

EMI TEST REPORT


Test Report No. : 23HE0036-HO-1

Applicant : Pioneer Corporation
Type of Equipment : Digital Wireless Speaker System
(Transmitter)
Model No. : XW-HTD630(T)
Test standard : FCC Part 15 Subpart C
Section 15.207, Section 15.247
FCC ID : AJDT101
Test Result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of A-Pex International Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with above regulation. We hereby certify that the data contain a true representation of the EMC profile.
4. The test results in this report are traceable to the national or international standards.
5. This test report does not constitute an endorsement by NIST/NVLAP or U.S. Government.

Date of test : March 14, 17, 18, and 25, and April 9, 2003

Tested by : 
Hiroka Umeyama
EMC Head Office Division

Approved by : 
Hironobu Shimoji
Group Leader of EMC Head Office Division

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SECTION 1: Client information

Company name : Pioneer Corporation
Brand name : PIONEER
Address : 4-2610 Hanazono, Tokorozawa-shi, Saitama, 359-8522, JAPAN
Telephone Number : +81-42-990-2438
Facsimile Number : +81-42-990-2077
Contact Person : Tatsuo Ohnobu

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Digital Wireless Speaker System (Transmitter)
Model No. : XW-HTD630(T)
Serial No. : 12
Rating : AC Adaptor: AC120V/60Hz
Country of Manufacture : Transmitter : Malaysia
AC Adaptor : Myanmar
Receipt Date of Sample : March 13, 2003
Condition of EUT : Engineering prototype

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2.2 Product Description

Pioneer Corporation, Model: XW-HTD630(T) (referred to as the EUT in this report) is the Digital Wireless Speaker System (Transmitter).

The clock frequency used in EUT is 8/12.288/24.576MHz.

Frequency band : from 2414 MHz to 2468 MHz

Frequency of operation : 2414, 2432, 2450, 2468MHz

Type of Modulation : GFSK

Antenna Type : Dipole

Antenna Gain : Max: 1.69dBi

ITU code : F1D

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SECTION 3: Test specification, procedures & results**3.1 Test Specification**

Test Specification : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and
5725-5850MHz

3.2 Procedures and results

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	Conducted emission	ANSI C63.4:2001	Section 15.207	-	N/A	20.5dB 0.3484MHz N	Complied
2	6dB Bandwidth	ANSI C63.4:2001	Section 15.247(a)(2)	Conducted	N/A	-	Complied
3	Maximum Peak Output Power	ANSI C63.4:2001	Section 15.247(b)(3)	Conducted	N/A	-	Complied
4	Out of Band Emission	ANSI C63.4:2001	Section 15.247 (c)	Conducted/ Radiated	N/A	6.1dB 14589.5MHz Vertical	Complied
5	Restricted Band Edges	ANSI C63.4:2001	Section 15.247 (c)	Radiated	N/A	-	Complied
6	Power Density	ANSI C63.4:2001	Section 15.247 (d)	-	N/A	-	Complied

These tests were performed without any deviations from test procedure excluding below additions or deviations.

3.3 Confirmation

A-Pex International hereby confirms that E.U.T., in the configuration tested, complies with the specifications FCC Part 15 Subpart C Section 15.207 and 15.247.

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3.4 Uncertainty

Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test was ± 1.3 dB.

- The data listed in this test report may exceed the test limit because it does not have enough margin.
 The data listed in this test report has enough margin.

Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is ± 4.5 dB.

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is ± 5.2 dB.

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is ± 6.6 dB.

- The data listed in this test report may exceed the test limit because it does not have enough margin.
 The data listed in this test report has enough margin.

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test was ± 3.0 dB.

- The data listed in this test report may exceed the test limit because it does not have enough margin.
 The data listed in this test report has enough margin.

3.5 Test Location

A-Pex International Co., Ltd. EMC Head Office Division. No.1 and No2 semi Anechoic chamber
No.3 Measurement room

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This semi anechoic chamber has been fully described in a report submitted to FCC office, and listed on February 01, and June 05, 2002. (Registration number: No. 1: 313583 No.2 :846015 Industry Canada: No.1: IC4247 No.2 : IC-4272-2)

*NVLAP Lab. code: 200572-0

3.6 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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SECTION 4: Operation of E.U.T. during testing

4.1 Operating Modes

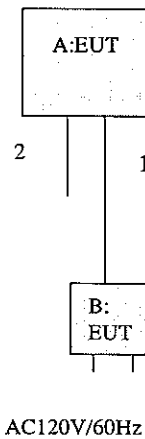
The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to typical use.

The sequence is used :

1. Transmitting mode (ch1:2412MHz)
2. Transmitting mode (ch2:2432MHz)
3. Transmitting mode (ch4:2468MHz)

Justification: The system was configured in typical fashion (as a customer would normally use it) for testing.

4.2 Configuration and peripherals



* Cabling was taken into consideration and test data was taken under worst case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID	Remark
A	Digital Wireless Speaker System (Transmitter)	XW-HTD630(T)	12	Pioneer Corporation	AJDT101	EUT
B	AC Adaptor	AWR7006	0305	Pioneer Corporation	-	EUT

List of cables used

No.	Name	Length (m)	Shield	Backshell Material
1	DC Power Cable	1.9	N	Polyvinyl chloride
2	Audio Video cable	1.4	N	Polyvinyl chloride

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SECTION 5: Conducted Emission, Section 15.207

Test Procedure

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. I/O cables and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source. All unused 50ohm connectors of the LISN were resistively terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT on a reference ground plane 7.0 x 6.0m in a No.1 semi Anechoic Chamber.

The EUT was connected to a Line Impedance Stabilization Network (LISN).

An overview sweep with peak detection has been performed.

The measurements have been performed with a CISPR quasi-peak detector (IF BW 9 kHz).

Measurement range: 0.15-30MHz

Test data : APPENDIX 3
Test result : Pass
Test instruments : MTR-01, MCC-03, MLS-02, MPL-01

SECTION 6: 6dB Bandwidth , Section 15.247(a)(2)

Test Procedure

The minimum 6dB bandwidth was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass
Test instruments : MBTR10, MCC-04

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SECTION 7: Maximum Peak Output Power, Section 15.247(b)(3)

[Conducted]

Test Procedure

The Maximum Peak Output Power was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass
Test instruments : MBTR10, MCC-04

SECTION 8: Out of Band Emission and Restricted Band Edge, Section 15.247 (c)

[Conducted]

Test Procedure

The Out of Band Emission (Conducted) was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass
Test instruments : MBTR10, MCC-04

[Radiated]

Test Procedure

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization.

The Radiated Electric Field Strength intensity has been measured in the semi anechoic chamber (19.2x11.2x7.7m) with a ground plane and at a distance of 3m.

The measuring antenna height was varied between 1 to 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

Test data : APPENDIX 3
Test result : Pass
Test instruments : MTR-01, MCC-01/12, MCC-05, MCC-06/11, MHA-05, MPA-01
MBA-03, MLA-03, MPA-04, MAT-07, MHA-01, MBF-01/02/03

SECTION 9: Peak Power Density, Section 15.247(d)

Test Procedure

The Power Density was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass
Test instruments : MBTR10, MCC-04

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APPENDIX 1: Photographs of test setup

- Page 11 : Conducted Emission
Page 12 : Other test except Conducted Emission and Spurious Emission (Radiated)
Page 13 : Spurious Emission (Radiated)

APPENDIX 2: Test instruments

- Page 14 : Test instruments

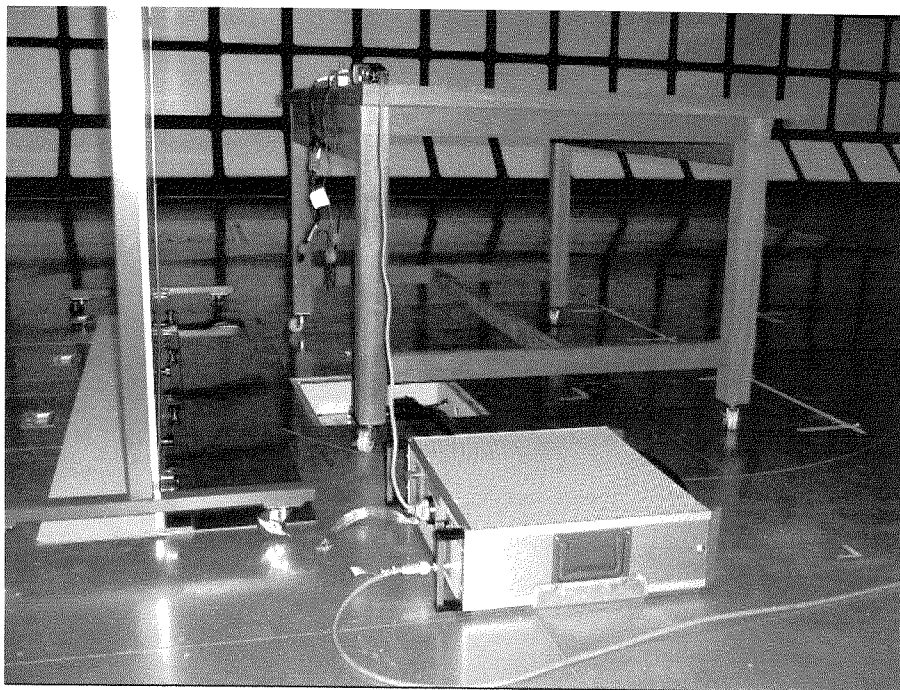
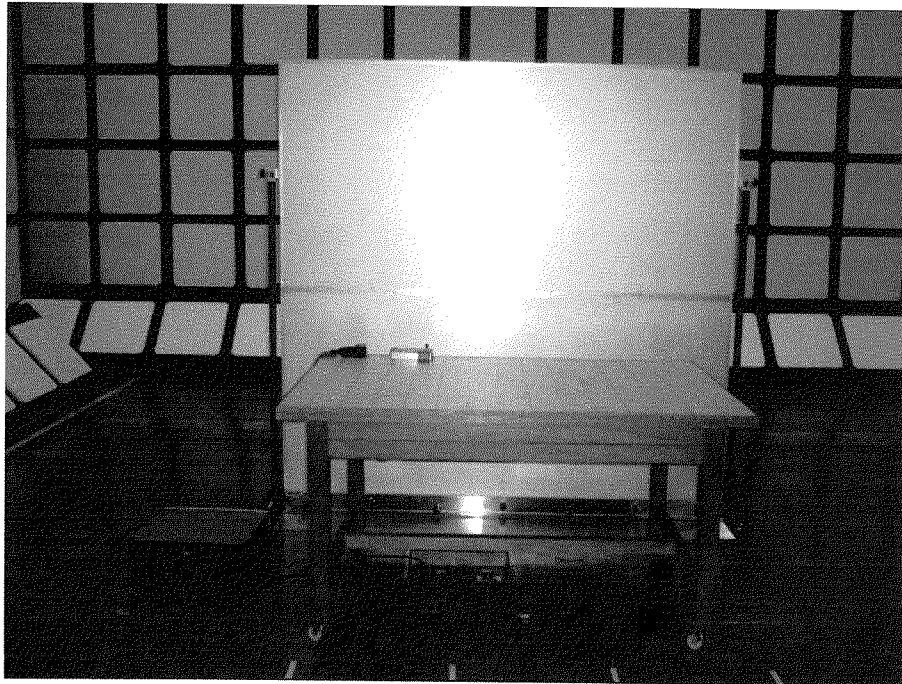
APPENDIX 3: Data of EMI test

- Page 15-18 : Conducted emission
Page 19-21 : 6dB Bandwidth
Page 22-24 : Maximum Peak Output Power
Page 25-37 : Out of Band Emission and Restricted Band Edge
Page 38-40 : Peak Power Density

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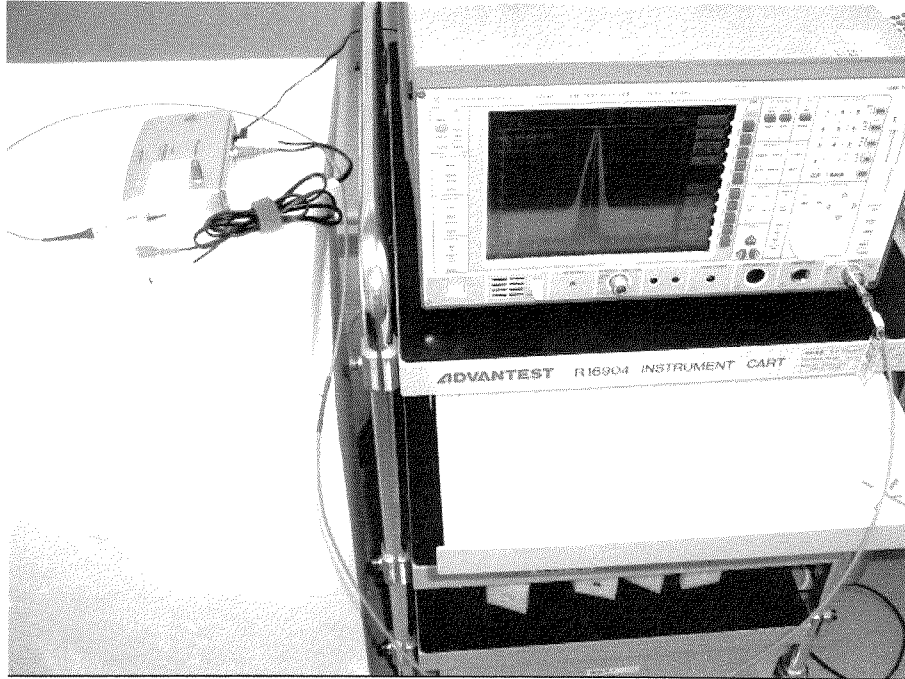
APPENDIX 1: Photographs of test setup
Conducted Emission



