

Minutes of First Joint Receiver Development Group (JRDG) Meeting
Tucson 30 Sept 1999

The outcome of the meeting:

- 1) A number of questions for the Science Group
- 2) A number of decisions relating to the receiver construction

Questions affecting the receiver design:

- 1) Is circular polarization needed? If so, are spot frequencies ok? If so, what should they be?
- 2) Please review the frequency bands.
- 3) 30-45 GHz band. Do we need it?
- 4) Initial bands. What are they? NRAO has proposed 3mm, 1 mm, and 650 GHz. Are these acceptable for the first receiver bands?
- 5) 183 GHz water vapor monitor. What are the specifications on this receiver?

The critical specifications are:

- a) Alignment with optical axis
 - b) Stability
 - c) Switching arrangement
 - d) Sensitivity
- 6) Total power stability of all receivers. What is required? One part in ten thousand in a few seconds is achievable fairly easily.
 - 7) Nutator -- do we need it?
 - 8) What are the frequency switching requirements? Our understanding is as follows, and we would like confirmation.
 - a) Frequency switching within a band-single dish observing. Rate up to 10 Hz maximum, 50 MHz switching.
 - b) Frequency changing within one band. We would suggest less than 1.5 seconds.
 - c) Frequency changing to the 3mm band in less than 1.5 secs in order to permit phase calibration.
 - 9) We need to know the details of the calibration procedure. Primarily the accuracy required on amplitude calibration.

Decisions made:

- 1) 30-45 GHz. If needed will go in separate dewar.
- 2) All "regular" receivers will go in a single dewar.
- 3) The 183 GHz water vapor monitor receiver will likely be separate. This is to be determined.
- 4) There need be no measures taken to achieve mixer temperatures substantially less than 4k. A conventional J-T refrigerator will suffice.
- 5) The next two months will be occupied with several groups working on conceptual receiver designs.
- 6) The next JRDG meeting will take place in Grenoble on 2 and 3 of Dec. 1999. The outcome of this meeting will be, it is anticipated, probably one or two receiver configurations that will be selected for further intensive study.

In addition, a number of receiver "work packages" were presented along with a suggested list of organizations that could participate in executing this work. This will be presented in a separate document.