



EMI TEST REPORT

Test Report No. : 24IE0007-HO-1

Applicant : Pioneer Corporation
Type of Equipment : Digital Wireless Speaker System
(Transmitter)
Model No. : XW-HT1(T)
Test standard : FCC Part 15 Subpart C : 2003
Section 15.207, Section 15.247
FCC ID : AJDT104
Test Result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Apex 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.

Date of test:

April 21, 22 and May 10, 2004

Tested by:

Hiroka Umeyama
EMC Service

Approved by :

Hironobu Shimoji
Group Leader of
EMC Service

UL Apex Co., Ltd.

Head Office EMC Lab.

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MF060b(10.04.03)

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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-HT1(T)
Serial No. : PA-0845-2/4(Radiated Spurious Emission and Conducted Emission)
PA-0845-1/4
(Other tests except for Radiated Spurious Emission and Conducted Emission)
Country of Manufacture : Malaysia (Transmitter) and China (AC Adaptor)
Rating : AC Adaptor:AC120V/60Hz
Receipt Date of Sample : April 21, 2004
Condition of EUT : Engineering prototype
(Not for sale: This sample is equivalent to mass-produced items.)

2.2 Product Description

Pioneer Corporation, Model No. XW-HT1(T) is the Digital Wireless Speaker System (Transmitter).

(Transmitter)
Equipment Type : Transmitter
Frequency band : from 2414 MHz to 2468 MHz
Frequency of operation : 2414, 2432, 2450, 2468MHz
Type of Modulation : GFSK
Antenna Type : Rod
Antenna Gain : 0.44dBi
ITU code : F1D
Mode of operation : Simplex
Other clock frequency : 8MHz 12.288MHz, 24.576MHz, 36.864MHz and 10MHz
Method of Frequency Generation : Crystal

FCC 15.31 (e)

This EUT provides stable voltage (the used voltage is regulated by IC) constantly to RF Module regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part15 Subpart C : 2003

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	15.5dB 0.4200MHz L	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	2.8dB 17276.0MHz Horizontal/ Vertical (Radiated) *1)	Complied
5	Restricted Band Edges	ANSI C63.4:2001	Section 15.247 (c)	Conducted	N/A	-	Complied
6	Power Density	ANSI C63.4:2001	Section 15.247 (d)	Conducted	N/A	-	Complied

Note: UL Apex's EMI Work Procedures No.QPM05.

*These tests were also referred to "Guidance on Measurement for Digital Transmission Systems Section15.247".

*These tests were performed without any deviations from test procedure except for additions or exclusions.

*1)In the frequency over the sixth harmonic, the noise from the EUT was not seen. Its base noise implies the system noise floor.

3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	RSS210(issue 5):2001 +Amendment :2002 +Amendment2:2003 + Amendment3:2004	RSS210(issue 5):2001 +Amendment :2002 +Amendment2:2003 + Amendment3:2004	Conducted	N/A	N/A	N/A

3.4 Confirmation

UL Apex Co., Ltd. hereby confirms that E.U.T., in the configuration tested, complies with the specifications
FCC Part 15 Subpart C : 2003 Section 15.207 and 15.247.

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3.5 Uncertainty

Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test is $\pm 1.3\text{dB}$.
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 $\pm 4.5\text{dB}(3\text{m})$.
The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is $\pm 5.2\text{dB}(3\text{m})$.
The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is $\pm 6.6\text{dB}$.
The data listed in this report meets the limits unless the uncertainty is taken into consideration.

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test is $\pm 3.0\text{dB}$.
The data listed in this test report has enough margin.

3.6 Test Location

UL Apex Co., Ltd. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
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	Listed date (for NVLAP)	Registration number (for NVLAP)	IC Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	February 01, 2002	313583	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	June 05, 2002	846015	IC4247-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 shielded room	-	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.4 shielded room	-	-	-	3.1 x 5.0 x 2.7m	N/A	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1 and No.2 semi-anechoic and No.3 measurement room.

3.7 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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

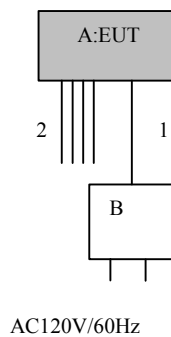
4.1 Operating Modes

The EUT exercise program was used while the testing was performed in a manner similar to typical use.

Test sequence is used: 1. Tx(CH1:2414MHz) mode
2. Tx(CH2:2432MHz) mode
3. Tx(CH4:2468MHz) mode

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 worse case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks	FCC ID
A	Digital Wireless Speaker System(Transmitter)	XW-HT1(T)	PA-0845-2/4 PA-0845-1/4	Pioneer Corporation	EUT *1)	AJDT104
B	AC Adaptor	RH41-1200500RU	N/A	Pioneer Corporation	-	-

*1) The EUT(S/N: PA-0845-2/4) is used for Radiated Spurious Emission and Conducted Emission, and the EUT (S/N: PA-0845-1/4) is used for the other tests.

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. EUT was located 80cm from Line Impedance Stabilization Network (LISN)/Artificial Mains Network(AMN). 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 (AMN) to the input power source. All unused 50ohm connectors of the LISN(AMN)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 in the semi Anechoic Chamber. The EUT was connected to a LISN(AMN). 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

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

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

Test Procedure

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

Test data	:	APPENDIX 3
Test result	:	Pass

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SECTION 8: Out of Band Emission, 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

[Radiated]

Test Procedure

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

The Radiated Electric Field Strength intensity has been measured in the semi anechoic chamber with a ground plane and at a distance of 3m(Below 10GHz) and 1m(Upper 10GHz).

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 with the Test Receiver or the Spectrum Analyzer.

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. The result also satisfied the general limits specified in section 15.209(a).

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer
IF Bandwidth	QP: BW 120kHz	PK: RBW:1MHz/VBW: 1MHz AV: RBW:1MHz/VBW:10Hz

Test data : APPENDIX 3
Test result : Pass

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

[Conducted]

Test Procedure

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

Test data : APPENDIX 3
Test result : Pass

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APPENDIX 1: Photographs of test setup

This page has been submitted for a separate exhibit.

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APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE/CE/EX	2004/04/12 * 12
MRENT-06	Spectrum Analyzer	Advantest	R3273	RE/CE/EX	2003/10/31 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE/CE	2004/02/03 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2004/02/24 * 12
MBA-03 *1	Biconical Antenna	Schwarzbeck	BBA9106	RE	2003/04/28 * 12
MLA-03 *1	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2003/04/28 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2003/12/16 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2004/01/10 * 12
MCC-04	Microwave Cable	Storm	421-011	RE	2004/01/06 * 12
MCC-24	Microwave Cable	Storm	-	RE	2004/05/01 * 12
MPA-02	Pre Amplifier	Agilent	87405A	RE	2004/04/16 * 12
MPA-01	Pre Amplifier	Agilent	8449B	RE	2004/02/06 * 12
MAT-20	Attenuator	HIROSE ELECTRIC CO.,LTD.	AT-110	RE/EX	2004/01/28 * 12
MHF-02	High Pass Filter	Tokimec	TF323DCA	RE	2003/09/19 * 12
MHA-02	Horn Antenna	EMCO	3160-09	RE	2004/01/10 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	CE (EUT)	2004/02/17 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	CE	2004/02/24 * 12
MBA-02 *2	Biconical Antenna	Schwarzbeck	BBA9106	RE	2003/10/15 * 12
MLA-02 *2	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2003/10/15 * 12

*1: only used for the test on April 21, 2004.

*2: only used for the test on May 10, 2004.

