

# REDES DE TELECOMUNICACIONES

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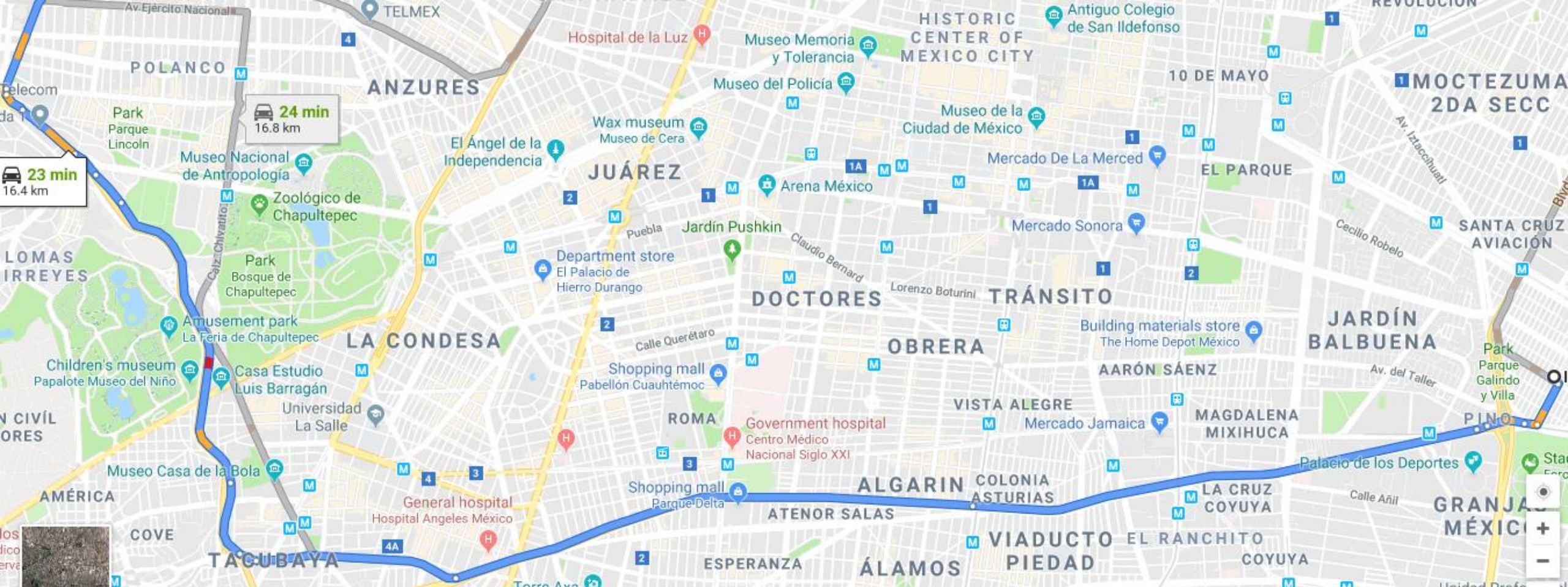