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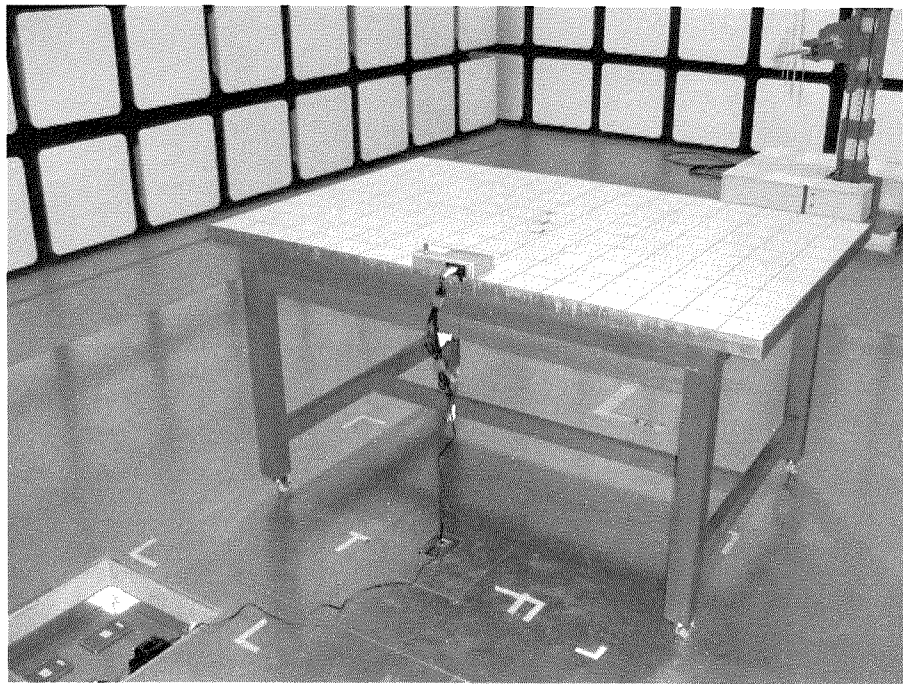
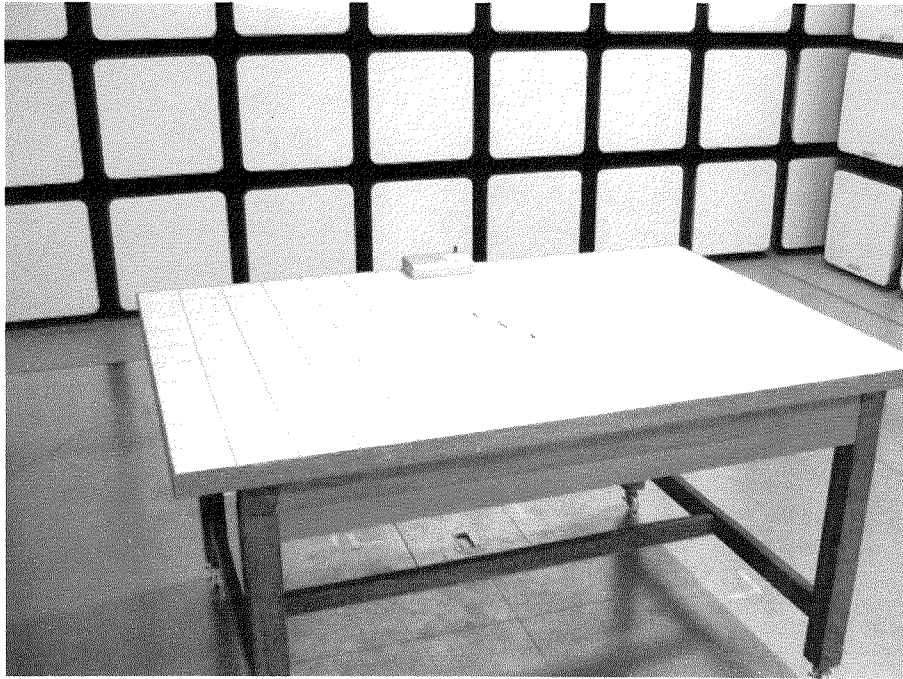
Other test except Conducted Emission and Spurious Emission (Radiated)



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Spurious Emission (Radiated)



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APPENDIX 2: Test instruments

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MTR-01	Test Receiver	Rohde & Schwarz	ES140	RE /CE	2002/11/01 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/Agilent/ TSJ	-	CE/RE	2002/12/19 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	CE	2002/11/11 * 12
MPL-01	Pulse Limiter	Rohde & Schwarz	ESH3Z2	CE	2003/01/07 * 12
MBTR10	Spectrum Analyzer;	Rohde & Schwarz	FSP30	RE	2003/11/13 * 24
MCC-04	Microwave Cable	Storm	421-011	RE	2003/01/14 * 12
MCC-01	Coaxial Cable	Suhner/storm/Agilent/TSJ	-	RE	2002/12/19 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2002/05/09 * 12
MCC-05	Microwave Cable	Storm	421-011	RE	2003/01/14 * 12
MCC-06	Microwave Cable	Storm	421-011	RE	2003/01/14 * 12
MCC-11	Microwave coaxial cable	Suhner	SUCOFLEX 104	RE	2003/03/27 * 12
MHA-05	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2003/01/11 * 12
MPA-01	Pre Amplifier	Agilent	8449B	RE	2003/02/08 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2002/05/02 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2002/05/02 * 12
MPA-04	Pre Amplifier	Agilent	8447D	RE	2003/03/13 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2002/12/24 * 12
MBF-01	SHF Bandpass Filter	M-City	5GHz BPF	RE	2002/04/30 * 12
MBF-02	SHF Bandpass Filter	M-City	8GHz BPF	RE	2002/04/30 * 12
MBF-03	SHF Bandpass Filter	M-City	13GHz BPF	RE	2002/04/30 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Test Item:

CE: Conducted emission
RE: Radiated emission,

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DATA OF CONDUCTED EMISSION TEST

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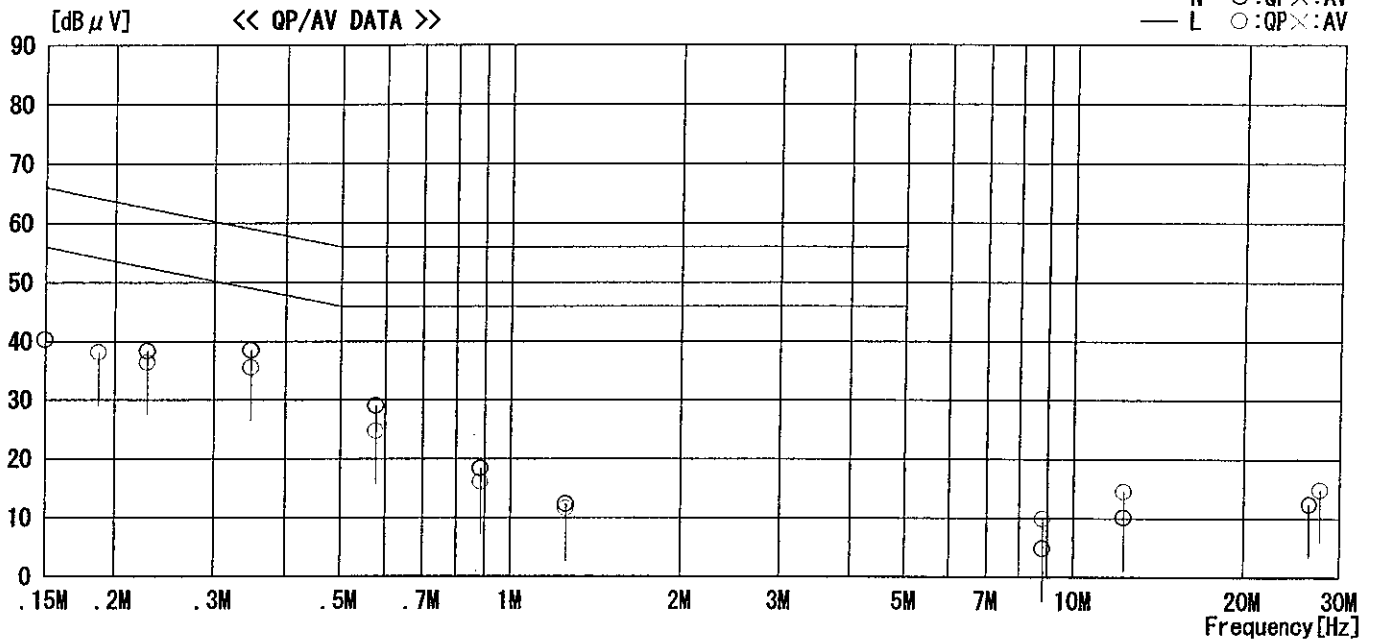
Applicant : Pioneer Corporation
 Kind of EUT : Digital Wireless Speaker System
 Model No. : XW-HTD630(T)
 Serial No. : 12

Report No. : 23HE0036-H0-1
 Power : AC120V / 60Hz
 Temp°C/Humi% : 24 / 42 2003/03/25
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting (Ch1) / FCC ID:AJDT101 / IC Number:775D-T101



LIMIT : FCC15C § 15.207 (QP)
 FCC15C § 15.207 (AV)



NO	FREQ [MHz]	READING		C. F [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dB μV]	AV [dB μV]		QP [dB μV]	AV [dB μV]	QP [dB μV]	AV [dB μV]	QP [dB]	AV [dB]	
1	0.1500	30.5	---	9.8	40.3	---	66.0	---	25.7	---	N
2	0.2290	28.3	---	10.0	38.3	---	62.5	---	24.2	---	N
3	0.3484	28.4	---	10.1	38.5	---	59.0	---	20.5	---	N
4	0.5788	18.7	---	10.4	29.1	---	56.0	---	26.9	---	N
5	0.8850	7.8	---	10.6	18.4	---	56.0	---	37.6	---	N
6	1.2527	1.7	---	10.7	12.4	---	56.0	---	43.6	---	N
7	8.8216	-6.5	---	11.4	4.9	---	60.0	---	55.1	---	N
8	26.4479	-0.5	---	12.9	12.4	---	60.0	---	47.6	---	N
9	12.2896	-1.6	---	11.7	10.1	---	60.0	---	49.9	---	N
10	0.1878	28.1	---	10.0	38.1	---	64.1	---	26.0	---	L
11	0.2290	26.4	---	10.0	36.4	---	62.5	---	26.1	---	L
12	0.3484	25.4	---	10.1	35.5	---	59.0	---	23.5	---	L
13	0.5788	14.4	---	10.4	24.8	---	56.0	---	31.3	---	L
14	0.8850	5.6	---	10.6	16.2	---	56.0	---	39.8	---	L
15	1.2527	0.9	---	10.7	11.6	---	56.0	---	44.4	---	L
16	8.8216	-1.5	---	11.4	9.9	---	60.0	---	50.1	---	L
17	12.2891	2.8	---	11.7	14.5	---	60.0	---	45.5	---	L
18	27.6491	2.0	---	12.9	14.9	---	60.0	---	45.1	---	L

CHART:WITHOUT FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C. F (LISN+CABLE+Limiter)
 Except for the above table : adequate margin data below the limits. MLS-02 Page: 15

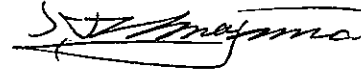
DATA OF CONDUCTED EMISSION TEST

A-Pex International Co., Ltd. EMC HEAD OFFICE DIVISION

Applicant : Pioneer Corporation
 Kind of EUT : Digital Wireless Speaker System
 Model No. : XW-HTD630 (T)
 Serial No. : 12

Report No. : 23HE0036-H0-1
 Power : AC120V / 60Hz
 Temp°C/Humi% : 24 / 42 2003/03/25
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting (Ch1) / FCC ID:AJDT101 / IC Number:775D-T101



LIMIT : FCC15C § 15.207 (QP)
 FCC15C § 15.207 (AV)

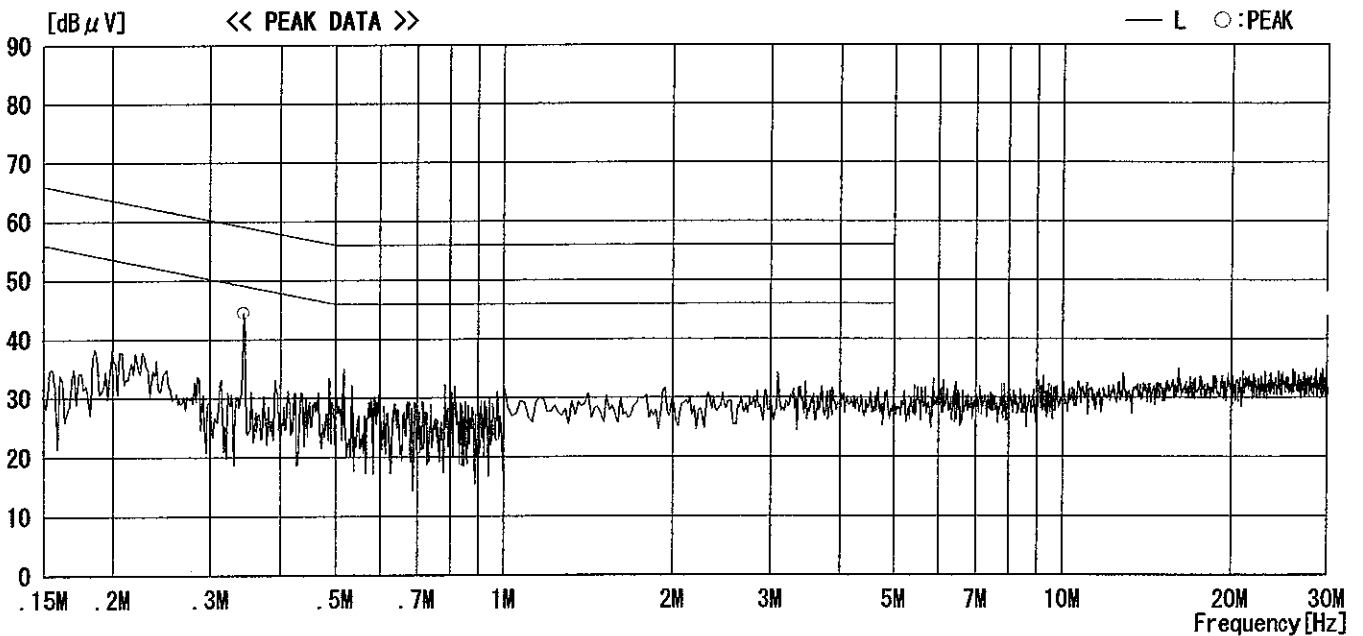
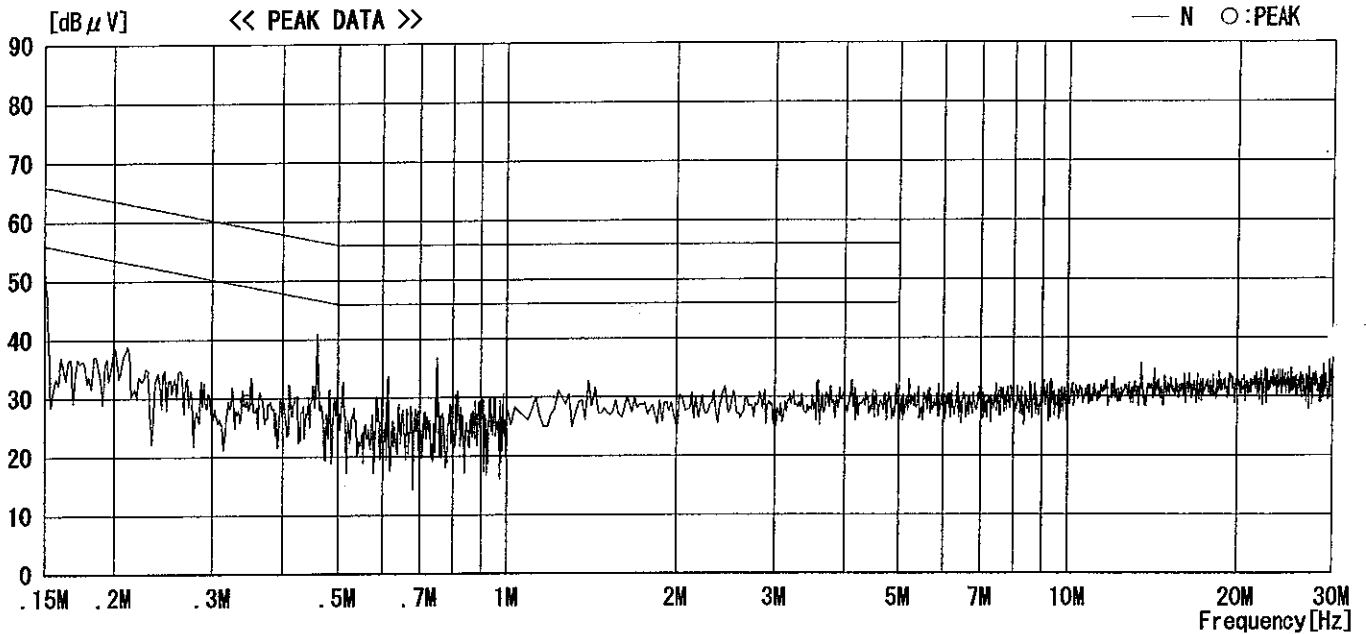


