NOAA TAPS RECEIVER
TEST PROTOCOL

This is a suggested test protocol for the NOAA TAPS RECEIVER card, to be conducted on the bench in the lab. Each step checks a particular characteristic of the RECEIVER. No step should be performed if the previous step uncovered an anomaly.

1. *This step checks the power supply portion of the RECEIVER.*

Connect a 24VDC power supply to J10, being careful to observe polarity (+ to pin 1), with a DC ammeter in series with one lead. Turn on power and observe the current draw:

__________ mA (expect about 100 mA)

With a voltmeter, measure the following voltages at the test points provided:

+15V:	__________ VDC
+12V:	__________ VDC
+5V:	__________ VDC
-15V:	__________ VDC (may be low)
-12V:	__________ VDC
-5V:	__________ VDC

Turn off power.

2. *This step checks the basic operation of the RECEIVER. These voltages will form a useful record for subsequent troubleshooting, should that become necessary.*

Install shorting headers on all three stations of JP2. This will select multiplexer channel 1.

Install shorting headers on all three stations of JP1. This will set the final gain stage to 1X.

Connect an adjustable 0-1V DC supply to TP2 (+) and ground. Set it the supply to 0V to begin.

Connect a signal generator to J1 (SMA jack). Set the signal generator frequency to 1 MHz and the output amplitude to 100 mVpp. This is the RF signal generator.

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Connect a signal generator to J8 (SMA jack). Set the frequency to 1.035 MHz and the amplitude to 1Vpp. This is the LO signal generator.

Turn on power.

Connect an oscilloscope to TP5. Read and record this voltage.

TP5: __________ Vpp (expect 1Vpp)

Move the oscilloscope probe to TP6. Read and record this voltage.

TP6: __________ Vpp (expect 3Vpp)

Move the oscilloscope probe to TP1.

Read and record the voltage at TP1 (This should be a clean sinewave version of the input at J1, slightly reduced).

TP1: __________ Vpp

Move the oscilloscope probe to TP 4. Adjust the DC voltage at TP2 to obtain the same voltage as recorded at TP1 above. Read and record the DC voltage input on TP2.

TP2: __________ VDC (expect 0.25VDC)

Move the oscilloscope probe to TP9. This should be 35 kHz sine wave signal with little to no high frequency component. . Read and record this voltage.

TP9: __________ Vpp

Move the oscilloscope probe to TP10. This should be 35 kHz sine wave signal with little to no high frequency component. . Read and record this voltage.

TP10: __________ Vpp

Move the oscilloscope probe to TP11. This should be 35 kHz sine wave signal with little to no high frequency component. . Read and record this voltage.

TP11: __________ Vpp

Move the oscilloscope probe to TP12. This should be DC signal with little to no high frequency component. . Read and record this voltage.

TP12: __________ VDC (expect TP11 voltage / 2.83)

Calculate the gain from TP1 to TP11 [G = 20 Log(V11/V1)].

