John W.

FYI

Fax Cover Page

To: TONY KERR

Organization: NRAO

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Date: 4/12/99 Pages Including Cover Page 2

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Message

TONY,

I VISITED MITEQ ON 4/2 AND AM EXPECTING QUOTES ON LNA'S BY 4/16 PER ATTACHED SPECS. I INCLUDED "B" THINKING OF THE MMA AND TO SEE WHAT THEY CAN DO WITH A MIC LNA. NOTE THERE ARE TWO UNITS - ONE WITH JPL PROVIDED InP TRANSISTORS. IN QUANTITIES OF 1000, MITEQ COULD SELL THESE LNA'S FOR ~ $400. I WILL CONTACT YOU AFTER I GET THE QUOTE.

I AM CONTINUING WORK ON MMIC VERSIONS.

SANDY

Request for Quotation

Cryogenically-Coolable Low-Noise Amplifiers

March 28, 1999

1. General Description - Three types of LNA's are desired as prototypes in future radio astronomy and space communication antenna arrays which will require of the order of 1000 units. The prototypes shall be designed to operate at temperatures of 4K to 80K but testing at these temperatures by the vendor is not required. For each type two units are required: The first is with the vendors best choice of low-noise transistor meeting room temperature specifications given below and the second is with a customer supplied InP transistor with a best effort by the vendor to meet or better the specifications.

The three types of LNA's shall be individually priced and may be purchased by different organizations.

2. Physical Configuration - The LNA's shall be supplied in a small unsealed case with removable SMA female input and output connectors and solder-lug DC bias terminals.

3. RF Performance at 300K

Type	Frequency Range, GHz	Gain, Min dB	Gain Variation,	Max NF dB	Min IRL
A	1 - 10	26	+/- 1.5 dB	1.70	0 dB
B	4 - 12	26	+/- 1 dB	1.00	3 dB
C	8 - 8.5	30	+/- 0.3 dB	0.50	10 dB

The output return loss shall be > 10 dB in the specified frequency range.
The amplifier shall be stable for a sliding short applied at input or output.

4. DC Power - No internal regulators are desired. One drain bias terminal and two gate bias terminals (one for adjustment of minimum noise of the first stage) are desired. The gate bias circuit shall include a 1:10 resistive voltage divider and 0.1 MF bypass capacitors for static charge protection.

5. Test Data - Vendor shall provide test data of all four S parameter magnitudes vs frequency, 0.5 to 20 GHz and Smith chart plots of S11 and S22 within the specified frequency range. Noise figure shall be measured at 10 frequencies within the specified frequency range.