

## RVP7 V04 Release Notes

These notes cover changes made to the RVP7 code since release V03 of 17 November 1997. If you are upgrading from an earlier release, please read those notes also.

### Bug Repairs

1. The measured PRF fields in the GPARM structure are now filled in properly. These fields are the present PRT, and the PRT at the start and end of the last ray. The "PRF Varied" condition is also now detected at the end of each ray, and the GPARM latched flag is set in response to it.
2. Several bugs were repaired related to Dual-PRF processing. In the generation of Dual-PRF triggers, a single spurious trigger whose period was equal to the mean of the high and low values was being produced on each PRF transition. Also, the processing boundaries between each PRF would sometimes be overrun when the PPP algorithms were running in Dual-PRF mode. The FFT modes did not have this problem.
3. A bug has been repaired in the RVP7's response to "dangling" range bins when range averaging is enabled. The processor would (in many cases) damage the internal noise range mask when the dangling bins were deleted. Subsequent noise measurements would produce errors which could only be relieved by restarting the RVP7.
4. An error has been corrected in the running of the powerup diagnostic that tests the FIR chips and subsequent hardwired arithmetic. The test would report a false failure with a probability of 1/512.

### New Features

1. The RVP7/AUX board is now fully supported. On powerup the red and green LEDs on each RVP7/AUX board will flash in synch with the LEDs on the RVP7/Main board. The final LED pattern on the RVP7/AUX will leave the green LED always on, and the red LED on only if all diagnostics were successful on that particular board.
2. The GPARM immediate status word #2 now has an additional status bit (bit position #5) to indicate when the link between the RVP7/Main and the RVP7/IFD is broken.
3. The GPARM immediate status word #2 now has an additional status bit (bit position #6) to indicate when separate noise levels are being kept for each pulse width. This is in preparation for IRIS supporting the multiple noise feature in a way that can be checked for consistency.
4. You may now use the Carriage-Return key within the "Pb", "Ps", and "Pr" plotting commands to scroll the screen up one line. This is helpful when watching how the parameters evolve over time.
5. The RVP7 diagnostics can now run in a continuous loop that is useful during production burn-in testing. In this mode the complete set of powerup tests is repeated

approximately once per second. The green LEDs on the RVP7/Main and RVP7/AUX boards will blink on each run as a progress indicator. All red LEDs will initially be on, but each will begin to blink if any diagnostic ever fails on that board. A line of text is also printed to the setup TTY to show the progress of the tests and a summary of any errors.

This special test mode can be started in two ways. One is to powerup the processor with the RVP7/Main I/O jumpers JP17–JP22 in the (somewhat illegal) pattern: JP17:BC, JP18:BC, JP19:AB, JP20:AB, JP21:AB, JP22:AB. This method has the advantage of not requiring a TTY connection. The second method is to reset the processor from the local TTY monitor using the new “\*+” command. This is similar to the old “\*” reset command, but with a plus sign (debugging) suffix.

6. The diagnostics for the range mask and trigger generator RAM have been improved to perform an additional read/write pattern interference test.
7. The real time TTY monitor PRF printout now shows both the primary and the alternate trigger rate when dual–PRF processing is running.
8. The SNOISE command now bounds the requested starting range of the noise sampling interval. This is to insure that the noise samples will fit within the specified PRT, and within the range mask hardware RAM. Previously the RVP7 would (correctly) set an error bit when an improper range was requested. But at low noise PRF’s IRIS will commonly request a very large range, which would then preclude making a proper noise measurement.
9. The TTY information line that is printed during the “Pb” command now lists the starting time in microseconds of the first trigger output. This number will change as the “L” and “R” subcommands are typed, thus giving some reassuring feedback that something is really happening. If an external trigger is firing the transmitter, then the pretrigger delay will be listed instead.
10. The RVP7 trigger outputs are now numbered 1–6 (rather than 0–5) in the “Mt<n>” setup section. This is so that the numbers agree with those printed on the back panel, and also with the convention used by the IRIS TRIGGER utility.
11. The Makefile for the standard code releases has been changed to use level 2 code optimization from the C compiler. All previous RVP7 versions have been compiled with the less aggressive level 1 optimization. The code is smaller and somewhat faster as a result, but it is possible that compiler related errors may now exist in code that used to run properly. We have tested this release as best we can, but code generator errors can sometimes be subtle. Note that level 2 optimization has been used all along for the RVP6.
12. The View–Status command’s printout of the round trip coax/fiber/pipeline delay now includes a numeric value of the uncertainty in the measurement. If the uplink and fiber cables are run properly this measurement error should be less than the period of the acquisition clock. A diagnostic error bit is set if the error is greater than two acquisition clock periods.

## Setup Changes

1. There is a new setup question in the "Mt" section that defines whether the (optional) external trigger that is applied to the RVP7 is also the trigger that ultimately fires the transmitter, i.e., that the transmitter is not fired by one of the RVP7 trigger outputs. This information is used by the "L" and "R" subcommands of the "Pb" plotting command. When slewing left and right to find the burst pulse, the pretrigger delay will be affected rather than the start times of the six output triggers.
2. The "M" command's complete printout of setup values now includes the debug options (from the "M+" command). Also, the title text of each section now includes the name of the command that would be used to view and modify those setup data. This is helpful when re-entering the setup parameters from an old printout.
3. The real time TTY monitor now has the option of printing the noise level that is being used for the current pulse width. The level is shown in the traditional 8-bit "LOG A/D" scale. An additional question appears in the "M+" section to enable this.