RF BRACKETING (MODULATOR TIMING) ADJUSTMENT.

5.5.9 RF BRACKETING (MODULATOR TIMING) ADJUSTMENT.

“This alignment properly positions the RF Pulse applied to the klystron cavities with respect to the cathode current pulse. This procedure should be performed whenever the components of the MPA 3A15, or the Pulse Shaper 3A5 are replaced. This procedure is also a prerequisite for Klystron Cavity Transmitter Tuning (paragraph 5.5.10).”

NWSTC Note:

We turn on the tube and we put RF energy into the tube.

In a perfect world, the turn on would be 0, then 100 percent at a known time. In a perfect world, the input would be 0, then 100 percent and then 0. Then there is our world.

The power in the tube takes time to build up, the power into the tube takes time.

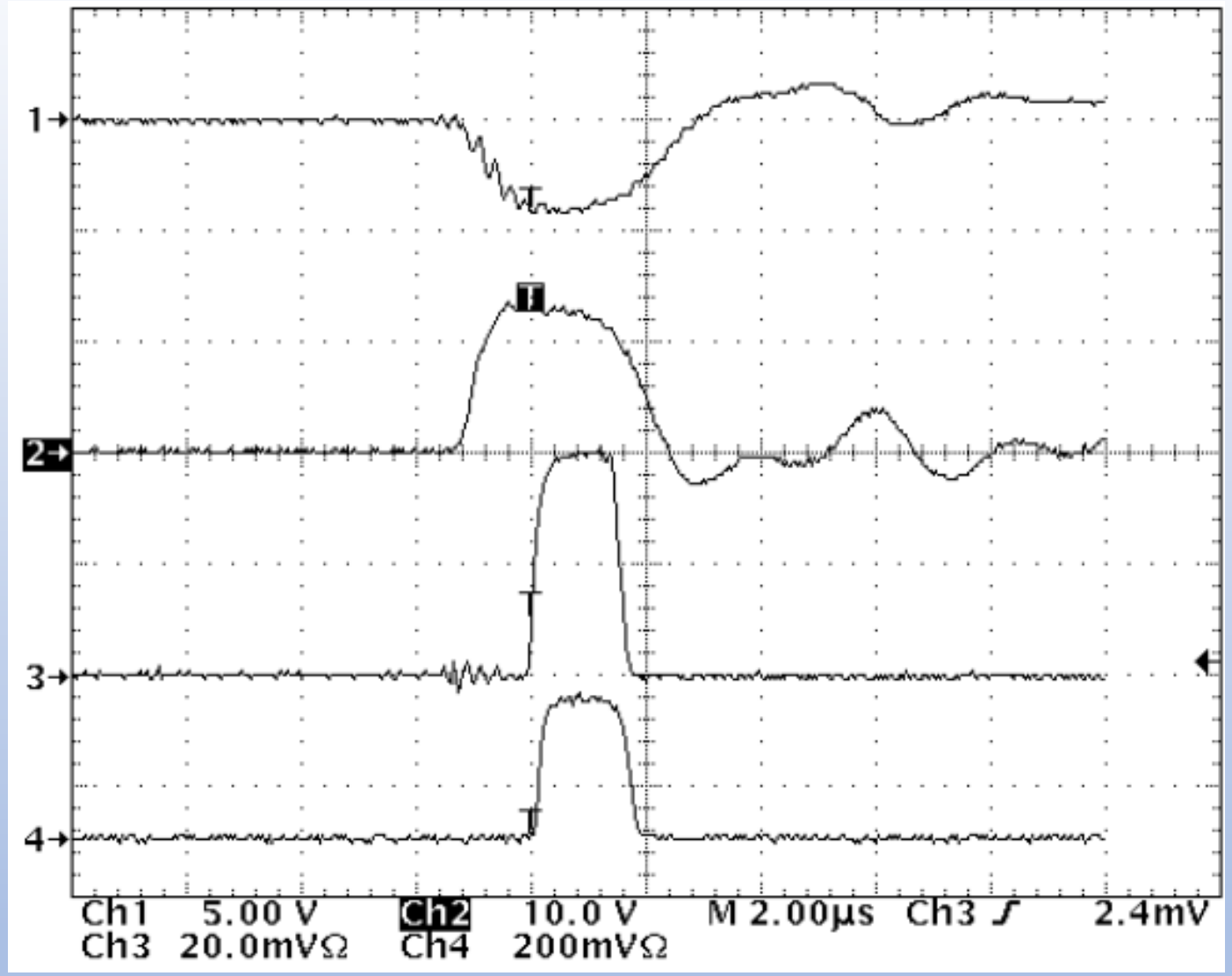
We care about the output, not the inputs. This procedure is looking for the most output.

