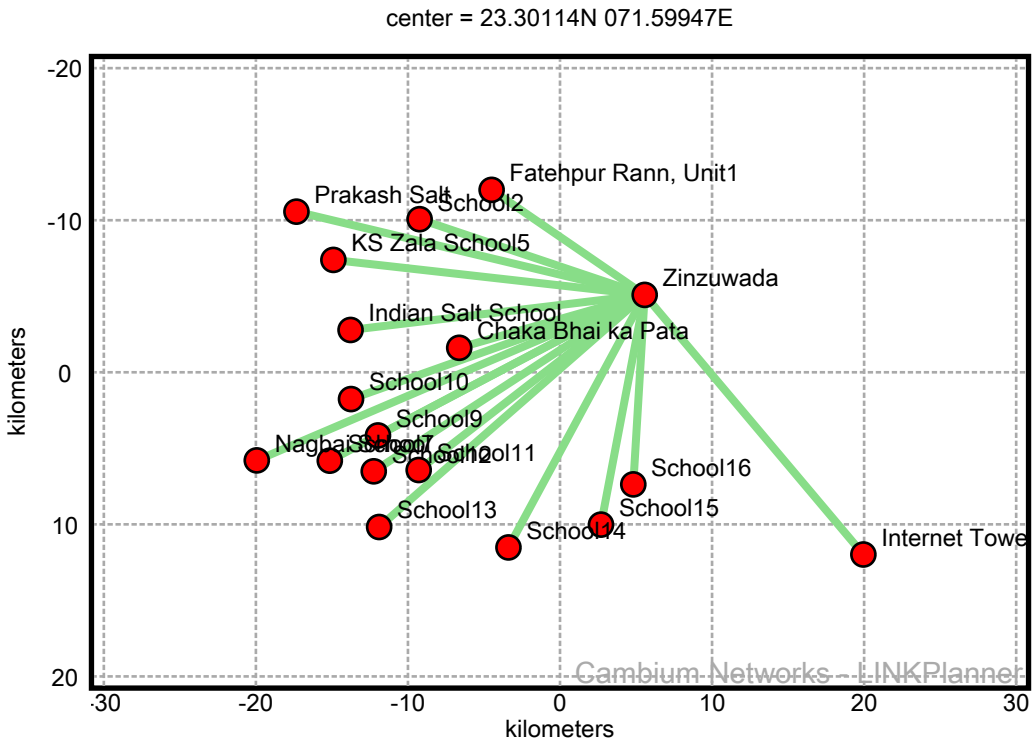

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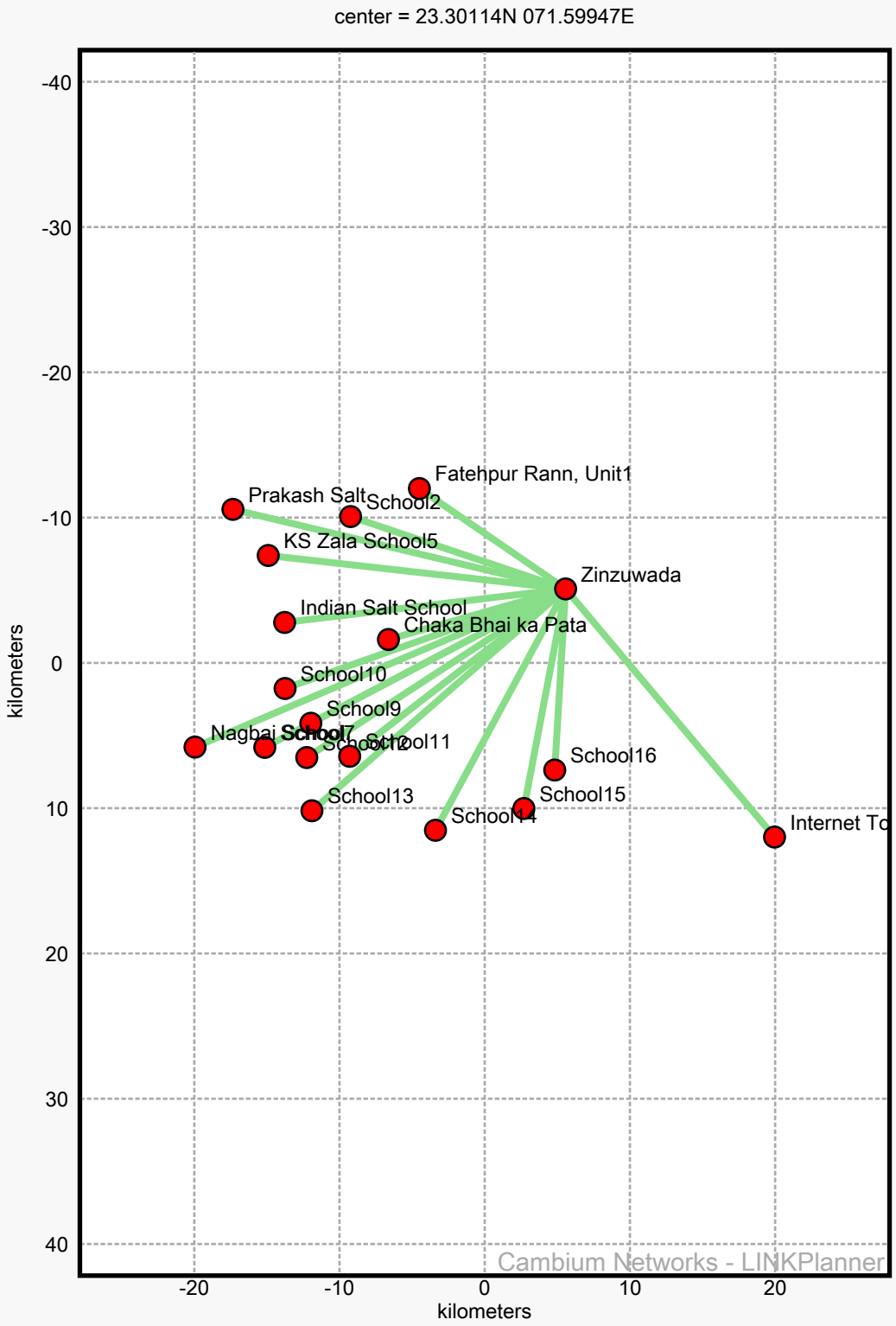
1. Project Summary

Project: Patdi Final Including Zinzuwada

General Information
Customer Name
Company Name
Address
Phone
Cell Phone
Email

Network Map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-30
-20
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40
kilometers
-20
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10
20
kilometers
Fatehpur Rann, Unit1
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Indian Salt School
Chaka Bhai ka Pata
School10
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Internet To
Cambium Networks - LINKPlanner

Link name	Product	Local antenna	Remote antenna	Max aggregate IP throughput
Internet Tower to Zinzuwada	PTP650	Cambium Networks Integrated Dual Polar Antenna	Cambium Networks Integrated Dual Polar Antenna	312.83 Mbps
Zinzuwada to School16	PTP650	Cambium Networks Integrated Dual Polar Antenna	Cambium Networks Integrated Dual Polar Antenna	398.64 Mbps
Zinzuwada to School15	PTP650	Cambium Networks Integrated Dual Polar Antenna	Cambium Networks Integrated Dual Polar Antenna	372.04 Mbps
Zinzuwada to School14	PTP650	Cambium Networks Integrated Dual Polar Antenna	Cambium Networks Integrated Dual Polar Antenna	227.01 Mbps
Zinzuwada to School13	PTP650	Cambium Networks Integrated Dual Polar Antenna	Stella Doradus 45in Parabolic Antenna 56 PSD113	285.97 Mbps
Zinzuwada to School11	PTP650	Cambium Networks Integrated Dual Polar Antenna	Stella Doradus 45in Parabolic Antenna 56 PSD113	289.73 Mbps
Zinzuwada to School12	PTP650	Cambium Networks Integrated Dual Polar Antenna	Stella Doradus 45in Parabolic Antenna 56 PSD113	245.19 Mbps
Zinzuwada to School9	PTP650	Cambium Networks Integrated Dual Polar Antenna	Stella Doradus 45in Parabolic Antenna 56 PSD113	293.58 Mbps
Zinzuwada to School7	PTP650	Cambium Networks Integrated Dual Polar Antenna	Stella Doradus 45in Parabolic Antenna 56 PSD113	220.66 Mbps
Zinzuwada to School10	PTP650	Cambium Networks Integrated Dual Polar Antenna	Stella Doradus 45in Parabolic Antenna 56 PSD113	296.26 Mbps
Zinzuwada to School2	PTP650	Cambium Networks Integrated Dual Polar Antenna	Cambium Networks Integrated Dual Polar Antenna	370.26 Mbps
Zinzuwada to Fatehpur Rann, Unit1	PTP650	Cambium Networks Integrated Dual Polar Antenna	Cambium Networks Integrated Dual Polar Antenna	391.65 Mbps
Zinzuwada to Prakash Salt	PTP650	Cambium Networks Integrated Dual Polar Antenna	Stella Doradus 45in Parabolic Antenna 56 PSD113	286.97 Mbps
Zinzuwada to KS Zala School5	PTP650	Cambium Networks Integrated Dual Polar Antenna	Stella Doradus 45in Parabolic Antenna 56 PSD113	334.46 Mbps
Zinzuwada to Indian Salt School	PTP650	Cambium Networks Integrated Dual Polar Antenna	Stella Doradus 45in Parabolic Antenna 56 PSD113	174.16 Mbps
Zinzuwada to Chaka Bhai ka Pata	PTP650	Cambium Networks Integrated Dual Polar Antenna	Cambium Networks Integrated Dual Polar Antenna	257.20 Mbps

(continued)

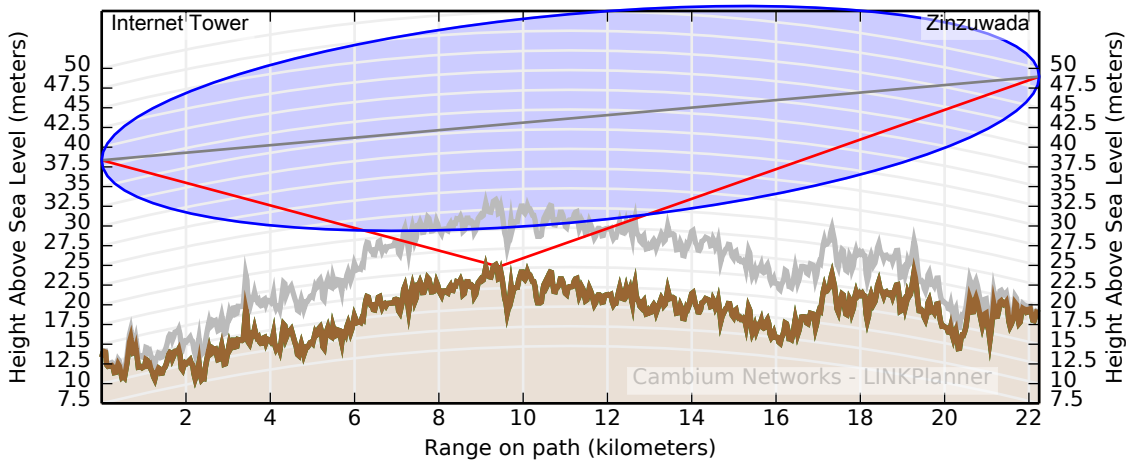
Link name	Product	Local antenna	Remote antenna	Max aggregate IP throughput
Zinzuwada to Nagbai School	PTP650	Cambium Networks Integrated Dual Polar Antenna	Stella Doradus 45in Parabolic Antenna 56 PSD113	315.86 Mbps

Bill of Materials : PTP Network		
Part Number	Qty	Description
(no part number)	20	Stella Doradus 45in Parabolic Antenna 56 PSD113
01010419001	126	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	34	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	34	LPU and Grounding Kit (1 kit per END)
C050065H012	1	PTP 650 Connectorized END with AC+DC Enhanced Supply (RoW - EU Line Cord). Kit includes ODU, power supply, mounting bracket and EU line cord
C050065H014	1	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - EU Line Cord). Kit includes ODU, power supply, mounting bracket and EU line cord
C050065H031	9	PTP 650 Connectorized END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
C050065H033	23	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	12	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

2. Internet Tower to Zinzuwada

Summary	
Link Name	Internet Tower to Zinzuwada
Profile Type	Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	22.244 kilometers
Free Space Path Loss	134.64 dB
Excess Path Loss	0.00 dB
User IP Throughput Expectation Aggregate	Aggregate 312.83 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Internet Tower

Link Configuration (continued)	
Slave	Zinzuwada

Bill of Materials		
Part Number	Qty	Description
01010419001	6	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H033	2	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Internet Tower	
Link Name	Internet Tower to Zinzuwada
Latitude	23.19320N
Longitude	071.79366E
Site Elevation	38 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	25.0 meters AGL
Antenna Tilt angle	-0.0° (downtilt)
Bearing to Zinzuwada	319.97° from True North 319.48° from Magnetic North
Magnetic Declination	0.49° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for Zinzuwada	
Link Name	Internet Tower to Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.1° (downtilt)
Bearing to Internet Tower	139.91° from True North 139.39° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Radio Commissioning Notes for Internet Tower	
Link Name	Internet Tower to Zinzuwada
Site Name	Internet Tower
Latitude	23.19320N
Longitude	071.79366E
Altitude	38 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-62 dBm ± 5 dB
Predicted Link Loss	134.87 dB ± 5.00 dB

Radio Commissioning Notes for Zinzuwada	
Link Name	Internet Tower to Zinzuwada
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-62 dBm ± 5 dB
Predicted Link Loss	134.87 dB ± 5.00 dB

Regulatory Conditions	
Country	Argentina (Private)

Regulatory Conditions (continued)	
Band	5.8 GHz
Region Code	44
Max EIRP	50.00 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (134.87 dB ± 5.00 dB). Also check that the received power is not greater than -35dBm.

