

*FCC PART 15, SUBPART C
TEST METHOD: ANSI C63.4-1992
TEST REPORT*

for

PITCHING MACHINE TRANSMITTER

Item Number: 939050

Prepared for

SPORTS FUN, INC.
4621 SPERRY STREET
LOS ANGELES, CALIFORNIA 90039-0150

Prepared by: *Kyle Fujimoto*

KYLE FUJIMOTO

Approved by: *Scott McCutchan*

SCOTT McCUTCHAN

COMPATIBLE ELECTRONICS INC.
114 OLINDA DRIVE
BREA, CALIFORNIA 92823
(714) 579-0500

DATE: FEBRUARY 23, 2001

	REPORT BODY	APPENDICES					TOTAL
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	
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GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the permission of Compatible Electronics, unless done so in full.

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

Device Tested: Pitching Machine Transmitter
Item Number: 939050
S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was not modified during the testing.

Manufacturer: Sports Fun, Inc.
4621 Sperry Street
Los Angeles, California 90039-0150

Test Date: February 23, 2001

Test Specifications: EMI requirements
CFR Title 47, Part 15 Subpart C, Sections 15.205, 15.209, and 15.231

Test Procedure: ANSI C63.4: 1992

Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 450 kHz - 30 MHz	This test was not performed because the EUT operates on batteries only and does not connect to the AC public mains.
2	Radiated RF Emissions, 10 kHz - 3200 MHz	Complies with the limits of CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.231



1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Pitching Machine Transmitter Item Number: 939050. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 1992. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the specification limits defined by CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.231.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Sports Fun, Inc.

Karen Gottlieb-Myers President

Compatible Electronics Inc.

Kyle Fujimoto Test Engineer

Scott McCutchan Lab Manager

2.4 Date Test Sample was Received

The test sample was received on February 23, 2001

2.5 Disposition of the Test Sample

The test sample has not been returned to Sports Fun, Inc. as of February 23, 2001.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network



3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
CFR Title 47, Subpart C	FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators
ANSI C63.4 1992	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz



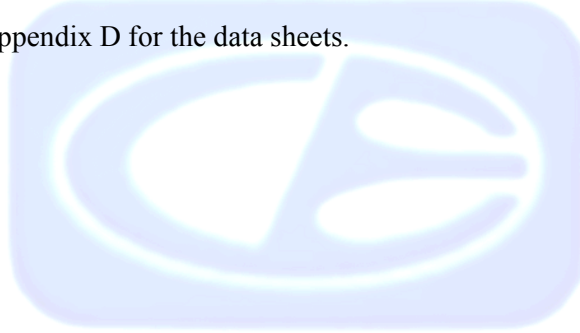
4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

Setup and operation of the equipment under test.

The Pitching Machine Transmitter Item Number: 939050 (EUT) was connected to a switch and tested in three orthogonal axis. The EUT was continuously transmitting.

Please see Appendix D for the data sheets.



4.1.1 Cable Construction and Termination

Cable 1

This is a 6 inch unshielded cable connecting the EUT to the switch. It has a 1/8 inch power connector at the EUT end and is hard wired into the switch.



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

EQUIPMENT	MANUFACTURER	ITEM NUMBER	SERIAL NUMBER	FCC ID
PITCHING MACHINE TRANSMITTER (EUT)	SPORTS FUN, INC.	939050	N/A	NU8-939050
SWITCH	SPORTS FUN, INC.	N/A	N/A	N/A



5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08768	June 24, 2000	June 24, 2001
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22262	June 24, 2000	June 24, 2001
Preamplifier	Com Power	PA-102	1017	Jan. 5, 2001	Jan. 5, 2002
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	June 24, 2000	June 24, 2001
Biconical Antenna	Com Power	AB-100	1548	Oct. 16, 2000	Oct. 16, 2001
Log Periodic Antenna	Com Power	AL-100	16101	Oct. 16, 2000	Oct. 16, 2001
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	HP98561A	2522A05178	N/A	N/A
Printer	Hewlett Packard	2225A	2925S33268	N/A	N/A
Plotter	Hewlett Packard	7440A	8726K38417	N/A	N/A
Microwave Preamplifier	Com-Power	PA-122	25195	Jan. 9, 2001	Jan. 9, 2002
Horn Antenna	Com-Power	AH-118	10073	Jan. 5, 2001	Jan. 5, 2002
Loop Antenna	Com-Power	AL-130	25309	May 25, 2000	May 25, 2001



