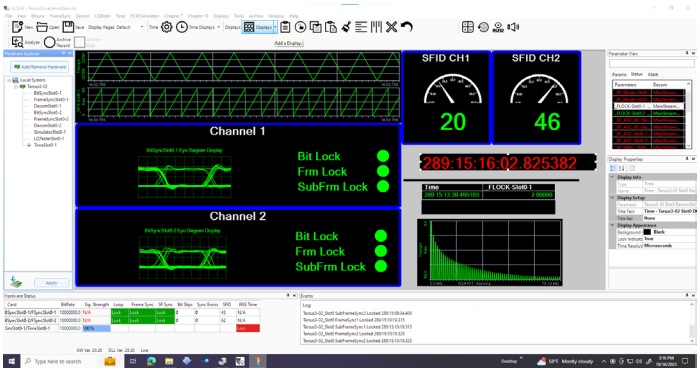
ULYSSIX TECHNOLOGIES, INC.

APPLICATION NOTES

ALTAIR Software Chapter 7 Capabilities

INTRODUCTION

The ALTAIR Software Suite is designed to support and enhance Ulyssix Technologies' Tarsus/ Bald Eagle RF product series as well as be a standalone Chapter 7/10 processing software suite. ALTAIR's Chapter 7 capability adds IRIG 106 Chapter 7 processing to the already robust software suite. This creates a Chapter 7 Receiver for processing incoming RF telemetry data and



a Chapter 7 RF or PCM Simulator to generate outgoing telemetry data from stored Chapter 10 files.

ALTAIR CHAPTER 7 RECEIVER DESCRIPTION

The ALTAIR Chapter 7 Receiver takes an input PCM stream from a Bald Eagle RF receiver, Tarsus Bit Sync/Frame Sync, or from Chapter 10 UDP stream. The ALTAIR software extracts the Chapter 7 portion of the frame, processes the Chapter 7 data, extracts the embedded Chapter 10 packets, and processes the IRIG channels as well as one or more channels of PCM and Analog data. ALTAIR can save the embedded Chapter 10 packets to a file or transmit it via UDP.

The ALTAIR Chapter 7 Simulator creates a PCM bit stream with embedded Chapter 7 data. The Chapter 7 data source is either a Chapter 10 file or PCM data acquired from one or more Ulyssix Tarsus PCM Processor cards. ALTAIR can output the PCM bit stream through the RF Transmitter of a Bald Eagle RF card or the PCM Simulator of a Tarsus or Bald Eagle RF card. Alternatively, ALTAIR can save the simulated PCM bit stream to a binary file or embed it as a PCM channel in a Chapter 10 file.

CHAPTER 7 STANDALONE SOFTWARE SOLUTION

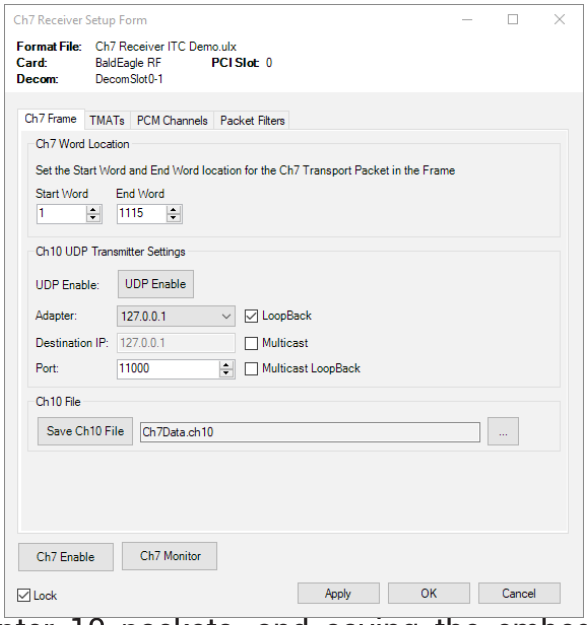
ALTAIR Chapter 7 can work as a standalone feature or can interface with Ulyssix RF/PCM Processor cards. The ALTAIR software is fully functional as a standalone software from the Ulyssix RF/PCM Processor cards by linking the ALTAIR software to the host computer's NIC address.

The Chapter 7 Receiver acquires Chapter 10 data via the ALTAIR Chapter 10 UDP receiver; processes a Chapter 10 PCM channel that includes Chapter 7 data; extracts the embedded Chapter 10 packets from the Chapter 7 data; and then processes embedded Chapter 10 packets. The ALTAIR software can display, store, or transmit the Chapter 10 packets. This includes Chapter 10 analog and PCM data formats.

ALTAIR Chapter 7 generates Chapter 10 files with Chapter 7 inside a PCM channel. ALTAIR is a software replacement for building a hardware test kit with PCM simulators and Chapter 7 encoders. The ALTAIR Chapter 7 Simulator builds a Chapter 10 file with an IRIG channel and a single PCM channel with user defined PCM settings. The telemetry stream in the PCM channel includes Chapter 7 data built from a user supplied Chapter 10 file.

