

Subject: First test of Bias Tees in 3 LNA4ALL Configuration
Memo: 8, Revision 1
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This note captures first test measurements of a horn configured with amplifiers powered via Bias-Tees. The new horn is built from aluminum sheet and copper tape. The first tests with the horn yielded reasonable results but quickly ended with an amplifier failure. The new configuration uses bias Tees to keep the ground loop problems to a minimum and simplify operation.

Measurements

The measurements were carried out on February 16, 2016 under rainy, slushy weather conditions.

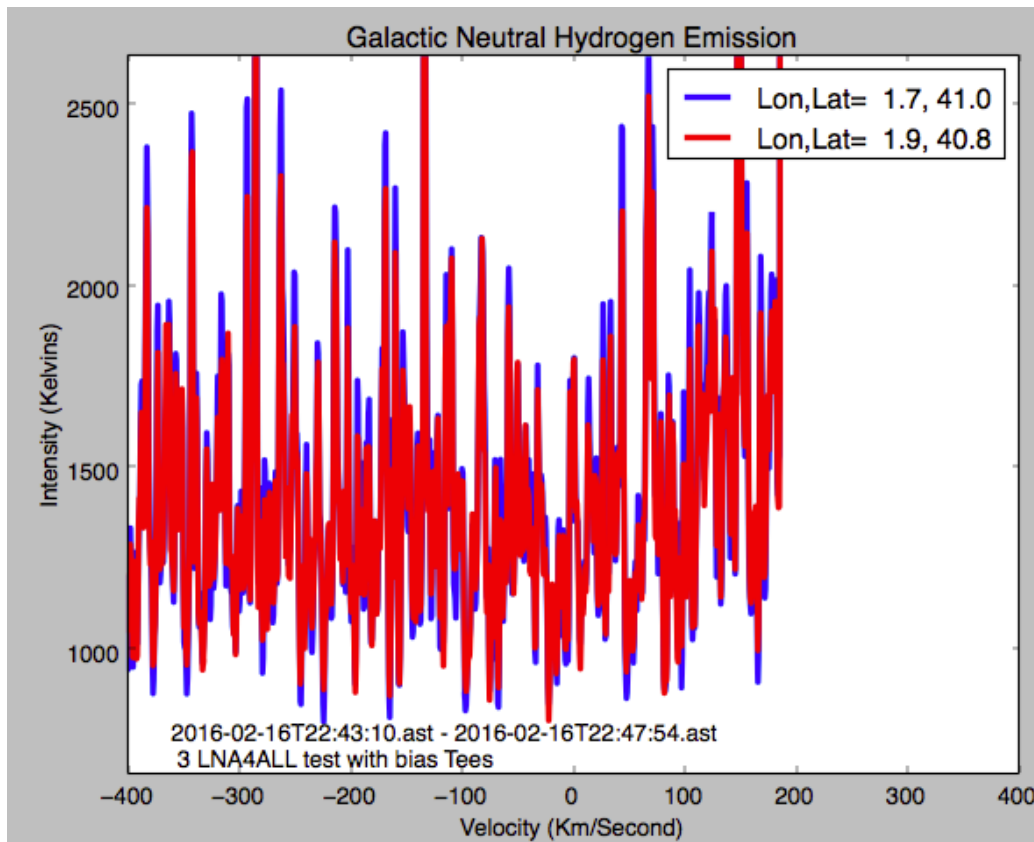


FIGURE 1: MEASUREMENT OF THE SYSTEM TEMPERATURE (K) BASED ON HOT-COLD LOAD MEASUREMENTS, WHILE THE HORN WAS POINTED AT 30 DEGREES ELEVATION.,AND AT THE GROUND (ELEVATION = -90).

The system temperature versus velocity plot is shown in Figure 1, using the methodology described in Light Work Memo 4.

Conclusion

The Bias T system works with the three LNA4ALL amplifiers and has sufficient gain for measurement of the system temperature. The new layout has improved convenience and robustness. The system does work, but has much worse effective temperature than is desired.

Due to a shortage of time, the system tested had relatively low voltages supplied to the amplifiers, 4.8 V, into the voltage regulators requiring between 6 and 12 V. Updating the power supply configuration may improve the system performance.