



LBA-CEOP PRESENTATION

LBA Reference Sites Status Report

Melbourne - Australia

August 19-21, 2009

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Topics

- **System Updates**
- **Data Submission Status**
- **Telemetry in LBA**
- **Miscellaneous**

System Updates

- New procedures to ingest, validate, calculate, and format data into CEOP standards are in place and **FULLY OPERATIONAL**. Minor fine-tuning will be done as needed.
- About 1300 lines of code written just for SFC calculations and validation.
- Code written and well documented (no use of spaghetti code !!!). Changes can be done with fast turn-around time.

New Data Submissions Status

- Manaus Surface Meteorology and Radiation submitted on July 2009.
- Manaus Soil Temperature and Moisture submitted on August 2009.
- Manaus Flux data submitted on August 2009.
- Processes and procedures now in place allow us to start delivering data at a much faster pace than before!

Telemetry in LBA

(moving data from remote sites)

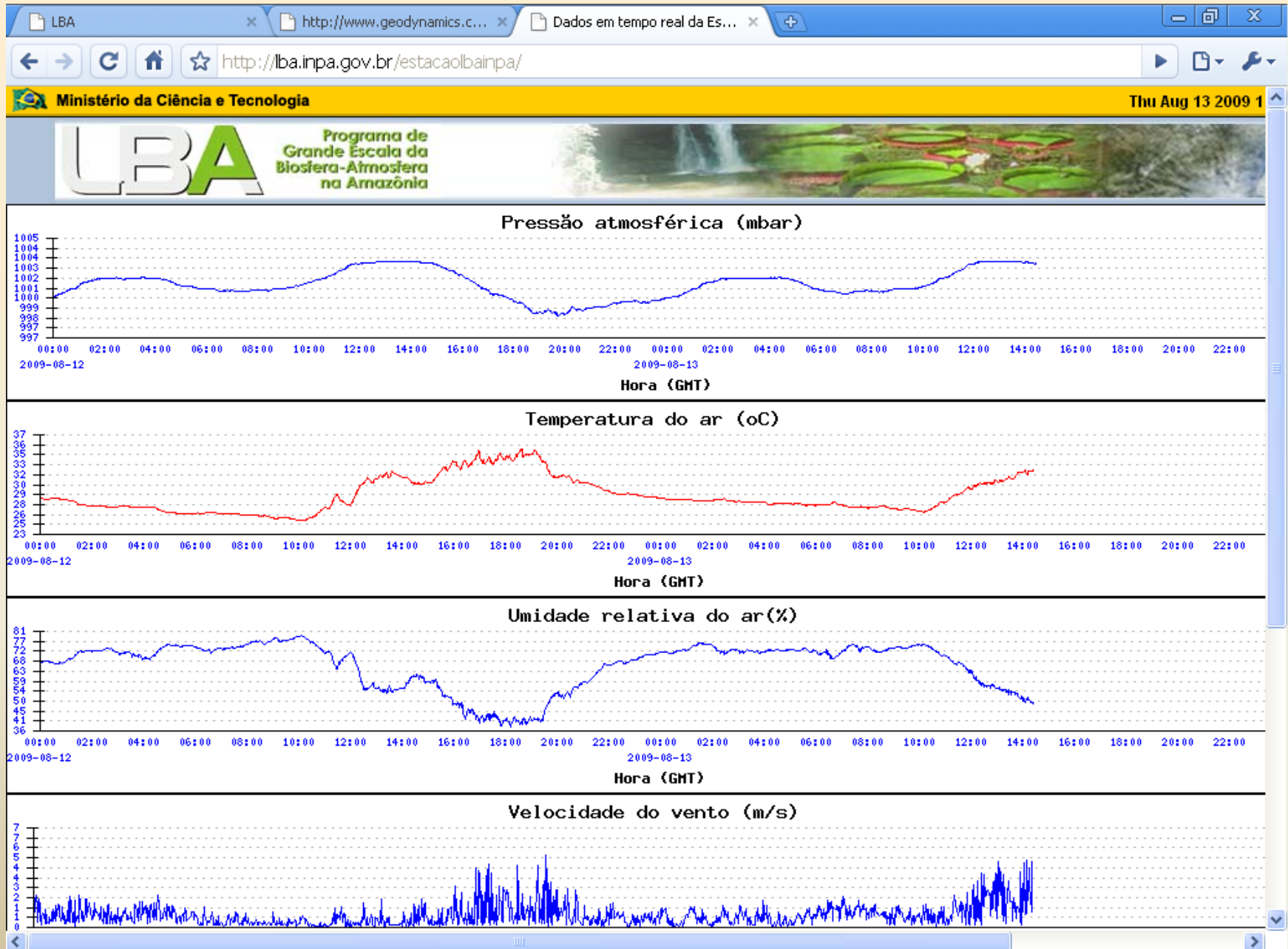
- Phase 1: proof of concept successfully completed! Data transfers from Manaus site to LBA Central Office (60 kilometer apart) is now a reality.
- This mechanism allows fast detection and repair of faulty instrumentation.
- REAL-TIME data collection and analysis currently going thru stress-testing.
- NOTE: Transmission of microwave signals over 60 kms of dense forest posed **several challenges** (signal degradation due to high humidity and heat, distance of sending/receiving towers, etc.)



