Accredited Since 1993

QUALIFICATION TEST REPORT

CRITERION TECHNOLOGY CORP.

1350 County Road 16
P.O. Box 387
Rollinsville, CO 80474
(303) 258-0100 ph.
(303) 258-0775 fax
www.criteriontech.com

EMISSIONS -FCC Part 15

Test Report Number: FPT100032401 RX Date of Issue: 21 April 2000

Model No: RC Dash Receiver Date of Test Article Receipt: 28 March 2000

Type of product: FCC Part 15 Subpart B

Manufacturer: Fisher-Price

Address: 636 Girard Avenue

East Aurora, N.Y. 14052

Test Results: [X] Complies [ ] Does Not Comply

Michael E. Mussler Lab Director (NVLAP Signatory)

Michael E. Mussler Compliance Engineer

Accredited by NIST NVLAP for FCC Part 15

Disclaimers:

This report is the confidential property of the client. For the protection of our clients and ourselves, extracts from this test report cannot be produced without prior written approval from Criterion Technology. Reproduction of the complete report can be performed at the client's discretion.

The client is aware that Criterion Technology has performed testing in accordance with the applicable standard(s). Test data is accurate within ANSI parameters for Emissions testing, unless a specific level of accuracy has been defined in writing prior to testing, by Criterion Technology and the client.

Criterion Technology reports apply only to the specific Equipment Under Test (EUT) sample(s) tested under the test conditions described in this report. If the manufacturer intends to use this report as a document demonstrating compliance of this model, additional models of this product must have electrical and mechanical characteristics identical to the device tested for this report. Criterion Technology shall have no liability for any deductions, inferences, or generalizations drawn by the client or others from Criterion Technology issued reports.

Total liability is limited to the amount invoiced for the testing of this EUT and the contents of this report are not warranted.

Compliance with the appropriate governmental standards is the responsibility of the manufacturer.
Any questions regarding this report should be directed to:

Laboratory Director
Criterion Technology
P.O. Box 387
1350 County Road 16
Rollinsville, Colorado 80474
Phone: 1-303-682-6600
Fax:1-303-682-6672
email: Laboratory_Director@criteriontech.com

NVLAP Note: Criterion Technology is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the specific scope of accreditation under Lab Code 100396-0. Test methods included in Lab Code 100396-0 are:

1. 12/CIS22 - IEC/CISPR22:1993
2. 12/CIS22a - IEC/CISPR22:1993, Amendment1:1995 & Amendment2:1996
3. 12/CIS22b - CNS13438:1997
4. 12/F01 - FCC Method -47 Part 15 - Digital Devices
5. 12/F01a - Conducted Emissions, Power Lines, 450 KHz to 30 MHz
6. 12/F01b - Radiated Emissions
7. 12/T51 - AS/NZS 3548

The NVLAP Logo on the front cover of this report applies only to data taken for the above test methods.
This report may contain data which is not covered by the NVLAP accreditation.

This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

Criterion Technology has been accredited by the following groups: NVLAP, VCCI, BSMI, NMi (EU Competent Body Accreditation) and Industry Canada. The National Institute for Standards and Technology (NIST) has designated Criterion Technology a Conformity Assessment Body (CAB) for Taiwan (BSMI # SL2-IN-E-007R).

All Criterion Technology instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 9001, ISO Guide 25, ANSI/NCSL Z540-I-1994 and are traceable to national standards.

Table of Contents

Section 1 Executive Summary 5

Section 2 Emissions Test Standards 7

Part 2.1 FCC Part 15 Subpart B –Radiated Emissions 8

Section 3 Test Setup Photographs 9

Part 3.1 Radiated Emissions Setup, 1 - 30 MHz 10

Part 3.2 Radiated Emissions Setup, Front View, 30 MHz - 4 GHz 11

Part 3.3 Radiated Emissions Setup - Rear View, 30 MHz - 4 GHz 12

Section 4 Original Test Data / Plots 13

Part 4.1 Radiated Emissions Data 14

Part 4.2 Radiated Emissions Plot 16

Section 5 Equipment Calibration Informaton 17

Section 6 Product Information Form 19

Part 6.1 EUT Description and Block Diagram 20

Part 6.2 EUT Diagram as Tested 22

Section 1 Executive Summary

The test article was in compliance with all the test standards listed below.

