NOAA TAPS TRANSMITTER
TEST PROTOCOL

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

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

Connect a 24VDC power supply to J2, 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 (Note: there will be a substantial in-rush current as the large power capacitor, C33, charges):

_____ mA   (expect about 20 mA)

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

| | |
|---|---|
| +15V: | _____ VDC |
| +9V: | _____ VDC |
| +5V: | _____ VDC |

Turn off power.

2. *This step checks the basic transmit operation of the TRANSMITTER.*

Connect a signal generator to J1 pin 2 (or TP2). Set the signal generator frequency to 500 kHz and the output amplitude to 0-5V square wave (use the SYNC output on the HP33120A). This is the transmit frequency signal generator.

Connect a TTL-level pulser to J1 pin 1 (or TP1). Set the pulser for 0.5 mSec pulse lengths at about 3-5 pulses per second. However, do not start the pulser until instructed.

Connect clip leads from J1, pins 3, 4, 5 to ground (select CH 1).

Connect a non-inductive 50 Ω dummy load to J3 (Channel 1 output).

Turn on power.

Connect an oscilloscope to TP8. Turn on the pulser. You should observe a quasi-square wave burst at about 200 Vpp. Read and record the square-wave voltage (from the flat parts, peak-to-peak).

TP8:            _____ Vpp  (expect 200-230 Vpp)

Compute the transmit power [ $P = V^2 / (4 * R_L)$ ].

        P1:                _____ W (expect 250 W)

Turn off the pulser. Connect J1 pin 3 to the +5V test point. Move the dummy load to J5.

Connect an oscilloscope to TP13. Turn on the pulser. Read and record the square-wave voltage.

        TP13:           _____ Vpp  (expect 200-230 Vpp)

Compute the transmit power [ $P = V^2 / (4 * R_L)$ ].

        P2:                _____ W (expect 250 W)


Turn the pulser off. Turn the power off.

3.     *This step checks the T/R function of the TRANSMITTER and uses a unique setup.*

Connect a 24VDC power supply to J1, observing polarity.

Connect clip leads from J1, pins 3, 4, 5 to ground (select CH 1).

Connect a 200 Ω resistor from TP10 to ground.

Set the signal generator frequency to 200 kHz and the amplitude to 100 mVpp. Connect the sine-wave output of the signal generator to J3 (or TP8). Install a jumper on the 2-pin header, JMP3.

Turn on the power. Using the oscilloscope probe, measure the voltages at TP8 and TP10:

        TP8:             _____ Vpp  (expect 100 mVpp)

        TP10:          _____ Vpp  (expect 200 mVpp)

Connect J1 pin 3 to the +5V test point to select CH2. Move the 200 Ω resistor to TP15. Move the signal generator leads to J5 (or TP13). Move the jumper to JMP4.

Measure the voltages at TP13 and TP15:

TP13: _____ Vpp  (expect 100 mVpp)

TP15: _____ Vpp  (expect 200 mVpp)

4. *This step checks the BPF function of the TRANSMITTER and uses the setup of Step 3. This test should be a continuation of Step 3.*

Set the signal generator frequency to the frequencies below. Read and record the peak-to-peak voltages at TP8 and TP10. Plot these data for future reference:

F = 50 kHz          TP13: _____ Vpp     TP15: _____ Vpp

F = 75 kHz          TP13: _____ Vpp     TP15: _____ Vpp

F = 100 kHz         TP13: _____ Vpp     TP15: _____ Vpp

F = 150 kHz         TP13: _____ Vpp     TP15: _____ Vpp

F = 200 kHz         TP13: _____ Vpp     TP15: _____ Vpp

F = 300 kHz         TP13: _____ Vpp     TP15: _____ Vpp

F = 400 kHz         TP13: _____ Vpp     TP15: _____ Vpp

F = 500 kHz         TP13: _____ Vpp     TP15: _____ Vpp

F = 600 kHz         TP13: _____ Vpp     TP15: _____ Vpp

F = 700 kHz         TP12: _____ Vpp     TP15: _____ Vpp

Connect J1 pin 3 to ground (select CH 1).  Move the signal generator leads to J3 (or TP8). Move the jumper to JMP3.

Set the signal generator frequency to the frequencies below. Read and record the peak-to-peak voltages at TP13 and TP15. Plot these data for future reference:

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F = 50 kHz         TP8: _____ Vpp     TP10: _____ Vpp

F = 75 kHz         TP8: _____ Vpp     TP10: _____ Vpp

F = 100 kHz        TP8: _____ Vpp     TP10: _____ Vpp

F = 150 kHz        TP8: _____ Vpp     TP10: _____ Vpp

F = 200 kHz        TP8: _____ Vpp     TP10: _____ Vpp

F = 300 kHz        TP8: _____ Vpp     TP10: _____ Vpp

F = 400 kHz        TP8: _____ Vpp     TP10: _____ Vpp

F = 500 kHz        TP8: _____ Vpp     TP10: _____ Vpp

F = 600 kHz        TP8: _____ Vpp     TP10: _____ Vpp

F = 700 kHz        TP8: _____ Vpp     TP10: _____ Vpp

## THIS CONCLUDES THE TRANSMITTER TEST