Radio Planning Software

Marco Zennaro
Ermanno Pietrosemoli

The Abdus Salam
International Centre
for Theoretical Physics

Example of wireless device specs: LBE-5AC-23

Output Power: 24 dBm							
TX Power Specifications				RX Power Specifications			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
airMAX ac	1x BPSK (½)	24 dBm	± 2 dB	airMAX ac	1x BPSK (½)	-96 dBm	± 2 dB
	2x QPSK (½)	24 dBm	± 2 dB		2x QPSK (½)	-95 dBm	± 2 dB
	2x QPSK (¾)	24 dBm	± 2 dB		2x QPSK (¾)	-92 dBm	± 2 dB
	4x 16QAM (½)	24 dBm	± 2 dB		4x 16QAM (½)	-90 dBm	± 2 dB
	4x 16QAM (¾)	24 dBm	± 2 dB		4x 16QAM (¾)	-86 dBm	± 2 dB
	6x 64QAM (⅔)	23 dBm	± 2 dB		6x 64QAM (⅔)	-83 dBm	± 2 dB
	6x 64QAM (¾)	22 dBm	± 2 dB		6x 64QAM (¾)	-77 dBm	± 2 dB
	6x 64QAM (⅚)	21 dBm	± 2 dB		6x 64QAM (⅚)	-74 dBm	± 2 dB
	8x 256QAM (¾)	20 dBm	± 2 dB		8x 256QAM (¾)	-69 dBm	± 2 dB
	8x 256QAM (⅚)	19 dBm	± 2 dB		8x 256QAM (⅚)	-65 dBm	± 2 dB

Antenna Information	
Operating Frequency	Worldwide: 5150 - 5875 MHz USA: 5725 - 5850 MHz
Output Power	25 dBm
Gain	23 dBi
Max. VSWR	1.5:1

BotRf: a telegram application for wireless links

To install the tool, first install the telegram application from the *play store* in your device.

You need to have a cell phone to receive an sms with the code that will grant you access. It does not need to be a smart phone.

With that code, you can run telegram in any web browser capable device, laptop, tablet or desktop, besides an android phone.

Once telegram is running choose BotRf as a contact, and you are set.

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To plan a point to point link you need:

- Coordinates and height above the terrain of the two antennas
- Frequency of operation in megahertz
- Transmission power and receiver sensitivity at the operating rate
- Transmitting and receiving antenna gains in the chosen direction
- Losses of the cables between the device and the antenna, if any

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BotRf will fetch the required digital elevation maps to:

- Draw the first Fresnel zone ellipsoid and optical line of sight
- Draw the apparent earth curvature for the specified refraction index
- Calculate the distance and the angles between both antennas
- Calculate the free space loss on the path and the estimated attenuation introduced by obstacles, if present
- Show a profile of the terrain between the antennas

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BotRf will also:

- Draw a graph of power versus distance along the link
- Calculate the estimated received power and the link margin
- Draw a map of the the area surrounding the two end points
- Present a view from one end point to the other, identifying relevant landmarks
- Additionally, BotRf will do many magnitude and units conversions to facilitate the planning of the link

Tunapanda network

- Tunapanda HQ: -1.312799 36.778679 10m
- Railta: -1.312547 36.783708 12m
- Tosha: -1.314644 36.782746 10m
- St.Christine: -1.317061 36.777154 15m