6. TEST SITE DESCRIPTION

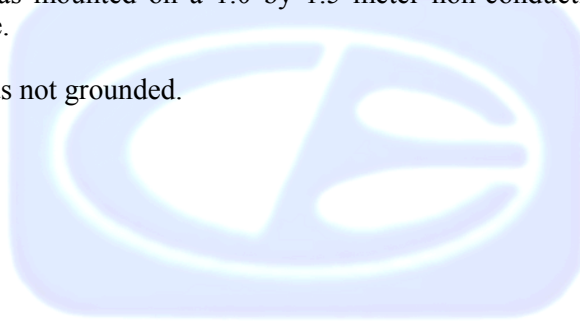
6.1 Test Facility Description

Please refer to section 2.1 and 7.2 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.



7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 1992. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics Conducted Emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix D.

Test Results:

This test was not performed because the EUT operates on batteries only and cannot be plugged into the AC public mains.



7.1 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, and the Com-Power Model: PA-122 was used for frequencies above 1 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps. The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets. The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 3.20 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 1992. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain final test data.



7.2 Bandwidth of the Fundamental

The -20 dB bandwidth was checked to see that it was within 0.25% of the fundamental frequency for the Pitching Machine Transmitter. A plot of the -20 dB bandwidth is in Appendix D.



8. CONCLUSIONS

The Pitching Machine Transmitter Item Number: 939050 meets all of the specification limits defined in CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.231.



APPENDIX A

MODIFICATIONS TO THE EUT



MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.231 specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

Modifications:

No modifications were made to the EUT.



APPENDIX B

***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***



ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Pitching Machine Transmitter
Item Number: 939050
S/N: N/A

There were no additional models covered under this report.

