WX/ASR Basic Operation and Baseline Configuration

Annex B: RVP8 Configuration

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1. Document Scope

This document describes the hardware and software configurations for the two RVP8 digital receiver/signal processor systems installed on the WX/ASR system. The document describes:

- 2. Delivered Hardware and Spares
- 3. WX/ASR Hardware Installation
- 4. RVP8-A TTY Setups (from dspx)
- 5. RVP8-A Menu Setups
- 6. RVP8-B TTY Setups (from dspx)
- 7. RVP8-B Menu Setups

The ***RVP8 User's Manual*** serves as the primary reference for this annex. This is available in hardcopy and on-line under the "manuals" interface or as part of the Help in IRIS.

2. Delivered Hardware and Spares

The RVP8 is a rack mount PC equipped as follows:

- Dual Intel Pentium mother board (3.06 GHz each, 6.12 GHz total.
- 80 GB hard disk drive
- 1 GB memory
- DVD+RW/CDRW
- Keyboard mouse and monitor on a KVM switch shared with the RCP8
- SIGMET RVP8/Rx Card Rev B

In addition, a SIGMET IF Digitizer Module Rev D (IFD) is supplied as part of the receiver plate along with a digital AFC module for STALO control. The IFD connects to the RVP8/Rx card via a fiber optic downlink and a COAX BNC uplink.

The following spares were provided:

- Rack mount PC power supply module (qty 2)
- RVP8/Rx Card Rev B
- IFD Rev D
- Computer mother board
- DAFC

Note that some of the spares are shared with the RCP8.

Note: The RVP8 was supplied as a minimal system without an IO62 card or connector panel. Because of this, the **softplane.conf** file is ignored by the RVP8.

3. WX/ASR Hardware Installation

This section describes any special hardware configurations for the WX/ASR application. Most of the components require no hardware configuration. Those that do are described below.

DAFC

The DAFC was configured for the standard CTI "MVSR-xxx" configuration. Please refer the the ***RVP8 User's Manual*** section 2.4 for details of the configuration. Note the following radar transmit frequency configurations

RVP–A:	Transmitter Frequency:	5450 MHz
	STALO Frequency:	5390 MHz
	Starting:	5200 MHz,
	AFC Value to get STALO Freq	1900
RVP–B:	Transmitter Frequency:	5650
	STALO Frequency:	5590
	Starting:	5200 MHz
	AFC Value to get STALO Freq	3900

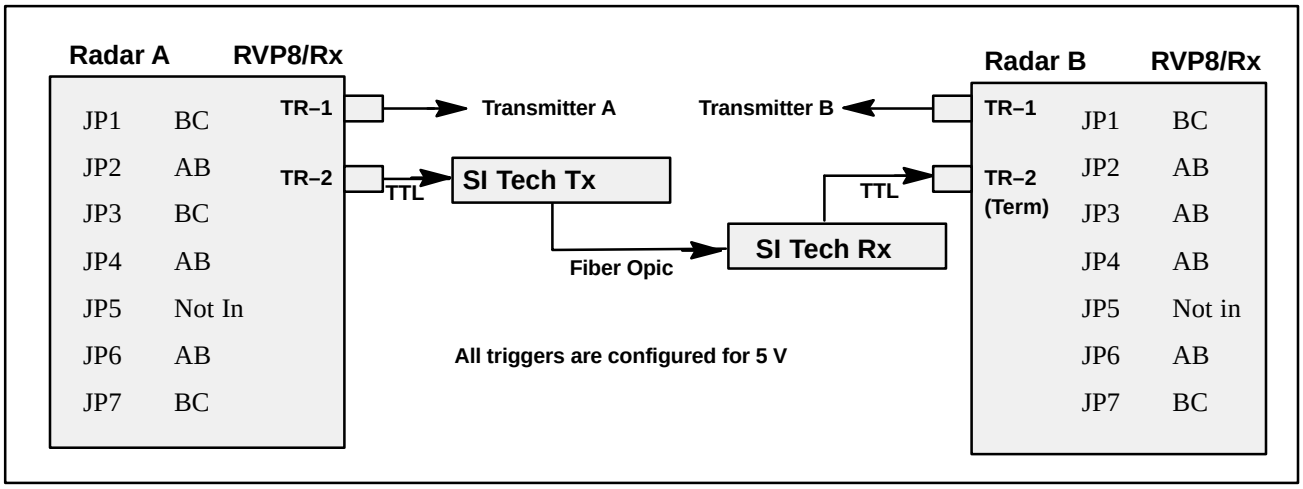
IFD

This is a Rev D version mounted on the receiver plate itself. The IFD special configurations are as follows:

- 60 MHz IF
- Acquisition Clock Frequency 36.00000 MHz
- Setup for Phase Lock Loop to 10 MHz STALO reference clock (PLL Ratio 5/9)

RVP8/Rx Card

The system is configured such that Radar A supplies the trigger to Radar B. The TR–2 trigger output on Radar A is configured to output a 5V trigger. A media convertor (supplied by Baron Services) converts this to a fiberoptic signal and a corresponding media convertor at the other end converts it back to a TTL trigger for Radar B. TR–1 is configured to be a 5V trigger which drives the transmitter. The configuration is shown in the diagram below. Please refer to the ***RVP8 User's Manual*** **Table B–2** for a detailed description of the functions of the 7 jumpers.



