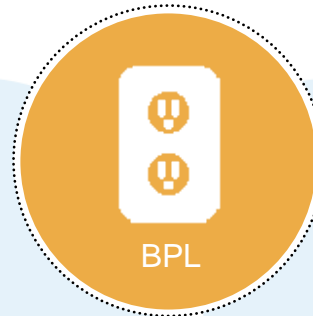
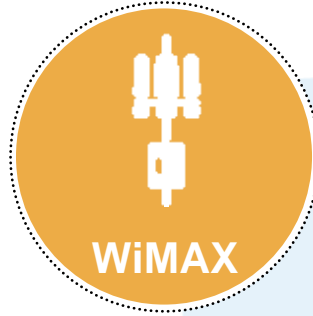
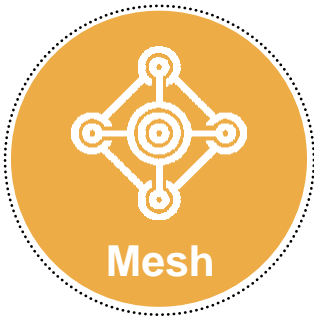
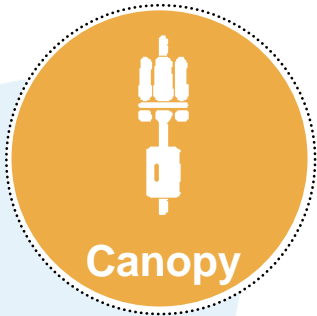