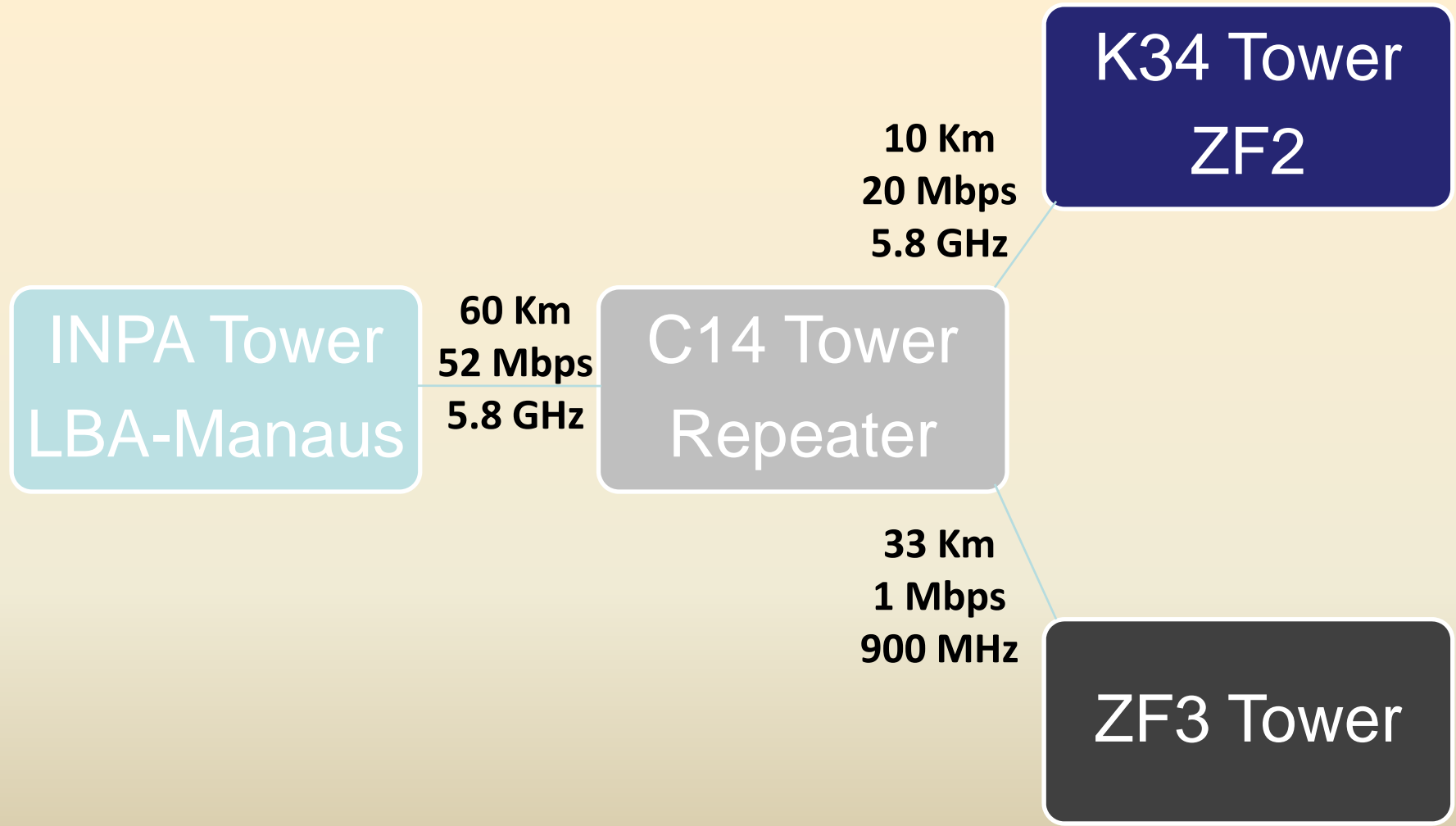


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