FCC Part 15 Subpart A
FCC Part 15 Subpart B Radiated Emissions

All test methods were performed in accordance with the standards listed above.

Section 2 Emissions Test Standards

The emissions tests were performed according to following standards:

FCC Part 15, Subpart B	[ ] Class A	[X] Class B

Part 2.1 FCC Part 15 Subpart B –Radiated Emissions

Measurement of *radiated emissions (electric* field) in the frequency range of 30 MHz-1000 MHz were tested in a horizontal and vertical polarization as indicated below:

Environmental conditions of the lab:

Date of Test: 28 March 2000

Temperature: 72°F

Rel. Humidity: 22%

Test Voltage: Battery Powered

Test location:
[X] Criterion Technology Open Area Test Site
[ ] Pre-Scan In Semi-Anechoic Chamber
[ ] In Situ

Test distance: (antenna to EUT)

[ ]1 meter	[ ]Preliminary Measurement	[ ]Final Measurement
[X]3 meters	[X]Preliminary Measurement	[X]Final Measurement
[ ]10 meters	[ ]Preliminary Measurement	[ ]Final Measurement
[ ]30 meters	[ ]Preliminary Measurement	[ ]Final Measurement

Test instruments: (see Section 6 for calibration information)
[X] Hewlett Packard Spectrum Analyzer, Model 8566B
[X] Hewlett Packard Quasi Peak Adapter, Model 85650A
[ ] Hewlett Packard Tracking Generator, Model 85645A
[ ] Rohde and Schwarz Receiver, Model, ESHS-30
[X] Rohde and Schwarz Model Receiver, ESVS-30
[ ] EMCO, BiConnical Antenna, Model 3108
[ ] EMCO, Log Periodic Antenna, Model 3146
[X] Chase, BiLog Antenna, Model 1121
[X] Mini Circuits Pre-Amp #2
[ ] Veratech Pre-Amp #3
[ ] Antenna Research Assoc., Horn Antenna, Model DRG118/A
[X] EMCO Loop Antenna, Model 6502

Test accessories: None

Test Results of Radiated Emissions: 1 MHz - 1000 MHz

Test Status: [X] PASS [ ] FAIL

Minimum margin to limit: 7.44 dB at 337.3051 MHz

Exceeded limit by: _____ dB at _____ MHz

Remarks: Reference Section 4 for Data Sheets

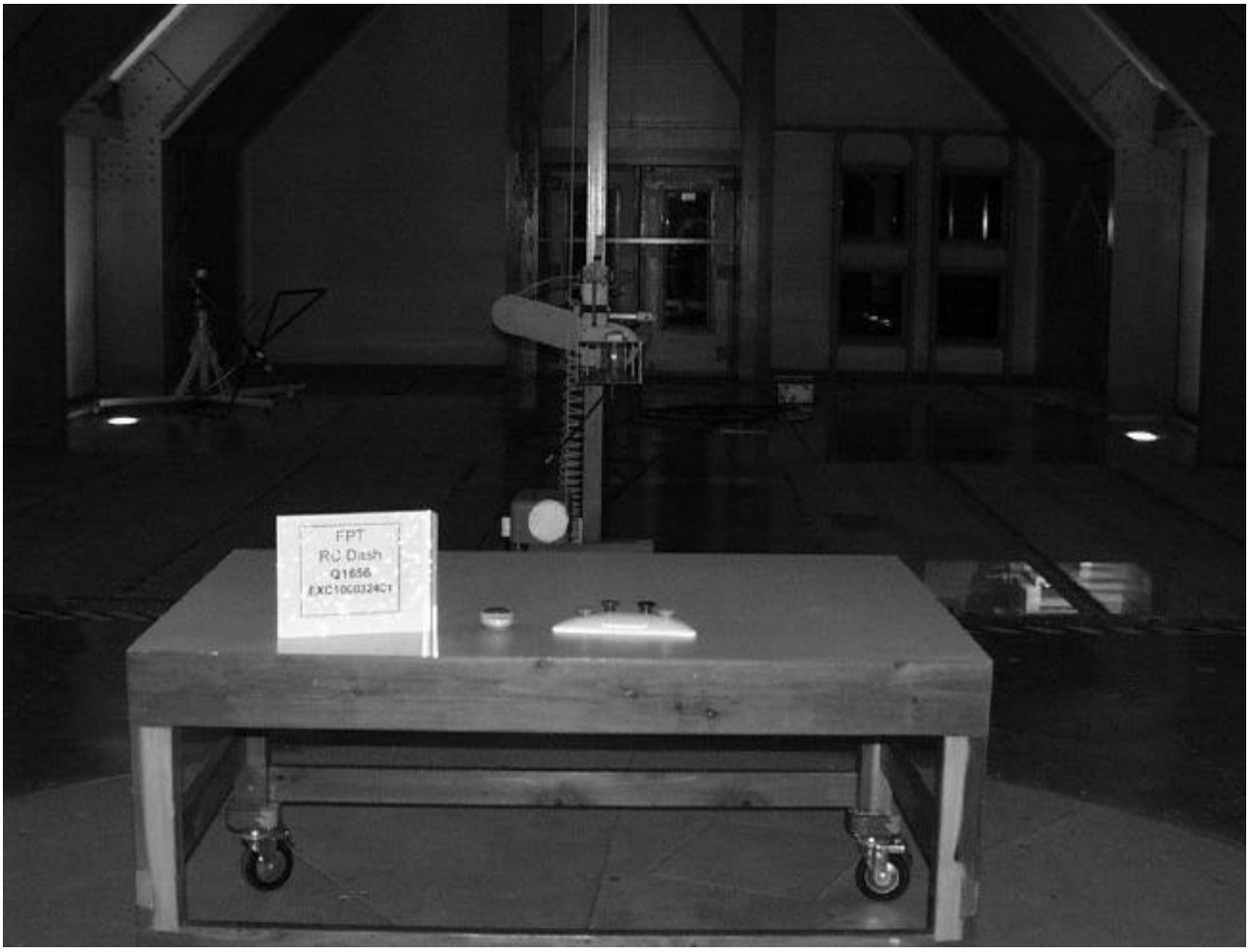
Note that the receiver and transmitter were tested simultaneously. The data table contains measured levels for both the receiver and transmitter. Receiver emissions are identified by "rcvr" in the Comments field.

