

APPLICATION FOR CERTIFICATION
On Behalf of
Perfect Toys International Co., Ltd.
Wonder Arm

Model : 08867

Prepared for : Perfect Toys International Co., Ltd.
2/F., Block 3, Wah Lai Industrial Centre,
10-14 Kwei Tei Street, Fo Tan,
Shatin New Territories, Hong Kong

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
No. 6 Ke Feng Rd., 52 Block,
Shenzhen Science & Industrial Park,
Nantou, Shenzhen, Guangdong, China

Tel: (0755)663-9496

Report Number : ACS-F01123
Date of Test : Aug. 22~23, 2001
Date of Report : Aug. 28, 2001

TABLE OF CONTENTS

Description	Page
Test Report Certification	
1. GENERAL INFORMATION	1-1
1.1. Description of Device (EUT)	1-1
1.2. Test Facility	1-2
1.3. Test Uncertainty	1-2
2. POWER LINE CONDUCTED MEASUREMENT	2-1
3. RADIATED EMISSION MEASUREMENT.....	3-1
3.1. Test Equipment.....	3-1
3.2. Block Diagram of Test Setup	3-1
3.3. Radiated Emission Limit (Class B)	3-2
3.4. EUT Configuration on Measurement	3-2
3.5. Operating Condition of EUT	3-3
3.6. Test Procedure	3-3
3.7. Radiated Emission Noise Measurement Result.....	3-3
4. TEST BANDWIDTH	4-1
5. PHOTOGRAPH	5-1
5.1. Photos of Radiated Measurement	5-1
 APPENDIX I	 (4 Pages)

TEST REPORT CERTIFICATION

Applicant : Perfect Toys International Co., Ltd.
Manufacturer : Xian Hao Electric Appliances & Toys Co., Ltd.
Receiver : 8*1.5 DC Batteries, 40cm length antenna built-in
EUT Description : Wonder Arm
(A) MODEL NO. : 08867
(B) SERIAL NO. : 2001082801
(C) POWER SUPPLY : +9V DC Battery
75cm length antenna built-in

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C October 1998 & ANSI C63.4-1992

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both radiated and conducted emissions.

The measurement results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Date of Test :

Aug. 22~23, 2001

Prepared by : Fanny Yang
(Assistant: Fanny Yang)

Reviewer : Rees Zeng
(Engineer: Rees Zeng)

For and on behalf of
AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Approved & Authorized Signer : Alex Deng
(Assistant Manager: Alex Deng)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Wonder Arm
Model Number	:	08867 (75cm length antenna built-in)
Applicant	:	Perfect Toys International Co., Ltd. 2/F., Block 3, Wah Lai Industrial Centre, 10-14 Kwei Tei Street, Fo Tan, Shatin, New Territories, Hong Kong
Manufacturer	:	Xian Hao Electric Appliances & Toys Co., Ltd. Tian Xin Management Zone, Huang Jiang, Dongguan, Guangdong, P. R. C.
Date of Test	:	Aug. 22~ 23, 2001

1.2. Test Facility

Site Description

3m Anechoic Chamber	:	Certificated by FCC, USA Aug. 24, 2000
3m & 10m Open Site	:	Certificated by FCC, USA Jan. 29, 2001
EMC Lab.		Certificated by VCCI, Japan Oct. 29, 1998
		Certificated by DATech, German Feb. 02, 1999
		Certificated by NVLAP, USA Until Mar. 31, 2002 NVLAP Code: 200372-0
Name of Firm	:	Audix Technology (Shenzhen) Co., Ltd.
Site Location	:	No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China

1.3. Test Uncertainty

Conducted Emission Uncertainty	=	$\pm 2.66\text{dB}$
Radiated Emission Uncertainty	=	$\pm 4.26\text{dB}$

2. POWER LINE CONDUCTED MEASUREMENT

According to Paragraph (f) of FCC Part 15 Section 15.107, measurement to demonstrate compliance with the conducted emission limits are not required for devices which only employ battery power for operation and which do not operate from AC power lines or contain provisions for operation while connected to AC power lines.

3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

3.1.1. For Anechoic Chamber

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	HP	85422E	3625A00181	Jun. 03, 01	1 Year
2.	Test Receiver	Rohde & Schwarz	ESVS20	830350/005	Jun. 03, 01	1 Year
3.	Amplifier	HP	8447D	2944A07794	Jun. 03, 01	1/2 Year
4.	Bilog Antenna	Chase	CBL6112A	2176	Sep. 26, 00	1 Year
5.	Computer	N/A	N/A	N/A	N/A	N/A
6.	Printer	NEC	P3800	568101448	N/A	N/A
7.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.1	Aug.09, 01	1/2 Year
8.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.2	Aug.09, 01	1/2 Year
9.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.3	Aug.09, 01	1/2 Year
10.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.4	Aug.09, 01	1/2 Year
11.	Coaxial Switch	Anritsu	MP59B	M74389	Jun. 03, 01	1/2 Year

