

# ***EXHIBIT 4***

## ***Test Report***

## APPLICATION OF VERIFICATION

For

Great Wall Digitech Ltd.

Discman

Model No.: CMW-5100

Prepared for : Great Wall Digitech Ltd.

Room 1008-1011, MingWah International Convention  
Centre, No. 8, Gui Shan Rd., Shekou Industrial Zone,  
Shenzhen, P.R., China

Prepared By : Shenzhen Unitech Technology Co., Ltd.

Rm.606, Daxin Building, Road Nanxin, Nanshan,  
Shenzhen, Guangdong, China

Telephone : (0755) 6574848~9

Report No. : SUT-F011101

Date of Test : October 20-31, 2001

Date of Report : November 1, 2001

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**TEST REPORT DECLARATION**

**Applicant** : Great Wall Digitech Ltd.

**Manufacturer** : Great Wall Industrial Estate (Huizhou) Ltd.

**EUT Description** : Discman

(A) Model No. : CMW-5100

(B) Serial No. : F2001110101

(C) Power Supply : AC 120V/60HZ

**Test Procedure Used:**

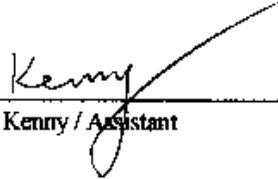
FCC Rules and Regulations Part 15 Subpart B Class B October 1998.

The device described above has been tested in AUDIX Lab by Shenzhen Unitech Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class B limits both conducted and radiated emissions.


The test results are contained in this test report and Shenzhen Unitech Technology Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests. Also, this report shows that the EUT (Equipment Under Test) is complies with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Unitech Technology Co., Ltd..

**Date of Test :** October 20-31, 2001

**Prepared by :**   
Kenny / Assistant

**Reviewer :**   
Daniel / Engineer  
For and on behalf of  
**SHENZHEN UNITECH TECHNOLOGY CO., LTD.**

**Approved & Authorized Signer :**   
Jimmy. J / Manager

# 1. GENERAL INFORMATION

## 1.1 Description of Device (EUT)

Description	:	Discman
Model Number	:	CMW-5100
Power Cable	:	Shielded Detachable, 1.8m
Applicant	:	Great Wall Digitech Ltd. Room 1008-1011, MingWah International Convention Centre, No. 8, Gui Shan Rd., Shekou Industrial Zone, Shenzhen, P.R., China
Manufacturer	:	Great Wall Industrial Estate (Huizhou) Ltd. Zhong Kai Road, Huizhou City, Guang Dong, China
Date of Test	:	October 20-31, 2001

## 1.2 Description of 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, Germany Feb. 02, 1999
		Certificated by NVLAP, USA NVLAP Code: 200372-0
		Certificated by DNV, Norway May 26, 1999
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 Emissions Uncertainty	=	$\pm 2.66\text{dB}$
Radiated Emissions Uncertainty	=	$\pm 4.26\text{dB}$

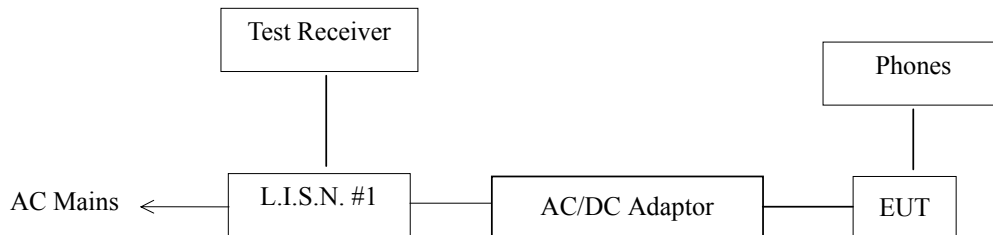
## 2. Power line conducted Emission Test