Section 3 Test Setup Photographs

Part 3.1 Radiated Emissions Setup, 1 - 30 MHz

Part 3.2 Radiated Emissions Setup, Front View, 30 MHz - 4 GHz

Part 3.3 Radiated Emissions Setup - Rear View, 30 MHz - 4 GHz



Section 4 Original Test Data / Plots

Radiated Emissions

Part 4.1 Radiated Emissions Data

Notes:

The third column below contains alpha characters which pertain to the type of measurements made. The following are the definitions for those characters: q = Quasi Peak, m = Maximized (cable, rotation and antenna height), s = scanned but no data taken, and a = average. For the first character in column four, a '-' indicates that value is below the limit while an '*' indicates that value is above the limit

If the list is sorted using "I-sort", then quasi-peak and average levels are weighted higher than peak levels and are moved to the front of the scan list.

The following keys help to better understand the data:

TT: Turntable position in degrees

Hght: Height of antenna in centimeters

Az: Azimuth, V = Vertical, H= Horizontal

Criterion Technology Fri Apr 21 15:17:07 2000
EUT: Model: RC Dash, Serial: FCC-1
Manufacturer: Fisher-Price Inc.
Tester: MEM Special ID: FPT Q1656
EUT Level: FEP (Pre-production), Modified for Continuous Transmit
EUT Information: EUT on Tabletop (Transmitter & Receiver Co-located)
Test information: Jumper on Micro., 3m, Battery Powered Units, FCC Sub C, Ind. Canada Cat. I

Table 1: Scan List, sorted by margin to limit FCC-B, -30.0dB filter

Freq. MHz	Value	Sts	FCC-B	TT	Hght	Az	Comment
344.9587	61.89	p	15.87	335	101	H	tx fundamental
689.9220	58.26	p	12.24	283	121	H	345. ck, 2fo
1727.5474	52.44	m	-1.54	105	102	H	345. ck, 5fo
337.3051	38.58	m	-7.44	339	100	H	bb from rcvr
1036.5244	43.67	m	-10.31	30	100	H	345. ck, 3fo
347.1452	32.14	m	-13.88	339	100	H	upper rx bb hump
2072.8942	39.30	m	-14.68	144	105	H	345. ck, 6fo
1382.0222	38.98	m	-15.00	30	100	H	345. ck, 4fo
2325.9999	36.55	a	-17.43	272	101	H	rcvr harmonic
1674.0000	36.15	p	-17.83	253	101	H	rcvr harmonic
1333.3500	31.65	p	-22.33	105	101	H	rcvr harmonic
3454.8237	31.57	m	-22.41	280	98	V	345. ck, 10fo
2418.3766	31.47	m	-22.51	360	100	V	345. ck, 7fo
2763.8589	27.55	m	-26.43	224	100	V	345. ck, 8fo
3109.3413	25.91	m	-28.07	165	100	H	345. ck, 9fo

