

FCC TEST REPORT

for

Aeon Labs LLC.

Aeon Z-Stick Z-Wave USB Adapter

Model No.: DSA02203-ZWUS, DSA07203-ZWUS

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Date of Test : Jul. 17-30, 2009
Date of Report : Aug. 07, 2009

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APPENDIX I (Photos of EUT) (4 Pages)

TEST REPORT

Applicant : Aeon Labs LLC.
Manufacturer : Aeon Labs LLC.
EUT : Aeon Z-Stick Z-Wave USB Adapter
Model No. : DSA02203-ZWUS, DSA07203-ZWUS
Serial No. : N/A
Rating : DC 3.7V via Battery or DC 5V via PC
Trade Mark : N/A

Measurement Procedure Used:

FCC Part15 Subpart C, Paragraph 15.207, 15.209&15.249

The device described above is tested by Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Anbotek Compliance Laboratory Limited

Date of Test :

Jul. 17-30, 2009



Prepared by :

(Engineer)



Reviewer :

(Project Manager)



Approved & Authorized Signer :

(Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : Aeon Z-Stick Z-Wave USB Adapter

Model Number : DSA02203-ZWUS, DSA07203-ZWUS
(Note: All samples are the same except the model number & shape of appliances, so we prepare “DSA02203-ZWUS” for EMC test only.)

Test Power Supply : DC 3.7V via Battery or DC 5V via PC

Notebook PC : Manufacturer: IBM
M/N: 2662
S/N: 99-Y5753 02/02
CE , FCC: DOC

Frequency : 908.42MHz

Antenna : Gain is 1dBi
(The antenna used in this product is embedded antenna)

Applicant : Aeon Labs LLC.
Address : 121 Buckingham drive, unit36 santa claras CA95051 USA

Manufacturer : Aeon Labs LLC.
Address : 121 Buckingham drive, unit36 santa claras CA95051 USA

Date of receiver : Jul. 16, 2009
Date of Test : Jul. 17-30, 2009

1.2. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS - LAB Code: L3503

Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

FCC-Registration No.: 607248

Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 607248, November 12, 2008.

IC-Registration No.: 8058A

Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A, November 12, 2008.

Test Location

All Emissions tests were performed at
Anbotek Compliance Laboratory Limited. at 2/F, Langfeng Building, Kefa Road
North, Hi-tech Industrial Park, Nanshan District, Shenzhen 518057, China

1.3. Measurement Uncertainty

Radiation Uncertainty : $U_r = \pm 4.26\text{dB}$

Conduction Uncertainty : $U_c = \pm 2.66\text{dB}$

2. MEASURING DEVICE AND TEST EQUIPMENT

Equipment	Manufacturer	Model #	Serial #	Data of Cal.	Due Data
EMI Test Receiver	Rohde & Schwarz	ESCI	100119	Mar.03, 2009	Mar.02, 2010
EMI Test Receiver	Rohde & Schwarz	ESPI	1101604	Jun.21, 2009	Jun.20, 2010
EMI Test Receiver	Rohde & Schwarz	ESIB26	100249	Sep.22, 2008	Sep.21, 2009
Spectrum Analyzer	Agilent	E7405A	MY45114970	Jun.21, 2009	Jun.20, 2010
Signal Generator	Rohde & Schwarz	SMR27	100124	Jul.06, 2008	Jul.25, 2010
Signal Generator	Rohde & Schwarz	SML03	102319	Aug.01, 2008	Aug.01, 2010
AC Power Source	All Power Electronic Co.	APW-1100N	890869	N/A	N/A
Absorbing Clamp	Rohde & Schwarz	MDS21	100218	Apr.30, 2008	Apr.29, 2010
Power Meter	Rohde & Schwarz	NRVD	101287	Jul.19, 2008	Jul.18, 2010
Coaxial Cable	N/A	N/A	N/A	May.31, 2009	May.30, 2010
Coaxial Cable	N/A	N/A	N/A	May.31, 2009	May.30, 2010
Coaxial Cable	N/A	N/A	N/A	May.31, 2009	May.30, 2010
Universal radio Communication tester	Rohde & Schwarz	CMU200	101724	Sep.08, 2007	Sep.07, 2009
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	N/A	N/A	N/A
BiConilog Antenna	ETS-LINDGREN	3142C	00042670	Mar.03, 2009	Mar.02, 2010
BiConilog Antenna	ETS-LINDGREN	3142C	00042673	Mar.03, 2009	Mar.02, 2010
Double-ridged Waveguide horn	ETS-LINDGREN	3117	00035926	Dec.30, 2007	Dec.29, 2009
Double-ridged Waveguide horn	ETS-LINDGREN	3117	00041545	Dec.30, 2007	Dec.29, 2009
Pre-amplifier	CD	PAM0203	804203	Jun.21, 2009	Jun.20, 2010
RF Switch	CD	RSU-M3	706543	Jun.21, 2009	Jun.20, 2010
Thermo-/Hygrometer	N/A	TH01	N/A	May.03, 2008	Mar.03, 2010
Shielding Room	Zhong Yu Electron	GB-88	N/A	N/A	N/A
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	N/A	Apr.28, 2008	Apr.27, 2010