SI Tech Coax to Fiber Driver

The SI Tech Tx and Rx units, supplied by Baron Services are used to convert the Radar A TTL master trigger to fiber optic (by the Tx), transmit the RVP8 master trigger from Radar A to Radar B over fiber optic cable and then convert back to TTL.

The same circuit board is used in both the Tx and Rx, but the input to the Tx was still connected to the output of the DS34C86T chip (located directly below the input BNC), which normally receives differential input. The following modification was performed on the Tx unit (the Rx unit is fine):

- 1. Remove the 0–Ohm resistor that connects to Pin–13 of the DS34C86T chip, between the BNC–In and Fiber–Out connectors. This removes the mysterious 65mA current source at the ”input” to the box. Leaving this component in place was an error on SI–Tech's part, as the BNC ”input” is being driven with the output of this chip.
- Remove the flimsy 30–gauge wire from the BNC center to Pin–5 of the 74S140, and replace it with a sturdy stranded wire soldered to the pad nearest the BNC of the 0–Ohm resistor removed in the above step. This will give a much better mechanical connection.

4. RVP8-A TTY Setups

Note the mt setups for sector blanking for 40 to 185 degrees AZ.

```
Script started on Fri 25 Mar 2005 04:23:15 PM EST
$ dspx¿
Digital Signal Processor 'Chat' Mode
Checking for code upgrades... Okay
(Type ^C to exit Chat Mode)

¿
RVP8 Digital IF Signal Processor V7.3(Pol) IRIS-8.07.4
------------------------------------------------------

RVP8> ??

V - Configuration and Internal Status
-------------------------------------
RVP8 Digital IF Signal Processor V7.3(Pol) IRIS-8.07.4
  Settings were last saved using V7.3
  RVP8 started at: 16:22:42 24 MAR 2005
  Current time is: 16:23:21 25 MAR 2005

CPU-Type: Pentium(R) 4 Hyperthreaded
IPP-Library: libippsw7.so v4.0 4.0.19.77

Physical hardware inventory:
  Found PCI Card RVP8/Rx - Rev.B  Serial:1751  Code:20 (/dev/rda/rvp8rx-0)

Diagnostics: PASS

Processes and Threads:
  RVP8Proc-0 - PID:6132   Priority:10  Policy:RealTimeRR
  RVP8Proc-1 - PID:6133   Priority:10  Policy:RealTimeRR
  Chat/Plot  - PID:6016   Priority:10  Policy:RealTimeRR
  Burst/AFC  - PID:6016   Priority:10  Policy:RealTimeRR
   Watchdog  - PID:6016   Priority:10  Policy:RealTimeRR
   HostCmds  - PID:6016   Priority:11  Policy:RealTimeRR
    IQ-Data  - PID:6016   Priority:11  Policy:RealTimeRR
    RT-Ctrl  - PID:6016   Priority:12  Policy:RealTimeRR
     Angles  - PID:6016   Priority:12  Policy:RealTimeRR

Shared library build dates:
  RVP8/Main/Core: Fri Dec  3 11:50:43 EST 2004
  RVP8/Main/Open: Fri Dec  3 11:51:01 EST 2004
  RVP8/Main/Site: Fri Dec  3 11:50:43 EST 2004
  RVP8/Proc/Core: Fri Dec  3 11:50:44 EST 2004
  RVP8/Proc/Open: Fri Dec  3 11:51:04 EST 2004
  RVP8/Proc/Site: Fri Dec  3 11:50:44 EST 2004

Front panel display:
  +----------------------+
  | 355.91  AZ/EL  -4.09 |
  | PPP 100B    250Hz x1 |
  +----------------------+

TrigRAM is 97.0% free,  TrigCount:21600654
AFC:0.00% [1900] (NoBurst)   Burst Pwr:-57.8 dBm, Freq:63.920 MHz
IFD:NoPLL   Link: Delay = 0.568 usec, Jitter = 0.014 usec
```

```
Mb - Burst Pulse and AFC
------------------------
Receiver Intermediate Frequency:   60.0000 MHz
IF increases for an approaching target: NO
PhaseLock to the burst pulse - 0:No, 1:Yes, 2:Auto: 1
Minimum power for valid burst pulse: -25.0 dBm
Design/Analysis Window - 0:Rect, 1:Hamming, 2:Blackman : 1
Settling time (to 1%) of burst frequency estimator: 5.0 sec
Lock IFD sampling clock to external reference: YES
  PLL ratio of (5/9) ==> Input reference at 10.0000 MHz
  VCXO has positive frequency deviation: YES
Enable AFC and MFC functions: YES
  AFC Servo - 0:DC Coupled, 1:Motor/Integrator : 0
  Wait time before applying AFC: 10.0 sec
