10. Equipment Modifications

To achieve compliance to FCC Section 15.227 technical limits, the following change(s) were made during compliance testing:

NOT APPLICABLE

11. TEST PROCEDURE AND RESULT

Powerline RFI Limits	Eut	Radiated Emission Limits	Eut
SECTION 15.207		SECTION 15.209	x
SECTION 15.205, 15.209, 15.221, 15.223, x 15.225 OR 15.227		SECTION 15.205	x
BATTERY POWER	X	SECTION 15.227	X

11.1 Radiated Emission Test Procedure and Result

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 3 meter from the EUT. The EUT antenna was mounted vertically as per normal installation.

2. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205. The EUT was moved throughout the XY, XZ, and YZ planes to maximize emissions received by the search antenna.

3. Once maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. The six maximum readings so obtained are recorded in the data listed below.

COMPLIANCE ENGINEERING SERVICES, INC. CCS DOCUMENT NO:CCSUP4022B
1366 BORDEAUX DRIVE, SUNNYVALE, CA 94089, USA TEL:(408)752-8166 FAX:(408)752-8168

Data No: 981103F1
Date: 11/03/1998
Test Engineer: Mike Zhu

Company: Mattel Toys, Inc.
EUT: Micro R/C
Technical Limits : FC FCC 15.227
Mode Of Operation : EUT Standing Position

Freq (MHz)	Reading (dBuV/m)	Setting (P/Q/A)	C.F. (dB)	Adjusted Readin (dBuV/m)	Limits (dB)	Margin (dB)	Antenna (H/V)	Remark
54.29	54.1	P	-20.29	33.81	40	-6.19	V	EUT-Y
54.3	53.6	P	-20.29	33.31	40	-6.69	V	EUT-Z
54.28	49.4	P	-19.24	30.16	40	-9.84	H	EUT-X
407.16	45.7	P	-9.43	36.27	46	-9.73	H	EUT-X
54.28	49.7	P	-19.24	30.46	40	-9.54	H	EUT-Y
54.28	49.7	P	-19.24	30.46	40	-9.54	H	EUT-Z

Total Number of Data= 6

Measuring Instrument:
Spectrum Analyzer : H.P. 8568A (100 Hz - 1.5GHz)
Antenna : Eaton 94455-1 (25 - 200 MHz)
Antenna : EMCO 3146 (200 - 1000 MHz)
Preamplifier: H.P. 8447D (0.1 - 1300 MHz)

Analyzer Setting :
Resolution Bandwidth: 100KHz
Video Bandwidth : 100KHz

Frequency Range Investigated : 30 - 272 MH

COMPLIANCE ENGINEERING SERVICES, INC. CCS DOCUMENT NO:CCSUP4022B
1366 BORDEAUX DRIVE, SUNNYVALE, CA 94089, USA TEL:(408)752-8166 FAX:(408)752-8168

Compliance Engineering Services Inc.

Project No. : 98E7881
Report No. : 981103F1
Date : 11/03/1998
Time : 14:13
Test Engr : MIKE ZHU

>> 3 M RADIATED EMISSION DATA <<

M2

Company : MATTEL TOYS INC
Equipment Under Test : M/N: TY-F1037/REMOTE CONTROL CAR TRANSMITTER
Test Configuration : EUT ONLY
Type of Test : FCC15.209/FCC15.227
Mode of Operation : NORMAL