# UBICACIÓN CORPORATIVO

# UBICACIÓN CD

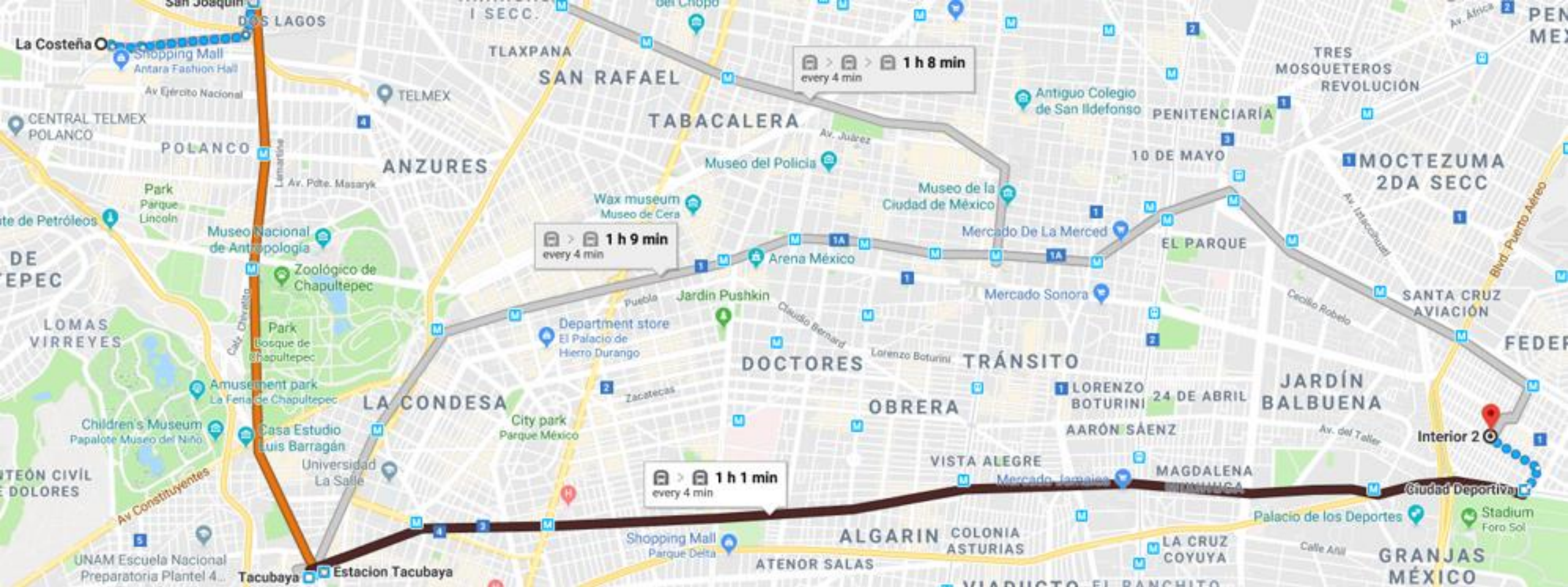






RUTA ALTERNATIVA





ruta principal

## VALORES CALCULADOS

Tramo 1

$$L_1 = 0.65 \text{ km}$$

$$At_1 = 0.65 * .02 + 0.5 * 1 + 0.3 * 1 = 0.93 \text{ dB}$$

$$P_{Tx1} - 0.93 = 5 - 0.93 = 4.07 \text{ dBm}$$

Tramo 2

$$L_2 = 3.4 \text{ km}$$

$$At_2 = 3.4 * .02 + 0.5 * 1 = 1.18 \text{ dB}$$

$$P_{Tx2} - 1.18 = 4.07 - 1.18 = 2.89 \text{ dBm}$$

Tramo 3

$$L_3 = 3.5 \text{ km}$$

$$At_3 = 3.5 * .02 + 0.5 * 1 = 1.2 \text{ dB}$$

$$P_{Tx3} - 1.2 = 2.89 - 1.2 = 1.69 \text{ dBm}$$

Tramo 4

$$L_4 = 3.6 \text{ km}$$

$$At_4 = 3.6 * .02 + 0.5 * 1 = 1.22 \text{ dB}$$

$$P_{Tx4} - 1.22 = 1.69 - 1.22 = 0.47 \text{ dBm}$$

## VALORES CALCULADOS

### Tramo 5

$$L_5 = 3.7 \text{ km}$$

$$At_5 = 3.7 * .02 + 0.5 * 1 = 1.24 \text{ dB}$$

$$P_{Tx5} - 1.24 = 0.47 - 1.24 = -0.77 \text{ dBm}$$

### Tramo 6

$$L_6 = 1.3 \text{ km}$$

$$At_6 = 1.3 * .02 + 0.5 * 1 = 0.76 \text{ dB}$$

$$P_{Tx6} - 0.76 = -0.77 - 0.76 = -1.53 \text{ dBm}$$

### Tramo 7

$$L_7 = 1.7$$

$$At_7 = 1.7 * .02 + 0.5 * 1 + 0.3 * 1 = 1.14 \text{ dB}$$

$$P_{Tx7} - 1.14 = -1.53 - 1.14 = -2.67 \text{ dBm}$$

Potencia de recepción del enlace.