  AFC hysteresis - Inner: 50.0 KHz,  Outer: 70.0 KHz
  AFC outer tolerance during data processing: 120.0 KHz
  AFC feedback slope:     0.0100 D-Units/sec / KHz
  AFC minimum slew rate:  0.0000 D-Units/sec
  AFC maximum slew rate:  1.0000 D-Units/sec
  AFC span - [-100%,+100%] maps into [ 1800 , 2000 ]
  AFC format - 0:Bin, 1:BCD, 2:8B4D: 0,  ActLow: NO
  AFC uplink protocol - 0:Off, 1:Normal, 2:PinMap : 2
    PinMap Table (Use '31' for GND, '30' for +5)
    -------------------------------------------
    Pin01:GND  Pin02:GND  Pin03:GND  Pin04:GND  Pin05:GND
    Pin06:02   Pin07:03   Pin08:11   Pin09:09   Pin10:08
    Pin11:07   Pin12:12   Pin13:GND  Pin14:GND  Pin15:GND
    Pin16:GND  Pin17:GND  Pin18:00   Pin19:01   Pin20:10
    Pin21:04   Pin22:05   Pin23:06   Pin24:GND  Pin25:13
    FAULT status pin (0:None): 4,  ActLow: NO
  Burst frequency increases with increasing AFC voltage: NO
Enable Burst Pulse Tracking: YES
Enable Time/Freq hunt for missing burst: NO
Simulate burst pulse samples: NO

Mc - Top-Level Configuration
----------------------------
Acquisition clock: 36.00000 MHz
Dual simultaneous receivers are being used: NO
Live angle input - 0:None, 1:Sim, 2:TAGs, 3:S/D : 0
Synthesize LOG video output waveform: NO
Primary RVP8/Rx PCI card (-1:None) : 0
Primary RVP8/Tx PCI card (-1:None) : -1
Primary I/O-62  PCI card (-1:None) : -1
Reset all PCI cards on RVP8 shutdown: YES
Provide IRIS RPC network status server: YES
PWINFO command enabled: NO
TRIGWF command enabled: NO
RVP7 Emulation: NO

Mf - Clutter Filter Options
---------------------------
Residual clutter LOG noise margin: 0.15 dB/dB

Spectral Clutter Filters
------------------------
```

```
   Window   -1:Default   0:Rectangular  1:Hamming
    Code     2:Blackman  3:ExBlackman   4:VonHann  5:Adaptive

Filter #1 - Type:0(Fixed)    Win:-1  WidthPts:1   EdgePts:2
Filter #2 - Type:0(Fixed)    Win:-1  WidthPts:2   EdgePts:2
Filter #3 - Type:0(Fixed)    Win:-1  WidthPts:3   EdgePts:3
Filter #4 - Type:0(Fixed)    Win:-1  WidthPts:4   EdgePts:3
Filter #5 - Type:3(Gaussian Adaptive)   Win:-1  Spectrum width: 0.300 m/sec
Filter #6 - Type:3(Gaussian Adaptive)   Win:-1  Spectrum width: 0.500 m/sec
Filter #7 - Type:3(Gaussian Adaptive)   Win:-1  Spectrum width: 0.700 m/sec

Whitening Parameters for Tx:Random
----------------------------------
Secondary SQI Threshold  Slope:0.50  Offset:-0.05

Whitening Parameters for Tx:SZ(8/64)
------------------------------------
Max power mismatch across octants: 4.0db
High power rejection threshold: 8.0db
Maximum KEY phase error: 12.0 deg

Mp - Processing Options
-----------------------
Spectral Window - 0:User, 1:Rect, 2:Hamming, 3:Blackman : 0
Allow continuous sizes for power spectra: YES
R2 Processing Algorithms -  0:Never, 1:User, 2:Always : 1
Clutter MicroSuppression -  0:Never, 1:User, 2:Always : 1
2D Final Speckle/Unfold  -  0:Never, 1:User, 2:Always : 1
Unfold Velocity (Vh-Vl)  -  0:Never, 1:User, 2:Always : 1
Process w/ custom trigs  -  0:Never, 1:User, 2:Always : 1
Use High-SNR 16-bit packed timeseries format: YES
Minimum freerunning ray holdoff: 50% of dwell
Linearized saturation headroom: 4.0 dB
Apply amplitude correction based on Burst/COHO: YES
  Time constant of mean amplitude estimator: 70 pulses
IFD built-in noise dither source: -57.0dBm
TAG Bits to invert     AZ: 0x0000  EL: 0x0000
TAG scale factors      AZ: 1.0000  EL: 1.0000
TAG offsets (degrees)  AZ:   0.00  EL:   0.00
Interference Filter - 0:None, Alg.1, Alg.2, Alg.3: 0
Provide WSR88D legacy BATCH major mode: NO
Polarization Params - Filtered:YES  NoiseCorrected:YES
PhiDP - Negate: NO ,  Offset:90.0 deg
KDP   - Length: 5.00 km
T/Z/V/W computed from:   H-Xmt:YES   V-Xmt:YES

Mt - Triggers and Timing
------------------------
Pulse Repetition Frequency: 250.00 Hz
