

National Radio Astronomy Observatory
Tucson, Arizona

February 3, 1988

MEMORANDUM

To: Darrel and John

From: P. R. Jewell *PRJ*

Subject: High Frequency Mixer Performance: How to Improve it?

As we have discussed at length, our mixer performance above 240 GHz is much worse than it should be. It seems that we should have better performance in all three of the high frequency bands: 240-270 GHz, 270-310 GHz, and 330-360 GHz. The mixer set that has the most embarrassing performance is the 240-270 GHz mixers, however.

We should take some action right away to improve the 240-270 GHz set. The first step should be to get these mixers off the telescope and send them back for evaluation at Charlottesville. I have been looking at the telescope schedule to see when this is possible. The mixers are last needed on February 16 and do not reappear on the schedule through the first week in April. However, they might see some use as backup mixers during the 345 GHz observations that run through February 27. I thus propose that we take the mixer set out on the March 2 maintenance day and send them to Charlottesville. If they could return them by March 23 it would be convenient, but they could keep them until April 7 if necessary. We should notify them of our intentions so that they can allot time in their work schedules.

If the CDL can find a problem and make a substantial improvement in the mixers, our problems with that band will be alleviated. If they cannot make any improvement, we have two options: (1) ask the CDL to build us new ones, or (2) buy the mixers from Millitech. There is probably no use in discussing these two options until the mixers are evaluated in Charlottesville. Nevertheless, we also need better performance in the other bands and I don't have much faith that the CDL can deliver it. Consequently, I think that we should see how much money we can scrape up to buy Millitech mixers and let the CDL concentrate on SIS development.