

EMC EMISSION - TEST REPORT

UNITED STATES STANDARD 47 CFR PART 15, SUBPART C

Test Report File No. : **B031901** Date of Issue: January 23, 2001

Model / Serial No. : **BR0928001 / 09280001**

Product Type : **Broadcast Radio**

Applicant : **Waio, Inc.**

Manufacturer : **Waio, Inc.**

License holder : **Waio, Inc.**

Address : **1357 Downing Street**
: **Denver, CO 80218**

Test Result : ☒ **Positive** ☐ **Negative**

Test Project Number : **BC1G031901**

Reference(s) : _____

Total pages - Test Report : **40**

NOTE: All test equipment used during testing is calibrated and traceable to NIST.

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EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to the following regulations:

- | | | |
|--|---|--|
| ☐ - EN 50081-1 / 1991 | ☐ - Group 1 | ☐ - Group 2 |
| ☐ - EN 55011 / 1998 | ☐ - Class A | ☐ - Class B |
|
 | | |
| ☐ - EN 55014 / 1993 | ☐ - Household appliances and similar | |
| | ☐ - Portable tools | |
| | ☐ - Semiconductor devices | |
|
 | | |
| ☐ - EN 55022 / 1987 | ☐ - Class A | ☐ - Class B |
|
 | | |
| ☐ - EN 55022 / 1998 | ☐ - Class A | ☐ - Class B |
|
 | | |
| ☐ - VCCI | ☐ - Class A ITE | ☐ - Class B ITE |
|
 | | |
| ■ - 47 CFR Part 15, Subpart C | | |
| ☐ 15.231 | | |
| ☐ - 107(b) | | |
| ☐ - 107(a) | | |
| ☐ - 107(e) | ☐ - Class A | ☐ - Class B |
| ■ - 15.207 | | |
|
 | | |
| ■ - 15.209 | | |
| ☐ - 109(b) | | |
| ☐ - 109(a) | | |
| ☐ - 109(g) | ☐ - Class A | ☐ - Class B |
| ■ - 239 | | |
|
 | | |
| ☐ - AS/NZS 3548: 1995 | ☐ - Class A | ☐ - Class B |
|
 | | |
| ☐ - CISPR 11 (1997) | ☐ - Group 1 | ☐ - Group 2 |
| | ☐ - Class A | ☐ - Class B |
|
 | | |
| ■ - CISPR 22 (1997) | ☐ - Class A | ■ - Class B |

Report No. B031901

Environmental Conditions In The Laboratory:

	<u>Actual</u>
Temperature:	: 20.5 °C
Relative Humidity:	: <24 %
Atmospheric Pressure:	: 79 kPa

Power Supply Utilized:

Power supply system : 12 VDC

Symbol Definitions:

- - Applicable
- - Not Applicable

Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

The **RADIATED EMISSIONS (ELECTRIC FIELD)** measurements, in the frequency range of 30 MHz-1000 MHz, were tested in a horizontal and vertical polarization at the following test location :

☐ - Test not applicable

■ - Pinewood Site #1 (10- and 30-Meter Open Area Test Site)

Testing was performed at a test distance of :

■ - 3 meters

Equipment Report

31-Jan-2001

Project Number: B0319

Project Date: 08-Nov-2000

Company Name: Waio

Equip ID	Manufacturer	Model Number	Serial Number	Description	Date	Calibration Interval	Due	Cal Code
<u>Test Performed C</u>		<u>Conducted Emissions</u>						
8038	HEWLETT PACKARD	11947A	3107A01975	Transient Limiter	14-Jun-2000	12	14-Jun-2001	G
8184	RHODE & SCHWARZ	ESH2-Z5	830364/002	LISN 50 ohm/50uH 3 line (1kHz - 30 MHz)	22-Mar-2000	12	22-Mar-2001	B
8189	HEWLETT PACKARD	11947A	2820A00277	Transient Limiter	14-Dec-2000	12	14-Dec-2001	G
8191	RHODE & SCHWARTZ	ESHS 30	842806/001	EMI Test Receiver	03-Dec-1999	13	01-Jan-2001	G
<u>Test Performed R</u>		<u>Radiated Emissions</u>						
7514	A.H.SYSTEMS	SAS-200/512	104	Log Periodic Antenna (200-1500 MHz)	12-Sep-2000	12	12-Sep-2001	G
8005	HEWLETT PACKARD	8447F	3113A04923	Option H64 Dual Preamp	08-Mar-2000	12	08-Mar-2001	B
8179	EMCO	3108	2149	Biconical Dipole Antenna (30-300 MHz)	06-Jul-2000	12	06-Jul-2001	G
8213	HEWLETT PACKARD	8566B	2410A00154	Spectrum Analyzer (dc-22 GHz)	12-May-2000	12	12-May-2001	G
8214	HEWLETT PACKARD	85662A	2403A08749	Display Section	12-May-2000	12	12-May-2001	G
8345	HEWLETT-PACKARD	85650A	2811A01300	Q.P Adapter	23-Nov-1999	13	22-Dec-2000	G

Cal Code Legend: G=Out Source, Y=No Cal required, R=Out of Service, B=In-House Verification Required

Remarks: One year calibration cycle for all test equipment.

Equipment Under Test (EUT) Test Operation Mode - Emissions Tests :

The equipment under test was operated under the following conditions during emissions testing:

- ☐ - Standby
- ☐ - Test Program (H - Pattern)
- ☐ - Test Program (Color Bar)
- ☐ - Test Program (Customer Specified)
- ☐ - Practice Operation
- ☒ - Normal Operating Mode
- ☐ - _____

Configuration of the equipment under test:

- ☐ - See Constructional Data Form in Appendix B - Page B2
- ☒ - See Product Information Form(s) in Appendix B - Page B2

The following peripheral devices and interface cables were connected during the testing:

- | | |
|---|----------------|
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - _____ | Type : _____ |
| ☐ - unshielded power cable | |
| ☐ - unshielded cables | |
| ☐ - shielded cables | MPS.No.: _____ |
| ☐ - customer specific cables | |
| ☐ - _____ | |
| ☐ - _____ | |

Emissions Test Results:**Conducted Emissions, 150 kHz - 30 MHz**☒ - PASS☐ - FAIL☐ - NOT PERFORMED

Minimum limit margin _____ 9.7 dB at _____ .779 MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

Radiated Emissions (Electric Field), 30 MHz - 1000 MHz (15.209)☒ - PASS☐ - FAIL☐ - NOT APPLICABLE

Minimum limit margin _____ 11.5 dB at _____ 160.05 MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

Radiated Emissions (Electric Field), 30 MHz - 1000 MHz (15.239)☒ - PASS☐ - FAIL☐ - NOT APPLICABLE

Minimum limit margin (Low f) _____ 45.3 av at _____ 88.3 MHz

Minimum limit margin (Mid f) _____ 43.6 av at _____ 93.7 MHz

Minimum limit margin (High f) _____ 38.6 av at _____ 160.05 MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

GENERAL REMARKS:

NOTE: All photographs are representative of setup for maximum emissions.