3.2. Block Diagram of Test Setup

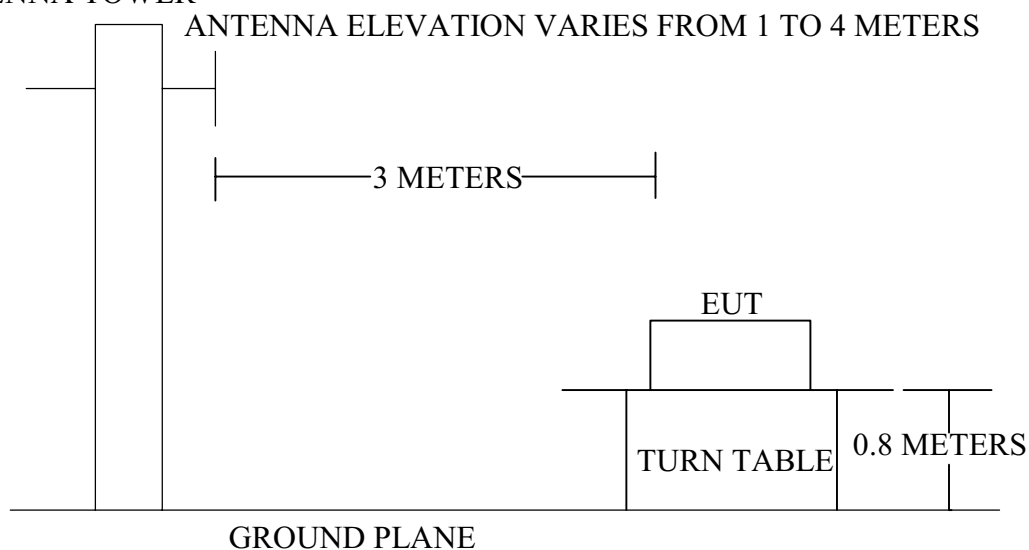
3.2.1. diagram of connection between the EUT and simulators

EUT

(EUT: Wonder Arm)

3.2.2. In Anechoic Chamber 3 Test Setup Diagram

ANTENNA TOWER



3.3. Radiated Emission Limit (Class B)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
Fundamental Frequency	3	50×10^3	94.0
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

- Remark :
- (1) Emission level $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

3.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.4.1. Wonder Arm (EUT)

Model Number	:	08867 (75cm length antenna built-in)
Serial Number	:	2001082801
Receiver	:	8*1.5 DC Batteries
		40cm length antenna built-in
Manufacturer	:	Xian Hao Electric Appliances & Toys Co., Ltd.

3.5. Operating Condition of EUT

1. Setup the EUT as shown in Section 3.2..
2. Let the EUT work in test modes (Lie on / Stand on) and measure it.

3.6. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-1992 on radiated emission measurement.

The bandwidth of the EMI test receiver (R&S ESVS20) is set at 120KHz in the 30-1000MHz and 1MHz had been set in above 1000MHz Range.

The frequency range from 30MHz to 1000MHz is checked.

The test modes (Lie on/ Stand on) are tested in Anechoic Chamber and all the scanning waveforms are attached in Appendix I.

3.7. Radiated Emission Noise Measurement Result

PASS.

The frequency range from 30MHz to 1000MHz is investigated.

Please see the following pages.

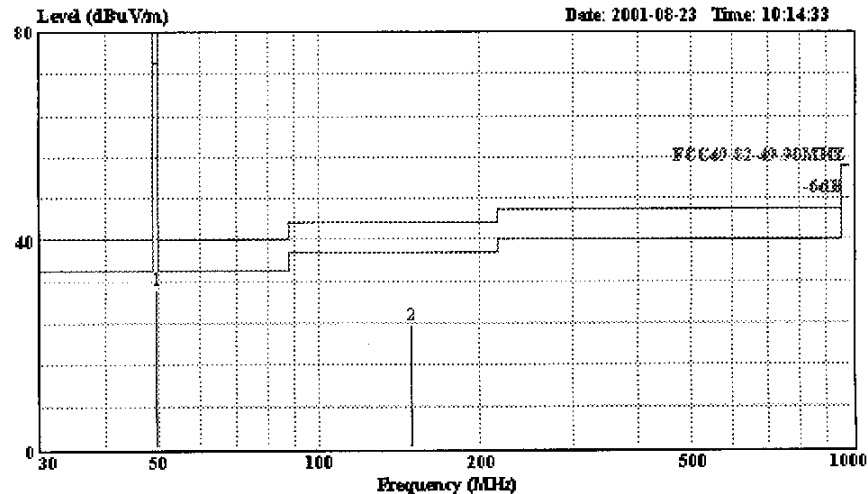


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Data#: 12 File#: C:\EMI TEST DATA\P\Perfect.EMI



Site : 3# Chamber
Condition : FCC49.82-49.90MHZ 3m 2176FACTOR HORIZONTAL
EUT : Wonder Arm
M/N : 08867
Power : DC 9V
Test Engineer : Sean Xing
Memo : Transmitting Stand Location
Memo :
Memo :

	Freq	Level	Over	Read	Limit		Cable	Probe	Preamp	
	MHz	dBuV/m	Limit	Level	Line	Factor	Loss	Factor	Factor	Rems
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	dB	
1	49.864	30.38	-49.62	21.20	80.00	9.18	1.58	7.60	0.00	Aver
2	149.589	23.82	-19.68	6.00	43.50	17.82	3.23	14.59	0.00	QP