Transmit pulse width index [0-3]: 1
Use external pretrigger: NO
Number of user-defined output triggers: 2
Number of polarization output controls: 0
2-way (Tx+Rx) total waveguide length: 30 meters
Quantize trigger PRT to ((1 x AQ) + 0) 27.8ns ticks
Blank output triggers within AZ and EL sectors: YES
  Sector #1 - InUse:YES   AZ: 40.0,185.0   EL:-10.0,100.0   Ped:YES
```

```
  Sector #2 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
  Sector #3 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
  Sector #4 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
  Sector #5 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
  Sector #6 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
  Sector #7 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
  Sector #8 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
Blank output triggers via softplane sTrigBlank: NO
Blank output triggers during noise measurement: NO
  Blank triggers : #1:Y #2:N
Rx-Fixed Triggers: #1:N #2:N Z:N
Merge triggers to create composite waveforms: NO

Mt0 - Parameters for Pulse Width #0
-----------------------------------
Trigger #1 - Start:   -1.67 usec
        #1 - Width:    1.00 usec     High:YES
Trigger #2 - Start:   -6.67 usec
        #2 - Width:    1.00 usec     High:YES
Maximum number of Pulses/Sec:  1250.0
Maximum instantaneous 'PRF' :  1250.0 (/Sec)
Range mask spacing: 100.000 meters
FIR-Filter impulse response length: 1.42 usec
Burst Freq Estimator - Length: 0.69 usec, Start: 0.33 usec
FIR-Filter prototype passband width: 0.90 MHz
Output control 4-bit pattern: 0x1
Current noise level: -74.85 dBm
Powerup noise level: -74.85 dBm

Mt1 - Parameters for Pulse Width #1
-----------------------------------
Trigger #1 - Start:   -2.25 usec
        #1 - Width:    1.00 usec     High:YES
Trigger #2 - Start:   -7.25 usec
        #2 - Width:    1.00 usec     High:YES
Maximum number of Pulses/Sec:   500.0
Maximum instantaneous 'PRF' :   500.0 (/Sec)
Range mask spacing: 125.000 meters
FIR-Filter impulse response length: 2.67 usec
Burst Freq Estimator - Length: 1.31 usec, Start: 0.67 usec
FIR-Filter prototype passband width: 0.25 MHz
Output control 4-bit pattern: 0x2
Current noise level: -85.20 dBm
Powerup noise level: -77.73 dBm

Mt2 - Parameters for Pulse Width #2
-----------------------------------
Trigger #1 - Start:   -5.00 usec
        #1 - Width:    1.00 usec     High:YES
Trigger #2 - Start:   -4.00 usec
        #2 - Width:    1.00 usec     High:YES
Maximum number of Pulses/Sec:  1000.0
Maximum instantaneous 'PRF' :  1000.0 (/Sec)
Range mask spacing: 125.000 meters
FIR-Filter impulse response length: 1.33 usec
Burst Freq Estimator - Length: 1.33 usec, Start: 0.00 usec
```

```
FIR-Filter prototype passband width: 0.50 MHz
Output control 4-bit pattern: 0x4
Current noise level: -75.00 dBm
Powerup noise level: -75.00 dBm

Mt3 - Parameters for Pulse Width #3
-----------------------------------
Trigger #1 - Start:   -5.00 usec
        #1 - Width:    1.00 usec     High:YES
Trigger #2 - Start:   -4.00 usec
        #2 - Width:    1.00 usec     High:YES
Maximum number of Pulses/Sec:  2000.0
Maximum instantaneous 'PRF' :  2000.0 (/Sec)
Range mask spacing: 125.000 meters
FIR-Filter impulse response length: 1.33 usec
Burst Freq Estimator - Length: 1.33 usec, Start: 0.00 usec
FIR-Filter prototype passband width: 0.50 MHz
Output control 4-bit pattern: 0x8
Current noise level: -77.73 dBm
Powerup noise level: -77.73 dBm

Mz - Transmissions and Modulations
----------------------------------
Provide phase modulation of transmitted pulses: NO

M+ - Debug Options
------------------
Noise level for simulated data: -50.00 dB
Simulate output rays: NO
Real Time TTY Monitor: NO

RVP8> q
Exiting Setups...

Script done on Fri 25 Mar 2005 04:23:27 PM EST
```

