WIDAR Real-Time Data Display

D. Del Rizzo
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: 1
- Integration Time: 10 ms
- Display Rate: 10.0 ms

Chart Recorder Display Control

- Averaging Factor: 1
- Integration Time: 10 ms
- Time Window: 300 s
Input Chip Panel

Station Board Select
- Rack: 0
- Crate: 0
- Slot: 0

Display Path
- Path 0
- Path 1

Record-Based Display Control
- Averaging Factor: 1
- Integration Time: 10 ms
- Display Rate: 10.0 ms
- Persistence Mode: 

Refresh
Wideband Correlator Chip Panel
Output Chip Panel

- Station Board Select:
  - Rack: 0
  - Crate: 0
  - Slot: 0
- Display Path:
  - Path 0
  - Path 1
- Frequency Range:
  - Low: 1
  - High: 1000
- Record-Based Display Control:
  - Averaging Factor: 1
  - Integration Time: 10 ms
  - Display Rate: 10.0 ms
  - Persistence Mode:
- Amplitude Scale:
  - Linear Scale
  - dB Scale
- Refresh button
Filter Chip Panel
Output State Counts
Filter Chip Panel
Re-quantizer
Filter Chip Panel
RFI Blanker

Station Board Select
Rack: 0  Crate: 0  Slot: 0

Filter Chip Select
Bank: 0  Chip: 0

Chart Recorder Display Control
Averaging Factor: 1
Integration Time: 10 ms
Time Window: 300 s

Restart

Input Chip  Filter Chip  WBC Chip  Output Chip  Correlation Coefficients
Output State Counts  Re-quantizer  RFI Blanker  Clip Counter  Tone Extractor

RFI Data Valid
Display Data Valid
RFI Threshold
DV Stretch Scale
Filter Chip Panel
Clip Counter

Station Board Select
Rack: 0
Crane: 0
Slot: 0

Filter Chip Select
Bank: 0
Chip: 0

Chart Recorder Display Control
Averaging Factor: 1
Integration Time: 10 ms
Time Window: 300 s

Pre-Requantizer
Stage 1
Stage 2
Stage 3
Stage 4

Post-Requantizer
Post Requantizer
## Filter Chip Panel

### Tone Extractor

<table>
<thead>
<tr>
<th>Input Chip</th>
<th>Filter Chip</th>
<th>WBC Chip</th>
<th>Output Chip</th>
<th>Correlation Coefficients</th>
</tr>
</thead>
</table>

#### Output State Counts

<table>
<thead>
<tr>
<th>Station Board Select</th>
<th>Filter Chip Select</th>
<th>Tone Extractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack</td>
<td>Crate</td>
<td>Slot</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Chart Recorder Display Control

- **Averaging Factor:** 1x
- **Integration Time:** 10 ms
- **Time Window:** 300 s

[Image of the Filter Chip Panel and Tone Extractor interface]
Correlation Coefficients
Wideband Lag/Frequency
Correlation Coefficients
Single Lag/Frequency
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!