CHART:WITHOUT FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C. F (LISN+CABLE+Limiter)
 Except for the above table : adequate margin data below the limits. MLS-02 Page: 16

DATA OF CONDUCTED EMISSION TEST

A-Pex International Co., Ltd. EMC HEAD OFFICE DIVISION
Date : 2003/03/25 22:50:52

Applicant : Pioneer Corporation
Kind of EUT : Digital Wireless Speaker System
Model No. : XW-HTD630(T)
Serial No. : 12

Report No. : 23HE0036-H0 - 1
Power : AC120V / 60Hz
Temp°C/Humi% : 24 / 42
Operator : Hiroka Umeyama *S. Umeyama*

Mode / Remarks : Transmitting (Ch2) / FCC ID:AJDT101 / IC Number:775D-T101

LIMIT : FCC15C § 15.207 (QP)
FCC15C § 15.207 (AV)

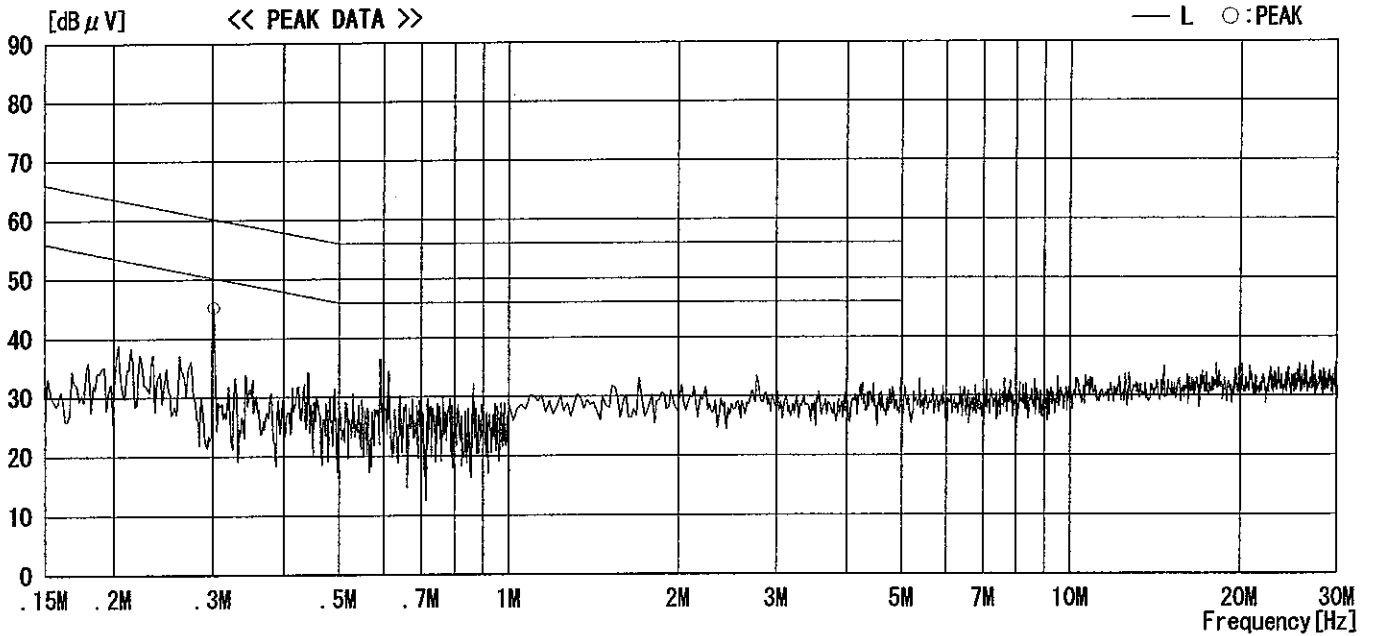
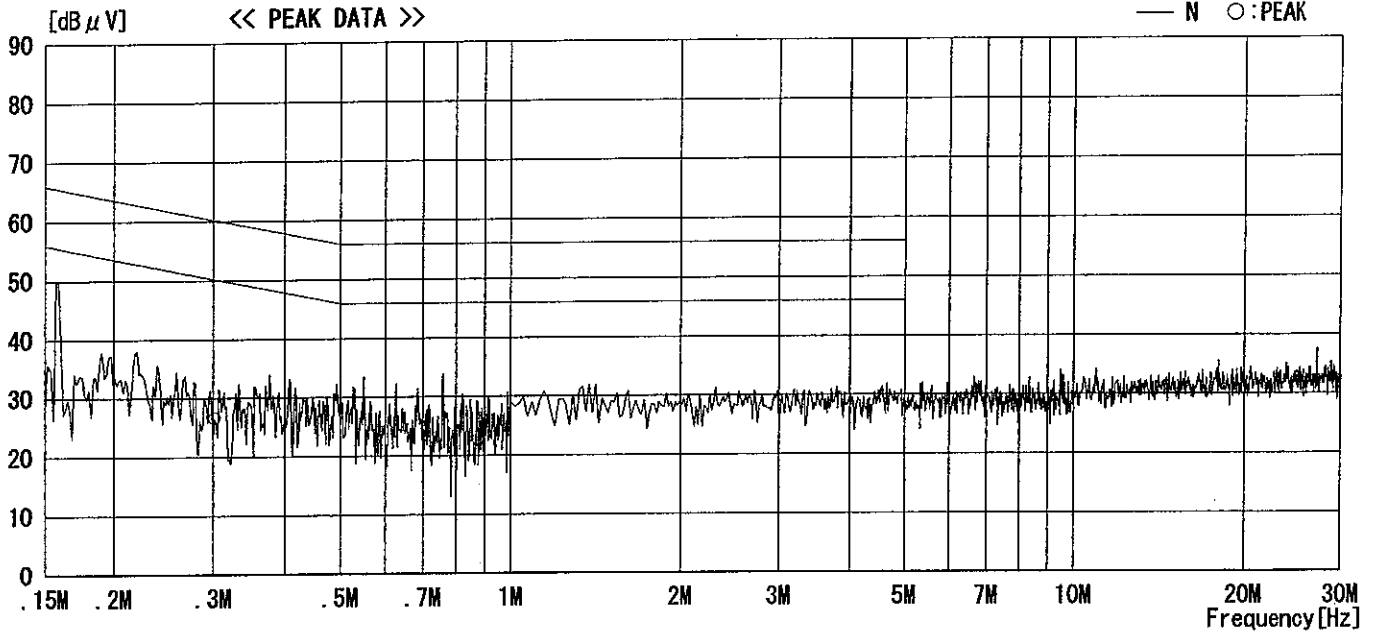


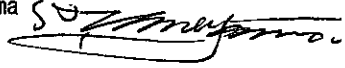
CHART: WITHOUT FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (LISN+CABLE+Limiter)
Except for the above table : adequate margin data below the limits. MLS-02 Page: 17

DATA OF CONDUCTED EMISSION TEST

A-Pex International Co., Ltd. EMC HEAD OFFICE DIVISION
Date : 2003/03/25 22:52:59

Applicant : Pioneer Corporation
Kind of EUT : Digital Wireless Speaker System
Model No. : XW-HTD630(T)
Serial No. : 12

Report No. : 23HE0036-H0 - 1
Power : AC120V / 60Hz
Temp°C/Humi% : 24 / 42
Operator : Hiroka Umeyama



Mode / Remarks : Transmitting (Ch4) / FCC ID:AJDT101 / IC Number:775D-T101

LIMIT : FCC15C § 15.207 (QP)
FCC15C § 15.207 (AV)

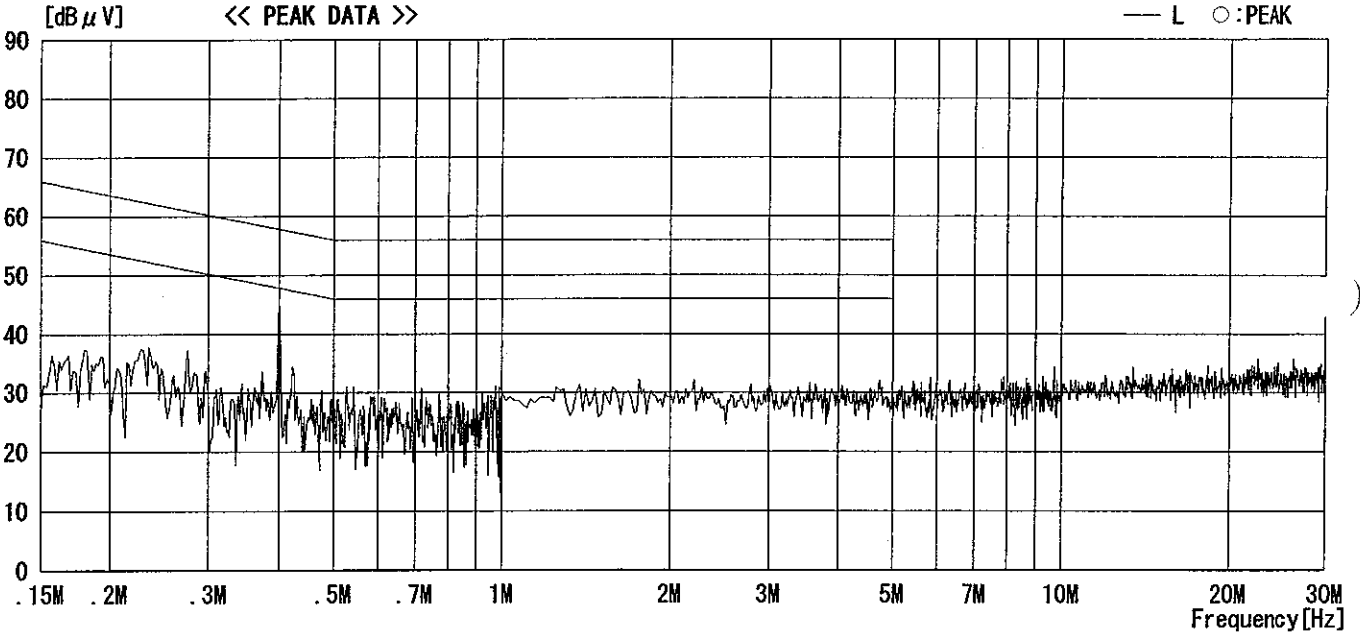
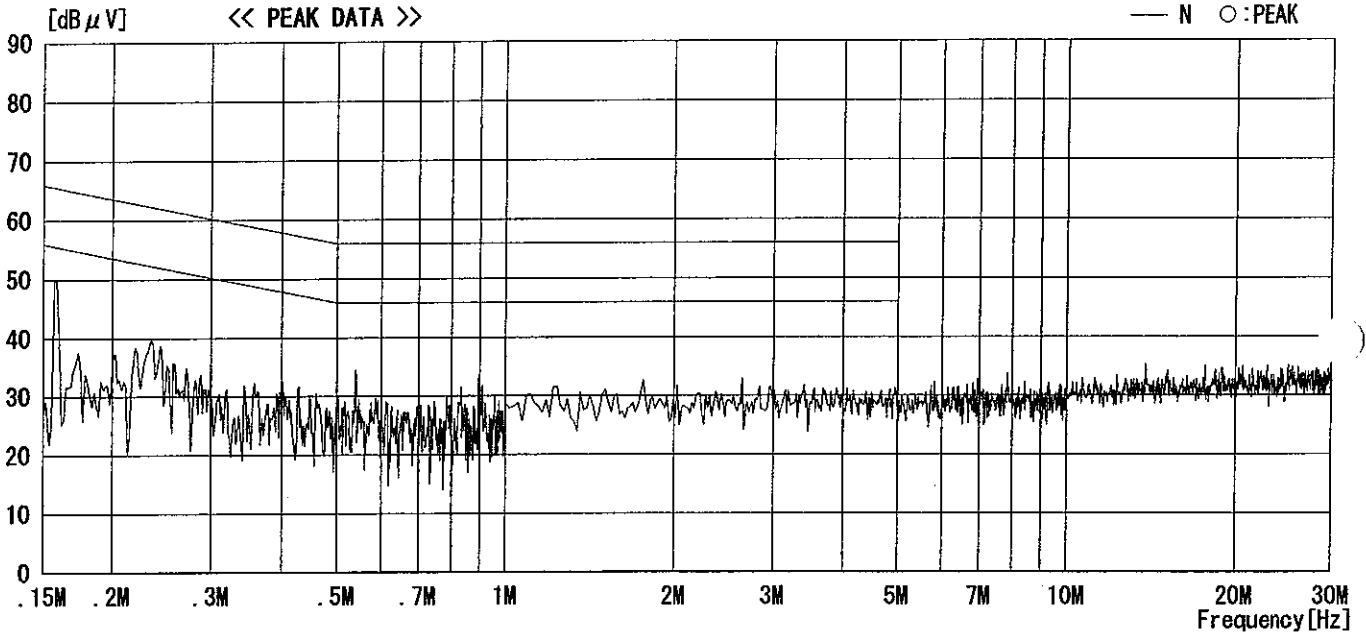


CHART:WITHOUT FACTOR, Peak hold data. Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN+CABLE+Limiter)
Except for the above table : adequate margin data below the limits. MLS-02

DATA OF 6dB BANDWIDTH

A-Pex Internationa Co., Ltd.

