

WIDAR Real-Time Data Display

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Overview

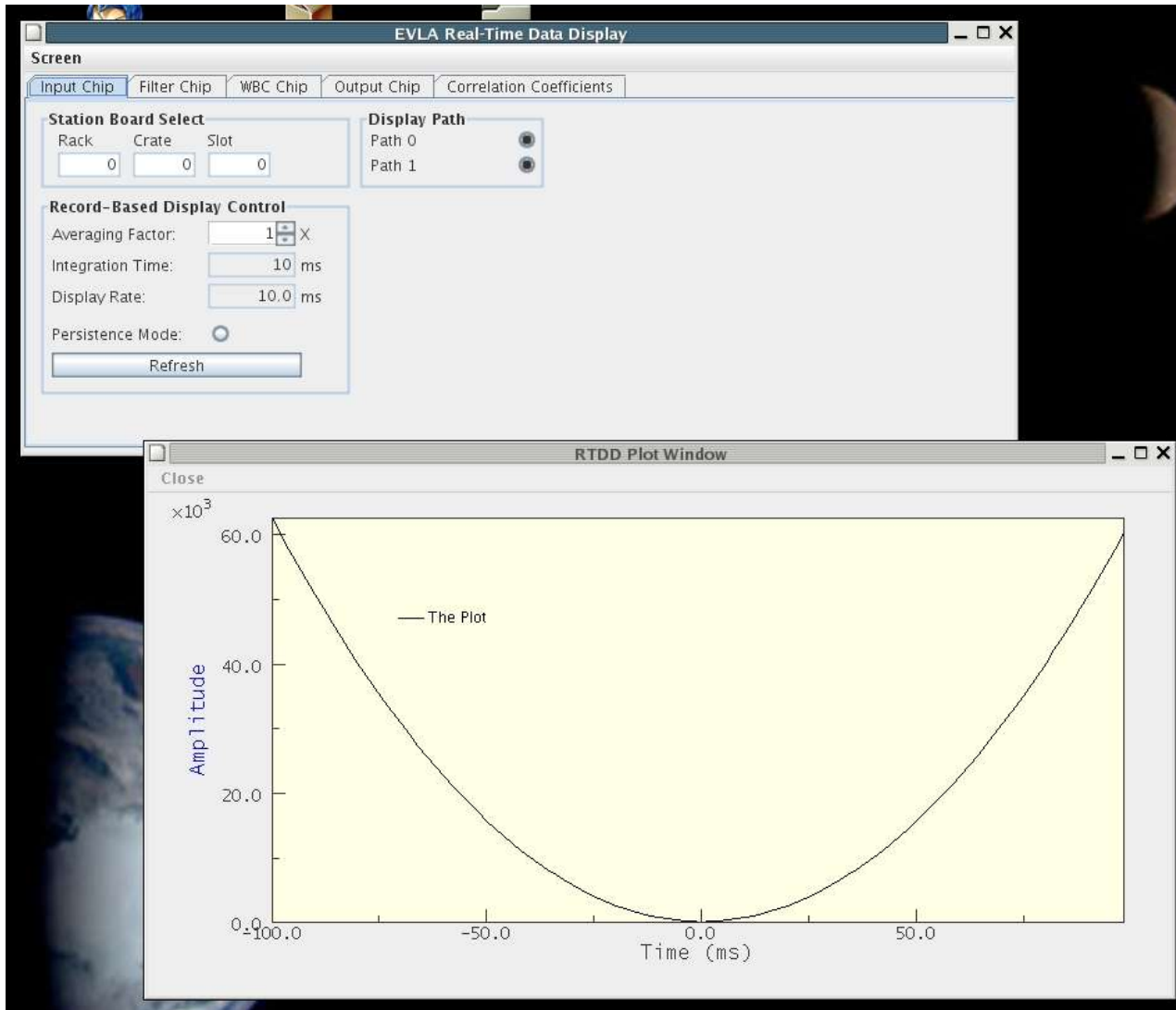
- What is the Real-Time Data Display (RTDD)?

A diagnostic tool, used primarily in prototype testing, to allow correlator developers the ability to efficiently probe various parts of the system and visualize output correlator data.