SUMMARY:

All tests according to the regulations cited on page 3 were

☐ - Performed

☒ - **Not** Performed

The Equipment Under Test

☒ - **Fulfills** the general approval requirements cited on page 3.

☐ - **Does not** fulfill the general approval requirements cited on page 3.

Statement of Measurement Uncertainty

The data and results referenced in this document are true and accurate. The measurement uncertainty is calculated to be ± 2 dB for conducted emissions and ± 4 dB for radiated emissions.

Equipment Received Date: **11 December 2000**

Testing Start Date: **11 December 2000**

Testing End Date: **8 November 2000**

- TÜV PRODUCT SERVICE, INC. -

Reviewed By:



Robert Cresswell

Tested By:



Dan Dillion

Technical Documentation

Test Data Sheets
and
Occupied Bandwidth Plots

Conducted Electromagnetic Emissions



Test Report #: **B0319 Run 01** Test Area: **Pinewood Site 1 Cond**
Test Method: **FCC** Test Date: **29-Sep-2000**
EUT Model #: **BR0928001** EUT Power: **120 VAC / 60 Hz**
EUT Serial #: **09280001** Temperature: **20.8** °C
Manufacturer: **Waio, Inc.** Relative Humidity: **30** %
EUT Description: **FM Broadcast Radio** Air Pressure: **81** kPa
Notes: Page: **1** of 2

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 (dB) FCC B	DELTA2 (dB) N/A
0.450	16.2 Qp	0.1 / 0.0 / -10.0	26.3	Line 1	-21.7	N/A
0.531	19.8 Qp	0.1 / 0.0 / -10.0	29.9	Line 1	-18.1	N/A
0.779	11.8 Qp	0.2 / 0.0 / -10.0	22.0	Line 1	-26.0	N/A
1.64	12.5 Qp	0.3 / 0.0 / -10.0	22.8	Line 1	-25.2	N/A
8.79	9.6 Qp	0.6 / 0.0 / -10.0	20.2	Line 1	-27.8	N/A
0.450	24.5 Qp	0.1 / 0.0 / -10.0	34.6	Neutral	-13.4	N/A
0.531	23.7 Qp	0.1 / 0.0 / -10.0	33.8	Neutral	-14.2	N/A
0.779	28.1 Pk	0.2 / 0.0 / -10.0	38.3	Neutral	-9.7	N/A
1.64	7.8 Qp	0.3 / 0.0 / -10.0	18.1	Neutral	-29.9	N/A
8.79	10.2 Qp	0.6 / 0.0 / -10.0	20.8	Neutral	-27.2	N/A

Tested by: **Dan Dillon**

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Reviewed by: **Robert Cresswell**

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Conducted Electromagnetic Emissions



Test Report #: B0319 Run 01 Test Area: Pinewood Site 1 Cond
Test Method: FCC Test Date: 29-Sep-2000
EUT Model #: BR0928001 EUT Power: 120 VAC / 60 Hz
EUT Serial #: 09280001 Temperature: 20.8 °C
Manufacturer: Waio, Inc. Relative Humidity: 30 %
EUT Description: FM Broadcast Radio Air Pressure: 81 kPa
Notes: _____ Page: 2 of 2

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 (dB) FCC B	DELTA2 (dB) N/A
---------------	-----------------	------------------------------	-----------------	------------	----------------------	--------------------

***** MEASUREMENT SUMMARY *****						
0.779	28.1 Pk	0.2 / 0.0 / -10.0	38.3	Neutral	-9.7	N/A
0.450	24.5 Qp	0.1 / 0.0 / -10.0	34.6	Neutral	-13.4	N/A
0.531	23.7 Qp	0.1 / 0.0 / -10.0	33.8	Neutral	-14.2	N/A
1.64	12.5 Qp	0.3 / 0.0 / -10.0	22.8	Line 1	-25.2	N/A
8.79	10.2 Qp	0.6 / 0.0 / -10.0	20.8	Neutral	-27.2	N/A

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Radiated Electromagnetic Emissions



Test Report #:	B0319 Run 03	Test Area:	Pinewood Site 1 (3m)	
Test Method:	N/A	Test Date:	28-Sep-2000	
EUT Model #:	BR0928001	EUT Power:	120 VAC / 60 Hz	
EUT Serial #:	09280001			Temperature: 20.8 °C
Manufacturer:	Waio, Inc.			Relative Humidity: 38 %
EUT Description:	FM Broadcast Radio			Air Pressure: 80.5 kPa
Notes:				Page: 1 of 7

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) N/A	DELTA2 (dB) N/A
Operating at 88.3 MHz						
Low Frequency						
All readings were maximized.						
88.30	36.9 Av	0.6 / 7.8 / 0.0	45.3	V / 1.0 / 0.0	N/A	N/A
176.60	29.7 Qp	0.8 / 12.8 / 0.0	43.2	V / 1.0 / 0.0	N/A	N/A
264.90	16.8 Qp	0.9 / 14.1 / 0.0	31.8	V / 1.0 / 0.0	N/A	N/A
353.20	16.1 Qp	1.1 / 15.0 / 0.0	32.1	V / 1.0 / 0.0	N/A	N/A
441.50	28.2 Qp	1.2 / 16.4 / 0.0	45.8	V / 1.0 / 0.0	N/A	N/A
529.80	23.1 Qp	1.4 / 17.9 / 0.0	42.3	V / 1.0 / 0.0	N/A	N/A
618.10	13.4 Qp	1.5 / 20.5 / 0.0	35.4	V / 1.0 / 0.0	N/A	N/A
706.40	11.9 Qp	1.7 / 20.3 / 0.0	33.9	V / 1.0 / 0.0	N/A	N/A
794.70	11.0 Qp	1.8 / 21.6 / 0.0	34.4	V / 1.0 / 0.0	N/A	N/A
883.00	11.3 Qp	1.9 / 22.4 / 0.0	35.7	V / 1.0 / 0.0	N/A	N/A
883.00	10.8 Qp	1.9 / 22.4 / 0.0	35.1	H / 1.0 / 0.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #:	B0319 Run 03	Test Area:	Pinewood Site 1 (3m)	
Test Method:	N/A	Test Date:	28-Sep-2000	
EUT Model #:	BR0928001	EUT Power:	120 VAC / 60 Hz	
EUT Serial #:	09280001			Temperature: 20.8 °C
Manufacturer:	Waio, Inc.			Relative Humidity: 38 %
EUT Description:	FM Broadcast Radio			Air Pressure: 80.5 kPa
Notes:				Page: 2 of 7