Internet Tower Performance *	
Mean IP Throughput Predicted	156.42 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9946% (unavailable for 28.3 mins/year)

Zinzuwada Performance *	
Mean IP Throughput Predicted	156.42 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9946% (unavailable for 28.3 mins/year)

* Multipath availability calculated using ITU-R

Mode	Max Aggregate User IP Throughput (Mbps)	Internet Tower				Zinzuwada			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	440.62	220.31	-5.60	0.1665	0.1665	220.31	-5.60	0.1665	0.1665
64QAM 0.92 Dual	371.23	185.62	-0.87	19.0345	18.8681	185.62	-0.87	19.0345	18.8681
64QAM 0.75 Dual	303.37	151.68	3.26	95.5409	76.5064	151.68	3.26	95.5409	76.5064

(continued)

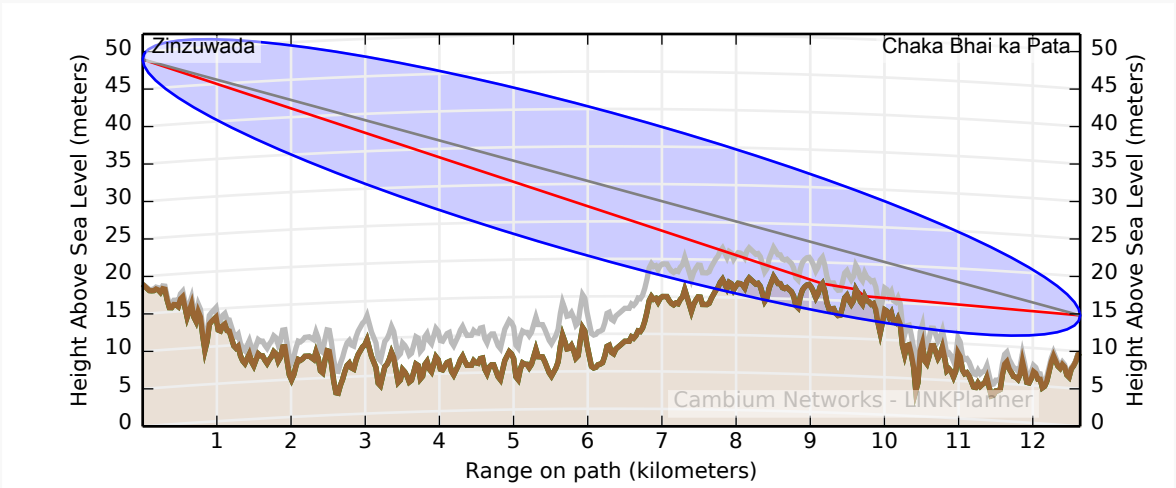
Mode	Max Aggregate User IP Throughput (Mbps)	Internet Tower				Zinzuwada			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
16QAM 0.87 Dual	236.01	118.00	7.38	99.4236	3.8827	118.00	7.38	99.4236	3.8827
16QAM 0.63 Dual	169.66	84.83	11.01	99.8178	0.3942	84.83	11.01	99.8178	0.3942
256QAM 0.81 Sngl	220.30	110.15	-1.94	0.0000	0.0000	110.15	-1.94	0.0000	0.0000
64QAM 0.92 Sngl	185.61	92.81	2.43	0.0004	0.0004	92.81	2.43	0.0004	0.0004
64QAM 0.75 Sngl	151.68	75.84	6.38	0.0005	0.0000	75.84	6.38	0.0005	0.0000
16QAM 0.87 Sngl	118.00	59.00	10.45	0.0005	0.0000	59.00	10.45	0.0005	0.0000
16QAM 0.63 Sngl	84.83	42.41	14.96	99.9333	0.1150	42.41	14.96	99.9333	0.1150
QPSK 0.87 Sngl	59.00	29.50	18.28	99.9688	0.0355	29.50	18.28	99.9688	0.0355
QPSK 0.63 Sngl	42.41	21.20	22.30	99.9870	0.0182	21.20	22.30	99.9870	0.0182
BPSK 0.63 Sngl	21.20	10.60	26.41	99.9946	0.0076	10.60	26.41	99.9946	0.0076

* Multipath availability calculated using ITU-R

3. Zinzuwada to Chaka Bhai ka Pata

Summary	
Link Name	Zinzuwada to Chaka Bhai ka Pata
Profile Type	Near Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	12.639 kilometers
Free Space Path Loss	129.73 dB
Excess Path Loss	8.83 dB
User IP Throughput Expectation Aggregate	Aggregate 257.20 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	Chaka Bhai ka Pata

Bill of Materials		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H033	2	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to Chaka Bhai ka Pata
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to Chaka Bhai ka Pata	254.10° from True North 253.58° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for Chaka Bhai ka Pata	
Link Name	Zinzuwada to Chaka Bhai ka Pata
Latitude	23.31561N
Longitude	071.53490E
Site Elevation	15 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	5.0 meters AGL
Antenna Tilt angle	0.1° (uptilt)
Bearing to Zinzuwada	74.05° from True North 73.53° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to Chaka Bhai ka Pata
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-66 dBm ± 8 dB
Predicted Link Loss	138.69 dB ± 7.65 dB

Radio Commissioning Notes for Chaka Bhai ka Pata	
Link Name	Zinzuwada to Chaka Bhai ka Pata
Site Name	Chaka Bhai ka Pata
Latitude	23.31561N
Longitude	071.53490E
Altitude	15 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-66 dBm ± 8 dB
Predicted Link Loss	138.69 dB ± 7.65 dB

Regulatory Conditions	
Country	Argentina (Private)

Regulatory Conditions (continued)	
Band	5.8 GHz
Region Code	44
Max EIRP	50.00 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (138.69 dB ± 7.65 dB). Also check that the received power is not greater than -38dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	128.60 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9993% (unavailable for 3.7 mins/year)

Chaka Bhai ka Pata Performance *	
Mean IP Throughput Predicted	128.60 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9993% (unavailable for 3.7 mins/year)

* Multipath availability calculated using ITU-R

Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				Chaka Bhai ka Pata			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	446.06	223.03	-9.42	0.0028	0.0028	223.03	-9.42	0.0028	0.0028
64QAM 0.92 Dual	375.82	187.91	-4.69	0.0842	0.0814	187.91	-4.69	0.0842	0.0814
64QAM 0.75 Dual	307.12	153.56	-0.56	33.3137	33.2295	153.56	-0.56	33.3137	33.2295

(continued)

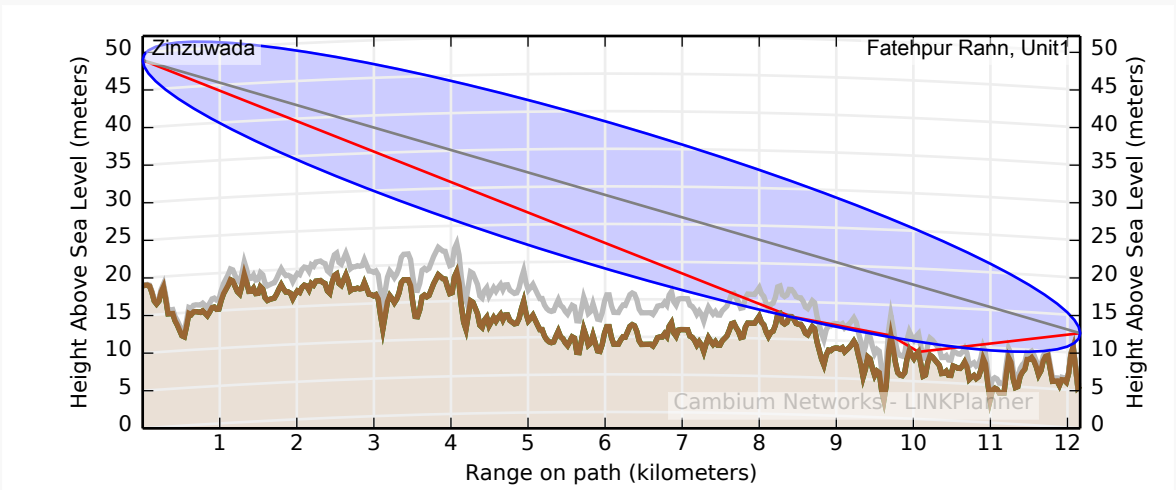
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				Chaka Bhai ka Pata			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
16QAM 0.87 Dual	238.92	119.46	3.56	93.7863	60.4726	119.46	3.56	93.7863	60.4726
16QAM 0.63 Dual	171.76	85.88	7.19	99.3513	5.5650	85.88	7.19	99.3513	5.5650
256QAM 0.81 Sngl	223.03	111.51	-5.77	0.0001	0.0001	111.51	-5.77	0.0001	0.0001
64QAM 0.92 Sngl	187.91	93.95	-1.39	0.0282	0.0281	93.95	-1.39	0.0282	0.0281
64QAM 0.75 Sngl	153.55	76.78	2.56	0.3308	0.3026	76.78	2.56	0.3308	0.3026
16QAM 0.87 Sngl	119.46	59.73	6.63	0.3416	0.0109	59.73	6.63	0.3416	0.0109
16QAM 0.63 Sngl	85.87	42.94	11.13	99.9819	0.2890	42.94	11.13	99.9819	0.2890
QPSK 0.87 Sngl	59.73	29.86	14.46	99.9941	0.0122	29.86	14.46	99.9941	0.0122
QPSK 0.63 Sngl	42.93	21.47	18.48	99.9981	0.0040	21.47	18.48	99.9981	0.0040
BPSK 0.63 Sngl	21.46	10.73	22.59	99.9993	0.0012	10.73	22.59	99.9993	0.0012

* Multipath availability calculated using ITU-R

4. Zinzuwada to Fatehpur Rann, Unit1

Summary	
Link Name	Zinzuwada to Fatehpur Rann, Unit1
Profile Type	Near Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	12.165 kilometers
Free Space Path Loss	129.40 dB
Excess Path Loss	0.51 dB
User IP Throughput Expectation Aggregate	Aggregate 391.65 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	Fatehpur Rann, Unit1

Bill of Materials		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H033	2	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to Fatehpur Rann, Unit1
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to Fatehpur Rann, Unit1	304.48° from True North 303.96° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for Fatehpur Rann, Unit1	
Link Name	Zinzuwada to Fatehpur Rann, Unit1
Latitude	23.40907N
Longitude	071.55563E
Site Elevation	13 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	7.0 meters AGL
Antenna Tilt angle	0.1° (uptilt)
Bearing to Zinzuwada	124.44° from True North 123.91° from Magnetic North
Magnetic Declination	0.53° E ±0.28° changing by 0.06° E per year

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to Fatehpur Rann, Unit1
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-57 dBm ± 5 dB
Predicted Link Loss	130.03 dB ± 5.15 dB

Radio Commissioning Notes for Fatehpur Rann, Unit1	
Link Name	Zinzuwada to Fatehpur Rann, Unit1
Site Name	Fatehpur Rann, Unit1
Latitude	23.40907N
Longitude	071.55563E
Altitude	13 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-57 dBm ± 5 dB
Predicted Link Loss	130.03 dB ± 5.15 dB

Regulatory Conditions	
Country	Argentina (Private)

Regulatory Conditions (continued)	
Band	5.8 GHz
Region Code	44
Max EIRP	50.00 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (130.03 dB ± 5.15 dB). Also check that the received power is not greater than -35dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	195.82 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9999% (unavailable for 25 secs/year)

Fatehpur Rann, Unit1 Performance *	
Mean IP Throughput Predicted	195.82 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9999% (unavailable for 25 secs/year)

* Multipath availability calculated using ITU-R

Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				Fatehpur Rann, Unit1			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	446.56	223.28	-0.77	22.7895	22.7895	223.28	-0.77	22.7895	22.7895
64QAM 0.92 Dual	376.24	188.12	3.97	99.1697	76.3802	188.12	3.97	99.1697	76.3802
64QAM 0.75 Dual	307.46	153.73	8.09	99.9417	0.7720	153.73	8.09	99.9417	0.7720

(continued)