SETUP THE ALTAIR CHAPTER 7 RECEIVER

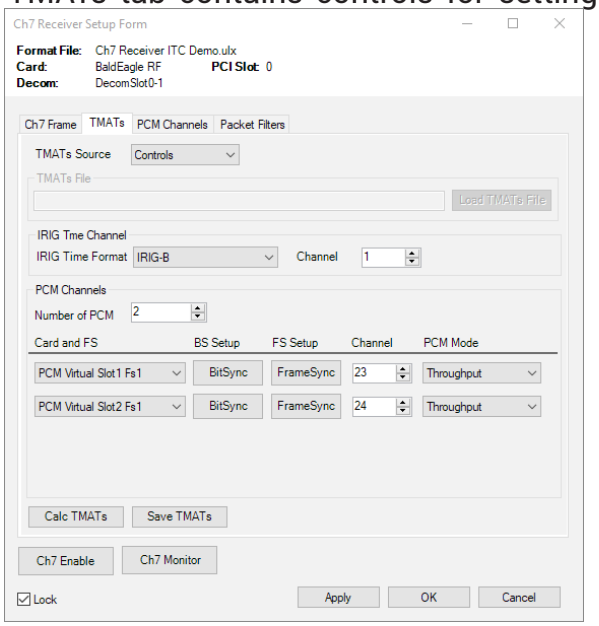
Configuring the ALTAIR Chapter 7 Receiver begins on the Ch7 Frame tab form (see below), which contains the controls to define the Chapter 7 location inside of the PCM frame, setup the UDP transmitting the embedded



Chapter 10 packets, and saving the embedded Chapter 10 packets to a file.

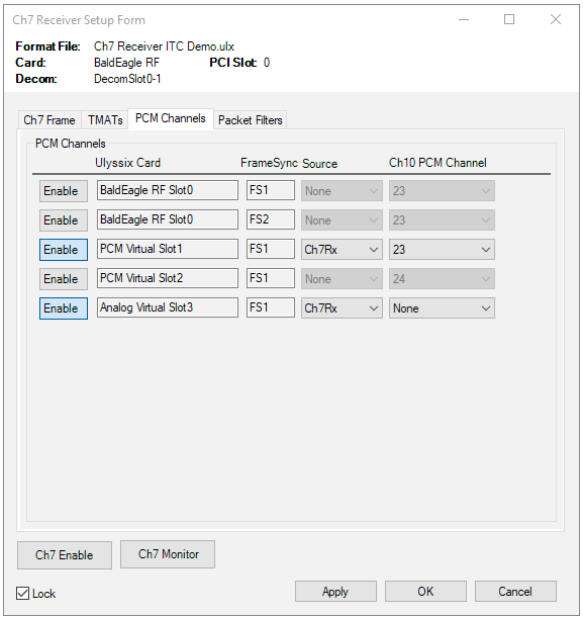
The Start Word and End Word are telemetry word numbers as defined in ALTAIR's Decommutator Setup for the PCM frame.

The TMATs tab contains controls for setting up



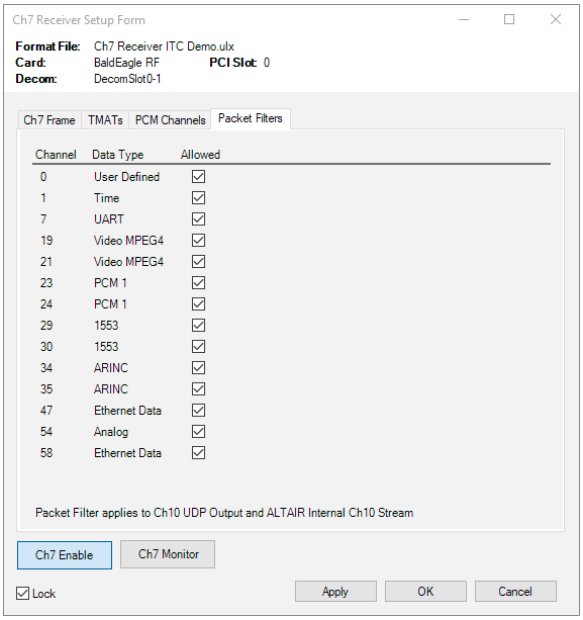
the TMATs for the embedded Chapter 10 packets. There are two options on the form: load a TMATs file or setup the embedded Chapter 10 channels via the user interface. The user interactive controls configure the IRIG Channel and one or more PCM Channels.

The PCM Channels tab routes the embedded Chapter 10 channels to the elements that process



them. PCM Virtual Slot 1 is strictly a software PCM processor with a Frame Sync and Decom (no Ulyssix hardware is utilized).