Backhaul



MOTO **wi** **4**

BH OFDM 30/60/150/300 Mbps

Antena Integrada



Antena conectorizada
Flat Panel

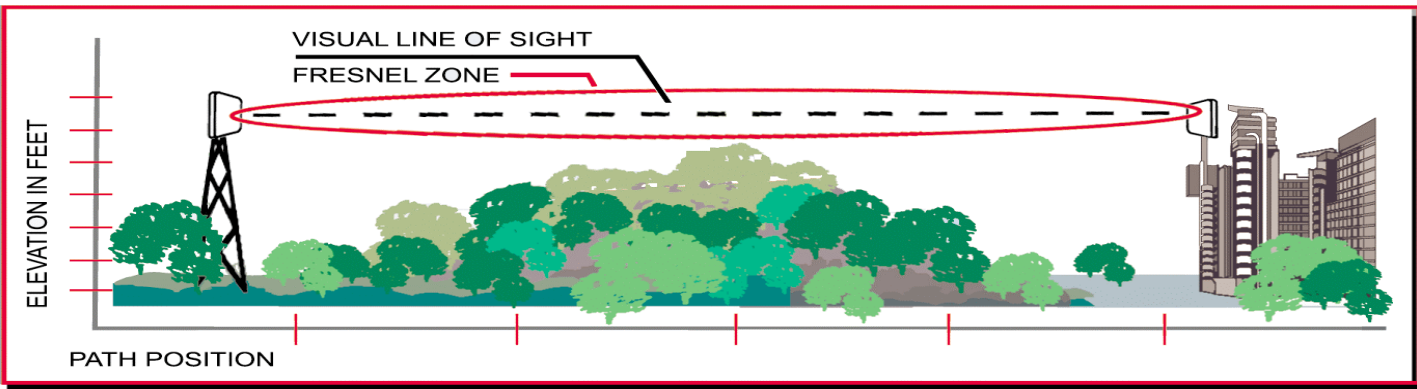


BH OFDM: 30/60 & 150/300

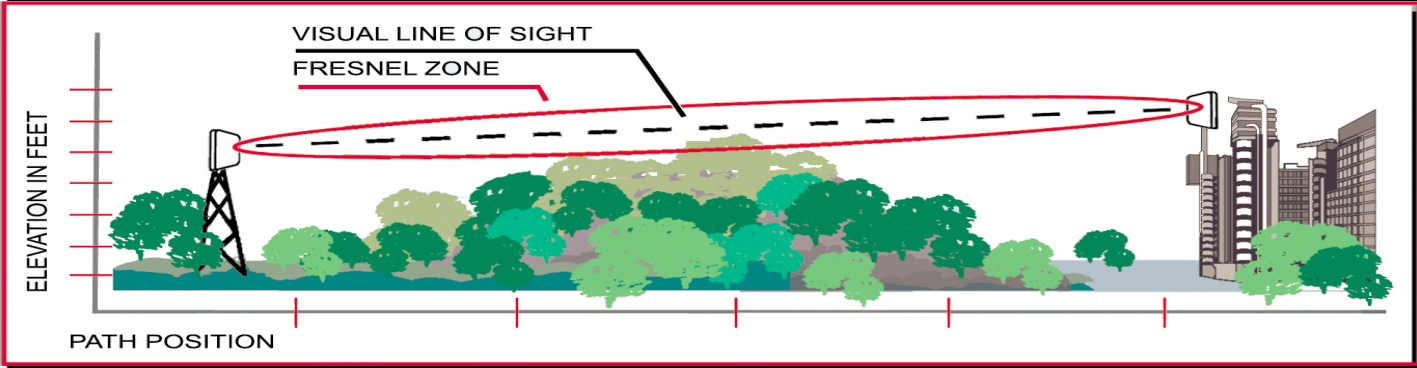
- NLOS, nLOS, LOS
- 5.4 GHz & 5.7 GHz
- Diversidade de transmissão
- Modulação Adaptativa (BPSK até 256QAM)
- Maior Ganho de Sistema (System gain)
- Melhor radio do mercado
- Diversidade espacial
- Correção de erro ARQ
- I-DFS / narrow channel
- I-OFDM
- Upgrade de SW (30 → 60, 150 → 300)
- Gerência SNMP/SMTP e web