$$\sum_{n=1}^7 P_{Txn} = -2.67 \text{ dB}$$

$$P_{RxEnlace} - A_{Reserva} = -2.67 - 3 = 5.67 \text{ dBm}$$

Atenuación de total.

$$\sum_{n=1}^7 At_n = 7.67 \text{ dB}$$

Atenuación real.

$$A_{real} = A_T + 3 = 7.67 + 3 = 10.67 \text{ dB}$$

Potencia de recepción

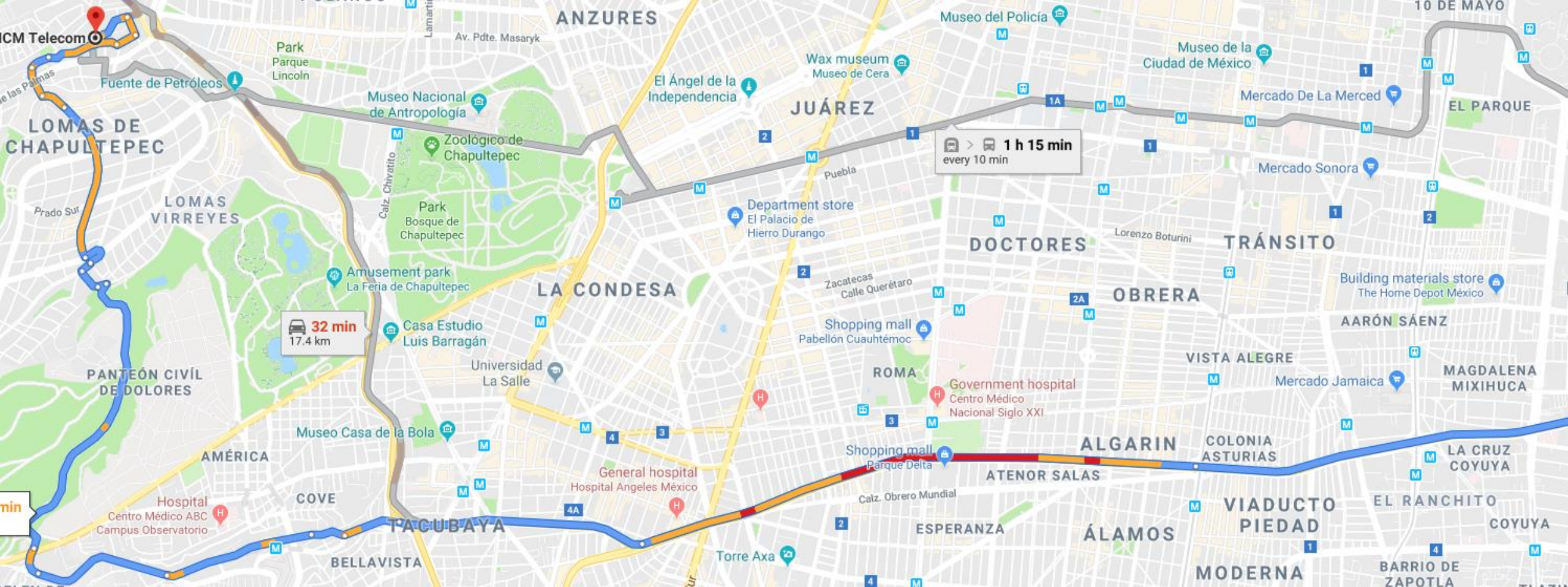
$$P_{Rx} = P_{Tx} - A_{Real} = 5 - 10.67 = -5.67 \text{ dB}$$

Como  $P_{Rx} > -16 \text{ dBm}$ , el enlace es PON (Passive Optic Network).