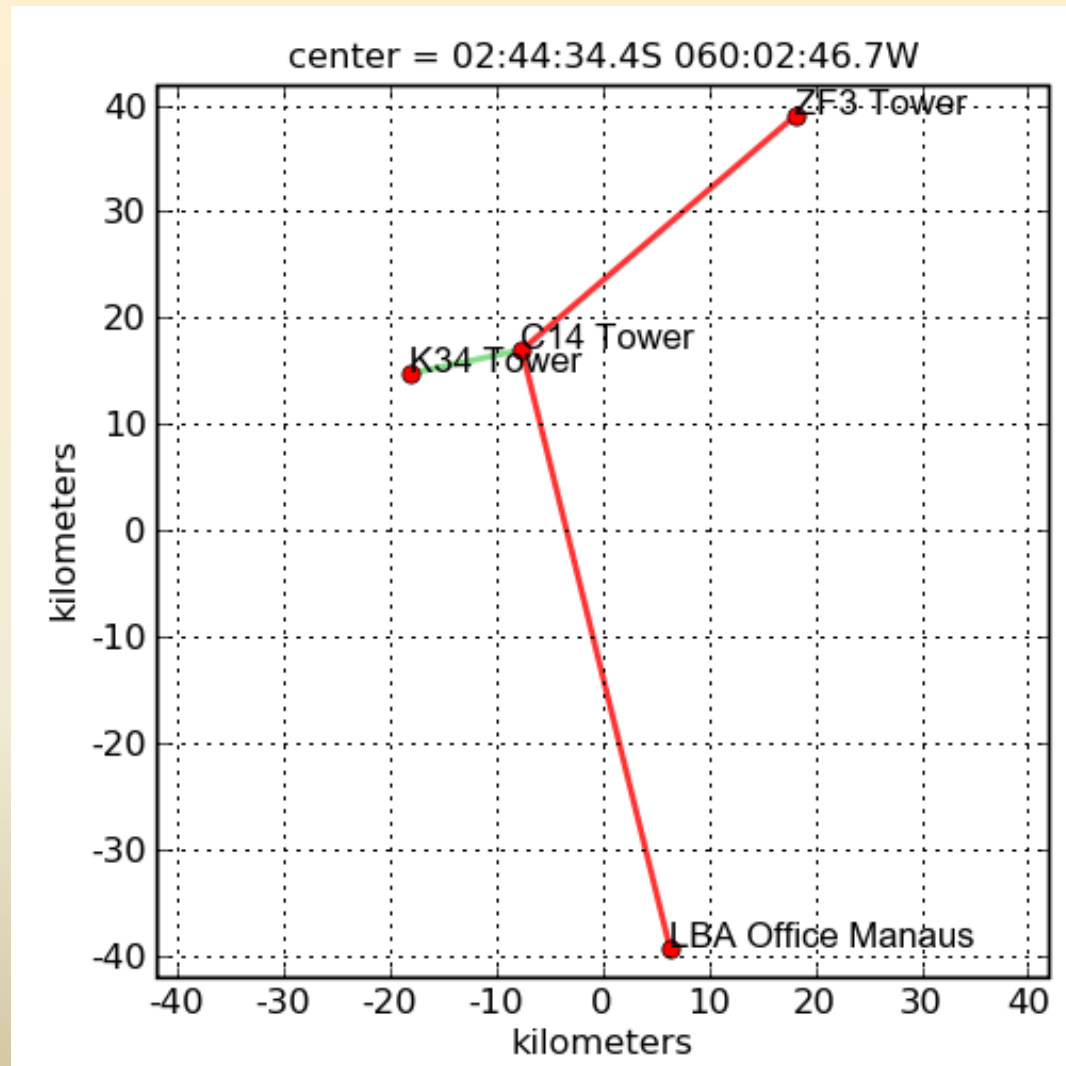
Real-time data check snapshot



