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To: MWA Group
 From: Alan E.E. Rogers
 Subject: Tests of MWA LNAs

1] LNA input and output impedance

A network analyzer was used to measure the input and output impedance. (For those measurements the input of one LNA of the balanced pair was left open.)

| Freq. MHz | Input-magnitude ohm | Output ohm |
|-----------|---------------------|------------|
| 80 | 250 | 75 |
| 100 | 280 | 75 |
| 250 | 260 | 75 |
| 400 | 180 | 75 |

2] LNA noise temperature

A hot/cold “Y” factor was taken with 50 ohm terminations on each input. (both terminations were cooled with liquid nitrogen). After correcting for 2nd stage noise the results were as follows:

| Freq MHz | Noise temperature K |
|----------|---------------------|
| 80 | 50 |
| 150 | 25 |
| 200 | 25 |
| 250 | 25 |
| 300 | 25 |

50 ohms on each input is equivalent to 100 ohms across both balanced inputs.

3] Gain and comparison with older PC board – The gain was measured with 50 source across both inputs (using a clamp-on ferrite choke to act as a balun).

| Freq. MHz | Gain dB | Old-pc board dB |
|-----------|---------|-----------------|
| 50 | 17 | 17 |
| 100 | 21 | 21 |
| 150 | 22 | 22 |
| 200 | 24 | 24 |
| 250 | 25 | 24 |
| 300 | 21 | 20 |

It was noted that there is some “peaking” of the gain around 250 MHz with 50 ohms across the inputs which flattens out with 100 ohms across the inputs. The differences between the new and old (used in the early deployment) were noted to be small.