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FCC PART 15 SUBPART B CLASS B TEST REPORT

Applicant	AUDIO-TECHNICA CORPORATION
Address	2-46-1 NISHI-NARUSE MACHIDA TOKYO 194-8666 JAPAN
FCC ID	JFZCKS990BT
Model Number	ATH-CKS990BT
Product Description	BLUETOOTH WIRELESS STEREO HEADSET
Date Sample Received	7/15/2016
Date Tested	8/3/2016
Tested By	Tim Royer
Approved By	Cory Leverett
Test Results	☒ PASS ☐ FAIL

Report Number	Version Number	Description	Issue Date
1375BUT16TestReport	Rev1	Initial Issue	8/8/2016
1375BUT16TestReport	Rev2	Made correction to equipment type	8/8/2016

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

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GENERAL REMARKS

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

Summary

The device under test does:

- ☒ Fulfill the general approval requirements as identified in this test report and was selected by the customer.
- ☐ 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.

I attest that the necessary measurements were made at:

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



Tested by: _____

Name and Title: Tim Royer, Project Manager/Testing Engineer

Date: 8/ 3/ 2016



Reviewed and approved by: _____

Name and Title: Cory Leverett Project Manager

Date: 8/ 8/ 2016

EUT SPECIFICATION

This test results relates only to the items tested.	
EUT DESCRIPTION	BLUETOOTH WIRELESS STEREO HEADSET
REQUIREMENTS	CFR 47 FCC Pt 15.109, Pt 15.107
FCC ID	JFZCKS990BT
MODEL NUMBER	ATH-CKS990BT
TEST STANDARDS	ANSI C63.4 – 2014
TEST FREQUENCIES	NA
EUT POWER SOURCE	☐ 110–120Vac/50– 60Hz
	☐ DC Power
	☒ Battery Operated Exclusively
TEST ITEM	☐ Prototype
	☐ Pre-Production
	☒ Production
TYPE OF EQUIPMENT	☐ Fixed
	☐ Mobile
	☒ Portable
MODIFICATIONS TO EUT:	☒ No ☐ Yes (explanation below)
TEST MODE DESCRIPTION	The EUT was switched on and placed in a receive mode using test software. For conducted emissions the EUT was connected to a laptop charging only.
TEST FACILITIES	Timco Engineering Inc. located at 849 NW State Road 45 Newberry, FL 32669 USA.
LABORATORY TEST CONDITION	Temperature: 24-26°C Relative humidity: 50-65% Barometric Pressure: 30.01 in

EUT CABLES USED FOR TESTING

Description	Type	Connector	Length
Charging	USB	Micro USB	0.5m

TEST RESULTS SUMMARY

FCC Part 15.109	Pass
FCC Part 15.107	Pass

RADIATED SPURIOUS EMISSIONS

RULES PART NO.:FCC PART 15.109

REQUIREMENTS:

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

Method of Measurement for Radiated Emissions:

The test procedure used for radiated emissions is described ANSI C63.4 using a spectrum analyzer. The resolution bandwidth used was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. All cable loss and antenna factors were calibrated to provide plots with correction factors applied to results using the formula and example described below. The video bandwidth of the analyzer was always greater than or equal to the resolution bandwidth, and a peak detector with max hold was used

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 vertical planes. The frequency was scanned from 30 MHz to 1.0 GHz... The EUT was measured in three parts of the tunable band of EUT and (3) orthogonal planes when necessary.

Radiated Emissions Test Setup:

EUT setup and arrangement was completed as described in ANSI C63.4. Exploratory measurements were taken following different peripheral placement and cable manipulations as described in ANSI C63.4. A photo is provided of the Test setup to record the exact peripheral equipment and cable manipulation arrangement found to produce the highest possible level of radiated emissions.

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 μ 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.