Turn on Voltage

Turn on Current

RF Input

RF Output



Ch 1 = A7TP1 (Beam Voltage Proximity Sample)
Ch 2 = A7TP2 (Klystron Current Sample
Ch 3 = A5J4 (RF input with 20 dB attenuator)
Ch 4 = 1DC1J1 (beyond 3dB attn with an additional **30 dB** attenuator for crystal protection)

5.5.9.2 Initial Conditions/Preliminary Setup.

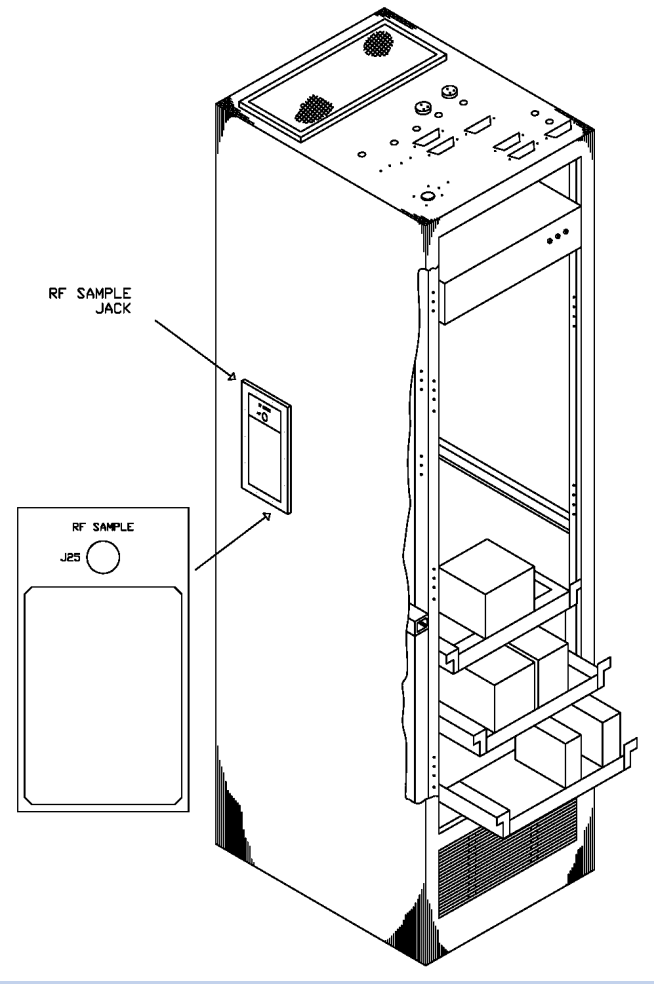
1. Gain control and place system in `standby` by performing the procedures in paragraph 3.4.1.2, steps 1 and 2.

2. Calibrate the power meter and sensor per paragraph 3.4.4. *(Power Sensor, HP8481A)*

3. Connect the power meter to RF SAMPLE 4J25 on the side of the Receiver cabinet.

4J25 is on the side of the receiver cabinet.

It is downstream of the transmitter output.