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) N/A	DELTA2 (dB) N/A
794.70	11.8 Qp	1.8 / 21.6 / 0.0	35.2	H / 1.0 / 0.0	N/A	N/A
706.40	10.7 Qp	1.7 / 20.3 / 0.0	32.7	H / 1.0 / 0.0	N/A	N/A
618.10	11.2 Qp	1.5 / 20.5 / 0.0	33.2	H / 1.0 / 0.0	N/A	N/A
529.80	12.0 Qp	1.4 / 17.9 / 0.0	31.3	H / 1.0 / 0.0	N/A	N/A
441.50	23.4 Qp	1.2 / 16.4 / 0.0	41.0	H / 1.6 / 0.0	N/A	N/A
353.20	14.2 Qp	1.1 / 15.0 / 0.0	30.3	H / 1.5 / 0.0	N/A	N/A
264.90	21.9 Qp	0.9 / 14.1 / 0.0	37.0	H / 1.0 / 0.0	N/A	N/A
176.60	22.2 Qp	0.8 / 12.8 / 0.0	35.7	H / 1.5 / 0.0	N/A	N/A
88.30	28.3 Av	0.6 / 7.8 / 0.0	36.7	H / 2.1 / 0.0	N/A	N/A
Operating at 93.7 MHz - Mid frequency						
93.70	34.9 Av	0.6 / 8.2 / 0.0	43.6	V / 1.0 / 0.0	N/A	N/A
187.40	25.7 Qp	0.8 / 13.3 / 0.0	39.8	V / 1.0 / 0.0	N/A	N/A
281.10	16.1 Qp	1.0 / 14.2 / 0.0	31.3	V / 1.0 / 0.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #:	B0319 Run 03	Test Area:	Pinewood Site 1 (3m)		
Test Method:	N/A	Test Date:	28-Sep-2000		
EUT Model #:	BR0928001	EUT Power:	120 VAC / 60 Hz		
EUT Serial #:	09280001			Temperature:	20.8 °C
Manufacturer:	Waio, Inc.			Relative Humidity:	38 %
EUT Description:	FM Broadcast Radio			Air Pressure:	80.5 kPa
Notes:				Page:	3 of 7

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) N/A	DELTA2 (dB) N/A
374.80	18.2 Qp	1.1 / 14.8 / 0.0	34.2	V / 1.0 / 0.0	N/A	N/A
468.50	20.8 Qp	1.3 / 16.9 / 0.0	38.9	V / 1.0 / 0.0	N/A	N/A
562.20	19.2 Qp	1.4 / 20.0 / 0.0	40.7	V / 1.0 / 0.0	N/A	N/A
655.90	14.8 Qp	1.6 / 21.0 / 0.0	37.4	V / 1.0 / 0.0	N/A	N/A
749.60	10.8 Qp	1.7 / 21.0 / 0.0	33.5	V / 1.0 / 0.0	N/A	N/A
843.30	10.2 Qp	1.9 / 21.7 / 0.0	33.8	V / 1.0 / 0.0	N/A	N/A
937 MHz was in the noise floor, vertical						
937 MHz was in the noise floor, horizontal						
843.3 MHz was below the noise floor, horizontal						
749.6 MHz was below the noise floor, horizontal						
655.90	14.9 Qp	1.6 / 21.0 / 0.0	37.5	H / 1.1 / 0.0	N/A	N/A
562.25	16.6 Qp	1.4 / 20.0 / 0.0	38.0	H / 1.3 / 0.0	N/A	N/A
468.55	18.3 Qp	1.3 / 16.9 / 0.0	36.4	H / 1.7 / 0.0	N/A	N/A
374.85	17.9 Qp	1.1 / 14.8 / 0.0	33.9	H / 2.3 / 0.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #:	B0319 Run 03	Test Area:	Pinewood Site 1 (3m)	
Test Method:	N/A	Test Date:	28-Sep-2000	
EUT Model #:	BR0928001	EUT Power:	120 VAC / 60 Hz	
EUT Serial #:	09280001			Temperature: 20.8 °C
Manufacturer:	Waio, Inc.			Relative Humidity: 38 %
EUT Description:	FM Broadcast Radio			Air Pressure: 80.5 kPa
Notes:				Page: 4 of 7

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) N/A	DELTA2 (dB) N/A
281.15	23.9 Qp	1.0 / 14.2 / 0.0	39.1	H / 1.0 / 0.0	N/A	N/A
187.46	24.0 Qp	0.8 / 13.3 / 0.0	38.1	H / 1.6 / 0.0	N/A	N/A
93.70	26.4 Av	0.6 / 8.2 / 0.0	35.2	H / 2.0 / 0.0	N/A	N/A
Operating at 106.5 MHz - High frequency						
106.50	28.4 Av	0.6 / 9.6 / 0.0	38.6	V / 1.0 / 0.0	N/A	N/A
213.00	21.4 Qp	0.8 / 13.8 / 0.0	36.0	V / 1.0 / 0.0	N/A	N/A
319.50	16.2 Qp	1.0 / 14.0 / 0.0	31.2	V / 1.0 / 0.0	N/A	N/A
426.00	9.2 Qp	1.2 / 16.3 / 0.0	26.8	V / 1.0 / 0.0	N/A	N/A
532.50	15.5 Qp	1.4 / 17.9 / 0.0	34.7	V / 1.0 / 0.0	N/A	N/A
639.00	9.8 Qp	1.6 / 21.7 / 0.0	33.1	V / 1.0 / 0.0	N/A	N/A
745.50	3.5 Qp	1.7 / 21.3 / 0.0	26.4	V / 1.0 / 0.0	N/A	N/A
852.00	4.5 Qp	1.9 / 22.2 / 0.0	28.6	V / 1.0 / 0.0	N/A	N/A
958.50	4.9 Qp	2.0 / 24.3 / 0.0	31.2	V / 1.0 / 0.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #:	B0319 Run 03	Test Area:	Pinewood Site 1 (3m)	
Test Method:	N/A	Test Date:	28-Sep-2000	
EUT Model #:	BR0928001	EUT Power:	120 VAC / 60 Hz	
EUT Serial #:	09280001			Temperature: 20.8 °C
Manufacturer:	Waio, Inc.			Relative Humidity: 38 %
EUT Description:	FM Broadcast Radio			Air Pressure: 80.5 kPa
Notes:				Page: 5 of 7