EMC HEAD OFFICE DIVISON No.3 Measurement room

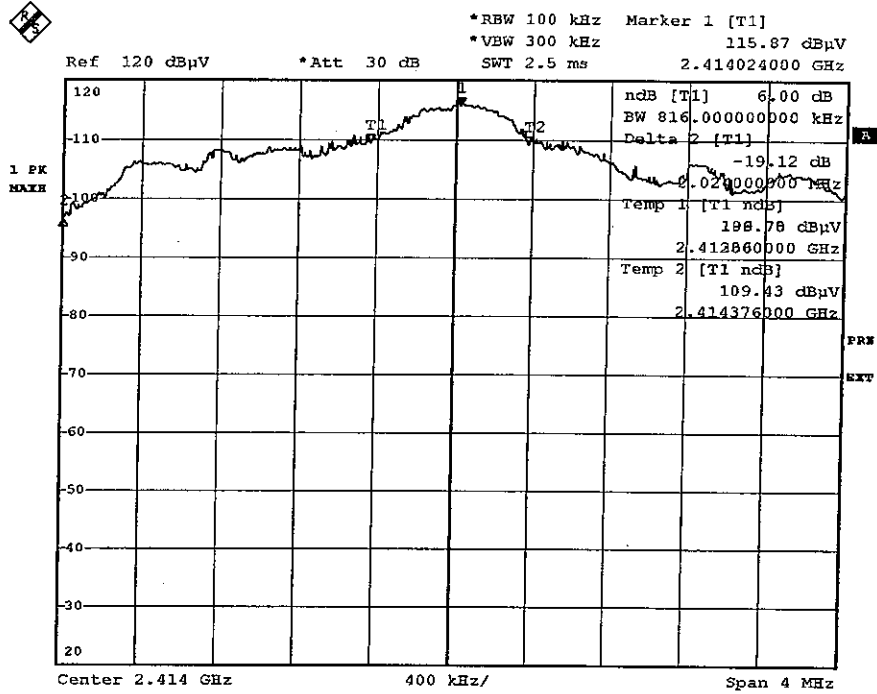
Company : Pioneer Corporation
Equipment : Digital Wireless Speaker System(Tx)
Model : XW-HTD630(T)
Sample No : 12
Power : AC120V/60Hz
Mode : Transmitting
FCC ID : AJDT101
IC No. : 775D-T101

Report No. : 23HE0036-HO- 1
REGULATION : Fcc Part15 Subpart C 247(a)(2)
Test Distance : -
Date : 2003/04/09
Temperature : 21deg.C
Humidity : 41%


ENGINEER : Hiroka Umeyama

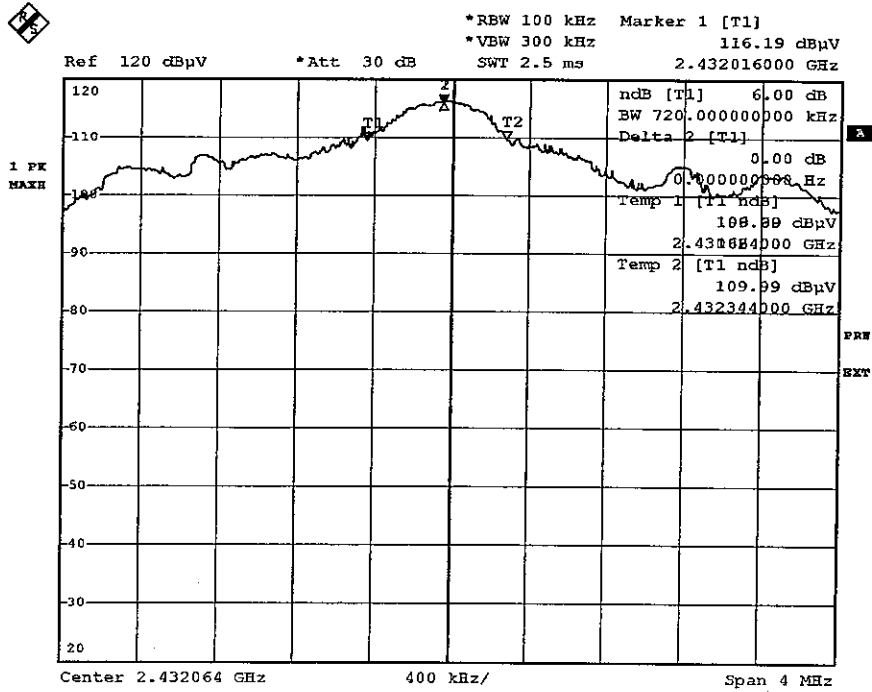
CH	FREQ [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
Low	2414.0	0.816	>500
Mid	2432.0	0.720	>500
High	2468.0	0.632	>500

6dB Bandwidth:Tx(ch1:2414MHz)



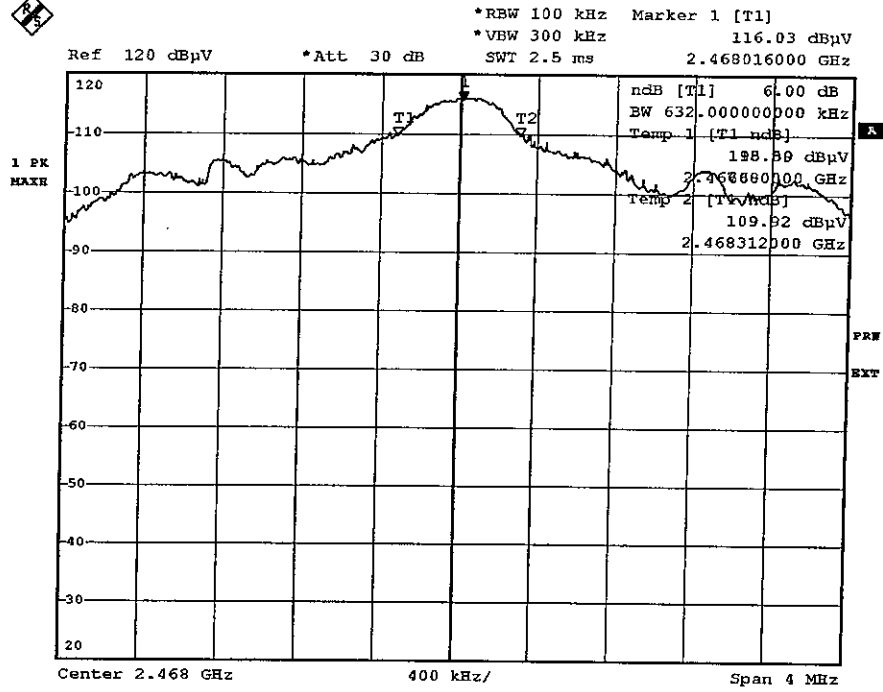
Date: 9.APR.2003 15:43:06

6dB Bandwidth:Tx(ch2:2432MHz)



Date: 9.APR.2003 15:38:34

6dB Bandwidth:Tx(ch4:2468MHz)



Date: 9.APR.2003 15:32:37

DATA OF PEAK OUTPUT POWER(CONDUCTED)

A-Pex Internationa Co., Ltd.

EMC HEAD OFFICE DIVISON No.3 Measurement

Company : Pioneer Corporation
Equipmen : Digital Wireless Speaker System(Tx)
Model : XW-HTD630(T)
Sample N : 12
Power : AC120V/60Hz
Mode : Transmitting (Ch1:2414MHz)
FCC ID : AJDT101
IC No. : 775D-T101

Report No. : 23HE0036-HO- **I**
REGULATION : Fcc Part15 Subpart C 247(b)(3)
Test Distance : -
Date : 2003/03/17
Temperature : 23deg.C
Humidity : 37%

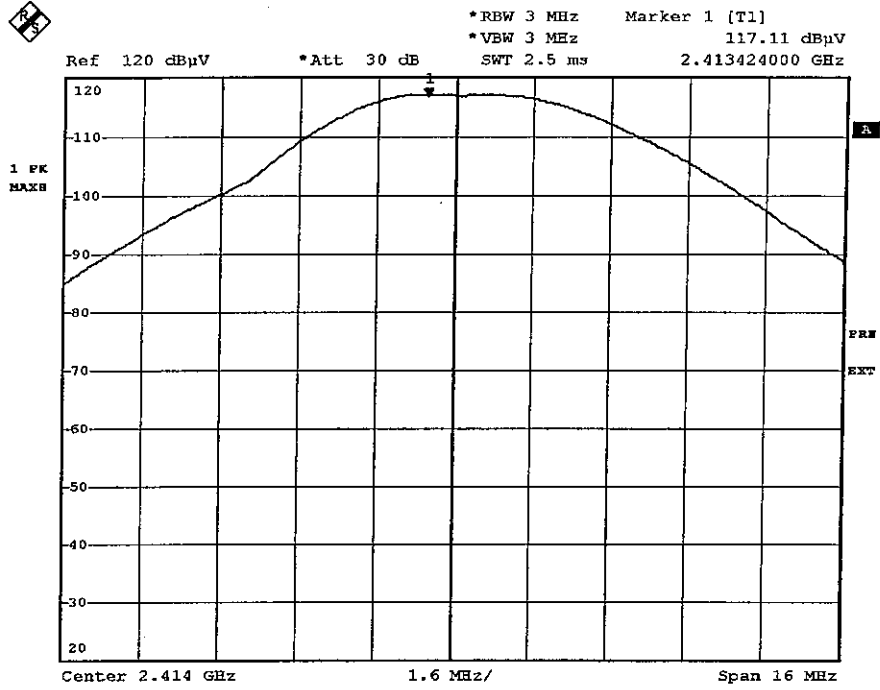

ENGINEER : Hiroka Umeyama

ch	FREQ [MHz]	S/A Reading [dBuV]	Cable Loss [dB]	ATTEN. [dB]	Result [dBuV]	Limit (1W) [dBm]	Margin [dB]
Low(1)	2414.0	117.11	2.1	0.0	119.2	30.0	17.8
Mid(6)	2432.0	116.99	2.1	0.0	119.1	30.0	17.9
High(11)	2468.0	116.59	2.0	0.0	118.6	30.0	18.4

Sample Calculation:

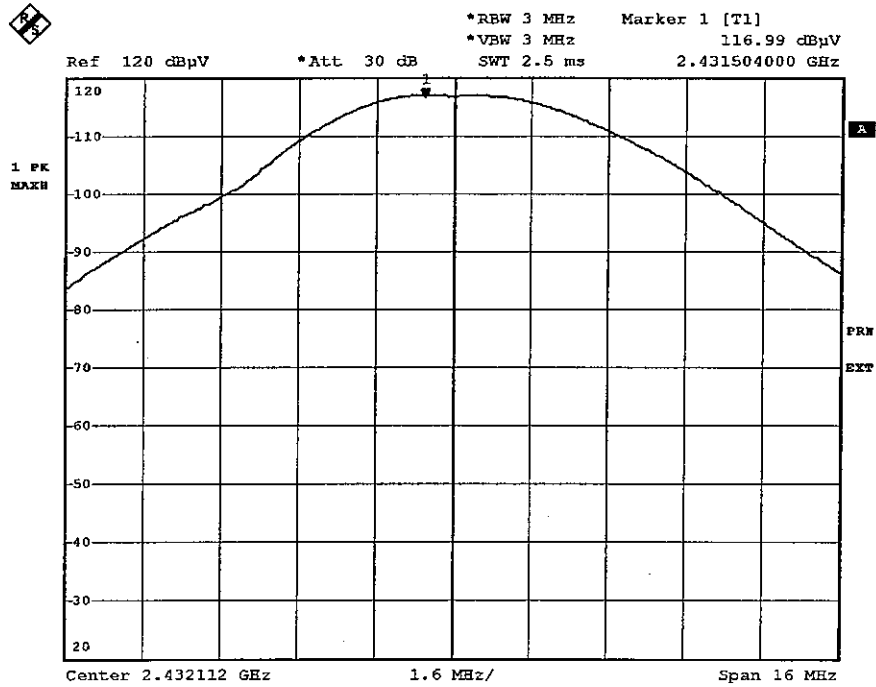
Result = Reading + Cable Loss

Peak Output Power(Conducted):Tx(ch1:2414MHz)