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

Test Item:

RE: Spurious Emission (Radiated)

CE: Conducted Emission

EX: Except for RE and CE

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APPENDIX 3: Data of EMI

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/04/21 15:56:20

Applicant : Pioneer Corporation

Kind of EUT : Digital Wireless Speaker

Model No. : XW-HT1 (T)

Serial No. : PA-0845-2/4

Report No. : 241E0007-HO

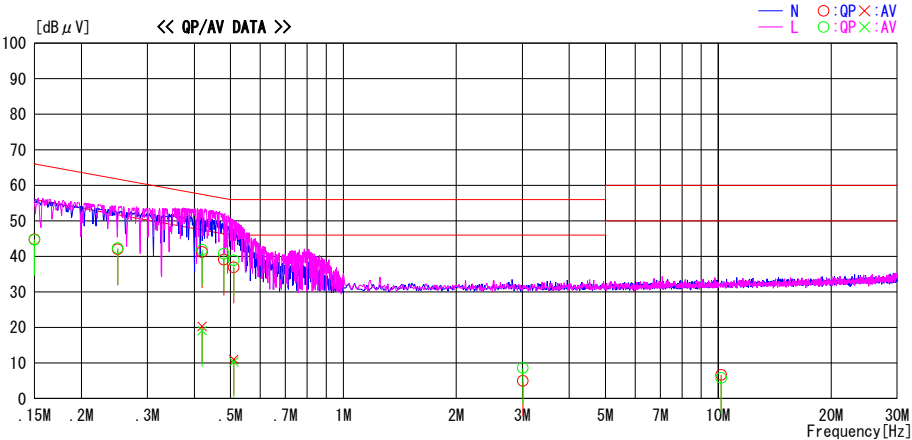
Power : AC120V / 60Hz

Temp°C/Humi% : 27 / 30

Operator : Hiroka Umeyama

Mode / Remarks : Transmitting Ch1:2414MHz

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



NO	FREQ [MHz]	READING		C. F	RESULT		LIMIT		MARGIN		PHASE
		QP [dB μ V]	AV [dB μ V]		QP [dB μ V]	AV [dB μ V]	QP [dB μ V]	AV [dB μ V]	QP [dB]	AV [dB]	
1	0.1500	44.8	----	0.0	44.8	----	66.0	----	21.2	----	N
2	0.2500	41.9	----	0.1	42.0	----	61.8	----	19.8	----	N
3	0.4200	41.1	20.2	0.1	41.2	20.3	57.4	47.4	16.2	27.1	N
4	0.4800	39.0	----	0.1	39.1	----	56.3	----	17.2	----	N
5	0.5100	36.7	10.8	0.2	36.9	11.0	56.0	46.0	19.1	35.0	N
6	3.0100	4.6	----	0.4	5.0	----	56.0	----	51.0	----	N
7	10.1800	5.6	----	1.1	6.7	----	60.0	----	53.3	----	N
8	0.1500	44.7	----	0.0	44.7	----	66.0	----	21.3	----	L
9	0.2500	42.2	----	0.1	42.3	----	61.8	----	19.5	----	L
10	0.4200	41.8	19.0	0.1	41.9	19.1	57.4	47.4	15.5	28.3	L
11	0.4800	40.6	----	0.1	40.7	----	56.3	----	15.6	----	L
12	0.5100	38.7	10.1	0.2	38.9	10.3	56.0	46.0	17.1	35.7	L
13	3.0100	8.2	----	0.4	8.6	----	56.0	----	47.4	----	L
14	10.1800	4.7	----	1.1	5.8	----	60.0	----	54.2	----	L

CHART:WITH FACTOR,Peak hold data.Data is uncorrected.
Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/05/10 15:28:33

Applicant : Pioneer Corporation
Kind of EUT : Digital Wireless Speaker
Model No. : XW-HT1(T)
Serial No. : PA-0845-2/4

Report No. : 24IE0007-H0
Power : AC120V / 60Hz
Temp/C/Humi% : 27 / 30
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting Ch2:2432MHz

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

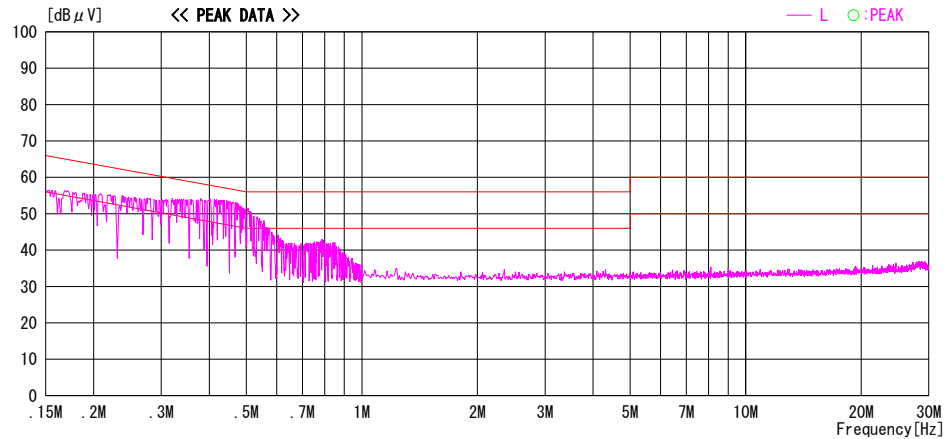
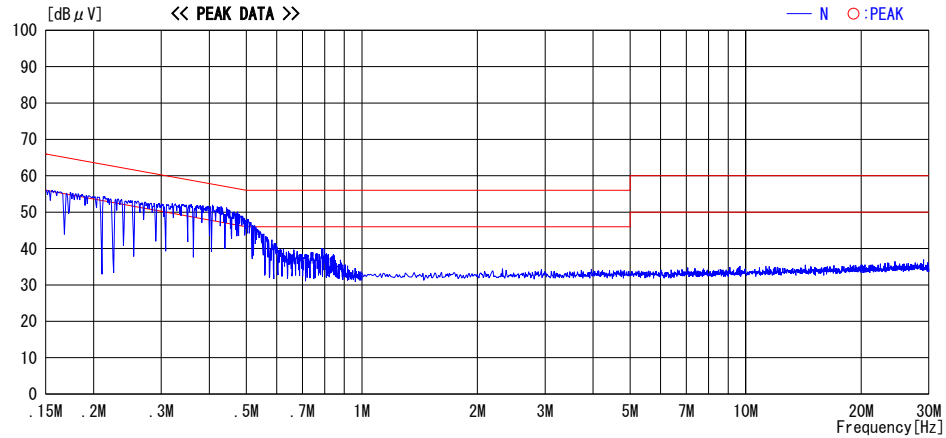


CHART:WITH FACTOR, Peak hold data. Data is uncorrected.
Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/05/10 15:36:33

Applicant : Pioneer Corporation
Kind of EUT : Digital Wireless Speaker
Model No. : XW-HT1(T)
Serial No. : PA-0845-2/4

Report No. : 24IE0007-H0
Power : AC120V / 60Hz
Temp/C/Humi% : 27 / 30
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting Ch4:2468MHz

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

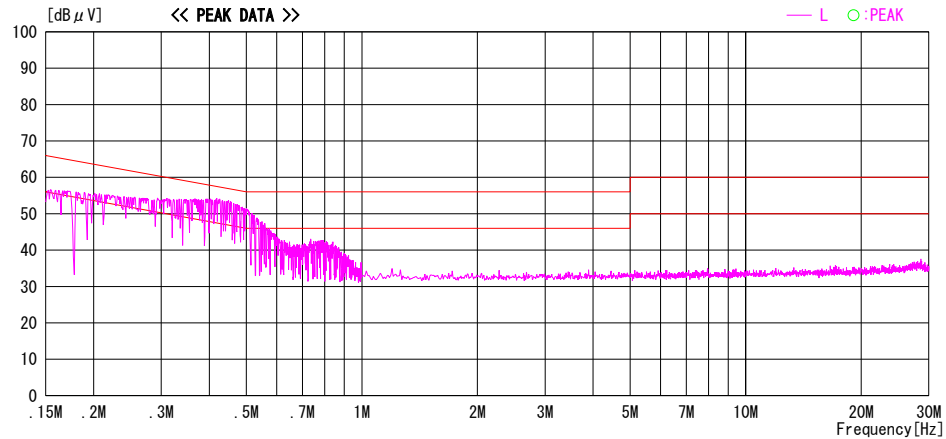
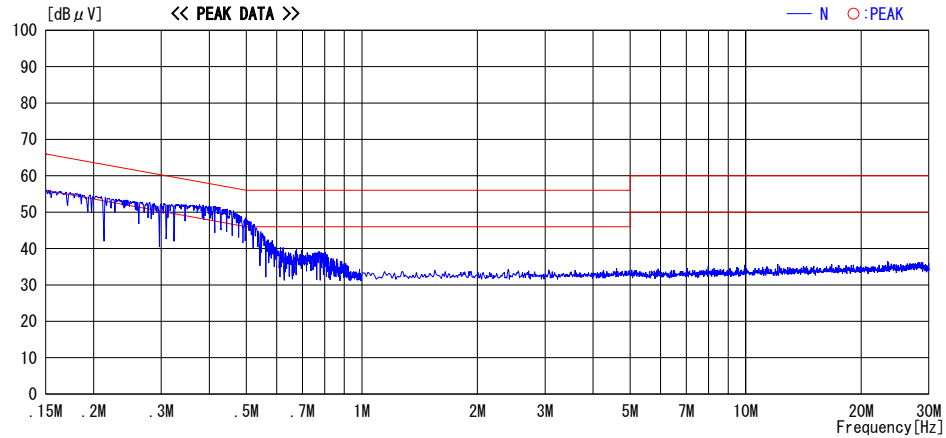


CHART:WITH FACTOR, Peak hold data. Data is uncorrected.
Except for the above table : adequate margin data below the limits.