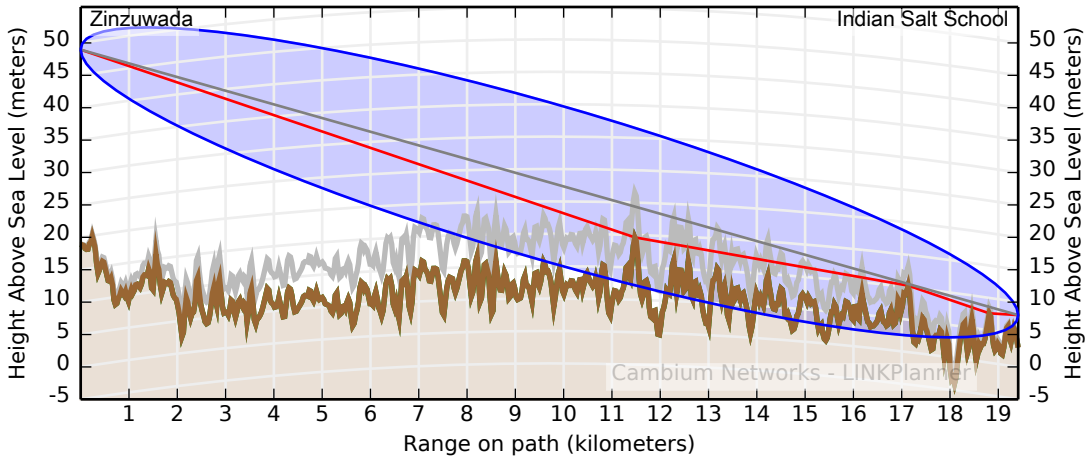
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				Fatehpur Rann, Unit1			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
16QAM 0.87 Dual	239.19	119.60	12.22	99.9889	0.0471	119.60	12.22	99.9889	0.0471
16QAM 0.63 Dual	171.95	85.97	15.84	99.9959	0.0070	85.97	15.84	99.9959	0.0070
256QAM 0.81 Sngl	223.28	111.64	2.89	0.0009	0.0009	111.64	2.89	0.0009	0.0009
64QAM 0.92 Sngl	188.12	94.06	7.26	0.0009	0.0000	94.06	7.26	0.0009	0.0000
64QAM 0.75 Sngl	153.73	76.86	11.22	0.0009	0.0000	76.86	11.22	0.0009	0.0000
16QAM 0.87 Sngl	119.59	59.80	15.28	0.0009	0.0000	59.80	15.28	0.0009	0.0000
16QAM 0.63 Sngl	85.97	42.99	19.79	99.9989	0.0021	42.99	19.79	99.9989	0.0021
QPSK 0.87 Sngl	59.79	29.90	23.12	99.9995	0.0006	29.90	23.12	99.9995	0.0006
QPSK 0.63 Sngl	42.98	21.49	27.14	99.9998	0.0003	21.49	27.14	99.9998	0.0003
BPSK 0.63 Sngl	21.49	10.74	31.25	99.9999	0.0001	10.74	31.25	99.9999	0.0001

* Multipath availability calculated using ITU-R

5. Zinzuwada to Indian Salt School

Summary	
Link Name	Zinzuwada to Indian Salt School
Profile Type	Non Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	19.411 kilometers
Free Space Path Loss	133.48 dB
Excess Path Loss	17.28 dB
User IP Throughput Expectation Aggregate	Aggregate 174.16 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5875 MHz)
RF Channel Bandwidth	40 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	40 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Symmetric
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	Indian Salt School

Bill of Materials		
Part Number	Qty	Description
(no part number)	2	Stella Doradus 45in Parabolic Antenna 56 PSD113
01010419001	9	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H012	1	PTP 650 Connectorized END with AC+DC Enhanced Supply (RoW - EU Line Cord). Kit includes ODU, power supply, mounting bracket and EU line cord
C050065H014	1	PTP 650 Integrated 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)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to Indian Salt School
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to Indian Salt School	263.22° from True North 262.70° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for Indian Salt School	
Link Name	Zinzuwada to Indian Salt School
Latitude	23.32612N
Longitude	071.46527E
Site Elevation	8 meters AMSL
Platform Variant	Connectorized
Antenna Type	Stella Doradus 45in Parabolic Antenna 56 PSD113
Antenna Gain	32.4 dBi
Antenna Height	5.0 meters AGL
Antenna Tilt angle	0.1° (uptilt)
Diversity Spacing	5.0 meters

Physical Installation Notes for Indian Salt School (continued)	
Bearing to Zinzuwada	83.15° from True North 82.62° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.06° E per year
Cable Loss	1.0 dB

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to Indian Salt School
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	35 - 5.8 GHz
Channel Bandwidth	40 MHz
Link Symmetry	Symmetric
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-70 dBm ± 10 dB
Predicted Link Loss	150.95 dB ± 10.18 dB

Radio Commissioning Notes for Indian Salt School	
Link Name	Zinzuwada to Indian Salt School
Site Name	Indian Salt School
Latitude	23.32612N
Longitude	071.46527E
Altitude	8 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	35 - 5.8 GHz
Channel Bandwidth	40 MHz
Link Symmetry	Symmetric
Antenna Gain	32.4 dBi

Radio Commissioning Notes for Indian Salt School (continued)	
Cable Loss	1.0 dB
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-70 dBm ± 10 dB
Predicted Link Loss	150.95 dB ± 10.18 dB

Regulatory Conditions	
Country	Other
Band	5.8 GHz
Region Code	35
Max EIRP	58.40 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (150.95 dB ± 10.18 dB). Also check that the received power is not greater than -40dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	87.08 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9994% (unavailable for 3.1 mins/year)

Indian Salt School Performance *	
Mean IP Throughput Predicted	87.08 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9994% (unavailable for 3.1 mins/year)

* Multipath availability calculated using ITU-R

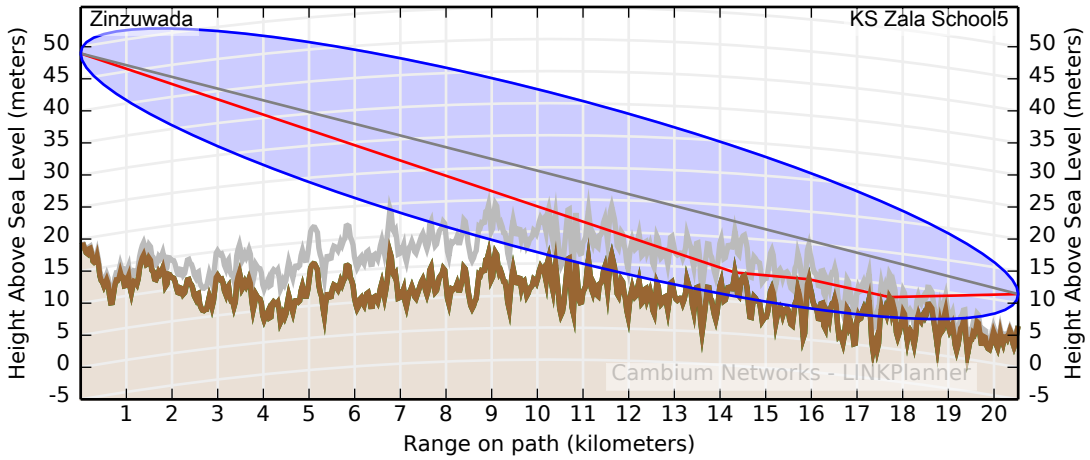
Mode	Max Aggregate User IP Throughput (Mbps)	Max User IP Throughput in Either Direction (Mbps)	Zinzuwada			Indian Salt School		
			Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	400.64	200.32	-12.78	0.7694	0.7694	-12.78	0.7694	0.7694
64QAM 0.92 Dual	337.55	168.77	-8.04	2.2683	1.4989	-8.04	2.2683	1.4989
64QAM 0.75 Dual	275.84	137.92	-3.92	5.9097	3.6414	-3.92	5.9097	3.6414
16QAM 0.87 Dual	214.59	107.30	0.21	44.7769	38.8671	0.21	44.7769	38.8671
16QAM 0.63 Dual	154.26	77.13	3.83	81.5676	36.7908	3.83	81.5676	36.7908
256QAM 0.81 Sngl	200.31	100.16	-9.12	0.0772	0.0772	-9.12	0.0772	0.0772
64QAM 0.92 Sngl	168.77	84.39	-4.75	0.2107	0.1335	-4.75	0.2107	0.1335
64QAM 0.75 Sngl	137.92	68.96	-0.79	1.0947	0.8839	-0.79	1.0947	0.8839
16QAM 0.87 Sngl	107.29	53.65	3.27	4.0030	2.9083	3.27	4.0030	2.9083
16QAM 0.63 Sngl	77.13	38.56	7.78	99.8775	14.3069	7.78	99.8775	14.3069
QPSK 0.87 Sngl	53.64	26.82	11.11	99.9762	0.0987	11.11	99.9762	0.0987
QPSK 0.63 Sngl	38.56	19.28	15.13	99.9962	0.0200	15.13	99.9962	0.0200
BPSK 0.63 Sngl	19.28	9.64	19.23	99.9994	0.0032	19.23	99.9994	0.0032

* Multipath availability calculated using ITU-R

6. Zinzuwada to KS Zala School5

Summary	
Link Name	Zinzuwada to KS Zala School5
Profile Type	Near Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	20.529 kilometers
Free Space Path Loss	133.94 dB
Excess Path Loss	8.31 dB
User IP Throughput Expectation Aggregate	Aggregate 334.46 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	KS Zala School5

Bill of Materials		
Part Number	Qty	Description
(no part number)	2	Stella Doradus 45in Parabolic Antenna 56 PSD113
01010419001	9	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H031	1	PTP 650 Connectorized END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
C050065H033	1	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to KS Zala School5
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to KS Zala School5	276.43° from True North 275.91° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for KS Zala School5	
Link Name	Zinzuwada to KS Zala School5
Latitude	23.36756N
Longitude	071.45422E
Site Elevation	11 meters AMSL
Platform Variant	Connectorized
Antenna Type	Stella Doradus 45in Parabolic Antenna 56 PSD113
Antenna Gain	32.4 dBi
Antenna Height	5.0 meters AGL
Antenna Tilt angle	0.0° (uptilt)
Diversity Spacing	5.0 meters

Physical Installation Notes for KS Zala School5 (continued)	
Bearing to Zinzuwada	96.35° from True North 95.82° from Magnetic North
Magnetic Declination	0.53° E ±0.28° changing by 0.06° E per year
Cable Loss	1.0 dB

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to KS Zala School5
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-61 dBm ± 7 dB
Predicted Link Loss	142.46 dB ± 7.49 dB

Radio Commissioning Notes for KS Zala School5	
Link Name	Zinzuwada to KS Zala School5
Site Name	KS Zala School5
Latitude	23.36756N
Longitude	071.45422E
Altitude	11 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Antenna Gain	32.4 dBi

Radio Commissioning Notes for KS Zala School5 (continued)	
Cable Loss	1.0 dB
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-61 dBm ± 7 dB
Predicted Link Loss	142.46 dB ± 7.49 dB

Regulatory Conditions	
Country	Argentina (Private)
Band	5.8 GHz
Region Code	44
Max EIRP	58.40 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (142.46 dB ± 7.49 dB). Also check that the received power is not greater than -37dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	167.23 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	100.0000% (unavailable for 9 secs/year)

KS Zala School5 Performance *	
Mean IP Throughput Predicted	167.23 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	100.0000% (unavailable for 9 secs/year)

* Multipath availability calculated using ITU-R

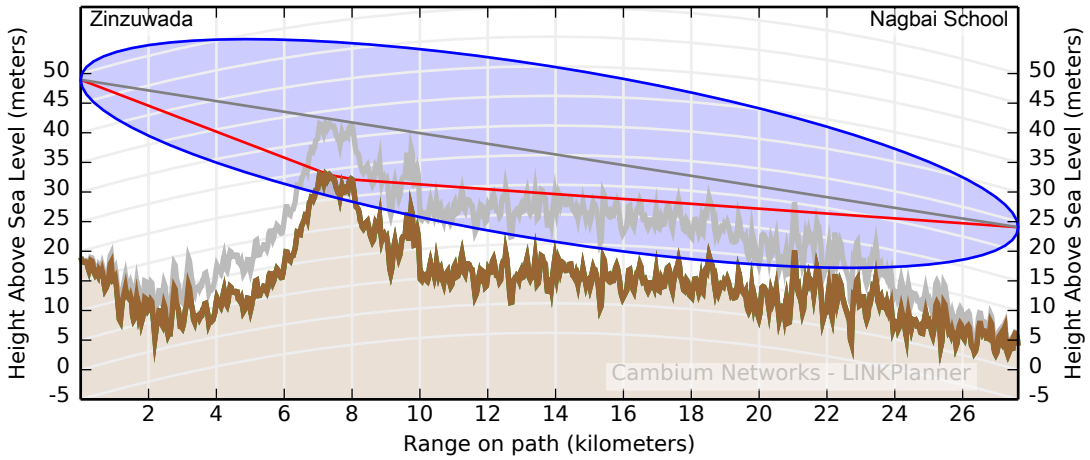
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				KS Zala School5			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	441.60	220.80	-4.80	4.0377	4.0377	220.80	-4.80	4.0377	4.0377
64QAM 0.92 Dual	372.06	186.03	-0.06	44.5118	40.4742	186.03	-0.06	44.5118	40.4742
64QAM 0.75 Dual	304.04	152.02	4.06	96.4084	51.8966	152.02	4.06	96.4084	51.8966
16QAM 0.87 Dual	236.53	118.27	8.19	99.5939	3.1855	118.27	8.19	99.5939	3.1855
16QAM 0.63 Dual	170.04	85.02	11.81	99.7029	0.1090	85.02	11.81	99.7029	0.1090
256QAM 0.81 Sngl	220.79	110.40	-1.14	0.0409	0.0409	110.40	-1.14	0.0409	0.0409
64QAM 0.92 Sngl	186.03	93.01	3.23	0.2644	0.2235	93.01	3.23	0.2644	0.2235
64QAM 0.75 Sngl	152.02	76.01	7.19	0.2711	0.0067	76.01	7.19	0.2711	0.0067
16QAM 0.87 Sngl	118.26	59.13	11.25	0.2716	0.0005	59.13	11.25	0.2716	0.0005
16QAM 0.63 Sngl	85.01	42.51	15.76	99.9955	0.0210	42.51	15.76	99.9955	0.0210
QPSK 0.87 Sngl	59.13	29.56	19.09	99.9990	0.0035	29.56	19.09	99.9990	0.0035
QPSK 0.63 Sngl	42.50	21.25	23.11	99.9998	0.0009	21.25	23.11	99.9998	0.0009
BPSK 0.63 Sngl	21.25	10.62	27.21	100.0000	0.0002	10.62	27.21	100.0000	0.0002