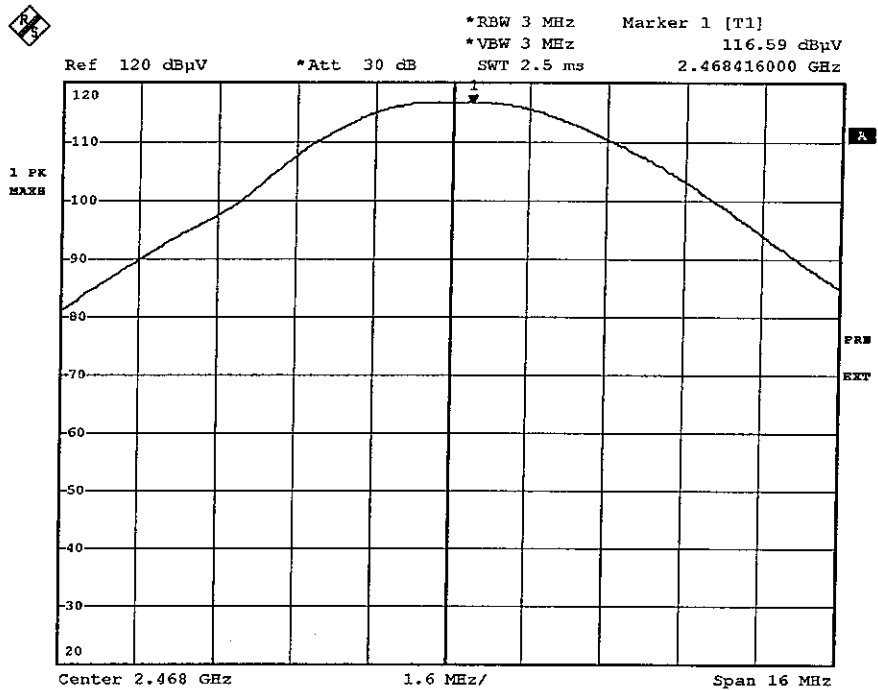
Date: 9.APR.2003 15:24:33

Peak Output Power(Conducted):Tx(ch2:2432MHz)



Date: 9.APR.2003 15:25:57

Peak Output Power(Conducted):Tx(Ch4:2468MHz)




Date: 9.APR.2003 15:28:27

DATA OF RADIATION TEST

A-Pex International Co., Ltd.
No.2 SEMI ANECHOIC CHAMBER
Report No. : 23HE0036-H0- 1

Applicant : Pioneer Corporation
 Kind of Equipment : DIGITAL WIRELESS SPEAKER SYSTEM (Tx)
 Model No. : XW-HTD630(T)
 Serial No. : 12
 Power : AC120V / 60Hz
 Mode : Transmitting (CH1)
 Remarks : FCC ID: AJDT101 , IC Number: 775D-T101
 Date : 3/18/2003
 Test Distance : 3 m
 Temperature : 20 °C
 Humidity : 36 %
 Regulation : FCC § 15.247(C)


 Engineer : Hiroka Umeyama

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER					HOR [dB μ V/m]	VER		HOR [dB]	VER
1.	49.15	BB	25.3	38.8	12.6	27.9	0.8	6.0	16.8	30.3	83.5	66.7	53.2
2.	72.09	BB	41.0	45.4	7.2	27.7	0.9	6.0	27.4	31.8	83.5	56.1	51.7
3.	98.32	BB	34.5	41.2	10.3	26.7	1.1	6.1	25.3	32.0	83.5	58.2	51.5
4.	122.88	BB	35.5	47.3	13.0	26.8	1.2	6.0	28.9	40.7	83.5	54.6	42.8
5.	147.46	BB	33.7	30.1	15.2	26.8	1.3	6.0	29.4	25.8	83.5	54.1	57.7
6.	172.04	BB	30.9	33.9	16.1	27.3	1.5	6.0	27.2	30.2	43.5	16.3	13.3
7.	344.07	BB	35.1	36.0	15.7	27.0	2.2	6.1	32.1	33.0	83.5	51.4	50.5
8.	368.64	BB	33.2	36.5	16.4	27.2	2.3	6.1	30.8	34.1	83.5	52.7	49.4
9.	442.38	BB	32.7	37.1	17.8	27.7	2.5	6.2	31.5	35.9	83.5	52.0	47.6
10.	589.84	BB	31.9	39.3	19.0	28.6	3.1	6.1	31.5	38.9	83.5	52.0	44.6
11.	614.42	BB	30.9	35.1	19.1	28.6	3.3	6.1	30.8	35.0	83.5	52.7	48.5
12.	663.57	BB	31.1	33.9	19.2	28.8	3.4	6.1	31.0	33.8	83.5	52.5	49.7
13.	712.72	BB	32.8	32.4	19.6	28.8	3.5	6.1	33.2	32.8	83.5	50.3	50.7

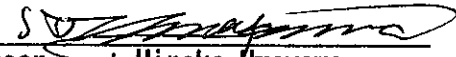
CALCULATION: READING + ANT.FACTOR + CABLE LOSS - AMP.GAIN + ATTEN.

The limit values at frequencies excepting restricted bands indicated in 15.205 are values 20dB below lower peak output powers at each channel.

DATA OF RADIATION TEST

A-Pex International Co., Ltd.
No.2 SEMI ANECHOIC CHAMBER
Report No. : 23HE0036-H0 - 1

Applicant : Pioneer Corporation
 Kind of Equipment : DIGITAL WIRELESS SPEAKER SYSTEM (Tx)
 Model No. : XW-HTD630(T)
 Serial No. : 12
 Power : AC120V / 60Hz
 Mode : Transmitting (CH2)
 Remarks : FCC ID: AJDT101 , IC Number: 775D-T101
 Date : 3/18/2003
 Test Distance : 3 m
 Temperature : 20 °C
 Humidity : 36 %
 Regulation : FCC § 15. 247(C)


Engineer : Hiroka Umeyama

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	49.15	BB	28.6	45.3	12.6	27.9	0.8	6.0	20.1	36.8	83.4	63.3	46.6
2.	72.09	BB	34.0	43.9	7.2	27.7	0.9	6.0	20.4	30.3	83.4	63.0	53.1
3.	98.30	BB	29.0	39.9	10.3	26.7	1.1	6.1	19.8	30.7	83.4	63.6	52.7
4.	122.88	BB	32.4	44.6	13.0	26.8	1.2	6.0	25.8	38.0	83.4	57.6	45.4
5.	344.07	BB	37.4	37.8	15.7	27.0	2.2	6.1	34.4	34.8	83.4	49.0	48.6
6.	368.65	BB	30.7	31.3	16.4	27.2	2.3	6.1	28.3	28.9	83.4	55.1	54.5
7.	442.38	BB	30.7	36.5	17.8	27.7	2.5	6.2	29.5	35.3	83.4	53.9	48.1

CALCULATION: READING + ANT.FACTOR + CABLE LOSS - AMP.GAIN + ATTEN.

The limit values at frequencies excepting restricted bands indicated in 15.205 are values 20dB below lower peak output powers at each channel.

DATA OF RADIATION TEST

A-Pex International Co., Ltd.
No.2 SEMI ANECHOIC CHAMBER
Report No. : 23HE0036-H0 - 1

Applicant : Pioneer Corporation
 Kind of Equipment : DIGITAL WIRELESS SPEAKER SYSTEM (Tx)
 Model No. : XW-HTD630(T)
 Serial No. : 12
 Power : AC120V / 60Hz
 Mode : Transmitting (CH4)
 Remarks : FCC ID: AJDT101 , IC Number: 775D-T101
 Date : 3/18/2003
 Test Distance : 3 m
 Temperature : 20 °C
 Humidity : 36 %
 Regulation : FCC § 15.247(C)


Engineer : Hiroka Umeyama

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
			HOR [dB μ V]	VER					HOR [dB μ V/m]	VER	HOR [dB]	VER		
1.	49.16	BB	34.4	52.1	12.6	27.9	0.8	6.0	25.9	43.6	83.5	57.6	39.9	
2.	98.30	BB	35.7	47.2	10.3	26.7	1.1	6.1	26.5	38.0	83.5	57.0	45.5	
3.	122.88	BB	31.2	43.7	13.0	26.8	1.2	6.0	24.6	37.1	83.5	58.9	46.4	
4.	147.46	BB	40.6	39.1	15.2	26.8	1.3	6.0	36.3	34.8	83.5	47.2	48.7	
5.	270.34	BB	36.7	37.8	18.8	26.5	1.9	6.0	36.9	38.0	46.0	9.1	8.0	
6.	294.92	BB	43.7	41.7	19.5	26.7	2.0	6.0	44.5	42.5	83.5	39.0	41.0	
7.	344.07	BB	43.9	45.1	15.7	27.0	2.2	6.1	40.9	42.1	83.5	42.6	41.4	
8.	368.65	BB	37.1	39.9	16.4	27.2	2.3	6.1	34.7	37.5	83.5	48.8	46.0	
9.	442.38	BB	39.8	38.9	17.8	27.7	2.5	6.2	38.6	37.7	83.5	44.9	45.8	
10.	589.84	BB	30.3	39.4	19.0	28.6	3.1	6.1	29.9	39.0	83.5	53.6	44.5	

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

The limit values at frequencies excepting restricted bands indicated in 15.205 are values 20dB below lower peak output powers at each channel.

DATA OF SPURIOUS EMISSIONS(1GHz to 26GHz)

A-Pex International Co., Ltd.

EMC HEAD OFFICE DIVISION No.2 SEMI ANECHOIC CHAMBER

COMPANY : Pioneer Corporation.	REPORT NO : 23HE0036-HO- I
EQUIPMENT : DIGITAL WIRELESS SPEAKER SYSTEM	REGULATION : Fcc Part15 Subpart C 15.247(c)
MODEL : XW-HTD630(T)	TEST DISTANCE : 3 and 1 m
S/N : 12	DATE : 3/14/2003
FCC ID : AJDT101	TEMPERATURE : 24°C
IC Number : 775D-T101	HUMIDITY : 30%
POWER : AC120V / 60Hz	
MODE : Transmitting(Ch1) - Receiving	


 ENGINEER : Hiroka Umeyama

PK DETECT

No.	FREQ [MHz]	T/R READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Band-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR [dBuV/m]	VER [dBuV/m]					HOR [dB]	VER [dB]			
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
1	2390.0	44.7	44.9	30.7	36.9	6.3	0.0	44.8	45.0	88.1	43.3	43.1
2	4828.0	43.4	44.5	35.2	36.8	9.0	0.3	51.1	52.2	74.0	22.9	21.8
3	7242.0	44.2	44.1	37.6	36.5	11.1	0.2	56.6	56.5	88.1	31.5	31.6
4	9656.0	44.5	44.8	37.3	37.2	12.7	0.0	57.3	57.6	88.1	30.8	30.5
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass - Dfac												
5	12067.0	47.5	49.2	40.7	36.8	14.9	0.3	57.1	58.8	74.0	16.9	15.2
6	14480.6	45.2	46.0	43.0	35.4	16.5	0.3	60.1	60.9	74.0	13.9	13.1
7	16895.0	43.4	47.9	45.3	36.4	17.7	0.0	60.5	65.0	88.1	27.6	23.1
8	19312.0	43.2	43.1	40.9	35.9	18.9	0.0	57.6	57.5	74.0	16.4	16.5
9	21726.0	44.9	44.7	40.9	36.6	19.6	0.0	59.3	59.1	88.1	28.8	29.0
10	24140.0	45.9	45.0	40.4	36.5	20.9	0.0	61.2	60.3	88.1	26.9	27.8

AV DETECT

No.	FREQ [MHz]	T/R READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Band-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV/m]	VER [dBuV/m]					HOR [dB]	VER [dB]			
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
1	2390.0	31.2	31.6	30.7	36.9	6.3	0.0	31.3	31.7	83.5	52.2	51.8
2	4828.0	29.4	32.3	35.2	36.8	9.0	0.3	37.1	40.0	54.0	16.9	14.0
3	7242.0	31.4	30.7	37.6	36.5	11.1	0.2	43.8	43.1	83.5	39.7	40.4
4	9656.0	30.6	31.6	37.3	37.2	12.7	0.0	43.4	44.4	83.5	40.1	39.1
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass - Dfac												
5	12067.0	36.8	37.9	40.7	36.8	14.9	0.3	46.4	47.5	54.0	7.6	6.5
6	14480.6	32.0	32.7	43.0	35.4	16.5	0.3	46.9	47.6	54.0	7.1	6.4
7	16895.0	30.1	35.7	45.3	36.4	17.7	0.0	47.2	52.8	83.5	36.3	30.7
8	19312.0	29.9	29.8	40.9	35.9	18.9	0.0	44.3	44.2	54.0	9.7	9.8
9	21726.0	31.4	31.3	40.9	36.6	19.6	0.0	45.8	45.7	83.5	37.7	37.8
10	24140.0	31.7	31.7	40.4	36.5	20.9	0.0	47.0	47.0	83.5	36.5	36.5

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*The limit values at frequencies excepting restricted bands indicated in 15.205 are values 20dB below lower (PK:88.1dBuV/AV:83.5dBuV) peak output powers (PK:108.1dBuV/AV:103.5dBuV) at each channel.

DATA OF SPURIOUS EMISSIONS(1GHz to 26GHz)

A-Pex International Co., Ltd.