6dB Bandwidth

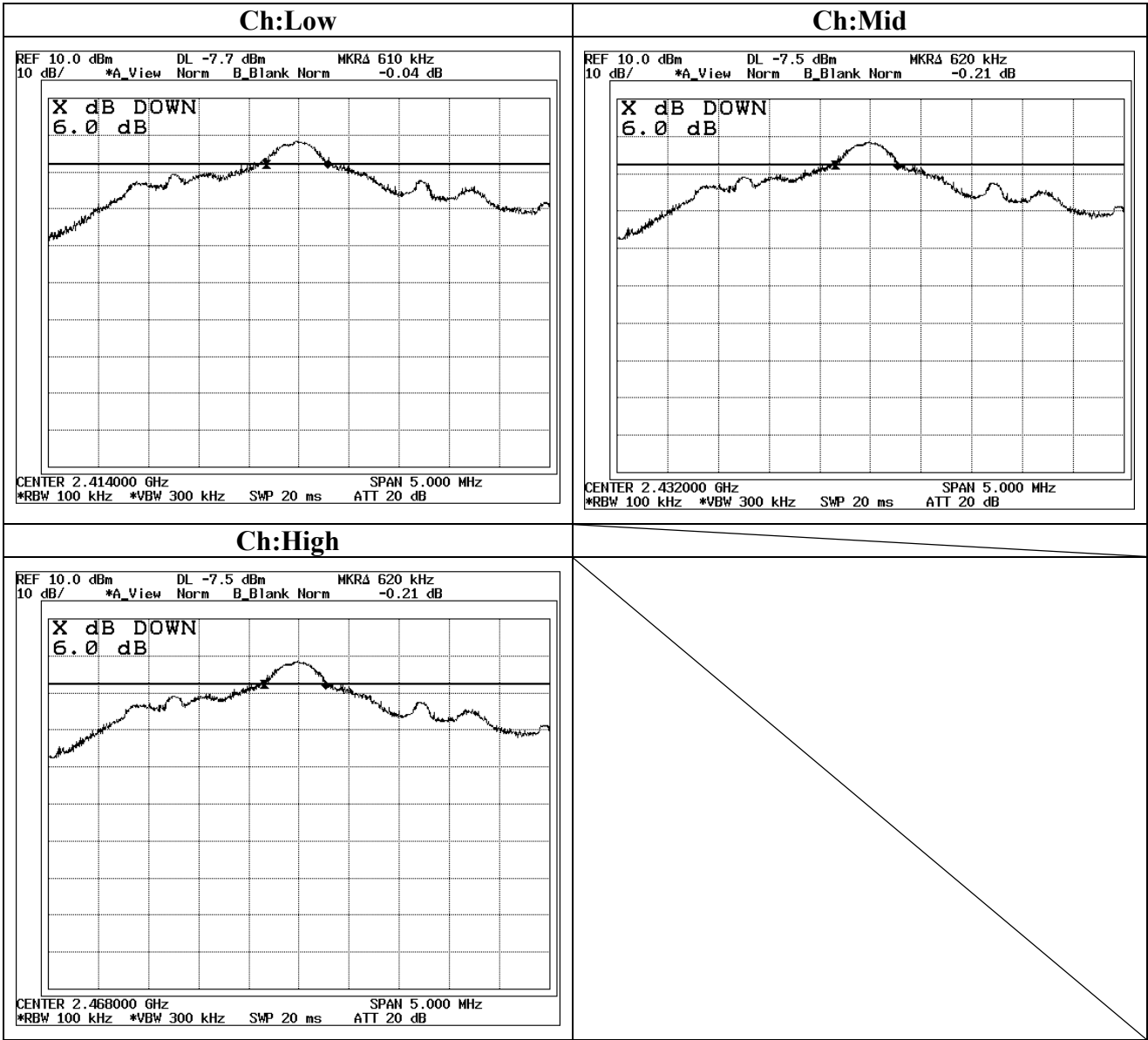
UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

Company : Pioneer Corporation.
Equipment : Digital Wireless Speaker System
Model : XW-HT1(T)
Sample No. : PA-0845-1/4
Power : AC120V/60Hz
Mode : Tx

REPORT NO : 24IE0007-HO
REGULATION : FCC Part15 Subpart C 15.247(a)(2)
TEST DISTANCE : -
DATE : 04/22/2004
TEMPERATURE : 25deg.C
HUMIDITY : 36%
ENGINEER : Hiroka Umeyama

Ch	Freq. [MHz]	6dB Bandwidth [kHz]	Limit [kHz]
Low	2414.0	610.000	500.0
Mid	2432.0	620.000	500.0
High	2468.0	620.000	500.0

6dB Bandwidth



Maximum Peak OutPut Power

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

Company	: Pioneer Corporation.	REPORT NO	: 24IE0007-HO
Equipment	: Digital Wireless Speaker System	REGULATION	: FCC Part15 Subpart C 15.247(b)(3)
Model	: XW-HT1(T)	TEST DISTANCE	: -
Sample No.	: PA-0845-1/4	DATE	: 04/21/2004
Power	: AC120V/60Hz	TEMPERATURE	: 28deg.C
Mode	: Tx	HUMIDITY	: 30%
		ENGINEER	: Hiroka Umeyama

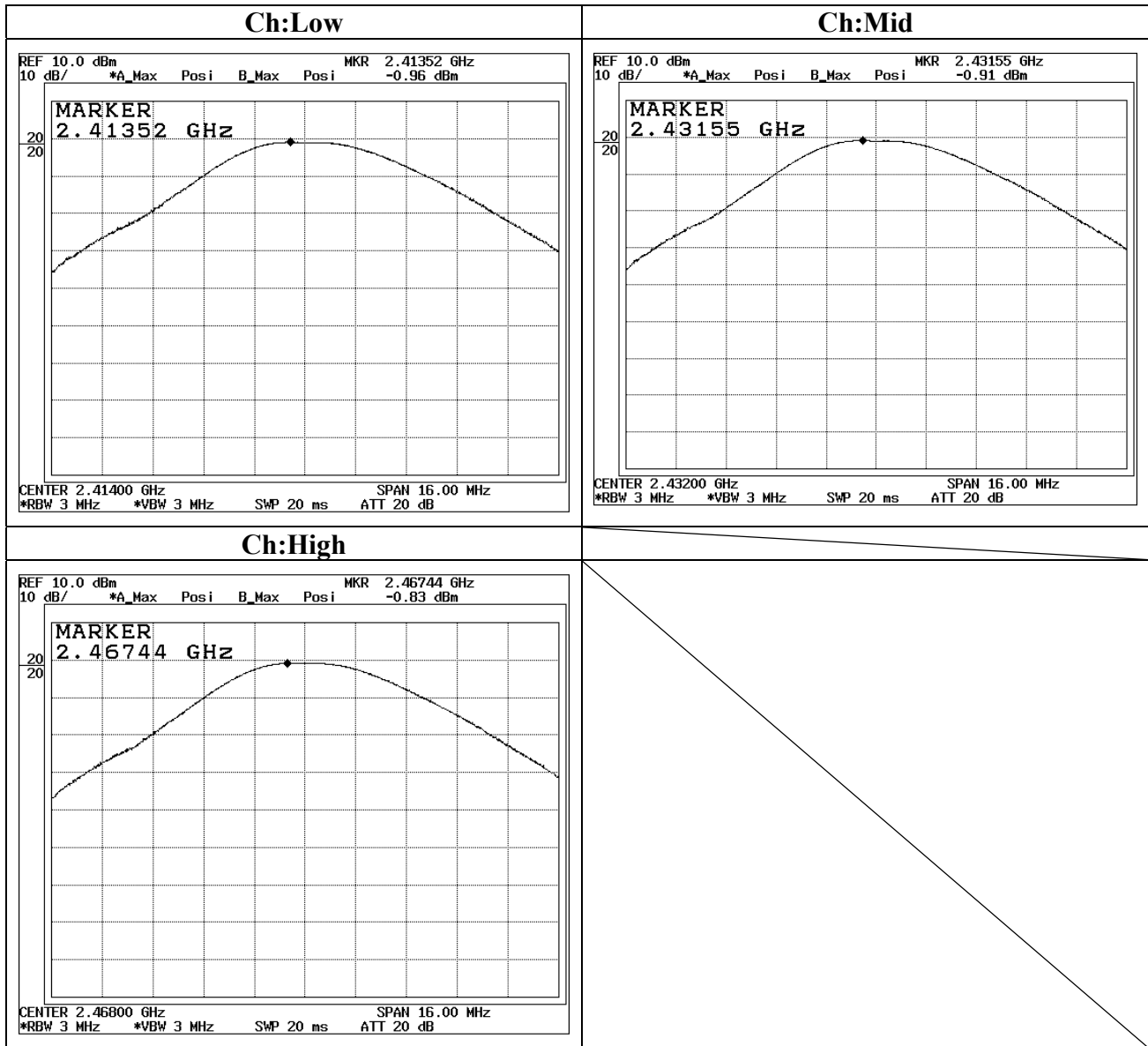
Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2414.0	-0.96	0.0	10.0	9.0	30.0	21.0
Mid	2432.0	-0.91	0.0	10.0	9.1	30.0	20.9
High	2468.0	-0.83	0.0	10.0	9.2	30.0	20.8