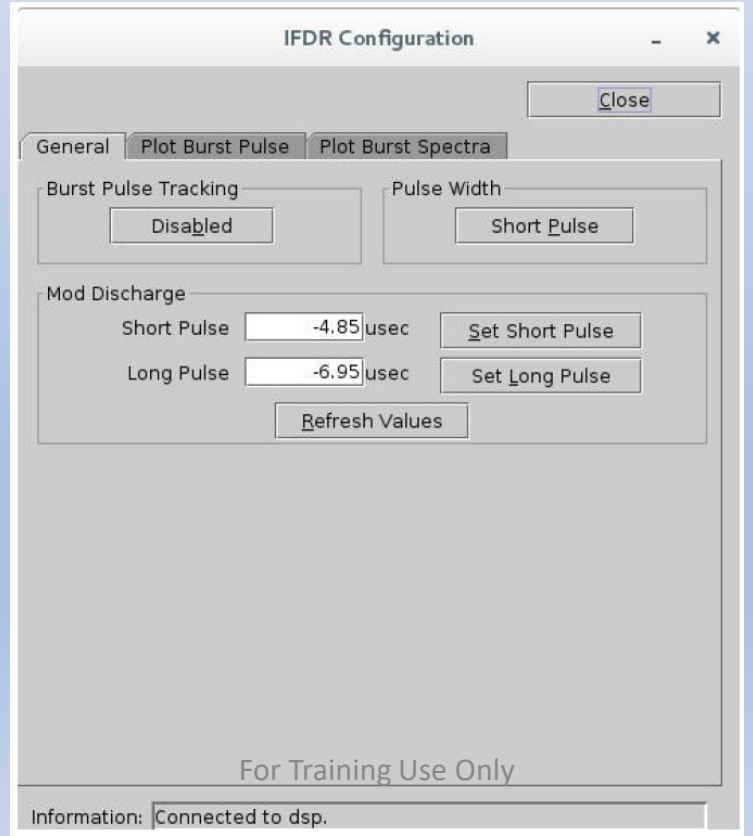


5.5.9.3 Procedure.

CAUTION

Completion of the next step will cause the transmitter to start to fire.

1. On the Main RDA HCI, click on **System Test Software** and **Yes** to confirm. Click **Calibration ► IFDR Configuration**.



NOTE

Wait until power meter reading stabilizes before recording any values.

2. Record the initial power meter reading and the associated value for short pulse (in µsec) in the `Mod Discharge` area of the `IFDR Configuration` window.

Initial Power Meter Reading @ 4J25 _____dBm
Mod Discharge Short Pulse _____µsec

NOTES

High Voltage Switch 3A15A13 will require mod discharge delay values near -4.50 µsec for short pulse and -6.50 µsec for long pulse.

The following steps will determine if an increase or decrease in timing either increases or decreases power.

3. In the `IFDR Configuration` window, increase the Mod Discharge timing for short pulse by 0.10 µS and click **Set Short Pulse**. Record the power meter reading.

Power Meter Reading @ 4J25 _____dBm

4. If the power increases, continue increasing the Mod Discharge timing by tenths of microseconds until power starts to decrease. If power decreased in step 3, decrease the Mod Discharge timing from the original value of 0.10 µS and click **Set Short Pulse**. Continue decreasing the Mod Discharge timing by tenths of microseconds until power starts to decrease.

