Assessment Trip – WiFi4Crea

Cocobolo, Panama

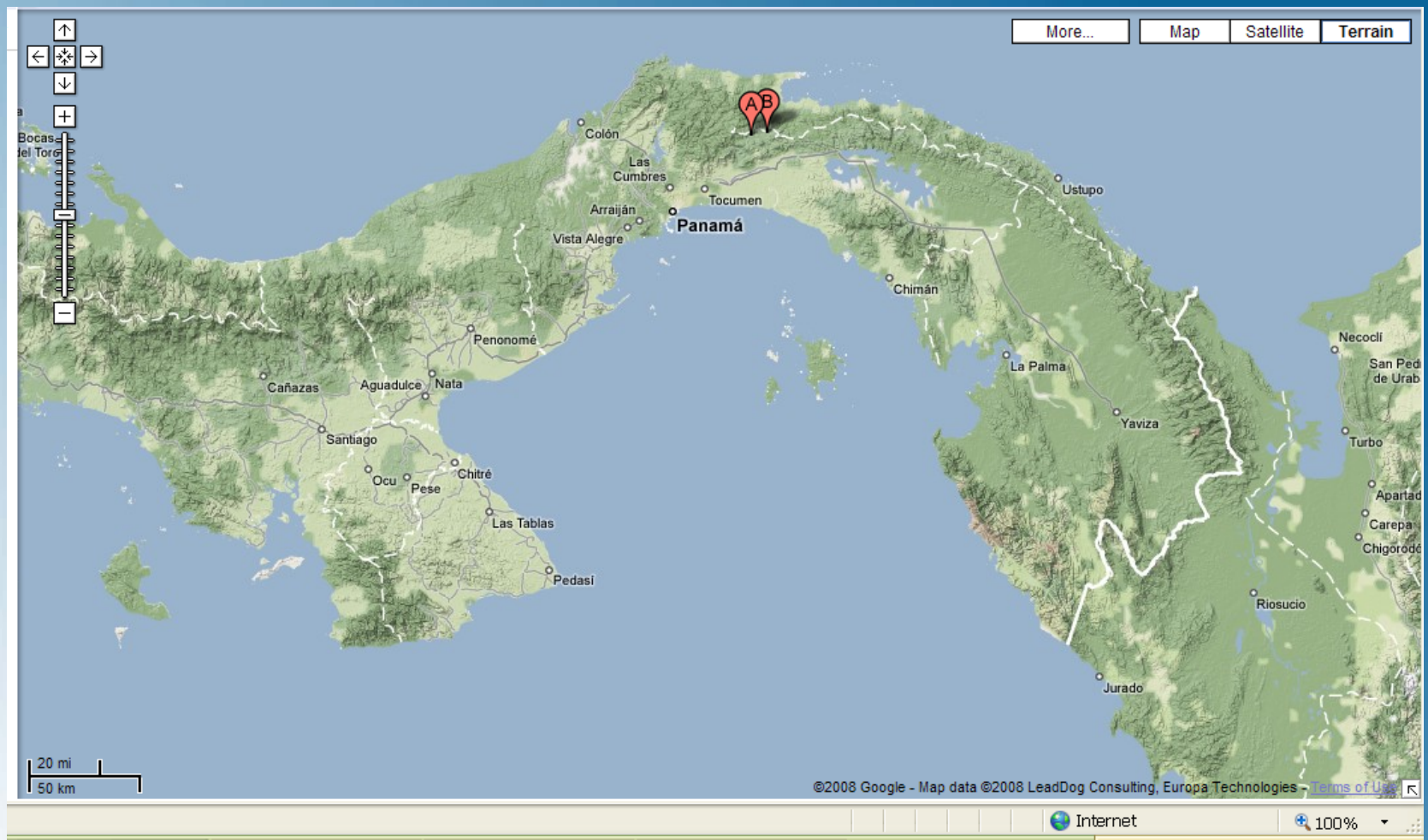
Engineers Without Borders – USA
Sun Professionals
San Francisco Professionals

Introduction

- Wifi4Crea is a joint project between the San Francisco Professionals / Sun Professionals Chapter of Engineers Without Borders and CREA Panama
- The purpose of the project is to provide an inexpensive and fast internet connection to the Cocobolo Nature Preserve in Panama
- The internet connection will serve to provide CREA with the ability to improve remote monitoring of the rainforest and give training and internet information retrieval capabilities to 1000 local villagers

Location

- Cocobolo, Panama



Local Area Description

- Rainforest suffers from slash-and-burn subsistence farming
- Local villagers live on average of $2USD/day
- Replacing slow and expensive satellite internet connection with Wifi will enable:
  - Students the ability to study and monitor rainforest conditions
  - Villagers to learn about sustainable farming techniques