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) N/A	DELTA2 (dB) N/A
1065 MHz was below the noise floor. Vertical						
1065 MHz was below the noise floor. Horizontal						
958.5 MHz was below the noise floor. Horizontal						
852.00	9.2 Qp	1.9 / 22.2 / 0.0	33.2	H / 1.1 / 0.0	N/A	N/A
745.50	8.8 Qp	1.7 / 21.3 / 0.0	31.8	H / 1.0 / 0.0	N/A	N/A
639.00	9.2 Qp	1.6 / 21.7 / 0.0	32.5	H / 1.0 / 0.0	N/A	N/A
532.50	9.5 Qp	1.4 / 17.9 / 0.0	28.7	H / 1.0 / 0.0	N/A	N/A
426.00	8.5 Qp	1.2 / 16.3 / 0.0	26.1	H / 1.0 / 0.0	N/A	N/A
319.51	19.3 Qp	1.0 / 14.0 / 0.0	34.3	H / 1.0 / 0.0	N/A	N/A
213.01	22.4 Qp	0.8 / 13.8 / 0.0	37.1	H / 1.0 / 0.0	N/A	N/A
106.50	33.7 Av	0.6 / 9.6 / 0.0	43.9	H / 1.8 / 0.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #:	B0319 Run 03	Test Area:	Pinewood Site 1 (3m)		
Test Method:	N/A	Test Date:	28-Sep-2000		
EUT Model #:	BR0928001	EUT Power:	120 VAC / 60 Hz		
EUT Serial #:	09280001			Temperature:	20.8 °C
Manufacturer:	Waio, Inc.			Relative Humidity:	38 %
EUT Description:	FM Broadcast Radio			Air Pressure:	80.5 kPa
Notes:				Page:	6 of 7

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) N/A	DELTA2 (dB) N/A
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***** MEASUREMENT SUMMARY *****						
88.30	36.9 Av	0.6 / 7.8 / 0.0	45.3	V / 1.0 / 0.0	N/A	N/A
93.70	34.9 Av	0.6 / 8.2 / 0.0	43.6	V / 1.0 / 0.0	N/A	N/A
106.50	33.7 Av	0.6 / 9.6 / 0.0	43.9	H / 1.8 / 0.0	N/A	N/A
176.60	29.7 Qp	0.8 / 12.8 / 0.0	43.2	V / 1.0 / 0.0	N/A	N/A
187.40	25.7 Qp	0.8 / 13.3 / 0.0	39.8	V / 1.0 / 0.0	N/A	N/A
187.46	24.0 Qp	0.8 / 13.3 / 0.0	38.1	H / 1.6 / 0.0	N/A	N/A
213.01	22.4 Qp	0.8 / 13.8 / 0.0	37.1	H / 1.0 / 0.0	N/A	N/A
264.90	21.9 Qp	0.9 / 14.1 / 0.0	37.0	H / 1.0 / 0.0	N/A	N/A
281.15	23.9 Qp	1.0 / 14.2 / 0.0	39.1	H / 1.0 / 0.0	N/A	N/A
319.51	19.3 Qp	1.0 / 14.0 / 0.0	34.3	H / 1.0 / 0.0	N/A	N/A
353.20	16.1 Qp	1.1 / 15.0 / 0.0	32.1	V / 1.0 / 0.0	N/A	N/A
374.80	18.2 Qp	1.1 / 14.8 / 0.0	34.2	V / 1.0 / 0.0	N/A	N/A
426.00	9.2 Qp	1.2 / 16.3 / 0.0	26.8	V / 1.0 / 0.0	N/A	N/A
441.50	28.2 Qp	1.2 / 16.4 / 0.0	45.8	V / 1.0 / 0.0	N/A	N/A
468.50	20.8 Qp	1.3 / 16.9 / 0.0	38.9	V / 1.0 / 0.0	N/A	N/A
529.80	23.1 Qp	1.4 / 17.9 / 0.0	42.3	V / 1.0 / 0.0	N/A	N/A
532.50	15.5 Qp	1.4 / 17.9 / 0.0	34.7	V / 1.0 / 0.0	N/A	N/A
562.20	19.2 Qp	1.4 / 20.0 / 0.0	40.7	V / 1.0 / 0.0	N/A	N/A
618.10	13.4 Qp	1.5 / 20.5 / 0.0	35.4	V / 1.0 / 0.0	N/A	N/A
639.00	9.8 Qp	1.6 / 21.7 / 0.0	33.1	V / 1.0 / 0.0	N/A	N/A
655.90	14.9 Qp	1.6 / 21.0 / 0.0	37.5	H / 1.1 / 0.0	N/A	N/A
706.40	11.9 Qp	1.7 / 20.3 / 0.0	33.9	V / 1.0 / 0.0	N/A	N/A
745.50	8.8 Qp	1.7 / 21.3 / 0.0	31.8	H / 1.0 / 0.0	N/A	N/A
749.60	10.8 Qp	1.7 / 21.0 / 0.0	33.5	V / 1.0 / 0.0	N/A	N/A
794.70	11.8 Qp	1.8 / 21.6 / 0.0	35.2	H / 1.0 / 0.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #: **B0319 Run 03** Test Area: Pinewood Site 1 (3m)
Test Method: N/A Test Date: 28-Sep-2000
EUT Model #: BR0928001 EUT Power: 120 VAC / 60 Hz
EUT Serial #: 09280001 Temperature: 20.8 °C
Manufacturer: Waio, Inc. Relative Humidity: 38 %
EUT Description: FM Broadcast Radio Air Pressure: 80.5 kPa
Notes: Page: 7 of 7

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB\m) (dB)	FINAL (dBuV)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) N/A	DELTA2 (dB) N/A
843.30	10.2 Qp	1.9 / 21.7 / 0.0	33.8	V / 1.0 / 0.0	N/A	N/A
852.00	9.2 Qp	1.9 / 22.2 / 0.0	33.2	H / 1.1 / 0.0	N/A	N/A
883.00	11.3 Qp	1.9 / 22.4 / 0.0	35.7	V / 1.0 / 0.0	N/A	N/A
958.50	4.9 Qp	2.0 / 24.3 / 0.0	31.2	V / 1.0 / 0.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #:	B0319 Run 05	Test Area:	Pinewood Site 1 (3m)	
Test Method:	FCC Part 15	Test Date:	08-Nov-2000	
EUT Model #:	BR0928001	EUT Power:	120 VAC / 60 Hz	
EUT Serial #:	09280001			Temperature: 20.5 °C
Manufacturer:	Waio, Inc.			Relative Humidity: <24 %
EUT Description:	FM Broadcast Radio			Air Pressure: 79 kPa
Notes:				Page: 1 of 6

