APPENDIX B

LOS PATH DATA CALCULATIONS

By appropriate substitutions and by converting d to miles and frequency in GHz as an inverse function of wavelength, the frequency path loss between two isotropic antennas becomes:

$$A = 96.6 + 20 \log_{10} F + 20 \log_{10} D \tag{B-1}$$

where

A = free space attenuation between isotropics, in dB

F = frequency in GHz

D = path distance, in miles

Figure B-1 is a path data form. Utilization of the form, together with a numerical example, can be found in chapter 5.

MICROWAVE PATH DATA CALCULATIONS

1	SITE						
2	LATITUDE						
3	LONGITUDE						
4	ELEVATION	Ft.					
5	TOWER HEIGHT	Ft.					
6	TOWER TYPE						
7	AZIMUTH FROM TRUE NORTH.						
8	PATH LENGTH	Mi.					
9	PATH ATTENUATION	dB					
10	RIGID WAVEGUIDE	Ft.					V - Vertical / H - Horizontal ‡
11	FLEXIBLE WAVEGUIDE	Ft.					
12	WAVEGUIDE LOSS	dB					
13	CONNECTOR LOSS	dB					
14	CIRCULATOR OR HYBRID LOSS	dB					
15	RADOME LOSS, TYPE*	dB					
16	NEAR FIELD LOSS	dB					
17	CLOSE COUPLING LOSS (DOUBLE PASS.)	dB					
18	TOTAL FIXED LOSSES	dB					
19	TOTAL LOSSES	dB					
20	PARABOLA HEIGHT	Ft.					N - Non-Diversity / Q - Space And Frequency Diversity
21	PARABOLA DIAMETER	Ft.					
22	REFLECTOR HEIGHT	Ft.					
23	REFLECTOR SIZE, TYPE	Ft.					
24	PARABOLA - REFLECTOR SEP.	Ft.					
25	NEAR FIELD GAIN	dB					
26	ANTENNA SYSTEM GAIN	dB					
27	TOTAL GAINS	dB					F - Frequency Diversity / S - Space Diversity
28	NET PATH LOSS	dB					
29	TRANSMITTER POWER	dBm					
30	MED. RECEIVED POWER (± 2 dB)	dBm					
31	RECEIVER NOISE THRESHOLD	dBm					
32	THEORECTICAL RF C/N RATIO	dB					U - Unheated / H - Heated †
33	FM IMP. THRESHOLD (dBa)	dBm					
34	FADE MARGIN (To FM Imp. Thresh.)	dB					
35	RELIABILITY SPACING†	%					
36	POLARIZATION ‡						
37	PROFILE NUMBER						

(Reliability Figures Are For Rayleigh Distributed Fading Only)

CUSTOMER _____

PROJECT NO. _____ FREQUENCY _____

SYSTEM _____ EQUIPMENT _____

LOADING _____ dBm0 (_____ CHANNELS OF _____)

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DATE _____ ENGINEER _____ Sheet ____ of ____

Figure B-1. Microwave Path Calculation Sheet