5. RVP8-A Menu Setups

```
=======================================================
Radar Video Processor Setups, rvp8-test
=======================================================

System Type
  System has a signal processor      : Yes
  Interface to RVP                   : Native
  Processor Type                     : RVP8
  Check byte order on powerup        : No

Optional Data Parameters
  Polarization Diversity             : Disabled
  Polarization                       : Horizontal
  Signal Quality Index (SQI)         : Disabled
  Major mode 'USER1' custom name     :
  Major mode 'USER2' custom name     :
  Major mode 'USER3' custom name     :
  Major mode 'USER4' custom name     :

System Parameters
  Transmit Wavelength                : 5.40 cm
  Transmitter Type                   : Magnetron
  Default PRF                        : 250 Hertz
  Noise Sample PRF                   : 300 Hertz
  Number of Pulsewidths              : 2
  HV off time before PW change       : 0.00 sec
  Wait time after PW change          : 0.20 sec

Calibration
  Horizontal beamwidth               : 1.50 deg
  Vertical beamwidth                 : 1.50 deg
  Antenna gain                       : 40.5 dB
  Cal signal bandwidth               : Broad (NS)
  Noise source ENR value             : 30.8 dB
  Transmit loss                      : 1.5 dB
  Receive loss                       : 1.9 dB
  Test signal loss                   : 0.0 dB

Signal Processing Options
  Gaseous attenuation                : 0.0160 dB/km
  Power spectrum window              : Hamming (Def)
  AGC decay code                     : 3
  Dual-PRF / AGC delay               : 2
  Parameter data width               : 8-Bit (Def)
  Velocity sign                      : Normal
  Sync mode fuzz angle               : 0.15 deg

Data Simulations
  Clutter width scientific units     : meters/sec
  Clutter width (Gaussian model)     : 0.10 m/sec

Pulse Width #1 (Code:0) Definitions
  Pulsewidth                         : 0.80 usec
```

```
  Range mask spacing                 : 100.00 meters
  Output bit pattern                 : 1
  Minimum PRF                        : 250 Hertz
  Maximum PRF                        : 1250 Hertz
  Transmit power                     : 350000 Watts

Pulse Width #2 (Code:1) Definitions
  Pulsewidth                         : 2.00 usec
  Range mask spacing                 : 125.00 meters
  Output bit pattern                 : 2
  Minimum PRF                        : 250 Hertz
  Maximum PRF                        : 500 Hertz
  Transmit power                     : 350000 Watts

Custom Trigger Period Sequences
  === Length of Sequence #1 ===      : 0 Pulses
  === Length of Sequence #2 ===      : 0 Pulses
  === Length of Sequence #3 ===      : 0 Pulses
  === Length of Sequence #4 ===      : 0 Pulses

Real Time Display
  System transmits RTD               : No

=======================================================
Radar Control Processor Setups, rvp8-test
=======================================================

Interface to RCP
  System has an antenna           : Yes
  Main Interface to RCP           : Network
  Antenna angle insertion source  : Normal RCP
  Is this the 1 controlling host  : No
  Network Multicast Address       : 239.255.0.2
  Network Port Number             : 30785
  Network Interface               : eth0
  Average network delay           : 1 ms
  Receive format from RCP         : RCV03 (Shipboard)

Advanced Interface Features
  Auxiliary receive format        : No Reception
  Start RCP Simulator             : No
  Transmit subprocess priority    : -15
  Receive subprocess priority     : -15
  Timezone of time packets        : UTC
  Trust timestamps in RCVxx       : Yes
  Packet Logging                  : None

Radar Site and Antenna Placement
  Ground height above sea level   : 0.0 meters
  Antenna height above the ground : 50.0 meters
  Default Latitude of antenna     : 43.00000 deg North
  Default Longitude of antenna    : -70.00000 deg East
  Antenna position forward of INU : 0.0 meters
  Antenna position to port of INU : 0.0 meters
  Antenna position above INU      : 0.0 meters
  INU Height Offset               : 0.0 meters
```

```
Status Bit Definitions
  Pulse Width Status              : Disabled
  Polarization Status             : Disabled
  Servo Power Status              : Disabled
  Transmit Radiate Status         : Disabled
  T/R Power Status                : Disabled
  Signal Generator Status         : Disabled
  Siggen Cont.Wave Status         : Disabled
  Siggen Fault Status             : Disabled
  RCP Shutdown Status             : Disabled
  Low Airflow Status              : Disabled
  Low Waveguide Pressure Status   : Disabled
  Antenna Local Mode Status       : Disabled
  T/R Local Mode Status           : Disabled
  Safety Interlock Status         : Disabled
  Standby Status                  : Disabled
  Magnetron Current Status        : Disabled
  Azimuth Encoder Status          : Disabled
  Elevation Encoder Status        : Disabled

=======================================================
License and Site Setups, rvp8-test
=======================================================

License and Site Information
00000001-041001-W3EWPY-01-9T7YA3
00000001-041001-W3EWPY-03-PM9T39


Radar
SBX, RADAR1
SBX, RADAR1
***************
```

