

CIAO RADIO MULTIMODE RECEIVER TEST SET

By Sistel

Introduction

- Ciao Radio is a Multimode HF Receiver and Test – Set
- As Multimode HF Receivers it is a SDR (Software Defined Radio) with two antennas input .
- Filtering and Demodulation of the signals is made from a PC connected to Ciao Radio trough an USB port
- This allows any kind of demodulation , filtering and postprocessing via Software

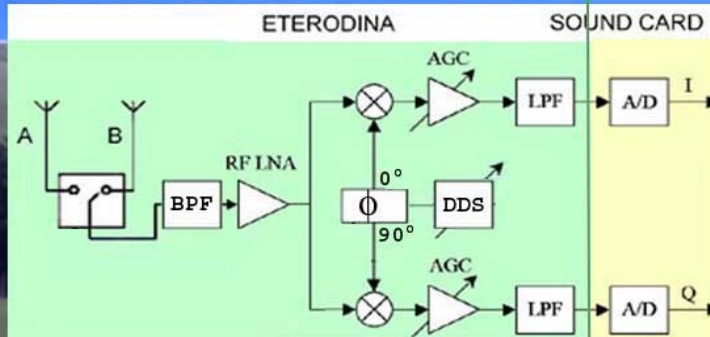
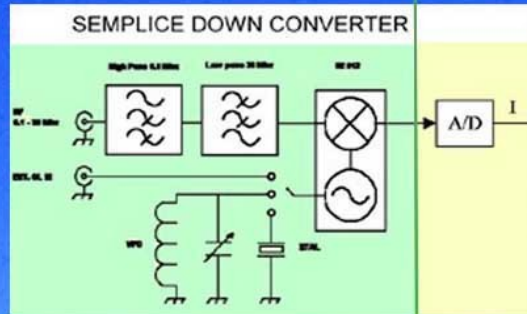
Ciao Radio as Test - Set

- Spectrum and Spectrogram analysis
- Generation of a CW carrier via DDS
- Spectrum recording for surveying and postmodulation purposes
- Audio Frequency analysis
- Recording of the amplitude of the signals and statistical analysis for propagation studies
- Measurements of the gain of antennas (Line of Sight or even in Ionospheric Mode) .

