

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

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APPENDIX I

(4 Pages)

TEST REPORT CERTIFICATION

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:

Family Young

(Assistant: Fanny Yang)

Reviewer:

Rees Zeng
(Engineer: Rees Zeng)

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

Approved & Authorized Signer:

Alex Denz
(Assistant Manager, Jack Denz)

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	=	± 2.66dB
Radiated Emission Uncertainty	=	± 4.26dB

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

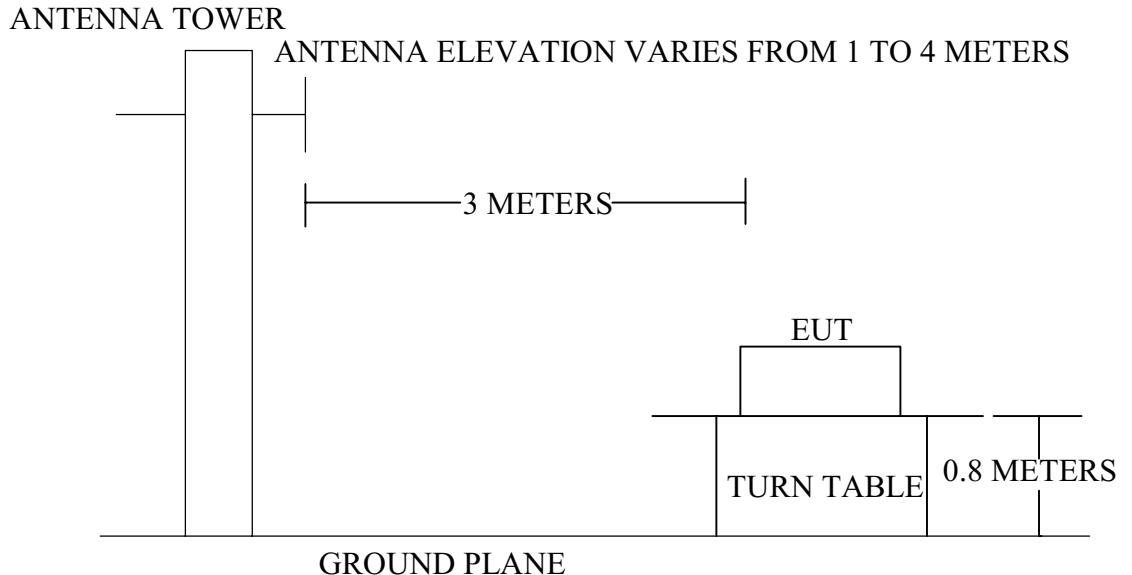
3.2. Block Diagram of Test Setup

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



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 ($\text{dB}(\mu\text{V})$) = $20 \log_{10}$ Emission level $\mu\text{V}/\text{m}$
 (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.

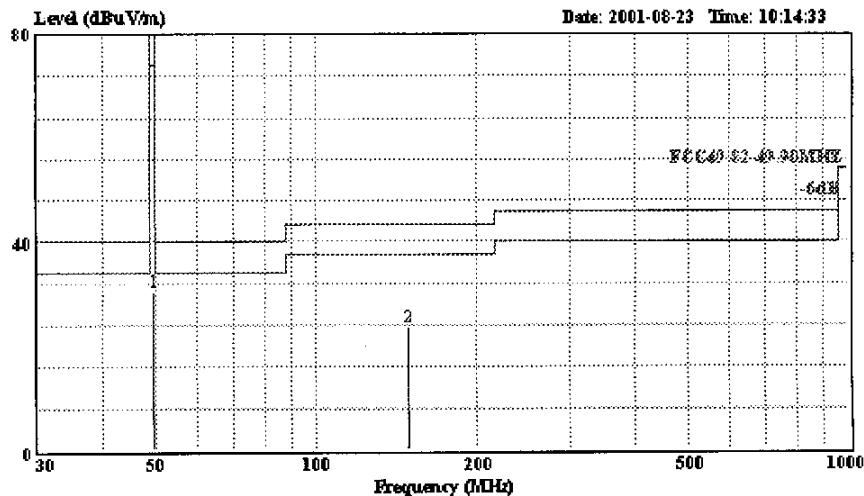


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Data#: 12 File#: C:\EMI TEST DATA\P\Perfect.EMI



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	Over Limit	Read Level	Limit Line Factor	Cable Loss	Probe Factor	Preamp Factor	Remarks
	MHz	dBuV/m	dB	dBuV	dBuV/m	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