6. RVP8-B TTY Setups

Note the mt setups for sector blanking for 200 to 5 degrees AZ.

```
Script started on Fri 25 Mar 2005 05:38:06 PM EST
$ dspx¿
Digital Signal Processor 'Chat' Mode
Checking for code upgrades... Okay
(Type ^C to exit Chat Mode)
¿
RVP8 Digital IF Signal Processor V7.3(Pol) IRIS-8.07.4
------------------------------------------------------

RVP8> ??

V - Configuration and Internal Status
-------------------------------------
RVP8 Digital IF Signal Processor V7.3(Pol) IRIS-8.07.4
  Settings were last saved using V7.3
  RVP8 started at: 17:36:59 25 MAR 2005
  Current time is: 17:38:13 25 MAR 2005

CPU-Type: Pentium(R) 4 Hyperthreaded
IPP-Library: libippsw7.so v4.0 4.0.19.77

Physical hardware inventory:
  Found PCI Card RVP8/Rx - Rev.B  Serial:1751  Code:20 (/dev/rda/rvp8rx-0)

Diagnostics: FAIL (00000480)
   0x00000080 : Could not start IRIS antenna library
   0x00000400 : Signals raised during startup

Processes and Threads:
  RVP8Proc-0 - PID:6693   Priority:10  Policy:RealTimeRR
  RVP8Proc-1 - PID:6694   Priority:10  Policy:RealTimeRR
  Chat/Plot  - PID:6690   Priority:10  Policy:RealTimeRR
  Burst/AFC  - PID:6690   Priority:10  Policy:RealTimeRR
   Watchdog  - PID:6690   Priority:10  Policy:RealTimeRR
   HostCmds  - PID:6690   Priority:11  Policy:RealTimeRR
    IQ-Data  - PID:6690   Priority:11  Policy:RealTimeRR
    RT-Ctrl  - PID:6690   Priority:12  Policy:RealTimeRR
     Angles  - PID:6690   Priority:12  Policy:RealTimeRR

Shared library build dates:
  RVP8/Main/Core: Fri Dec  3 11:50:43 EST 2004
  RVP8/Main/Open: Fri Dec  3 11:51:01 EST 2004
  RVP8/Main/Site: Fri Dec  3 11:50:43 EST 2004
  RVP8/Proc/Core: Fri Dec  3 11:50:44 EST 2004
  RVP8/Proc/Open: Fri Dec  3 11:51:04 EST 2004
  RVP8/Proc/Site: Fri Dec  3 11:50:44 EST 2004

Front panel display:
  +----------------------+
  | 307.84  AZ|EL 257.74 |
  | PPP 100B    300Hz x1 |
  +----------------------+

TrigRAM is 97.3% free,  TrigCount:18985
AFC:0.00% [3900] (NoBurst)   Burst Pwr:-58.0 dBm, Freq:64.010 MHz
IFD:NoPLL   Link: Delay = 0.570 usec, Jitter = 0.014 usec
```

```
Mb - Burst Pulse and AFC
------------------------
Receiver Intermediate Frequency:   60.0000 MHz
IF increases for an approaching target: NO
PhaseLock to the burst pulse - 0:No, 1:Yes, 2:Auto: 1
Minimum power for valid burst pulse: -25.0 dBm
Design/Analysis Window - 0:Rect, 1:Hamming, 2:Blackman : 1
Settling time (to 1%) of burst frequency estimator: 5.0 sec
Lock IFD sampling clock to external reference: YES
  PLL ratio of (5/9) ==> Input reference at 10.0000 MHz
  VCXO has positive frequency deviation: YES
Enable AFC and MFC functions: YES
  AFC Servo - 0:DC Coupled, 1:Motor/Integrator : 0
  Wait time before applying AFC: 10.0 sec
  AFC hysteresis - Inner: 50.0 KHz,  Outer: 70.0 KHz
  AFC outer tolerance during data processing: 120.0 KHz
  AFC feedback slope:     0.0100 D-Units/sec / KHz
  AFC minimum slew rate:  0.0000 D-Units/sec
  AFC maximum slew rate:  0.5000 D-Units/sec
  AFC span - [-100%,+100%] maps into [ 3800 , 4000 ]
  AFC format - 0:Bin, 1:BCD, 2:8B4D: 0,  ActLow: NO
  AFC uplink protocol - 0:Off, 1:Normal, 2:PinMap : 2
    PinMap Table (Use '31' for GND, '30' for +5)
    -------------------------------------------
    Pin01:GND  Pin02:GND  Pin03:GND  Pin04:GND  Pin05:GND
    Pin06:02   Pin07:03   Pin08:11   Pin09:09   Pin10:08
    Pin11:07   Pin12:12   Pin13:GND  Pin14:GND  Pin15:GND
    Pin16:GND  Pin17:GND  Pin18:00   Pin19:01   Pin20:10
    Pin21:04   Pin22:05   Pin23:06   Pin24:GND  Pin25:13
    FAULT status pin (0:None): 4,  ActLow: NO
  Burst frequency increases with increasing AFC voltage: NO
Enable Burst Pulse Tracking: YES
Enable Time/Freq hunt for missing burst: NO
Simulate burst pulse samples: NO

Mc - Top-Level Configuration
----------------------------
Acquisition clock: 36.00000 MHz
Dual simultaneous receivers are being used: NO
Live angle input - 0:None, 1:Sim, 2:TAGs, 3:S/D : 0
Synthesize LOG video output waveform: NO
Primary RVP8/Rx PCI card (-1:None) : 0
Primary RVP8/Tx PCI card (-1:None) : -1
Primary I/O-62  PCI card (-1:None) : -1
Reset all PCI cards on RVP8 shutdown: YES
Provide IRIS RPC network status server: YES
PWINFO command enabled: NO
TRIGWF command enabled: NO
RVP7 Emulation: NO

Mf - Clutter Filter Options
---------------------------
Residual clutter LOG noise margin: 0.15 dB/dB

Spectral Clutter Filters
------------------------
```

```
   Window   -1:Default   0:Rectangular  1:Hamming
    Code     2:Blackman  3:ExBlackman   4:VonHann  5:Adaptive

Filter #1 - Type:0(Fixed)    Win:-1  WidthPts:1   EdgePts:2
Filter #2 - Type:0(Fixed)    Win:-1  WidthPts:2   EdgePts:2
Filter #3 - Type:0(Fixed)    Win:-1  WidthPts:3   EdgePts:3
Filter #4 - Type:0(Fixed)    Win:-1  WidthPts:4   EdgePts:3
Filter #5 - Type:3(Gaussian Adaptive)   Win:-1  Spectrum width: 0.300 m/sec
Filter #6 - Type:3(Gaussian Adaptive)   Win:-1  Spectrum width: 0.500 m/sec
Filter #7 - Type:3(Gaussian Adaptive)   Win:-1  Spectrum width: 0.700 m/sec