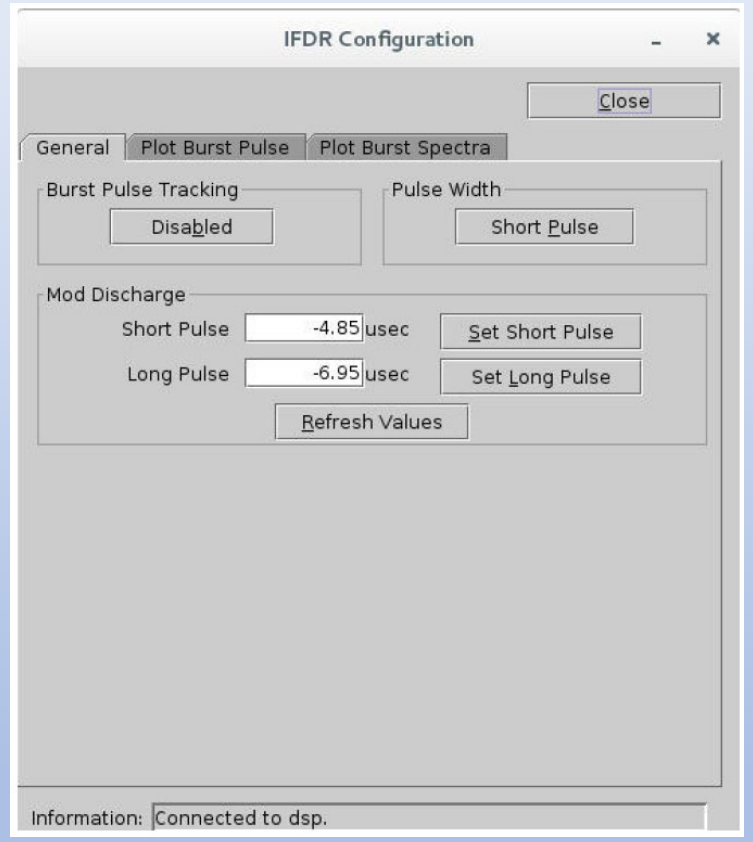
5. After power starts to decrease, reverse the timing setting in smaller increments until the peak power indication at 4J25 is found.

Mod Discharge Adjustments

Mod Discharge Timing	Power Reading @ 4J25

6. Set the short pulse discharge timing to the value which corresponds to the highest measured power in step 5.

7. In the `IFDR Configuration` window `Pulse Width` area, click on **Short Pulse** to toggle it to long pulse mode.



NOTE

Wait until power meter reading stabilizes before recording any values.

8. Record the initial power meter reading and Long Pulse Mod Discharge timing value.

Initial Power Meter Reading @ 4J25 _____dBm

Mod Discharge Long Pulse _____µsec

9. In the `IFDR Configuration` window, increase the Mod Discharge timing for long pulse by 0.20 µsec and click **Set Long Pulse**. Record the power meter reading.

Power Meter Reading @ 4J25 _____dBm

10. If the power increases, continue increasing the Mod Discharge timing by two-tenths of a microsecond until power starts to decrease. If power decreased in step 9, decrease the Mod Discharge timing from the original value of 0.20 µsec and click **Set Long Pulse**. Continue decreasing the Mod Discharge timing by two-tenths of a microsecond until power starts to decrease.

11. After power starts to decrease, reverse the timing setting in smaller increments until the peak power at 4J25 is found.

Mod Discharge Adjustments

Mod Discharge Timing	Power Reading @ 4J25

12. Set the long pulse discharge timing to the value which corresponds to the highest measured power in step 11.

13. Record these final settings.

Mod Discharge Short Pulse _____µsec

Mod Discharge Long Pulse _____µsec

14. At the `IFDR Configuration` window, click **Close**. The transmitter will stop firing.

15. Remove the power sensor from 4J25.

NOTE

Anytime adjustments are made that affect the output pulse shape, the IFDR Alignment procedure should be performed.

16. Perform the IFDR Alignment Procedure per NWS EHB 6-513, SECTION 6.5, if no further klystron adjustments are required. *If klystron tuning is required, perform the IFDR Alignment Procedure after the tuning is completed.*

17. Close all `System Test Software` windows by clicking **Close**, **File** and **Exit**. Click **Yes** and **OK** at pop-up windows.

18. Create a backup by performing the Backup Files procedure in NWS EHB 6-513, Section 4.9

NWSTC Note: If you are continuing a tube tunning, you will be making more adaptation changes , so you can do the update later if needed.

19. Return the system to remote control by performing the procedures in paragraph 3.4.1.5, steps 3 and 4.