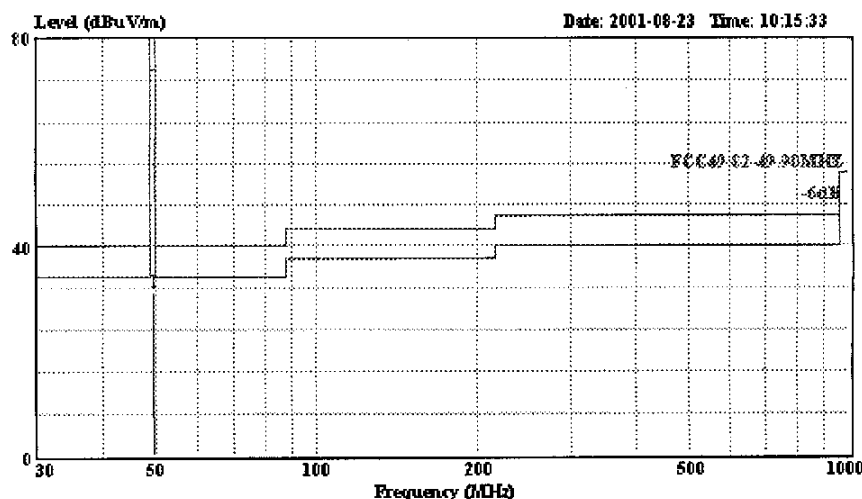
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Data#: 13

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Site : 3# Chamber
Condition : FCC49.82-49.90MHZ 3m 2176FACTOR HORIZONTAL
EUT : Wonder Arm
M/N : 08867
Power : DC 9V
Test Engineer : Sean Xing
Memo : Transmitting Stand Location
Memo :
Memo :

	Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Probe Factor	Preamp Factor	Rems
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	dB	
1	49.864	31.18	-48.82	22.00	80.00	9.18	1.58	7.60	0.00	Peak



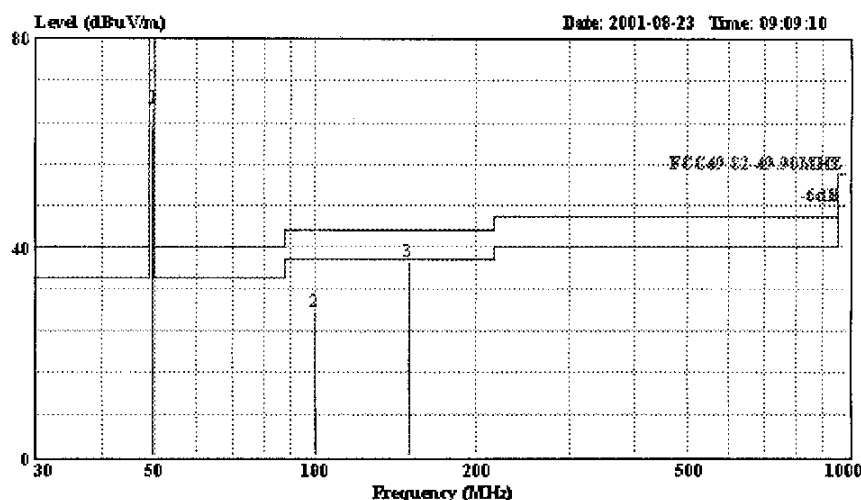
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Data#: 10

File#: C:\EMI TEST DATA\P\Perfect.EMI



Site : 3# Chamber
Condition : FCC49.82-49.90MHz 3m 2176FACTOR VERTICAL
EUT : Wonder Arm
M/N : 08867
Power : DC 9V
Test Engineer : Sean Xing
Memo : Transmitting Stand Location
Memo : Freq: 149.890MHz
Memo : Table Pos: 350(degree) ANT Pos: 1m

	Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Probe Factor	Preamp Factor	Rems
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	dB	
1	49.870	66.83	-13.17	51.60	80.00	15.23	1.58	13.65	0.00	Aver
2	99.720	27.60	-15.90	8.40	43.50	19.20	2.62	16.58	0.00	QP
3	149.890	37.30	-6.20	17.30	43.50	20.00	3.24	16.76	0.00	QP

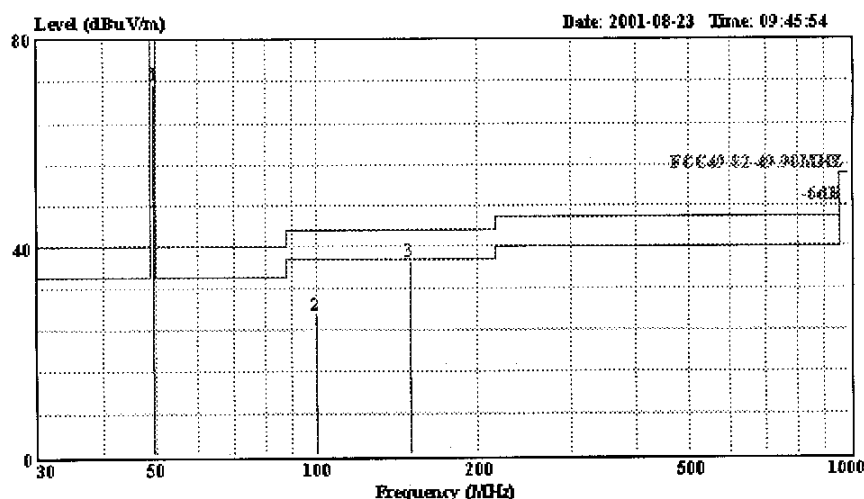


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Data#: 11 File#: C:\EMI TEST DATA\P\Perfect.EMI