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) FCC B (> 1GHz)
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***** MEASUREMENT SUMMARY *****						
160.05	45.6 Qp	0.7 / 12.5 / 26.8	32.0	V / 1.0 / 295.0	-11.5	N/A
272.06	45.4 Qp	0.9 / 14.0 / 26.5	33.8	V / 1.0 / 328.0	-12.2	N/A
256.05	44.1 Qp	0.9 / 14.5 / 26.6	33.0	V / 1.0 / 34.0	-13.0	N/A
43.60	41.8 Qp	0.4 / 11.5 / 27.2	26.6	V / 1.0 / 90.0	-13.4	N/A
43.96	41.2 Qp	0.4 / 11.4 / 27.2	25.9	V / 1.0 / 0.0	-14.1	N/A
56.05	42.1 Qp	0.5 / 9.9 / 27.1	25.3	V / 1.0 / 154.0	-14.7	N/A
224.06	41.4 Qp	0.8 / 15.1 / 26.6	30.7	V / 1.0 / 255.0	-15.3	N/A
148.09	41.4 Qp	0.7 / 12.3 / 26.9	27.5	V / 1.0 / 0.0	-16.0	N/A
147.50	41.2 Qp	0.7 / 12.3 / 26.9	27.4	V / 1.0 / 0.0	-16.1	N/A
240.05	40.6 Qp	0.9 / 15.1 / 26.6	29.9	V / 1.0 / 40.0	-16.1	N/A
146.29	41.2 Qp	0.7 / 12.3 / 26.9	27.3	V / 1.0 / 0.0	-16.2	N/A
145.06	41.1 Qp	0.7 / 12.2 / 26.9	27.2	V / 1.0 / 0.0	-16.3	N/A
149.93	40.9 Qp	0.7 / 12.4 / 26.9	27.1	V / 1.0 / 0.0	-16.4	N/A
163.91	40.7 Qp	0.7 / 12.5 / 26.8	27.1	V / 1.0 / 0.0	-16.4	N/A
624.06	35.2 Qp	1.5 / 20.7 / 27.9	29.6	V / 1.0 / 0.0	-16.4	N/A
656.06	34.8 Qp	1.6 / 21.0 / 27.9	29.5	V / 1.0 / 295.0	-16.5	N/A
36.07	37.7 Qp	0.4 / 12.5 / 27.2	23.4	V / 1.0 / 0.0	-16.6	N/A
64.14	40.8 Qp	0.5 / 9.0 / 27.1	23.2	V / 1.0 / 270.0	-16.8	N/A
608.06	35.1 Qp	1.5 / 20.3 / 27.9	29.1	V / 1.0 / 0.0	-16.9	N/A
208.06	39.1 Qp	0.8 / 13.1 / 26.6	26.5	V / 1.0 / 277.0	-17.0	N/A
36.91	37.2 Qp	0.4 / 12.4 / 27.2	22.8	V / 1.0 / 0.0	-17.2	N/A
157.22	39.8 Qp	0.7 / 12.4 / 26.8	26.1	V / 1.0 / 0.0	-17.4	N/A
156.62	39.7 Qp	0.7 / 12.4 / 26.8	26.0	V / 1.0 / 0.0	-17.5	N/A
712.06	34.2 Qp	1.7 / 20.0 / 27.8	28.1	V / 1.0 / 295.0	-17.9	N/A
360.06	38.9 Qp	1.1 / 15.0 / 27.0	28.0	V / 1.0 / 180.0	-18.0	N/A

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Radiated Electromagnetic Emissions



Test Report #:	B0319 Run 05	Test Area:	Pinewood Site 1 (3m)	
Test Method:	FCC Part 15	Test Date:	08-Nov-2000	
EUT Model #:	BR0928001	EUT Power:	120 VAC / 60 Hz	
EUT Serial #:	09280001			Temperature: 20.5 °C
Manufacturer:	Waio, Inc.			Relative Humidity: <24 %
EUT Description:	FM Broadcast Radio			Air Pressure: 79 kPa
Notes:				Page: 2 of 6

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) FCC B (> 1GHz)
592.06	34.3 Qp	1.5 / 19.8 / 27.8	27.8	V / 1.0 / 0.0	-18.2	N/A
640.06	32.3 Qp	1.6 / 21.8 / 27.9	27.8	V / 1.0 / 277.0	-18.2	N/A
680.06	32.4 Qp	1.6 / 21.7 / 27.9	27.8	V / 1.0 / 277.0	-18.2	N/A
344.05	38.8 Qp	1.1 / 14.6 / 26.9	27.7	V / 1.0 / 180.0	-18.3	N/A
744.06	32.4 Qp	1.7 / 21.4 / 27.8	27.7	V / 1.0 / 0.0	-18.3	N/A
64.03	39.2 Qp	0.5 / 9.0 / 27.1	21.6	V / 1.0 / 90.0	-18.4	N/A
144.07	39.1 Qp	0.7 / 12.2 / 26.9	25.1	V / 1.0 / 270.0	-18.4	N/A
672.06	32.5 Qp	1.6 / 21.4 / 27.9	27.6	V / 1.0 / 277.0	-18.4	N/A
728.06	33.5 Qp	1.7 / 20.2 / 27.8	27.5	V / 1.0 / 0.0	-18.5	N/A
328.07	38.5 Qp	1.0 / 14.6 / 26.7	27.4	V / 1.0 / 295.0	-18.6	N/A
151.75	38.6 Qp	0.7 / 12.4 / 26.9	24.8	V / 1.0 / 90.0	-18.7	N/A
153.57	38.6 Qp	0.7 / 12.4 / 26.9	24.8	V / 1.0 / 90.0	-18.7	N/A
696.06	32.7 Qp	1.6 / 20.8 / 27.9	27.3	V / 1.0 / 295.0	-18.7	N/A
760.06	32.0 Qp	1.7 / 21.3 / 27.8	27.3	V / 1.0 / 0.0	-18.7	N/A
48.01	37.0 Pk	0.5 / 10.9 / 27.1	21.1	V / 1.0 / 0.0	-18.9	N/A
145.98	38.6 Qp	0.7 / 12.2 / 26.9	24.6	V / 1.0 / 0.0	-18.9	N/A
80.05	39.6 Qp	0.5 / 8.0 / 27.1	21.0	V / 1.0 / 90.0	-19.0	N/A
288.05	38.5 Qp	1.0 / 14.1 / 26.5	27.0	V / 1.0 / 295.0	-19.0	N/A
664.04	32.1 Qp	1.6 / 21.2 / 27.9	27.0	V / 1.0 / 0.0	-19.0	N/A
264.05	38.3 Qp	0.9 / 14.1 / 26.6	26.8	V / 1.0 / 295.0	-19.2	N/A
648.06	31.6 Qp	1.6 / 21.0 / 27.9	26.3	V / 1.0 / 295.0	-19.7	N/A
199.79	35.6 Qp	0.8 / 13.9 / 26.7	23.6	V / 1.0 / 270.0	-19.9	N/A
576.05	32.2 Qp	1.5 / 20.1 / 27.8	26.0	V / 1.0 / 0.0	-20.0	N/A
81.52	38.3 Qp	0.5 / 7.9 / 27.1	19.7	V / 1.0 / 90.0	-20.3	N/A
280.05	37.1 Qp	1.0 / 14.2 / 26.5	25.7	H / 1.5 / 90.0	-20.3	N/A
206.46	35.8 Qp	0.8 / 13.0 / 26.6	23.0	V / 1.0 / 277.0	-20.5	N/A
688.06	30.7 Qp	1.6 / 21.1 / 27.9	25.5	V / 1.0 / 277.0	-20.5	N/A