EMC HEAD OFFICE DIVISION No.2 SEMI ANECHOIC CHAMBER

COMPANY : Pioneer Corporation.	REPORT NO : 23HE0036-HO - 1
EQUIPMENT : DIGITAL WIRELESS SPEAKER SYSTEM	REGULATION : Fcc Part15 Subpart C 15.247(c)
MODEL : XW-HTD630(T)	TEST DISTANCE : 3 and 1 m
S/N : 12	DATE : 3/14/2003
FCC ID : AJDT101	TEMPERATURE : 24°C
IC Number : 775D-T101	HUMIDITY : 30%
POWER : AC120V / 60Hz	
MODE : Transmitting(Ch2) - Receiving	


 ENGINEER : Hiroka Umeyama

PK DETECT

No.	FREQ [MHz]	T/R READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Band-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR [dBuV/m]	VER [dBuV/m]					HOR [dB]	VER [dB]			
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
2	4864.0	43.3	43.4	35.2	36.8	9.0	0.3	51.0	51.1	74.0	23.0	22.9
3	7296.0	45.0	44.5	37.6	36.5	11.1	0.2	57.4	56.9	74.0	16.6	17.1
4	9728.0	43.3	43.8	37.3	37.2	12.7	0.0	56.1	56.6	88.6	32.5	32.0
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass - Dfac												
5	12157.8	46.7	48.1	40.7	36.8	14.9	0.3	56.3	57.7	74.0	17.7	16.3
6	14589.5	45.2	46.7	43.0	35.4	16.5	0.3	60.1	61.6	74.0	13.9	12.4
7	17020.4	43.2	48.3	45.3	36.4	17.7	0.0	60.3	65.4	88.6	28.3	23.2
8	19456.0	43.2	43.6	40.9	35.9	18.9	0.0	57.6	58.0	74.0	16.4	16.0
9	21888.0	46.0	46.3	40.9	36.6	19.6	0.0	60.4	60.7	88.6	28.2	27.9
10	24320.0	45.2	44.5	40.4	36.5	20.9	0.0	60.5	59.8	88.6	28.1	28.8

AV DETECT

No.	FREQ [MHz]	T/R READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Band-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV/m]	VER [dBuV/m]					HOR [dB]	VER [dB]			
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
2	4864.0	29.7	29.9	35.2	36.8	9.0	0.3	37.4	37.6	54.0	16.6	16.4
3	7296.0	31.8	31.1	37.6	36.5	11.1	0.2	44.2	43.5	54.0	9.8	10.5
4	9728.0	30.4	30.3	37.3	37.2	12.7	0.0	43.2	43.1	83.4	40.3	40.3
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass - Dfac												
5	12157.8	34.7	37.3	40.7	36.8	14.9	0.3	44.3	46.9	54.0	9.7	7.2
6	14589.5	32.3	33.0	43.0	35.4	16.5	0.3	47.2	47.9	54.0	6.8	6.1
7	17020.4	30.1	37.4	45.3	36.4	17.7	0.0	47.2	54.5	83.4	36.2	28.9
8	19456.0	30.0	30.0	40.9	35.9	18.9	0.0	44.4	44.4	54.0	9.6	9.6
9	21888.0	32.5	32.4	40.9	36.6	19.6	0.0	46.9	46.8	83.4	36.5	36.6
10	24320.0	31.4	31.3	40.4	36.5	20.9	0.0	46.7	46.6	83.4	36.7	36.9

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*The limit values at frequencies excepting restricted bands indicated in 15.205 are values 20dB below lower (PK:88.6dBuV/AV:83.4dBuV) peak output powers (PK:108.6dBuV/AV:103.4dBuV) at each channel.

DATA OF SPURIOUS EMISSIONS(1GHz to 26GHz)

A-Pex International Co., Ltd.

EMC HEAD OFFICE DIVISION No.2 SEMI ANECHOIC CHAMBER

COMPANY : Pioneer Corporation.

REPORT NO : 23HE0036-HO - 1

EQUIPMENT : DIGITAL WIRELESS SPEAKER SYSTEM

REGULATION : Fcc Part15 Subpart C 15.247(c)

MODEL : XW-HTD630(T)

TEST DISTANCE : 3 and 1 m

S/N : 12

DATE : 3/14/2003

FCC ID : AJDT101

TEMPERATURE : 24°C

IC Number : 775D-T101

HUMIDITY : 30%

POWER : AC120V / 60Hz

MODE : Transmitting(Ch4) - Receiving

ENGINEER :  Hiroka Umeyama

PK DETECT

No.	FREQ [MHz]	T/R READING HOR VER [dBuV/m]		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Band-Pass Filter [dB]	RESULT HOR VER [dBuV/m]		Limit PK [dBuV/m]	MARGIN HOR VER [dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
1	2483.5	44.7	45.6	30.7	36.9	6.3	0.0	44.8	45.7	88.7	43.9	43.0
2	4936.0	42.9	43.1	35.2	36.8	9.0	0.3	50.6	50.8	74.0	23.4	23.2
3	7404.0	46.1	45.6	37.6	36.5	11.1	0.2	58.5	58.0	74.0	15.5	16.0
4	9872.0	43.8	43.3	37.3	37.2	12.7	0.0	56.6	56.1	88.7	32.1	32.6
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass - Dfac												
5	12337.8	46.1	46.1	40.7	36.8	14.9	0.3	55.7	55.7	74.0	18.3	18.3
6	14808.0	43.6	43.4	43.0	35.4	16.5	0.3	58.5	58.3	88.7	30.2	30.4
7	17273.1	43.7	47.5	45.3	36.4	17.7	0.0	60.8	64.6	88.7	27.9	24.1
8	19744.0	43.4	43.4	40.9	35.9	18.9	0.0	57.8	57.8	74.0	16.2	16.2
9	22212.0	44.9	44.4	40.9	36.6	19.6	0.0	59.3	58.8	74.0	14.7	15.2
10	24680.0	45.3	45.5	40.4	36.5	20.9	0.0	60.6	60.8	88.7	28.1	27.9

AV DETECT

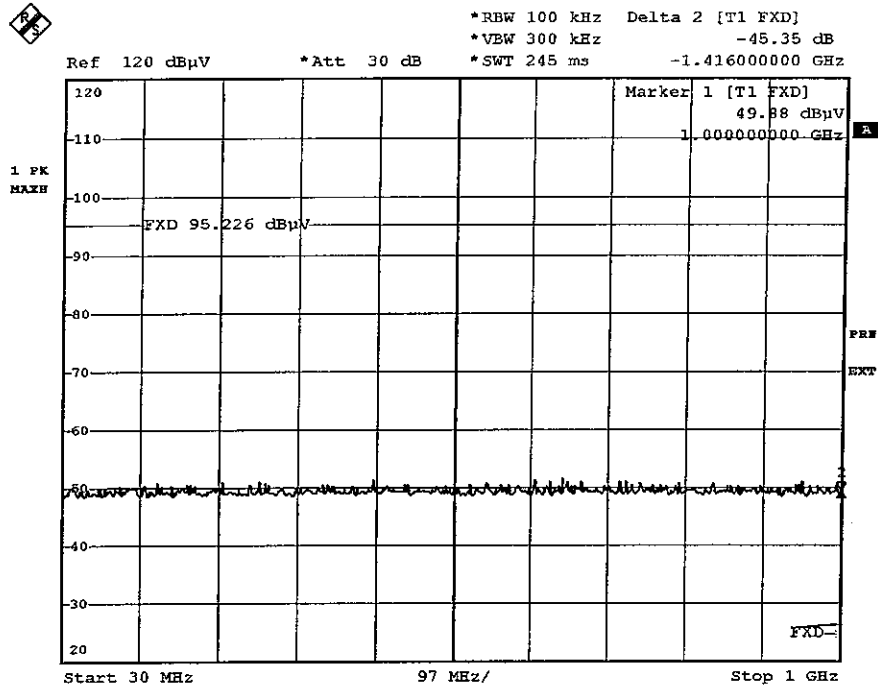
No.	FREQ [MHz]	T/R READING HOR VER [dBuV/m]		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Band-Pass Filter [dB]	RESULT HOR VER [dBuV/m]		Limit AV [dBuV/m]	MARGIN HOR VER [dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
1	2483.5	31.0	32.4	30.7	36.9	6.3	0.0	31.1	32.5	83.5	52.4	51.0
2	4936.0	29.6	29.6	35.2	36.8	9.0	0.3	37.3	37.3	54.0	16.7	16.7
3	7404.0	33.0	32.9	37.6	36.5	11.1	0.2	45.4	45.3	54.0	8.6	8.7
4	9872.0	30.4	30.4	37.3	37.2	12.7	0.0	43.2	43.2	83.5	40.3	40.3
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass - Dfac												
5	12337.8	32.6	33.7	40.7	36.8	14.9	0.3	42.2	43.3	54.0	11.8	10.8
6	14808.0	30.4	30.4	43.0	35.4	16.5	0.3	45.3	45.3	83.5	38.2	38.2
7	17273.1	29.9	37.4	45.3	36.4	17.7	0.0	47.0	54.5	83.5	36.5	29.0
8	19744.0	30.2	29.9	40.9	35.9	18.9	0.0	44.6	44.3	54.0	9.4	9.7
9	22212.0	31.4	31.2	40.9	36.6	19.6	0.0	45.8	45.6	54.0	8.3	8.4
10	24680.0	32.0	32.0	40.4	36.5	20.9	0.0	47.3	47.3	83.5	36.2	36.2

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

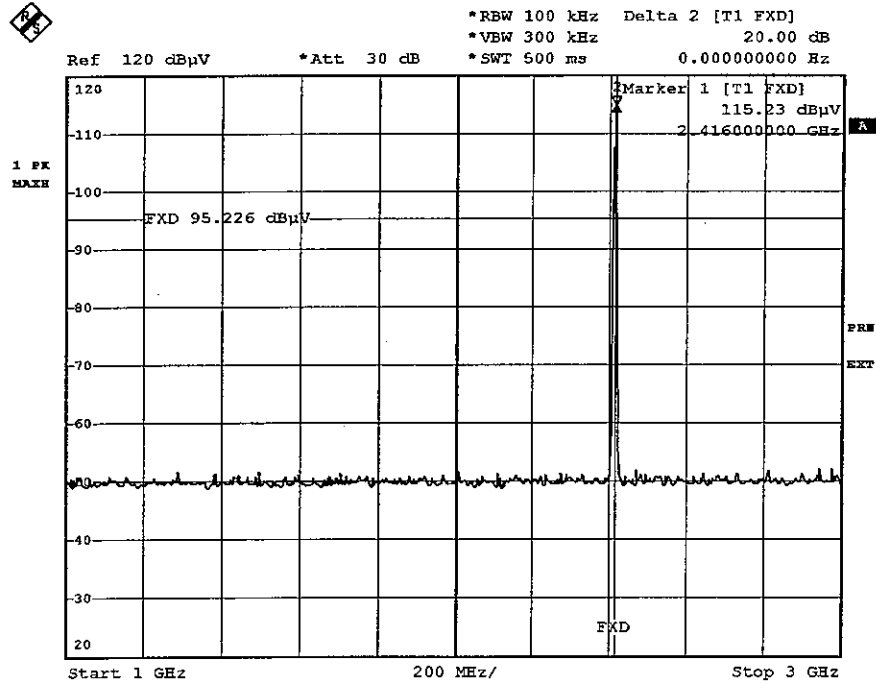
*The limit values at frequencies excepting restricted bands indicated in 15.205 are values 20dB below lower (PK:88.7dBuV/AV:83.5dBuV) peak output powers (PK:108.7dBuV/AV:103.5dBuV) at each channel.