Freq.	dBuV	PreAmp	Ant	Cable	dBuV/m	Limit	Margin	Pol	Hgt(m)	Az
V/X POSITION OF EUT:										
Biconical 8909-1079 ; Pre-pamp = 8447D-P2 2944A07781:										
27.14	75.40	-31.40	18.02	1.14	63.16	100.00	-36.84	V	1.0	90
54.28	45.60	-31.35	9.49	1.57	25.31	40.00	-14.69	V	1.0	90
81.42	50.50	-31.18	6.85	1.96	28.13	40.00	-11.87	V	1.0	90
108.56	47.30	-31.04	12.25	2.27	30.79	43.50	-12.71	V	1.0	90
LP NSN=X100 ; Pre-pamp = 8447D-P2 2944A07781:										
217.15	34.20	-30.47	11.33	3.25	18.31	46.00	-27.69	V	1.0	180
325.74	34.70	-30.19	15.25	4.02	23.77	46.00	-22.23	V	1.0	180
380.04	32.90	-30.41	15.81	4.38	22.68	46.00	-23.32	V	1.0	180
434.32	36.60	-30.64	16.86	4.72	27.55	46.00	-18.45	V	1.0	180
V/Y POSITION OF EUT:										
Biconical 8908-1079 ; Pre-pamp = 8447D-P2 2944A07781:										
27.14	78.50	-31.40	18.02	1.14	66.26	100.00	-33.74	V	1.0	180
54.29	54.10	-31.35	9.49	1.57	33.81	40.00	-6.19	V	1.0	180
81.43	46.60	-31.18	6.85	1.96	24.23	40.00	-15.77	V	1.0	180
108.56	49.10	-31.04	12.25	2.27	32.59	43.50	-10.91	V	1.0	180
LP NSN=X100 ; Pre-pamp = 8447D-P2 2944A07781:										
217.15	34.40	-30.47	11.33	3.25	18.51	46.00	-27.49	V	1.4	180
271.45	31.20	-30.23	13.29	3.67	17.93	46.00	-28.07	V	1.4	180
325.74	34.40	-30.19	15.25	4.02	23.47	46.00	-22.53	V	1.4	180
352.88	35.10	-30.30	15.53	4.20	24.53	46.00	-21.47	V	1.4	180
434.32	38.10	-30.64	16.86	4.72	29.05	46.00	-16.95	V	1.2	180
705.76	34.00	-30.35	20.46	6.23	30.34	46.00	-15.66	V	1.2	180
V/Z POSITION OF EUT:										
Biconical 8908-1079 ; Pre-pamp = 8447D-P2 2944A07781:										
27.14	86.80	-31.40	18.02	1.14	74.56	100.00	-25.44	V	1.0	180
54.30	53.60	-31.35	9.49	1.57	33.31	40.00	-6.69	V	1.0	180
81.44	43.10	-31.18	6.85	1.96	20.74	40.00	-19.26	V	1.0	180
108.57	43.60	-31.04	12.25	2.27	27.09	43.50	-16.41	V	1.0	180
LP NSN=X100 ; Pre-pamp = 8447D-P2 2944A07781:										
217.15	35.20	-30.47	11.33	3.25	19.31	46.00	-26.69	V	2.0	180
271.45	37.40	-30.23	13.29	3.67	24.13	46.00	-21.87	V	2.0	180
325.74	41.40	-30.19	15.25	4.02	30.47	46.00	-15.53	V	2.0	180
352.88	42.30	-30.30	15.53	4.20	31.73	46.00	-14.27	V	1.6	180
380.04	41.20	-30.41	15.81	4.38	30.98	46.00	-15.02	V	1.2	180
434.32	39.60	-30.64	16.86	4.72	30.55	46.00	-15.45	V	1.2	180

H/X POSITION OF EUT:

Biconical 8908-1079 ; Pre-pamp = 8447D-P2 2944A07781:

27.14	74.00	-31.40	21.45	1.14	65.19	100.00	-34.81	H	3.0	180
54.28	49.40	-31.35	10.54	1.57	30.16	40.00	-9.84	H	3.0	180
81.42	46.50	-31.18	6.24	1.96	23.52	40.00	-16.48	H	3.0	180
108.56	48.30	-31.04	11.35	2.27	30.88	43.50	-12.62	H	3.0	180

LP NSN=X100 ; Pre-pamp = 8447D-P2 2944A07781:

217.15	37.10	-30.47	11.13	3.25	21.02	46.00	-24.98	H	1.2	180
271.45	39.50	-30.23	13.33	3.67	26.27	46.00	-19.73	H	1.2	180
298.59	42.10	-30.10	14.59	3.83	30.43	46.00	-15.57	H	1.2	180

Compliance Engineering Services Inc.

