LS27B Software Quick-Start Manual

Dual channel Multi-Band RF Downconverter with AM and FM Demodulation

Document:	U027B201
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Date:	10/25/11
Release:	Initial

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1 Introduction

1.1 General

This document is a Quick-Start Software Manual for the Lumistar LS27B Dual Channel Multi-band RF Downconverter. This product represents Lumistar's 3rd generation of the LS27 Series of Dual Channel RF Downconverters. In addition to the functionalities of the Lumistar LS27P3 PCI downconverter, this product also provides and optional FM demodulation stage for each input channel.

The intent of this document is to provide general Graphical User Interface (GUI) operational information for the provided software application.

The LS27B hardware design implements a Digital Signal Processor Engine (DSPE) controlled superhetrodyne downconverter with AM demodulation and optional FM demodulation. This receiver is in the physical format and size similar to a standard 5 3/4" CD or DVD drive format. The product provides two independent and autonomous multi-band downconversion stages. Each channel provides the conversion of up to four RF pass-bands to a 70MHz Intermediate Frequency (IF) output while providing AM demodulation of the input signal. The product's standard configuration provides eight software selectable IF bandwidth filters, roughly placed at octave intervals (or as ordered by the customer), to reduce channel noise bandwidth and improve adjacent channel rejection. The product line can optionally be equipped with an FM demodulation stage and eight video filters.

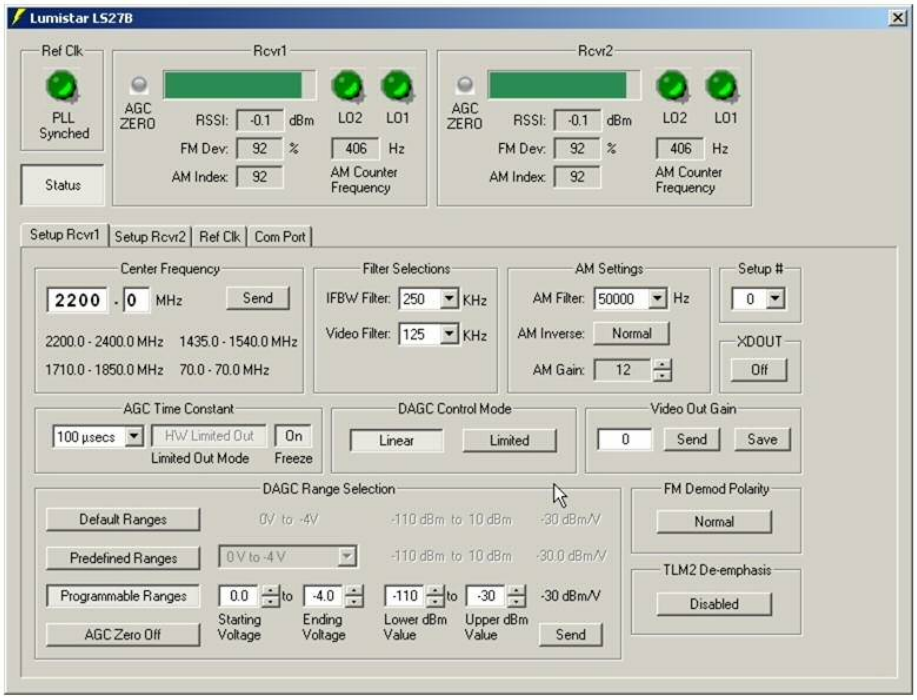
For hardware documentation refer to document U027B101.

2 Software Interfaces

In order to more clearly understand the operation of the receiver software, this section will detail the GUI user status and controls.