### 2.1 Test Equipment

The following test equipments are used during the power line conducted emission

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS20	836600/006	Jun. 04, 00	1 Year
2.	L.I.S.N. #1	Kyoritsu	KNW-407	8-541-4	Jun. 04, 00	1 Year
3.	L.I.S.N. #2	EMCO	3825/2	9006-1660	Jun. 04, 00	1 Year
4.	Terminator	EMCO	50Ω	No. 1	Jun. 04, 00	1 Year
5.	Terminator	EMCO	50Ω	No. 2	Jun. 04, 00	1 Year
6.	RF Cable	FUJIKURA	RG-55/U	LISN Cable	Feb. 27, 01	1/2 Year
7.	Coaxial Switch	Anritsu	MP59B	M73989	Dec. 03, 00	1/2 Year

### 2.2 Block Diagram of Test Setup



(EUT: Discman)

### 2.3 Power Line Conducted Emission Limit

Frequency MHz	Maximum RF Line Voltage	
	μV	dB(μV)
0.45 ~ 30	250	48

Remarks: RF LINE VOLTAGE (dB(μV)) = 20 log RF LINE VOLTAGE (μV)

## 2.4 EUT Configuration on Test

The following equipments are installed on RF LINE VOLTAGE Test to meet the Commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

### 2.4.1 Discman

Model Number : CMW-5100

Serial Number: F2001110101

Manufacturer : Great Wall Industrial Estate (Huizhou) Ltd.

## 2.5 Operating Condition of EUT

2.5.1 Setup the EUT and simulator as shown on Section 2.2..

2.5.2 Turn on the power of all equipment.

2.5.3 Let the EUT work in test mode (CD Playing) and measure it.

## 2.6 Test Procedure

The EUT is put on the table which is 0.8m above the ground and away from other metallic surface at least 0.4m. The EUT is connected to the power mains through a line impedance stabilization network (L.I.S.N.) and a transformer. This provides a 50 ohm coupling impedance for the testing equipment; and the peripheral equipment powers form other L.I.S.N.. Please refer to the block diagram of the test setup and photographs. Both sides of AC line(Line & Neutral) are checked for maximum conducted interference. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables must be changed according to FCC part 15 B.

The bandwidth of the field strength meter (R & S Test Receiver ESHS20) is set at 10KHz. The frequency range from 450KHz to 30MHz is checked.

The details of test modes are as the followings, and the test data please see APPENDIX I.

## 2.7 Power Line Conducted Emission Test Results

**PASS.**

The frequency range from 450KHz to 30 MHz is investigated.

All emissions not reported below are too low against the prescribed limits.

As the peak value is too low against the limit, so the Quasi-peak value and average value have been omitted, the scanning waveforms are put in Appendix I.



### 3. Radiated emission Test

#### 3.1 Test Equipment

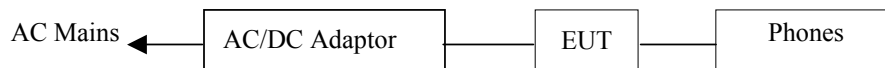
The following test equipments are used during the radiated emission test ☐

##### 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. 04, 00	1 Year
2.	Test Receiver	Rohde & Schwarz	ESVS20	830350/005	Jun. 04, 00	1 Year
3.	Amplifier	HP	8447D	2944A07794	Dec. 03, 00	1/2 Year
4.	Bilog Antenna	Chase	CBL6112A	2176	Sep. 25, 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	Feb.09, 01	1/2 Year
8.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.2	Feb.09, 01	1/2 Year
9.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.3	Feb.09, 01	1/2 Year
10.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.4	Feb.09, 01	1/2 Year
11.	Coaxial Switch	Anritsu	MP59B	M74389	Dec. 03, 00	1/2 Year