Whitening Parameters for Tx:Random
----------------------------------
Secondary SQI Threshold  Slope:0.50  Offset:-0.05

Whitening Parameters for Tx:SZ(8/64)
------------------------------------
Max power mismatch across octants: 4.0db
High power rejection threshold: 8.0db
Maximum KEY phase error: 12.0 deg

Mp - Processing Options
-----------------------
Spectral Window - 0:User, 1:Rect, 2:Hamming, 3:Blackman : 0
Allow continuous sizes for power spectra: YES
R2 Processing Algorithms -  0:Never, 1:User, 2:Always : 1
Clutter MicroSuppression -  0:Never, 1:User, 2:Always : 1
2D Final Speckle/Unfold  -  0:Never, 1:User, 2:Always : 1
Unfold Velocity (Vh-Vl)  -  0:Never, 1:User, 2:Always : 1
Process w/ custom trigs  -  0:Never, 1:User, 2:Always : 1
Use High-SNR 16-bit packed timeseries format: YES
Minimum freerunning ray holdoff: 50% of dwell
Linearized saturation headroom: 4.0 dB
Apply amplitude correction based on Burst/COHO: YES
  Time constant of mean amplitude estimator: 70 pulses
IFD built-in noise dither source: -57.0dBm
TAG Bits to invert     AZ: 0x0000  EL: 0x0000
TAG scale factors      AZ: 1.0000  EL: 1.0000
TAG offsets (degrees)  AZ:   0.00  EL:   0.00
Interference Filter - 0:None, Alg.1, Alg.2, Alg.3: 0
Provide WSR88D legacy BATCH major mode: NO
Polarization Params - Filtered:YES  NoiseCorrected:YES
PhiDP - Negate: NO ,  Offset:90.0 deg
KDP   - Length: 5.00 km
T/Z/V/W computed from:   H-Xmt:YES   V-Xmt:YES

Mt - Triggers and Timing
------------------------
Pulse Repetition Frequency: 300.00 Hz
Transmit pulse width index [0-3]: 0
Use external pretrigger: NO
Number of user-defined output triggers: 1
Number of polarization output controls: 0
2-way (Tx+Rx) total waveguide length: 35 meters
Quantize trigger PRT to ((1 x AQ) + 0) 27.8ns ticks
Blank output triggers within AZ and EL sectors: YES
  Sector #1 - InUse:YES   AZ:200.0,5.0     EL:-10.0,100.0   Ped:YES
```

```
  Sector #2 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
  Sector #3 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
  Sector #4 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
  Sector #5 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
  Sector #6 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
  Sector #7 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
  Sector #8 - InUse:NO    AZ:  0.0,0.0     EL:  0.0,0.0     Ped:NO
Blank output triggers via softplane sTrigBlank: NO
Blank output triggers during noise measurement: NO
  Blank triggers : #1:Y
Rx-Fixed Triggers: #1:N Z:N
Merge triggers to create composite waveforms: NO
Mt0 - Parameters for Pulse Width #0
-----------------------------------
Trigger #1 - Start:   -1.77 usec
        #1 - Width:    1.00 usec     High:YES
Maximum number of Pulses/Sec:  1255.0
Maximum instantaneous 'PRF' :  1255.0 (/Sec)
Range mask spacing: 100.000 meters
FIR-Filter impulse response length: 1.42 usec
Burst Freq Estimator - Length: 0.72 usec, Start: 0.33 usec
FIR-Filter prototype passband width: 0.90 MHz
Output control 4-bit pattern: 0x1
Current noise level: -73.17 dBm
Powerup noise level: -73.17 dBm
Mt1 - Parameters for Pulse Width #1
-----------------------------------
Trigger #1 - Start:   -2.33 usec
        #1 - Width:    1.00 usec     High:YES
Maximum number of Pulses/Sec:   505.0
Maximum instantaneous 'PRF' :   505.0 (/Sec)
Range mask spacing: 125.000 meters
FIR-Filter impulse response length: 2.67 usec
Burst Freq Estimator - Length: 1.31 usec, Start: 0.67 usec
FIR-Filter prototype passband width: 0.25 MHz
Output control 4-bit pattern: 0x2
Current noise level: -76.25 dBm
Powerup noise level: -76.25 dBm
Mt2 - Parameters for Pulse Width #2
-----------------------------------
Trigger #1 - Start:   -5.00 usec
        #1 - Width:    1.00 usec     High:YES
Maximum number of Pulses/Sec:  1000.0
Maximum instantaneous 'PRF' :  1000.0 (/Sec)
Range mask spacing: 125.000 meters
FIR-Filter impulse response length: 1.33 usec
Burst Freq Estimator - Length: 1.33 usec, Start: 0.00 usec
FIR-Filter prototype passband width: 0.50 MHz
Output control 4-bit pattern: 0x4
Current noise level: -75.00 dBm
Powerup noise level: -75.00 dBm
Mt3 - Parameters for Pulse Width #3
-----------------------------------
```

```
Trigger #1 - Start:   -5.00 usec
        #1 - Width:    1.00 usec     High:YES
Maximum number of Pulses/Sec:  2000.0
Maximum instantaneous 'PRF' :  2000.0 (/Sec)
Range mask spacing: 125.000 meters
FIR-Filter impulse response length: 1.33 usec
Burst Freq Estimator - Length: 1.33 usec, Start: 0.00 usec
FIR-Filter prototype passband width: 0.50 MHz
Output control 4-bit pattern: 0x8
Current noise level: -75.00 dBm
Powerup noise level: -75.00 dBm

Mz - Transmissions and Modulations
----------------------------------
Provide phase modulation of transmitted pulses: NO

M+ - Debug Options
------------------
Noise level for simulated data: -50.00 dB
Simulate output rays: NO
Real Time TTY Monitor: NO

RVP8> q
Exiting Setups...


Script done on Fri 25 Mar 2005 05:38:18 PM EST
```

