

2. Product Description

CHASSIS TYPE	PLASTIC
Fundamental Frequency	27 MHz
Power Source	9V Battery
CHIPSET BRAND AND PART NO	TX2 / 81141M1 804
Transmitting Time	CONTINUOUS
NO. OF LAYER	1
Board Revision Number	33309PSA / 333091A
Local Osc.	27.145 MHz

3. Test Facility

The 3/10/30 meter open area test site and conducted measurement facility used to collect the radiated data is located at 561F Monterey Road, Morgan Hill, California, U.S.A. A detailed description of the test facility was submitted to the Commission on May 27,1994.

4. Measurement Standards

The site is constructed and calibrated in conformance with the requirements of ANSI C63.4/1992.

5. Test Methodology

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 KHz, up to at least the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. (CFR 47 Section 15.33)

6. Measurement Equipment Used

Manufacturer	Model Number	Description	Cal Due Date
H.P.	8568A	Spectrum Analyzer (100Hz - 1.5GHz)	02/99
EATON	94455-1	Antenna (25 - 200MHz)	10/98
EMCO	3146	Antenna (200-1000 MHz)	10/98
H.P.	8447D	Preamplifier (0.1 - 1300 MHz)	09/98

7. POWERLINE RFI LIMIT

CONNECTED TO AC POWER LINE	SECTION 15.207
CARRIER CURRENT SYSTEM IN THE FREQUENCY RANGE OF 450 KHZ TO 30 MHZ	SECTION 15.205 AND SECTION 15.209, 15.221, 15.223, 15.225 OR 15.227, AS APPROPRIATE.
BATTERY POWER	NO REQUIRED.

8. RADIATED EMISSION LIMITS

GENERAL REQUIREMENTS	SECTION 15.209.
RESTRICTED BANDS OF OPERATION	SECTION 15.205
OPERATION WITHIN THE BAND 26.96 - 27.28 MHZ	SECTION 15.227

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.

Data No: 980519F1 & F2

Date: 05/19/1998

Test Engineer: Thu Tran

Company: Mattel Toys, Inc.

EUT: Remote Control Car Transmitter

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
678.64	47	P	-3.58	44.93	46	-1.07	H	EUT-X
705.79	47	Q	-3.07	43.93	46	-2.07	H	EUT-X
132.93	47	Q	-2.73	44.27	46	-1.73	H	EUT-X
760.07	46	P	-2.4	43.6	46	-2.4	H	EUT-X
35	51	Q	-16.81	34.19	40	-5.81	V	EUT-X
732.92	47.5	p	-3.39	44.1	46	-1.9	V	EUT-X

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 MHz

Compliance Engineering Services Inc.

Project No. : 98E7363
Report No. : 980519F2
Date : 05/19/1998
Time : 12:19
Test Engr : THU TRAN

>> 3 M RADIATED EMISSION DATA <<

Company : MATTEL TOYS INC
Equipment Under Test : REMOTE CONTROL CAR OPERATION AT 27MHZ
Test Configuration : EUT ONLY
Type of Test : FCC CLASS B
Mode of Operation : EUT STANDING POSITION