Out of Band Emission(Conducted) :Tx(Ch1:2414MHz)30MHz-1GHz



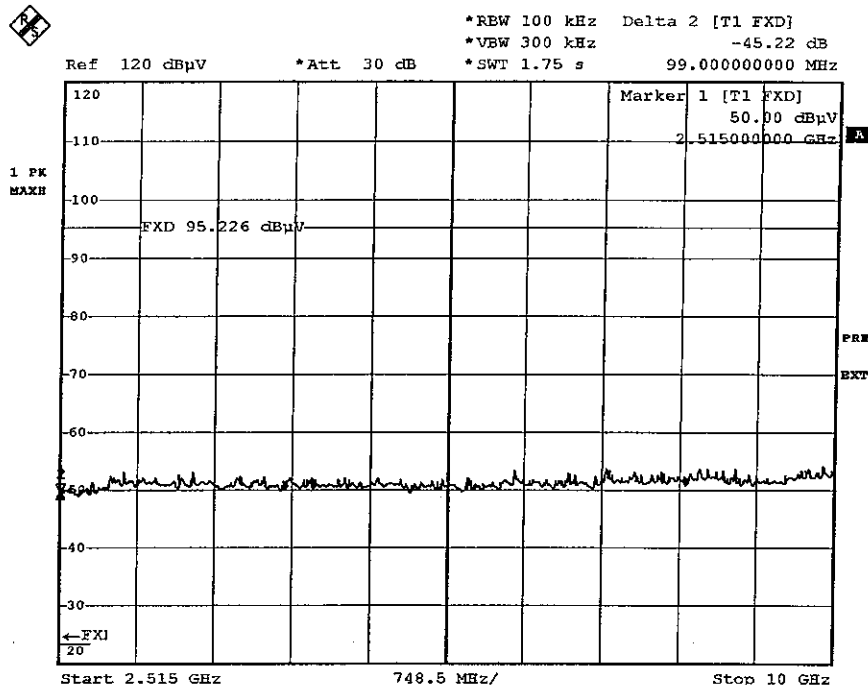
Date: 9.APR.2003 15:57:16

Out of Band Emission(Conducted) :Tx(Ch1:2414MHz)1GHz-3GHz



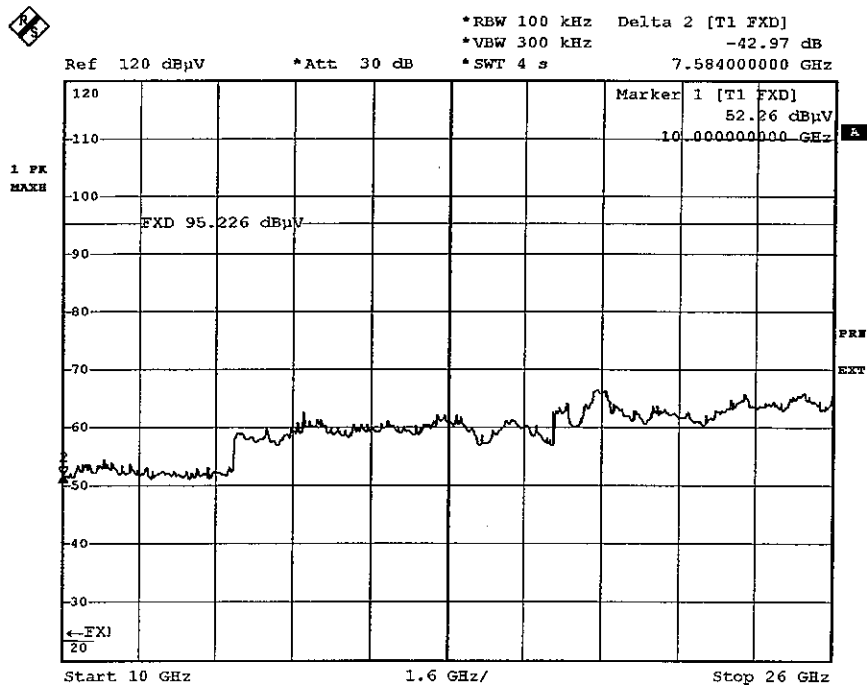
Date: 9.APR.2003 15:54:57

Out of Band Emission(Conducted) :Tx(Ch1:2414MHz)3GHz-10GHz



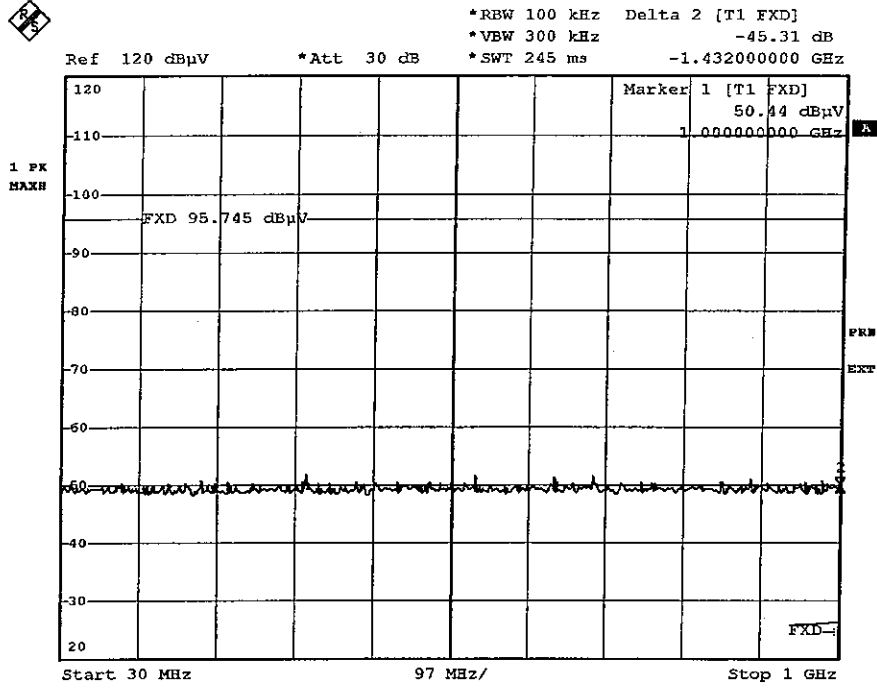
Date: 9.APR.2003 15:59:03

Out of Band Emission(Conducted) :Tx(Ch1:2414MHz)10GHz-26GHz



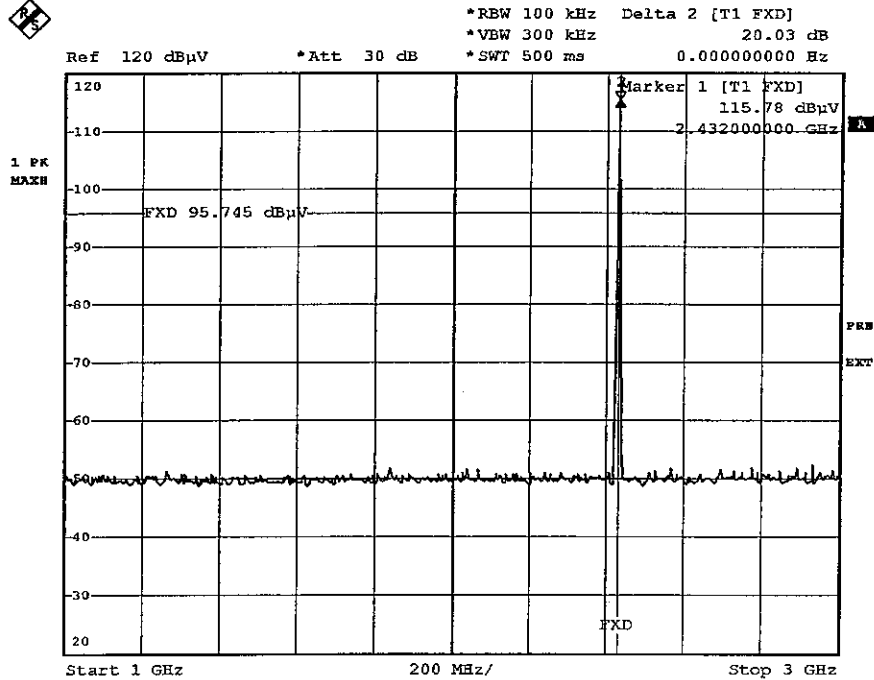
Date: 9.APR.2003 16:00:42

Out of Band Emission(Conducted) :Tx(Ch2:2432MHz)30MHz-1GHz



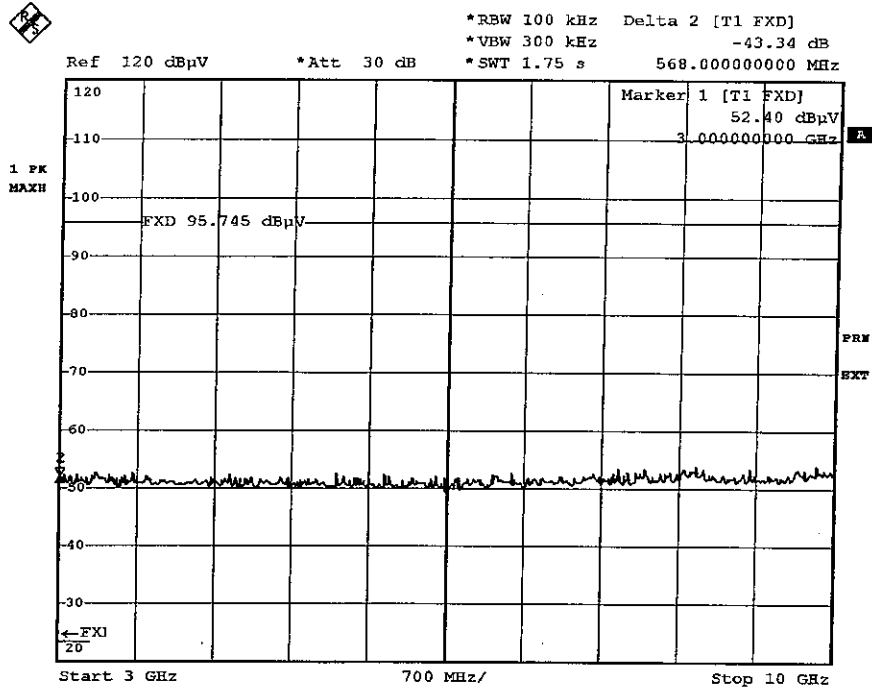
Date: 9.APR.2003 16:51:37

Out of Band Emission(Conducted) :Tx(Ch2:2432MHz)1GHz-3GHz



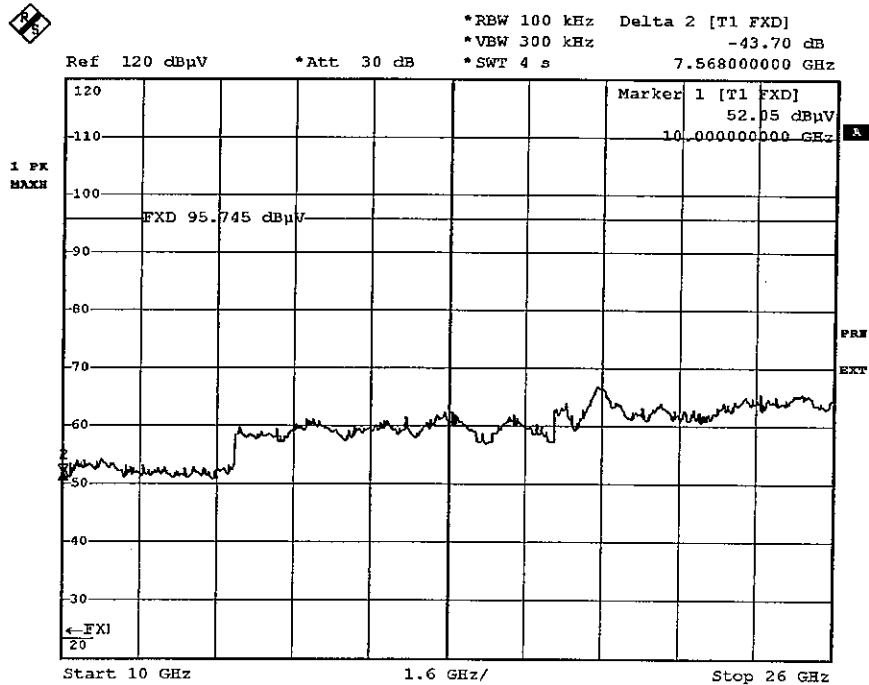
Date: 9.APR.2003 16:49:43

Out of Band Emission(Conducted) :Tx(Ch2:2432MHz)3GHz-10GHz



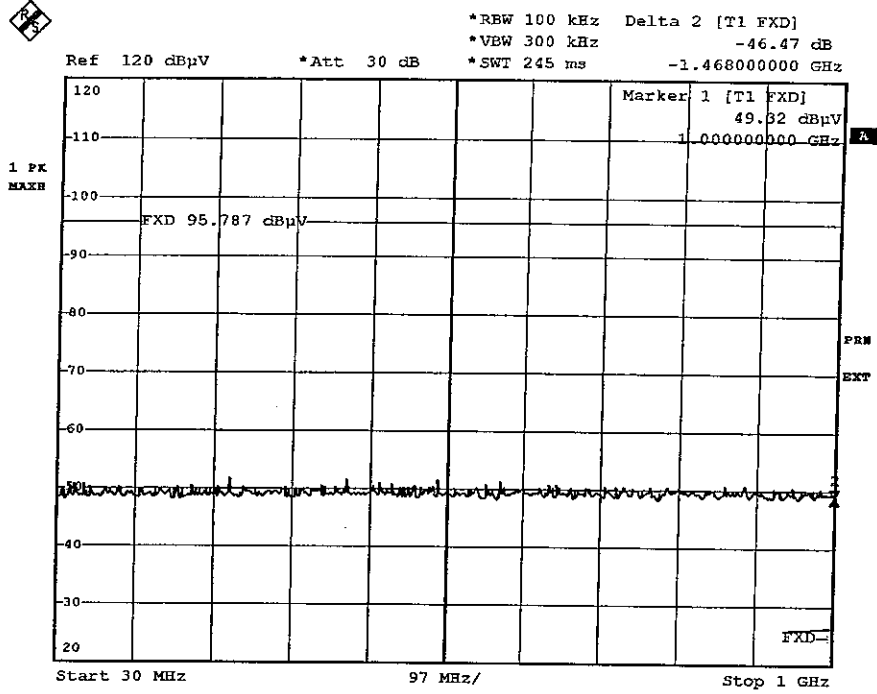
Date: 9.APR.2003 16:53:07

Out of Band Emission(Conducted) :Tx(Ch2:2432MHz)10GHz-26GHz



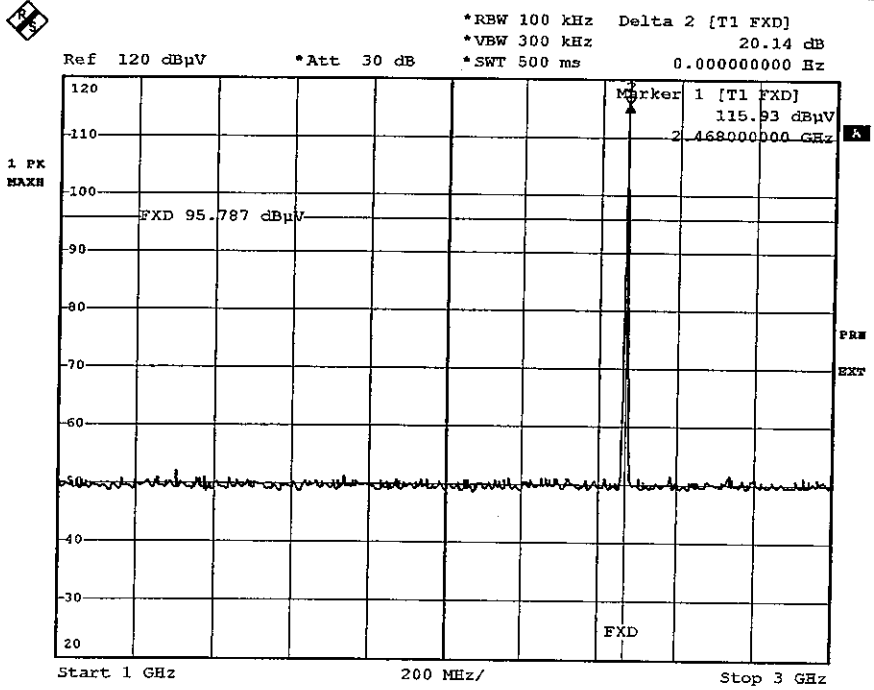
Date: 9.APR.2003 16:54:37

Out of Band Emission(Conducted) :Tx(Ch4:2468MHz)30MHz-1GHz



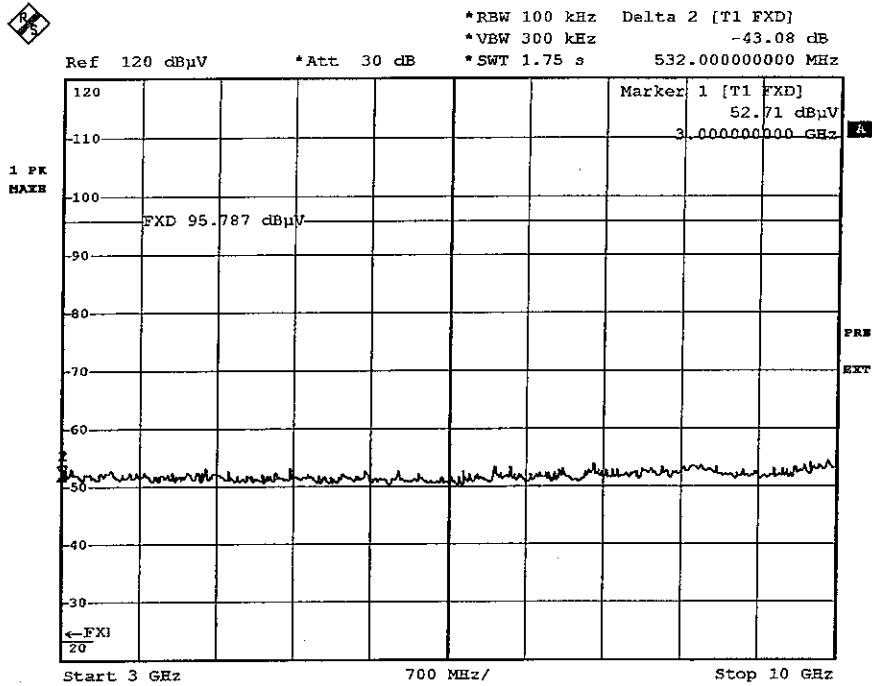
Date: 9.APR.2003 16:42:32

Out of Band Emission(Conducted) :Tx(Ch4:2468MHz)1GHz-3GHz



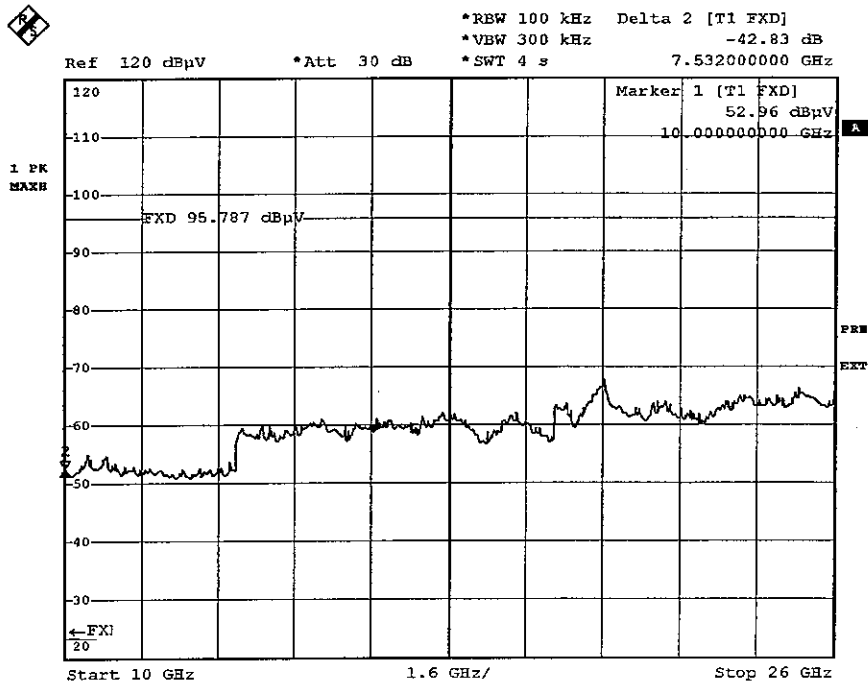
Date: 9.APR.2003 16:41:01

Out of Band Emission(Conducted) :Tx(Ch4:2468MHz)3GHz-10GHz