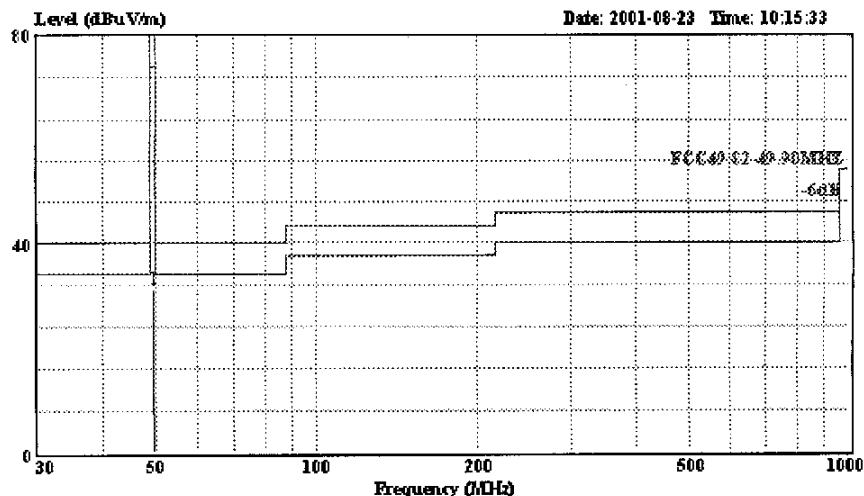


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 Condition : FCC49.82-49.90MHZ 3m 2176FACTOR HORIZONTAL
 EUT : Wonder Arm
 M/N : 08867
 Power : DC 9V
 Test Engineer : Sean Xing
 Memo : Transmitting Stand Location
 Memo :
 Memo :

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

0.00 Peak

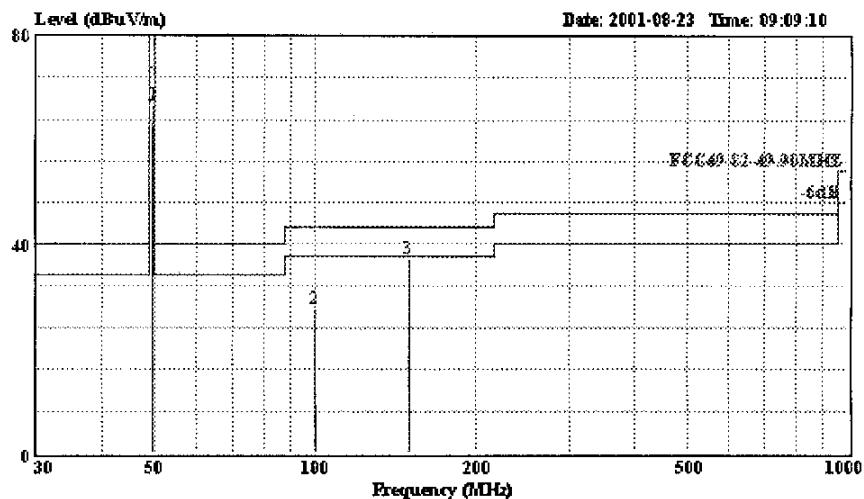


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Data#: 10 File#: C:\EMI TEST DATA\P\Perfect.EMI



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	Over Read Limit		Cable Line Factor	Probe Loss Factor	Preamp Factor	Remarks			
	Level	Limit							
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

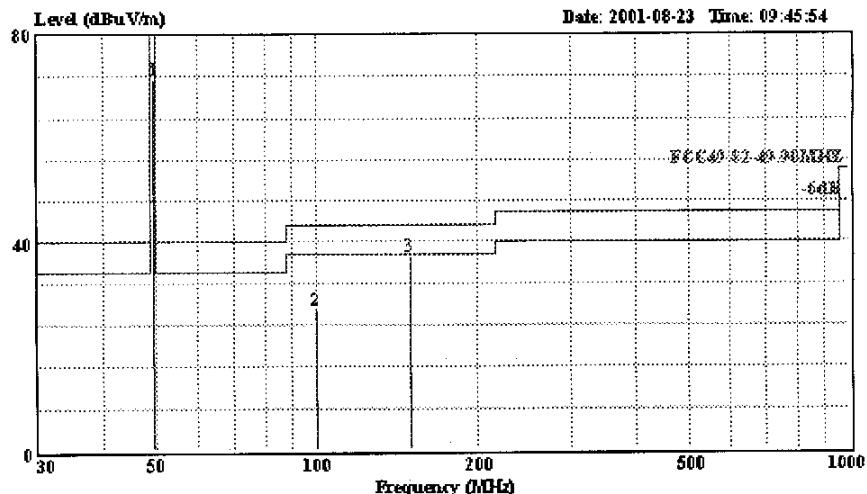


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Data#: 11 File#: C:\EMI TEST DATA\P\Perfect.EMI



