

RVP7 V13 Release Notes

These notes cover changes made to the RVP7 code since release V12 of 8 November 1998. If you are upgrading from an earlier release, please read those notes also.

New Features

1. The RVP7 now supports the option of sourcing a LOG Video analog output signal from the backpanel of the main chassis. There are two ways that this signal can be configured:
 - ***Self-Triggering, Free-Running Mode***
This is the default mode that is available on all RVP7 boards. The output signal is periodic at approximately the PRF of the radar, but is free-running, i.e., not actually synchronized with the radar trigger. A synthetic 1.0 μ sec wide, full scale, “trigger” pulse is embedded at the zero-range start of each LOG Video waveform. This marker can easily trigger an oscilloscope if the scope’s trigger level is set just below the maximum LOG Video voltage level.
 - ***Waveform Locked to Radar Trigger***
This mode requires a (one-wire) hardware modification to the Rev.B RVP7/Main board. The LOG Video waveform then becomes locked to the radar trigger, so that the LOG signal can be displayed on any device that already receives the radar trigger.

In either case, the LOG Video output signal is unipolar, ranging from approximately 0.0V to 3.0V. It is active during all data processing modes that the host computer might request, as well as during the idle time between scans. The signal is absent (zero), however, during the short intervals of time that the RVP7 is being reconfigured by the host computer, or when the RVP7’s local TTY setups are being used.

The time resolution of the synthesized LOG Video signal is fixed at 1.0 μ sec per bin. This is independent of the actual range resolution of the FIR matched filter. Whatever (I,Q) data are actually being computed by the FIR front end are selected for a nearest fit to each 1.0 μ sec synthetic output cell. The maximum number of incoming FIR range bins that can be selected among is 5460. Thus, for example, the maximum range of the LOG Video signal would be 682km when the FIR range resolution is 125–meters.

Setup Changes

1. Several new questions have been added to the **Mc** setup section in support of the new LOG Video output option:

Dedicate one DSP to LOG video output: YES
Upper 100.0 dB will occupy 85.0% of voltage span
Force freerunning video mode: NO

Answer the first question “Yes” if you would like the RVP7/Main board to synthesize and drive the LOG Video output signal. The cost of doing this is that one of the “slave”

DSP chips will be removed from the normal Doppler processing chain, and dedicated to the task of LOG Video generation. On a single-board system, the three available slave DSPs would be reduced to two; whereas on a dual-board system, the 13 available DSPs would be reduced to 12. Obviously, the percentage penalty is less in a larger system.

The second question decides how the overall dynamic range of the receiver will fit into the 12-bit unipolar output voltage span of the DAC that produces the LOG Video waveform. The default setting calls for the upper 100dB of dynamic range to occupy 85% of the output voltage span. This means that the strongest IF input signal would produce 85% of the maximum DAC voltage (approximately 2.55 Volts); 50dB down would be 42.5%, and 100dB down would be 0%, i.e., zero volts.

If you are using a self-triggering LOG Video waveform, then the 15% of headroom provided by the default settings leaves room for the embedded trigger pulse. However, if your RVP7 has the hardware modification required to synchronize the LOG Video to the system trigger, then the full 100% of the DAC voltage span can freely be used. The third setup question can be used to force freerunning mode on an RVP7 that has the hardware modification. This question is included mostly for testing purposes.