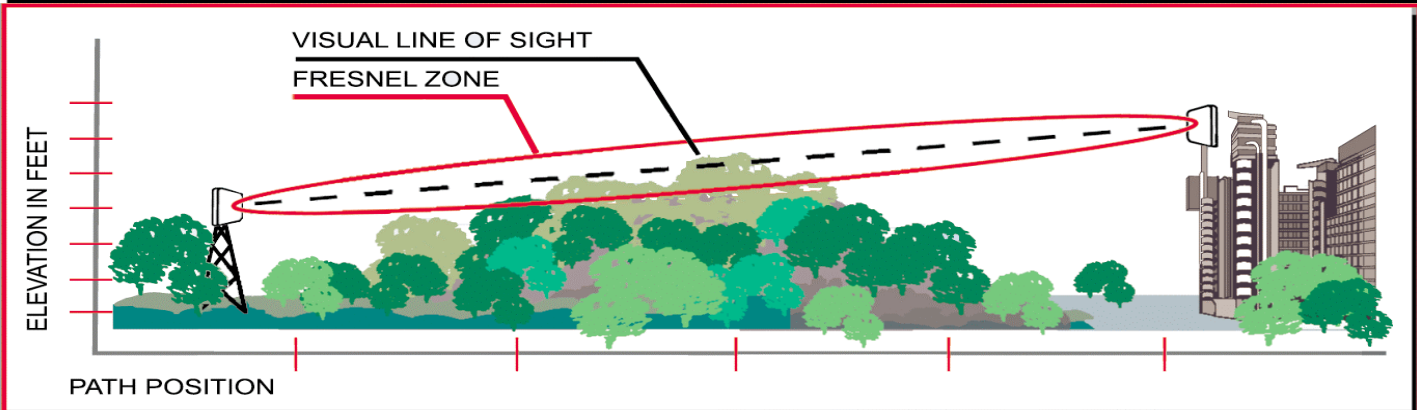
LOS, nLOS & NLOS



Line of Site



near Line of Site



Non Line of Site

Tabela Resumo de Desempenho

Ponto a Ponto

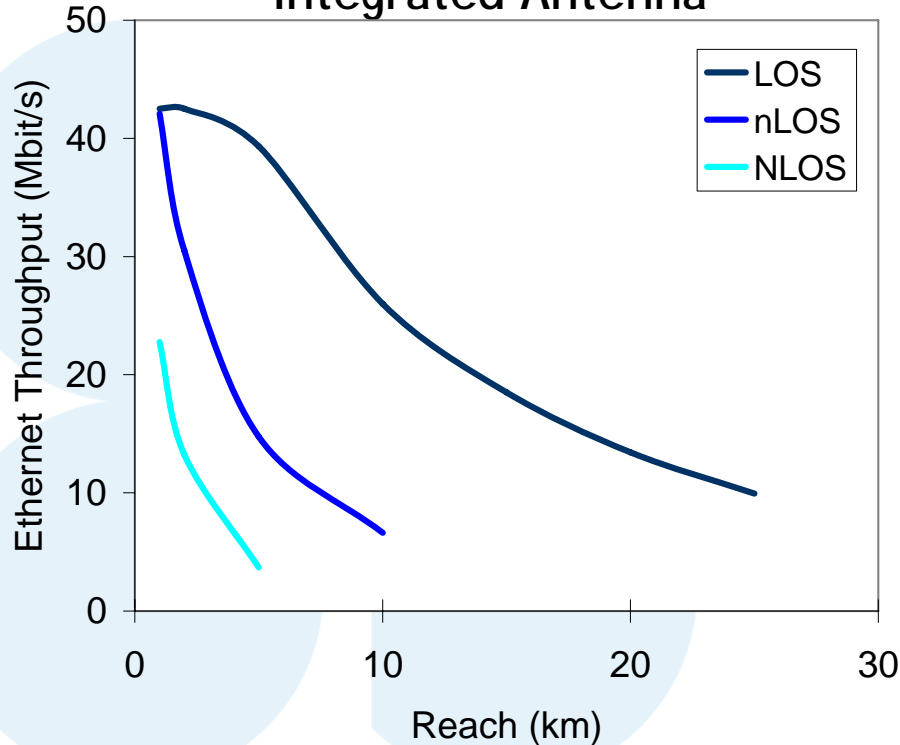
Frequência	Alcance (km)	Throughput
5.4 GHz (30 Mbps)	> 40 km	Até 21 Mbps
5.4 GHz (60 Mbps)	> 40 km	Até 42 Mbps
5.4 GHz (150 Mbps)	> 40 km	Até 150 Mbps
5.4 GHz (300 Mbps)	> 40 km	Até 300 Mbps
5.7 GHz (30 Mbps)	> 100 km	Até 21 Mbps
5.7 GHz (60 Mbps)	> 100 km	Até 42 Mbps
5.7 GHz (150 Mbps)	> 100 km	Até 150 Mbps
5.7 GHz (300 Mbps)	> 100 km	Até 300 Mbps

- **Distância e largura de banda variam com condições de RF**
- **Enlaces nLOS e NLOS terão distâncias e largura de banda reduzidas. Em geral:**
 - NLOS: até 10 km (5.7 GHz)
 - nLOS: até 40 km (5.7 GHz)
- **Use o Link Estimator para simular performance de enlaces**