#### 3.2 Block Diagram of Test Setup

##### 3.2.1 Block Diagram of EUT Test Setup

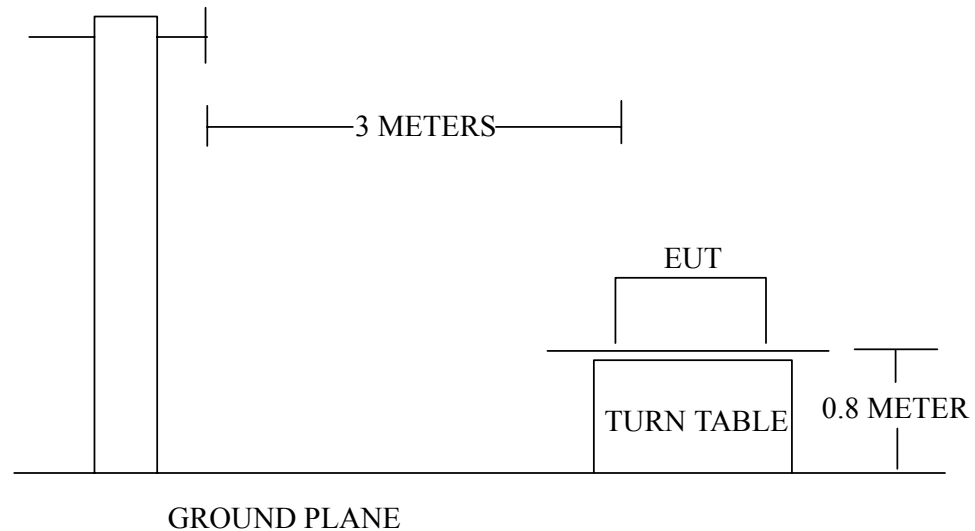


*(EUT: Discman)*

### 3.2.2 Anechoic Chamber Setup Diagram

ANTENNA TOWER

ANTENNA ELEVATION VARIES FROM 1 TO 4 METERS



### 3.3 Radiation Limit

Frequency MHz			Distance (Meter/s)	Field Strengths Limits dB( $\mu$ V)/m
30	~	88	3	40.0
88	~	216	3	43.5
216	~	960	3	46.0
960	~	1000	3	54.0

Remark: (1) Emission level (dB( $\mu$ V)/m) = 20 log Emission level ( $\mu$ V/m)

(2) The smaller limit shall apply at the cross point between two

(3) Distance refers to the distance in meters between the measuring instrument, antenna and the closed point of any part of the device or system.

### 3.4 EUT Configuration on Test

The configuration of EUT and its simulators are same as those used in conducted emission test. Please refer to Section 2.4.

### 3.5 Operating Condition of the EUT

Same as conducted emission test which is listed in Section 2.5.

### 3.6 Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna are set on test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI / IEEE Std 187-1990 on radiated emission test.

The bandwidth setting on the field strength meter (R & S Test Receiver ESVS 20) is set at 120KHz.

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

The following test models are measured in Anechoic Chamber, all the scanning waveform are attached in Appendix II.

### 3.7 Test Results

#### **PASS.**

The frequency range from 30MHz to 1000MHz is investigated. Please see the following pages.

Date of Test :	October 20-31, 2001	Temperature :	24□
EUT :	Discman	Humidity :	56□
Model No. :	CWM-5100	Test Mode :	CD Playing
Test Engineer:	Chris		

Frequency Hz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Over Limits dBμV/m	Limits dBμV/m
75.590	7.39	2.20	23.56	33.16	-6.84	40.00
189.080	9.96	3.58	20.86	34.40	-5.60	40.00
216.240	9.80	3.78	21.32	34.91	-5.09	40.00
237.580	11.48	3.93	22.65	38.05	-8.95	47.00
271.530	13.11	4.13	20.13	37.36	-9.64	47.00

- Remark: 1. All readings are Quasi-Peak values.  
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading

Date of Test :	October 20-31, 2001	Temperature :	24□
EUT :	Discman	Humidity :	56□
Model No. :	CWM-5100	Test Mode :	CD Playing
Test Engineer:	Chris		

Frequency	Antenna	Cable	Meter Reading	Emission Level	Over	Limits
MHz	Factor	Loss	Vertical	Vertical	Limits	
	dB/m	dB	dBμV	dBμV/m	dBμV/m	dBμV/m
62.980	9.09	1.92	21.35	32.36	-7.64	40.00
203.630	9.99	3.69	19.98	33.67	-6.33	40.00
237.580	12.34	3.93	19.98	36.25	-10.75	47.00
271.530	13.48	4.13	16.45	34.05	-12.95	47.00
405.390	16.13	4.73	17.32	38.18	-8.82	47.00