Site : 3# Chamber
Condition : FCC49.82-49.90MHZ 3m 2176FACTOR VERTICAL
EUT : Wonder Arm
M/N : 08867
Power : DC 9V
Test Engineer : Sean Xing
Memo : Transmitting Stand Location
Memo :
Memo :

	Freq	Level	Over	Read	Limit		Cable	Probe	Preamp	
	MHz	dBuV/m	Limit	Level	Line	Factor	Loss	Factor	Factor	Reme
			dB	dBuV	dBuV/m	dB	dB	dB	dB	
1	49.870	71.43	-8.57	56.20	80.00	15.23	1.58	13.65	0.00	Peak
2	99.720	27.00	-16.50	7.80	43.50	19.20	2.62	16.58	0.00	Peak
3	149.890	37.20	-6.30	17.20	43.50	20.00	3.24	16.76	0.00	Peak



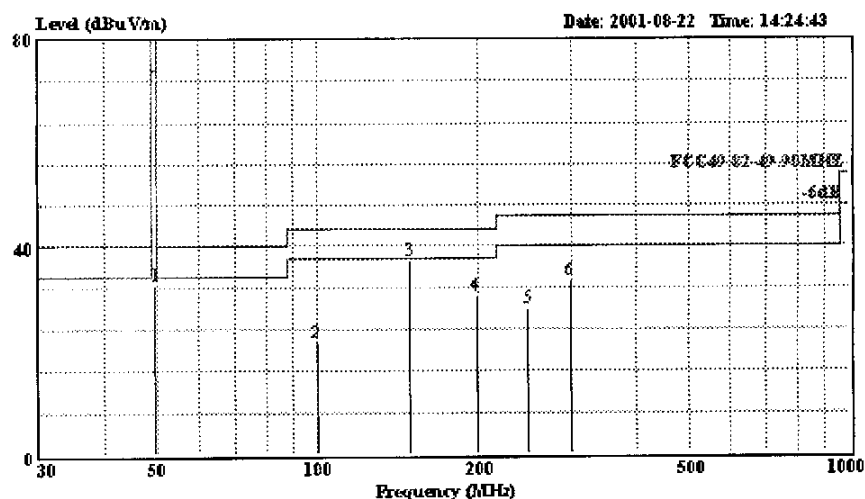
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Data#: 3

File#: C:\EMI TEST DATA\P\Perfect.EMI



Site : 3# Chamber
Condition : FCC49.82-49.90MHZ 3m 2176FACTOR HORIZONTAL
EUT : Wonder Arm
M/N : 08867
Power : DC 9V
Test Engineer : Sean Xing
Memo : Transmitting Lie Location
Memo :
Memo :

	Freq	Level	Over	Read	Limit		Cable	Probe	Preamp	
	MHz	dBuV/m	Limit	Level	Line	Factor	Loss	Factor	Factor	Rema
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	dB	
1	49.875	32.78	-47.22	23.60	80.00	9.18	1.58	7.60	0.00	Aver
2	99.741	21.56	-21.94	5.41	43.50	16.15	2.62	13.53	0.00	QP
3	149.593	37.32	-6.18	19.50	43.50	17.82	3.23	14.59	0.00	QP
4	199.438	30.40	-13.10	13.10	43.50	17.30	3.67	13.63	0.00	QP
5	249.313	28.07	-17.93	7.30	46.00	20.77	4.00	16.77	0.00	QP
6	299.175	33.31	-12.69	10.99	46.00	22.32	4.28	18.04	0.00	QP



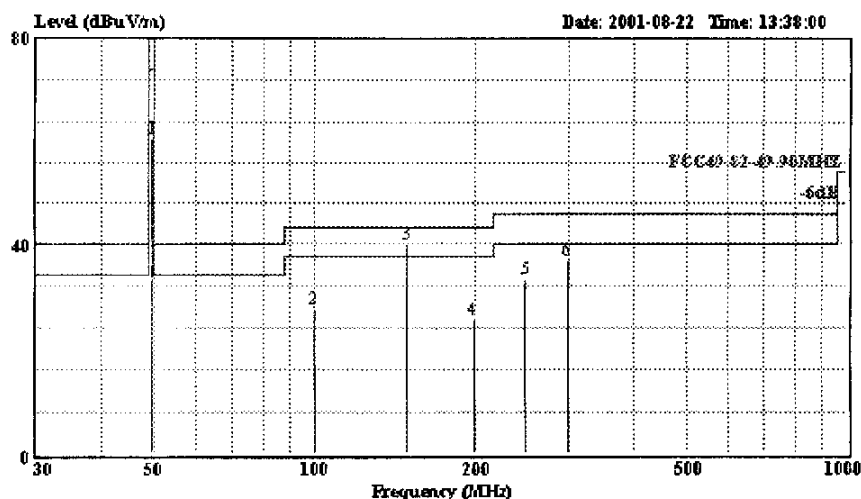
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Data#: 2