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Radiated Electromagnetic Emissions



Test Report #:	B0319 Run 05	Test Area:	Pinewood Site 1 (3m)	
Test Method:	FCC Part 15	Test Date:	08-Nov-2000	
EUT Model #:	BR0928001	EUT Power:	120 VAC / 60 Hz	
EUT Serial #:	09280001			Temperature: 20.5 °C
Manufacturer:	Waio, Inc.			Relative Humidity: <24 %
EUT Description:	FM Broadcast Radio			Air Pressure: 79 kPa
Notes:				Page: 3 of 6

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) FCC B (> 1GHz)
52.07	35.7 Qp	0.5 / 10.4 / 27.1	19.4	V / 1.0 / 0.0	-20.6	N/A
202.23	36.1 Qp	0.8 / 12.7 / 26.6	22.9	V / 1.0 / 277.0	-20.6	N/A
203.43	36.0 Qp	0.8 / 12.8 / 26.6	22.9	V / 1.0 / 277.0	-20.6	N/A
376.06	36.6 Qp	1.1 / 14.9 / 27.1	25.4	V / 1.0 / 277.0	-20.6	N/A
201.60	36.1 Qp	0.8 / 12.6 / 26.6	22.8	V / 1.0 / 277.0	-20.7	N/A
82.12	37.9 Qp	0.5 / 7.9 / 27.1	19.2	V / 1.0 / 90.0	-20.8	N/A
776.06	29.9 Qp	1.8 / 21.1 / 27.7	25.1	V / 1.0 / 295.0	-20.9	N/A
417.63	34.9 Qp	1.2 / 16.3 / 27.4	25.0	V / 1.0 / 0.0	-21.0	N/A
200.39	35.8 Qp	0.8 / 12.5 / 26.6	22.4	V / 1.0 / 277.0	-21.1	N/A
704.06	30.6 Qp	1.7 / 20.5 / 27.9	24.8	V / 1.0 / 295.0	-21.2	N/A
154.48	35.7 Qp	0.7 / 12.4 / 26.9	22.0	V / 1.0 / 90.0	-21.5	N/A
79.68	36.9 Qp	0.5 / 8.0 / 27.1	18.4	V / 1.0 / 90.0	-21.6	N/A
209.50	34.2 Qp	0.8 / 13.3 / 26.6	21.7	V / 1.0 / 277.0	-21.8	N/A
792.06	28.5 Qp	1.8 / 21.6 / 27.7	24.2	V / 1.0 / 180.0	-21.8	N/A
320.07	35.7 Qp	1.0 / 14.0 / 26.7	24.1	V / 1.0 / 295.0	-21.9	N/A
304.05	36.0 Qp	1.0 / 13.4 / 26.5	23.9	H / 1.5 / 270.0	-22.1	N/A
385.51	34.6 Qp	1.1 / 15.3 / 27.2	23.9	V / 1.0 / 0.0	-22.1	N/A
616.06	29.9 Qp	1.5 / 20.4 / 27.9	23.9	V / 1.0 / 0.0	-22.1	N/A
417.30	33.5 Qp	1.2 / 16.3 / 27.4	23.6	H / 1.5 / 180.0	-22.4	N/A
200.07	34.3 Qp	0.8 / 12.5 / 26.6	21.0	V / 1.0 / 277.0	-22.5	N/A
312.07	35.4 Qp	1.0 / 13.6 / 26.6	23.4	H / 1.5 / 270.0	-22.6	N/A
336.06	34.6 Qp	1.1 / 14.5 / 26.8	23.4	V / 1.0 / 295.0	-22.6	N/A
352.06	34.1 Qp	1.1 / 15.0 / 26.9	23.3	V / 1.0 / 180.0	-22.7	N/A
488.06	32.4 Qp	1.3 / 17.3 / 27.8	23.2	V / 1.0 / 0.0	-22.8	N/A
472.06	32.4 Qp	1.3 / 17.1 / 27.7	23.1	V / 1.0 / 0.0	-22.9	N/A
496.06	32.4 Qp	1.3 / 17.1 / 27.8	23.0	V / 1.0 / 0.0	-23.0	N/A
401.59	32.0 Qp	1.2 / 17.0 / 27.3	22.9	V / 1.0 / 0.0	-23.1	N/A

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Radiated Electromagnetic Emissions



Test Report #:	B0319 Run 05	Test Area:	Pinewood Site 1 (3m)	
Test Method:	FCC Part 15	Test Date:	08-Nov-2000	
EUT Model #:	BR0928001	EUT Power:	120 VAC / 60 Hz	
EUT Serial #:	09280001			Temperature: 20.5 °C
Manufacturer:	Waio, Inc.			Relative Humidity: <24 %
EUT Description:	FM Broadcast Radio			Air Pressure: 79 kPa
Notes:				Page: 4 of 6