Field Strength Correction Factor Conversion Example:

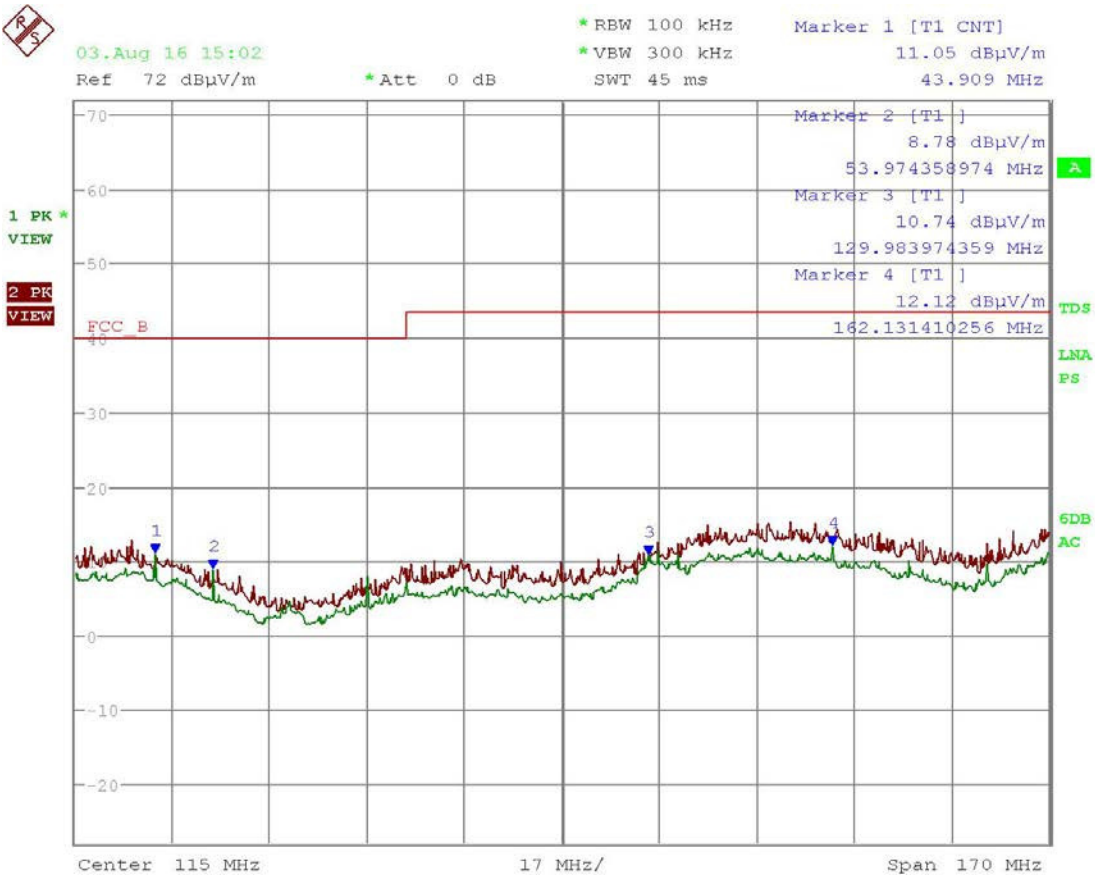
Freq (MHz)	Meter Reading	+ ACF	+ CL	= FS
33	20 dB μ V	+ 10.36 dB/m	+ 0.40 dB	= 30.76 dB μ V/m @ 3m

RADIATED EMISSIONS TEST DATA:

The following plots represent the maximum emissions found when taking final measurements following the procedure described in ANSI C63.4. The final measurements were preceded by taking exploratory measurements described in ANSI C63.4. The plots include the limit line for radiated emissions as required by FCC part 15.109.

RADIATED SPURIOUS EMISSIONS

30-200 MHz PLOT



Date: 3.AUG.2016 15:02:40

Results - Meets Requirements

Ant Polarity: T1 (Green) = Vertical, T2 (Red) = Horizontal

RADIATED SPURIOUS EMISSIONS

200-1000 MHZ PLOT



Results - Meets Requirements

Ant Polarity: T1 (Green) = Vertical, T2 (Red) = Horizontal

RADIATED SPURIOUS EMISSIONS

Emission Frequency MHz	Detector (PK/AV)	Meter Reading dBu V	Antenna Polarity	Coax Loss Db	Correction Factor dB/M	Field Strength dBu V/M	Margin
4871.85	PK	26.80	V	8.127	33.930	68.857	5.143
4871.85	AV	8.09	V	8.127	33.930	50.147	3.853
10777.30	PK	20.53	H	12.177	37.880	70.587	3.413
10777.30	AV	3.14	H	12.177	37.880	53.197	0.803

POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: Part 15.107

Requirements:

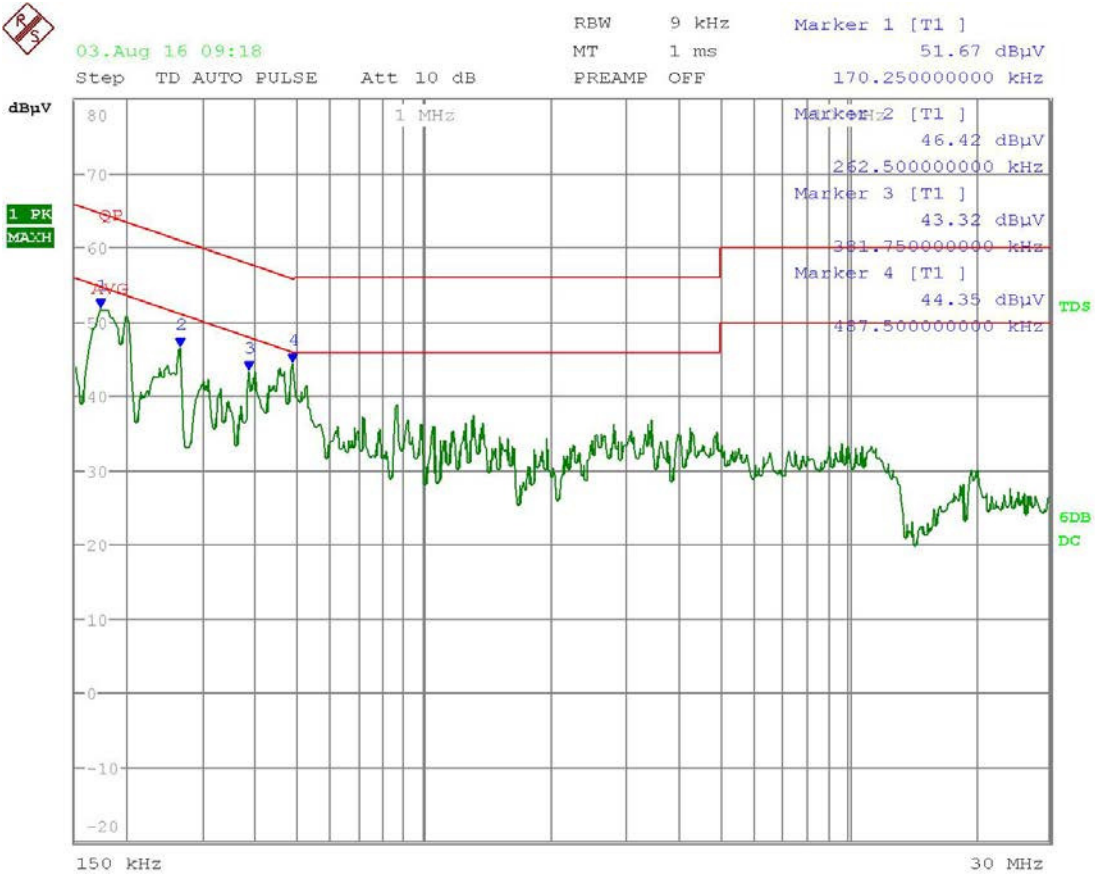
Frequency (MHz)	Quasi Peak Limits (dB μ V)	Average Limits (dB μ V)
0.15 – 0.5	66 – 56 *	56 – 46 *
0.5 – 5.0	56	46
5.0 – 30	60	50
* Decrease with logarithm of frequency		

Method of Measurement: The procedure used was ANSI C63.4 using a 50 μ H LISN. Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed. The spectrum was scanned from 0.15 to 30 MHz.

Test Data: The following plots represent the emissions for power line conducted. Both lines were observed.