LBA Manaus Telecom System Architecture



Radio Links



Radio Links



INPA/LBA Tower: 80 m



Radio:

**Motorola PTP 500
(OFDM)**

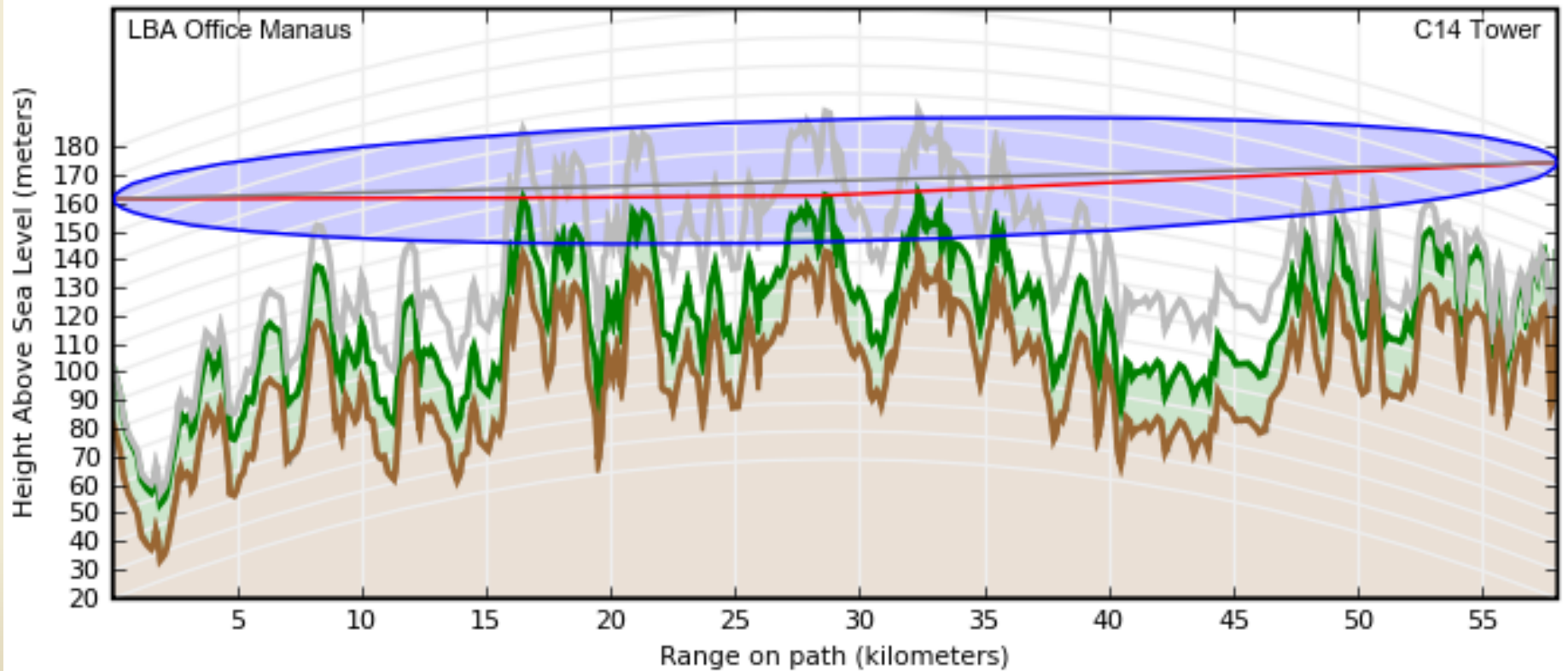
**Frequency: 5.8 GHz
52 Mbps**

Antenna:

**2 parabolic dishes 90
cm diameter**

**Vertical and Horizontal
Polarization**

Link Path: LBA-C14



C14 Repeater Tower: 52 m

Radios:

- 1 Motorola PTP 500 Lite (5.8 GHz - OFDM)
- 1 Motorola Canopy BH20 (5.8 GHz - PSK)
- 1 MDS (900 MHz – Spread Spectrum)

Antennas:

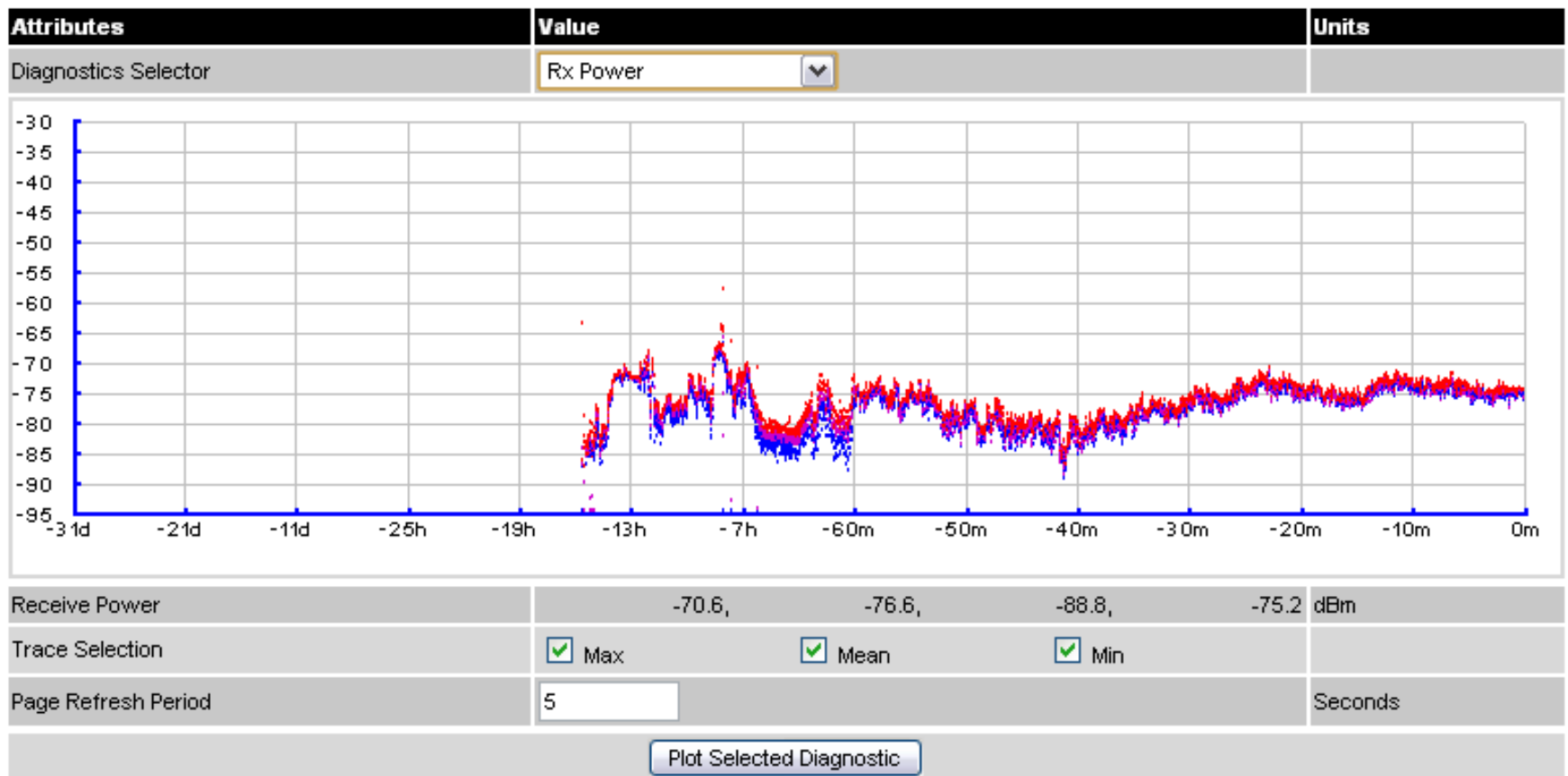
- 1 parabolic dish 1.2 m dual polarization
- 1 parabolic offset reflector
- 1 yagi 20 dbi



Receive Power: INPA-C14

Diagnostic Plotter

The plot displays three traces. Maximum values are displayed in red, mean values are displayed in purple and minimum values are displayed in blue.