File#: C:\EMI TEST DATA\P\Perfect.EMI



Site : 3# Chamber
Condition : FCC49.82-49.90MHz 3m 2176FACTOR HORIZONTAL
EUT : Wonder Arm
M/N : 08867
Power : DC 9V
Test Engineer : Sean Xing
Memo : Transmitting Lie Location
Memo : Freq: 149.593MHz
Memo : Table Pos: 255(degree) ANT Pos: 1.45m

			Over	Read	Limit		Cable	Probe	Preamp	
	Freq	Level	Limit	Level	Line	Factor	Loss	Factor	Factor	Rems
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	dB	
1	49.875	60.48	-19.52	51.30	80.00	9.18	1.58	7.60	0.00	Peak
2	99.740	27.46	-16.04	11.31	43.50	16.15	2.62	13.53	0.00	Peak
3	149.593	40.12	-3.38	22.30	43.50	17.82	3.23	14.59	0.00	Peak
4	199.438	25.50	-18.00	8.20	43.50	17.30	3.67	13.63	0.00	Peak
5	249.313	33.27	-12.73	12.50	46.00	20.77	4.00	16.77	0.00	Peak
6	299.175	37.11	-8.89	14.79	46.00	22.32	4.28	18.04	0.00	Peak



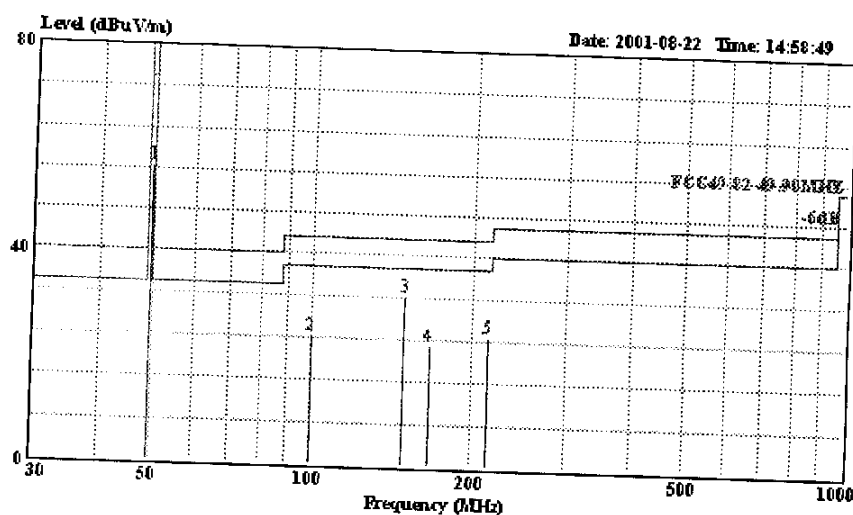
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Data#: 6

File#: C:\EMI TEST DATA\P\Perfect.EMI



Site : 3# Chamber
Condition : FCC49.82-49.90MHZ 3m 2176FACTOR VERTICAL
EUT : Wonder Arm
M/N : 08867
Power : DC 9V
Test Engineer : Sean Xing
Memo : Transmitting Lie Location
Memo :
Memo :

	Freq	Level	Over	Read	Limit		Cable	Probe	Preamp	
	MHz	dBuV/m	Limit	Level	Line	Factor	Loss	Factor	Factor	Rems
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	dB	
1	49.875	56.73	-23.27	41.50	80.00	15.23	1.58	13.65	0.00	Aver
2	99.730	24.50	-21.50	5.30	46.00	19.20	2.62	16.58	0.00	QP
3	149.598	32.19	-13.81	12.20	46.00	19.99	3.23	16.76	0.00	QP
4	166.875	23.13	-22.87	4.70	46.00	18.43	3.39	15.04	0.00	QP
5	214.301	24.76	-21.24	4.60	46.00	20.16	3.77	16.39	0.00	QP

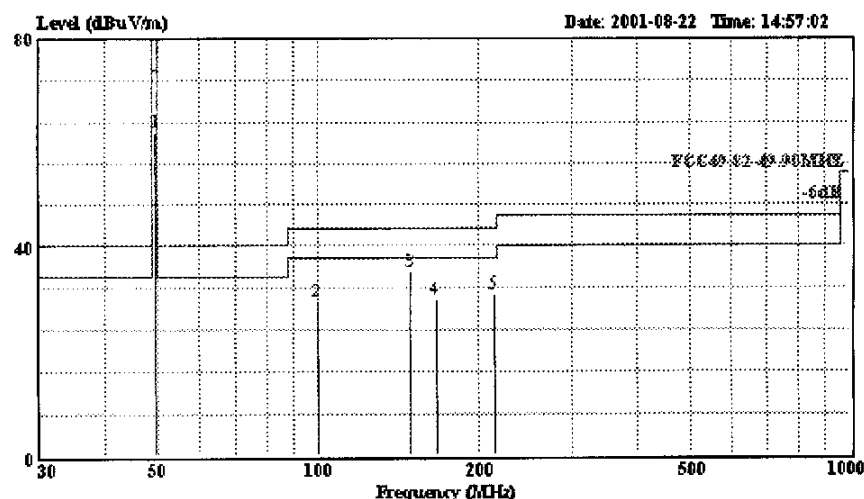


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Site : 3# Chamber
Condition : FCC49.82-49.90MHZ 3m 2176FACTOR VERTICAL
EUT : Wonder Arm
M/N : 08867
Power : DC 9V
Test Engineer : Sean Xing
Memo : Transmitting Lie Location
Memo :
Memo :