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) FCC B (> 1GHz)
118.63	35.5 Qp	0.6 / 11.1 / 27.0	20.2	V / 1.0 / 270.0	-23.3	N/A
632.06	27.8 Qp	1.5 / 21.2 / 27.9	22.7	V / 1.0 / 0.0	-23.3	N/A
130.76	34.2 Qp	0.7 / 12.0 / 27.0	19.9	V / 1.0 / 180.0	-23.6	N/A
232.01	32.8 Qp	0.9 / 15.3 / 26.6	22.4	V / 1.0 / 180.0	-23.6	N/A
808.06	26.7 Qp	1.8 / 21.5 / 27.7	22.3	V / 1.0 / 0.0	-23.7	N/A
296.07	34.0 Qp	1.0 / 13.6 / 26.5	22.1	V / 1.0 / 295.0	-23.9	N/A
449.78	32.2 Qp	1.2 / 16.2 / 27.6	22.1	V / 1.0 / 0.0	-23.9	N/A
70.05	33.8 Qp	0.5 / 8.7 / 27.1	15.9	V / 1.0 / 90.0	-24.1	N/A
121.05	34.5 Qp	0.6 / 11.3 / 27.0	19.4	V / 1.0 / 90.0	-24.1	N/A
600.06	27.8 Qp	1.5 / 20.3 / 27.9	21.8	V / 1.0 / 0.0	-24.2	N/A
121.66	34.1 Pk	0.6 / 11.4 / 27.0	19.2	V / 1.0 / 0.0	-24.3	N/A
912.06	24.6 Qp	2.0 / 22.4 / 27.2	21.7	V / 1.0 / 0.0	-24.3	N/A
401.07	30.4 Qp	1.2 / 17.1 / 27.3	21.4	V / 1.0 / 277.0	-24.6	N/A
480.06	30.4 Qp	1.3 / 17.5 / 27.7	21.4	V / 1.0 / 0.0	-24.6	N/A
720.06	27.9 Qp	1.7 / 19.6 / 27.8	21.4	V / 1.0 / 0.0	-24.6	N/A
736.06	26.4 Qp	1.7 / 21.1 / 27.8	21.4	V / 1.0 / 0.0	-24.6	N/A
84.27	34.0 Pk	0.6 / 7.7 / 27.1	15.3	V / 1.0 / 0.0	-24.7	N/A
824.06	24.8 Qp	1.8 / 22.3 / 27.6	21.3	V / 1.0 / 0.0	-24.7	N/A
173.04	31.9 Qp	0.7 / 12.7 / 26.8	18.5	H / 1.5 / 270.0	-25.0	N/A
944.06	22.5 Qp	2.0 / 23.6 / 27.1	21.0	V / 1.0 / 0.0	-25.0	N/A
449.03	31.0 Qp	1.2 / 16.2 / 27.6	20.9	V / 1.0 / 0.0	-25.1	N/A
248.07	31.4 Qp	0.9 / 14.9 / 26.6	20.7	V / 1.0 / 295.0	-25.3	N/A
456.06	31.0 Qp	1.3 / 16.1 / 27.6	20.7	V / 1.0 / 0.0	-25.3	N/A
840.06	24.9 Qp	1.9 / 21.5 / 27.5	20.7	V / 1.0 / 90.0	-25.3	N/A
848.07	24.4 Qp	1.9 / 21.9 / 27.5	20.7	V / 1.0 / 90.0	-25.3	N/A
928.06	23.4 Qp	2.0 / 22.5 / 27.2	20.7	V / 1.0 / 0.0	-25.3	N/A
385.20	31.4 Qp	1.1 / 15.3 / 27.2	20.6	H / 1.5 / 90.0	-25.4	N/A

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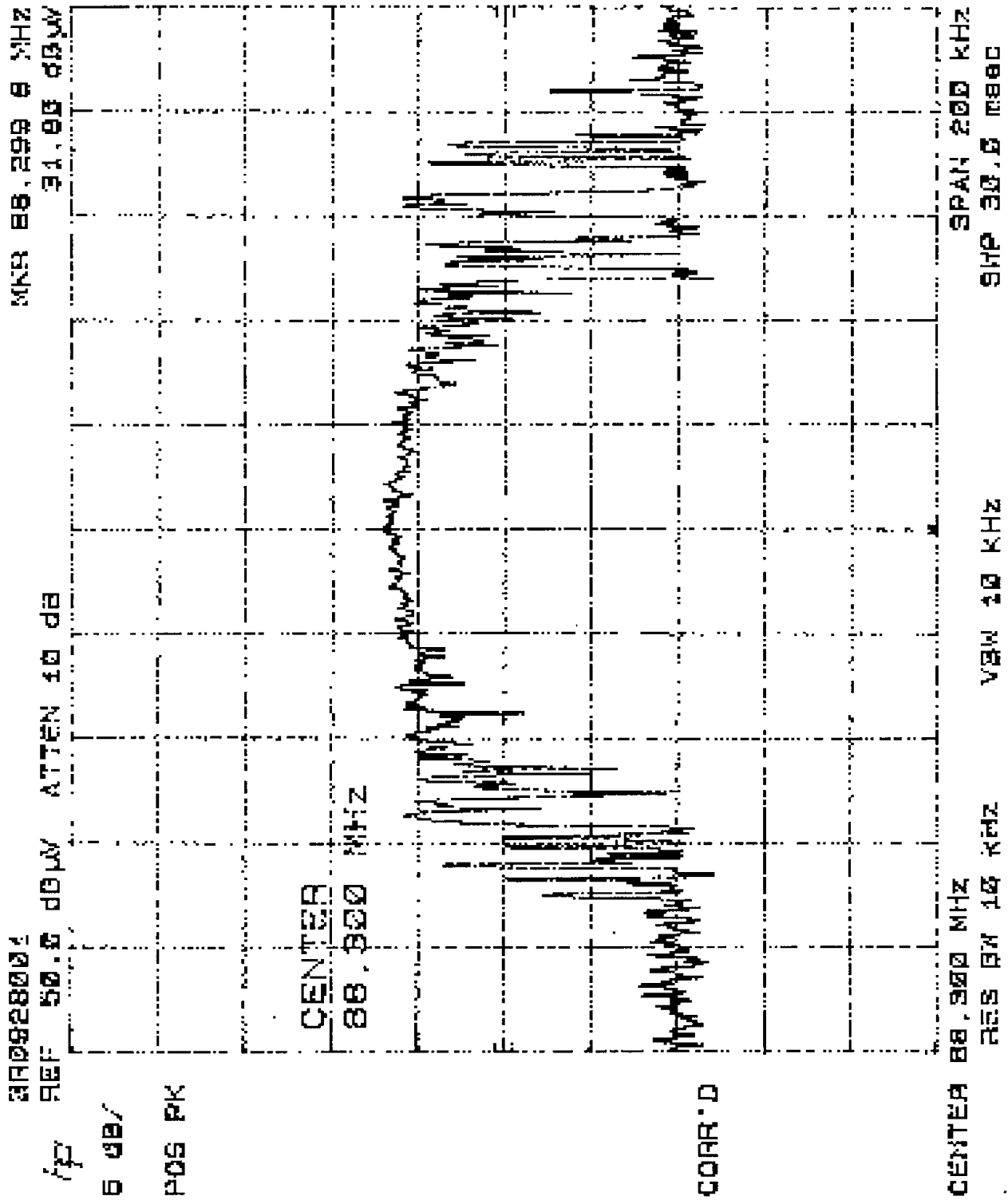
Signature