CIAO RADIO Architecture

Hardware

RF →



Software  CIAOradio



USB

Spectrum Analysis and Level Recording

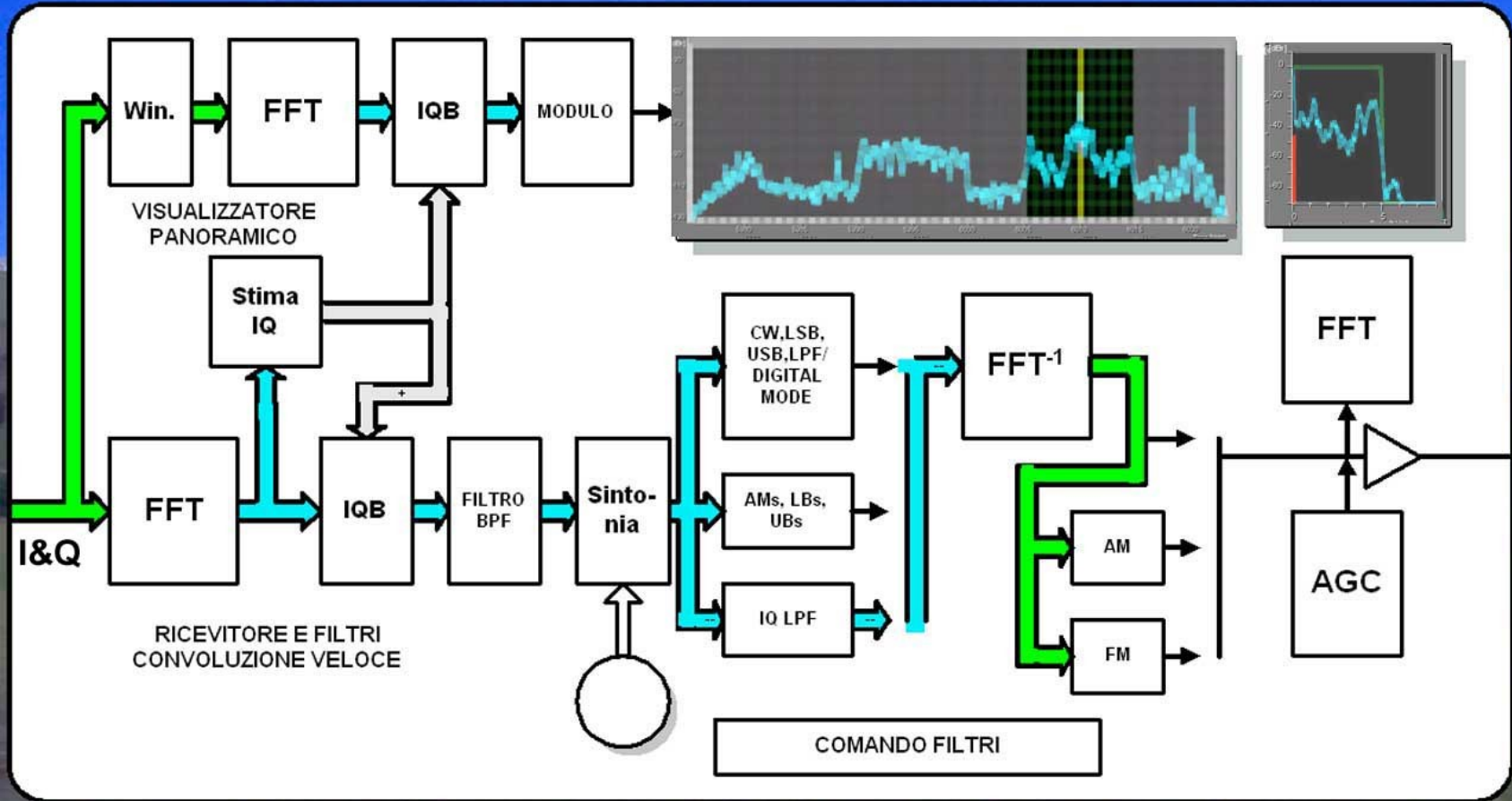
The screenshot displays the CIAOradio software interface, which is used for spectrum analysis and signal level recording. The main window is titled "CIAOradio" and features a menu bar with options like File, Tools, Mode, BandOutput, Setup, NoiseBlanker, ReadMemory, WriteMemory, and Help. The interface is divided into several sections:

- Waterfall Plot (Top Left):** A waterfall plot showing frequency over time. It is labeled "Spettrogramma" in green text.
- Wave Player (Top Center):** A window titled "Wave Player" showing a file path and playback controls (PAUSE, STOP, etc.).
- Input Spectrum (Top Right):** A plot titled "Spettro di ingresso" showing the input spectrum. The x-axis is labeled "Freq [MHz]" and ranges from 7025 to 7055. The y-axis ranges from -120 to 20. A vertical black bar highlights a specific frequency range.
- IF Filter (Middle Left):** A plot titled "filtro IF" showing the intermediate frequency filter response. It is labeled "filtro IF" in green text. The x-axis is labeled "Freq [MHz]" and ranges from 0 to 100. The y-axis ranges from -60 to 0.
- Mode Selection (Middle Right):** A panel with various mode selection buttons: QCW, AMs, LSB, USB, AM, OFM, LDe, UBs, DRM, and LPF. A small bar graph shows the signal level.
- Frequency and Sintonia (Bottom Right):** A large digital display showing the frequency "7.034.305" and a "Sintonia" knob for tuning. The text "Sintonia" is in yellow.
- Signal Level Trace (Bottom Left):** A plot titled "Signal level trace" showing the signal level over time. The x-axis is labeled "Sec" and ranges from 0 to 30. The y-axis ranges from -120 to 0. It is labeled "Livello segnale" in orange text.

