

Manual Transmitter Tuning

1. Power down the unit and connect the antenna port to a Mode S / ATCRBS interrogation generator (SDX2000 or equivalent) through a cable with 1.5 ± 0.1 dB loss.
2. Set the interrogation generator for ATCRBS interrogation at 100 PRF and power level of -50 dBm.
3. Connect the UUT output from the interrogation generator to the oscilloscope input. The oscilloscope port should be set for 50 ohm impedance, or should have an external 50 ohm load connected if using a high impedance setting.
4. Refer to **Error! Reference source not found.** for locations of the alignment components referenced in the steps that follow.

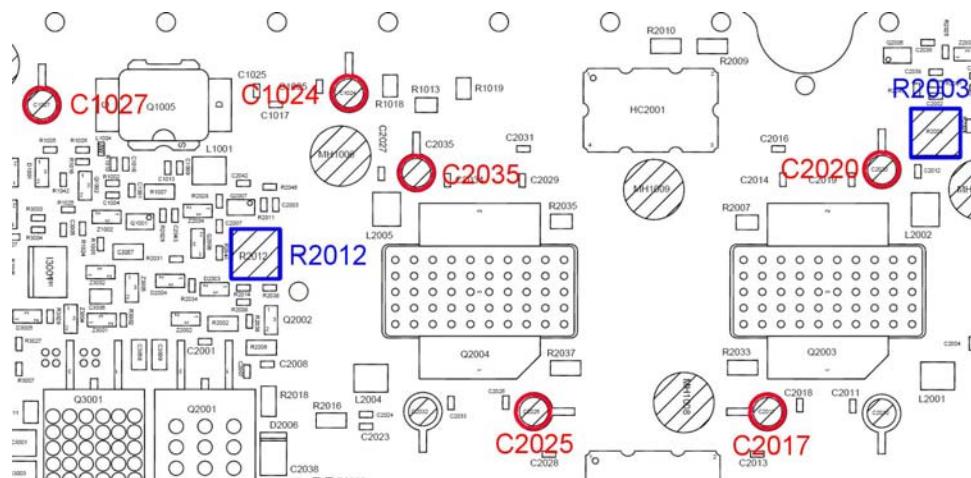


Figure Error! No text of specified style in document..1. Alignment Point Locations

5. Adjust the screws on trimmer caps C1027, C1024, C2020, C2035, C2025, and C2017 clockwise until resistance is felt, then 4 turns counterclockwise.
6. Adjust potentiometers R2012 and R2003 fully counterclockwise, then turn clockwise one quarter turn.
7. If not connected, reconnect the ribbon cable between the transmitter and main boards.
8. Turn on the unit power.
9. Using the GTX3000 SI Tool, put the unit in test mode.
10. Reply pulses should be seen on the oscilloscope. If not, adjust the scope vertical scale and / or trigger level until a stable pulse display is obtained. The actual vertical scale settings are dependent on the characteristics of the interrogation generator UUT output.
11. Adjust the horizontal scale on the oscilloscope to 200 nS per division to display a single pulse.
12. While observing the pulse on the oscilloscope, adjust trimmer cap C2017 for maximum pulse amplitude.

13. Adjust trimmer cap C2025 for maximum pulse amplitude.
14. Adjust trimmer cap C2020 for maximum pulse amplitude.
15. Adjust trimmer cap C2035 for maximum pulse amplitude.
16. Adjust trimmer cap C1024 for maximum pulse amplitude.
17. Adjust trimmer cap C1027 for maximum pulse amplitude.
18. Adjust potentiometer R2003 for maximum pulse amplitude.

19. Adjust potentiometer R2012 clockwise until a small peak is seen at the right hand edge of the pulse top as seen in **Error! Reference source not found..**