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

*Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

Maximum Peak OutPut Power



Radiated Spurious Emission

DATA OF RADIATED EMISSION TEST

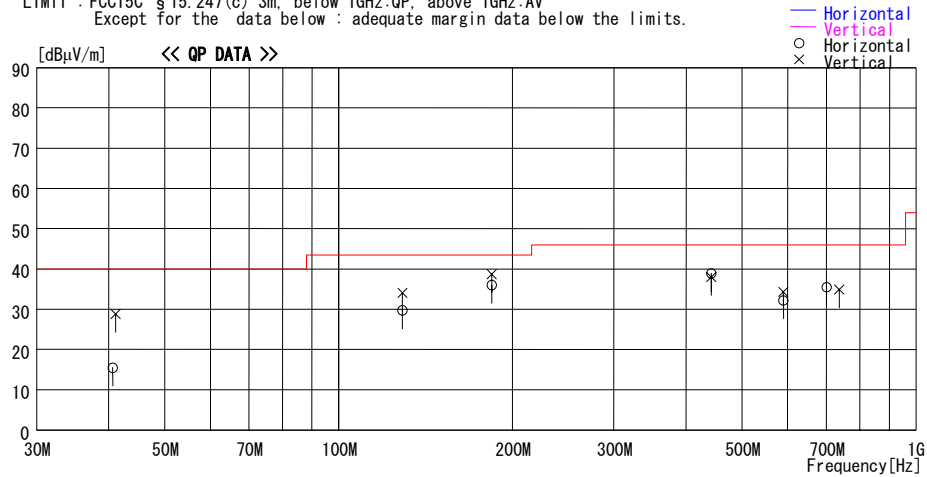
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/04/21 09:28:24

Applicant : PIONEER CORPORATION
Kind of EUT : DIGITAL WIRELESS SPEAKER
Model No. : XW-HT1(T)
Serial No. : PA-0845-2/4

Report No. : 24IE0007-HO
Power : AC120V/60Hz
Temp°C/Humi% : 27°C / 32%
Operator : Hiroka Umeyama

Mode / Remarks: Transmitting Ch1:2414MHz

LIMIT : FCC15C §15.247(c) 3m, below 1GHz:QP, above 1GHz:AV
Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING QP [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	40.640	16.0	14.4	8.3	23.2	15.5	40.0	24.5	300	0
2	129.020	31.9	13.7	7.4	23.3	29.7	43.5	13.8	165	80
3	184.320	35.3	16.2	7.8	23.3	36.0	43.5	7.5	186	140
4	442.363	34.9	17.7	9.2	22.9	38.9	46.0	7.1	200	0
5	589.820	26.1	19.5	9.7	23.1	32.2	46.0	13.8	210	60
6	700.410	27.9	20.7	10.2	23.3	35.5	46.0	10.5	150	200
----- Vertical -----										
7	41.100	31.6	14.3	6.6	23.7	28.8	40.0	11.2	100	0
8	129.024	36.3	13.7	7.4	23.3	34.1	43.5	9.4	110	156
9	184.320	38.0	16.2	7.8	23.3	38.7	43.5	4.8	100	0
10	442.363	34.0	17.7	9.2	22.9	38.0	46.0	8.0	100	360
11	589.820	28.2	19.5	9.7	23.1	34.3	46.0	11.7	230	76
12	737.260	26.7	21.0	10.3	23.1	34.9	46.0	11.1	100	0

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

Radiated Spurious Emission

DATA OF RADIATED EMISSION TEST

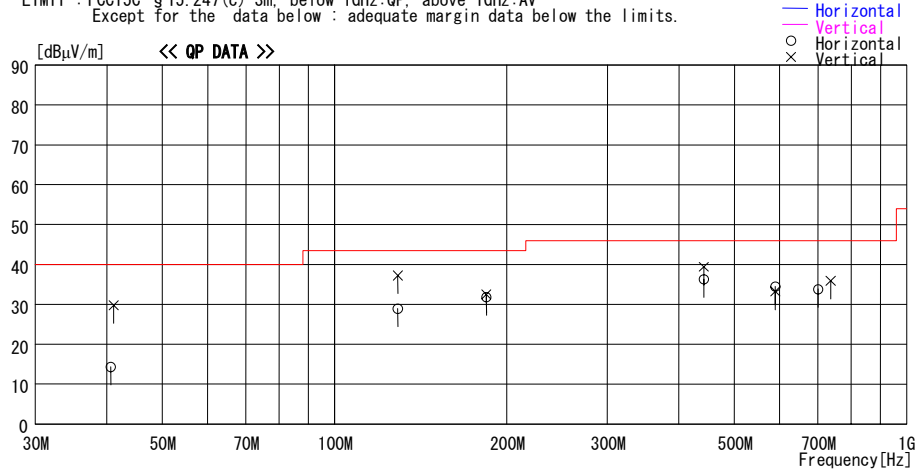
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/05/10 09:28:24

Applicant : PIONEER CORPORATION
Kind of EUT : DIGITAL WIRELESS SPEAKER
Model No. : XW-HT1(T)
Serial No. : PA-0845-2/4

Report No. : 24IE0007-H0
Power : AC120V/60Hz
Temp°C/Humi% : 27°C / 32%
Operator : Hiroka Umeyama

Mode / Remarks: Transmitting Ch2:2432MHz

LIMIT : FCC15C §15.247(c) 3m, below 1GHz:QP, above 1GHz:AV
Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING QP [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	40.640	17.5	13.4	6.6	23.2	14.3	40.0	25.7	300	0
2	129.020	30.9	13.5	7.4	22.9	28.9	43.5	14.6	165	80
3	184.320	30.7	16.3	7.8	23.0	31.8	43.5	11.7	186	140
4	442.363	31.6	18.3	9.2	22.8	36.3	46.0	9.7	200	0
5	589.820	27.9	19.5	9.7	22.6	34.5	46.0	11.5	210	60
6	700.410	26.2	20.1	10.2	22.7	33.8	46.0	12.2	150	200
----- Vertical -----										
7	41.100	33.2	13.2	6.6	23.2	29.8	40.0	10.2	100	0
8	129.024	39.2	13.5	7.4	22.9	37.2	43.5	6.3	110	156
9	184.320	31.4	16.3	7.8	23.0	32.5	43.5	11.0	100	0
10	442.363	34.7	18.3	9.2	22.8	39.4	46.0	6.6	100	360
11	589.820	26.6	19.5	9.7	22.6	33.2	46.0	12.8	230	76
12	737.260	27.6	20.7	10.3	22.7	35.9	46.0	10.1	100	0

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

Page:

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MF060b(10.04.03)

Radiated Spurious Emission

DATA OF RADIATED EMISSION TEST

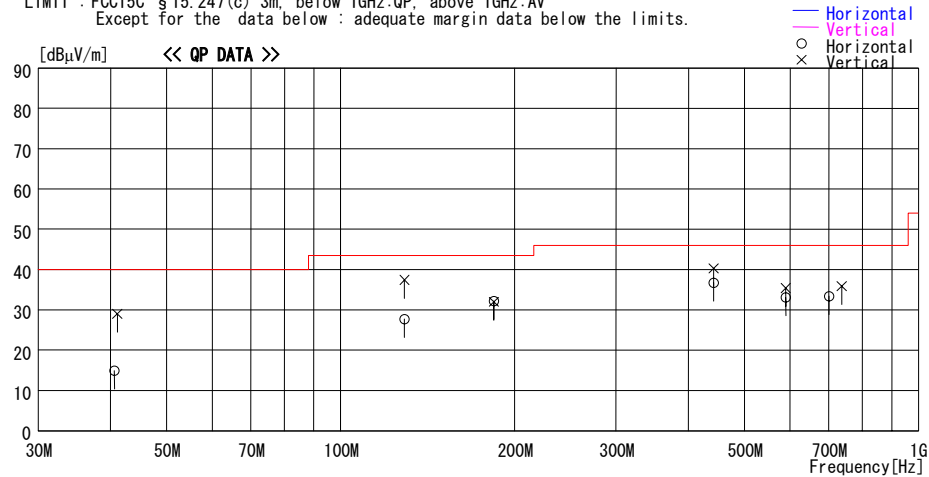
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/05/10 09:28:24