The Windows taskbar at the bottom shows the Start button and several open applications: Total Commander 6.0..., CIAOradio, Wave Player, Waterfall, and Signal level trace. The system clock shows 10:26.

DSP

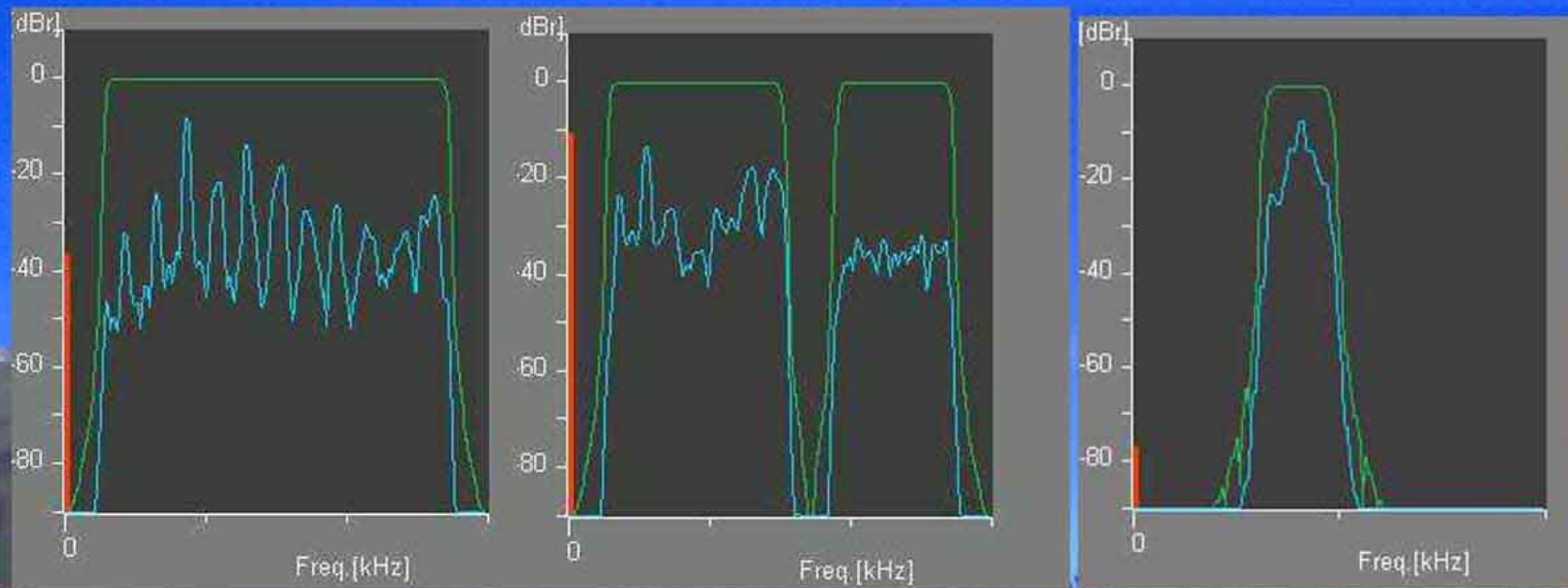
Digital Signal Processing



Filtering shape easily changed by mouse