- Utilized extensively in prototype testing
- Utility likely to extend well into correlator operation

RTDD Environment

- Java
 - Platform independent
 - Self-contained application
 - Remote access to system from any desktop
 - Multiple sessions run simultaneously
- Utilizes Java 2D Graph package (USQ Dept. of Mathematics)



RTDD Display Control

Record-Based Display Control

Averaging Factor: X

Integration Time: ms

Display Rate: ms

Persistence Mode:

Chart Recorder Display Control

Averaging Factor: X

Integration Time: ms

Time Window: s

Input Chip Panel

The screenshot shows a software interface with five tabs: "Input Chip", "Filter Chip", "WBC Chip", "Output Chip", and "Correlation Coefficients". The "Input Chip" tab is selected. The interface is divided into several sections:

- Station Board Select:** Three input fields for "Rack", "Crate", and "Slot", each containing the value "0".
- Display Path:** Two radio buttons labeled "Path 0" and "Path 1".
- Record-Based Display Control:** A section containing:
 - "Averaging Factor:" with a numeric input field set to "1" and a multiplier "X".
 - "Integration Time:" with a numeric input field set to "10" and the unit "ms".
 - "Display Rate:" with a numeric input field set to "10.0" and the unit "ms".
 - "Persistence Mode:" with an unselected radio button.
 - A "Refresh" button at the bottom.

Wideband Correlator Chip Panel

Input Chip | Filter Chip | **WBC Chip** | Output Chip | Correlation Coefficients

Station Board Select
Rack: Crate: Slot:

Record-Based Display Control
Averaging Factor: X
Integration Time: ms
Display Rate: ms
Persistence Mode:

Correlation Product
Path0 x Path0:
Path1 x Path1:
Path0 x Path1:
Amp vs. Freq:
Phase vs. Freq:
Amp vs. Lags:

Amplitude Scale
Linear Scale:
dB Scale:

Frequency Range
Low: High:

Lag Range
First: Last:

Output Chip Panel

Input Chip | Filter Chip | WBC Chip | **Output Chip** | Correlation Coefficients

Station Board Select
Rack: Crate: Slot:

Record-Based Display Control
Averaging Factor: X
Integration Time: ms
Display Rate: ms
Persistence Mode:

Display Path
Path 0:
Path 1:

Amplitude Scale
Linear Scale:
dB Scale:

Frequency Range
Low: High:

Filter Chip Panel

Output State Counts

The screenshot shows a software interface with several tabs and control panels. The top row of tabs includes 'Input Chip', 'Filter Chip' (selected), 'WBC Chip', 'Output Chip', and 'Correlation Coefficients'. Below this, a sub-panel contains tabs for 'Output State Counts' (selected), 'Re-quantizer', 'RFI Blanker', 'Clip Counter', and 'Tone Extractor'.

Station Board Select

Rack	Crate	Slot
0	0	0

Filter Chip Select

Bank	Chip	Display
0	0	<input checked="" type="radio"/>
0	0	<input type="radio"/>

Record-Based Display Control

Averaging Factor: X

Integration Time: ms

Display Rate: ms

Persistence Mode:

Filter Chip Panel

Re-quantizer

The screenshot shows a software interface with the following components:

- Input Chip:** Filter Chip (selected), WBC Chip, Output Chip, Correlation Coefficients
- Output State Counts:** Re-quantizer (selected), RFI Blanker, Clip Counter, Tone Extractor
- Station Board Select:** Rack (0), Crate (0), Slot (0)
- Filter Chip Select:** Bank (0), Chip (0)
- Chart Recorder Display Control:**
 - Averaging Factor: 1 X
 - Integration Time: 10 ms
 - Time Window: 300 s
 - Restart button
- Pre-Requantizer:**
 - Power:
 - Noise Diode On:
 - Noise Diode Off:
 - Data Valid Counts:
- Post-Requantizer:**
 - Power:
 - Data Valid Counts:

Filter Chip Panel

RFI Blanker

The screenshot shows a software interface for the 'Filter Chip Panel' with the 'RFI Blanker' sub-panel selected. The interface includes several control sections:

- Station Board Select:** Three input fields for Rack (0), Crate (0), and Slot (0).
- Filter Chip Select:** Two input fields for Bank (0) and Chip (0).
- RFI Data Valid:** A radio button for 'Display Data Valid' (which is selected), and two empty input fields for 'RFI Threshold' and 'DV Stretch Scale'.
- Chart Recorder Display Control:** A section containing:
 - 'Averaging Factor:' with a numeric input of 1 and a multiplier 'X'.
 - 'Integration Time:' with a numeric input of 10 and the unit 'ms'.
 - 'Time Window:' with a numeric input of 300 and the unit 's'.
 - A horizontal slider bar below the 'Time Window' input.
 - A 'Restart' button at the bottom.

Filter Chip Panel

Clip Counter

Input Chip
Filter Chip
WBC Chip
Output Chip
Correlation Coefficients

Output State Counts
Re-quantizer
RFI Blanker
Clip Counter
Tone Extractor

Station Board Select

Rack	Crate	Slot
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Filter Chip Select

Bank	Chip
<input type="text" value="0"/>	<input type="text" value="0"/>

Pre-Requantizer

	Scaling Factor
Stage 1	<input checked="" type="radio"/> <input type="text"/>
Stage 2	<input type="radio"/> <input type="text"/>
Stage 3	<input type="radio"/> <input type="text"/>
Stage 4	<input type="radio"/> <input type="text"/>

Chart Recorder Display Control

Averaging Factor: X

Integration Time: ms

Time Window: s

Restart

Post-Requantizer

	Scaling Factor
Post Requantizer	<input type="radio"/> <input type="text"/>

Filter Chip Panel

Tone Extractor

Input Chip | **Filter Chip** | WBC Chip | Output Chip | Correlation Coefficients

Output State Counts | Re-quantizer | RFI Blanker | Clip Counter | **Tone Extractor**

Station Board Select
 Rack: Crate: Slot:

Filter Chip Select
 Bank: Chip:

Tone Extractor
 Amplitude: Phase:

Chart Recorder Display Control
 Averaging Factor: X
 Integration Time: ms
 Time Window: s

Correlation Coefficients

Wideband Lag/Frequency

Input Chip | Filter Chip | WBC Chip | Output Chip | **Correlation Coefficients**

Wideband Lag/Frequency | Single Lag/Frequency

Baseline Select
 Antenna 1: x Antenna 2:

Record-Based Display Control
 Averaging Factor: X
 Integration Time: ms
 Display Rate: ms
 Persistence Mode:

Correlation Product
 Amp vs. Freq:
 Phase vs. Freq:
 Amp vs. Lags:

Amplitude Scale
 Linear Scale:
 dB Scale:

Frequency Range
 Low: High:

Lag Range
 First: Last:

Correlation Coefficients

Single Lag/Frequency

The screenshot shows the 'Correlation Coefficients' window with the 'Single Lag/Frequency' tab selected. The interface includes the following controls:

- Input Chips:** Input Chip, Filter Chip, WBC Chip, Output Chip, and Correlation Coefficients (selected).
- Wideband Lag/Frequency:** A sub-tab that is currently inactive.
- Baseline Select:**
 - Antenna 1: x Antenna 2:
- Chart Recorder Display Control:**
 - Averaging Factor: X
 - Integration Time: ms
 - Time Window: s
 - A horizontal slider below the Time Window input.
 -
- Correlation Product:**
 - Amp vs. Freq:
 - Phase vs. Freq:
 - Amp vs. Lag:
 - Phase vs. Lag:
- Amplitude Scale:**
 - Linear Scale:
 - dB Scale:
- Single Frequency:** A horizontal slider with a numerical display box showing the value 500.
- Single Lag:** A horizontal slider with a numerical display box showing the value 1024.

Outstanding Issues

- Data format for transfer?
 - ASDM?
 - Internal format (XML?)
- Connectivity/integration with correlator software
- Access & permissions via distributed network

Summary

- A powerful tool for real-time correlator diagnostics – both during prototype testing and operations
- Finalizing data transfer formats essential
- Early in design phase
 - Input & suggestions welcome!