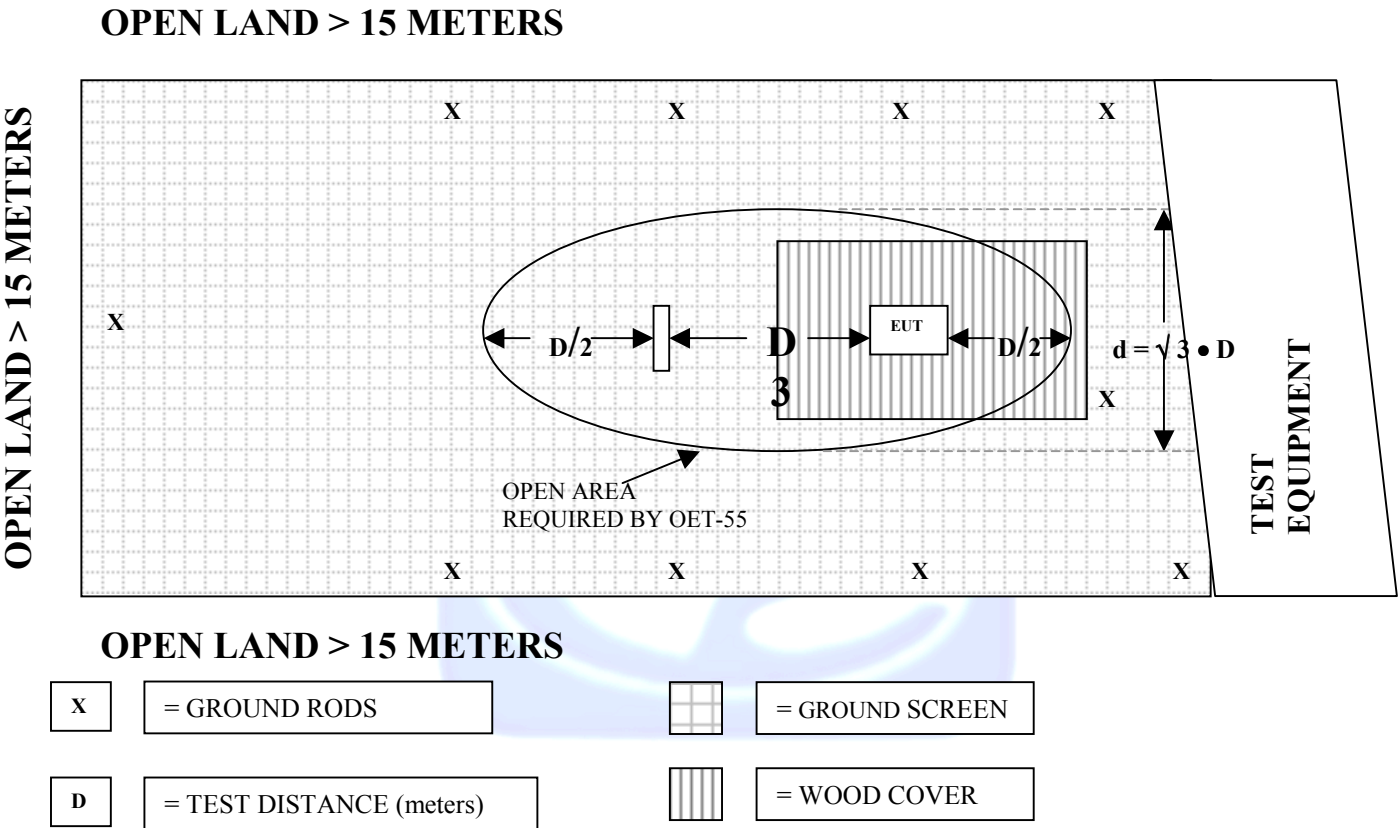


APPENDIX C

DIAGRAMS, CHARTS AND PHOTOS



FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE





FRONT VIEW

SPORTS FUN, INC.
PITCHING MACHINE TRANSMITTER
ITEM NUMBER: 939050
FCC SUBPART C - RADIATED EMISSIONS – 02-23-01

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**





REAR VIEW

SPORTS FUN, INC.
PITCHING MACHINE TRANSMITTER
ITEM NUMBER: 939050
FCC SUBPART C - RADIATED EMISSIONS – 02-23-01

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



COM-POWER AB-100
BICONICAL ANTENNA

S/N: 01548

CALIBRATION DATE: OCTOBER 16, 2000

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	14.01	120	10.33
35	13.63	125	11.61
40	13.26	140	12.70
45	11.62	150	12.95
50	11.03	160	13.58
60	8.52	175	14.82
70	8.94	180	14.84
80	8.17	200	14.80
90	8.08	250	16.42
100	8.64	300	20.26



COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16101

CALIBRATION DATE: OCTOBER 16, 2000

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	12.96	700	19.24
400	16.92	800	21.37
500	16.73	900	22.13
600	16.32	1000	22.19



COM-POWER PA-102

PREAMPLIFIER

S/N: 1017

CALIBRATION DATE: JANUARY 5, 2001

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	39.0	300	38.9
40	39.2	350	38.9
50	39.2	400	38.6
60	39.2	450	38.5
70	38.8	500	38.7
80	38.6	550	38.4
90	38.5	600	38.8
100	38.7	650	38.5
125	39.2	700	38.6
150	38.8	750	38.1
175	38.8	800	37.9
200	39.0	850	38.0
225	38.8	900	37.8
250	38.8	950	36.9
275	39.0	1000	38.2