* Multipath availability calculated using ITU-R

7. Zinzuwada to Nagbai School

Summary	
Link Name	Zinzuwada to Nagbai School
Profile Type	Near Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	27.637 kilometers
Free Space Path Loss	136.53 dB
Excess Path Loss	6.39 dB
User IP Throughput Expectation Aggregate	Aggregate 315.86 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	Nagbai School

Bill of Materials		
Part Number	Qty	Description
(no part number)	2	Stella Doradus 45in Parabolic Antenna 56 PSD113
01010419001	9	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H031	1	PTP 650 Connectorized END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
C050065H033	1	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to Nagbai School
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.1° (downtilt)
Bearing to Nagbai School	246.92° from True North 246.40° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for Nagbai School	
Link Name	Zinzuwada to Nagbai School
Latitude	23.24889N
Longitude	071.40529E
Site Elevation	24 meters AMSL
Platform Variant	Connectorized
Antenna Type	Stella Doradus 45in Parabolic Antenna 56 PSD113
Antenna Gain	32.4 dBi
Antenna Height	20.0 meters AGL
Antenna Tilt angle	-0.0° (downtilt)
Diversity Spacing	5.0 meters

Physical Installation Notes for Nagbai School (continued)	
Bearing to Zinzuwada	66.82° from True North 66.31° from Magnetic North
Magnetic Declination	0.51° E ±0.28° changing by 0.07° E per year
Cable Loss	1.0 dB

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to Nagbai School
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-62 dBm ± 7 dB
Predicted Link Loss	143.19 dB ± 6.92 dB

Radio Commissioning Notes for Nagbai School	
Link Name	Zinzuwada to Nagbai School
Site Name	Nagbai School
Latitude	23.24889N
Longitude	071.40529E
Altitude	24 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Antenna Gain	32.4 dBi

Radio Commissioning Notes for Nagbai School (continued)	
Cable Loss	1.0 dB
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-62 dBm ± 7 dB
Predicted Link Loss	143.19 dB ± 6.92 dB

Regulatory Conditions	
Country	Argentina (Private)
Band	5.8 GHz
Region Code	44
Max EIRP	58.40 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (143.19 dB ± 6.92 dB). Also check that the received power is not greater than -37dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	157.93 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9994% (unavailable for 2.9 mins/year)

Nagbai School Performance *	
Mean IP Throughput Predicted	157.93 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9994% (unavailable for 2.9 mins/year)

* Multipath availability calculated using ITU-R

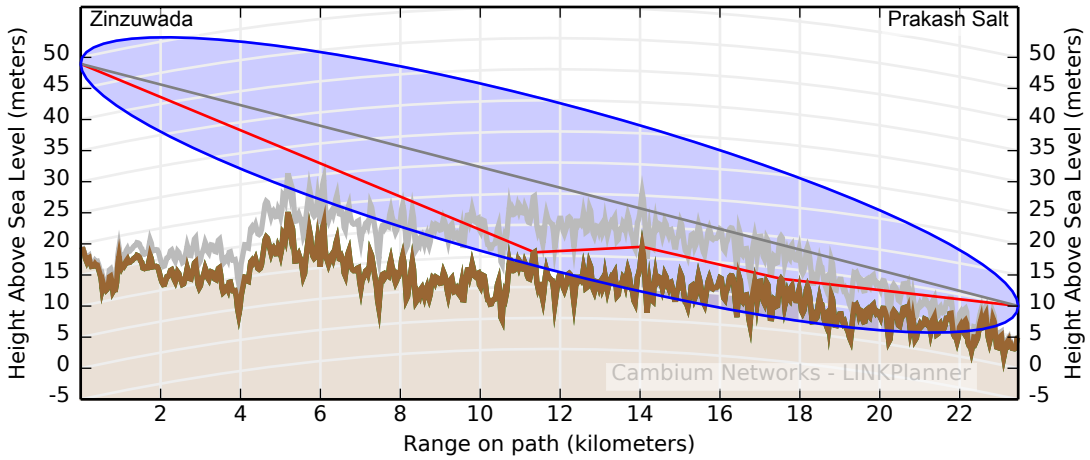
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				Nagbai School			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	437.22	218.61	-5.53	1.2517	1.2517	218.61	-5.53	1.2517	1.2517
64QAM 0.92 Dual	368.37	184.19	-0.79	26.6209	25.3692	184.19	-0.79	26.6209	25.3692
64QAM 0.75 Dual	301.03	150.51	3.33	95.0823	68.4614	150.51	3.33	95.0823	68.4614
16QAM 0.87 Dual	234.19	117.09	7.45	99.2257	4.1434	117.09	7.45	99.2257	4.1434
16QAM 0.63 Dual	168.35	84.18	11.08	99.7071	0.4814	84.18	11.08	99.7071	0.4814
256QAM 0.81 Sngl	218.61	109.30	-1.87	0.0061	0.0061	109.30	-1.87	0.0061	0.0061
64QAM 0.92 Sngl	184.18	92.09	2.50	0.0920	0.0859	92.09	2.50	0.0920	0.0859
64QAM 0.75 Sngl	150.51	75.26	6.45	0.0994	0.0074	75.26	6.45	0.0994	0.0074
16QAM 0.87 Sngl	117.09	58.54	10.52	0.1002	0.0008	58.54	10.52	0.1002	0.0008
16QAM 0.63 Sngl	84.17	42.09	15.03	99.9487	0.1414	42.09	15.03	99.9487	0.1414
QPSK 0.87 Sngl	58.54	29.27	18.35	99.9847	0.0360	29.27	18.35	99.9847	0.0360
QPSK 0.63 Sngl	42.08	21.04	22.37	99.9969	0.0122	21.04	22.37	99.9969	0.0122
BPSK 0.63 Sngl	21.04	10.52	26.48	99.9994	0.0026	10.52	26.48	99.9994	0.0026

* Multipath availability calculated using ITU-R

8. Zinzuwada to Prakash Salt

Summary	
Link Name	Zinzuwada to Prakash Salt
Profile Type	Near Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	23.464 kilometers
Free Space Path Loss	135.11 dB
Excess Path Loss	9.76 dB
User IP Throughput Expectation Aggregate	Aggregate 286.97 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	Prakash Salt

Bill of Materials		
Part Number	Qty	Description
(no part number)	2	Stella Doradus 45in Parabolic Antenna 56 PSD113
01010419001	9	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H031	1	PTP 650 Connectorized END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
C050065H033	1	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to Prakash Salt
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to Prakash Salt	283.46° from True North 282.95° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for Prakash Salt	
Link Name	Zinzuwada to Prakash Salt
Latitude	23.39609N
Longitude	071.43051E
Site Elevation	10 meters AMSL
Platform Variant	Connectorized
Antenna Type	Stella Doradus 45in Parabolic Antenna 56 PSD113
Antenna Gain	32.4 dBi
Antenna Height	5.0 meters AGL
Antenna Tilt angle	0.0° (uptilt)
Diversity Spacing	5.0 meters

Physical Installation Notes for Prakash Salt (continued)	
Bearing to Zinzuwada	103.38° from True North 102.84° from Magnetic North
Magnetic Declination	0.54° E ±0.28° changing by 0.06° E per year
Cable Loss	1.0 dB

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to Prakash Salt
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-64 dBm ± 8 dB
Predicted Link Loss	145.11 dB ± 7.93 dB

Radio Commissioning Notes for Prakash Salt	
Link Name	Zinzuwada to Prakash Salt
Site Name	Prakash Salt
Latitude	23.39609N
Longitude	071.43051E
Altitude	10 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Antenna Gain	32.4 dBi

Radio Commissioning Notes for Prakash Salt (continued)	
Cable Loss	1.0 dB
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-64 dBm ± 8 dB
Predicted Link Loss	145.11 dB ± 7.93 dB

Regulatory Conditions	
Country	Argentina (Private)
Band	5.8 GHz
Region Code	44
Max EIRP	58.40 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (145.11 dB ± 7.93 dB). Also check that the received power is not greater than -38dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	143.48 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9998% (unavailable for 1.3 mins/year)

Prakash Salt Performance *	
Mean IP Throughput Predicted	143.48 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9998% (unavailable for 1.3 mins/year)

* Multipath availability calculated using ITU-R

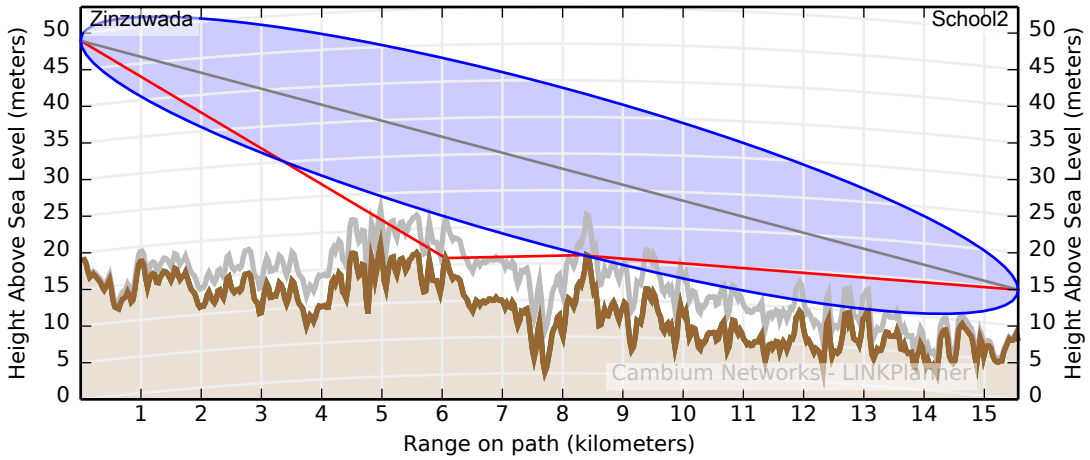
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				Prakash Salt			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	439.64	219.82	-7.44	1.4361	1.4361	219.82	-7.44	1.4361	1.4361
64QAM 0.92 Dual	370.41	185.20	-2.71	5.2707	3.8346	185.20	-2.71	5.2707	3.8346
64QAM 0.75 Dual	302.70	151.35	1.42	72.0516	66.7809	151.35	1.42	72.0516	66.7809
16QAM 0.87 Dual	235.48	117.74	5.54	97.8930	25.8414	117.74	5.54	97.8930	25.8414
16QAM 0.63 Dual	169.28	84.64	9.17	99.3405	1.4475	84.64	9.17	99.3405	1.4475
256QAM 0.81 Sngl	219.82	109.91	-3.79	0.0188	0.0188	109.91	-3.79	0.0188	0.0188
64QAM 0.92 Sngl	185.20	92.60	0.59	0.3327	0.3139	92.60	0.59	0.3327	0.3139
64QAM 0.75 Sngl	151.34	75.67	4.54	0.5025	0.1698	75.67	4.54	0.5025	0.1698
16QAM 0.87 Sngl	117.74	58.87	8.61	0.5090	0.0065	58.87	8.61	0.5090	0.0065
16QAM 0.63 Sngl	84.64	42.32	13.12	99.9697	0.1202	42.32	13.12	99.9697	0.1202
QPSK 0.87 Sngl	58.87	29.43	16.44	99.9922	0.0225	29.43	16.44	99.9922	0.0225
QPSK 0.63 Sngl	42.31	21.16	20.46	99.9986	0.0064	21.16	20.46	99.9986	0.0064
BPSK 0.63 Sngl	21.15	10.58	24.57	99.9998	0.0012	10.58	24.57	99.9998	0.0012

* Multipath availability calculated using ITU-R

9. Zinzuwada to School2

Summary	
Link Name	Zinzuwada to School2
Profile Type	Near Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	15.562 kilometers
Free Space Path Loss	131.54 dB
Excess Path Loss	0.22 dB
User IP Throughput Expectation Aggregate	Aggregate 370.26 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	School2

Bill of Materials		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H033	2	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to School2
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to School2	288.61° from True North 288.09° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for School2	
Link Name	Zinzuwada to School2
Latitude	23.39170N
Longitude	071.50947E
Site Elevation	15 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	7.0 meters AGL
Antenna Tilt angle	0.1° (uptilt)
Bearing to Zinzuwada	108.55° from True North 108.02° from Magnetic North
Magnetic Declination	0.53° E ±0.28° changing by 0.06° E per year

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to School2
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-59 dBm ± 5 dB
Predicted Link Loss	131.91 dB ± 5.07 dB

Radio Commissioning Notes for School2	
Link Name	Zinzuwada to School2
Site Name	School2
Latitude	23.39170N
Longitude	071.50947E
Altitude	15 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-59 dBm ± 5 dB
Predicted Link Loss	131.91 dB ± 5.07 dB

Regulatory Conditions	
Country	Argentina (Private)

Regulatory Conditions (continued)	
Band	5.8 GHz
Region Code	44
Max EIRP	50.00 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (131.91 dB ± 5.07 dB). Also check that the received power is not greater than -35dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	185.13 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9996% (unavailable for 1.9 mins/year)