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	Line Factor	Cable	Probe	Preamp	Reme
		Limit	Level	Factor		Loss Factor	Factor	Factor	
MHz	dBuV/m	dB	dBuV	dBuV/m		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



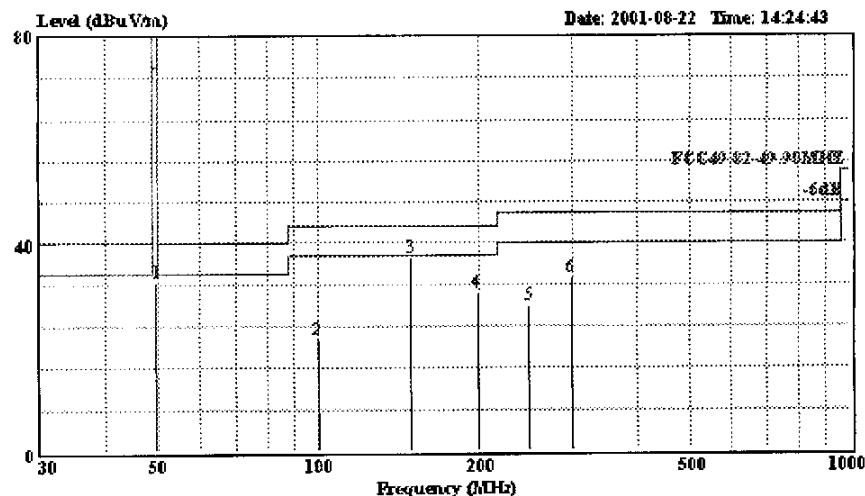
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Data#: 3

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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 :

Freq	Level	Over Limit	Read Level	Limit		Cable Loss	Probe Factor	Preamp Factor	Reme
				Line	Factor				
	MHz	dBuVm	dB	dBuV	dBuVm	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

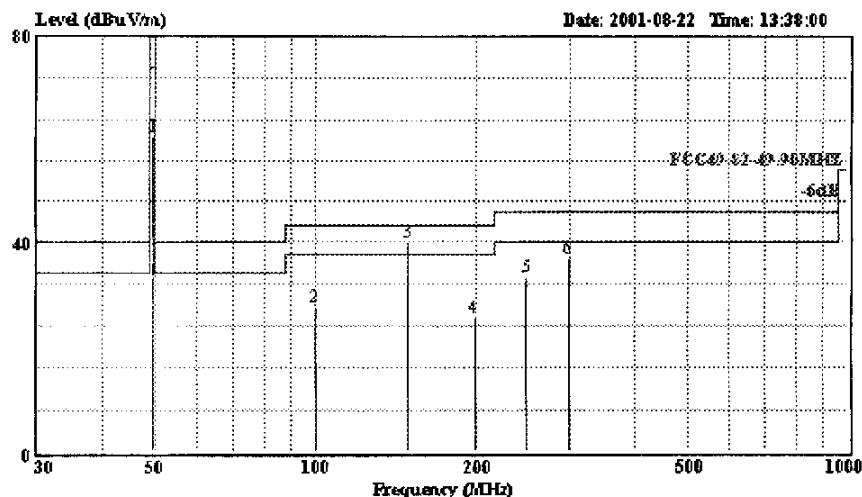


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Data#: 2 File#: C:\EMI TEST DATA\P\Perfect.EMI