## UBICACIÓN MCM





RUTA ALTERNATIVA





RUTA PRINCIPAL

## VALORES CALCULADOS

### Tramo 1

$$L_1 = 0.65 \text{ km}$$

$$At_1 = 0.65 * .02 + 0.5 * 1 + 0.3 * 1 = 0.93 \text{ dB}$$

$$P_{Tx1} - 0.93 = 5 - 0.93 = 4.07 \text{ dBm}$$

### Tramo 2

$$L_2 = 3.9 \text{ km}$$

$$At_2 = 3.9 * .02 + 0.5 * 1 = 1.28 \text{ dB}$$

$$P_{Tx2} - 1.28 = 4.07 - 1.28 = 2.79 \text{ dBm}$$

### Tramo 3

$$L_3 = 3.92 \text{ km}$$

$$At_3 = 3.92 * .02 + 0.5 * 1 = 1.284 \text{ dB}$$

$$P_{Tx3} - 1.284 = 2.79 - 1.284 = 1.506 \text{ dBm}$$

### Tramo 4

$$L_4 = 1.9 \text{ km}$$

$$At_4 = 1.9 * .02 + 0.5 * 1 + 0.3 * 1 = 1.18 \text{ dB}$$

$$P_{Tx4} - 1.18 = 1.506 - 1.18 = 0.326 \text{ dBm}$$

### Tramo 5

$$L_5 = 0.3 \text{ km}$$

$$At_5 = .3 * .02 + 0.5 * 1 + 0.3 * 1 = 0.86 \text{ dB}$$

$$P_{Tx5} - 0.86 = 0.326 - 0.86 = -0.534 \text{ dBm}$$

### Tramo 6

$$L_6 = 3.9 \text{ km}$$

$$At_6 = 3.9 * .02 + 0.5 * 1 + 0.3 * 1 = 1.58 \text{ dB}$$

$$P_{Tx6} - 1.58 = -0.534 - 1.58 = -1.046 \text{ dBm}$$

### Tramo 7

$$L_7 = 1 \text{ km}$$

$$At_7 = 1 * .02 + 0.5 * 1 + 0.3 * 1 = 1 \text{ dB}$$

$$P_{Tx7} - 1 = -1.046 - 1 = -2.046 \text{ dBm}$$



## VALORES CALCULADOS

Potencia de recepción del enlace.

$$\sum_{n=1}^7 P_{Txn} = -2.046 \text{ dB}$$

$$P_{RxEnlace} - A_{Reserva} = -2.046 - 3 = -5.046 \text{ dBm}$$

Atenuación de total.

$$\sum_{n=1}^7 At_n = 8.114 \text{ dB}$$

Atenuación real.