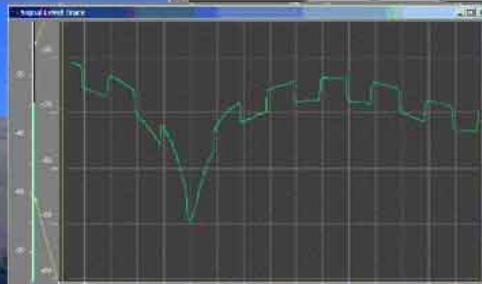


CIAOradio

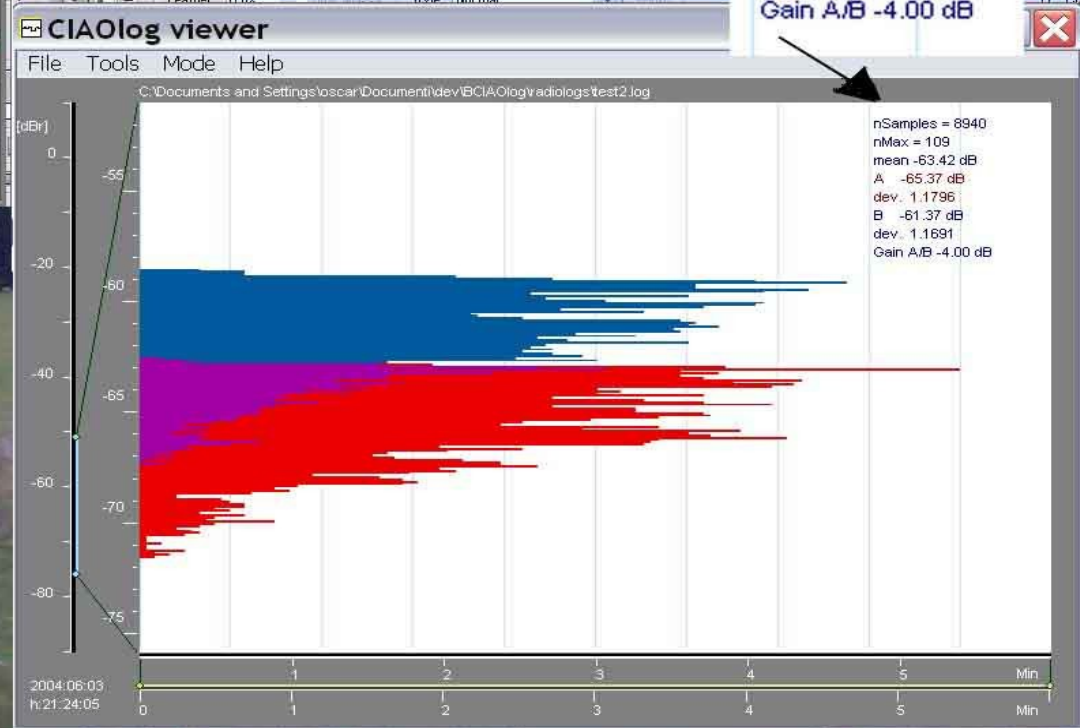


Antenna comparison

Misura relativa di antenne

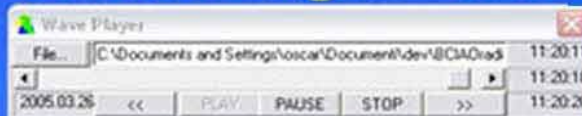
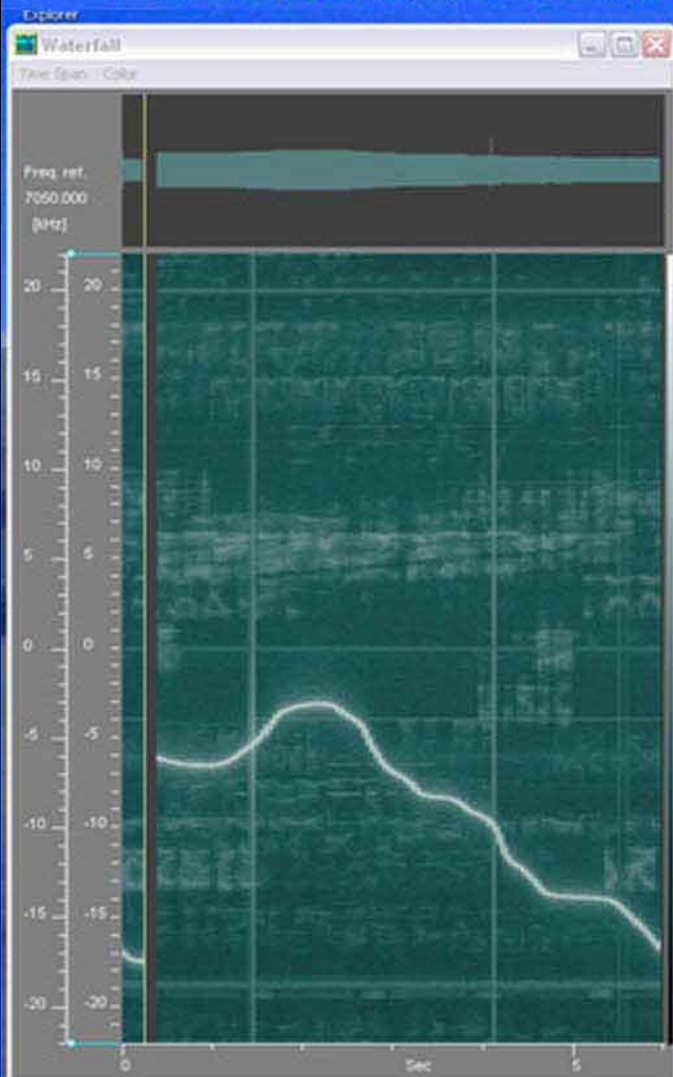


nSamples = 8940
nMax = 109
mean -63.42 dB
A -65.37 dB
dev. 1.1796
B -61.37 dB
dev. 1.1691
Gain A/B -4.00 dB