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

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



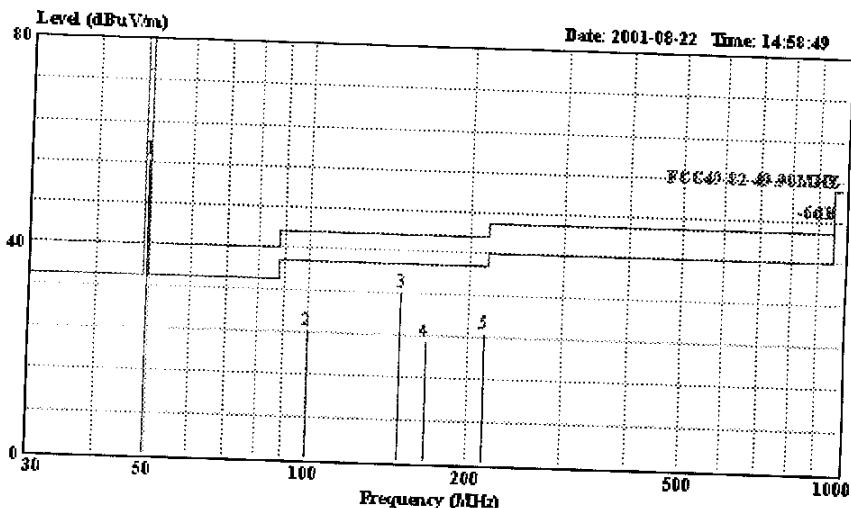
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Data#: 6

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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	Over Limit	Read Level	Limit Line Factor	Cable Loss	Probe Factor	Preamplifier Factor	Remarks
	MHz	dBuV/m	dB	dBuV	dBuV/m	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



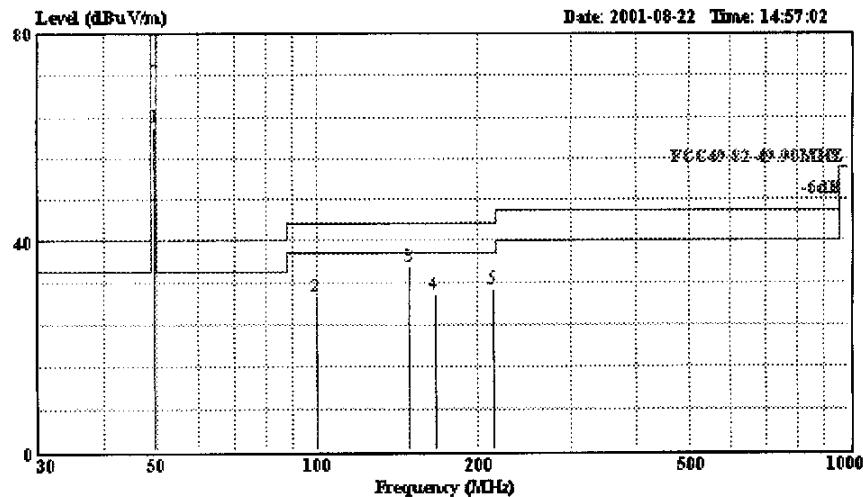
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File#: C:\EMI TEST DATA\P\Perfect.EMI



Site : 3# Chamber
 Condition : FCC49.82-49.90MHZ 3m 2176FACTOR VERTICAL
 EUT : Wonder Arm
 M/N : D8867
 Power : DC 9V
 Test Engineer : Sean Xing
 Memo : Transmitting Lie Location
 Memo :
 Memo :

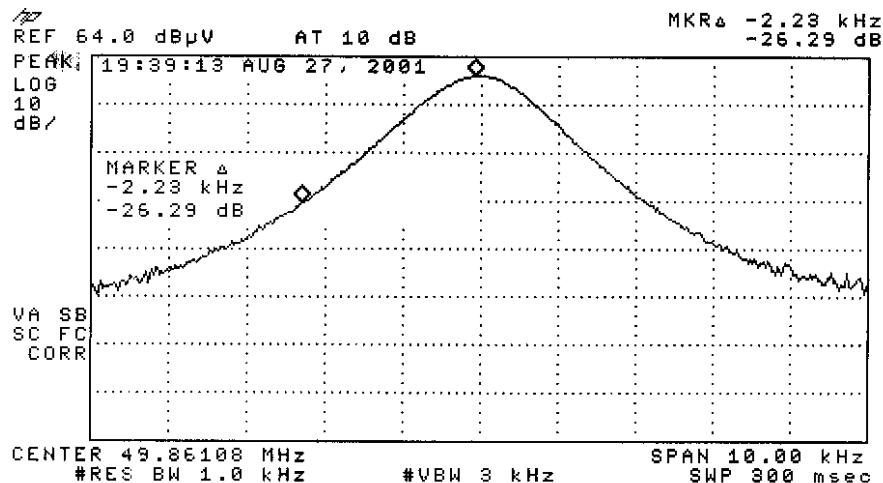
Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss		Probe Factor	Preamp Factor	Reme
					dBuV/m	dB			
1	49.875	62.23	-17.77	47.00	80.00	15.23	1.58	13.65	0.00 Peak
2	99.733	29.50	-14.00	10.30	43.50	19.20	2.62	16.58	0.00 Peak
3	149.598	35.29	-8.21	15.30	43.50	19.99	3.23	16.76	0.00 Peak
4	166.875	29.63	-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