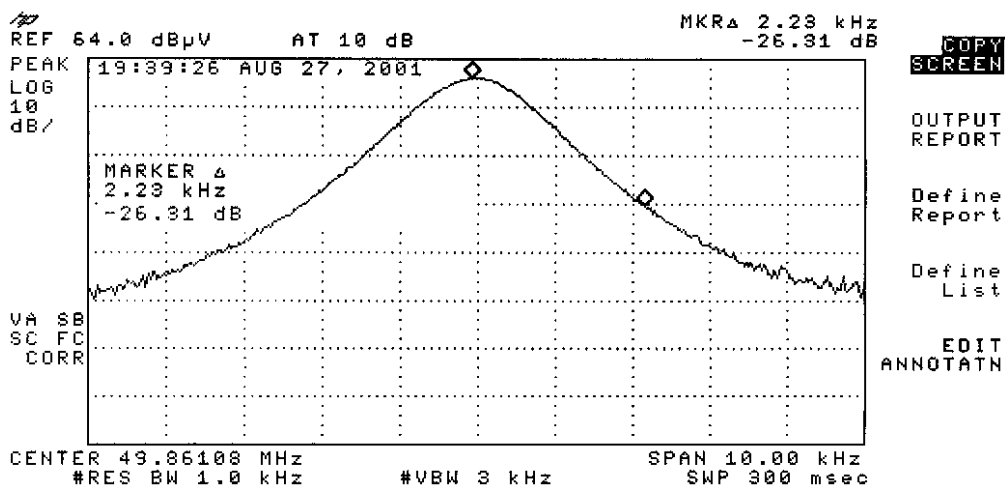
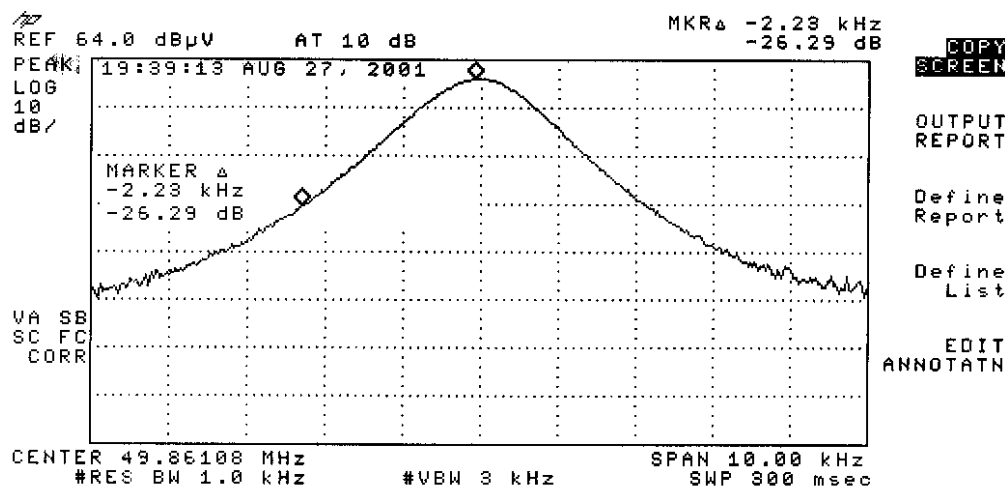
	Freq	Level	Over	Read	Limit		Cable	Probe	Preamp	
	MHz	dBuV/m	Limit	Level	Line	Factor	Loss	Factor	Factor	Reme
			dB	dBuV	dBuV/m	dB	dB	dB	dB	
1	49.875	62.23	-17.77	47.00	80.00	15.23	1.58	13.65	0.00	Peak
2	99.733	29.50	-14.00	10.30	43.50	19.20	2.62	16.58	0.00	Peak
3	149.598	35.29	-8.21	15.30	43.50	19.99	3.23	16.76	0.00	Peak
4	166.875	29.63	-13.87	11.20	43.50	18.43	3.39	15.04	0.00	Peak
5	214.301	30.86	-12.64	10.70	43.50	20.16	3.77	16.39	0.00	Peak

4. TEST BANDWIDTH

According to FCC Sec 15.235(b) the field strength of any emission appearing between the band edges and up to 10KHz above and below the band edges shall be attenuated at least 26dB below the level of the unmodulated carrier.