2.1 Main Receiver Setup and Status Pages

Receiver Setup and Status Page



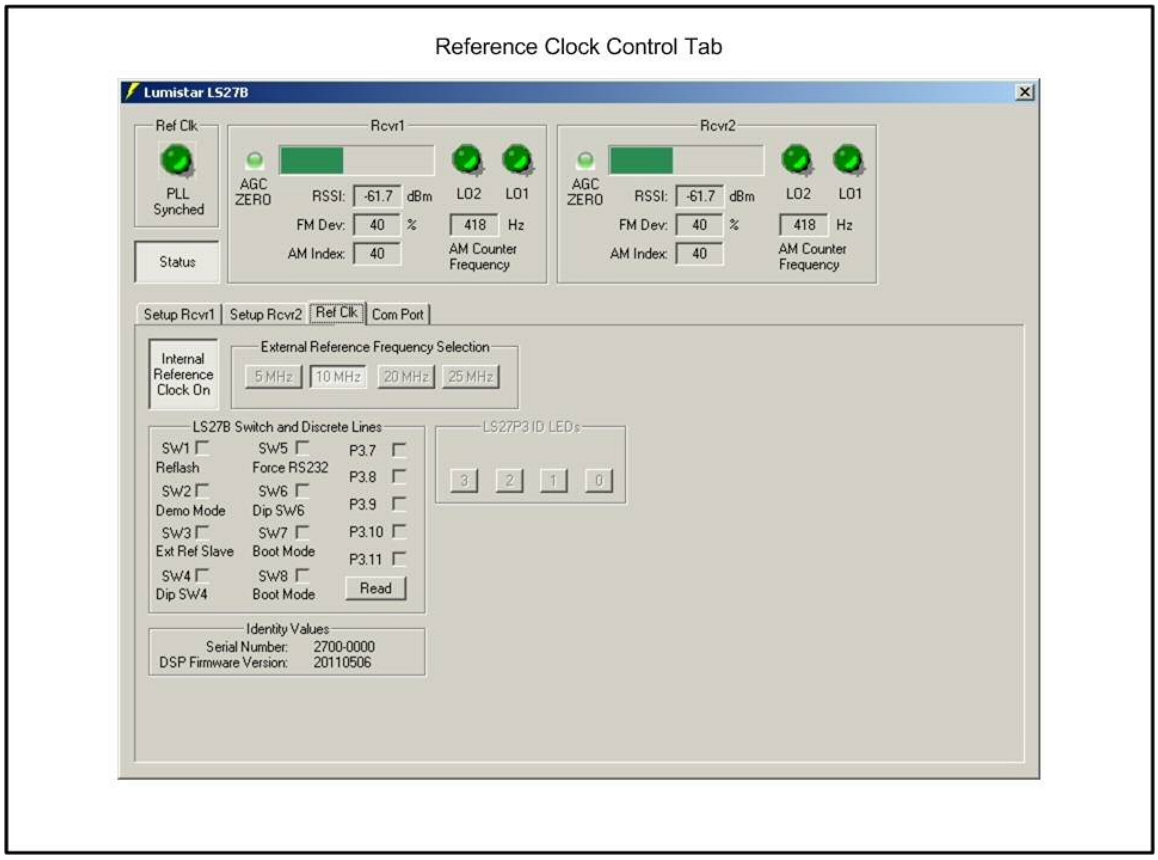
The figure above illustrates one of the two receiver control tabs as well as the status window for both independent receivers. Status is provided in the upper third of the GUI window. Status is provided for the following items:

1.) Receiver signal strength
2.) Reference and LO lock states
3.) Detected AM frequency and modulation index
4.) Detected FM deviation
5.) Installed Bandwidths

Receiver controls allow for following:

1.) Frequency tuning
2.) IF BW Selection
3.) Video Filter Selections
4.) AM Output Filter Cut-off Frequency
5.) AM Output Level Control
6.) AGC Time Constants Selection, Output Slope and Range Controls, and Freeze Controls
7.) Digital AGC Controls
8.) Video Output Gain
9.) FM Polarity Selection
10.) Video De-emphasis Enable/Disable
11.) Setup “Save” Controls