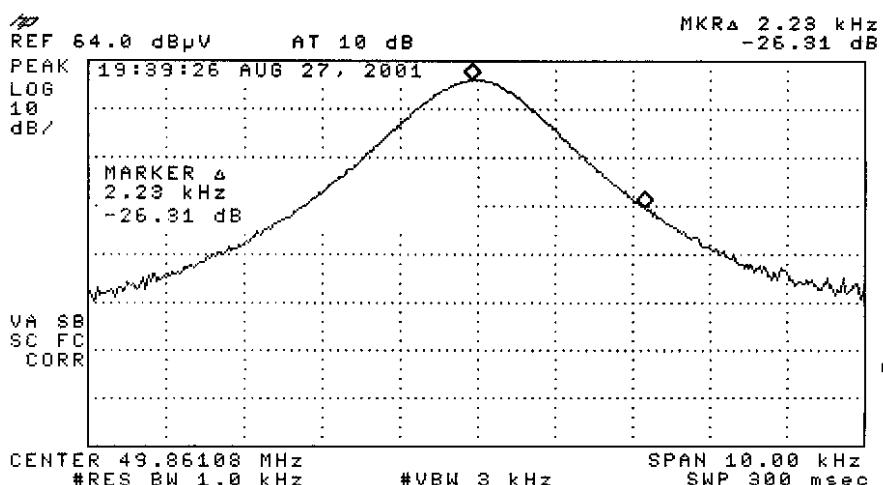
According to FCC Sec 15.235(b) the field strength of any emission appearing between the band edges and up to 10KHz above and below the band edges shall be attenuated at least 26dB below the level of the unmodulated carrier.

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.



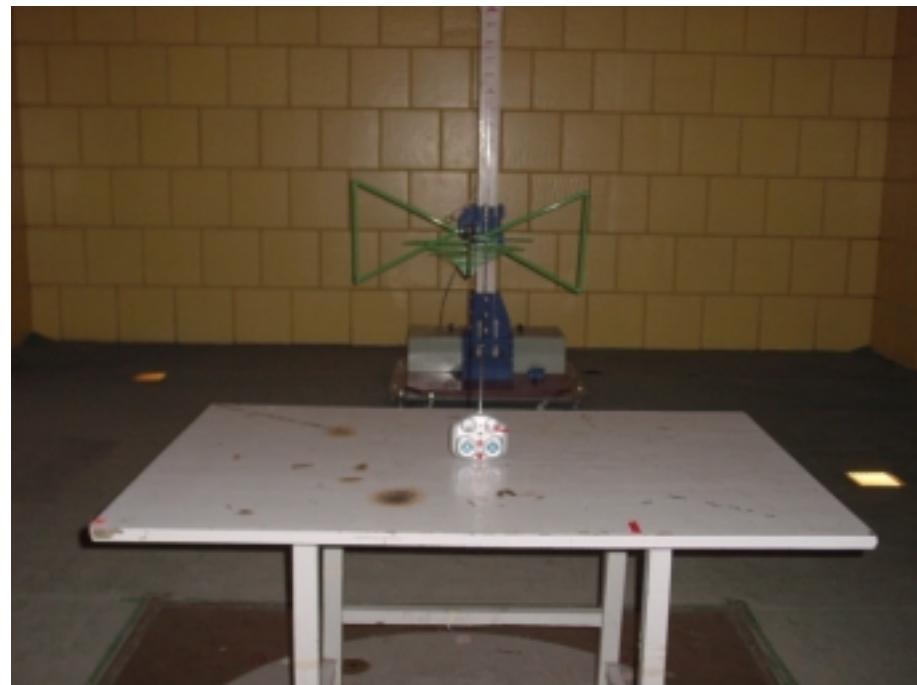
COPY SCREEN
OUTPUT REPORT
Define Report
Define List
EDIT ANNOTATN