Table 2: Scan List for FCC-B, sorted by Frequency, -30.0dB filter

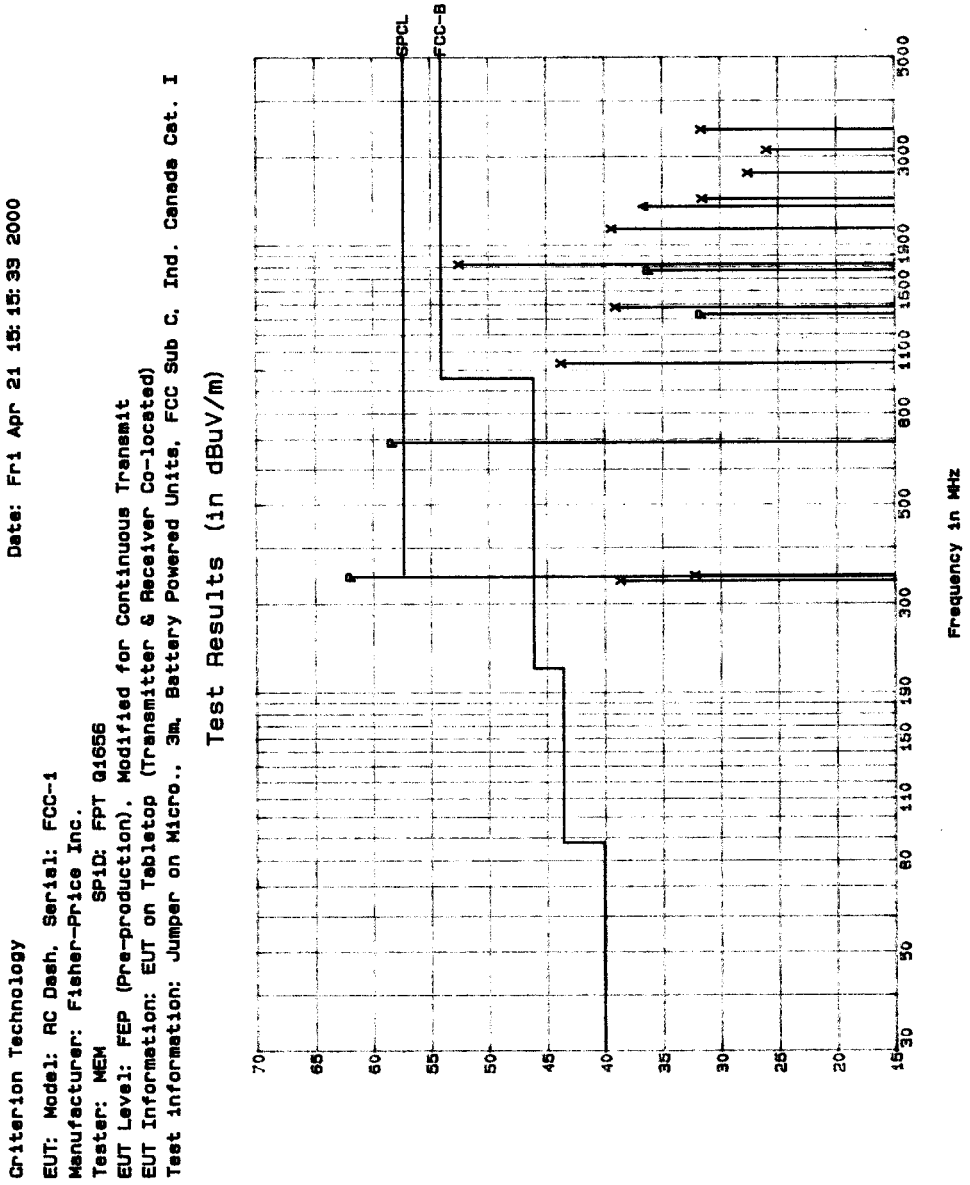
Freq, MHz	Value	Sts	FCC-B	TT	Hght	Az	Comment
337.3051	38.58	m	-7.44	339	100	H	bb from rcvr
344.9587	61.89	p	15.87	335	101	H	tx fundamental
347.1452	32.14	m	-13.88	339	100	H	upper rx bb hump
689.9220	58.26	p	12.24	283	121	H	345. ck, 2fo
1036.5244	43.67	m	-10.31	30	100	H	345. ck, 3fo
1333.3500	31.65	p	-22.33	105	101	H	rcvr harmonic
1382.0222	38.98	m	-15.00	30	100	H	345. ck, 4fo
1674.0000	36.15	p	-17.83	253	101	H	rcvr harmonic
1727.5474	52.44	m	-1.54	105	102	H	345. ck, 5fo
2072.8942	39.30	m	-14.68	144	105	H	345. ck, 6fo
2325.9999	36.55	a	-17.43	272	101	H	rcvr harmonic
2418.3766	31.47	m	-22.51	360	100	V	345. ck, 7fo
2763.8589	27.55	m	-26.43	224	100	V	345. ck, 8fo
3109.3413	25.91	m	-28.07	165	100	H	345. ck, 9fo
3454.8237	31.57	m	-22.41	280	98	V	345. ck, 10fo