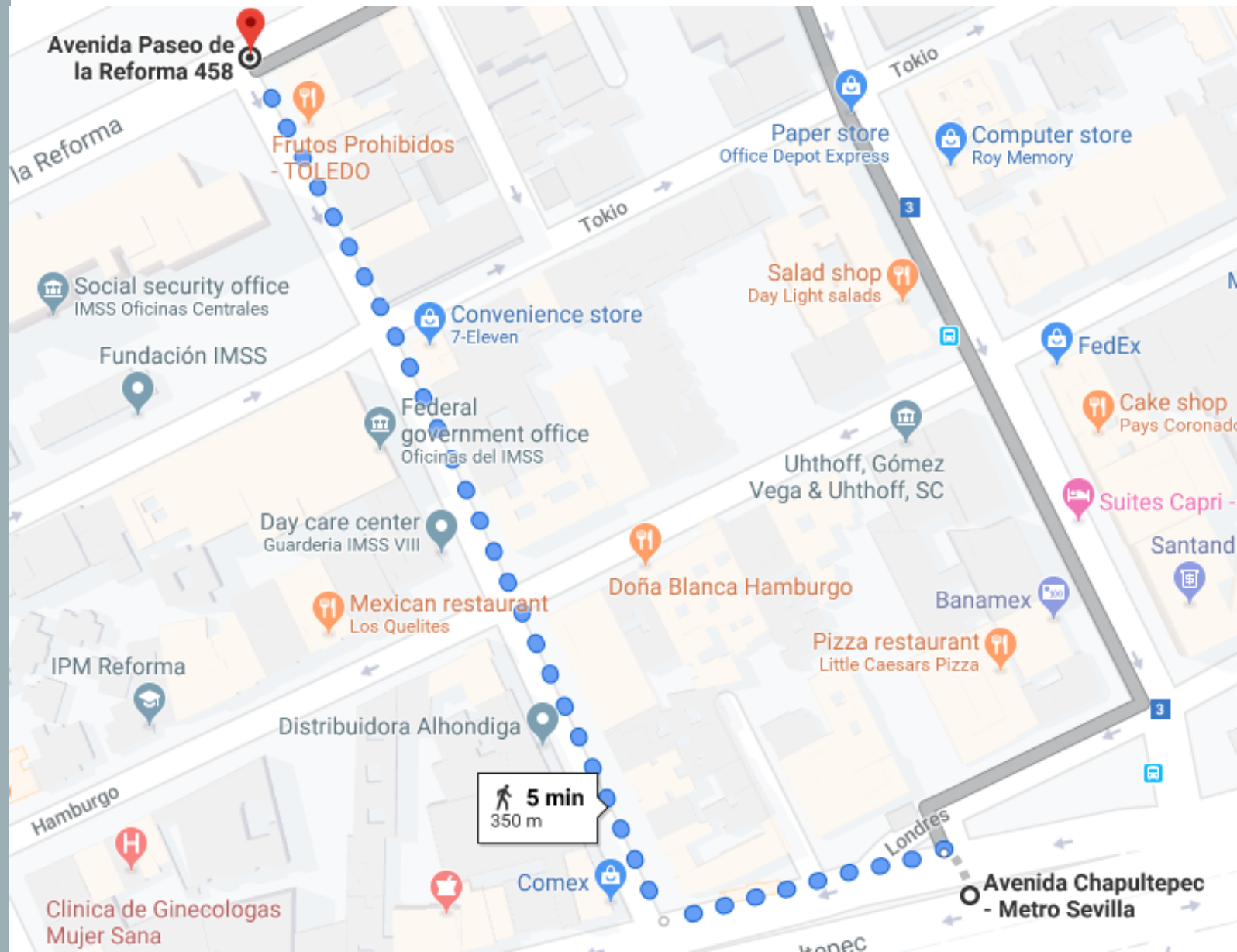
$$A_{real} = A_T + 3 = 8.114 + 3 = 11.114 \text{ dB}$$

Potencia de recepción

$$P_{Rx} = P_{Tx} - A_{Real} = 5 - 11.114 = -6.114 \text{ dB}$$

Como  $P_{Rx} > -16\text{dBm}$ , el enlace es PON (Passive Optic Network).

# PUNTO CRÍTICO



# SALIDA DE METRO SEVILLA







ENTRADA A  
SUBSUELO

The background of the slide is a dark blue night sky filled with numerous small white stars. A prominent constellation is highlighted with bright green lines connecting its stars. The constellation appears to be Orion, with its main body on the left and a smaller part on the right. A white rectangular box with a thin black border is positioned in the lower center of the image, containing the word 'CONCLUSIONES' in a bold, black, sans-serif font.

# CONCLUSIONES