Advanced Automatic I-Q Balancing

Advanced I and Q Balancing

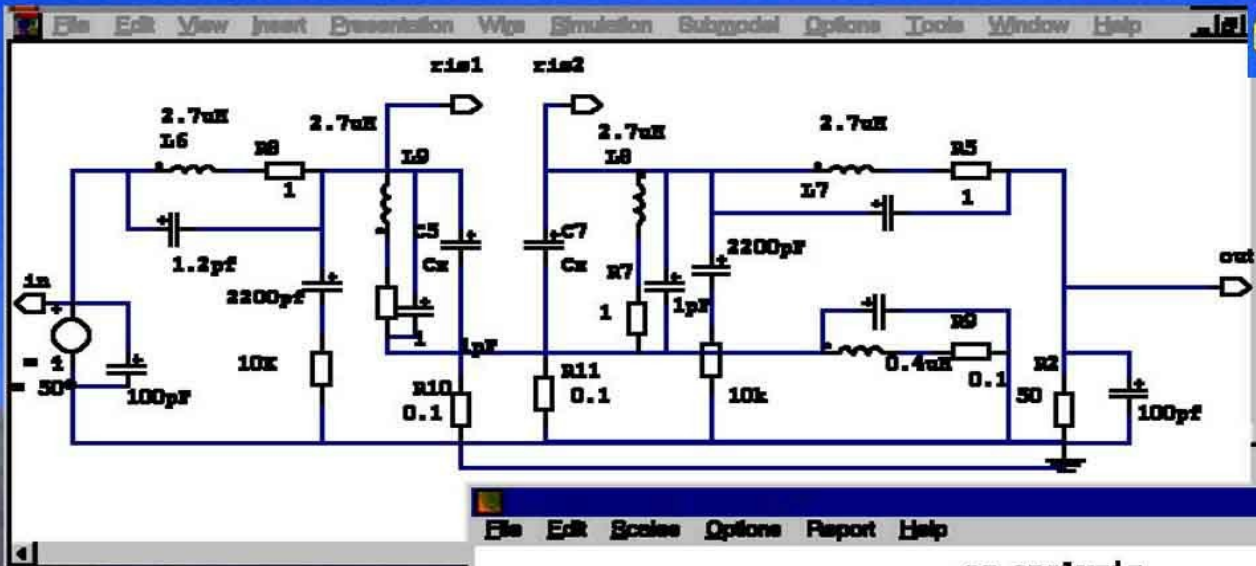


AIQB attivato

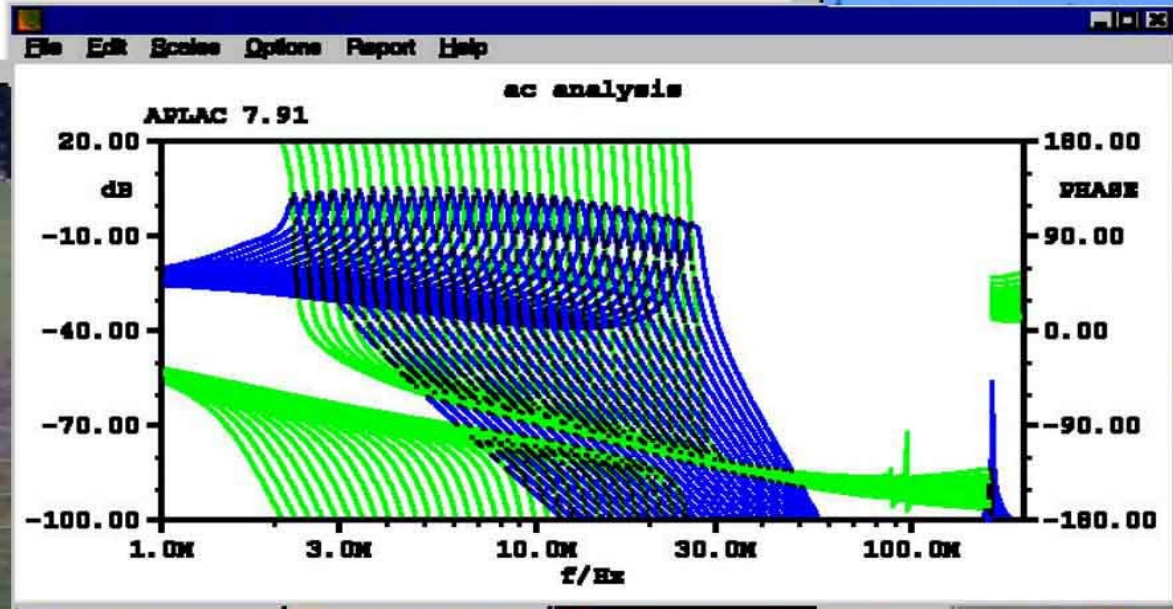
Multimode Demodulation

The screenshot displays the CIAOradio software interface. The main window features a spectrum analyzer at the top showing a signal between 6880 and 7000 kHz. Below it is a demodulation control panel with buttons for DV, LSB, USB, AM, FM, AMc, LBC, LBS, DRM, and an empty slot. A smaller spectrum plot is visible in the bottom left of the CIAOradio window. The Dream software window is overlaid on the right, showing the 'dream' logo and the names of its developers: Volker Fischer and Alexander Kurpiers from Darmstadt University of Technology. The Dream window displays an 'Input Level [dB]' meter at approximately -15 dB and a large text area with the following information: AAC(24 kHz)+SBR P-Stereo / No language specified / Information, DW-Wertachtal, and Bit Rate: 17.46 kbps EEP / ID:1001. At the bottom of the Dream window, a list shows the current track: 1 DW-Wertachtal | AAC(24 kHz)+SBR P-Stereo / No language specified / Information (17.46 kbps). In the background, a Wave Player window is open, showing a file path and playback controls. The Windows taskbar at the bottom includes the Start button, CIAOradio, Wave Player, and Dream icons, along with system icons and the time 10.02.

Preselector Design



Analisi del filtro di ingresso.



Drawing