School2 Performance *	
Mean IP Throughput Predicted	185.13 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9996% (unavailable for 1.9 mins/year)

* Multipath availability calculated using ITU-R

Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School2			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	444.56	222.28	-2.65	0.8285	0.8285	222.28	-2.65	0.8285	0.8285
64QAM 0.92 Dual	374.56	187.28	2.09	93.2577	92.4292	187.28	2.09	93.2577	92.4292
64QAM 0.75 Dual	306.08	153.04	6.21	99.6940	6.4362	153.04	6.21	99.6940	6.4362

(continued)

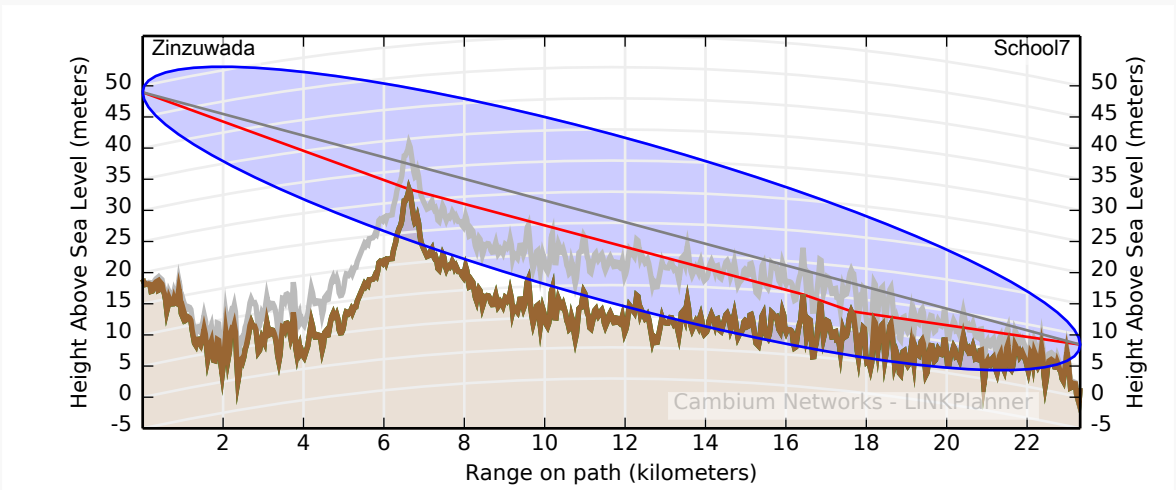
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School2			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
16QAM 0.87 Dual	238.12	119.06	10.34	99.9505	0.2565	119.06	10.34	99.9505	0.2565
16QAM 0.63 Dual	171.18	85.59	13.96	99.9843	0.0338	85.59	13.96	99.9843	0.0338
256QAM 0.81 Sngl	222.28	111.14	1.01	0.0005	0.0005	111.14	1.01	0.0005	0.0005
64QAM 0.92 Sngl	187.28	93.64	5.38	0.0007	0.0001	93.64	5.38	0.0007	0.0001
64QAM 0.75 Sngl	153.04	76.52	9.33	0.0007	0.0000	76.52	9.33	0.0007	0.0000
16QAM 0.87 Sngl	119.06	59.53	13.40	0.0007	0.0000	59.53	13.40	0.0007	0.0000
16QAM 0.63 Sngl	85.59	42.79	17.91	99.9948	0.0099	42.79	17.91	99.9948	0.0099
QPSK 0.87 Sngl	59.53	29.76	21.23	99.9977	0.0029	29.76	21.23	99.9977	0.0029
QPSK 0.63 Sngl	42.79	21.39	25.26	99.9990	0.0014	21.39	25.26	99.9990	0.0014
BPSK 0.63 Sngl	21.39	10.70	29.36	99.9996	0.0006	10.70	29.36	99.9996	0.0006

* Multipath availability calculated using ITU-R

10. Zinzuwada to School7

Summary	
Link Name	Zinzuwada to School7
Profile Type	Non Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	23.320 kilometers
Free Space Path Loss	135.05 dB
Excess Path Loss	13.57 dB
User IP Throughput Expectation Aggregate	Aggregate 220.66 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	School7

Bill of Materials		
Part Number	Qty	Description
(no part number)	2	Stella Doradus 45in Parabolic Antenna 56 PSD113
01010419001	9	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H031	1	PTP 650 Connectorized END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
C050065H033	1	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to School7
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to School7	242.26° from True North 241.74° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for School7	
Link Name	Zinzuwada to School7
Latitude	23.24877N
Longitude	071.45205E
Site Elevation	8 meters AMSL
Platform Variant	Connectorized
Antenna Type	Stella Doradus 45in Parabolic Antenna 56 PSD113
Antenna Gain	32.4 dBi
Antenna Height	7.0 meters AGL
Antenna Tilt angle	0.0° (uptilt)
Diversity Spacing	5.0 meters

Physical Installation Notes for School7 (continued)	
Bearing to Zinzuwada	62.18° from True North 61.67° from Magnetic North
Magnetic Declination	0.51° E ±0.28° changing by 0.07° E per year
Cable Loss	1.0 dB

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to School7
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-67 dBm ± 9 dB
Predicted Link Loss	148.86 dB ± 9.07 dB

Radio Commissioning Notes for School7	
Link Name	Zinzuwada to School7
Site Name	School7
Latitude	23.24877N
Longitude	071.45205E
Altitude	8 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Antenna Gain	32.4 dBi

Radio Commissioning Notes for School7 (continued)	
Cable Loss	1.0 dB
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-67 dBm ± 9 dB
Predicted Link Loss	148.86 dB ± 9.07 dB

Regulatory Conditions	
Country	Argentina (Private)
Band	5.8 GHz
Region Code	44
Max EIRP	58.40 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (148.86 dB ± 9.07 dB). Also check that the received power is not greater than -39dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	110.33 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9989% (unavailable for 5.9 mins/year)

School7 Performance *	
Mean IP Throughput Predicted	110.33 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9989% (unavailable for 5.9 mins/year)

* Multipath availability calculated using ITU-R

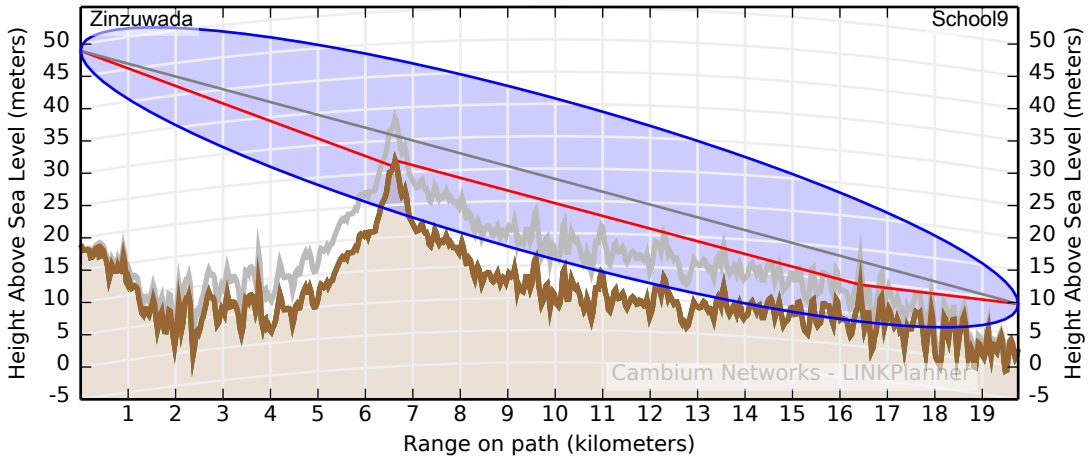
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School7			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	440.13	220.06	-11.19	0.6189	0.6189	220.06	-11.19	0.6189	0.6189
64QAM 0.92 Dual	370.82	185.41	-6.46	1.8844	1.2654	185.41	-6.46	1.8844	1.2654
64QAM 0.75 Dual	303.03	151.52	-2.33	9.3790	7.4947	151.52	-2.33	9.3790	7.4947
16QAM 0.87 Dual	235.74	117.87	1.79	71.3559	61.9768	117.87	1.79	71.3559	61.9768
16QAM 0.63 Dual	169.47	84.74	5.42	93.9451	22.5893	84.74	5.42	93.9451	22.5893
256QAM 0.81 Sngl	220.06	110.03	-7.53	0.0268	0.0268	110.03	-7.53	0.0268	0.0268
64QAM 0.92 Sngl	185.41	92.70	-3.16	0.0844	0.0576	92.70	-3.16	0.0844	0.0576
64QAM 0.75 Sngl	151.51	75.76	0.79	1.2576	1.1732	75.76	0.79	1.2576	1.1732
16QAM 0.87 Sngl	117.87	58.93	4.86	1.7899	0.5322	58.93	4.86	1.7899	0.5322
16QAM 0.63 Sngl	84.73	42.37	9.37	99.8704	4.1354	42.37	9.37	99.8704	4.1354
QPSK 0.87 Sngl	58.93	29.47	12.69	99.9669	0.0965	29.47	12.69	99.9669	0.0965
QPSK 0.63 Sngl	42.36	21.18	16.71	99.9937	0.0268	21.18	16.71	99.9937	0.0268
BPSK 0.63 Sngl	21.18	10.59	20.82	99.9989	0.0052	10.59	20.82	99.9989	0.0052

* Multipath availability calculated using ITU-R

11. Zinzuwada to School9

Summary	
Link Name	Zinzuwada to School9
Profile Type	Non Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	19.756 kilometers
Free Space Path Loss	133.61 dB
Excess Path Loss	10.97 dB
User IP Throughput Expectation Aggregate	Aggregate 293.58 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	School9

Bill of Materials		
Part Number	Qty	Description
(no part number)	2	Stella Doradus 45in Parabolic Antenna 56 PSD113
01010419001	9	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H031	1	PTP 650 Connectorized END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
C050065H033	1	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to School9
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to School9	242.23° from True North 241.71° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for School9	
Link Name	Zinzuwada to School9
Latitude	23.26372N
Longitude	071.48290E
Site Elevation	10 meters AMSL
Platform Variant	Connectorized
Antenna Type	Stella Doradus 45in Parabolic Antenna 56 PSD113
Antenna Gain	32.4 dBi
Antenna Height	7.0 meters AGL
Antenna Tilt angle	0.0° (uptilt)
Diversity Spacing	5.0 meters

Physical Installation Notes for School9 (continued)	
Bearing to Zinzuwada	62.16° from True North 61.65° from Magnetic North
Magnetic Declination	0.51° E ±0.28° changing by 0.07° E per year
Cable Loss	1.0 dB

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to School9
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-63 dBm ± 8 dB
Predicted Link Loss	144.78 dB ± 8.29 dB

Radio Commissioning Notes for School9	
Link Name	Zinzuwada to School9
Site Name	School9
Latitude	23.26372N
Longitude	071.48290E
Altitude	10 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Antenna Gain	32.4 dBi

Radio Commissioning Notes for School9 (continued)	
Cable Loss	1.0 dB
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-63 dBm ± 8 dB
Predicted Link Loss	144.78 dB ± 8.29 dB

Regulatory Conditions	
Country	Argentina (Private)
Band	5.8 GHz
Region Code	44
Max EIRP	58.40 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (144.78 dB ± 8.29 dB). Also check that the received power is not greater than -38dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	146.79 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9999% (unavailable for 18 secs/year)

School9 Performance *	
Mean IP Throughput Predicted	146.79 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9999% (unavailable for 18 secs/year)

* Multipath availability calculated using ITU-R

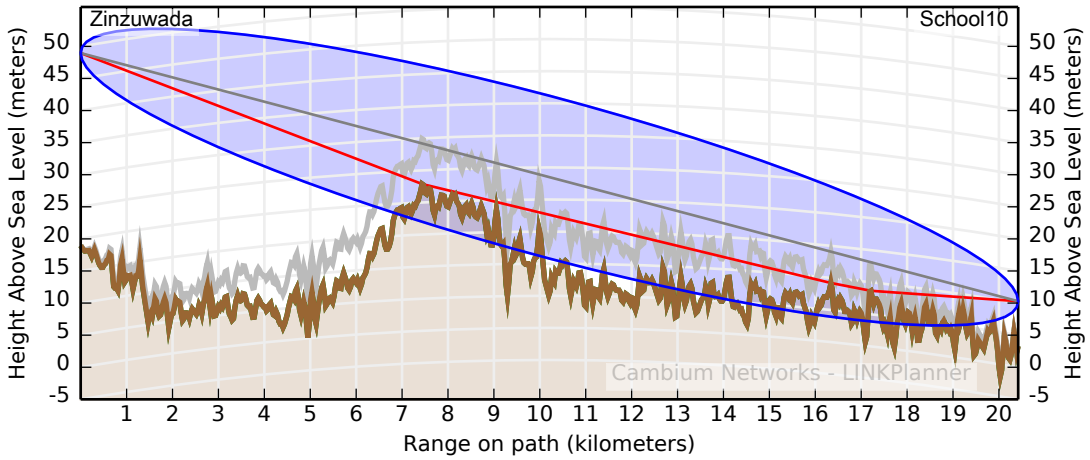
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School9			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	442.09	221.04	-7.12	2.6985	2.6985	221.04	-7.12	2.6985	2.6985
64QAM 0.92 Dual	372.47	186.24	-2.39	8.8513	6.1528	186.24	-2.39	8.8513	6.1528
64QAM 0.75 Dual	304.38	152.19	1.74	74.9284	66.0771	152.19	1.74	74.9284	66.0771
16QAM 0.87 Dual	236.79	118.40	5.86	97.4603	22.5319	118.40	5.86	97.4603	22.5319
16QAM 0.63 Dual	170.23	85.11	9.49	99.0224	1.5621	85.11	9.49	99.0224	1.5621
256QAM 0.81 Sngl	221.04	110.52	-3.46	0.0520	0.0520	110.52	-3.46	0.0520	0.0520
64QAM 0.92 Sngl	186.23	93.12	0.91	0.6073	0.5553	93.12	0.91	0.6073	0.5553
64QAM 0.75 Sngl	152.19	76.09	4.86	0.7949	0.1876	76.09	4.86	0.7949	0.1876
16QAM 0.87 Sngl	118.39	59.20	8.93	0.8002	0.0053	59.20	8.93	0.8002	0.0053
16QAM 0.63 Sngl	85.11	42.55	13.44	99.9907	0.1681	42.55	13.44	99.9907	0.1681
QPSK 0.87 Sngl	59.19	29.60	16.76	99.9979	0.0072	29.60	16.76	99.9979	0.0072
QPSK 0.63 Sngl	42.55	21.28	20.78	99.9996	0.0018	21.28	20.78	99.9996	0.0018
BPSK 0.63 Sngl	21.27	10.64	24.89	99.9999	0.0003	10.64	24.89	99.9999	0.0003