Freq.	dBuV	PreAmp	Ant	Cable	dBuV/m	Limit	Margin	Pol	Hgt(m)	Az
Bilog 2049 ; Pre-pamp = 8447D-P2 2944A07781:										
35.00	50.00	-31.74	16.06	1.29	35.61	40.00	-4.39	H	1.0	180
54.30	47.00	-31.84	8.06	1.76	24.98	40.00	-15.02	H	1.0	180
81.44	47.00	-31.69	7.59	2.12	25.02	40.00	-14.98	H	1.0	180
108.58	48.00	-31.57	12.13	2.47	31.03	43.50	-12.47	H	1.0	0
190.00	46.00	-31.15	10.94	3.18	28.97	43.50	-14.53	H	1.0	270
244.32	45.00	-30.82	13.48	3.68	31.34	46.00	-14.66	H	1.0	180
298.60	47.00	-30.61	14.53	4.08	35.00	46.00	-11.00	H	1.0	90
434.33	48.00	-31.03	17.78	5.01	39.76	46.00	-6.24	H	1.0	180
325.74	52.00	-30.67	15.28	4.27	40.88	46.00	-5.12	H	1.0	90
352.89	46.00	-30.75	16.06	4.45	35.76	46.00	-10.24	H	1.0	90
678.64	47.00	-30.86	20.80	6.48	43.42	46.00	-2.58	H	1.0	180
705.79	48.00	-30.77	21.08	6.62	44.93	46.00	-1.07	H	1.0	180
QP: 705.79	47.00	-30.77	21.08	6.62	43.93	46.00	-2.07	H	1.0	180
732.93	48.50	-30.75	21.32	6.70	45.77	46.00	-0.23	H	1.0	180
QP: 732.93	47.00	-30.75	21.32	6.70	44.27	46.00	-1.73	H	1.0	180
760.07	46.00	-30.74	21.56	6.78	43.60	46.00	-2.40	H	1.0	180
QP: 35.00	54.70	-31.74	13.64	1.29	37.89	40.00	-2.11	V	1.0	180
35.00	51.00	-31.74	13.64	1.29	34.19	40.00	-5.81	V	1.0	180
54.29	55.00	-31.84	6.98	1.76	31.90	40.00	-8.10	V	1.0	90
65.16	56.00	-31.80	5.83	1.94	31.98	40.00	-8.02	V	1.0	180
73.17	53.00	-31.73	5.97	2.07	29.30	40.00	-10.70	V	1.0	180
81.44	48.00	-31.69	7.22	2.12	25.65	40.00	-14.35	V	1.0	180
108.58	50.00	-31.57	12.65	2.47	33.55	43.50	-9.95	V	1.0	90
119.45	52.00	-31.55	13.60	2.55	36.60	43.50	-6.90	V	1.0	180
121.66	47.00	-31.54	13.57	2.57	31.59	43.50	-11.91	V	1.0	180
127.43	52.00	-31.51	13.29	2.62	36.40	43.50	-7.10	V	1.0	0
135.73	47.00	-31.45	12.89	2.69	31.13	43.50	-12.37	V	1.0	90
162.88	46.00	-31.26	11.43	2.91	29.09	43.50	-14.41	V	1.0	90
165.45	48.00	-31.25	11.32	2.94	31.01	43.50	-12.49	V	1.0	90
167.20	49.00	-31.25	11.24	2.96	31.96	43.50	-11.54	V	1.0	0
190.02	46.00	-31.15	10.92	3.18	28.95	43.50	-14.55	V	1.0	180
219.75	48.00	-30.97	12.13	3.45	32.61	46.00	-13.39	V	1.0	0
227.77	45.00	-30.92	12.53	3.52	30.14	46.00	-15.86	V	1.0	90
244.31	48.00	-30.82	13.36	3.68	34.21	46.00	-11.79	V	1.0	90
352.89	47.00	-30.75	15.92	4.45	36.63	46.00	-9.37	V	1.0	90

407.18	48.00	-30.91	17.31	4.83	39.22	46.00	-6.78	V	1.0	90
597.24	48.00	-31.17	20.14	6.03	43.00	46.00	-3.00	V	1.0	180
705.78	46.00	-30.77	20.44	6.62	42.29	46.00	-3.71	V	1.0	180
732.92	47.50	-30.75	20.66	6.70	44.10	46.00	-1.90	V	1.0	180

Total # of data 46

V. f2.2

Compliance Engineering Services Inc.