Table 3: Complete Scan List Sorted by Frequency

Freq, MHz	I-val	Final	Sts	TT	Hght	Az	Time	Comment
337.3051	45.78	38.58	m	339	100	H	Tue Mar 28 19:11:49 2000	bb from rcvr
344.9587	68.80	61.89	p	335	101	H	Fri Apr 21 14:39:07 2000	tx fundamental
347.1452	38.96	32.14	m	339	100	H	Tue Mar 28 19:12:34 2000	upper rx bb hump
689.9220	57.92	58.26	p	283	121	H	Fri Apr 21 14:32:56 2000	345. ck, 2fo
1036.5244	59.56	43.67	m	30	100	H	Tue Mar 28 19:39:04 2000	345. ck, 3fo
1333.3500	45.32	31.65	p	105	101	H	Tue Mar 28 20:11:51 2000	rcvr harmonic
1382.0222	52.38	38.98	m	30	100	H	Tue Mar 28 19:40:41 2000	345. ck, 4fo
1674.0000	47.40	36.15	p	253	101	H	Tue Mar 28 20:17:06 2000	rcvr harmonic
1727.5474	63.20	52.44	m	105	102	H	Tue Mar 28 19:44:59 2000	345. ck, 5fo
2072.8942	44.57	39.30	m	144	105	H	Tue Mar 28 19:52:21 2000	345. ck, 6fo
2325.9999	42.42	36.55	a	272	101	H	Tue Mar 28 20:22:36 2000	rcvr harmonic
2418.3766	37.61	31.47	m	360	100	V	Tue Mar 28 19:55:38 2000	345. ck, 7fo
2763.8589	33.49	27.55	m	224	100	V	Tue Mar 28 19:58:32 2000	345. ck, 8fo
3109.3413	31.56	25.91	m	165	100	H	Tue Mar 28 20:02:41 2000	345. ck, 9fo
3454.8237	36.23	31.57	m	280	98	V	Tue Mar 28 20:05:17 2000	345. ck, 10fo

NOTE: All receiver emissions are labeled with 'rcvr' prefix in comments field.