Applicant : PIONEER CORPORATION
Kind of EUT : DIGITAL WIRELESS SPEAKER
Model No. : XW-HT1(T)
Serial No. : PA-0845-2/4

Report No. : 24IE0007-HO
Power : AC120V/60Hz
Temp°C/Humi% : 27°C / 32%
Operator : Hiroka Umeyama

Mode / Remarks: Transmitting Ch4:2468MHz

LIMIT : FCC15C §15.247(c) 3m, below 1GHz:QP, above 1GHz:AV
Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING QP [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	40.640	18.1	13.4	6.6	23.2	14.9	40.0	25.1	300	0
2	129.020	29.7	13.5	7.4	22.9	27.7	43.5	15.8	165	80
3	184.320	31.1	16.3	7.8	23.0	32.2	43.5	11.3	186	140
4	442.363	32.0	18.3	9.2	22.8	36.7	46.0	9.3	200	0
5	589.820	26.5	19.5	9.7	22.6	33.1	46.0	12.9	210	60
6	700.410	25.8	20.1	10.2	22.7	33.4	46.0	12.6	150	200
----- Vertical -----										
7	41.100	32.4	13.2	6.6	23.2	29.0	40.0	11.0	100	0
8	129.024	39.4	13.5	7.4	22.9	37.4	43.5	6.1	110	156
9	184.320	30.9	16.3	7.8	23.0	32.0	43.5	11.5	100	0
10	442.363	35.6	18.3	9.2	22.8	40.3	46.0	5.7	100	360
11	589.820	28.8	19.5	9.7	22.6	35.4	46.0	10.6	230	76
12	737.260	27.6	20.7	10.3	22.7	35.9	46.0	10.1	100	0

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP. GAIN

Radiated Spurious Emission

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : Pioneer Corporation.
EQUIPMENT : Digital Wireless Speaker System
MODEL : XW-HT1(T)
S/ N : PA-0845-2/4
POWER : AC120V / 60Hz
MODE : Transmitting(Ch1: 2414MHz)

REPORT NO : 24IE0007-HO
REGULATION : Fcc Part15 Subpart C 15.247(c)
TEST DISTANCE : 3 and 1 m
DATE : 4/21/2004 and 5/10/2004
TEMPERATURE : 24deg.C and 22deg.C
HUMIDITY : 30% and 60%
ENGINEER : Hiroka Umeyama

PK DETECT(RBW & VBW 1MHz SWP AUTO)

No.	FREQ	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Band-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
	[MHz]	HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
1	2390.0	43.6	43.9	30.8	36.3	6.2	10.0	54.3	54.6	74.0	19.7	19.4
2	4828.0	42.8	43.9	35.4	36.1	9.0	1.0	52.1	53.2	74.0	21.9	20.8
3	7240.7	43.2	43.5	38.0	35.6	11.2	0.5	57.3	57.6	74.0	16.7	16.4
4	9654.6	44.2	43.4	37.5	36.3	12.9	0.5	58.8	58.0	74.0	15.2	16.0
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass - Dfac)												
5	12066.8	44.1	45.1	41.2	35.7	14.4	0.5	55.0	56.0	74.0	19.0	18.0
6	14480.6	42.1	43.5	41.0	34.6	16.6	0.6	56.2	57.6	74.0	17.8	16.4
7	16895.0	43.7	43.2	46.1	35.5	18.7	0.4	63.9	63.4	74.0	10.1	10.6
8	19312.0	44.0	43.3	39.5	34.9	20.4	0.9	60.4	59.7	74.0	13.6	14.3
9	21726.0	42.8	43.7	40.7	35.3	22.2	0.7	61.6	62.5	74.0	12.4	11.5
10	24140.0	43.3	43.3	40.0	36.1	22.6	1.7	62.0	62.0	74.0	12.0	12.0

AV DETECT(RBW 1MHz VBW 10Hz SWP AUTO)

No.	FREQ [MHz]	S/A READING HOR VER [dBuV]		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	2390.0	30.9	30.9	30.8	36.3	6.2	10.0	41.6	41.6	54.0	12.4	12.4
2	4828.0	29.5	31.5	35.4	36.1	9.0	1.0	38.8	40.8	54.0	15.2	13.2
3	7240.7	28.9	29.0	38.0	35.6	11.2	0.5	43.0	43.1	54.0	11.0	10.9
4	9654.6	28.9	28.9	37.5	36.3	12.9	0.5	43.5	43.5	54.0	10.5	10.5
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass - Dfac)												
5	12066.8	32.6	34.3	41.2	35.7	14.4	0.5	43.5	45.2	54.0	10.5	8.8
6	14480.6	28.1	27.8	41.0	34.6	16.6	0.6	42.2	41.9	54.0	11.8	12.1
7	16895.0	30.0	30.0	46.1	35.5	18.7	0.4	50.2	50.2	54.0	3.8	3.8
8	19312.0	30.4	30.3	39.5	34.9	20.4	0.9	46.8	46.7	54.0	7.2	7.3
9	21726.0	30.8	30.9	40.7	35.3	22.2	0.7	49.6	49.7	54.0	4.4	4.3
10	24140.0	30.3	30.4	40.0	36.1	22.6	1.7	49.0	49.1	54.0	5.0	4.9

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 equipment and cables were not used for factor 0.0dB of the above table.

*Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

*In the frequency over the sixth harmonic, the noise from the EUT was not seen. The data above is its base noise.

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MF060b(10.04.03)

Radiated Spurious Emission

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : Pioneer Corporation.	REPORT NO : 24IE0007-HO
EQUIPMENT : Digital Wireless Speaker System	REGULATION : Fcc Part15 Subpart C 15.247(c)
MODEL : XW-HT1(T)	TEST DISTANCE : 3 and 1 m
S/ N : PA-0845-2/4	DATE : 4/21/2004 and 5/10/2004
POWER : AC120V / 60Hz	TEMPERATURE : 24deg.C and 22deg.C
MODE : Transmitting(Ch2: 2432MHz)	HUMIDITY : 30% and 60%
	ENGINEER : Hiroka Umeyama

PK DETECT(RBW & VBW 1MHz SWP AUTO)

No.	FREQ	S/A READING		ANT	AMP	CABLE	Band-Pass	RESULT		Limit	MARGIN	
	[MHz]	HOR	VER	Factor	GAIN	LOSS	Filter	HOR	VER	PK	HOR	VER
		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
2	4862.7	44.1	43.5	35.6	36.1	9.1	1.0	53.7	53.1	74.0	20.3	20.9
3	7294.7	42.2	41.1	38.1	35.7	11.2	0.5	56.3	55.2	74.0	17.7	18.8
4	9726.6	41.5	44.3	37.3	36.3	13.0	0.5	56.0	58.8	74.0	18.0	15.2
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass - Dfac)												
5	12156.6	42.7	45.2	41.4	35.5	14.5	0.5	54.1	56.6	74.0	19.9	17.4
6	14589.5	41.9	40.0	41.4	34.7	16.7	0.6	56.4	54.5	74.0	17.6	19.5
7	17020.4	43.3	44.0	46.3	35.4	18.8	0.4	63.9	64.6	74.0	10.1	9.4
8	19456.0	41.8	42.2	39.3	34.9	20.6	1.0	58.3	58.7	74.0	15.7	15.3
9	21888.0	42.3	42.6	40.5	35.1	22.2	0.9	61.3	61.6	74.0	12.7	12.4
10	24320.0	43.0	41.9	40.1	36.5	22.7	2.1	61.9	60.8	74.0	12.1	13.2

AV DETECT(RBW 1MHz VBW 10Hz SWP AUTO)

No.	FREQ	S/A READING		ANT	AMP	CABLE	Band-Pass	RESULT		Limit	MARGIN	
		HOR	VER	Factor	GAIN	LOSS	Filter	HOR	VER	AV	HOR	VER
	[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]		[dBuV/m]	[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
2	4862.7	30.3	31.8	35.6	36.1	9.1	1.0	39.9	41.4	54.0	14.1	12.6
3	7294.7	29.8	29.6	38.1	35.7	11.2	0.5	43.9	43.7	54.0	10.1	10.3
4	9726.6	30.3	31.0	37.3	36.3	13.0	0.5	44.8	45.5	54.0	9.2	8.5
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass - Dfac)												
5	12156.6	32.8	33.6	41.4	35.5	14.5	0.5	44.2	45.0	54.0	9.8	9.0
6	14589.5	28.8	28.8	41.4	34.7	16.7	0.6	43.3	43.3	54.0	10.7	10.7
7	17020.4	30.0	30.0	46.3	35.4	18.8	0.4	50.6	50.6	54.0	3.4	3.4
8	19456.0	31.2	31.2	39.3	34.9	20.6	1.0	47.7	47.7	54.0	6.3	6.3
9	21888.0	31.1	31.2	40.5	35.1	22.2	0.9	50.1	50.2	54.0	3.9	3.8
10	24320.0	31.6	32.0	40.1	36.5	22.7	2.1	50.5	50.9	54.0	3.5	3.1

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 equipment and cables were not used for factor 0.0dB of the above table.

*Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

*In the frequency over the sixth harmonic, the noise from the EUT was not seen.The data above is its base noise.

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MF060b(10.04.03)

Radiated Spurious Emission

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : Pioneer Corporation. EQUIPMENT : Digital Wireless Speaker System MODEL : XW-HT1(T) S/ N : PA-0845-2/4 POWER : AC120V / 60Hz MODE : Transmitting(Ch4: 2468MHz)	REPORT NO : 24IE0007-HO REGULATION : Fcc Part15 Subpart C 15.247(c) TEST DISTANCE : 3 and 1 m DATE : 4/21/2004 and 5/10/2004 TEMPERATURE : 24deg.C and 22deg.C HUMIDITY : 30% and 60% ENGINEER : Hiroka Umeyama
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PK DETECT(RBW & VBW 1MHz SWP AUTO)

No.	FREQ	S/A READING		ANT	AMP	CABLE	Band-Pass	RESULT		Limit	MARGIN	
	[MHz]	HOR	VER	Factor	GAIN	LOSS	Filter	HOR	VER	PK	HOR	VER
		[dBuV]			[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[dB]
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
1	2483.5	44.1	42.9	31.0	36.2	6.3	10.0	55.2	54.0	74.0	18.8	20.0
2	4936.0	41.6	44.6	36.0	36.1	9.2	1.0	51.7	54.7	74.0	22.3	19.3
3	7402.7	43.3	43.0	38.4	35.7	11.3	0.5	57.8	57.5	74.0	16.2	16.5
4	9870.7	43.9	44.2	37.1	36.3	13.0	0.5	58.2	58.5	74.0	15.8	15.5
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass - Dfac												
5	12340.0	46.9	46.3	41.7	35.5	14.5	0.4	58.5	57.9	74.0	15.5	16.1
6	14808.0	42.8	42.3	42.3	35.0	17.0	0.6	58.2	57.7	74.0	15.8	16.3
7	17276.0	42.9	44.0	46.8	35.3	18.9	0.3	64.1	65.2	74.0	9.9	8.8
8	19744.0	42.3	41.2	39.7	35.5	20.7	1.1	58.8	57.7	74.0	15.3	16.4
9	22212.0	41.5	41.5	40.6	35.0	22.3	1.6	61.5	61.5	74.0	12.5	12.5
10	24680.0	43.0	44.4	40.2	36.7	22.9	2.7	62.6	64.0	74.0	11.4	10.0

AV DETECT(RBW 1MHz VBW 10Hz SWP AUTO)

No.	FREQ	S/A READING		ANT	AMP	CABLE	Band-Pass	RESULT		Limit	MARGIN	
	[MHz]	HOR	VER	Factor	GAIN	LOSS	Filter	HOR	VER	AV	HOR	VER
		[dBuV]		[dB/m]	[dB]	[dB]	[dB]	[dB]	[dBuV/m]		[dBuV/m]	[dB]
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass												
1	2483.5	31.2	31.3	31.0	36.2	6.3	10.0	42.3	42.4	54.0	11.7	11.6
2	4936.0	31.0	33.6	36.0	36.1	9.2	1.0	41.1	43.7	54.0	12.9	10.3
3	7402.7	29.5	29.6	38.4	35.7	11.3	0.5	44.0	44.1	54.0	10.0	9.9
4	9870.7	30.4	30.3	37.1	36.3	13.0	0.5	44.7	44.6	54.0	9.3	9.4
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + Band Pass - Dfac)												
5	12340.0	36.0	36.3	41.7	35.5	14.5	0.4	47.6	47.9	54.0	6.4	6.1
6	14808.0	29.4	29.3	42.3	35.0	17.0	0.6	44.8	44.7	54.0	9.2	9.3
7	17276.0	30.0	30.0	46.8	35.3	18.9	0.3	51.2	51.2	54.0	2.8	2.8
8	19744.0	31.7	31.7	39.7	35.5	20.7	1.1	48.2	48.2	54.0	5.8	5.8
9	22212.0	30.8	30.8	40.6	35.0	22.3	1.6	50.8	50.8	54.0	3.2	3.2
10	24680.0	31.4	31.3	40.2	36.7	22.9	2.7	51.0	50.9	54.0	3.0	3.1

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 equipment and cables were not used for factor 0.0dB of the above table.

*Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

*In the frequency over the sixth harmonic, the noise from the EUT was not seen.The data above is its base noise.

UL Apex Co., Ltd.

Head Office EMC Lab.

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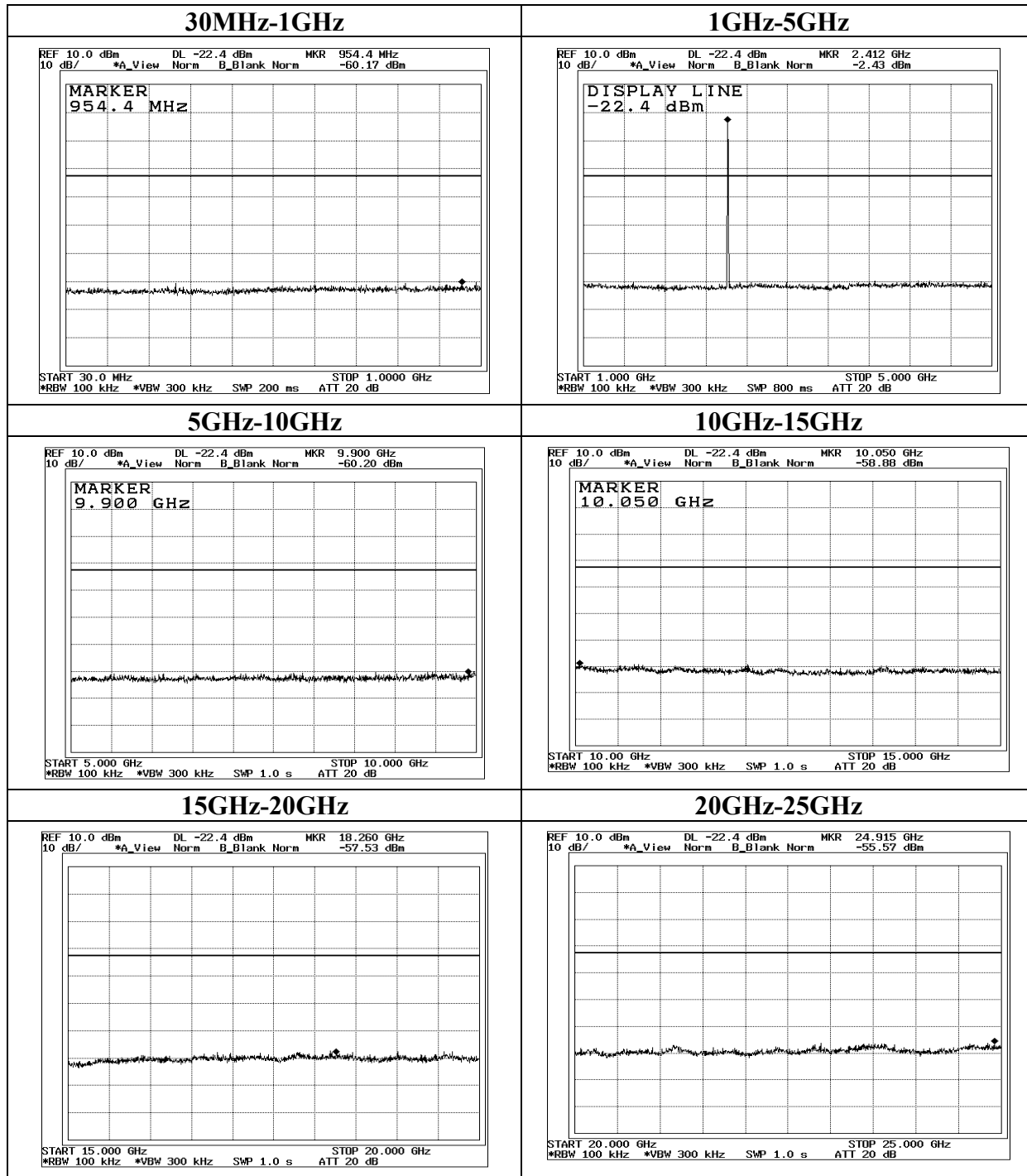
Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