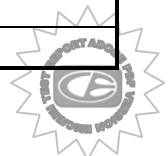


COM-POWER PA-122
MICROWAVE PREAMPLIFIER

S/N: 25195

CALIBRATION DATE: JANUARY 9, 2001

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	33.1	9.5	30.7
1.1	33.0	10.0	31.6
1.2	33.2	11.0	30.6
1.3	33.0	12.0	28.5
1.4	32.4	13.0	31.5
1.5	32.3	14.0	33.2
1.6	32.1	15.0	31.5
1.7	32.0	16.0	30.2
1.8	31.8	17.0	31.6
1.9	32.2	18.0	31.7
2.0	32.6		
2.5	31.9		
3.0	31.7		
3.5	31.7		
4.0	32.3		
4.5	31.5		
5.0	32.3		
5.5	34.2		
6.0	30.9		
6.5	32.0		
7.0	32.1		
7.5	33.0		
8.0	31.9		
8.5	31.9		
9.0	31.3		



COM-POWER AH-118

HORN ANTENNA

S/N: 10073

CALIBRATION DATE: JANUARY 5, 2001

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	26.1	9.5	41.6
1.5	29.1	10.0	42.2
2.0	32.8	10.5	40.6
2.5	32.6	11.0	40.4
3.0	31.5	11.5	42.0
3.5	31.9	12.0	43.9
4.0	33.2	12.5	44.6
4.5	34.0	13.0	43.5
5.0	35.7	13.5	43.0
5.5	35.6	14.0	43.6
6.0	36.4	14.5	45.2
6.5	37.1	15.0	44.3
7.0	40.1	15.5	44.3
7.5	41.0	16.0	44.9
8.0	40.8	16.5	43.8
8.5	39.5	17.0	44.5
9.0	40.0	17.5	47.1
		18.0	48.5

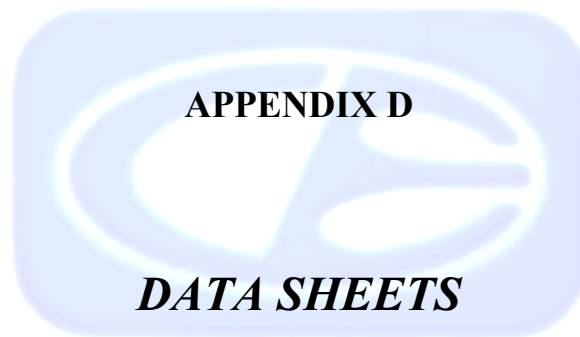


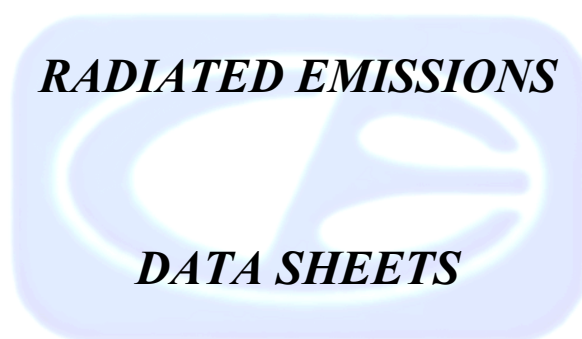
Com-Power Corporation

(949) 587-9800

Antenna Calibration

Antenna Type:		Loop Antenna
Model:		AL-130
Serial Number:		25309
Calibration Date:		05/25/00
Frequency MHz	Magnetic (dB/m)	Electric dB/m
0.009	-41.0	10.5
0.01	-41.0	10.5
0.02	-41.9	9.6
0.05	-41.9	9.6
0.075	-41.8	9.7
0.1	-42.2	9.3
0.15	-42.2	9.3
0.25	-40.7	10.8
0.5	-42.1	9.4
0.75	-40.9	10.6
1	-41.3	10.2
2	-40.8	10.7
3	-41.1	10.4
4	-41.2	10.3
5	-40.7	10.8
10	-40.6	10.9
15	-42.0	9.5
20	-42.0	9.5
25	-42.9	8.6
30	-42.3	9.2
Trans. Antenna Height		2 meter
Receiving Antenna Height		2 meter





RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	Sports Fun, Inc.	DATE	2/23/01
EUT	Pitching Machine Transmitter	DUTY CYCLE	N/A
MODEL	Item Number 939050	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
315.0000	53.1	A	H	1.0	90	X	LOW	13.6	2.9	0.0	69.5	-6.1	75.6	
315.0000	52.5	A	H	1.0	90	Y	LOW	13.6	2.9	0.0	68.9	-6.7	75.6	
315.0000	50.0	A	H	1.5	90	Z	LOW	13.6	2.9	0.0	66.4	-9.2	75.6	
315.0000	39.7	A	V	2.0	280	X	LOW	13.6	2.9	0.0	56.1	-19.5	75.6	
315.0000	43.2	A	V	1.5	90	Y	LOW	13.6	2.9	0.0	59.6	-16.0	75.6	
315.0000	45.4	A	V	1.0	180	Z	LOW	13.6	2.9	0.0	61.8	-13.8	75.6	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	Sports Fun, Inc.	DATE	2/23/01
EUT	Pitching Machine Transmitter	DUTY CYCLE	N/A
MODEL	Item Number 939050	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
630.0000	39.4	A	H	1.0	0	X	LOW	17.2	4.0	38.6	22.0	-33.6	55.6	
630.0000	37.9	A	H	1.5	180	Y	LOW	17.2	4.0	38.6	20.5	-35.1	55.6	
630.0000	59.2	A	H	1.5	90	Z	LOW	17.2	4.0	38.6	41.8	-13.8	55.6	
630.0000	52.7	A	V	1.0	90	X	LOW	17.2	4.0	38.6	35.3	-20.3	55.6	
630.0000	37.0	A	V	2.0	180	Y	LOW	17.2	4.0	38.6	19.6	-36.0	55.6	
630.0000	44.6	A	V	1.5	90	Z	LOW	17.2	4.0	38.6	27.2	-28.4	55.6	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	Sports Fun, Inc.	DATE	2/23/01
EUT	Pitching Machine Transmitter	DUTY CYCLE	N/A
MODEL	Item Number 939050	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
945.0000	38.3	A	H	1.5	90	X	LOW	22.2	5.3	37.0	28.7	-26.9	55.6	
945.0000	38.7	A	H	1.5	90	Y	LOW	22.2	5.3	37.0	29.1	-26.5	55.6	
945.0000	39.3	A	H	1.5	180	Z	LOW	22.2	5.3	37.0	29.7	-25.9	55.6	
945.0000	36.4	A	V	1.0	90	X	LOW	22.2	5.3	37.0	26.8	-28.8	55.6	
945.0000	40.2	A	V	1.5	90	Y	LOW	22.2	5.3	37.0	30.6	-25.0	55.6	
945.0000	40.1	A	V	1.5	0	Z	LOW	22.2	5.3	37.0	30.5	-25.1	55.6	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	Sports Fun, Inc.	DATE	2/23/01
EUT	Pitching Machine Transmitter	DUTY CYCLE	N/A
MODEL	Item Number 939050	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1260.0000	42.3	A	H	2.0	90	X	LOW	26.1	2.6	33.1	37.9	-17.7	55.6	
1260.0000	45.2	A	H	1.5	180	Y	LOW	26.1	2.6	33.1	40.8	-14.8	55.6	
1260.0000	46.2	A	H	1.0	90	Z	LOW	26.1	2.6	33.1	41.8	-13.8	55.6	
1260.0000	41.1	A	V	1.5	0	X	LOW	26.1	2.6	33.1	36.7	-18.9	55.6	
1260.0000	45.1	A	V	1.5	0	Y	LOW	26.1	2.6	33.1	40.7	-14.9	55.6	
1260.0000	43.5	A	V	1.0	90	Z	LOW	26.1	2.6	33.1	39.1	-16.5	55.6	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	Sports Fun, Inc.	DATE	2/23/01
EUT	Pitching Machine Transmitter	DUTY CYCLE	N/A
MODEL	Item Number 939050	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1575.0000	40.9	A	H	1.5	90	X	LOW	27.1	3.1	32.2	39.0	-15.0	54.0	
1575.0000	41.5	A	H	1.0	270	Y	LOW	27.1	3.1	32.2	39.6	-14.4	54.0	
1575.0000	38.6	A	H	2.0	270	Z	LOW	27.1	3.1	32.2	36.7	-17.3	54.0	
1575.0000	43.4	A	V	1.5	90	X	LOW	27.1	3.1	32.2	41.5	-12.5	54.0	
1575.0000	47.3	A	V	1.5	90	Y	LOW	27.1	3.1	32.2	45.4	-8.6	54.0	
1575.0000	43.7	A	V	2.0	90	Z	LOW	27.1	3.1	32.2	41.8	-12.2	54.0	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