Project No. : 98E7881
Report No. : 981103F1
Date : 11/03/1998
Time : 14:20
Test Engr : MIKE ZHU

>> 3 M RADIATED EMISSION DATA <<

Company : MATTEL TOYS INC
Equipment Under Test : M/N: TY-F1037/REMOTE CONTROL CAR TRANSMITTER
Test Configuration : EUT ONLY
Type of Test : FCC15.209/FCC15.227
Mode of Operation : NORMAL

Freq.	dBuV	PreAmp	Ant	Cable	dBuV/m	Limit	Margin	Pol	Hgt(m)	Az
325.73	45.00	-30.19	15.11	4.01	33.93	46.00	-12.07	H	1.2	180
352.87	46.70	-30.30	15.58	4.20	36.18	46.00	-9.82	H	1.2	180
380.03	46.20	-30.41	16.05	4.38	36.23	46.00	-9.77	H	1.0	180
407.16	45.70	-30.52	16.53	4.56	36.27	46.00	-9.73	H	1.0	180
434.32	44.80	-30.64	17.03	4.72	35.91	46.00	-10.09	H	1.0	180
515.75	38.80	-30.90	18.40	5.18	31.48	46.00	-14.52	H	1.0	180

H/Y POSITION OF EUT:

Biconical 8908-1079 ; Pre-pamp = 8447D-P2 2944A07781:

27.14	75.70	-31.40	21.45	1.14	66.89	100.00	-33.11	H	3.0	0
54.28	49.70	-31.35	10.54	1.57	30.46	40.00	-9.54	H	3.0	0
81.42	45.70	-31.18	6.24	1.96	22.72	40.00	-17.28	H	3.0	0
108.56	46.90	-31.04	11.35	2.27	29.48	43.50	-14.02	H	3.0	270

LP NSN=X100 ; Pre-pamp = 8447D-P2 2944A07781:

217.15	36.80	-30.47	11.13	3.25	20.72	46.00	-25.28	H	1.2	180
271.45	39.50	-30.23	13.33	3.67	26.27	46.00	-19.73	H	1.2	180
298.59	41.00	-30.10	14.59	3.83	29.33	46.00	-16.67	H	1.2	180
325.73	43.40	-30.19	15.11	4.01	32.33	46.00	-13.67	H	1.2	180
352.87	45.70	-30.30	15.58	4.20	35.18	46.00	-10.82	H	1.0	180
380.30	43.80	-30.41	16.06	4.39	33.83	46.00	-12.17	H	1.0	180
407.16	43.00	-30.52	16.53	4.56	33.57	46.00	-12.43	H	1.0	180
434.32	41.60	-30.64	17.03	4.72	32.71	46.00	-13.29	H	1.0	180

H/Z POSITION OF EUT:

Biconical 8908-1079 ; Pre-pamp = 8447D-P2 2944A07781:

27.14	81.40	-31.40	21.45	1.14	72.59	100.00	-27.41	H	3.0	180
54.28	49.70	-31.35	10.54	1.57	30.46	40.00	-9.54	H	3.0	180
81.24	45.70	-31.18	6.21	1.96	22.69	40.00	-17.31	H	3.0	180
108.56	46.20	-31.04	11.35	2.27	28.78	43.50	-14.72	H	3.0	270

LP NSN=X100 ; Pre-pamp = 8447D-P2 2944A07781:

217.15	36.80	-30.47	11.13	3.25	20.72	46.00	-25.28	H	1.2	180
298.59	36.10	-30.10	14.59	3.83	24.43	46.00	-21.57	H	1.0	180
352.87	38.40	-30.30	15.58	4.20	27.88	46.00	-18.12	H	1.0	180
380.03	37.30	-30.41	16.05	4.38	27.33	46.00	-18.67	H	1.0	180
407.16	36.80	-30.52	16.53	4.56	27.37	46.00	-18.63	H	1.0	180