Part 4.2 Radiated Emissions Plot



Section 5 Equipment Calibration Informaton

Manufacturer	Name/Description	Model Number	Serial Number	Calibration Due
Antenna Research Associates	1-18 GHz Horn	DRG118/A	1056	5-22-00
Antenna Research Associates	1-18 GHz Horn	DRG118/A	1057	4-8-00
Chase	Bilog 30 - 1000 MHz	CB6111	1121	6-1-00
Dickson	Temperature/ RH Recorder	THDX	5300245	2-19-01
EMCO	Active Loop	6502	2626	9-22-00
EMCO	BiConnical 30-200 MHz	3108	2343	6-1-00
EMCO	Dipole	3121C	722	6-1-00
EMCO	Log Periodic 200 - 1000 MHz	3146	2763	6-1-00
EMCO	Log Periodic 200 - 1000 MHz	3146	3096	6-1-00
FCC	Current Probe	F-33-2	None	9-28-00
Fluke	Digital Multimeter	87	60800598	12-17-00
Hewlett Packard	Quasi Peak Adapter	HP 85650A	2521A00733	7-12-00
Hewlett Packard	Spectrum Analyzer	HP 8566B	2403A07322	7-12-00
Hewlett Packard	Spectrum Analyzer	HP 8566B	2421A00527	7-12-00
Hewlett Packard	Tracking Generator	HP 85645A	3210A00124	5-28-00
Microwave Instrumentation Technologies	18-26.5 GHz Horn	12A-18	115300	10-12-00
Microwave Instrumentation Technologies	26.5 - 40 GHz Horn	12A-26	20493E	4-8-00
Mini Circuits	Preamp (AMP2)			6-2-00
Rohde/Schwarz	HF Receiver	ESHS-30	82600/011	8-31-00
Rohde/Schwarz	LISN	ESH2-Z5	828739-001	7-23-00
Rohde/Schwarz	VHF/UHF Receiver	ESVS-30	8634221014	6-4-00
Solar	50 uH LISN	8012-50-R-24-BNC	892310	7-23-00
Solar	50 uH LISN	8612-50-TS-100N	967621	7-23-00
Solar	50 uH LISN	8612-50-TS-100N	967622	7-23-00
Solar	50 uH LISN	8612-50-TS-100N	967623	7-23-00
Solar	50 uH LISN	8612-50-TS-100N	967624	7-23-00
Tektronix	Oscilloscope	2467B	B051203	12-20-00
Veratech	Preamp (AMP3)			9-30-01
Amplifier Research	Coupler	DC6080	19529	5-30-00
Amplifier Research	E-Field Probe	FP2000	19682	1-27-01

Amplifier Research	E-Field Probe	FP2080	20236	1-26-01
Amplifier Research	Power Amplifier	150A100A	20183	5-30-00
Amplifier Research	Power Amplifier	100W1000M1	20214	5-30-00
Amplifier Research	Power Amplifier	10S1G4	20155	5-30-00
Andrews Heliax Cable	F2-50 Low Loss Coax	F2-50	N/A	5-4-00
EMCO	BiConnical 30-200 MHz	3108	2441	6-1-00
EMCO	Horn	3115	4003	Verif.
FCC	CDN	FCC-801-M3-25	9714	9-28-00
FCC	Current Probe	F-33-1	None	9-27-00
FCC	EM Clamp	F2031	309	4-1-01
Fluke	Digital Multimeter	87	66320753	12-17-00
Fluke	Digital Multimeter	87	68630334	12-17-00
Gigatronics	Power Meter	8541C	1830945	9-9-00
Gigatronics	Power Sensor	80301A-410	1831996	9-1-00
Haefely Trench	Coupling Network	IP6.2	083 957-02	9-20-00
Haefely Trench	De-coupling Network	DEC1A	080057-09	9-20-00
Haefely Trench	Dip Generator	PLINE1610	083 970-07	10-25-00
Haefely Trench	EFT Coupling Clamp	IP4A	080-011-06	4-1-01
Haefely Trench	EFT Tester	PEFT Junior	583-333-51	9-20-00
Haefely Trench	ESD Gun	PESD 1600	H605100	9-24-00
Haefely Trench	Impulse Module	PHV 30.2	083991-06	9-20-00
Haefely Trench	Power Supply	PHF555	080-419-05	2-28-01
Haefely Trench	Surge Generator	PSURGE 6.1	083 906-07	9-20-00
Haefely Trench	Surge Network	FP-SURGE 32.1	083925-05	9-20-00
Hewlett Packard	Pulse Generator	HP 8116A	2901G09493	9-22-00
Hewlett Packard	Signal Generator	HP 8648D	3642000145	4-13-00
Hewlett Packard	Spectrum Analyzer	HP 8594E	3412A01039	9-23-00
Lehman Chambers	Semi Anechoic Chamber	N/A	N/A	10-5-00
Tegam	Current Probe	925236-1	12588	9-27-00
Tegam	Current Probe Cal Fixture	95241-1	12634	9-27-00
Tektronix	Oscilloscope	2465A	B021016	12-21-00