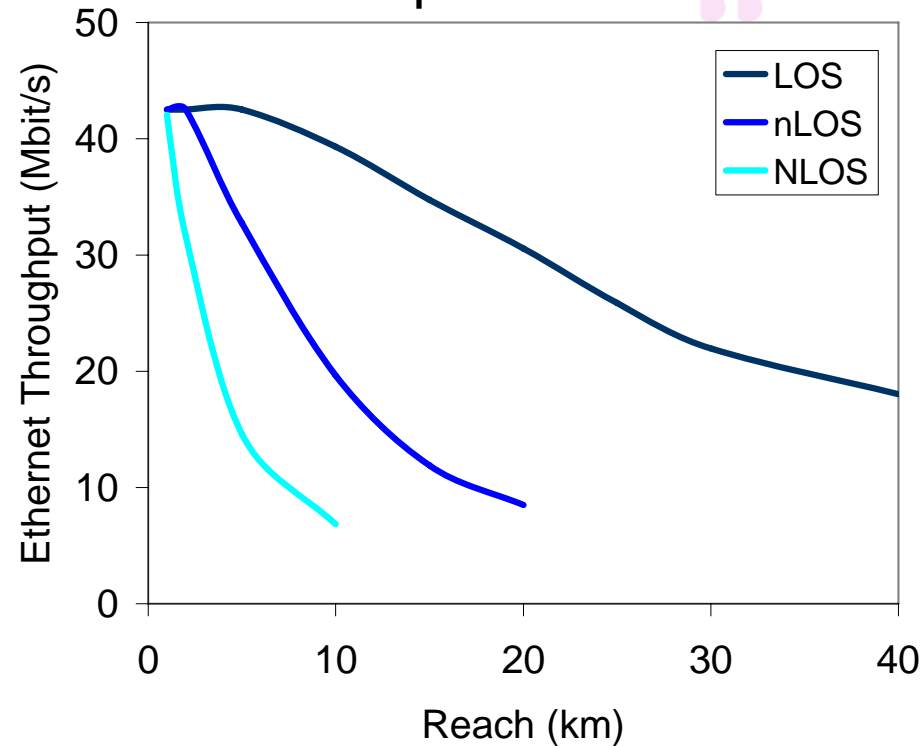
5.4 GHz

- Distâncias consideráveis, apesar de limitação de potência
- LOS: > 40km
- NLOS: até 5 km

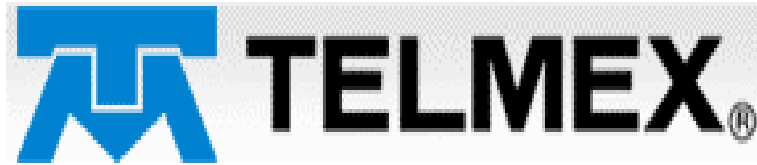
Integrated Antenna



3ft dual pole antenna



2005 Strategic Wins



- Objective:** Respond to Natural Disaster ~ Restore STM1 (150Mbps Full Duplex)

- Goal:** 145 Mbps (70 Full Duplex) 30 E1's

- Summary:** 7 links *limited by one 45Mbps Full Duplex link = 14 E1's
*(3Mbps per E1, Antenna Gain, Noise)

Lucent PSAX for E1's & Cisco 7200 to convert to IP

Responded to challenge supporting a strategic regional player resulting in HIGH level interest to use our solutions. Currently undergoing laboratory approval



Motorola Mexico



300 Mbps Backhaul Link at 70.3 Km/43.9 Miles

System Status– Master

Equipment

Attributes	Value	Units
Link Name	ESPOLON- LA MINA	
Link Location	RMO ESPOLON	
Software Version	58200-02-00	
Hardware Version	D03-R02-C	
Region Code	1	
Elapsed Time Indicator	16:28:09	

Ethernet / Internet

Ethernet Link Status	Copper Link Up	
Ethernet Speed And Duplex	1000 Mbps Full Duplex	
MAC Address	00:04:56:80:04:e4	

Telecoms

Channel A	Disabled	
Channel B	Disabled	

Wireless

Attributes	Value	Units
Wireless Link Status	Up	
Maximum Transmit Power	25	dBm
Remote Maximum Transmit Power	25	dBm
Transmit Power	18.0, 18.0, 18.0, 18.0	dBm
Receive Power	-56.6, -59.3, -62.0, -59.6	dBm
Vector Error	-24.6, -26.6, -28.6, -26.7	dB
Link Loss	154.3, 152.3, 150.2, 152.6	dB
Transmit Data Rate	88.40, 88.23, 74.46, 88.37	Mbps
Receive Data Rate	88.45, 88.30, 74.46, 88.37	Mbps
Link Capacity	259.05	Mbps
Transmit Modulation Mode	256QAM 0.81 (Dual)	
Receive Modulation Mode	256QAM 0.81 (Dual)	
Receive Modulation Mode Detail	Running at maximum receive mode	
Range	70.3	km



