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**FCC PART 15 B SUBPART B AND  
INDUSTRY CANADA  
RECEIVER TEST REPORT**

Applicant	AUDIO TECHNICA CORPORATION	
Address	2206 NARUSE, MACHIDA TOKYO 194 JAPAN	
FCC ID	JFZR1820AD	
IC	1752B-R1820AD	
Model	ATW-R1820a	
Product Description	WIRELESS MICROPHONE RECEIVER	
Date Sample Received	9/15/2009	
Date Tested	9/15/2009	
Tested By	Joe Scoglio	
Approved By	Mario de Aranzeta	
Report Number	2220AUT9TestReport.doc	
Test Results	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



Certificate # 0955-01

## TABLE OF CONTENTS

GENERAL REMARKS.....	3
REPORT SUMMARY .....	4
TEST ENVIRONMENT.....	4
TEST SETUP SUMMARY .....	4
DUT SPECIFICATION .....	5
TEST EQUIPMENT LIST.....	6
TEST PROCEDURES .....	7
RADIATED SPURIOUS EMISSIONS.....	8
POWER LINE CONDUCTED INTERFERENCE.....	9
RADIATED EMISSIONS TEST SETUP PHOTO .....	10

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## GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

The test results relate only to the items tested.

### Summary

The device under test does:

- fulfill the general approval requirements as identified in this test report
- not fulfill the general approval requirements as identified in this test report

### Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.



Certificate # 0955-01

I attest that the necessary measurements were made, under my supervision, at:

Timco Engineering Inc.  
849 NW State Road 45  
Newberry, Fl 32669



### Authorized Signatory Name:

Mario de Aranzeta C.E.T.  
Compliance Engineer/ Lab. Supervisor

**Date:** 9/30/2009

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## REPORT SUMMARY

Disclaimer	The test results only relate to the item tested.
Applicable Rule(s)	Pt 15.109, Pt 15.107, ANSI C63.4: 2003, RSS-GEN
Related Report	None

## TEST ENVIRONMENT

Test Facility	Timco Engineering, Inc. 849 NW State Road 45 Newberry, FL 32669 USA.
Test Condition in the laboratory	Temperature: 26°C Relative humidity: 50%

## TEST SETUP SUMMARY

Test Setup Diagram/ Description	The DUT was placed on the turntable per setup per ANSI C63.4: 2003. A test set up photo is provided for clarification.
Deviation from the standard/procedure	No deviation
Modification of DUT	No modification

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**DUT SPECIFICATION**

<b>DUT Description</b>	WIRELESS MICROPHONE RECEIVER
<b>FCC ID</b>	JFZR1820AD
<b>IC Certification</b>	1752B-R1820AD
<b>Model</b>	ATW-R1820a
<b>DUT Power Source</b>	<input type="checkbox"/> 110–120Vac/50– 60Hz
	<input type="checkbox"/> DC Power
	<input checked="" type="checkbox"/> Battery Operated Exclusively
<b>Test Item</b>	<input type="checkbox"/> Prototype
	<input checked="" type="checkbox"/> Pre-Production
	<input type="checkbox"/> Production
<b>Type of Equipment</b>	<input type="checkbox"/> Fixed
	<input type="checkbox"/> Mobile
	<input checked="" type="checkbox"/> Portable
<b>Laboratory Test Conditions</b>	Temperature: 26°C Humidity: 55%
<b>Modifications to DUT:</b>	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explanation below)

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**TEST EQUIPMENT LIST**

<b>Device</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial Number</b>	<b>Cal/Char Date</b>	<b>Due Date</b>
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/20/07	3/19/10
3-Meter OATS	TEI	N/A	N/A	Listed 2/5/09	2/5/12
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	Listed 5/11/07	5/11/10
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 11/30/07	11/30/09
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 11/30/07	11/30/09
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 11/30/07	11/30/09
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 11/30/07	11/30/09
Hygro-Thermometer	Extech	445703	0602	CAL 11/15/07	11/15/09
Measuring Tape-7.5M	Kraftixx	7.5M PROFI		CHAR 11/13/07	11/13/09
System One	Audio Precision	System One	SYS1-45868	CHAR 2/27/08	2/27/10
Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 4/25/08	4/25/10

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## TEST PROCEDURES

**Power line conducted Emission:** The test procedure used was ANSI C63.4-2003. The spectrum was scanned from 0.15 to 30 MHz.