7. RVP8-B Menu Setups

```
=======================================================
Radar Video Processor Setups, rvp8-test
=======================================================

System Type
  System has a signal processor      : Yes
  Interface to RVP                   : Native
  Processor Type                     :   RVP8
  Check byte order on powerup        : No

Optional Data Parameters
  Polarization Diversity             : Disabled
  Polarization                       : Horizontal
  Signal Quality Index (SQI)         : Disabled
  Major mode 'USER1' custom name     :
  Major mode 'USER2' custom name     :
  Major mode 'USER3' custom name     :
  Major mode 'USER4' custom name     :

System Parameters
  Transmit Wavelength                : 5.35 cm
  Transmitter Type                   : Magnetron
  Default PRF                        : 300 Hertz
  Noise Sample PRF                   : 300 Hertz
  Number of Pulsewidths              : 2
  HV off time before PW change       : 0.00 sec
  Wait time after PW change          : 0.20 sec

Calibration
  Horizontal beamwidth               : 1.50 deg
  Vertical beamwidth                 : 1.50 deg
  Antenna gain                       : 40.5 dB
  Cal signal bandwidth               : Broad (NS)
  Noise source ENR value             : 31.1 dB
  Transmit loss                      : 1.5 dB
  Receive loss                       : 1.9 dB
  Test signal loss                   : 0.0 dB

Signal Processing Options
  Gaseous attenuation                : 0.0160 dB/km
  Power spectrum window              : Hamming (Def)
  AGC decay code                     : 3
  Dual-PRF / AGC delay               : 2
  Parameter data width               : 8-Bit (Def)
  Velocity sign                      : Normal
  Sync mode fuzz angle               : 0.15 deg

Data Simulations
  Clutter width scientific units     : meters/sec
  Clutter width (Gaussian model)     : 0.10 m/sec

Pulse Width #1 (Code:0) Definitions
  Pulsewidth                         : 0.80 usec
  Range mask spacing                 : 100.00 meters
  Output bit pattern                 : 1
  Minimum PRF                        : 200 Hertz
```

```
  Maximum PRF                          : 1255 Hertz
  Transmit power                       : 350000 Watts

Pulse Width #2 (Code:1) Definitions
  Pulsewidth                           : 2.00 usec
  Range mask spacing                   : 125.00 meters
  Output bit pattern                   : 2
  Minimum PRF                          : 200 Hertz
  Maximum PRF                          : 505 Hertz
  Transmit power                       : 350000 Watts

Custom Trigger Period Sequences
  === Length of Sequence #1 ===        : 0 Pulses
  === Length of Sequence #2 ===        : 0 Pulses
  === Length of Sequence #3 ===        : 0 Pulses
  === Length of Sequence #4 ===        : 0 Pulses

Real Time Display
  System transmits RTD                 : No

=======================================================
Radar Control Processor Setups, rvp8-test
=======================================================

Interface to RCP
  System has an antenna           : Yes
  Main Interface to RCP           : Network
  Antenna angle insertion source  : Normal RCP
  Is this the 1 controlling host  : No
  Network Multicast Address       : 239.255.0.1
  Network Port Number             : 30785
  Network Interface               : eth0
  Average network delay           : 0 ms
  Receive format from RCP         : RCV03 (Shipboard)

Advanced Interface Features
  Auxiliary receive format        : No Reception
  Start RCP Simulator             : No
  Transmit subprocess priority    : -15
  Receive subprocess priority     : -15
  Timezone of time packets        : UTC
  Trust timestamps in RCVxx       : Yes
  Packet Logging                  : None

Radar Site and Antenna Placement
  Ground height above sea level   : 0.0 meters
  Antenna height above the ground : 50.0 meters
  Default Latitude of antenna     : 43.00000 deg North
  Default Longitude of antenna    : -70.00000 deg East
  Antenna position forward of INU : 0.0 meters
  Antenna position to port of INU : 0.0 meters
  Antenna position above INU      : 0.0 meters
  INU Height Offset               : 0.0 meters

Status Bit Definitions
  Pulse Width Status              : Disabled
  Polarization Status             : Disabled
  Servo Power Status              : Disabled
  Transmit Radiate Status         : Disabled
```

```
  T/R Power Status                : Disabled
  Signal Generator Status         : Disabled
  Siggen Cont.Wave Status         : Disabled
  Siggen Fault Status             : Disabled
  RCP Shutdown Status             : Disabled
  Low Airflow Status              : Disabled
  Low Waveguide Pressure Status   : Disabled
  Antenna Local Mode Status       : Disabled
  T/R Local Mode Status           : Disabled
  Safety Interlock Status         : Disabled
  Standby Status                  : Disabled
  Magnetron Current Status        : Disabled
  Azimuth Encoder Status          : Disabled
  Elevation Encoder Status        : Disabled
=======================================================
License and Site Setups, rvp8-test
=======================================================

License and Site Information
00000001-041001-W3EWPY-01-9T7YA3
00000001-041001-W3EWPY-03-PM9T39


Radar <Note this was not set properly but does not effect operation>
SBX, RADAR1  <should be RADAR2>
SBX, RADAR1
***************
```