Neuralynx
High Density Electrophysiology Recording Systems

Small Animal Transmitter (SAT) RF Tuning Procedure

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Applicable Transmitter Models:

SAT-TX-SS
SAT-TX-FLEX

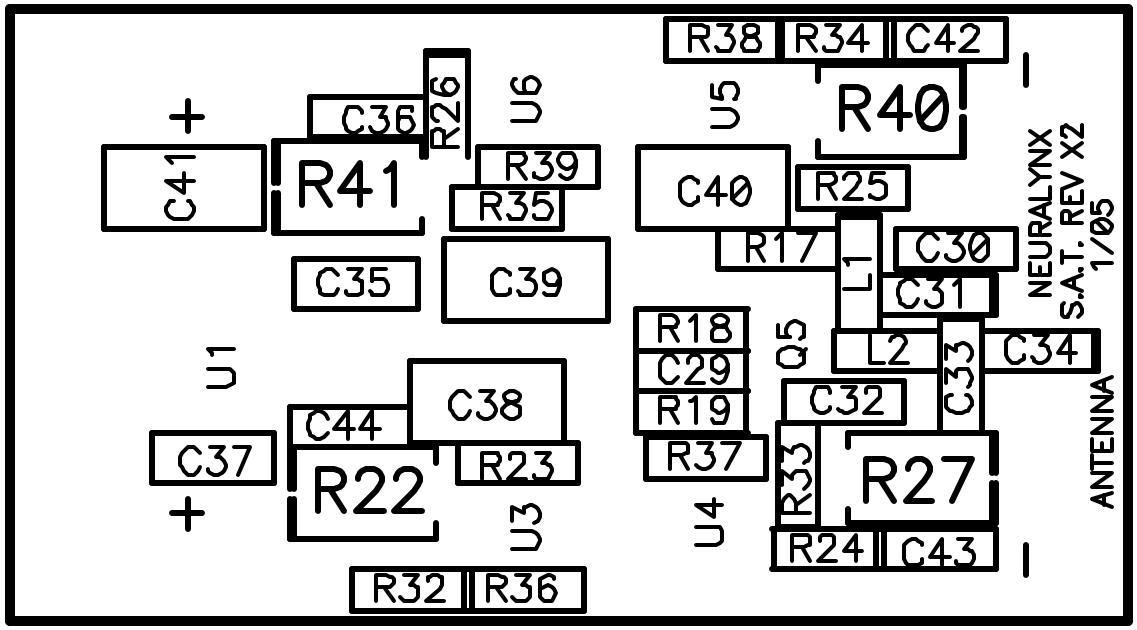
Required Equipment:

SAT Tuning Fixture
Variable DC Power Supply: 4Vdc @ 25ma
Function Generator: 200mVpp sine wave at 500Hz
Spectrum Analyzer: 916 – 921MHz frequency band
Receive Antenna or Non-contact Probe: 916 – 921MHz frequency band
Non-metallic Screwdriver or Trimmer

Tuning Setup:

1. The DC power supply and function generator should be switched off.
2. Connect the power supply between the RED tuning fixture lead and one of the BLACK ground leads.
3. Connect the function generator between the WHITE tuning fixture lead and the other BLACK ground lead.
4. Connect the SAT to be tuned to the 11 pin Millmax connector on the tuning fixture. The SAT is installed in the fixture with the connector facing down. Observe proper polarity on the connector when installing the SAT.
5. Connect the receive antenna or probe to the spectrum analyzer input.
6. Set the spectrum analyzer center frequency to 916.9MHz with a span of 200kHz to tune the channel 1 output.

View of SAT when installed in the tuning fixture:



Tuning Procedure:

1. Turn on the DC power supply to apply power to the SAT. Current draw should be approximately 22 – 24ma.
2. A continuous wave (CW) RF signal should be present on the spectrum analyzer display. If it is not present, use the screwdriver or trimmer to adjust the potentiometer R22 until the SAT begins transmitting (the potentiometer is a single turn). If the CW signal cannot be found then the SAT is defective.
3. Center the RF signal on the spectrum analyzer display then reduce the span to 100kHz.
4. Turn on the function generator. A modulated RF signal with peaks at the upper and lower frequencies and a trough in the center should now be observed on the analyzer display.
5. Rotating the potentiometer clockwise far enough will cause CW operation. Rotating counter-clockwise far enough will result in no oscillation. Adjust the potentiometer until the modulated signal is approximately centered between these two extremes.
6. The deviation measured at the –10dB points should be approximately 20kHz. Record the deviation on the attached data sheet. If necessary, this operating point can be adjusted by approximately +/-20% to balance deviation among the four channels.

7. Repeat steps 2 through 6 for channels 2 – 4. The spectrum analyzer setting and corresponding potentiometer to tune each of these channels is:

    a. Channel 2: 917.9MHz Center Frequency, R27
    b. Channel 3: 918.9MHz Center Frequency, R40
    c. Channel 4: 919.9MHz Center Frequency, R41

8. Turn off the function generator.
9. Turn off the DC power supply.
10. Remove the SAT from the tuning fixture.

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Small Animal Transmitter RF Output Data

Date: _____

Transmitter Serial Number: _____

Deviation (kHz):

Channel 1:	Channel 2:	Channel 3:	Channel 4:
_____	_____	_____	_____

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