Total # of data 62

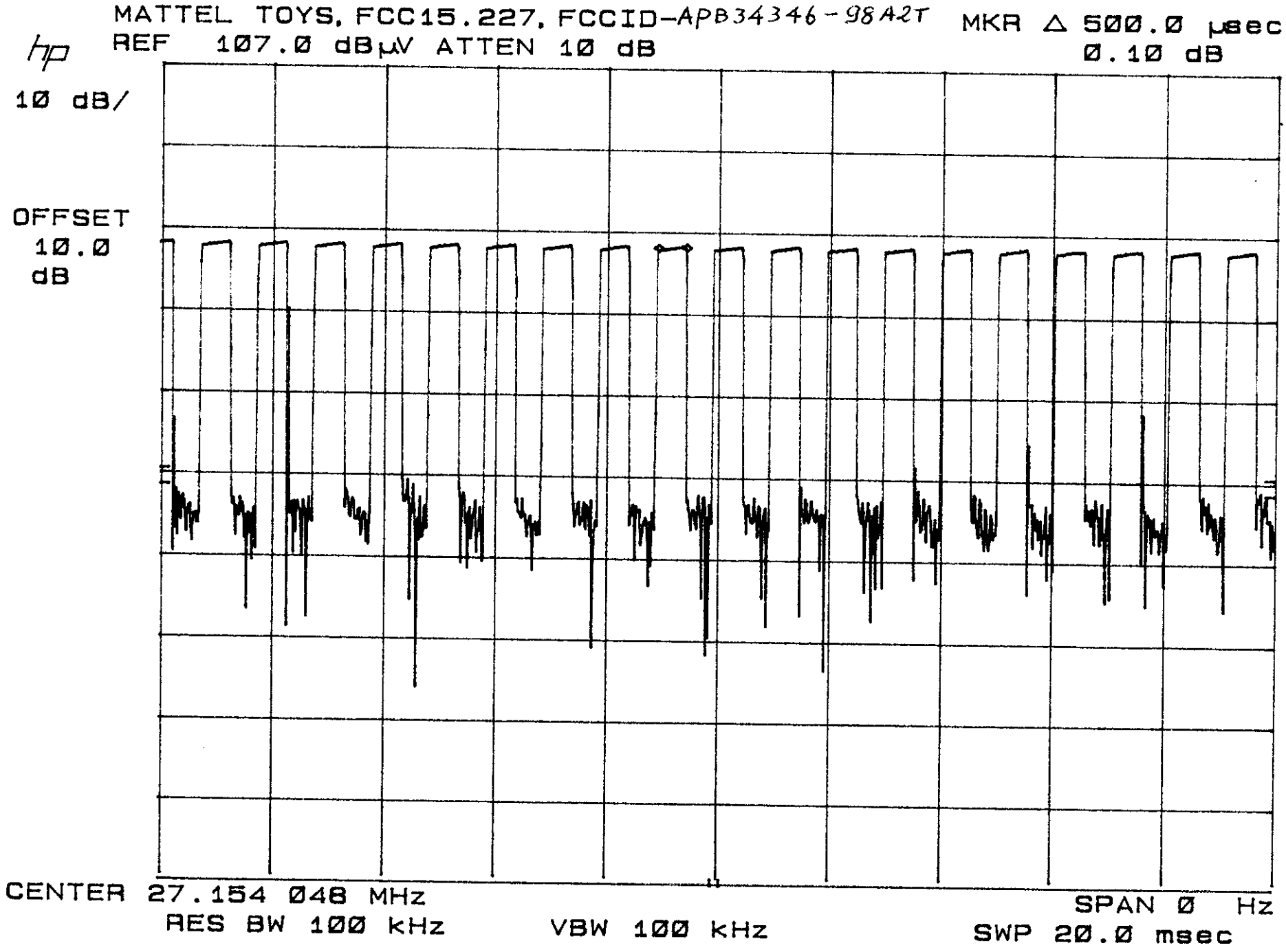
V. f2.2

Duty cycle calculation for FCC15.227:
M(%)=9.75ms/20ms=48.75% (or -6.24dB) (See plot)

Average Readings:

Freq(Mhz)	dBuvpk	dBuvav	Preamp	Ant.	Cable	dBuv	Lim(av)	Marg.	Pol
27.14	75.4	69.16	-31.4	18.02	1.14	56.92	80	-23.08	V/X
27.14	78.5	72.26	-31.4	18.02	1.14	60.02	80	-19.98	V/Y
27.14	86.8	80.56	-31.4	18.02	1.14	68.32	80	-11.68	V/Z
27.14	74.0	67.76	-31.4	21.45	1.14	58.95	80	-21.05	H/X
27.14	75.7	69.46	-31.4	21.45	1.14	60.65	80	-19.35	H/Y
27.14	81.4	75.16	-31.4	21.45	1.14	66.35	80	-13.65	H/Z

* Average Limit of FCC15.227: 10000 uV/m at 3 M ,or 80 dBuV/M


MATTEL TOYS, FCC15.227, FCCID-APB34346-98A2T
MKR Δ 500.0 µsec
0.10 dB
hp
REF 107.0 dBµV ATTEN 10 dB
10 dB/
OFFSET
10.0
dB
CENTER 27.154 048 MHz
RES BW 100 kHz
VBW 100 kHz
SPAN 0 Hz
SWP 20.0 msec