Part 2 - Spurious Emission Testing

DATE:	July 4, 2002
TEST STANDARD:	FCC CFR47, Part 2, 103, and 1053, and Part 24, Subpart D 133
DEVICE DESCRIPTIONS:	Refer to the Equipment Under Test Section, above, for EUT Descriptions.
TEST SETUP:	The equipment was set up at a 3 m measurement distance, and. Spurious emissions we measured in both horizontal and vertical polarizations with signal strength and the results recorded on the attached graph and tables.
CABLING DETAILS:	The EUT was Set up using the manufacturer's specified normal cabling configuration.
MINIMUM STANDARD:	Spurious Attenuation = 43 + 10logl0(Power)dB .Power is specified in Watts. (Nomimal 1 W Power)

ERP = (S/G – loss) + (G_{SUB} (dBi)- G_d (dBd))

ERP = (S/G – loss) + [(20logF - AF_S –29.79) – (20logF -AF_D – 31.94)]

ERP = (S/G – loss) - AF_S + AF_D – 107-2.15

ERP = Effective Radiated Power

S/G = Signal Generator Reading
Loss = Cable Loss to Substitution Antenna
G_{SUB} = Substitution Antenna Gain
G_d = Ideal Dipole Gain
AF_{SUB} = Antenna Factor for Substitution Antenna
AF_D = Antenna Factor for Ideal Dipole

MEASUREMENT DATA:	See Appendix B for Graphs and Data
EMISSIONS DATA:	See Table 2 Spurious Emissions in Appendix B, for corresponding frequencies.
MEASUREMENT PROCEDURE:	The radiated emissions test was performed according to TIA/EIA-603-A. The substitution method in section 2.1.1.2 was used. A bilog and horn antenna located 3 meters away from the transmitter picks up any signal radiated from the transmitter. A spectrum analyzer covering the necessary frequency range is used to detect and measure any radiation picked up by the antenna. The testing procedure is repeated for both horizontal and vertical polarizations of the receiving antenna. Relative signal strength is indicated on the spectrum analyzer connected to this antenna, and the cable losses, amplifier gain and antenna correction factor are added to calculate the signal strength. Actual measurements are recorded on the attached graphs.
PERFORMANCE:	Complies.

Appendix B: Measurement Data and Plots

Measurement Data

Table 1: Total Radiated Emissions

Frequency (MHz)	Pol	Height (cm)	Angle (deg)	Un Corr Pk (dB)	Tot Corr (dB)	Peak (dBuV/m)	DelLim-Pk (dB)
30.009244	Vert	100	0	10.30	8.35	18.65	-20.35
33.190543	Vert	100	0	11.40	7.11	18.51	-20.49
55.243899	Vert	100	0	9.50	6.64	18.14	-20.86
110.616980	Vert	100	0	9.50	9.12	18.62	-24.88
165.917116	Vert	100	0	8.10	11.88	19.98	-23.52
276.487913	Vert	100	0	11.80	13.68	25.48	-20.92
980.494229	Vert	100	0	4.70	28.75	33.45	-16.05

Table 2: Radiated Spurious Emissions 901.5 MHz

Harmonic	Frequency (MHz)	Polarity	Uncor Pk (dBuV)	Tot Corr (dB)	Peak (dbuV/m)	S/G dBµV	Loss dBm	Subs AF dBm	Dipole AF dBm	ERP dBm	dBc
1st	901.50	Vert	84.20	39.80	124.00	145.6	0.266	22.6	27.16	31.62	
1st	901.50	Horz	78.40	39.80	118.20	139.6	0.266	22.6	27.16	25.62	
2nd	1803.00	Vert	27.10	47.90	75.00	87.5	0.400	28.58	33.18	-26.65	-58.04
2nd	1803.00	Horz	21.70	47.90	69.60	81.1	0.400	28.58	33.18	-33.05	-64.44
3rd	2704.50	Vert	9.20	7.28	16.48	34.1	0.664	25.62	36.71	-86.80	-112.64
3rd	2704.50	Horz	10.30	7.28	17.58	29.6	0.664	25.62	36.71	-91.30	-122.14
4th	3606.00	Vert	10.50	14.64	25.14	47.6	0.824	30.62	39.21	-70.96	-101.48
4th	3606.00	Horz	7.90	14.64	22.54	36.1	0.824	30.62	39.21	-82.46	-112.98
5th	4507.50	Vert	9.90	18.82	28.72	56.69	1.33	32.5	41.14	-62.43	-91.95
5th	4507.50	Horz	10.60	18.82	29.42	44.1	1.33	32.5	41.14	-75.02	-104.46
6th	5409.00	Vert	10.40	22.44	32.84	64.8	1.38	33.67	42.73	-54.79	-84.15
6th	5409.00	Horz	9.40	22.44	31.84	48.3	1.38	33.67	42.73	-71.29	-100.65

(No other measurable spurious emissions)