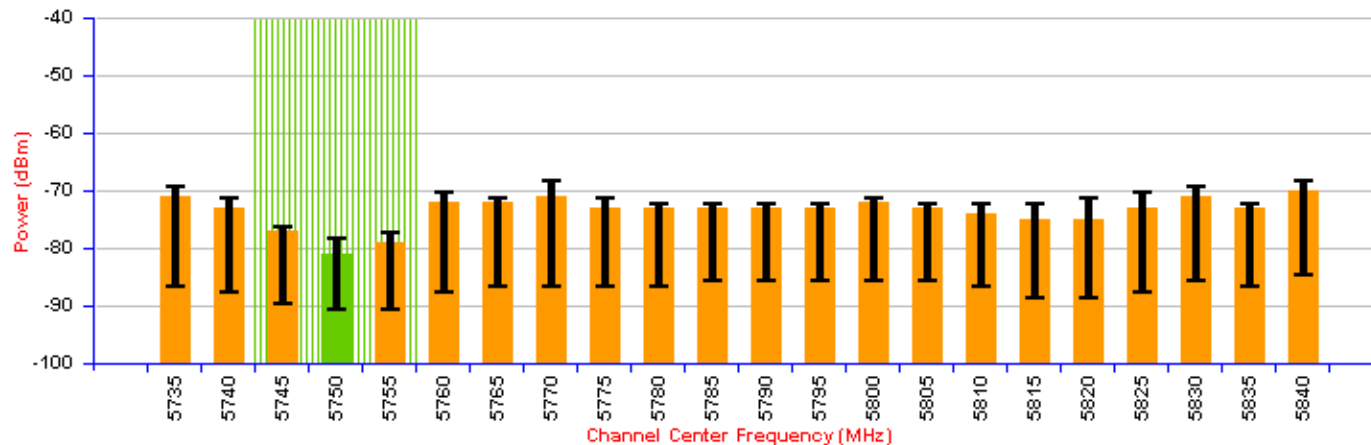


Frequency Spectrum: INPA-C14

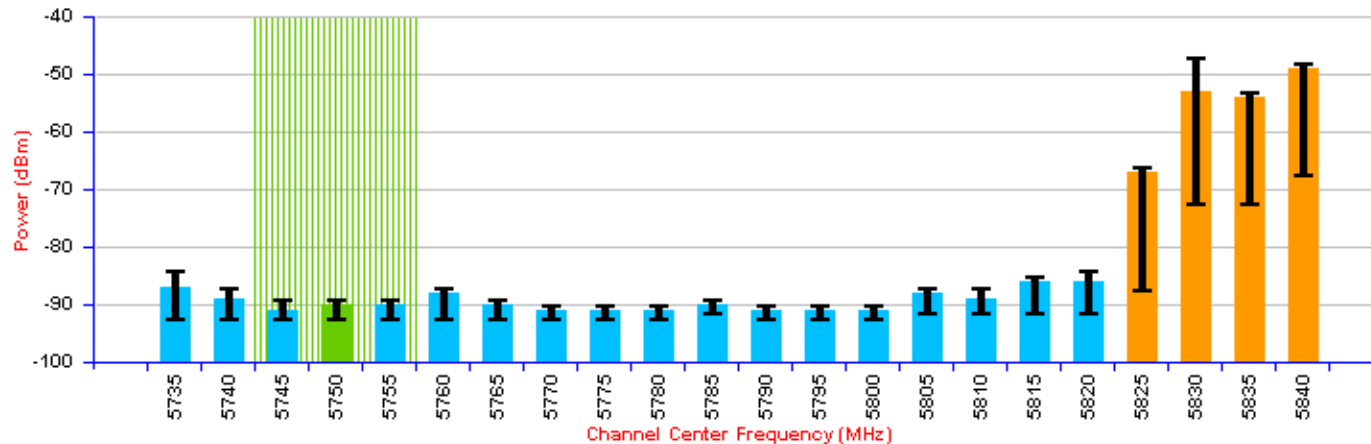
Spectrum Management - intelligent DFS

Local Channel 21: State=INTERFERENCE, Mean=-87 dBm, 99.9%=-73 dBm, Peak=-72 dBm

Local Receive Channel Spectrum