Remark: 1. All readings are Quasi-Peak values.  
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading

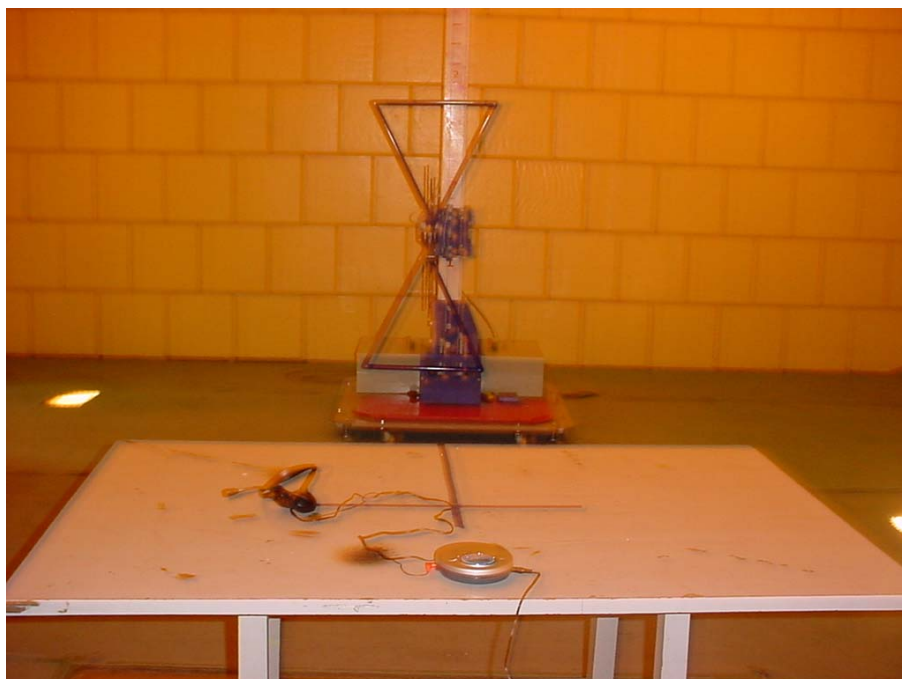
Reviewer: Daniel

## 4. Photograph

### 4.1 Photo of Power Line Conducted Emission Test



### 4.2 Photo of Radiated Emission Test(In Anechoic Chamber)



# **APPENDIX I**

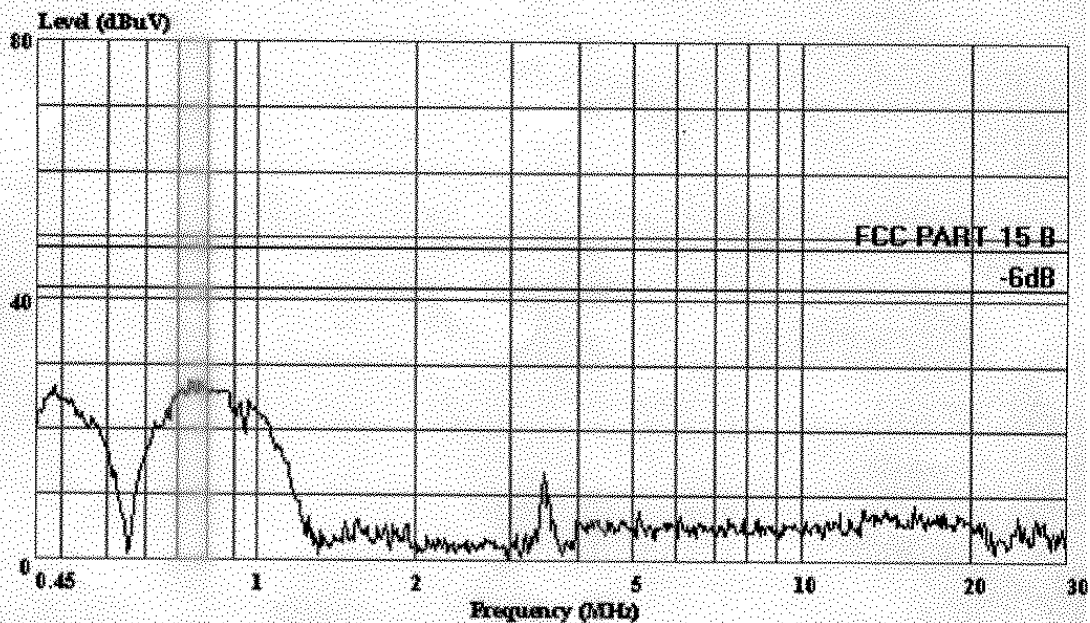
## **Power Line Conducted Emission Test Data**