Section 6 Product Information Form

CRITERION PRODUCT INFORMATION FORM

Date: **28 March 2000**

General Information
Company Name: **Fisher-Price**
Company Address: **636 Girard Avenue**
Company Address: **East Aurora, NY 14052**
Customer Contacts (and phone numbers):
Compliance Eng. **Steve Ernst**
Design Engineer: **Jim Meade**

General Instrument Information
Model: **RC Dash Receiver**
Serial Number: **FEP 1**

Test Facility
Name: **Criterion Technology**
Location: **Rollinsville, Colorado 80474**

TEST DESCRIPTION: ____Development **X** Initial Design Verification
____Design Change ____Production Model
Applicable Standards (EN50082-2, EN55011, etc) **FCC Part 15**

CIRCUIT BOARD

Oscillator Frequency: **345 MHz Super-regenerative receiver**
Oscillator Manufacturer: **Fisher-Price**
Clock Frequencies: **1 MHz microprocessor**
Other:

POWER

Power Supply Topology:(switching or linear)
Switching Frequency: **Battery Powered**
Power supply Primary Frequency and Voltage: **N/A**
Number of Input Phases: **N/A**
Current Draw: **Unknown**
Manufacturer: **N/A**
Model Number: **N/A**
Number of I/O cables: **None**
Length of I/O cables: **N/A**

Part 6.1 EUT Description and Block Diagram

FISHER-PRICE 71924 RC DASH RECEIVER DESCRIPTION OF OPERATION

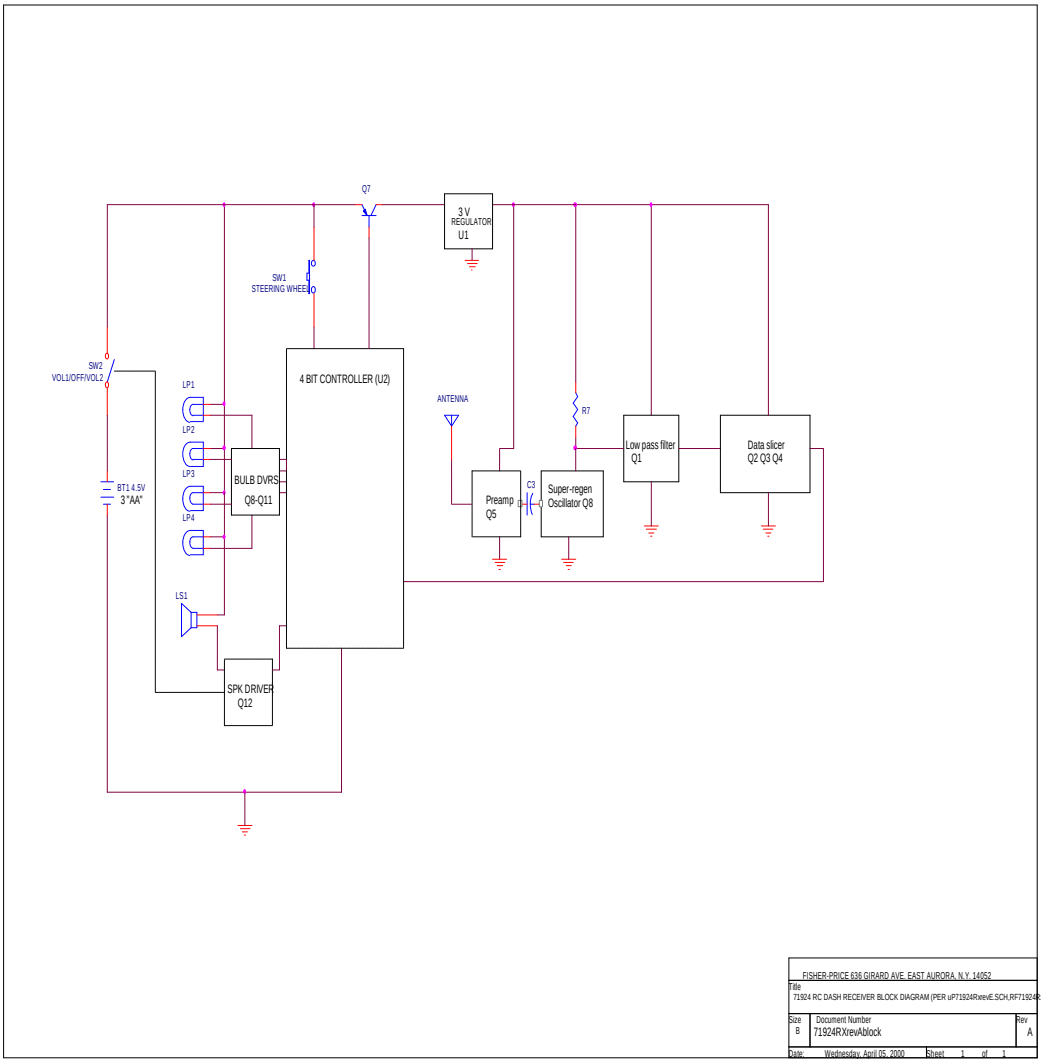
Receiver Operation:

The carseat attached receiver is controlled by a 4 bit micro-controller, allowing the unit to play music and flash lights to both soothe and entertain the child while in the confines of the carseat. Once initialized by sliding the ON/OFF Switch (SW2) to either one of the two volume modes from the center OFF position, and then depressing the Steering Wheel Switch (SW1), the receiver becomes activated and will respond to either a parent remote command or child interaction with SW1. If the receiver is inactive for the software-predefined period (approx. 2hrs) the unit will automatically turn off (time-out).

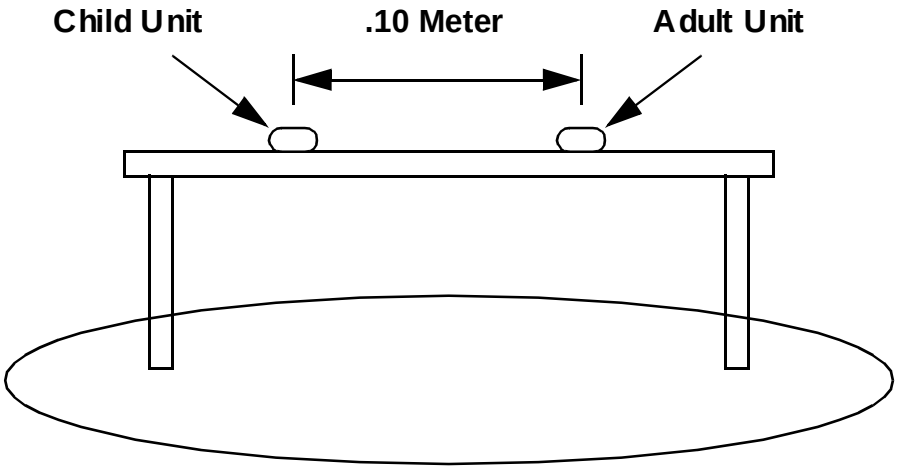
The receiver is a low power Super-Regenerative design defined by components: R2, C2, R17, R21, C10, C18, Q6, L3, R22, C15, C9, C8, R7. An antenna preamp provides both RF gain as well as regen antenna isolation and is comprised of: R1, C1, Q5, R16, C11, C7, L2, R8, R6, C6. The regen stage (Q6) oscillates at 345MHz with a quench rate of 500KHz. A lowpass filter network defined by: R13, C13, R14, C14, R15, C12, R9, C24, Q1, R20 filters the high frequency RF regenerative components and buffers the data signal for eventual logic level squaring. Q2, Q3, Q4, C25, R12, R10, R3, R11, R4, R5, R19, R37, C17, R18, C4, C5 form an AC coupled comparator stage for squaring the low level data signal to logic levels for the micro-controller (U2). The data is then sent to U2 for detection and validation.

System music, light patterns and data detection are controlled by the micro-controller. U1 regulates the 3”AA” +4.5V battery voltage to +3.0V for the RF receiver circuitry. Once the receiver is activated, the unit will go into a low current mode polling for either a parent remote command or a child press of the Steering Wheel Switch (SW1). If either a parent command or child interaction with SW1 occurs, the unit will execute music and light patterns. During execution of music and light patterns, a command from the parent remote unit will pause the unit turning off the music and lights. If no child interaction with SW1 occurs, the next received parent remote command prior to the timeout period will cause the unit to change to a new mode of music and lights. If a software predefined period of receiver inactivity results the unit will timeout and enter a low current mode until the next reinitialization by a depress of SW1. A total hardware OFF condition can be accomplished by moving SW2 to the OFF position disconnecting the batteries from the circuit.

JPM, SE



Part 6.2 EUT Diagram as Tested



Front View of Test Setup