**Radiation Interference:** The test procedure used was ANSI C63.4-2003 using a spectrum analyzer with a preselector. The bandwidth of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The video bandwidth was always greater than or equal to the RBW.

The frequency was scanned from 30 MHz to 1.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The DUT was measured in three (3) orthogonal planes when necessary.

**Formula Of Conversion Factors:** The field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dB $\mu$ V) to the antenna correction factor supplied by the antenna manufacturer plus the coax loss. The antenna correction factors are stated in terms of dB. The gain of the preselector was accounted for in the spectrum analyzer meter reading.

**Example:**

$$\begin{array}{lllll}
 \text{Freq (MHz)} & \text{Meter Reading} & + \text{ACF} & + \text{CL} & = \text{FS} \\
 33 & 20 \text{ dB}\mu\text{V} & + 10.36 \text{ dB/m} & +0.40 \text{ dB} & = 30.36 \text{ dB}\mu\text{V/m} @ 3\text{m}
 \end{array}$$

**ANSI C63.4-2003 Measurement Procedures:** The unit under test was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and verticals planes.

**ANSI STANDARD C63.4-2003 12.1.1.1 SUPERREGENERATIVE RECEIVER:** A Signal Generator was set to the unit under test operating frequency. An un-Modulated continuous wave (CW) signal was radiated at the super regenerative receiver operating frequency to cohere the characteristic broadband emissions from the receiver.

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## RADIATED SPURIOUS EMISSIONS

**Rules Part No.:** 15.109

**Requirements:**

Frequency MHz	Limits
30 – 88	40.0 dB $\mu$ V/m measured @ 3 meters
88 – 216	43.5 dB $\mu$ V/m measured @ 3 meters
216 – 960	46.0 dB $\mu$ V/m measured @ 3 meters
Above 960	54.0 dB $\mu$ V/m measured @ 3 meters

**Test Data:**

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dB $\mu$ V	Ant. Pol	Coax Loss dB	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Margin dB
655.5	411.50	12.9	H	1.21	16.20	30.31	15.69
655.5	411.50	16.2	V	1.21	15.92	33.33	12.67
655.5	823.10	4.9	H	1.91	21.96	28.77	17.23
655.5	823.10	5.9	V	1.91	21.33	29.14	16.86
655.5	1,234.60	13.5	H	2.29	27.79	43.58	10.42
655.5	1,234.60	16.6	V	2.29	27.79	46.68	7.32
668.0	424.00	10.5	H	1.22	16.32	28.04	17.96
668.0	424.00	13.9	V	1.22	16.04	31.16	14.84
668.0	848.00	7.7	H	1.92	22.58	32.20	13.80
668.0	848.00	12.0	V	1.92	22.00	35.92	10.08
668.0	1,272.00	13.7	H	2.32	27.82	43.84	10.16
668.0	1,272.00	16.8	V	2.32	27.82	46.94	7.06
680.3	436.40	8.3	H	1.24	16.69	26.23	19.77
680.3	436.40	15.6	V	1.24	16.23	33.07	12.93
680.3	872.80	7.5	H	1.94	23.08	32.52	13.48
680.3	872.80	10.8	V	1.94	22.40	35.14	10.86
680.3	1,309.20	14.5	H	2.35	27.85	44.70	9.30
680.3	1,309.20	16.0	V	2.35	27.85	46.20	7.80
680.3	2,182.20	6.8	H	3.03	31.67	41.50	12.50
680.3	2,182.20	7.0	V	3.03	31.67	41.70	12.30

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## POWER LINE CONDUCTED INTERFERENCE