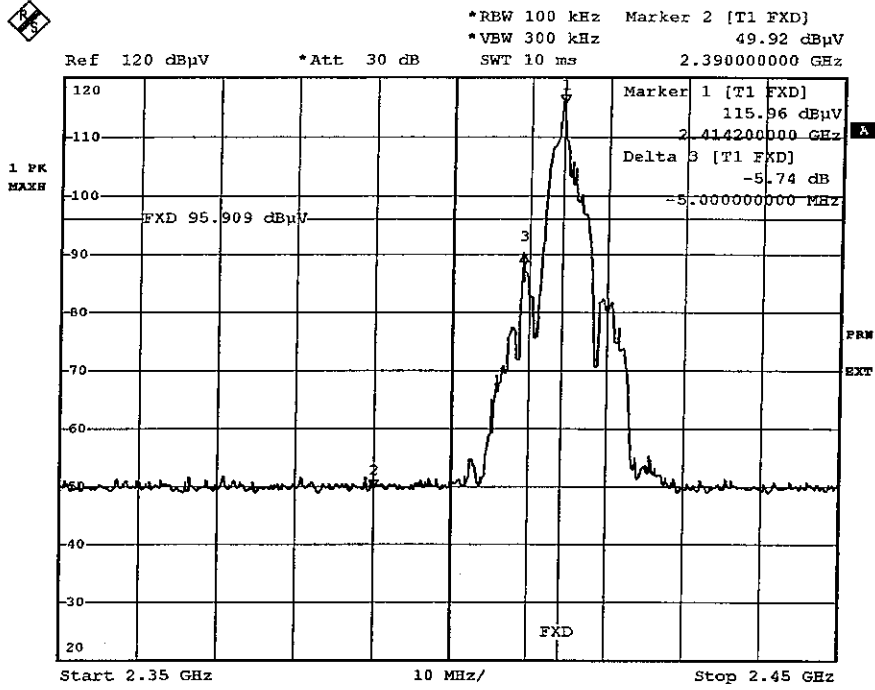
Date: 9.APR.2003 16:45:27

Out of Band Emission(Conducted) :Tx(Ch4:2468MHz)10GHz-26GHz



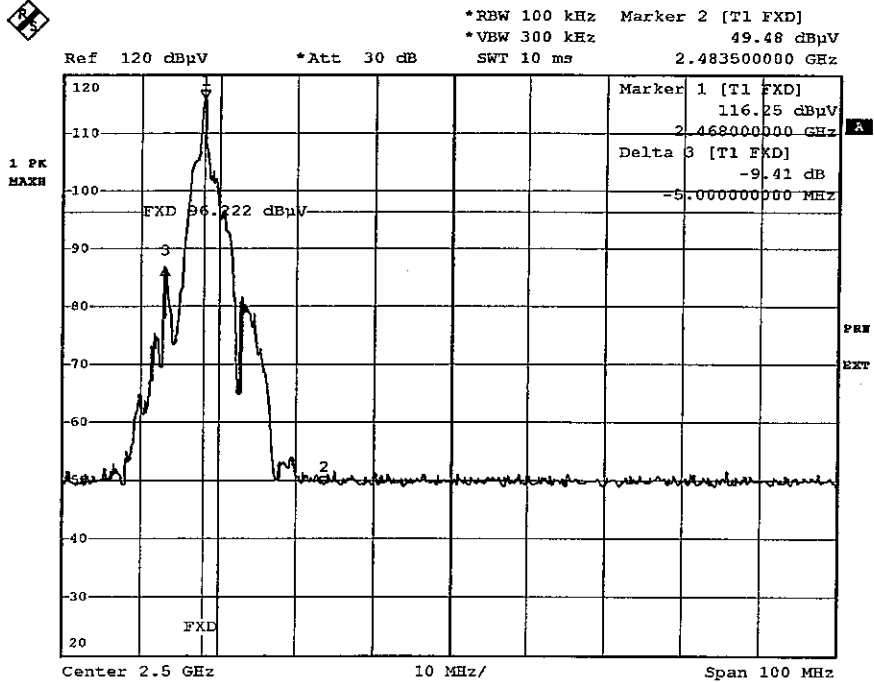
Date: 9.APR.2003 16:47:08

Band Edges :Tx(Ch1:2414MHz)



Date: 9.APR.2003 15:52:54

Band Edges :Tx(Ch4:2468MHz)



Date: 9.APR.2003 16:38:48

DATA OF POWER DENSITY(CONDUCTED)

A-Pex Internationa Co., Ltd.

EMC HEAD OFFICE DIVISON No.3 Measurement

Company : Pioneer Corporation
 Equipment : Digital Wireless Speaker System(Tx)
 Model : XW-HTD630(T)
 Sample No. : 12
 Power : AC120V/60Hz
 Mode : Transmitting
 FCC ID : AJDT101
 IC No. : 775D-T101

Report No. : 23HE0036-HO- 1
 REGULATION : Fcc Part15 Subpart C 247(d)
 Test Distance : -
 Date : 2003/04/09
 Temperature : 21deg.C
 Humidity : 41%

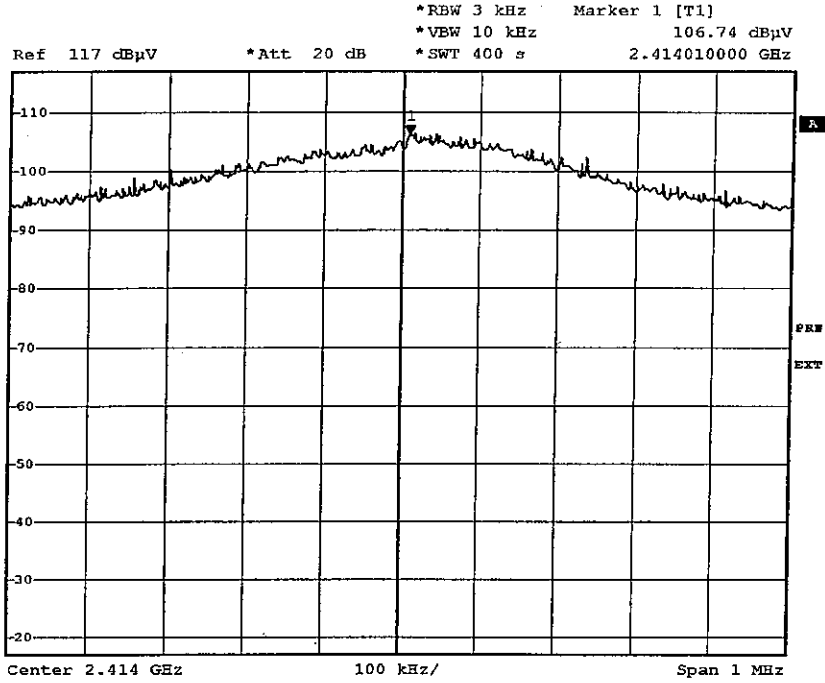

 ENGINEER : Hiroka Uneyama

ch	FREQ [MHz]	S/A Reading [dBuV]	Cable Loss [dB]	ATTEN. [dB]	Result [dBuV]	Limit [dBm]	Margin [dB]
Low(1)	2414.0	106.74	2.1	0.0	108.8	8.0	6.2
Mid(6)	2432.0	106.72	2.1	0.0	108.8	8.0	6.2
High(11)	2468.0	109.72	2.0	0.0	111.7	8.0	3.3

Sample Calculation:

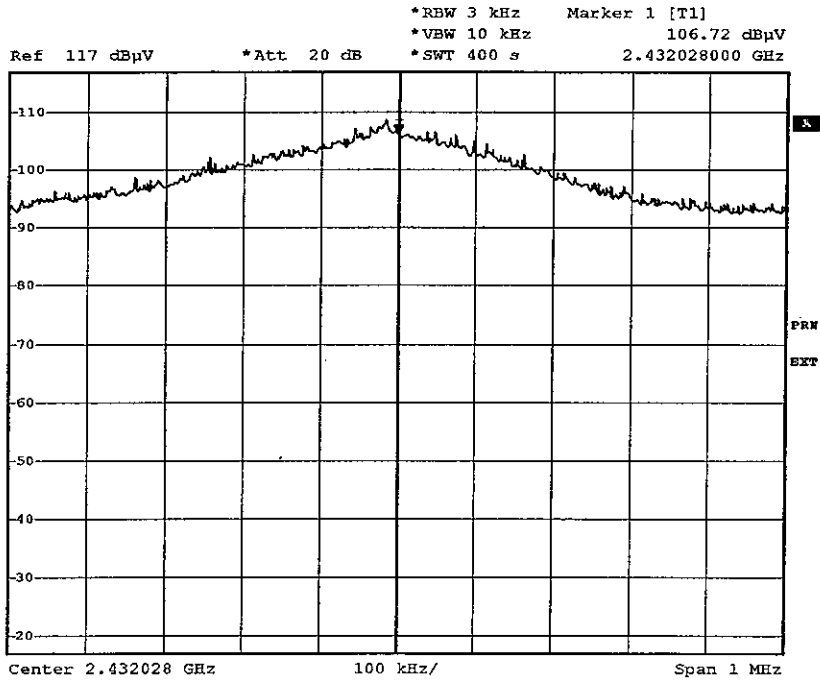
Result = Reading + Cable Loss

Power Density : TX(Ch1:2414MHz)



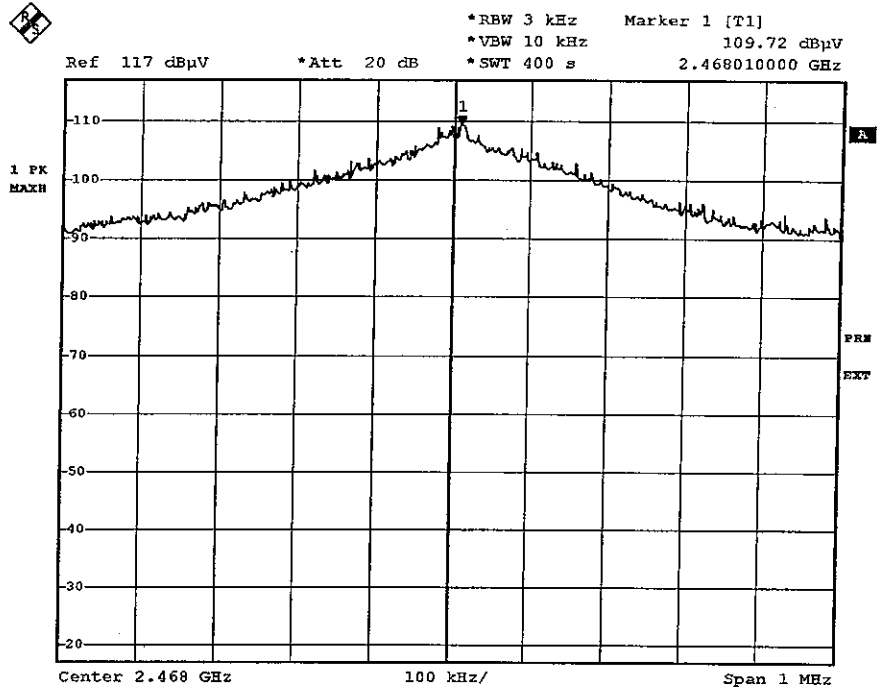
Date: 9.APR.2003 17:22:10

Power Density : TX(Ch2:2432MHz)



Date: 9.APR.2003 17:05:25

Power Density : TX(Ch4:2468MHz)



Date: 9.APR.2003 17:13:49