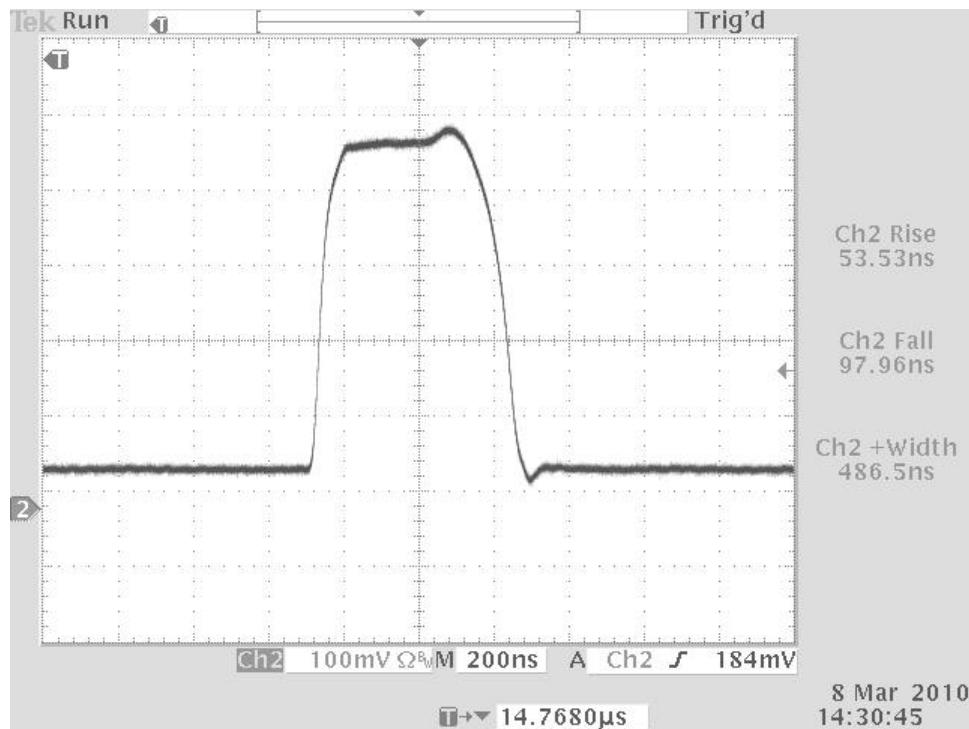


Figure Error! No text of specified style in document..2. Pulse Showing Trailing Edge Peak

20. Adjust R2012 counterclockwise until the small peak disappears and the pulse resembles that shown in **Error! Reference source not found..**

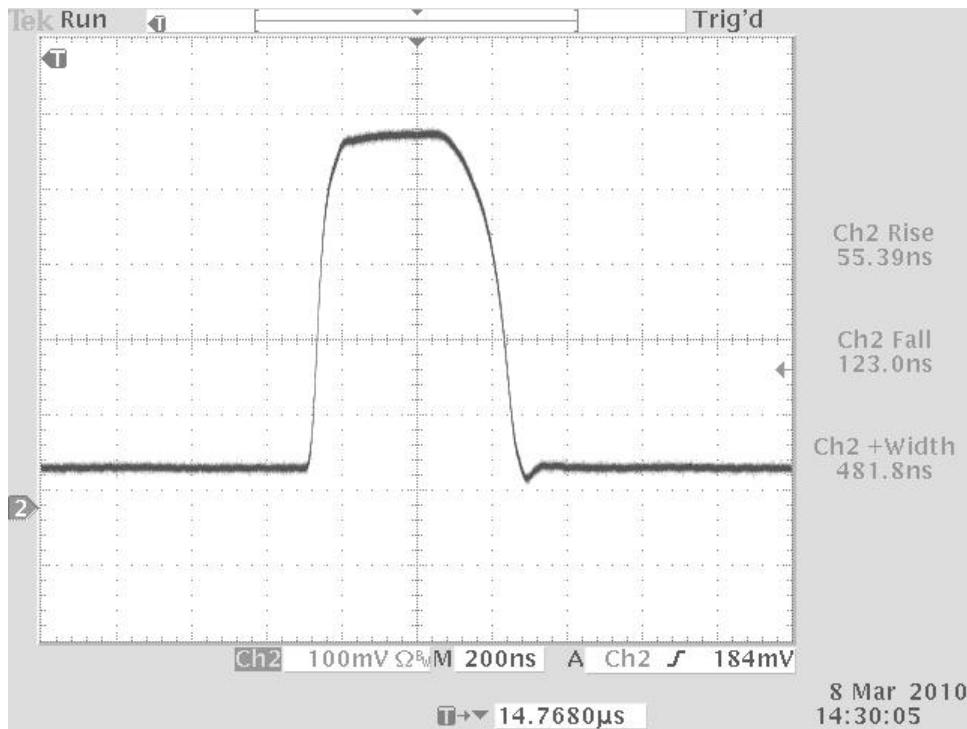


Figure Error! No text of specified style in document..3. Pulse Shape after R2012 Readjustment

21. Turn off power to the unit.
22. Install the transmitter compartment cover and turn the unit power back on.
23. Repeat steps 12 through 18 above to correct for any minor tuning errors that may be caused by the presence of the transmitter compartment cover.
24. Verify that the pulse width is (a) at least 450 nS and (b) the Transmit Pulse Width field in the SI Tool is as small as possible while still allowing the pulse width to be larger than 450 nS. The pulse width can be increased or decreased in the GTX3000 SI Tool by entering numbers 1 thru 6 in the Transmit Pulse Width field. A larger number equates to a longer pulse width. The pulse width should be set to the lowest number that gives a width greater than or equal to 450 nS.
25. Verify that power output is greater than 205 watts as measured through a 1.5 dB cable loss at the interrogation generator.
26. This completes the transmitter alignment procedure.