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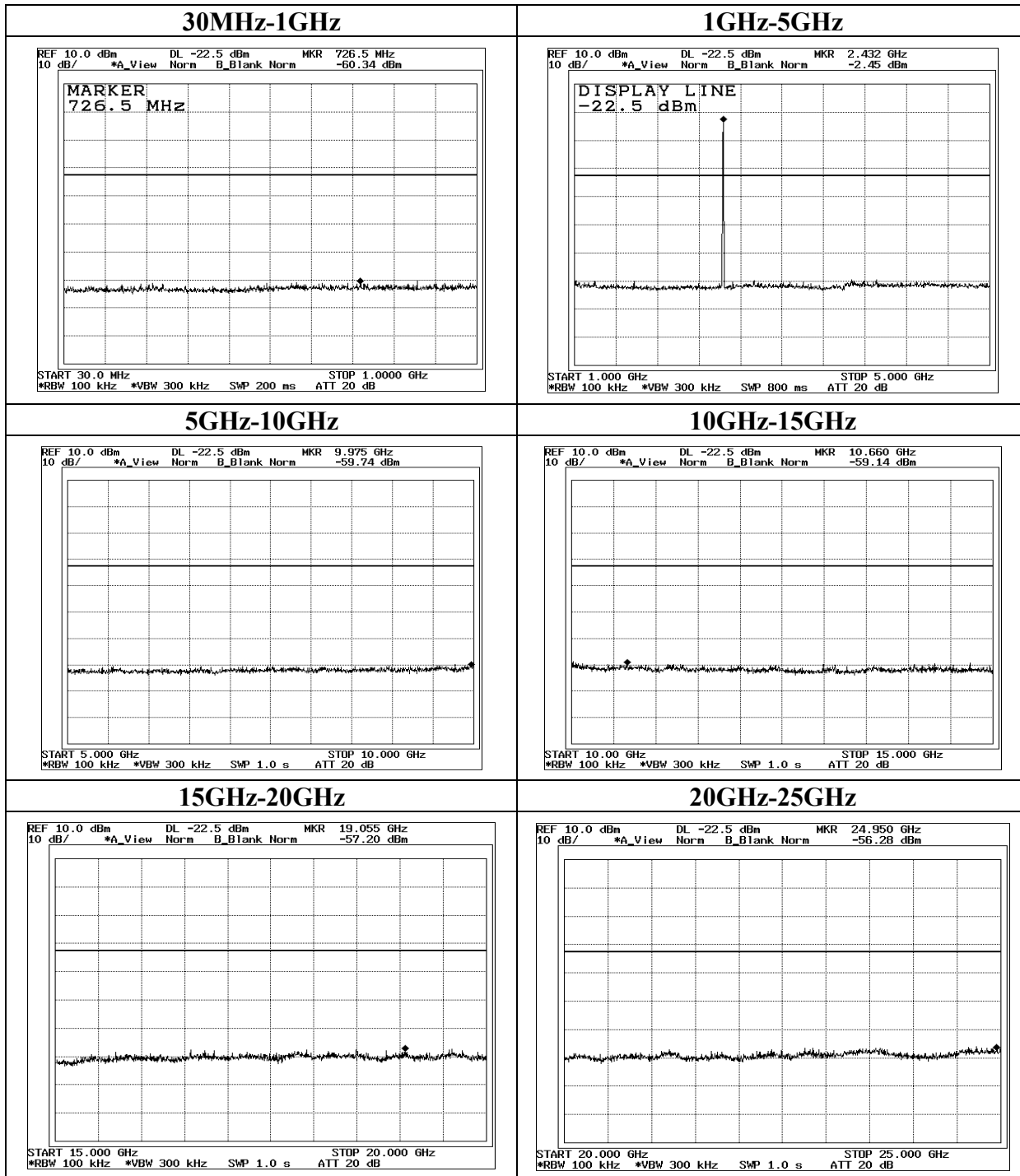
Conducted Spurious Emission

Ch : Low



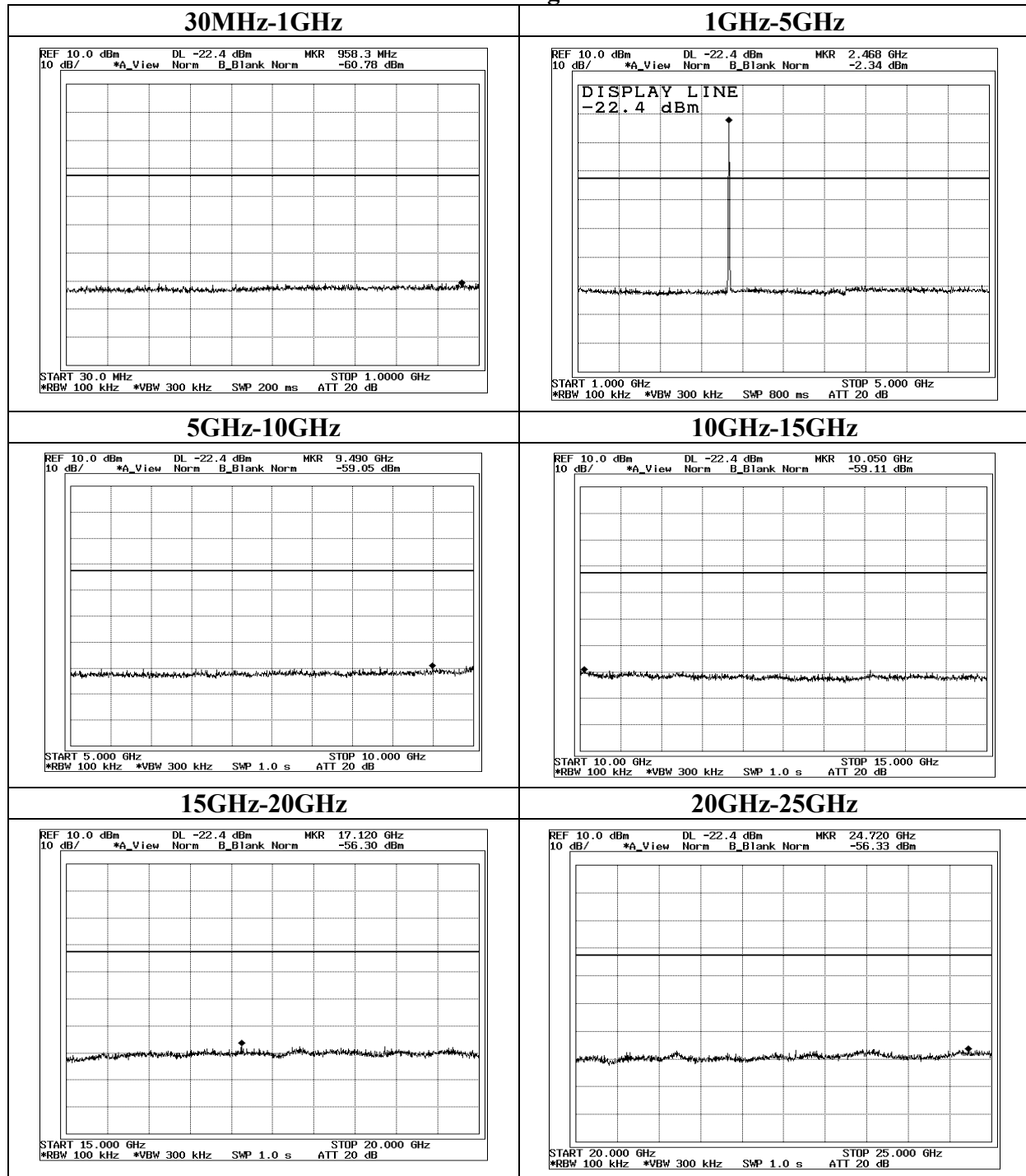
Conducted Spurious Emission

Ch : Mid



Conducted Spurious Emission

Ch : High



UL Apex Co., Ltd.