* Multipath availability calculated using ITU-R

12. Zinzuwada to School10

Summary	
Link Name	Zinzuwada to School10
Profile Type	Non Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	20.419 kilometers
Free Space Path Loss	133.90 dB
Excess Path Loss	10.46 dB
User IP Throughput Expectation Aggregate	Aggregate 296.26 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	School10

Bill of Materials		
Part Number	Qty	Description
(no part number)	2	Stella Doradus 45in Parabolic Antenna 56 PSD113
01010419001	9	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H031	1	PTP 650 Connectorized END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
C050065H033	1	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to School10
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to School10	250.49° from True North 249.97° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for School10	
Link Name	Zinzuwada to School10
Latitude	23.28523N
Longitude	071.46561E
Site Elevation	10 meters AMSL
Platform Variant	Connectorized
Antenna Type	Stella Doradus 45in Parabolic Antenna 56 PSD113
Antenna Gain	32.4 dBi
Antenna Height	7.0 meters AGL
Antenna Tilt angle	0.0° (uptilt)
Diversity Spacing	5.0 meters

Physical Installation Notes for School10 (continued)	
Bearing to Zinzuwada	70.42° from True North 69.90° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year
Cable Loss	1.0 dB

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to School10
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-63 dBm ± 8 dB
Predicted Link Loss	144.57 dB ± 8.14 dB

Radio Commissioning Notes for School10	
Link Name	Zinzuwada to School10
Site Name	School10
Latitude	23.28523N
Longitude	071.46561E
Altitude	10 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Antenna Gain	32.4 dBi

Radio Commissioning Notes for School10 (continued)	
Cable Loss	1.0 dB
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-63 dBm ± 8 dB
Predicted Link Loss	144.57 dB ± 8.14 dB

Regulatory Conditions	
Country	Argentina (Private)
Band	5.8 GHz
Region Code	44
Max EIRP	58.40 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (144.57 dB ± 8.14 dB). Also check that the received power is not greater than -38dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	148.13 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9999% (unavailable for 22 secs/year)

School10 Performance *	
Mean IP Throughput Predicted	148.13 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9999% (unavailable for 22 secs/year)

* Multipath availability calculated using ITU-R

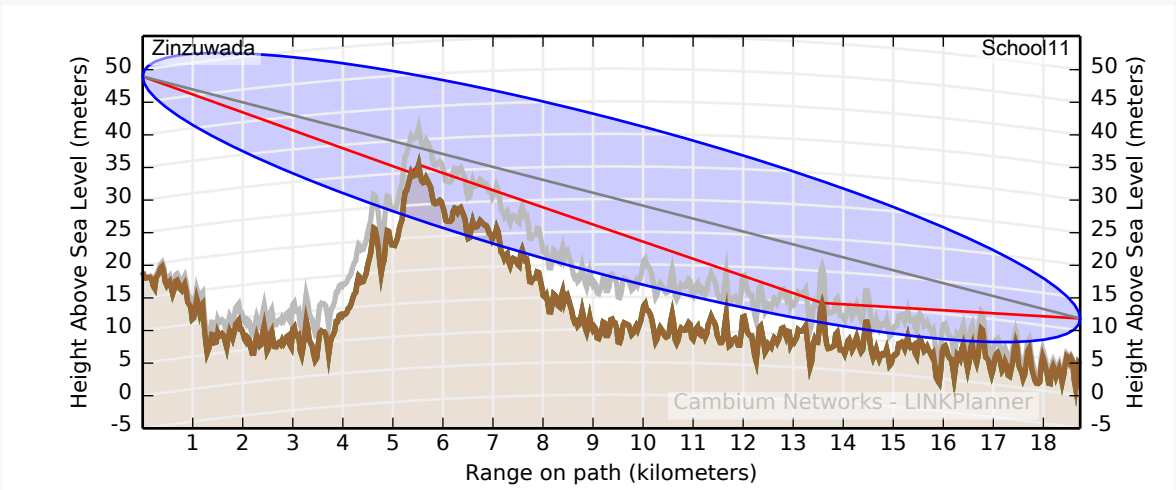
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School10			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	441.60	220.80	-6.90	2.5348	2.5348	220.80	-6.90	2.5348	2.5348
64QAM 0.92 Dual	372.06	186.03	-2.17	8.8306	6.2958	186.03	-2.17	8.8306	6.2958
64QAM 0.75 Dual	304.04	152.02	1.96	78.9239	70.0933	152.02	1.96	78.9239	70.0933
16QAM 0.87 Dual	236.53	118.27	6.08	98.0533	19.1294	118.27	6.08	98.0533	19.1294
16QAM 0.63 Dual	170.04	85.02	9.71	99.2057	1.1525	85.02	9.71	99.2057	1.1525
256QAM 0.81 Sngl	220.79	110.40	-3.25	0.0419	0.0419	110.40	-3.25	0.0419	0.0419
64QAM 0.92 Sngl	186.03	93.01	1.13	0.5459	0.5040	93.01	1.13	0.5459	0.5040
64QAM 0.75 Sngl	152.02	76.01	5.08	0.6670	0.1210	76.01	5.08	0.6670	0.1210
16QAM 0.87 Sngl	118.26	59.13	9.15	0.6712	0.0042	59.13	9.15	0.6712	0.0042
16QAM 0.63 Sngl	85.01	42.51	13.65	99.9894	0.1125	42.51	13.65	99.9894	0.1125
QPSK 0.87 Sngl	59.13	29.56	16.98	99.9976	0.0081	29.56	16.98	99.9976	0.0081
QPSK 0.63 Sngl	42.50	21.25	21.00	99.9996	0.0020	21.25	21.00	99.9996	0.0020
BPSK 0.63 Sngl	21.25	10.62	25.11	99.9999	0.0003	10.62	25.11	99.9999	0.0003

* Multipath availability calculated using ITU-R

13. Zinzuwada to School11

Summary	
Link Name	Zinzuwada to School11
Profile Type	Non Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	18.735 kilometers
Free Space Path Loss	133.15 dB
Excess Path Loss	11.73 dB
User IP Throughput Expectation Aggregate	Aggregate 289.73 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	School11

Bill of Materials		
Part Number	Qty	Description
(no part number)	2	Stella Doradus 45in Parabolic Antenna 56 PSD113
01010419001	9	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H031	1	PTP 650 Connectorized END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
C050065H033	1	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to School11
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to School11	232.25° from True North 231.73° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for School11	
Link Name	Zinzuwada to School11
Latitude	23.24329N
Longitude	071.50898E
Site Elevation	12 meters AMSL
Platform Variant	Connectorized
Antenna Type	Stella Doradus 45in Parabolic Antenna 56 PSD113
Antenna Gain	32.4 dBi
Antenna Height	7.0 meters AGL
Antenna Tilt angle	0.1° (uptilt)
Diversity Spacing	5.0 meters

Physical Installation Notes for School11 (continued)	
Bearing to Zinzuwada	52.20° from True North 51.69° from Magnetic North
Magnetic Declination	0.51° E ±0.28° changing by 0.07° E per year
Cable Loss	1.0 dB

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to School11
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-64 dBm ± 9 dB
Predicted Link Loss	145.07 dB ± 8.52 dB

Radio Commissioning Notes for School11	
Link Name	Zinzuwada to School11
Site Name	School11
Latitude	23.24329N
Longitude	071.50898E
Altitude	12 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Antenna Gain	32.4 dBi

Radio Commissioning Notes for School11 (continued)	
Cable Loss	1.0 dB
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-64 dBm ± 9 dB
Predicted Link Loss	145.07 dB ± 8.52 dB

Regulatory Conditions	
Country	Argentina (Private)
Band	5.8 GHz
Region Code	44
Max EIRP	58.40 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (145.07 dB ± 8.52 dB). Also check that the received power is not greater than -39dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	144.86 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	100.0000% (unavailable for 15 secs/year)

School11 Performance *	
Mean IP Throughput Predicted	144.86 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	100.0000% (unavailable for 15 secs/year)

* Multipath availability calculated using ITU-R

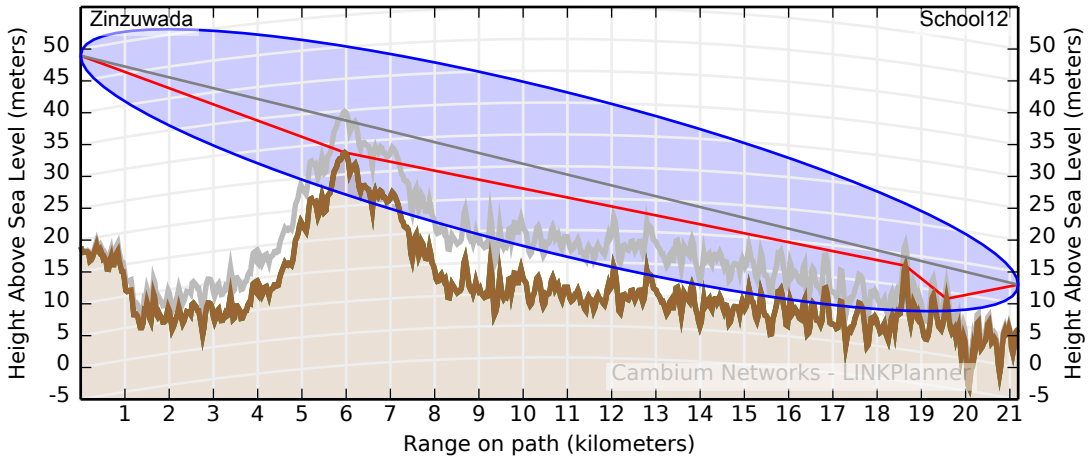
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School11			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	442.58	221.29	-7.41	2.9064	2.9064	221.29	-7.41	2.9064	2.9064
64QAM 0.92 Dual	372.89	186.44	-2.67	9.0182	6.1118	186.44	-2.67	9.0182	6.1118
64QAM 0.75 Dual	304.72	152.36	1.45	69.6422	60.6240	152.36	1.45	69.6422	60.6240
16QAM 0.87 Dual	237.06	118.53	5.58	96.3383	26.6961	118.53	5.58	96.3383	26.6961
16QAM 0.63 Dual	170.42	85.21	9.20	98.6617	2.3234	85.21	9.20	98.6617	2.3234
256QAM 0.81 Sngl	221.29	110.64	-3.75	0.0716	0.0716	110.64	-3.75	0.0716	0.0716
64QAM 0.92 Sngl	186.44	93.22	0.62	0.6920	0.6205	93.22	0.62	0.6920	0.6205
64QAM 0.75 Sngl	152.36	76.18	4.58	1.0367	0.3447	76.18	4.58	1.0367	0.3447
16QAM 0.87 Sngl	118.53	59.26	8.64	1.0441	0.0075	59.26	8.64	1.0441	0.0075
16QAM 0.63 Sngl	85.20	42.60	13.15	99.9920	0.2862	42.60	13.15	99.9920	0.2862
QPSK 0.87 Sngl	59.26	29.63	16.48	99.9982	0.0063	29.63	16.48	99.9982	0.0063
QPSK 0.63 Sngl	42.60	21.30	20.50	99.9997	0.0015	21.30	20.50	99.9997	0.0015
BPSK 0.63 Sngl	21.29	10.65	24.61	100.0000	0.0002	10.65	24.61	100.0000	0.0002

* Multipath availability calculated using ITU-R

14. Zinzuwada to School12

Summary	
Link Name	Zinzuwada to School12
Profile Type	Non Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	21.188 kilometers
Free Space Path Loss	134.22 dB
Excess Path Loss	13.09 dB
User IP Throughput Expectation Aggregate	Aggregate 245.19 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	School12