The Rainforest

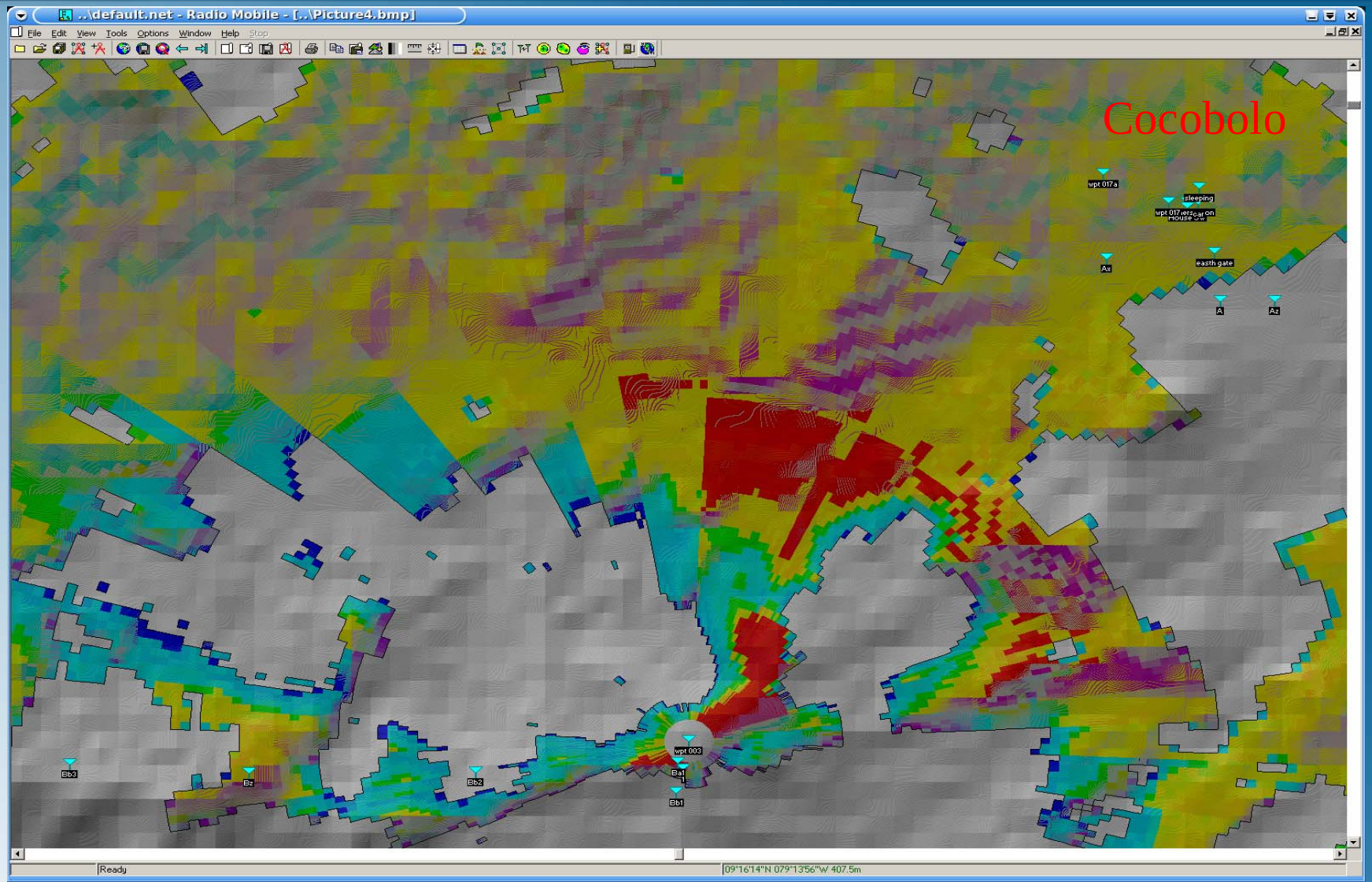
Cocobolo - Big Hut

Setting Up a Communications Test

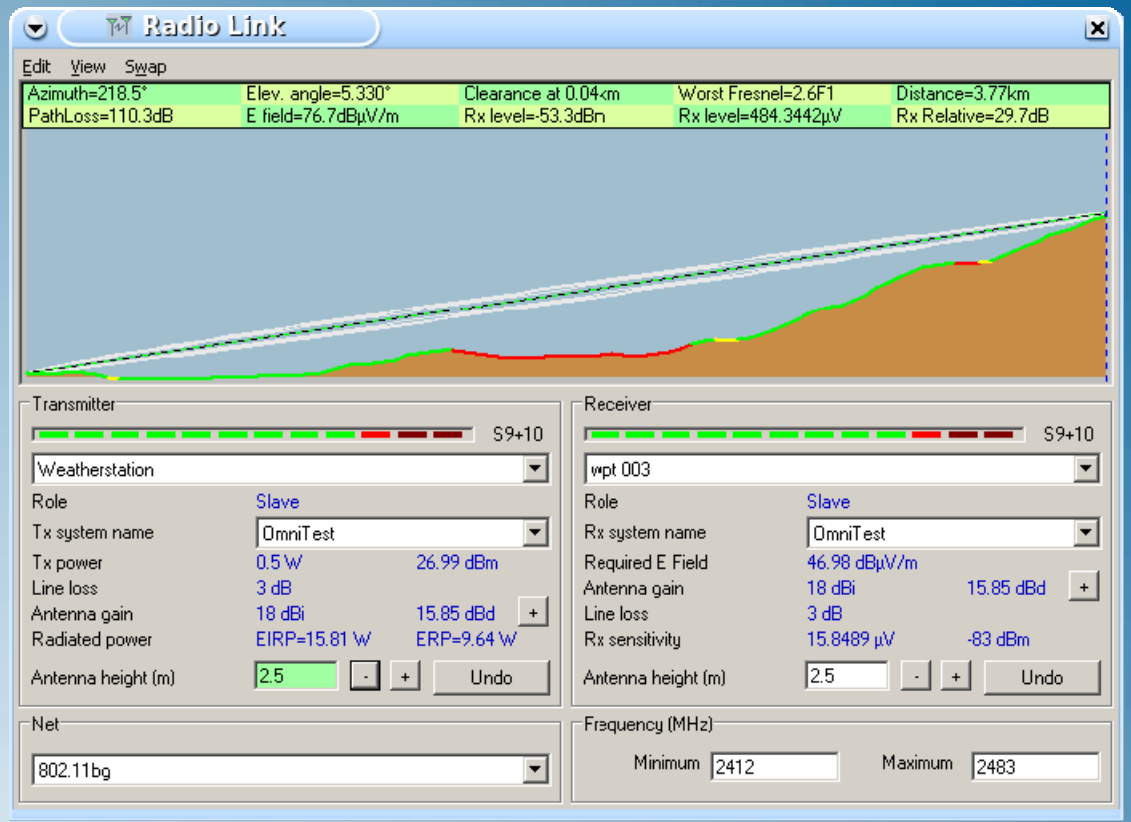
Terrain and Conditions

- Hillside where connection is required can be wet, foggy, and rainy
- Assessment trip evaluated optimal placement sites for communication towers