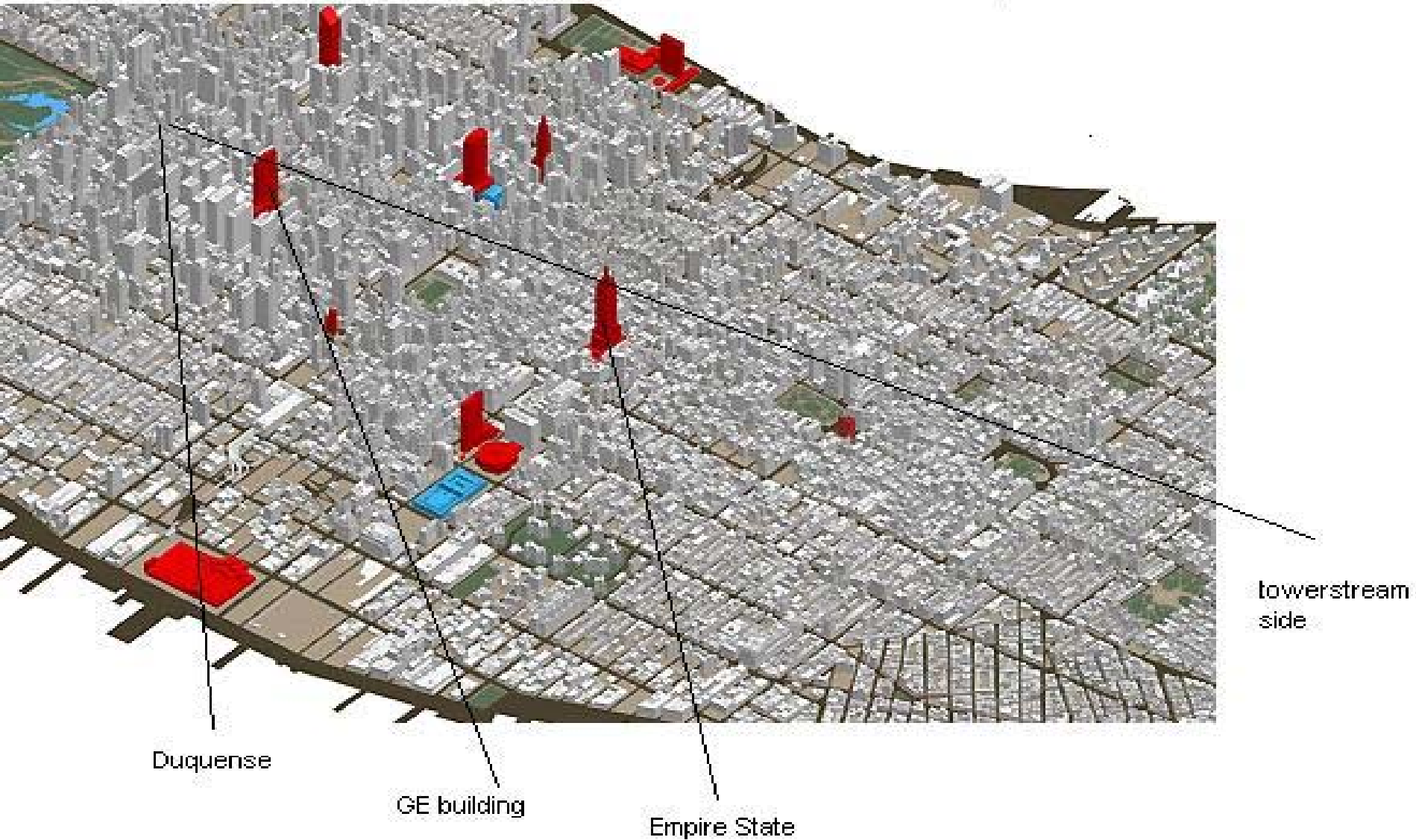
259 Mbps Link Capacity

256 QAM Dual Payload

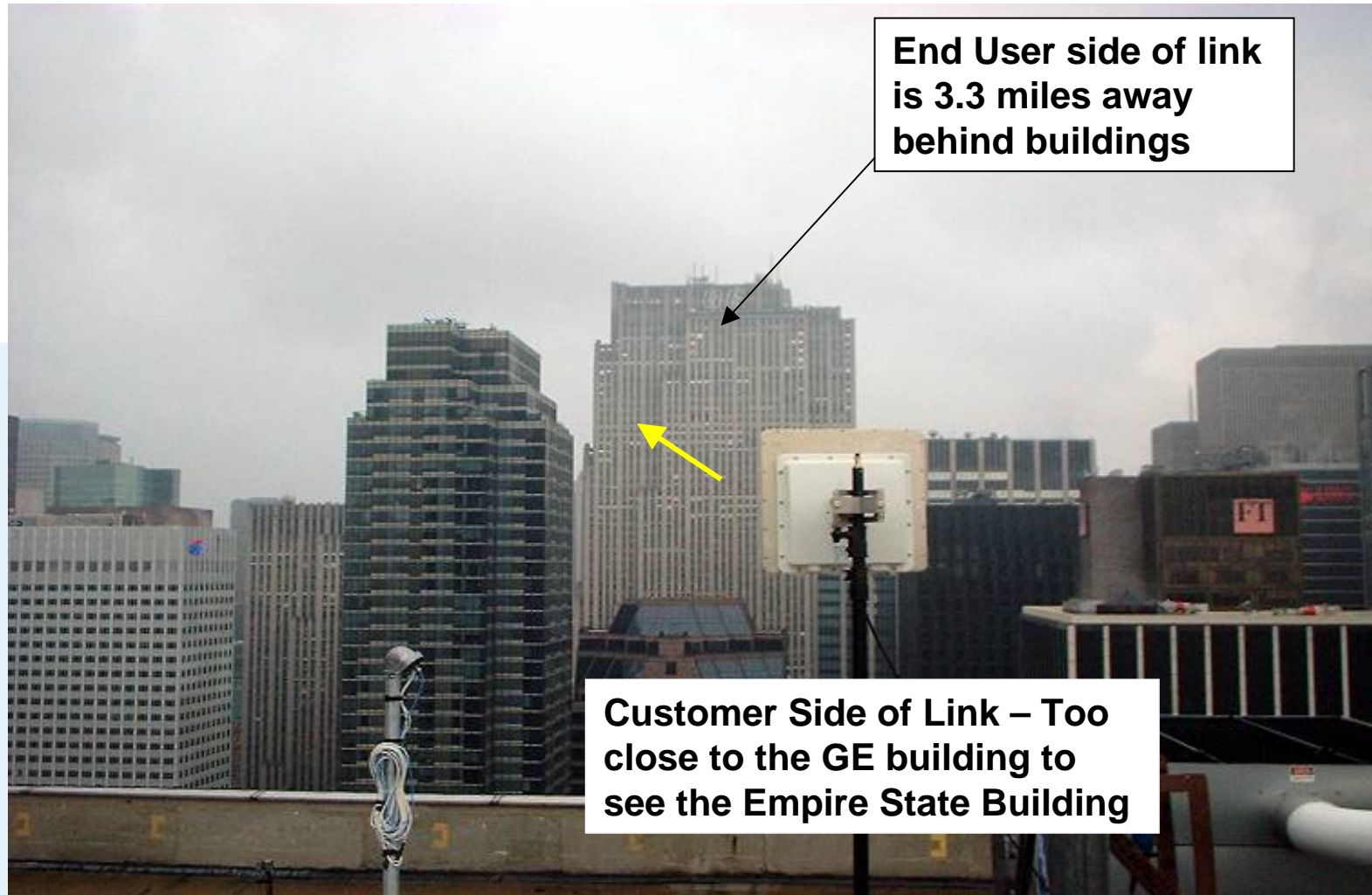
Dynamic Asymmetric TDD

New York City Deployment

New York, Axonometric View



New York City Customer Premise



End User side of link is 3.3 miles away behind buildings

Customer Side of Link – Too close to the GE building to see the Empire State Building

New York City ISP PoP

Internet and VPN Access

3.3 miles at 3.2 Mbps

**Overcame: Empire State and
GE Buildings**



SEP 23 2004