L. Page , Updated June 6, 1999

Table 1. Beam Parameters

Campaign	Ka1	Ka2	Q1	Q2	Q3	Q4	D1	D2
Predicted								
Ω_A (10^{-4} sr)	2.76	2.76	1.53	1.53	1.69	1.69	0.124	···
θ^{az}_{FWHM} (deg)	0.905	0.905	0.663	0.663	0.702	0.702	0.190	···
θ^{el}_{FWHM} (deg)	0.888	0.888	0.661	0.661	0.683	0.683	0.192	···
Azimuth (deg)	203.13	203.13	206.75	206.75	206.70	206.70	205.00	···
Elevation (deg)	41.8	41.8	41.8	41.8	39.2	39.2	40.66	···
Pri ET (dB)	-21	-21	-19	-19	-20	-20	-22	···
Chop ET (dB)	-50	-50	-49	-49	-50	-50	-55	···
QMAP96a								
Ω_A (10^{-4} sr)	2.83	2.83	1.58	1.58	1.62	1.62	···	···
θ^{Maj}_{FWHM} (deg)	0.931	0.931	0.694	0.694	0.700	0.700	···	···
θ^{Min}_{FWHM} (deg)	0.882	0.882	0.658	0.658	0.668	0.668	···	···
Cross-El (deg)	-1.35	-1.35	+1.35	+1.35	+1.35	+1.35	···	···
QMAP96b								
Ω_A (10^{-4} sr)	2.67	2.67	1.43	1.43	1.75	1.75	···	···
θ^{Maj}_{FWHM} (deg)	0.932	0.932	0.674	0.674	0.730	0.730	···	···
θ^{Min}_{FWHM} (deg)	0.831	0.831	0.616	0.616	0.694	0.694	···	···
Cross-El (deg)	-1.35	-1.35	+1.35	+1.35	+1.30	+1.30	···	···
Elevation (deg)	41.36	41.36	41.37	41.37	38.79	38.79	···	···
TOCO97[a]								
Ω_A (10^{-4} sr)	2.76	2.73	1.63	1.74	1.76	1.78	0.183	0.323
σ_Ω	···	···	···	···	···	···	···	···
θ^{az}_{FWHM} (deg)	0.881	0.871	0.711	0.744	0.718	0.716	0.225	0.306
θ^{el}_{FWHM} (deg)	0.909	0.909	0.664	0.676	0.711	0.721	0.236	0.306
Azimuth (deg)	203.13	203.13	206.75	206.75	206.70	206.70	205.00	···
Elevation (deg)	41.75	41.75	41.85	41.85	39.25	39.25	40.44	39.93
TOCO98								
Ω_A (10^{-4} sr)	3.00	3.00	1.52	1.60	1.76	1.80	0.136	0.292
σ_Ω	···	···	···	···	···	···	4%	5.4%
θ^{az}_{FWHM} (deg)	0.860	0.914	0.666	0.669	0.692	0.688	0.201	0.293
θ^{el}_{FWHM} (deg)	0.907	0.918	0.659	0.681	0.732	0.754	0.194	0.286
Azimuth (deg)	202.66	202.66	206.16	206.16	206.06	206.06	204.47	202.73
Elevation (deg)	42.05	42.05	42.03	42.03	39.48	39.48	40.63	40.13

a. There was a tilt of the azimuthal swing of $0.116 \sin(\text{chopper az})$ deg.

b. It is possible for the parabola to move between campaigns, accounting for some of the variation.

c. In 1998, there was a shift in the position of the base on Nov 1. There was no measurable tilt in the chopper swing.

To estimate the intrinsic beam error (the statistical errors are always smaller than the systematic ones), we take all the data for a band and find the variance around the mean for that band. We assume in this that the solid angle has not changed and ignore the fact that in the QMAP fits the solid angles were constrained to be the same. For the Ka bands, the error derived from the sample variance with 4 DOF. is 8.1×10^{-6} sr. The mean beam is 2.75×10^{-4} sr. Thus the 1-σ error is about 3%. For the Q bands (no Q2), the error derived from the sample variance with 6 DOF is 9.8×10^{-6} sr. The mean beam is 1.66×10^{-4} sr. Thus the 1-σ error is about 6%. These numbers are rather crude but suggest that the contribution from beam uncertainty to calibration is subdominant.

To get the declination for a TOCO97 beam at elev 41.7 is -63 deg.

Table 2. Calibration in Antenna Temperature (mK/ct)

Campaign	Ka1	Ka2	Q1	Q2	Q3	Q4	D1	D2
TOCO97[a]	0.379	0.166	0.100	0.200	0.0617	0.112	0.245	0.699
σ[b]	5.9%	6.3%	3.9%	8.1%	3.6%	6.0%	4.6%	5.8%
TOCO98	...	...	...	...	...	...	0.521	0.354-0.547
σ	...	...	...	...	...	...	10%	10%

a. These numbers are being used as of April 15, 1999.

b. Error on the above from amplitude fits with fixed beam. These are one sigma.

Table 3. Calibration Relative to 2.726 K (mK/ct)

Campaign	Ka1	Ka2	Q1	Q2	Q3	Q4	D1	D2
Factors	1.025	1.024	1.044	1.044	1.046	1.045	1.64	1.70
TOCO97[a]	0.394	0.171	0.104	0.201	0.065	0.149	0.410	2.615
TOCO98	...	...	...	...	...	...	...	...

a. These numbers are being used as of March 1, 1999.

b. These numbers are being used as of April 15, 1999.

Table 4. Jupiter Phase Offsets (frames)

Campaign	Ka1	Ka2	Q1	Q2	Q3	Q4	D1	D2
TOCO97[a]	...	...	...	...	...	...	...	...
TOCO98[b]	136	134	136	134	136	134	35.2	34.2

a. Need to get

b. From Jason April 20, 1999.