Bill of Materials		
Part Number	Qty	Description
(no part number)	2	Stella Doradus 45in Parabolic Antenna 56 PSD113
01010419001	9	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H031	1	PTP 650 Connectorized END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
C050065H033	1	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to School12
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to School12	236.96° from True North 236.44° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for School12	
Link Name	Zinzuwada to School12
Latitude	23.24250N
Longitude	071.48019E
Site Elevation	13 meters AMSL
Platform Variant	Connectorized
Antenna Type	Stella Doradus 45in Parabolic Antenna 56 PSD113
Antenna Gain	32.4 dBi
Antenna Height	7.0 meters AGL
Antenna Tilt angle	0.0° (uptilt)
Diversity Spacing	5.0 meters

Physical Installation Notes for School12 (continued)	
Bearing to Zinzuwada	56.89° from True North 56.38° from Magnetic North
Magnetic Declination	0.51° E ±0.28° changing by 0.07° E per year
Cable Loss	1.0 dB

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to School12
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-66 dBm ± 9 dB
Predicted Link Loss	147.53 dB ± 8.93 dB

Radio Commissioning Notes for School12	
Link Name	Zinzuwada to School12
Site Name	School12
Latitude	23.24250N
Longitude	071.48019E
Altitude	13 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Antenna Gain	32.4 dBi

Radio Commissioning Notes for School12 (continued)	
Cable Loss	1.0 dB
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-66 dBm ± 9 dB
Predicted Link Loss	147.53 dB ± 8.93 dB

Regulatory Conditions	
Country	Argentina (Private)
Band	5.8 GHz
Region Code	44
Max EIRP	58.40 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (147.53 dB ± 8.93 dB). Also check that the received power is not greater than -39dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	122.60 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9996% (unavailable for 1.9 mins/year)

School12 Performance *	
Mean IP Throughput Predicted	122.60 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9996% (unavailable for 1.9 mins/year)

* Multipath availability calculated using ITU-R

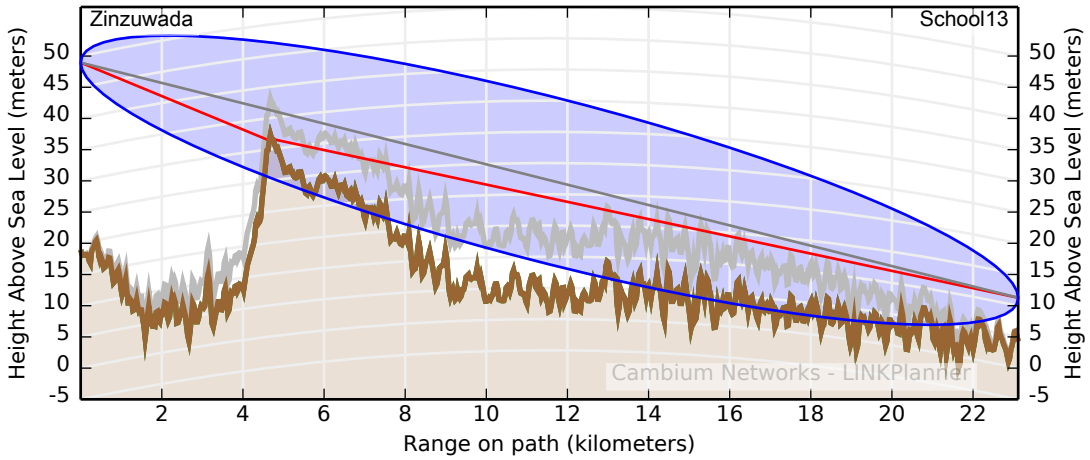
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School12			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	441.11	220.55	-9.86	1.0909	1.0909	220.55	-9.86	1.0909	1.0909
64QAM 0.92 Dual	371.64	185.82	-5.13	3.3096	2.2187	185.82	-5.13	3.3096	2.2187
64QAM 0.75 Dual	303.70	151.85	-1.00	26.2265	22.9168	151.85	-1.00	26.2265	22.9168
16QAM 0.87 Dual	236.27	118.13	3.12	85.0529	58.8264	118.13	3.12	85.0529	58.8264
16QAM 0.63 Dual	169.85	84.92	6.75	96.5788	11.5259	84.92	6.75	96.5788	11.5259
256QAM 0.81 Sngl	220.55	110.27	-6.20	0.0410	0.0410	110.27	-6.20	0.0410	0.0410
64QAM 0.92 Sngl	185.82	92.91	-1.83	0.1484	0.1074	92.91	-1.83	0.1484	0.1074
64QAM 0.75 Sngl	151.85	75.92	2.12	1.4635	1.3151	75.92	2.12	1.4635	1.3151
16QAM 0.87 Sngl	118.13	59.07	6.19	1.5734	0.1099	59.07	6.19	1.5734	0.1099
16QAM 0.63 Sngl	84.92	42.46	10.70	99.9497	1.7975	42.46	10.70	99.9497	1.7975
QPSK 0.87 Sngl	59.06	29.53	14.02	99.9880	0.0383	29.53	14.02	99.9880	0.0383
QPSK 0.63 Sngl	42.46	21.23	18.04	99.9979	0.0099	21.23	18.04	99.9979	0.0099
BPSK 0.63 Sngl	21.22	10.61	22.15	99.9996	0.0018	10.61	22.15	99.9996	0.0018

* Multipath availability calculated using ITU-R

15. Zinzuwada to School13

Summary	
Link Name	Zinzuwada to School13
Profile Type	Near Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	23.112 kilometers
Free Space Path Loss	134.97 dB
Excess Path Loss	9.99 dB
User IP Throughput Expectation Aggregate	Aggregate 285.97 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	School13

Bill of Materials		
Part Number	Qty	Description
(no part number)	2	Stella Doradus 45in Parabolic Antenna 56 PSD113
01010419001	9	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H031	1	PTP 650 Connectorized END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
C050065H033	1	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to School13
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to School13	228.87° from True North 228.35° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for School13	
Link Name	Zinzuwada to School13
Latitude	23.20955N
Longitude	071.48368E
Site Elevation	11 meters AMSL
Platform Variant	Connectorized
Antenna Type	Stella Doradus 45in Parabolic Antenna 56 PSD113
Antenna Gain	32.4 dBi
Antenna Height	7.0 meters AGL
Antenna Tilt angle	0.0° (uptilt)
Diversity Spacing	5.0 meters

Physical Installation Notes for School13 (continued)	
Bearing to Zinzuwada	48.80° from True North 48.30° from Magnetic North
Magnetic Declination	0.50° E ±0.28° changing by 0.07° E per year
Cable Loss	1.0 dB

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to School13
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-64 dBm ± 8 dB
Predicted Link Loss	145.20 dB ± 8.00 dB

Radio Commissioning Notes for School13	
Link Name	Zinzuwada to School13
Site Name	School13
Latitude	23.20955N
Longitude	071.48368E
Altitude	11 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Antenna Gain	32.4 dBi

Radio Commissioning Notes for School13 (continued)	
Cable Loss	1.0 dB
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-64 dBm ± 8 dB
Predicted Link Loss	145.20 dB ± 8.00 dB

Regulatory Conditions	
Country	Argentina (Private)
Band	5.8 GHz
Region Code	44
Max EIRP	58.40 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (145.20 dB ± 8.00 dB). Also check that the received power is not greater than -38dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	142.99 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9998% (unavailable for 1.2 mins/year)

School13 Performance *	
Mean IP Throughput Predicted	142.99 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9998% (unavailable for 1.2 mins/year)

* Multipath availability calculated using ITU-R

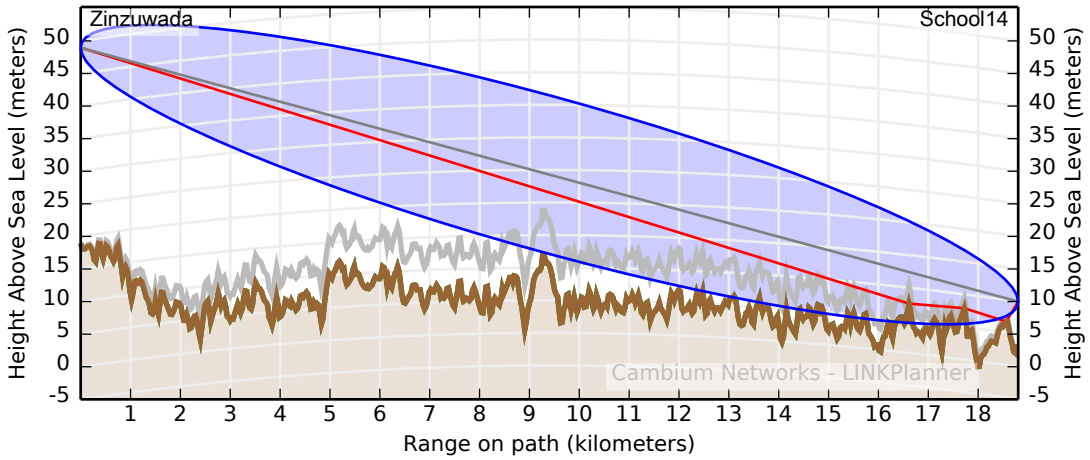
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School13			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	440.13	220.06	-7.54	1.4736	1.4736	220.06	-7.54	1.4736	1.4736
64QAM 0.92 Dual	370.82	185.41	-2.80	5.2590	3.7854	185.41	-2.80	5.2590	3.7854
64QAM 0.75 Dual	303.03	151.52	1.33	70.3292	65.0702	151.52	1.33	70.3292	65.0702
16QAM 0.87 Dual	235.74	117.87	5.45	97.6348	27.3056	117.87	5.45	97.6348	27.3056
16QAM 0.63 Dual	169.47	84.74	9.07	99.3008	1.6660	84.74	9.07	99.3008	1.6660
256QAM 0.81 Sngl	220.06	110.03	-3.88	0.0207	0.0207	110.03	-3.88	0.0207	0.0207
64QAM 0.92 Sngl	185.41	92.70	0.49	0.3447	0.3241	92.70	0.49	0.3447	0.3241
64QAM 0.75 Sngl	151.51	75.76	4.45	0.5449	0.2002	75.76	4.45	0.5449	0.2002
16QAM 0.87 Sngl	117.87	58.93	8.51	0.5521	0.0072	58.93	8.51	0.5521	0.0072
16QAM 0.63 Sngl	84.73	42.37	13.02	99.9710	0.1181	42.37	13.02	99.9710	0.1181
QPSK 0.87 Sngl	58.93	29.47	16.35	99.9926	0.0216	29.47	16.35	99.9926	0.0216
QPSK 0.63 Sngl	42.36	21.18	20.37	99.9986	0.0060	21.18	20.37	99.9986	0.0060
BPSK 0.63 Sngl	21.18	10.59	24.48	99.9998	0.0011	10.59	24.48	99.9998	0.0011

* Multipath availability calculated using ITU-R

16. Zinzuwada to School14

Summary	
Link Name	Zinzuwada to School14
Profile Type	Near Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	18.803 kilometers
Free Space Path Loss	133.18 dB
Excess Path Loss	7.11 dB
User IP Throughput Expectation Aggregate	Aggregate 227.01 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	School14

Bill of Materials		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H033	2	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to School14
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to School14	208.37° from True North 207.85° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for School14	
Link Name	Zinzuwada to School14
Latitude	23.19750N
Longitude	071.56648E
Site Elevation	10 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	7.0 meters AGL
Antenna Tilt angle	0.1° (uptilt)
Bearing to Zinzuwada	28.33° from True North 27.83° from Magnetic North
Magnetic Declination	0.50° E ±0.28° changing by 0.07° E per year

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to School14
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-67 dBm ± 7 dB
Predicted Link Loss	140.48 dB ± 7.13 dB

Radio Commissioning Notes for School14	
Link Name	Zinzuwada to School14
Site Name	School14
Latitude	23.19750N
Longitude	071.56648E
Altitude	10 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-67 dBm ± 7 dB
Predicted Link Loss	140.48 dB ± 7.13 dB

Regulatory Conditions	
Country	Argentina (Private)

Regulatory Conditions (continued)	
Band	5.8 GHz
Region Code	44
Max EIRP	50.00 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (140.48 dB ± 7.13 dB). Also check that the received power is not greater than -37dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	113.51 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9949% (unavailable for 26.7 mins/year)

School14 Performance *	
Mean IP Throughput Predicted	113.51 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9949% (unavailable for 26.7 mins/year)

* Multipath availability calculated using ITU-R

Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School14			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	442.58	221.29	-11.21	0.0022	0.0022	221.29	-11.21	0.0022	0.0022
64QAM 0.92 Dual	372.89	186.44	-6.48	0.0489	0.0467	186.44	-6.48	0.0489	0.0467
64QAM 0.75 Dual	304.72	152.36	-2.35	4.4728	4.4239	152.36	-2.35	4.4728	4.4239

(continued)