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Shenzhen Science & Ind Park  
Nantou, Guangdong, China  
Tel: 0755-6639495~7  
Fax: 0755-6632877

Data#: 512 File#: GREATWALL.EMI Date: 2001-10-31 Time: 16:06:18



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (Audix ATC)

Trace:

Ref Trace:

Condition: FCC PART 15 B

But: : Discman

Manuf: : CMW-5100

OP Cond: : CD Play

Operator: : Chris Du

Test Spec: : AC Adaptor Input 120V/60Hz Va

Comment: : Temp: 24°C

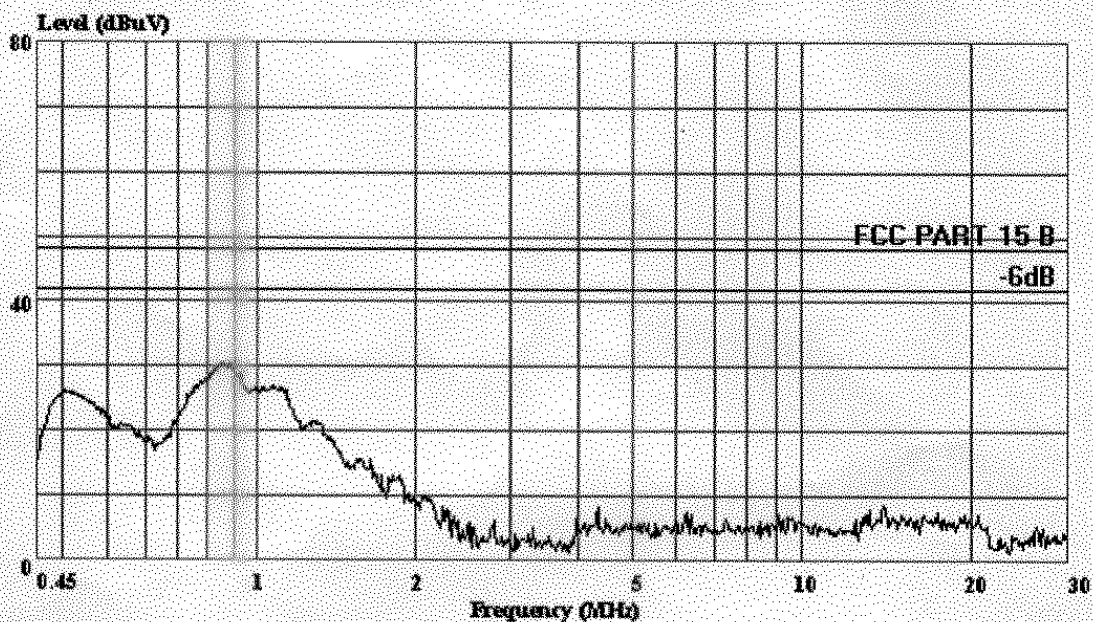
: Hum: 56%

**AUDIX**  
AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Shenzhen Science & Ind Park  
Nantou, Guangdong, China  
Tel: 0755-6639495-7  
Fax: 0755-6632877

Data#: 513 File: GREATWALL.EMI

Date: 2001-10-31 Time: 16:07:18



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (Audix ATC)

Trace:

Ref Trace:

Condition: FCC PART 15 B

Eut: : Discman

Manuf: : CMW-5100

OP Cond: : CD Play

Operator: : Chris Du

Test Spec: : AC Adaptor Input 120V/60Hz Vb

Comment: : Temp: 24°C

: Humi: 56%



## **APPENDIX II**

### **Radiated Emission Test Data**

(In Anechoic Chamber)