RadioMobile Coverage plot - Hill

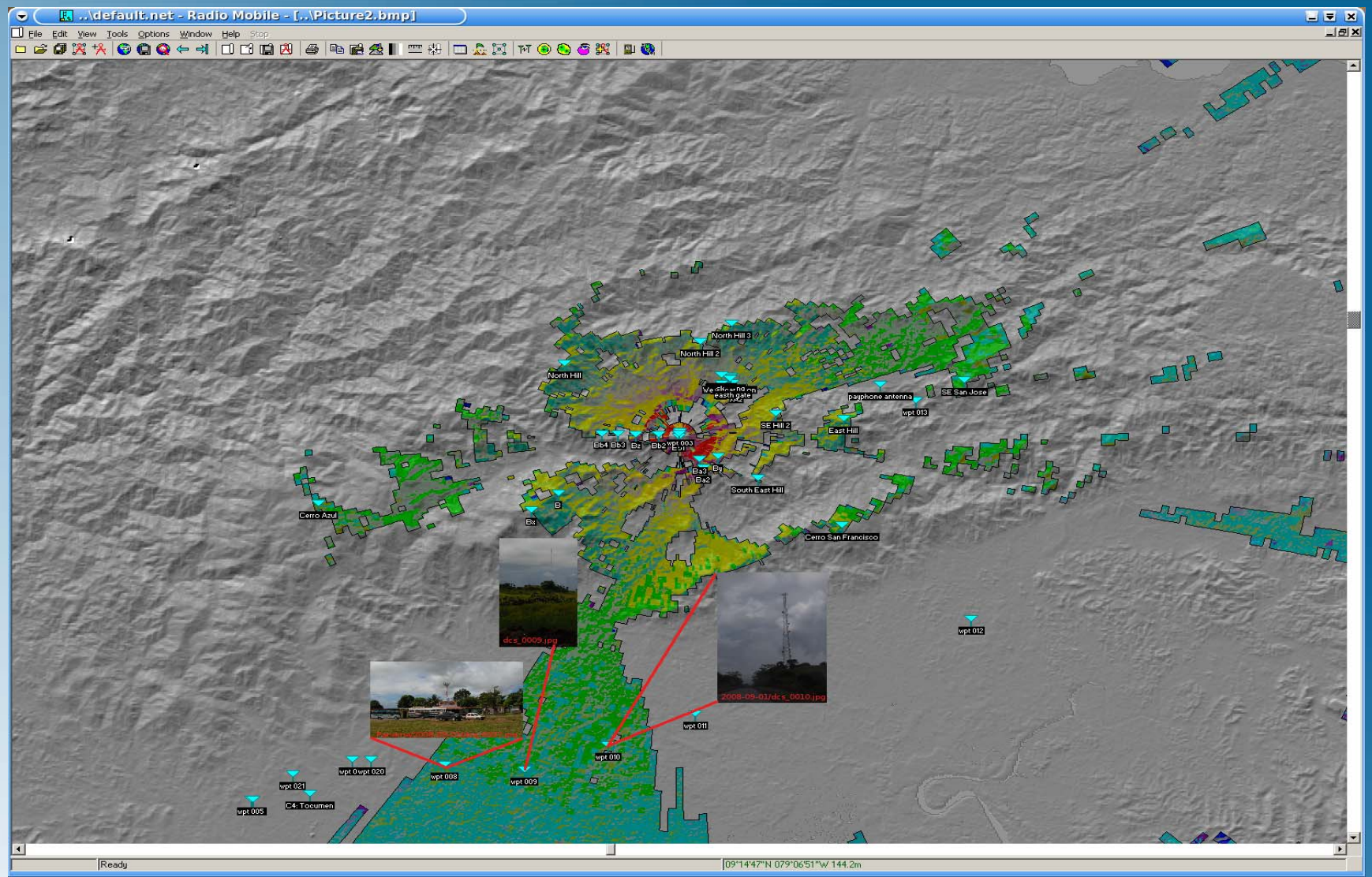


Hill → Weatherstation

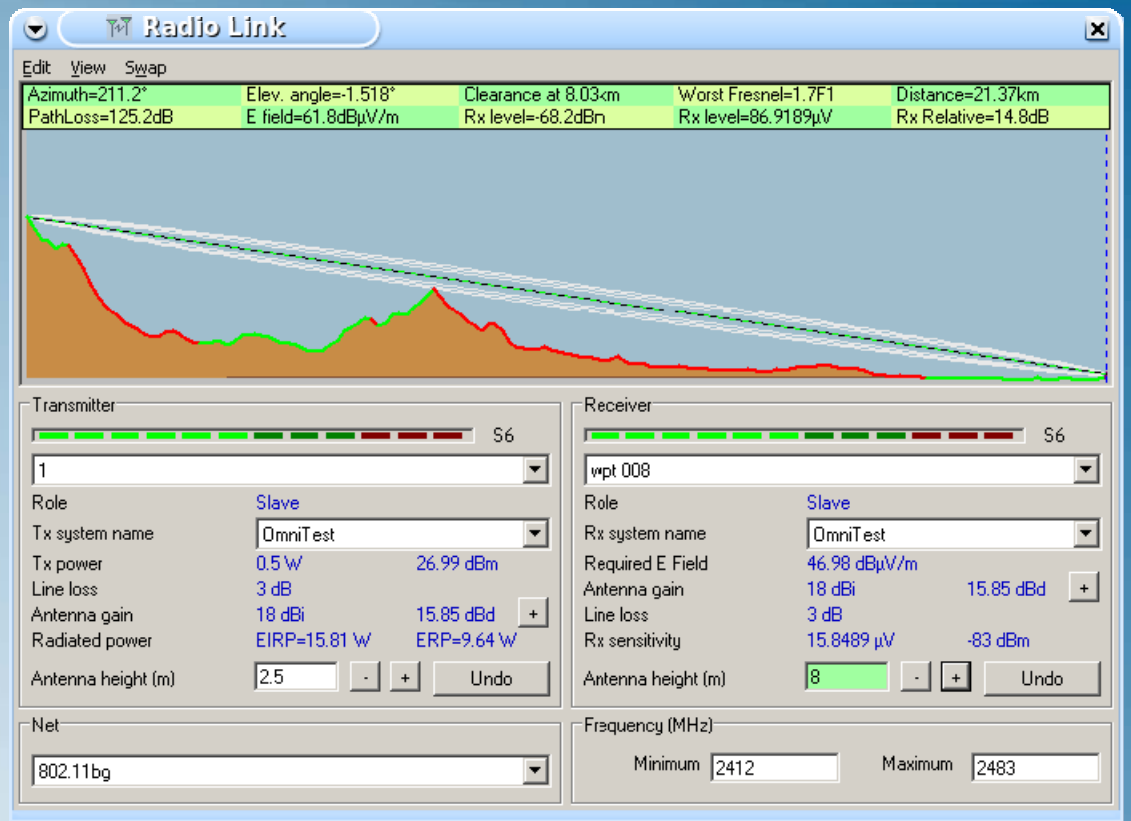


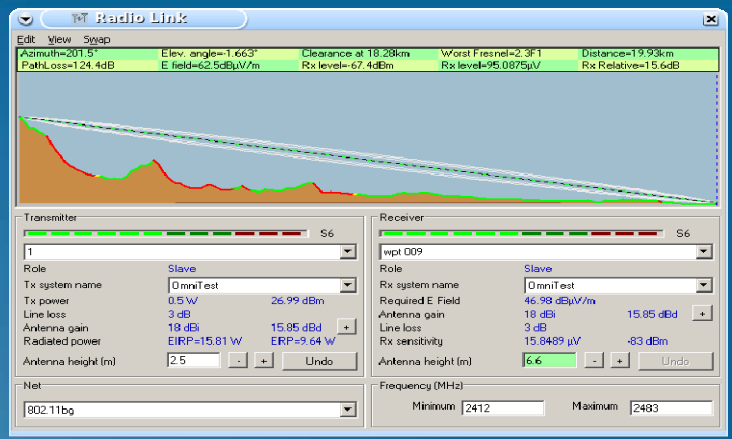
- Very strong signal for this short distance

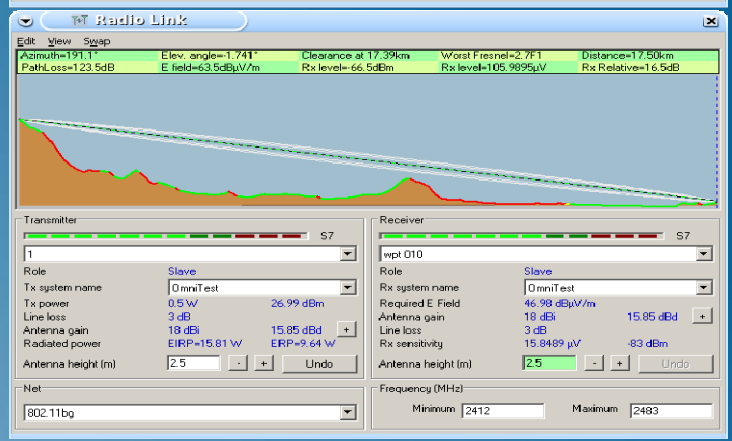
To the Outside



Hill → Outside







- Around those three points the signal is good.

Proposed Equipment - Outside

- Currently exact location unknown
- DSL/Cable Modem from ISP
- Ubiquiti Powerstation2 (PS2-18V)
- Pole/tower to clear the surounding structures

Proposed Equipment - Hill

- Clearance from the landowner needed
- 2 x PS2-18V
- Poles 2.5 m (+.5 in the ground) to clear grass/cows/ Cable fastent
- Solar Panel >= 125W
- AGM Battery 12V, >= 75Ah
- Charge Controller
- ”Control Computer/Switch”
- Fences, Cat 5, Enclosures …

Control Computer

- Propose WAP – Asus WL500gP V2
- OpenWRT
- 2xUSB (one to monitor charge controller via USB->Serial)
- Remote monitoring
- Possibly weatherstation/Sunspot basestation
- Switch to help with the length limit

Proposed Equipment - Cocobolo

- PS2-18V
- Pole to clear structures
- Asus WL500gP V2 as local distribution point

Project Teams Needed

- Hardware acquisition
- Solar panels to power communications equipment
- Towers for holding equipment in field
- Overall project management

Equipment Costs - Estimates

4x Ubiquiti PS2-18V $160/each		$ 640
Solar Panel Kyocera KC130TM (or sim.)		$ 629
AGM Battery MK 8A27AGM 92Ah(or sim)		$ 215
Morningstar Sunsaver MPPT Controller		$ 245
2x Asus WL-500gP V2 $95/each		$ 190
USB-Serial Converter		$ 20
Poles/cables/fences		$ 200
Panama - Bay Area	Total	$ 2140