**Rules Part No.:** Part 15.107

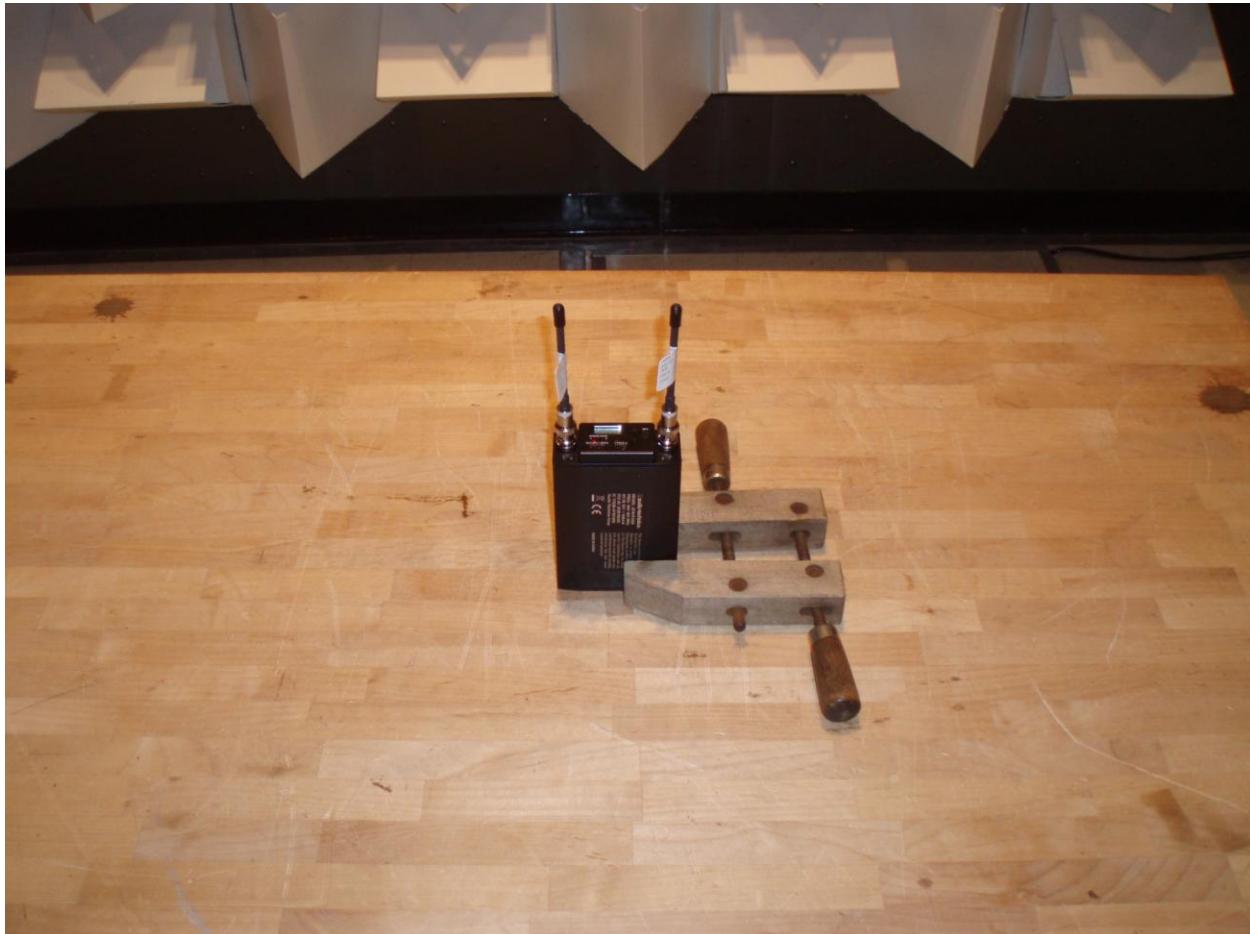
**Requirements:**

Frequency (MHz)	Quasi Peak Limits (dB $\mu$ V)	Average Limits (dB $\mu$ V)
0.15 – 0.5	66 – 56 *	56 – 46 *
0.5 – 5.0	56	46
5.0 – 30	60	50
* Decrease with logarithm of frequency		

**Test Data:** Not applicable. Battery operated device.

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## RADIATED EMISSIONS TEST SETUP PHOTO



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