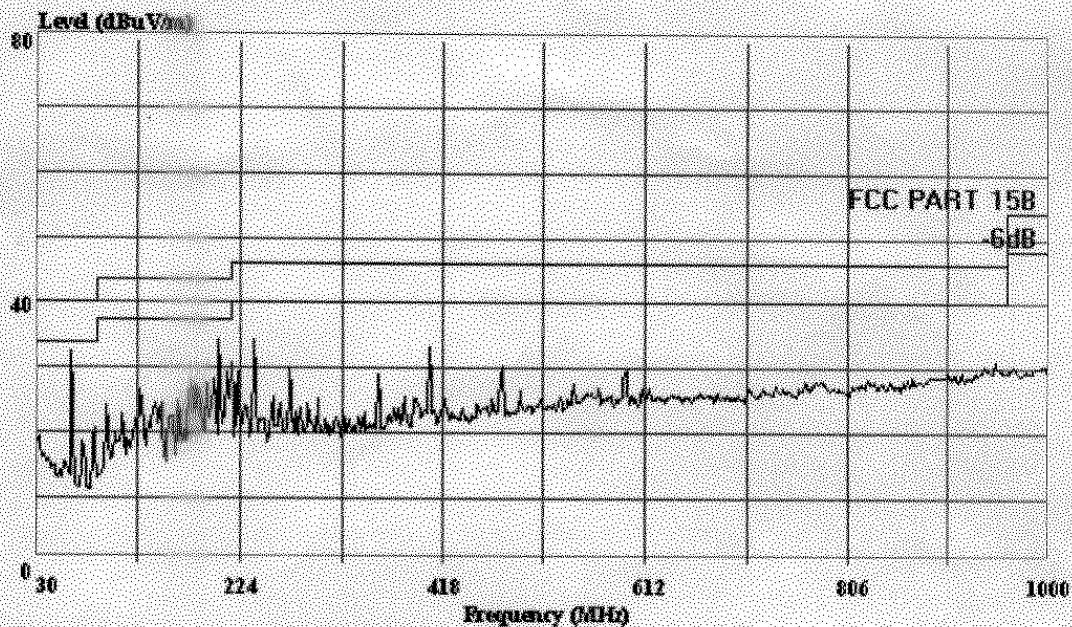
AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Shenzhen Science &amp; Ind. Park.

Tel: 0755-6639495~7

Fax: 0755-6632877

Data#: 914 File#: Greatwall.EMI Date: 2001-10-31 Time: 14:54:44



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace:

Ref Trace:

Condition: FCC PART 15B 3m 2598FACTOR VERTICAL

EUT: Discman

M/N: CMW-5100

Power: DC 3V

Test Engineer: Chris Du

Memo: CD Play



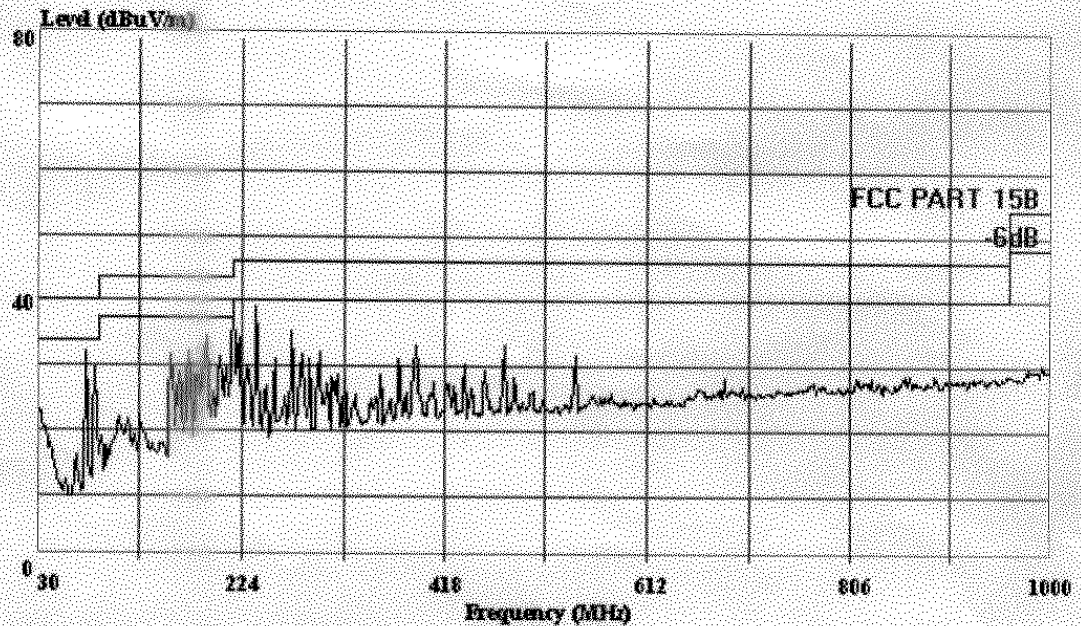
AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Shenzhen Science &amp; Ind. Park.