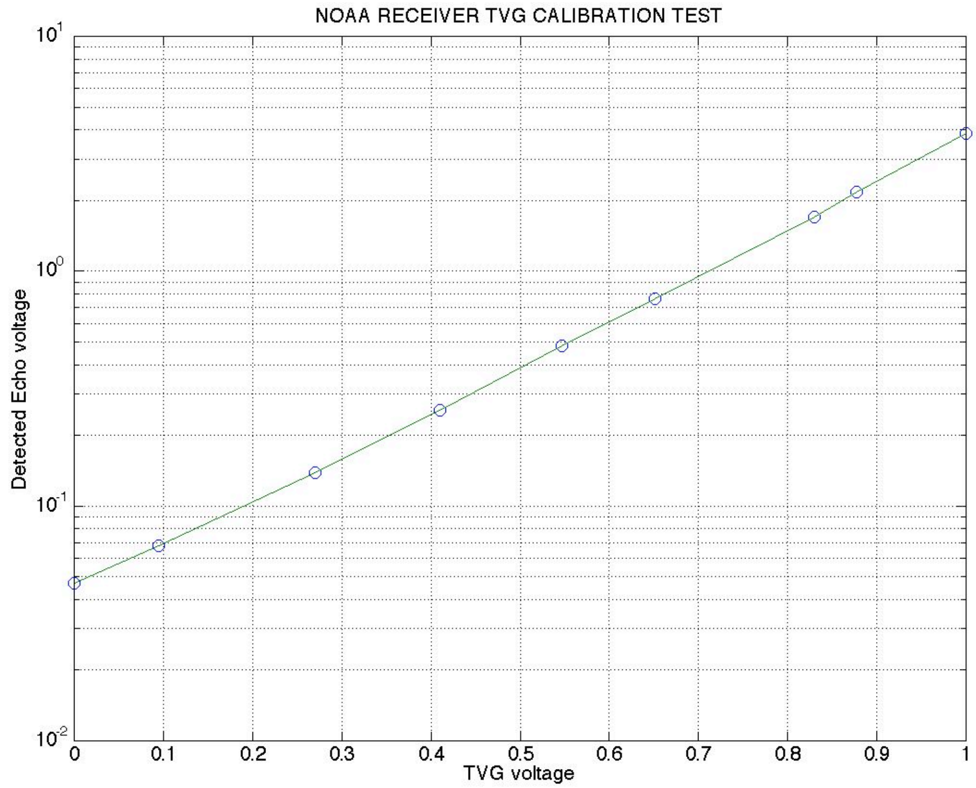
GAIN: __________ dB (The expected value is 32-36 dB)

3. *This step checks the TVG function of the RECEIVER and uses the setup of Step 2.*

Install a 20dB pad in the RF signal generator. Turn power on. Set the DC voltage to several values between 0 and 1 VDC and record the DC voltage at TP12:

V = 0		TP12:	__________ VDC
V =	_______ VDC	TP12:	__________ VDC
V =	_______ VDC	TP12:	__________ VDC
V =	_______ VDC	TP12:	__________ VDC
V =	_______ VDC	TP12:	__________ VDC
V =	_______ VDC	TP12:	__________ VDC
V =	_______ VDC	TP12:	__________ VDC
V = 1.0		TP12:	__________ VDC

Plot these data on a semilog graph. The data points should lie on a straight line. See the example on the next page.



4. *This step checks the digital gain function of the RECEIVER and uses the setup of Step 2.*

Set the signal generator amplitude to 50 mVpp. Set the TVG input voltage (at TP5) to 0 VDC. Read and record the DC voltage at TP12 for the following combinations of jumpers on JP1 (0 means jumper installed, 1 means jumper removed):

000 TP12: _______________ VDC

100 TP12: _______________ VDC

010 TP12: _______________ VDC

110 TP12: _______________ VDC

111 TP12: _______________ VDC

Each step should double the voltage of the previous step.

5. *This step checks the digital gain function of the RECEIVER and uses the setup of Step 2. Re-install the jumpers on JP1 for this test.*

Connect a pulse generator to the TRIG input of the RF signal generator. Set the pulse width of the output to 0.5 mSec.

Set the TVG input to 0VDC. Adjust the RF generator amplitude to get a 5VDC pulse from TP12. It may be necessary to insert the 20 dB pad to get the signal down to this level.

Measure the 10% to 90% rise and fall times of this pulse and record the value:

RISE TIME: ___________ μSec (expect about 70 μSec)
FALL TIME: ___________ μSec (expect about 90 μSec)

6. *This step measures the noise floor of the RECEIVER and uses the test setup of Step 2, less the signal generator input.*

Remove the signal generator input from J1 (SMA jack). If removed, re-install the jumpers on JP1 and JP2.

Set the TVG input to 0VDC.Set the signal generator connected to J8 (SMA jack) to the following frequencies and measure the average DC voltage at TP12 (a voltmeter set to DC is useful here):

F = 85 kHz TP12: _________ Vdc

F = 113 kHz TP12: _________ Vdc

F = 150 kHz TP12: _________ Vdc

F = 235 kHz TP12: _________ Vdc

F = 455 kHz TP12: _________ Vdc

F = 770 kHz TP12: _________ Vdc

S/N ________________

DATE ________________

THIS CONCLUDES THE RECEIVER TEST