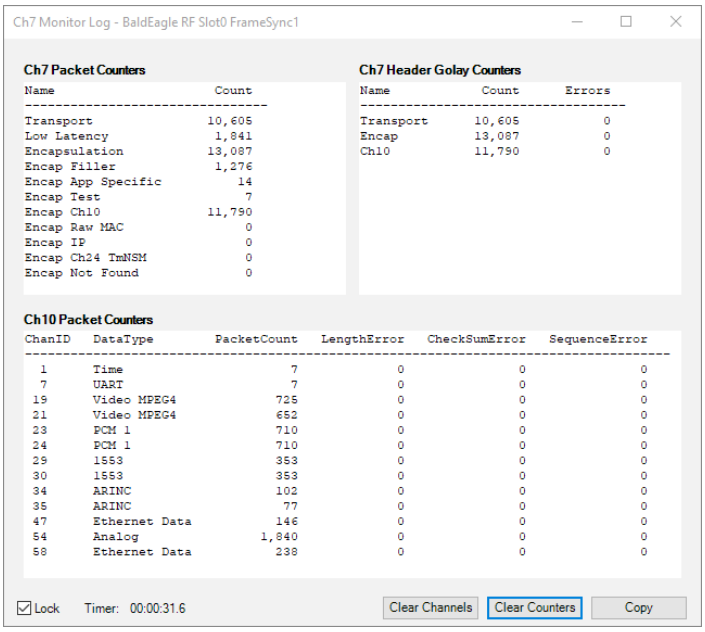
The Packet Filters tab contains a list of the channels from the embedded Chapter 10 data with an option to disable the channels. Disabling



a Chapter 10 channel removes the channel from any Chapter 10 UDP Transmission and Chapter 10 File storage. Filtering out Chapter 10 channels removes unwanted or protected data and reduces

the required data bandwidth.

The Chapter 7 Monitor Log displays counters for the received Chapter 7 elements, Chapter 7 Header, Golay Errors, and Chapter 10 Packet errors. This



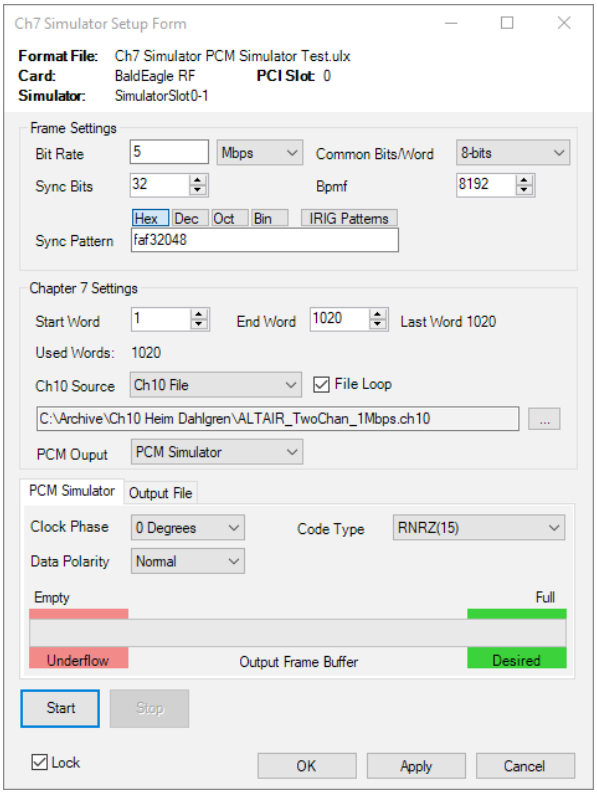
is useful for troubleshooting incoming Chapter 7 data.

ALTAIR CHAPTER 7 SIMULATOR

Configuring the ALTAIR Chapter 7 Simulator begins in the Frame Settings group, where the controls configure PCM frame settings as Bit Rate, Bits Per Minor Frame, Frame Sync Pattern, and Common Bits per Word. The Common Bits per Word control values are 8-bits, 16-bits, or 32-bits.

The Chapter 7 Settings group defines the frame location for the Chapter 7 Data, the source of the embedded Chapter 10, and the output location for the PCM stream. The embedded Chapter 10 Source is either Ulyssix hardware or Chapter 10 file.

The last section of the ALTAIR Chapter 7 simulator is a tabbed control with two tabs: PCM Output and Output File. The PCM Output is either the PCM Simulator, Binary File, or Chapter 10 File. If the PCM Output is a PCM Simulator, then the PCM Simulator tab controls the Clock Phase, Data Polarity, and Code Type of the PCM Simulator.



If the PCM Output is Binary File or Chapter 10 File, the Output File tab contains the destination file location.

The ALTAIR Chapter 7 Simulator software error checks the user settings to ensure that the selected Chapter 10 data source will fit inside the defined PCM frame and bit rate. If the Chapter 10 data source will not fit, ALTAIR suggests values for the Bit Rate, Start Word, and Stop Word. For example, a Chapter 10 file with two 10 Mbps PCM streams will not fit inside of a 5 Mbps PCM frame. ALTAIR will suggest increasing the Bit Rate from 5 Mbps to 22 Mbps.

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