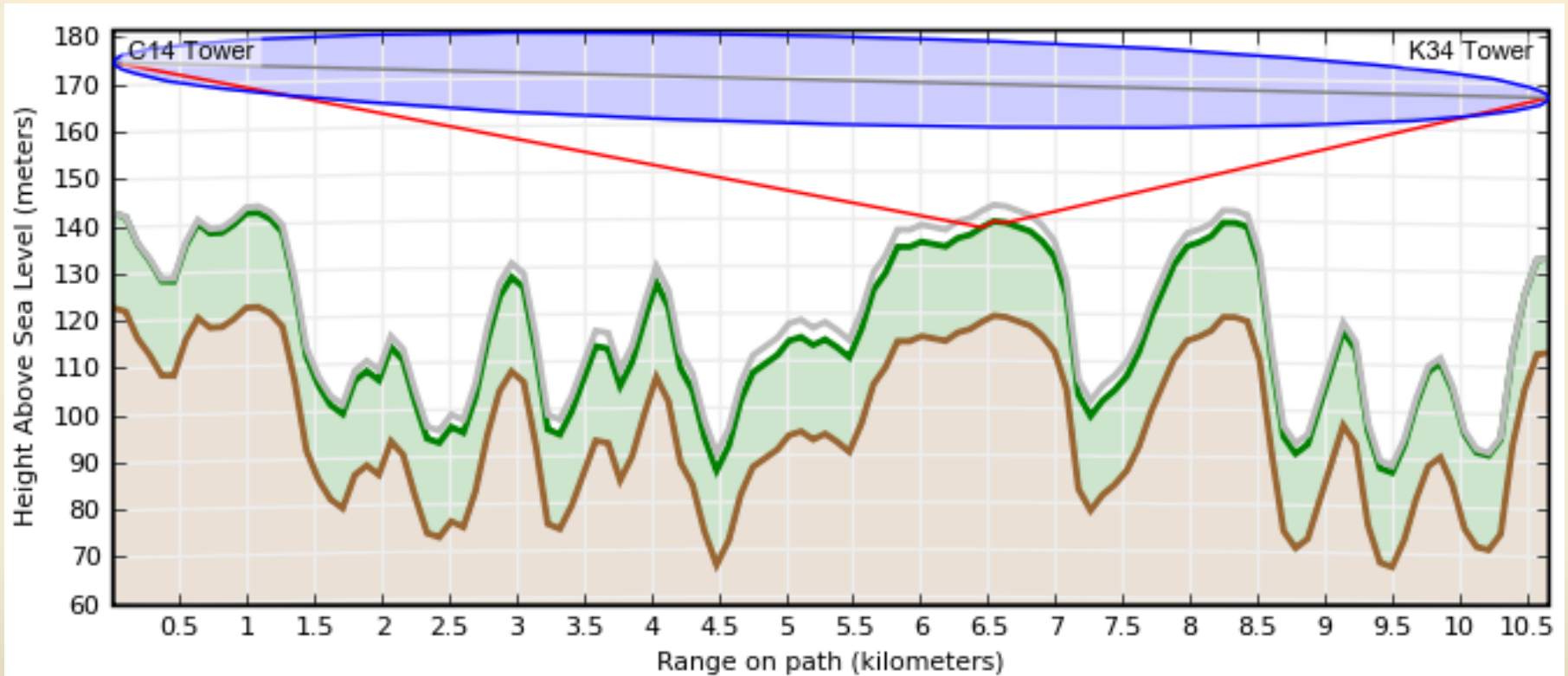


Peer Receive Channel Spectrum



[Active Channel History](#) [Help](#)

Link Path C14-K34



K34 Tower: 55 m

Radios:

- 1 Motorola BH 20 - 5.8 GHz
- 2 APs for Dataloggers – 2.4 GHz
- 1 Serial to wireless converter for each datalogger