Tel: 0755-6639495~7

Fax: 0755-6632877

Data#: 915 File#: Greatwall.EMI Date: 2001-10-31 Time: 14:55:52



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace:

Ref Trace:

Condition: FCC PART 15B 3m 2598FACTOR HORIZONTAL

EUT: Discman

M/N: CMW-5100

Power: DC 3V

Test Engineer: Chris Du

Memo: CD Play



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

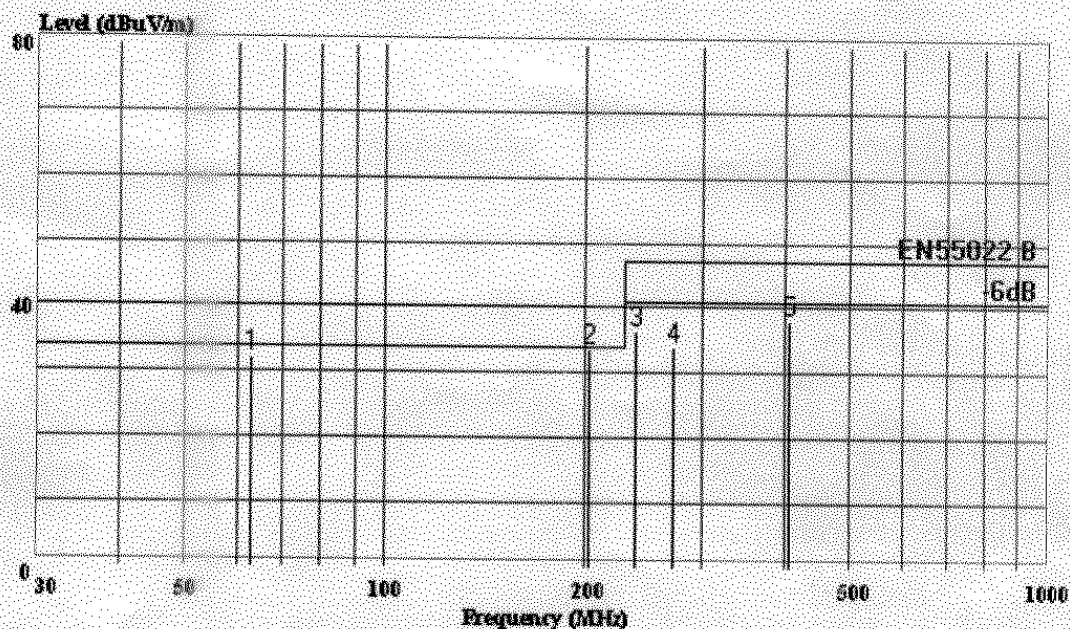
Shenzhen Science &amp; Ind. Park.