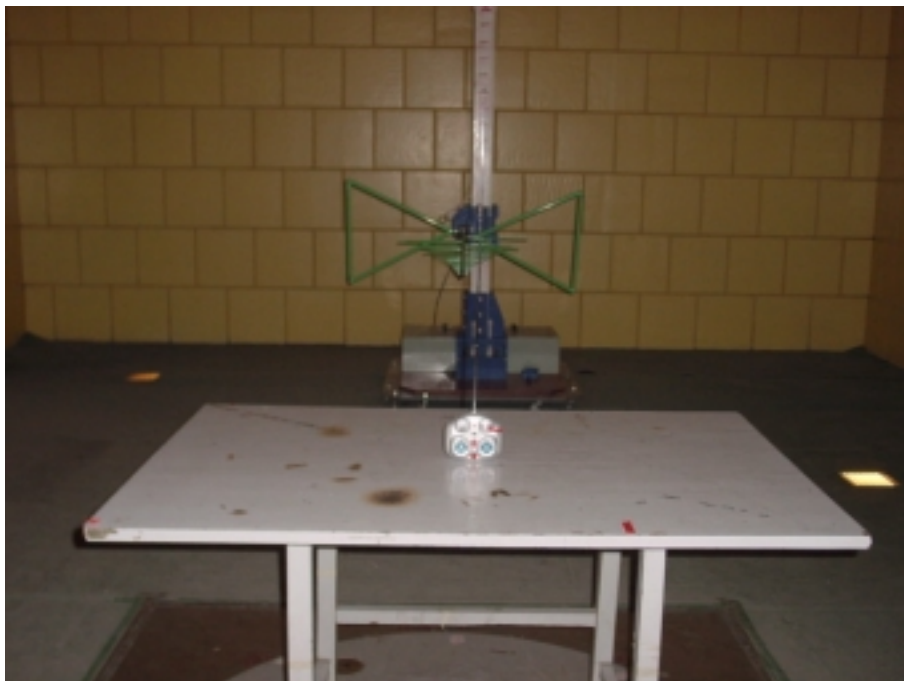
From the test data, 26dB below the level of the unmodulated carrier the bandwidth is $2.23+2.23=4.46\text{KHz}<20\text{KHz}$, so the test results is pass.

Please see the attached waveform.

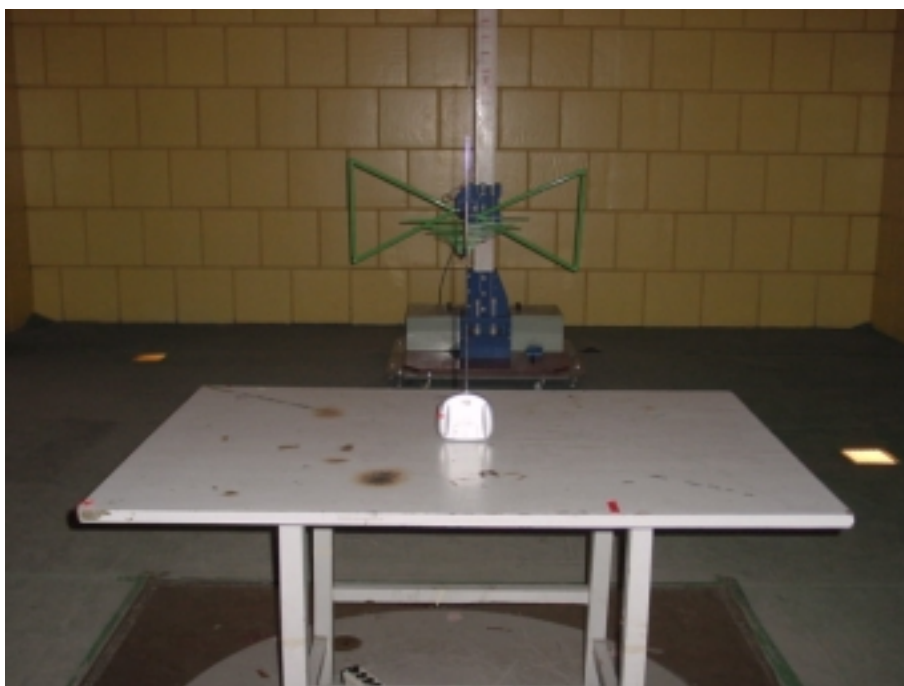


5. PHOTOGRAPH

5.1. Photos of Radiated Measurement



FRONT VIEW OF RADIATED MEASUREMENT



REAR VIEW OF RADIATED MEASUREMENT

APPENDIX I



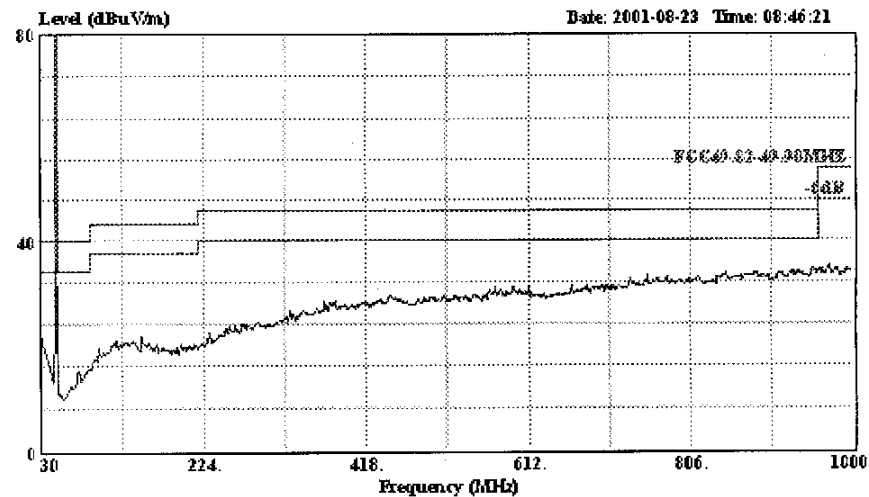
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Data#: 8

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Site : 3# Chamber
Condition : FCC49.82-49.90MHZ 3m 2176FACTOR HORIZONTAL
EUT : Wonder Arm
M/N : 08867
Power : DC 9V
Test Engineer : Sean Xing
Memo : Transmitting Stand Location
Memo :
Memo :