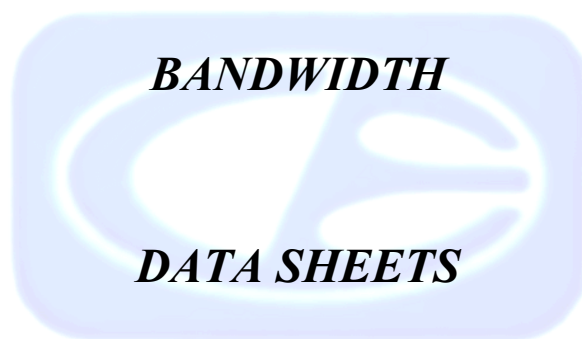
COMPANY	Sports Fun, Inc.	DATE	2/23/01
EUT	Pitching Machine Transmitter	DUTY CYCLE	N/A
MODEL	Item Number 939050	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1890.0000	41.5	A	H	1.5	90	X	LOW	29.0	3.4	32.2	41.7	-13.9	55.6	
1890.0000	39.8	A	H	2.0	180	Y	LOW	29.0	3.4	32.2	40.0	-15.6	55.6	
1890.0000	42.6	A	H	1.0	90	Z	LOW	29.0	3.4	32.2	42.8	-12.8	55.6	
1890.0000	39.9	A	V	1.5	0	X	LOW	29.0	3.4	32.2	40.1	-15.5	55.6	
1890.0000	42.4	A	V	1.5	0	Y	LOW	29.0	3.4	32.2	42.6	-13.0	55.6	
1890.0000	43.5	A	V	2.0	180	Z	LOW	29.0	3.4	32.2	43.7	-11.9	55.6	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

Test location: Compatible Electronics
Customer : SPORTS FUN, INC. Date : 2/23/2001
Manufacturer : SPORTS FUN, INC. Time : 16.53
EUT name : PITCHING MACHINE TRANSMITTER Item #: 939050
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor($20 \cdot \log(\text{test}/\text{spec})$) : 0.00
Test Mode : SPURIOUS EMISSIONS OF THE EUT
10 kHz to 3200 MHz, HORIZONTAL AND VERTICAL POLAR.
TEMPERATURE 52 DEGREES F., RELATIVE HUMIDITY 95%
TESTED BY: KYLE FUJIMOTO