Project No. : 98E7363
Report No. : 980519F1
Date : 05/19/1998
Time : 10:47
Test Engr : THU TRAN

>> 3 M RADIATED EMISSION DATA <<

Company : MATTEL TOYS INC
Equipment Under Test : REMOTE CONTROL CAR OPERATING AT 27MHZ
Test Configuration : EUT ONLY
Type of Test : FCC CLASS B
Mode of Operation : NORMAL

Freq. dBuV PreAmp Ant Cable dBuV/m Limit Margin Pol Hgt(m) Az
Biconical 8909-1079 ; Pre-pamp = 8447D-P2 2944A07781:

Z-POSITION (SIDE LIE DOWN):

PEAK READING:

27.14	72.50	-31.76	16.54	1.20	58.48	100.0	-41.52	V	1.0	0
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AVERAGE READING:

27.14	63.50	-31.76	16.54	1.20	49.48	80.00	-30.52	V	1.0	0
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PEAK READING:

27.14	78.80	31.76	20.55	1.20	68.79	100.0	-31.21	H	2.0	0
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AVERAGE READING:

27.14	70.20	-31.76	20.55	1.20	60.19	80.00	-19.81	H	2.0	0
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Y POSITION (BACK LIE DOWN):

PEAK READING:

27.14	80.30	-31.76	16.54	1.20	66.28	100.0	-33.72	V	1.0	0
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AVERAGE READING:

27.14	71.70	-31.76	16.24	1.20	57.68	80.00	-22.32	V	1.0	0
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PEAK READING:

27.14	83.60	-31.76	20.55	1.20	73.59	100.0	-26.41	H	2.0	0
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AVERAGE READING:

27.14	73.80	-31.76	20.55	1.20	63.79	80.00	-16.21	H	2.0	0
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X-POSITION (STAND UP):

PEAKING READING:

27.14	86.30	-31.76	16.54	1.20	72.28	100.0	-27.72	V	2.0	0
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AVERAGE READING:

27.14	77.40	-31.76	16.54	1.20	63.38	80.00	-16.62	V	2.0	0
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PEAKING READING:

27.14	88.10	-31.76	20.55	1.20	78.09	100.0	-21.91	H	1.0	0
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AVERAGE READING:

27.14	78.90	-31.76	20.55	1.20	68.89	80.00	-11.11	H	1.0	0
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ACTIVE LOOP ANTENNA EMCO 6502 ; PRE-AMP = BUILT-IN:

LOOP ANTENNA SIDE POSITION & EUT STAND UP:

PEAK READING:

27.14	69.60	0.00	7.43	1.20	78.23	100.0	-21.77	H	1.0	0
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AVERAGE READING:

27.14	60.40	0.00	7.43	1.20	69.03	80.00	-10.97	H	1.0	0
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LOOP ANTENNA CIRCLE FACING EUT & EUT STAND UP POSITION:

PEAK READING:

27.14	62.60	0.00	7.43	1.20	71.23	100.0	-28.77	H	1.0	0
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AVERAGE READING:

27.14	54.00	0.00	7.43	1.20	62.63	80.00	-17.37	H	1.0	0
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LOOP ANTENNA CIRCLE FACING EUT & EUT BACK LIE DOWN POSITION:

PEAK READING:

27.14	61.40	0.00	7.43	1.20	70.03	100.0	-29.97	H	1.0	0
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AVERAGE READING:

27.14	52.70	0.00	7.43	1.20	61.33	80.00	-18.67	H	1.0	0
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LOOP ANTENNA SIDE POSITION & EUT BACK LIE DOWN:

PEAK READING:

27.14	64.90	0.00	7.43	1.20	73.53	100.0	-26.47	H	1.0	0
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AVERAGE READING:

27.14	56.10	0.00	7.43	1.20	64.73	80.00	-15.27	H	1.0	0
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LOOP ANTENNA SIDE POSITION & EUT SIDE LIE DOWN:

PEAK READING:

27.14	53.40	0.00	7.43	1.20	62.03	100.0	-37.97	H	1.0	0
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AVERAGE READING:

27.14	44.10	0.00	7.43	1.20	52.73	80.00	-27.27	H	1.0	0
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LOOP ANTENNA CIRCLE FACING EUT & EUT SIDE LIE DOWN:

PEAK READING:

27.14	59.60	0.00	7.43	1.20	68.23	100.0	-31.77	H	1.0	0
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AVERAGE READING:

27.14	50.70	0.00	7.43	1.20	59.33	80.00	-20.67	H	1.0	0
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Total # of data 24

V. f2.2