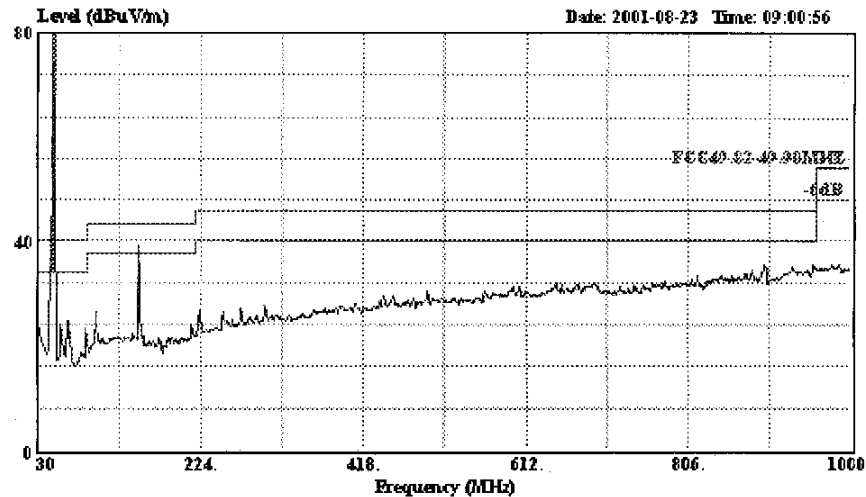
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Data#: 9

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Site : 3# Chamber
Condition : FCC49.82-49.90MHz 3m 2176FACTOR VERTICAL
EUT : Wonder Arm
M/N : 08867
Power : DC 9V
Test Engineer : Sean Xing
Memo : Transmitting Stand Location
Memo :
Memo :

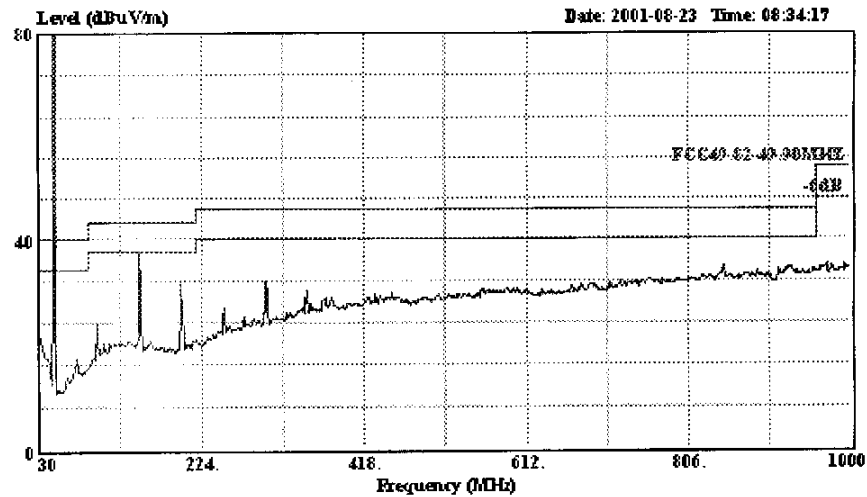


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Site : 3# Chamber
Condition : FCC49.82-49.90MHZ 3m 2176FACTOR HORIZONTAL
EUT : Wonder Arm
M/N : 08867
Power : DC 9V
Test Engineer : Sean Xing
Memo : Transmitting Lie Location
Memo :
Memo :



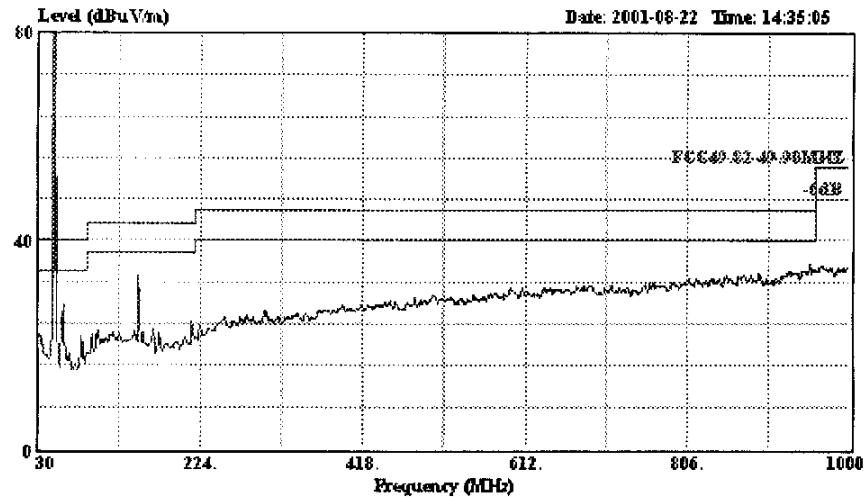
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acsadmin@

Data#: 4

File#: C:\EMI TEST DATA\P\Perfect.EMI



Site : 3# Chamber
Condition : FCC49.82-49.90MHz 3m 2176FACTOR VERTICAL
EUT : Wonder Arm
M/N : 08867
Power : DC 9V
Test Engineer : Sean Xing
Memo : Transmitting Lie Location
Memo :
Memo :