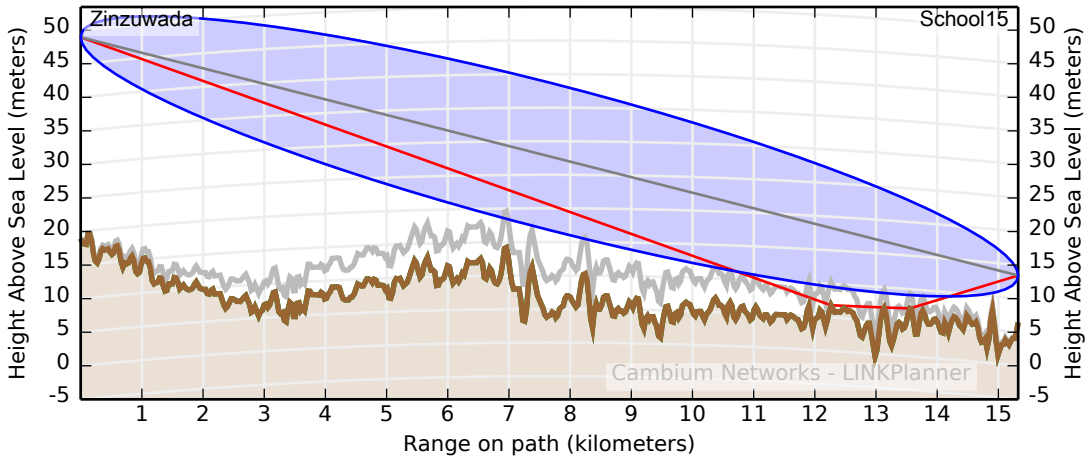
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School14			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
16QAM 0.87 Dual	237.06	118.53	1.77	81.4111	76.9383	118.53	1.77	81.4111	76.9383
16QAM 0.63 Dual	170.42	85.21	5.39	99.1038	17.6927	85.21	5.39	99.1038	17.6927
256QAM 0.81 Sngl	221.29	110.64	-7.56	0.0000	0.0000	110.64	-7.56	0.0000	0.0000
64QAM 0.92 Sngl	186.44	93.22	-3.19	0.0009	0.0008	93.22	-3.19	0.0009	0.0008
64QAM 0.75 Sngl	152.36	76.18	0.77	0.1034	0.1025	76.18	0.77	0.1034	0.1025
16QAM 0.87 Sngl	118.53	59.26	4.83	0.1456	0.0423	59.26	4.83	0.1456	0.0423
16QAM 0.63 Sngl	85.20	42.60	9.34	99.8830	0.6335	42.60	9.34	99.8830	0.6335
QPSK 0.87 Sngl	59.26	29.63	12.67	99.9603	0.0773	29.63	12.67	99.9603	0.0773
QPSK 0.63 Sngl	42.60	21.30	16.69	99.9865	0.0262	21.30	16.69	99.9865	0.0262
BPSK 0.63 Sngl	21.29	10.65	20.80	99.9949	0.0084	10.65	20.80	99.9949	0.0084

* Multipath availability calculated using ITU-R

17. Zinzuwada to School15

Summary	
Link Name	Zinzuwada to School15
Profile Type	Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	15.323 kilometers
Free Space Path Loss	131.40 dB
Excess Path Loss	0.00 dB
User IP Throughput Expectation Aggregate	Aggregate 372.04 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	School15

Bill of Materials		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H033	2	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to School15
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to School15	190.79° from True North 190.27° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for School15	
Link Name	Zinzuwada to School15
Latitude	23.21100N
Longitude	071.62572E
Site Elevation	13 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	7.0 meters AGL
Antenna Tilt angle	0.1° (uptilt)
Bearing to Zinzuwada	10.78° from True North 10.28° from Magnetic North
Magnetic Declination	0.50° E ±0.28° changing by 0.07° E per year

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to School15
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-59 dBm ± 5 dB
Predicted Link Loss	131.56 dB ± 5.00 dB

Radio Commissioning Notes for School15	
Link Name	Zinzuwada to School15
Site Name	School15
Latitude	23.21100N
Longitude	071.62572E
Altitude	13 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-59 dBm ± 5 dB
Predicted Link Loss	131.56 dB ± 5.00 dB

Regulatory Conditions	
Country	Argentina (Private)

Regulatory Conditions (continued)	
Band	5.8 GHz
Region Code	44
Max EIRP	50.00 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (131.56 dB ± 5.00 dB). Also check that the received power is not greater than -35dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	186.02 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9997% (unavailable for 1.6 mins/year)

School15 Performance *	
Mean IP Throughput Predicted	186.02 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9997% (unavailable for 1.6 mins/year)

* Multipath availability calculated using ITU-R

Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School15			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	444.56	222.28	-2.29	1.2040	1.2040	222.28	-2.29	1.2040	1.2040
64QAM 0.92 Dual	374.56	187.28	2.44	95.3899	94.1859	187.28	2.44	95.3899	94.1859
64QAM 0.75 Dual	306.08	153.04	6.57	99.7650	4.3751	153.04	6.57	99.7650	4.3751

(continued)

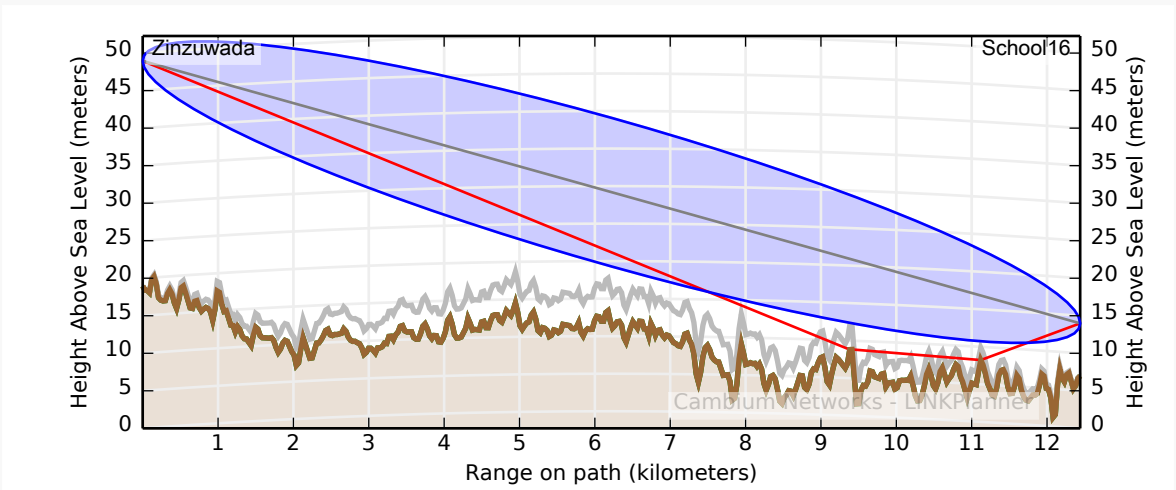
Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School15			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
16QAM 0.87 Dual	238.12	119.06	10.69	99.9605	0.1955	119.06	10.69	99.9605	0.1955
16QAM 0.63 Dual	171.18	85.59	14.31	99.9874	0.0269	85.59	14.31	99.9874	0.0269
256QAM 0.81 Sngl	222.28	111.14	1.36	0.0004	0.0004	111.14	1.36	0.0004	0.0004
64QAM 0.92 Sngl	187.28	93.64	5.73	0.0005	0.0001	93.64	5.73	0.0005	0.0001
64QAM 0.75 Sngl	153.04	76.52	9.69	0.0005	0.0000	76.52	9.69	0.0005	0.0000
16QAM 0.87 Sngl	119.06	59.53	13.75	0.0005	0.0000	59.53	13.75	0.0005	0.0000
16QAM 0.63 Sngl	85.59	42.79	18.26	99.9958	0.0080	42.79	18.26	99.9958	0.0080
QPSK 0.87 Sngl	59.53	29.76	21.59	99.9981	0.0023	29.76	21.59	99.9981	0.0023
QPSK 0.63 Sngl	42.79	21.39	25.61	99.9992	0.0011	21.39	25.61	99.9992	0.0011
BPSK 0.63 Sngl	21.39	10.70	29.72	99.9997	0.0005	10.70	29.72	99.9997	0.0005

* Multipath availability calculated using ITU-R

18. Zinzuwada to School16

Summary	
Link Name	Zinzuwada to School16
Profile Type	Line-of-Sight
Equipment Type	PTP650
Maximum Obstruction	0 meters
Link Distance	12.440 kilometers
Free Space Path Loss	129.59 dB
Excess Path Loss	0.00 dB
User IP Throughput Expectation Aggregate	Aggregate 398.64 Mbps assuming PTP-650 Series running the 650-01-42 software
RF Frequency Band	5.8 GHz (5725 to 5850 MHz)
RF Channel Bandwidth	45 MHz

Path Profile



Link Configuration	
Capacity	Full (Up to 450 Mbps)
Precise Network Timing	Disabled
Bandwidth	45 MHz
E1/T1	None
Optimization	IP
Sync	Disabled
Symmetry	Adaptive
Dual Payload	Enabled
Highest Mod Mode	256QAM 0.81
Lowest Ethernet Mode	BPSK 0.63 Sngl
Master	Zinzuwada

Link Configuration (continued)	
Slave	School16

Bill of Materials		
Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	LPU and Grounding Kit (1 kit per END)
C050065H033	2	PTP 650 Integrated END with AC+DC Enhanced Supply (RoW - U.S. Line Cord). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

Physical Installation Notes for Zinzuwada	
Link Name	Zinzuwada to School16
Latitude	23.34692N
Longitude	071.65374E
Site Elevation	49 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	30.0 meters AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to School16	183.46° from True North 182.94° from Magnetic North
Magnetic Declination	0.52° E ±0.28° changing by 0.07° E per year

Physical Installation Notes for School16	
Link Name	Zinzuwada to School16
Latitude	23.23480N
Longitude	071.64640E
Site Elevation	14 meters AMSL
Platform Variant	Integrated Antenna
Antenna Type	Cambium Networks Integrated Dual Polar Antenna
Antenna Gain	23.0 dBi
Antenna Height	7.0 meters AGL
Antenna Tilt angle	0.1° (uptilt)
Bearing to Zinzuwada	3.46° from True North 2.96° from Magnetic North
Magnetic Declination	0.50° E ±0.28° changing by 0.07° E per year

Radio Commissioning Notes for Zinzuwada	
Link Name	Zinzuwada to School16
Site Name	Zinzuwada
Latitude	23.34692N
Longitude	071.65374E
Altitude	49 meters
TDM Interface	None
Master Slave Mode	Master
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-57 dBm ± 5 dB
Predicted Link Loss	129.72 dB ± 5.00 dB

Radio Commissioning Notes for School16	
Link Name	Zinzuwada to School16
Site Name	School16
Latitude	23.23480N
Longitude	071.64640E
Altitude	14 meters
TDM Interface	None
Master Slave Mode	Slave
Dual Payload	Enabled
Max Receive Modulation Mode	256QAM 0.81 Dual
Lowest Data Modulation Mode	BPSK 0.63 Sngl
Link Mode Optimization	IP Traffic
TDD Synchronization Mode	Disabled
Regulatory Band	44 - 5.8 GHz
Channel Bandwidth	45 MHz
Link Symmetry	Adaptive
Maximum Transmit Power	27 dBm
Ranging Mode	Auto 0 to 40 kilometers
Predicted Receive Power	-57 dBm ± 5 dB
Predicted Link Loss	129.72 dB ± 5.00 dB

Regulatory Conditions	
Country	Argentina (Private)

Regulatory Conditions (continued)	
Band	5.8 GHz
Region Code	44
Max EIRP	50.00 dBm
Output Power	27.00 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 prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after disarm check that the mean value for the link loss is as predicted (129.72 dB ± 5.00 dB). Also check that the received power is not greater than -35dBm.

Zinzuwada Performance *	
Mean IP Throughput Predicted	199.32 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9999% (unavailable for 25 secs/year)

School16 Performance *	
Mean IP Throughput Predicted	199.32 Mbps
Mean IP Throughput Required	5.00 Mbps
Minimum IP Throughput Required	1.00 Mbps
Minimum IP Throughput Availability Predicted	99.9999% (unavailable for 25 secs/year)

* Multipath availability calculated using ITU-R

Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School16			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
256QAM 0.81 Dual	446.56	223.28	-0.45	32.5725	32.5725	223.28	-0.45	32.5725	32.5725
64QAM 0.92 Dual	376.24	188.12	4.28	99.3286	66.7560	188.12	4.28	99.3286	66.7560
64QAM 0.75 Dual	307.46	153.73	8.41	99.9467	0.6181	153.73	8.41	99.9467	0.6181

(continued)

Mode	Max Aggregate User IP Throughput (Mbps)	Zinzuwada				School16			
		Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Max User IP Throughput (Mbps)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
16QAM 0.87 Dual	239.19	119.60	12.53	99.9895	0.0428	119.60	12.53	99.9895	0.0428
16QAM 0.63 Dual	171.95	85.97	16.15	99.9963	0.0068	85.97	16.15	99.9963	0.0068
256QAM 0.81 Sngl	223.28	111.64	3.20	0.0005	0.0005	111.64	3.20	0.0005	0.0005
64QAM 0.92 Sngl	188.12	94.06	7.57	0.0005	0.0000	94.06	7.57	0.0005	0.0000
64QAM 0.75 Sngl	153.73	76.86	11.53	0.0005	0.0000	76.86	11.53	0.0005	0.0000
16QAM 0.87 Sngl	119.59	59.80	15.59	0.0005	0.0000	59.80	15.59	0.0005	0.0000
16QAM 0.63 Sngl	85.97	42.99	20.10	99.9989	0.0021	42.99	20.10	99.9989	0.0021
QPSK 0.87 Sngl	59.79	29.90	23.43	99.9995	0.0006	29.90	23.43	99.9995	0.0006
QPSK 0.63 Sngl	42.98	21.49	27.45	99.9998	0.0003	21.49	27.45	99.9998	0.0003
BPSK 0.63 Sngl	21.49	10.74	31.56	99.9999	0.0001	10.74	31.56	99.9999	0.0001

* Multipath availability calculated using ITU-R

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