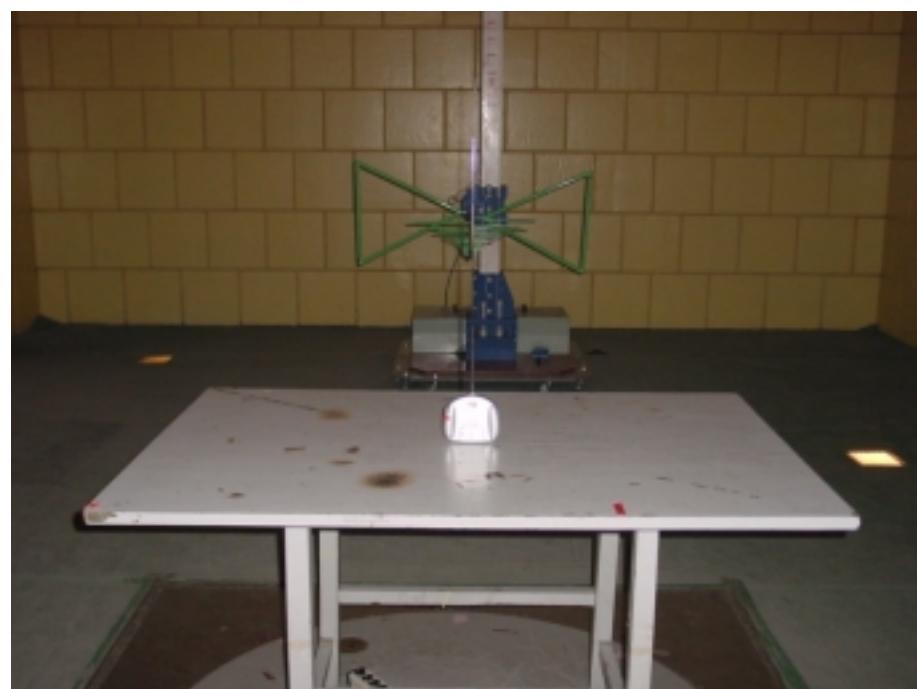
COPY SCREEN
OUTPUT REPORT
Define Report
Define List
EDIT ANNOTATN

5. PHOTOGRAPH

5.1. Photos of Radiated Measurement



FRONT VIEW OF RADIATED MEASUREMENT



REAR VIEW OF RADIATED MEASUREMENT

APPENDIX I



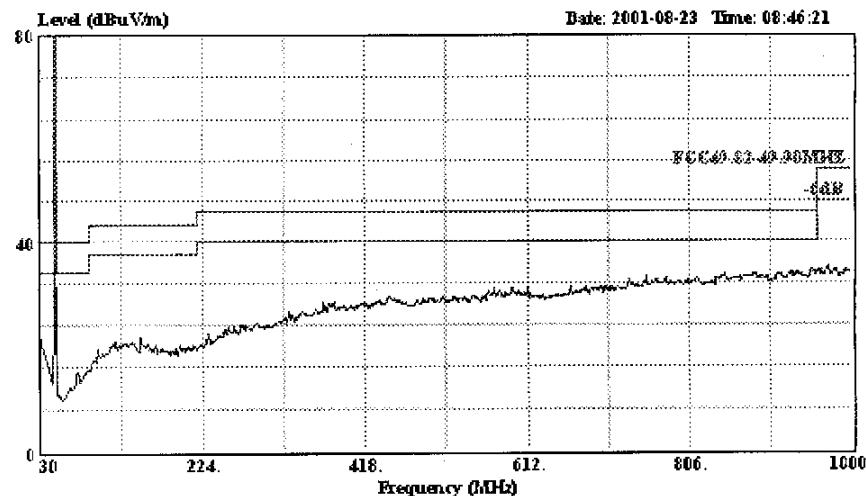
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Data#: 8

