

## Appendix D

### Gamma Factors for DSN Antennas

Table D-1 summarizes the  $\gamma_i$  factors, defined by Eq. (6.1-10), for several DSN antennas and both S-band and X-band. Conceptually, these gamma factors represent the antenna gain–noise temperature ratios normalized by the gain/noise temperature of the largest antenna. Here HEF denotes a high-efficiency antenna and STD a standard antenna. While the STD antennas are no longer in use, they have been retained in the table for reference purposes. Gamma factors were obtained from [1]. The numbers presented in the table should be used in a relative sense and not in an absolute sense. For example, for a three-element array of one 34-m HEF antenna and two 34-m STD antennas at S-band, the master antenna (in this case, the 34-m HEF) would have  $\gamma_i = 1$  and the other two antennas would have  $\gamma_2 = \gamma_3 = 0.13/0.26 = 0.5$ .

**Table D-1. Gamma factors for DSN antennas.**

Antenna Size	Frequency Band	$\gamma_i$
70 m	S-band	1.00
34-m STD	S-band	0.17
34-m HEF	S-band	0.07
70 m	X-band	1.00
34-m STD	X-band	0.13
34-m HEF	X-band	0.26

## Reference

- [1] *Deep Space Network/Flight Project Interface Design Handbook*, Document 810-5, Rev. D, vol. I, modules TCI-10, TCI-30, and TLM-10, Jet Propulsion Laboratory, Pasadena, California, 1992.