POWER LINE CONDUCTED INTERFERENCE

POWERLINE 1 PLOT

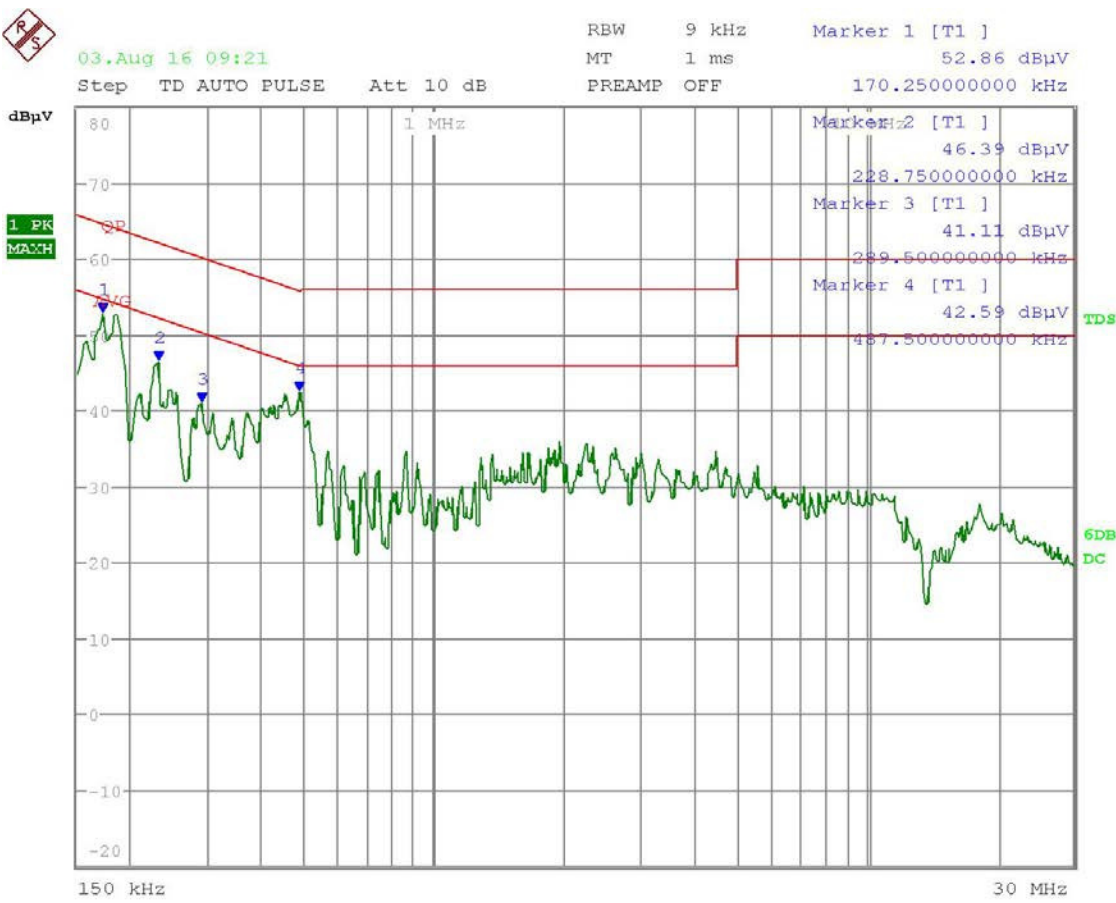


Date: 3.AUG.2016 09:18:29

Results - Meets Requirements

POWER LINE CONDUCTED INTERFERENCE

POWERLINE 2 PLOT



Date: 3.AUG.2016 09:21:07

Results - Meets Requirements

TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Antenna: Biconical 1096 Chamber	Eaton	94455-1	1096	07/14/15	07/14/17
Antenna: Log- Periodic 1122	Electro-Metrics	-25	1122	07/14/15	07/14/17
LISN (Primary)	Electro-Metrics	ANS-25/2	2604	07/13/15	07/13/17
CHAMBER	Panashield	3M	N/A	04/25/16	12/31/17
Antenna: Double-Ridged Horn/ETS Horn 2	ETS-Lindgren Chamber	3117	00041534	02/25/15	02/25/17
EMI Test Receiver R & S ESIB 40 Screen Room	Rohde & Schwarz	ESIB 40	100274	08/12/14	08/12/16
Software: Field Strength Program	Timco	N/A	Version 4.0	N/A	N/A
EMI Test Receiver R & S ESU 40 Chamber	Rohde & Schwarz	ESU 40	100320	04/01/16	04/01/18
Coaxial Cable - BMBM-1000-00 Silver	Semflex	LISN Cable	BMBM-1000-00	01/05/16	01/04/17
Coaxial Cable - Chamber 3 cable set (Primary)	Micro-Coax	Chamber 3 cable set (Primary)	KMKM-0244-00; KMKM-0670-00; KFKF-0198-00	12/05/15	12/05/17
Bore-sight Antenna Positioning Tower	Sunol Sciences	TLT2	N/A	N/A	N/A

* EMI RECEIVER SOFTWARE VERSION

The receiver firmware used was version 4.43 Service Pack 3

END OF TEST REPORT