Head Office EMC Lab.

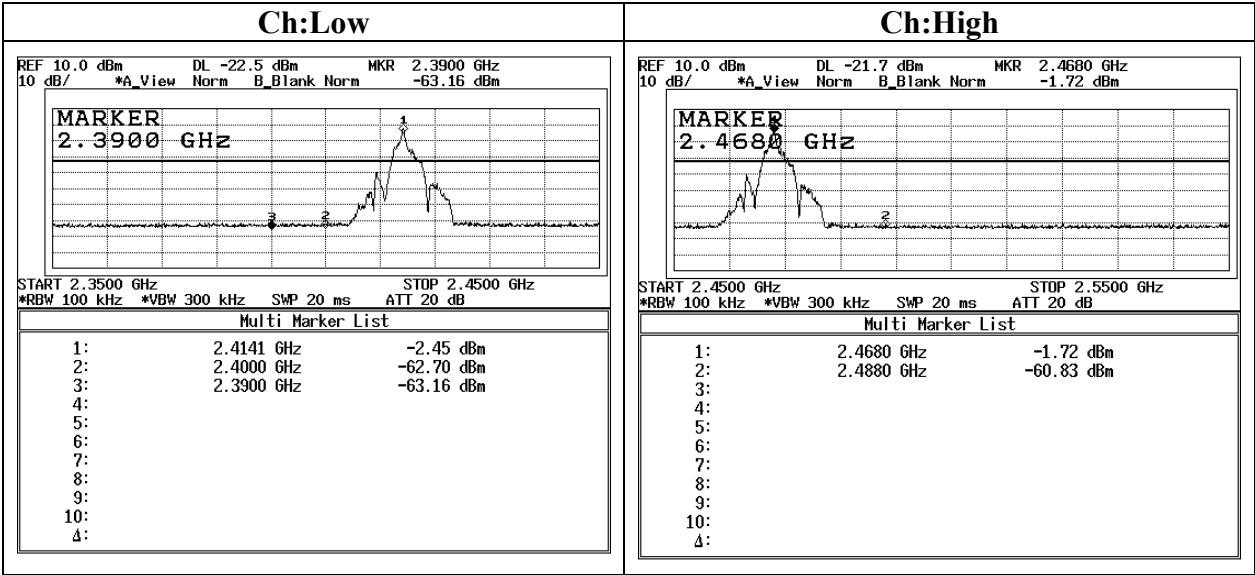
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MF060b(10.04.03)

Conducted emission Band Edge compliance



Power Density

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

Company	: Pioneer Corporation.	REPORT NO	: 24IE0007-HO
Equipment	: Digital Wireless Speaker System	REGULATION	: FCC Part15 Subpart C 15.247(d)
Model	: XW-HT1(T)	TEST DISTANCE	: -
Sample No.	: PA-0845-1/4	DATE	: 04/21/2004
Power	: AC120V/60Hz	TEMPERATURE	: 28deg.C
Mode	: Tx	HUMIDITY	: 30%
		ENGINEER	: Hiroka Umeyama

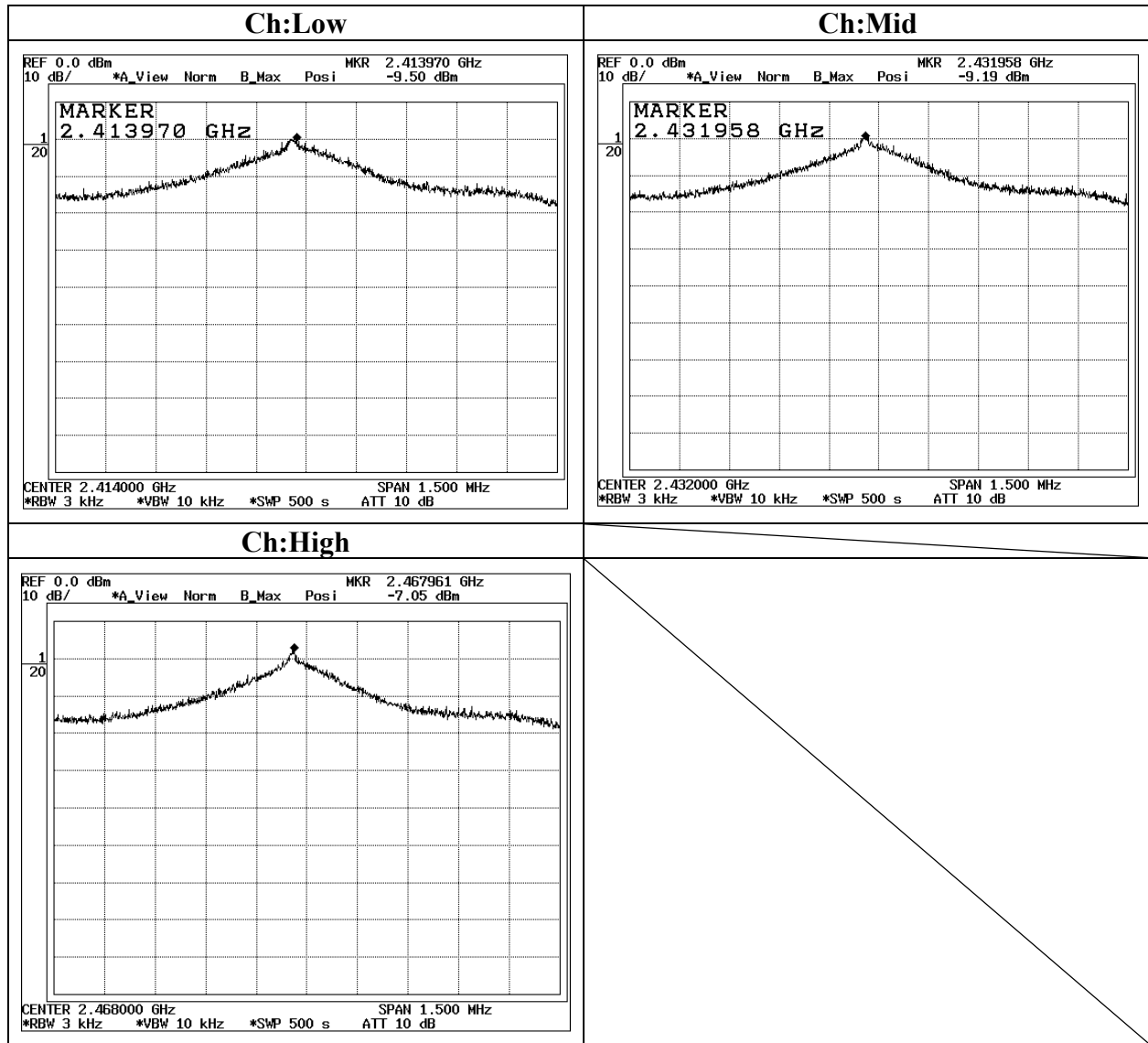
Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2414.0	-9.50	0.0	10.0	0.5	8.0	7.5
Mid	2432.0	-9.19	0.0	10.0	0.8	8.0	7.2
High	2468.0	-7.05	0.0	10.0	3.0	8.0	5.1

Sample Calculation:

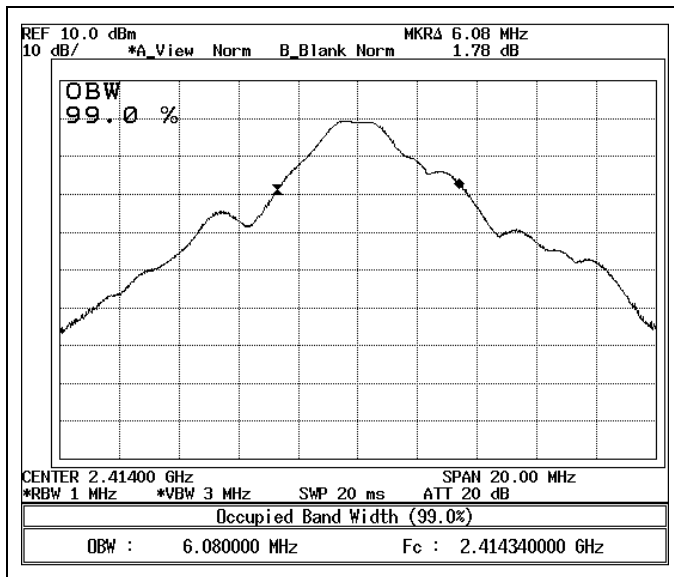
Result = Reading + Cable Loss + Attenuator

*Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

Power Density



99%Occupied Bandwidth



UL Apex Co., Ltd.

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