NO SPURIOUS EMISSIONS WERE FOUND FROM THE EUT FROM 10 kHz TO 3200 MHz
IN EITHER POLARIZATION



BANDWIDTH AT -20 dB OF FUNDAMENTAL
REF 100.0 dB μ V ATTEN 10 dB

MKR Δ 472 kHz
-0.10 dB

hp

10 dB/

DL
92.0
dB μ V

MARKER Δ
472 kHz
-0.10 dB

*

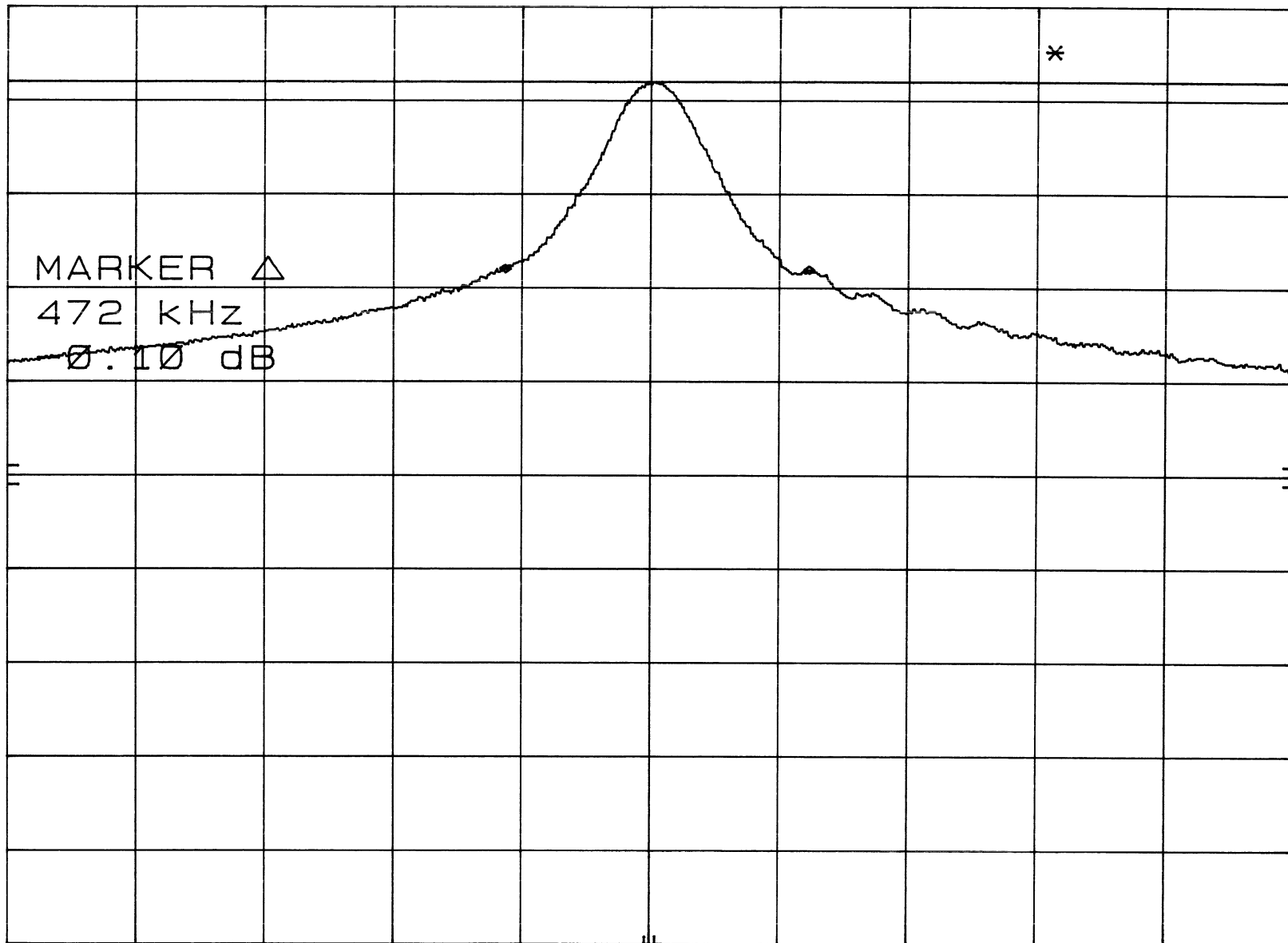
CORR'D

CENTER 315.01 MHz

RES BW 1 MHz

VBW 1 MHz

SPAN 2.00 MHz
SWP 20.0 msec



APPENDIX E

LABORATORY RECOGNITIONS



LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program – Lab Code: 200063-0

Voluntary Control Council for Interference – Registration Numbers: R-983, C-1026, R-984, and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)

