

RVP7 V03 Release Notes

These notes cover changes made to the RVP7 code since release V02 of 27 Oct 1997. If you are upgrading from an earlier release, please read those notes also.

Bug Repairs

1. A bug has been corrected in which the RVP7 would output incorrect data or crash in many cases when range averaging was in effect.
2. A bug was repaired in the RVP7's response to a missing fiber downlink signal. The phase locked loop that locks to the 540MHz optical stream is now disabled whenever the fiber input is absent. Previously the PLL would continue to run, resulting in a frequency instability of the clock that controls the uplink. The IFD module would then (sometimes) receive mistimed serial information. The visible effect would be that the AFC output voltage would take on random values, and the IFD LEDs would blink in their power-up pattern.

New Features

1. The TTY interface to the "Pb", "Ps", and "Pr" plotting commands has been improved. Previously there was sometimes confusion about exactly what types of data were being plotted. Now, whenever the <space> subcommand is used to change plots, a new header line is printed telling what will be seen on the scope screen. This line is also printed when the plot commands are first entered, and whenever help is requested.
2. The RVP7 now contains a Real Time TTY Monitor. This is a stream of characters that are continuously sent to the serial output port of the setup TTY, and which monitor selectable internal variables. When this live monitor is enabled, status lines will be printed whenever the RVP7 is not chatting, i.e., whenever it is performing normal data processing operations. Normally the setup TTY would be inactive during that time. You may choose which parameters are to be printed. Currently the list includes 1) Burst frequency, 2) Burst energy, 3) AFC level and status, 4) Pulse width, and 5) PRF.
3. The View-Status command now prints an itemized list (not just the numerical error mask) of powerup diagnostics that failed. You no longer need to lookup the error bits to decipher the message. The word "PASS" is still shown when there were no errors.
4. A printout of the revision levels of all Programmable Logic Devices (PLDs) has been added to the View-Status command. These numbers should match the digit that is located in the middle position of the PLD label (each PLD has its own revision level coded into it). You no longer have to remove the RVP7/Main cover to determine the revision level of any programmable part.
5. Added printout of the board and code revision levels to the line of the "V" command that used to only show the date and time that the code was built. This revision information simply duplicates what is shown in the initial banner when the TTY monitor is first entered, but makes the "V" command more complete as a stand-alone listing.

6. An explicit error diagnostic bit has been added for the case when the downlink optical signal is not detected during power-up. Previously this error was implied by others, but not specifically called out. Since leaving a cable disconnected is a very common mishap, having a dedicated message will often be more clear.
7. The "U" and "D" subcommands which slew MFC up and down in the Ps command now quantize the MFC level to the nearest 0.05% (the smallest slew increment). This makes the displayed value nicer to read.
8. The subcommand to toggle between MFC and AFC in the Ps command has been changed from '~' to '='. This is because many international keyboards do not support the tilde character.
9. A "smart upgrade" feature has been added to the RVP7's algorithm for restoring its nonvolatile RAM. The "save" command now saves the numerical version of the running code. When a ROM upgrade is later performed and the old parameters are restored, reasonable default values can likely be guessed for some of the new fields. You will still see the View-Status message indicating that automatic defaults have been supplied, and you should check the release notes to see what new parameters have been added.
10. The View-Status printout now contains a line showing the last ROM code version that wrote into the nonvolatile RAM. The line is only displayed if the old version is different from the current ROM version.
11. The spectrum calculations in the "Pr" and "Ps" commands have been optimized, and are now eight times faster than before. This very much improves the update rate when many spectra are being averaged from a long input sample segment. Note that an FFT is not used here because the scope plots are 500 points wide, i.e., not a power of two.
12. Added an additional power up diagnostic to test for code generation errors that can not be detected at compile or link time. This is for internal SIGMET use only.

Setup Changes

1. A new setup question has been added to the Mc section to permit changing the holdoff ratio and stroke timebase of the oscilloscope plots. Try increasing the holdoff from the default value of 0.5 if your scope is having trouble triggering on the plotting waveform. Larger values make it easier to trigger, but may introduce visible flicker. To reduce flicker, try decreasing the stroke duration from its default value of 1000 microseconds.
2. The following setup questions have been moved from the Mc section to the Mp section, since they have more to do with data processing than with board configuration:
Maintain separate noise levels for each PW: YES
TAG Bits to invert AZ:0000 EL:0000
TAG offsets (degrees) AZ:0.00 EL:0.00
3. There is now a separate setup question to tell whether the burst pulse frequency increases or decreases with increasing AFC voltage. Previously this information was implicitly

conveyed in the sign of the AFC feedback slope. Answer YES to the new question if the sign of your feedback slope used to be negative, else answer NO. The new feedback slope must always be positive. Correct values will automatically be filled in when you upgrade from V2.

These changes were made so that the AFC drive level (that is shown in the Ps command printout) increases and decreases in step with the burst frequency. This means that the "U" and "D" commands in MFC mode always raise and lower both the printed drive level and the actual burst frequency.

4. There are new setup questions in the "M+" (debugging) section that configures the Real Time TTY Monitor (See new feature #2.).