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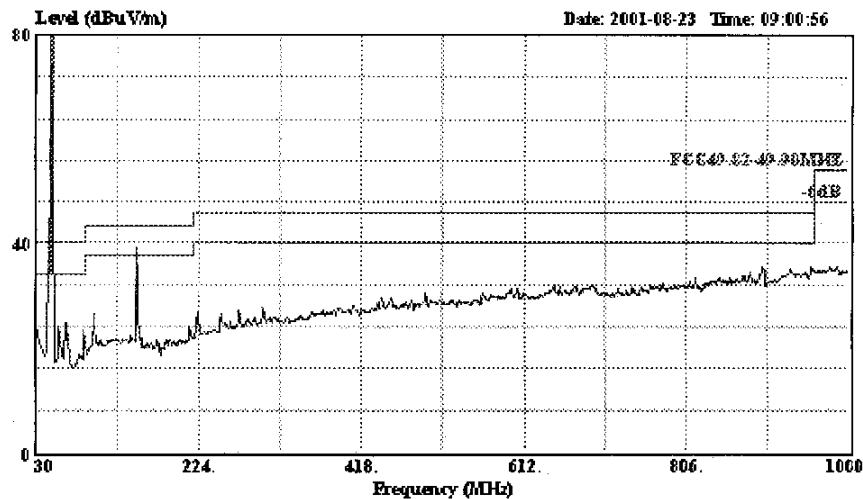
Site : 3# Chamber
 Condition : FCC49.82-49.90MHZ 3m 2176FACTOR HORIZONTAL
 EUT : Wonder Arm
 M/N : 08867
 Power : DC 9V
 Test Engineer : Sean Xing
 Memo : Transmitting Stand Location
 Memo :
 Memo :



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 EUT : Wonder Arm
 M/N : 08867
 Power : DC 9V
 Test Engineer : Sean Xing
 Memo : Transmitting Stand Location
 Memo :
 Memo :



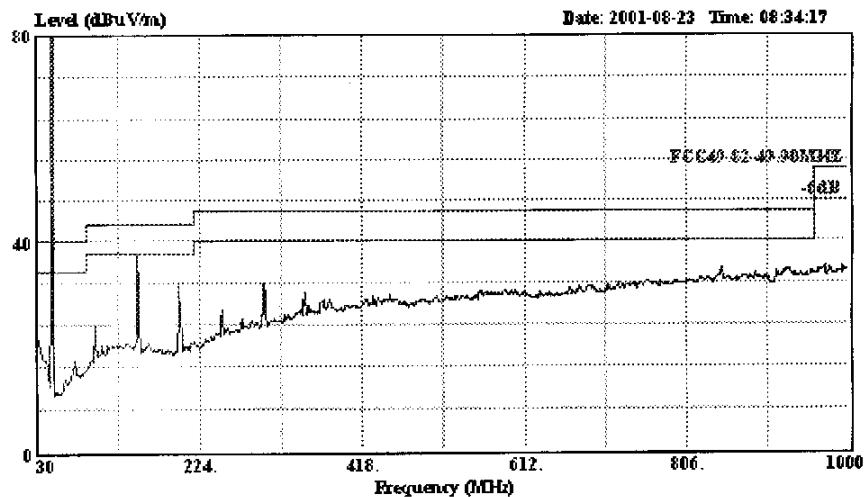
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Data#: 7

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 EUT : Wonder Arm
 M/N : 08867
 Power : DC 9V
 Test Engineer : Sean Xing
 Memo : Transmitting Lie Location
 Memo :
 Memo :



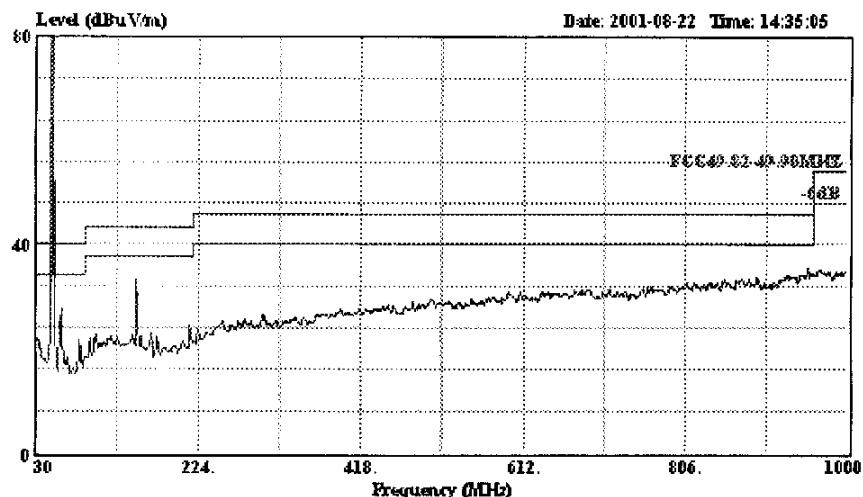
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 acsadmin@

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 :