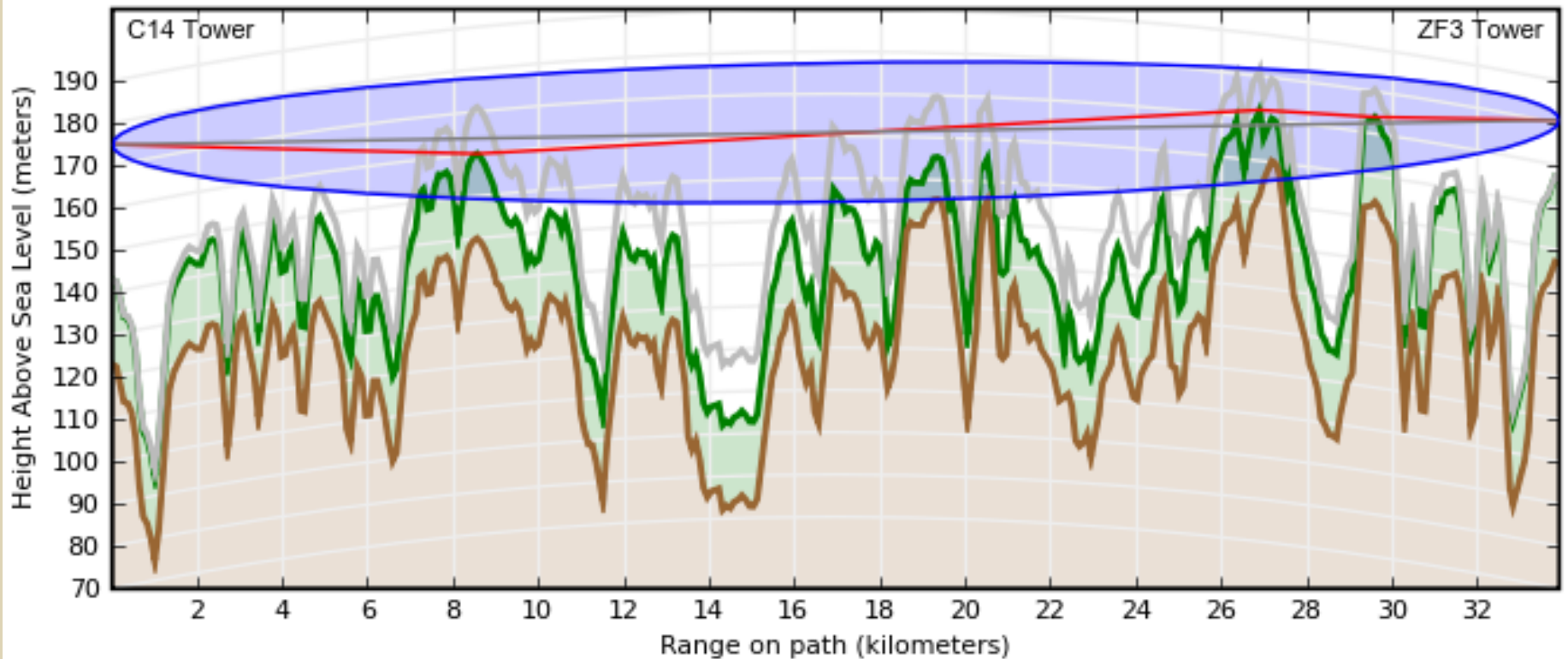


Antennas:

- 1 Parabolic offset dish reflector
- 1 Grade Dish reflector
- 1 Omnidirectional



Link Path C14-ZF3



Online Data received from K34 AWS at LBA Office

K34_CR10X_AWS Numeric Display 1: Real Time Monitoring (Connected)

RecNum	188	Atemp6	23.52	C_CO2_ppm	392.72
TimeStamp	31/2009 15:46:04	Windsp_1	2.24	Psour_H2O	53.00
Shortw_in	9.01	Windsp_2	1.41	Psour_CO2	54.00
Shortw_ou	1.46	Windsp_3	1.66	Pdest_H2O	29.00
Longw_in	-11.13	Windsp_4	0.87	Pdest_CO2	35.00
Longw_out	-INF	Rainfall	2.40	PTref_mV	22.30
Par_in	6.94	Batt_volt	13.32	Longin_mV	24.26
Rel_Umid	92.19	Con_H2O_1	30.86	L0ngou_mV	-INF
Solo_1	0.00	Con_H2O_2	30.38	Atemp1_mV	0.00
Solo_2	0.00	Con_H2O_3	30.76	Atemp2_mV	24.33
Wind_dir	324.37	Con_H2O_4	30.73	Atemp3_mV	24.32
Surf_temp	23.42	Con_H2O_5	30.82	Atemp4_mV	24.32
Pressao	995.81	Con_H2O_6	31.45	Atemp5_mV	24.40
TE_Longin	22.61	Con_CO2_1	387.10	Atemp6_mV	24.34
TE_Longou	INF	Con_CO2_2	388.86	H2O	30.76
Atemp_1	23.00	Con_CO2_3	391.89	CO2	391.89
Atemp_2	23.44	Con_CO2_4	394.82	Net_Rad	0.00
Atemp_3	23.25	Con_CO2_5	393.85	TimeLengh	0.00
Atemp4	23.29	Con_CO2_6	397.84		
Atemp5	24.24	C_H2O_mB	31.20		

Current LBA-DIS Node Configuration



CPTEC 155 Mbps link



13 8 2009



LBA Server at CPTEC

22 11 2007

The End !