

National Radio Astronomy Observatory
Charlottesville, Virginia

March 10, 1987

MEMORANDUM

To: Distribution

From: P. A. Vanden Bout

Subject: Performance of Millimeter Receivers -- Ours and Theirs

The attached list of receiver noise temperatures was assembled at my request by Al Wootten. Our 3-mm SIS receiver is the best in general use. The prize at 230 GHz is obviously held by T. Phillips with an SIS receiver for the high-altitude dish having $T_{RxSSB} = 150$ K. For Schottky receivers at this frequency, FCRAO edges us out, but with a somewhat narrower tuning range. Above 300 GHz, FCRAO and CIT have receivers with roughly half the noise temperature of ours, as does the JCT.

NRAO's present goal is to produce SIS receivers for all these frequency bands with the lowest noise temperature possible. Your comments are welcome.

PVB/j

Distribution:	Balister	Owen
	Barvainis	Pan
	Brown	✓ Payne, J.
	Hjellming	Siegel
	Jewell	Turner
	Kerr	Uson
	Lamb	Weinreb
	Liszt	Wootten

Millimeter Receiver
9 March 1987

Telescope	Receiver	Frequen	TrxSSB	Polari	Type	Comments
12m	3mm	90-116	100	Dual	SIS	Payne
12m	1mm	200-270	500	Dual	Schottky	Payne
12m	345	330-365	1500	Single	Schottky	Payne
12m	345	290-340	1500	Single	Schottky	Payne
12m	3mm	70-116	275	Dual	Schottky	Payne
12m	Multi-Feed	200-270	500	Single	Schottky	Payne
JCMT	A	220&230	700	Dual	Schottky	Hills
JCMT	B	330-370	800	Single	Schottky	Hills
CIT High	220-290	230	150	Single	SIS	Phillips
CIT High	100-500	400	1000	Single	SIS	Wengler's BowTie; Test only
FCRAO	7mm		200	Single	Schottky	Read Predmore
FCRAO	3mm	80-120	180	Single	Schottky	Snell; with rejection filter i
FCRAO	1mm	210-250	350	Dual	Schottky	With rejection filter in
FCRAO	Submm	345	860	Single	Schottky	Erickson; no rejection filter
FCRAO	Submm	492	1700	Single	Schottky	Same receiver as above
Bell Labs	2mm	95-150	135	Single	SIS	Bally. Pumped to 2K
OVRO	3mm	98-115	175	Single	SIS	Woody; range 100-200 SSB
OVRO	1mm	200-240	400	Single	SIS	Woody; preliminary tests
Hat Creek	3mm	70-115	225	Single	Schottky	Plambeck; range 150-300SSB
MWO	2mm	110-170	350	Single	Schottky	Butner
MWO	1mm	215-300	900	Single	Schottky	Butner
Gornergrat	3mm	80-115	540	Single	Schottky	Combes; from C. Dupraz
IRAM	3mm	80-115	225	Single	SIS	Combes: 150-300K
IRAM	3mm	74-115	500	Single	Schottky	Combes
IRAM	2mm	130-160	300	Single	SIS	21st SAC: 500K 160-170GHZ
IRAM	1mm	216-236	800	Single	Schottky	Combes
Nobeyama	6mm AIL	35-50	800	Single	Shottky	Bally
Nobeyama	3mm AIL	80-120	800	Single	Schottky	Bally
Nobeyama	3mm Millit	80-120	350	Single	Schottky	Bally
Nobeyama	2mm SIS	95-150	180	Single	SIS @ 4K	250K@140 GHz; Better at 2K
OSO	3mm	70-120	450	Single	Schottky	Sahai
OSO	3mm New	80-120	150	Single	SIS (60-	Sahai
SEST	1mm Plan	200-260		Single	Schottky	Booth
SEST	3mm Plan	80-120		Single	Schottky	Booth
Bordeaux	3mm	80-110	350	Single	Schottky	Combes
GISS	CO	115	95	Single	SIS	Dame thesis