2.2 Reference Clock Control Tab

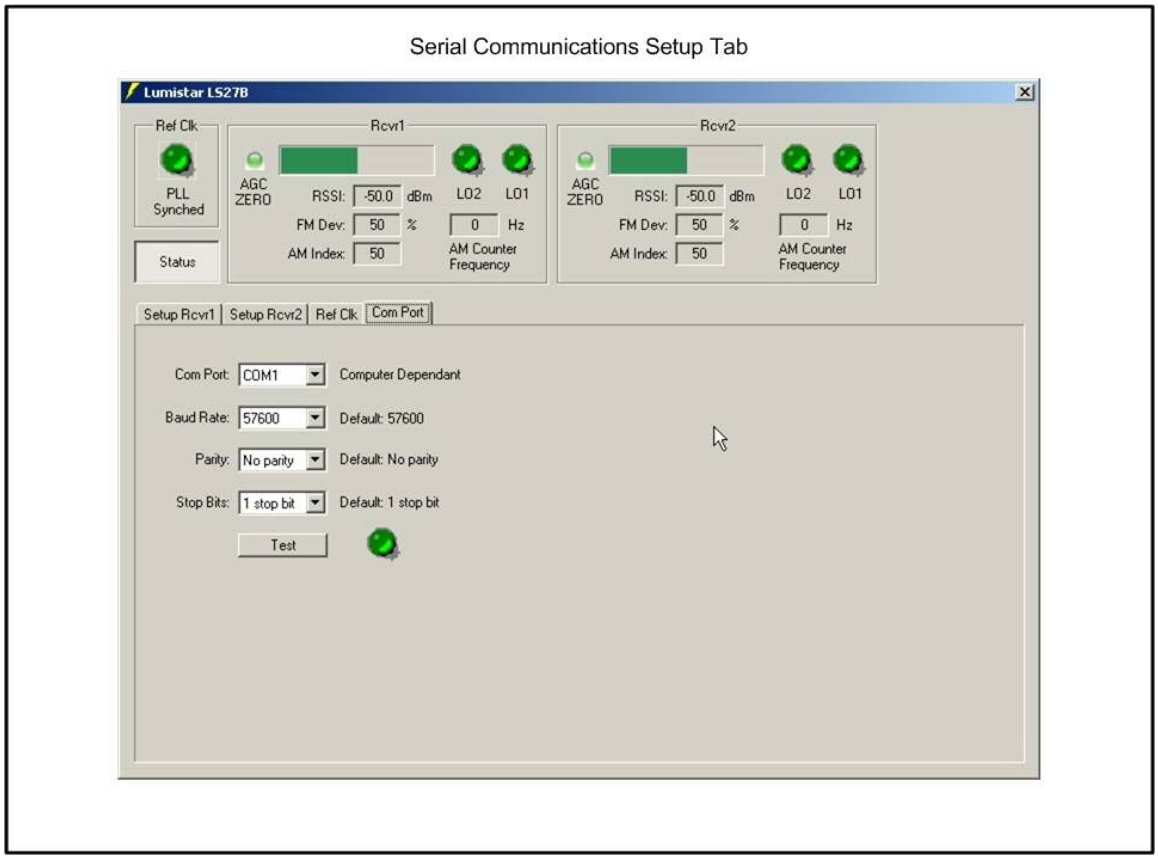


The figure above illustrates the reference control tab. From this tab, selections can be made for the following:

1.) Internal/External Reference Source Selection
2.) External Reference Frequency Selection

In addition to the reference clock controls, this tab also provides the user with information on configuration control switch states, external setup select discrete states, DSP firmware version software, and the device serial number.