Tel: 0755-6639495~7

Fax: 0755-6632877

Data#: 917 File#: Greatwall.EMI

Date: 2001-10-31 Time: 15:03:32



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace:

Ref Trace:

Condition: EN55022 B 3m 2598FACTOR VERTICAL

EUT: : Discman

M/N: : CMW-5100

Power: : DC 3V

Test Engineer: : Chris Du

Memo: : CD Play

Page: 1

	Freq	Level	Limit	Over	Read	Probe	Cable
	MHz	dBuV/m	Line	Limit	Level	Factor	Loss
			dBuV/m	dB	dBuV	dB	dB
1	62.980	32.36	40.00	-7.64	21.35	11.01	1.92
2	203.630	33.67	40.00	-6.33	19.98	13.69	3.69
3	237.580	36.25	47.00	-10.75	19.98	16.27	3.93
4	271.530	34.05	47.00	-12.95	16.45	17.60	4.13
5	405.390	38.18	47.00	-8.82	17.32	20.86	4.73



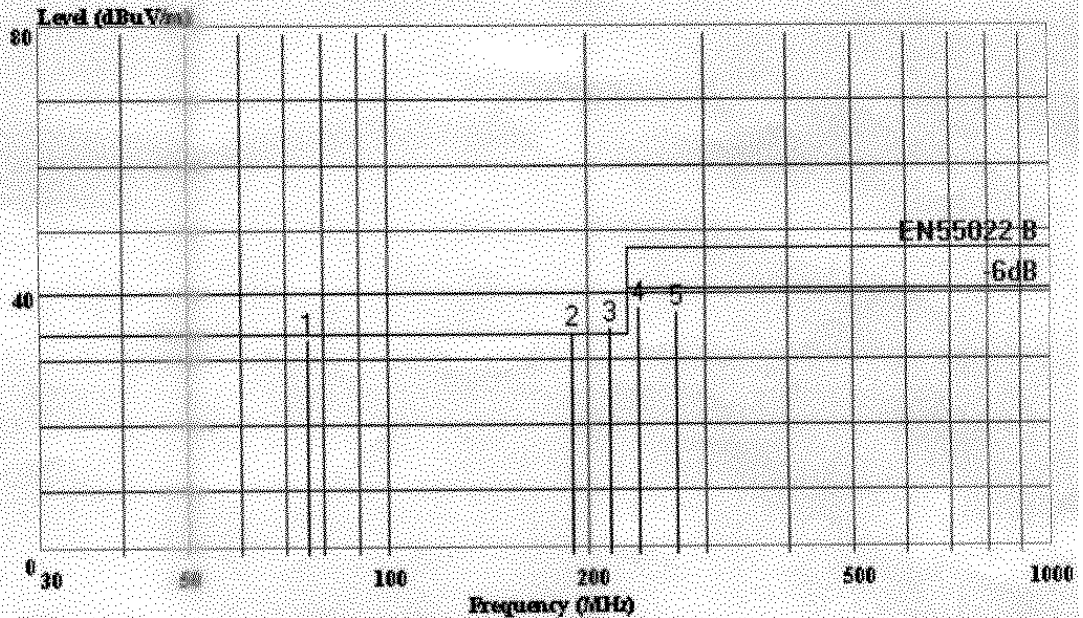
AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Shenzhen Science &amp; Ind. Park.

Tel: 0755-6639495~7

Fax: 0755-6632877

Data#: 916 File#: Greatwall.EMI Date: 2001-10-31 Time: 15:01:49



AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace:

Ref Trace:

Condition: EN55022 B 3m 2598FACTOR HORIZONTAL

EUT: Discman  
 M/N: CMW-5100  
 Power: DC 3V  
 Test Engineer: Chris Du  
 Memo: CD Play

Page: 1

	Freq	Level	Limit	Over	Read	Probe	Cable
	MHz	dBuV/m	Line	Limit	Level	Factor	Loss
			dBuV/m	dB	dBuV	dB	dB
1	75.590	33.16	40.00	-6.84	23.56	9.60	2.20
2	189.080	34.40	40.00	-5.60	20.86	13.55	3.58
3	216.240	34.91	40.00	-5.09	21.32	13.59	3.78
4	237.580	38.05	47.00	-8.95	22.65	15.40	3.93
5	271.530	37.36	47.00	-9.64	20.13	17.23	4.13