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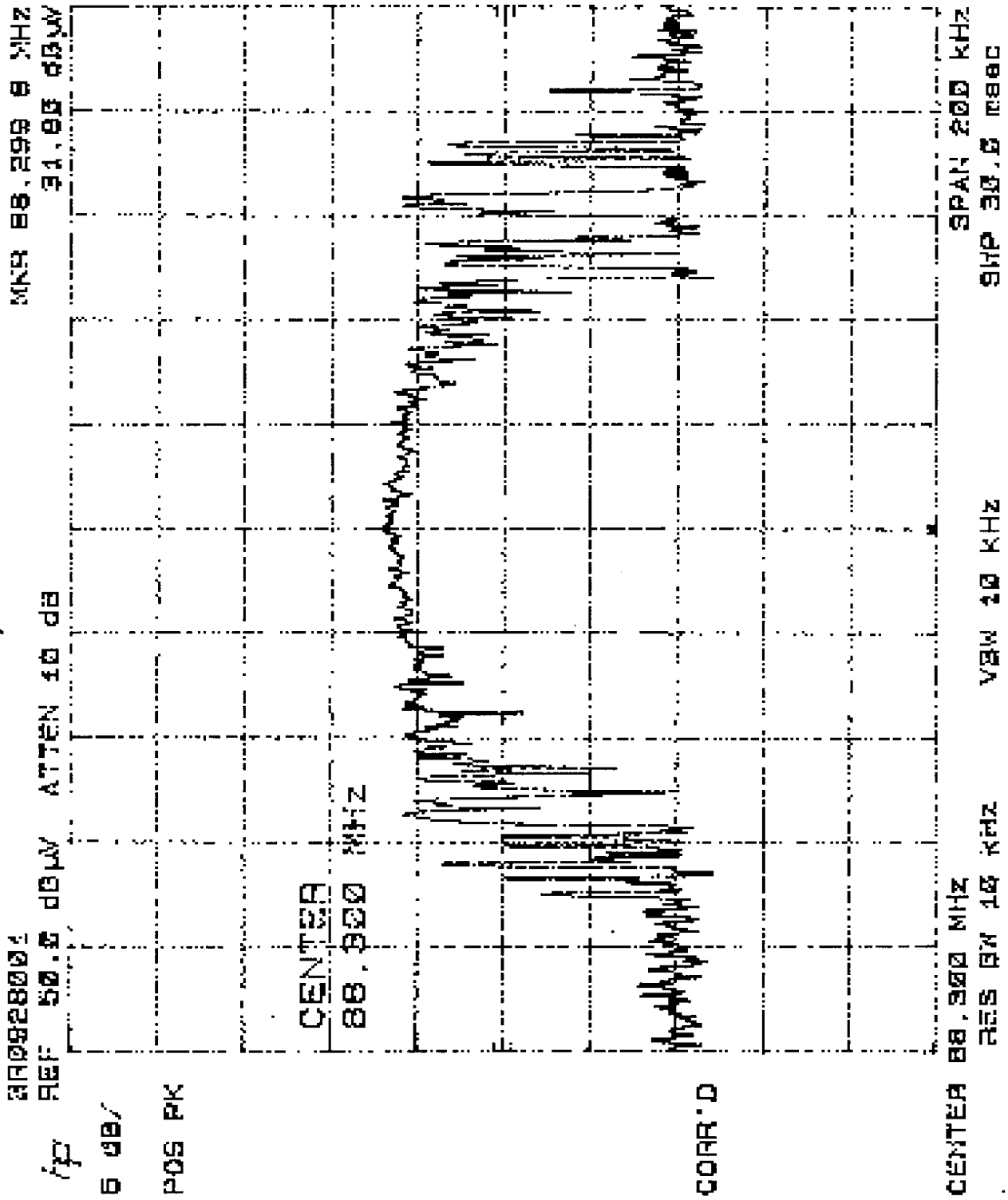
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Occupied Bandwidth



Occupied Bandwidth



Constructional Data Form

Company: _____

Address: _____

Contact: _____ Position: _____

Phone: _____ Fax: _____

E-mail Address: _____

General Equipment Description—

EUT Description _____

EUT Name _____

Model No.: _____ Serial No.: _____

Product Options: _____

Configurations to be tested: _____

Test Objective

- | | |
|---|--|
| ☐ EMC Directive 89/336/EEC (EMC)
Std: _____ | ☒ FCC: Class ☐ A ☒ B Part _____ |
| ☐ Machinery Directive 89/392/EEC (EMC)
Std: _____ | ☐ VCCI: Class ☐ A ☐ B |
| ☐ Medical Device Directive 93/42/EEC (EMC)
Std: _____ | ☐ BCIQ: Class ☐ A ☐ B |
| ☐ Vehicle Directive 72/245/EEC (EMC)
Std: _____ | ☐ Canada: Class ☐ A ☐ B |
| ☐ FDA Reviewers Guidance for Premarket
Notification Submissions (EMC) | ☐ Australia: Class ☐ A ☐ B |
| | ☐ Other: _____ |

TÜV Product Service Certification Requested

- | | |
|--|---|
| ☐ Attestation of Conformity (AoC) | ☐ International EMC Mark (IEM) |
| ☐ Certificate of Conformity (CoC) | ☐ Compliance Document |
| Protection Class (N/A for vehicles) | ☐ Class I ☐ Class II ☐ Class III |
- (Press **F1** when field is selected to show additional information on Protection Class.)

EUT Specifications and Requirements

Length: _____ Width: _____ Height: _____ Weight: _____

Power Requirements

*Regulations require testing to be performed at typical power ratings in the countries of intended use.
(i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)*

Voltage: _____ (If battery powered, make sure battery life is sufficient to complete testing.)

of Phases: _____

Current (Amps/phase(max)): _____ Current (Amps/phase(nominal)): _____

Other _____

Other Special Requirements**Typical Installation and/or Operating Environment**

(ie. Hospital, Small Business, Industrial/Factory, etc.)

EUT Power Cable

☐ Permanent	OR	☒ Removable	Length (in meters): _____
☐ Shielded	OR	☐ Unshielded	
☐ Not Applicable			

EUT Interface Ports and Cables										
Interface			Shielding							
Type	Analog	Digital	Qty	Yes	No	Type	Termination	Connector Type	Port Termination	Length (in meters)
EXAMPLE: RS232	☐	☒	2	☒	☐	Foil over braid	Coaxial	Metallized 9-pin D-Sub	Characteristic Impedance	6
	☒	☐		☐	☒					☐
	☒	☐		☐	☒					☐
	☒	☐		☐	☒					☐
	☒	☐		☐	☒					☐

EUT Software.

Revision Level:

Description:

EUT Operating Modes to be Tested—list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1.

EUT System Components—List and describe all components which are part of the EUT. For FCC testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc.)

Description	Model #	Serial #	FCC ID #

Oscillator Frequencies

Frequency	Derived Frequency	Component # / Location	Description of Use

Power Supply

Manufacturer	Model #	Serial #	Type
			☐ Switched-mode: (Frequency) _____ ☒ Linear ☐ Other: _____

Power Line Filters

Manufacturer	Model #	Location in EUT

Critical EMI Components (Capacitors, ferrites, etc.)

Description	Manufacturer	Part # or Value	Qty	Component # / Location

EMC Critical Detail—Describe other EMC Design details used to reduce high frequency noise.

Authorization Signatures

Timothy J. DePumpo	09/28/00
Customer authorization to perform tests according to this test plan.	Date
Timothy J. DePumpo	09/28/00
Test Plan/CDF Prepared By (please print)	Date
<i>Robert Creswell</i>	12/28/00
Reviewed by TÜV Product Service Associate	Date