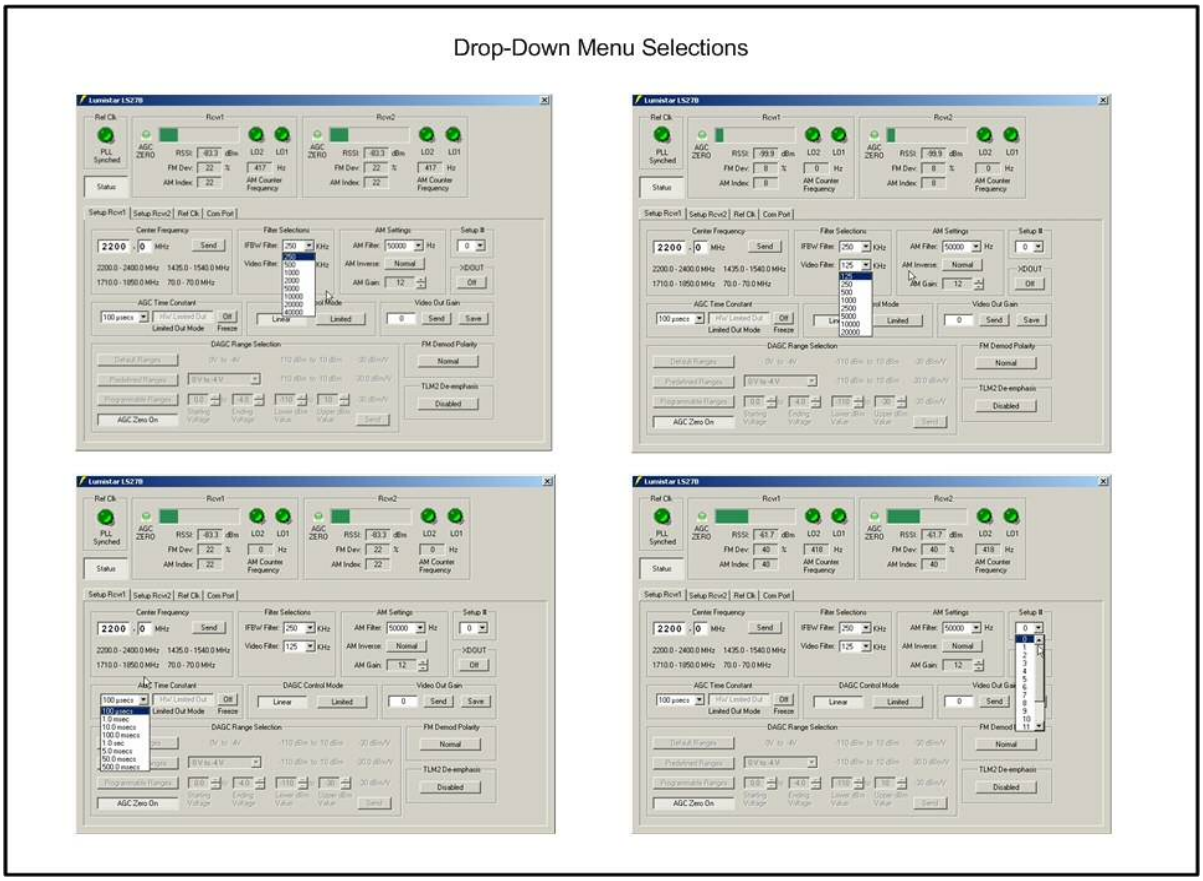
2.3 Serial Interface Control Tab



The figure above illustrates the serial interface control tab. From this tab the user can select from various host computer serial ports detected and set BAUD rates and communications formats. The unit's defaults are shown and should be used in normal operating conditions. Custom setups are possible. Consult the factory for details.

Once settings are selected, the user can test for successful communications by selecting the TEST button. If valid communications exists, the LED next to the TEST button will illuminate green.

2.4 Drop-Down Menu Selections



The figure above illustrates a few of the drop down menu options available for user control. These include:

1.) IF Bandwidth Selection (8 filters)
2.) Video Filter Bandwidth Selection (8 filters)
3.) AGC Time Constant Selection (8 time constants)
4.) AM Low-Pass Filter Cutoff Frequency Selections (32 filters)
5.) Preset “Save” Selections (16 options)

The “Preset” selections allow the user to internally save up to 16 different configurations for each receiver. These presets can be recalled by either selecting them in software or by external input discrete control. Refer to the hardware users manual for additional information on the “preset” external discretes.