3. Test Procedure

GENERAL: This report shall NOT be reproduced except in full without the written approval of Anbotek Compliance Laboratory Limited. The EUT was transmitting a test signal during the testing.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2003 using a spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and 1.0MHz with a video BW of 3.0MHz above 1.0GHz. The ambient temperature of the EUT was 74.3oF with a humidity of 69%.

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 dBuV) to the antenna correction factor supplied by the antenna manufacturer. 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:

Freq (MHz) METER READING + ACF = FS

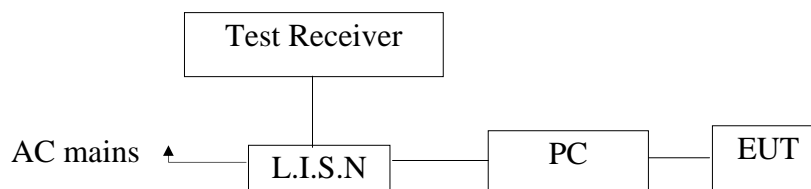
33 20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). 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.

4. Conducted Limits

4.1. Block Diagram of Test Setup

4.1.1. Block diagram of connection between the EUT and simulators



(EUT: Aeon Z-Stick Z-Wave USB Adapter)

4.2. Power Line Conducted Emission Measurement Limits (15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

4.3. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

EUT : Aeon Z-Stick Z-Wave USB Adapter
 Model Number : DSA02203-ZWUS
 Applicant : Aeon Labs LLC.

4.4. Operating Condition of EUT

4.4.1. Setup the EUT and simulator as shown as Section 4.1.

4.4.2. Turn on the power of all equipment.

4.4.3. Let the EUT work in test mode (Connect to PC) and measure it.

4.5. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2003 on Conducted Emission Measurement.

The bandwidth of test receiver (E7405A) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test results are reported on Section 4.6.

4.6. Power Line Conducted Emission Measurement Results

PASS.

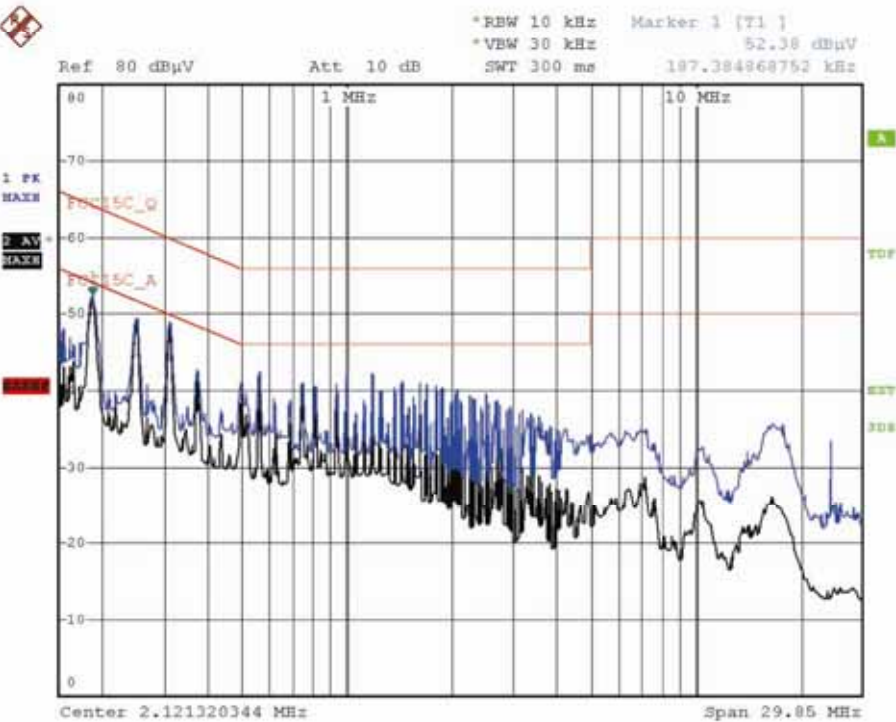
The frequency range from 150KHz to 30 MHz is investigated.

Please refer the following pages.

Conducted disturbance

EUT: Aeon Z-Stick Z-Wave USB Adapter
Op Cond: Connect to PC
Test Spec: L
Comment: AC 120V/60Hz
Data: 2009-07-27

M/N: DSA02203-ZWUS

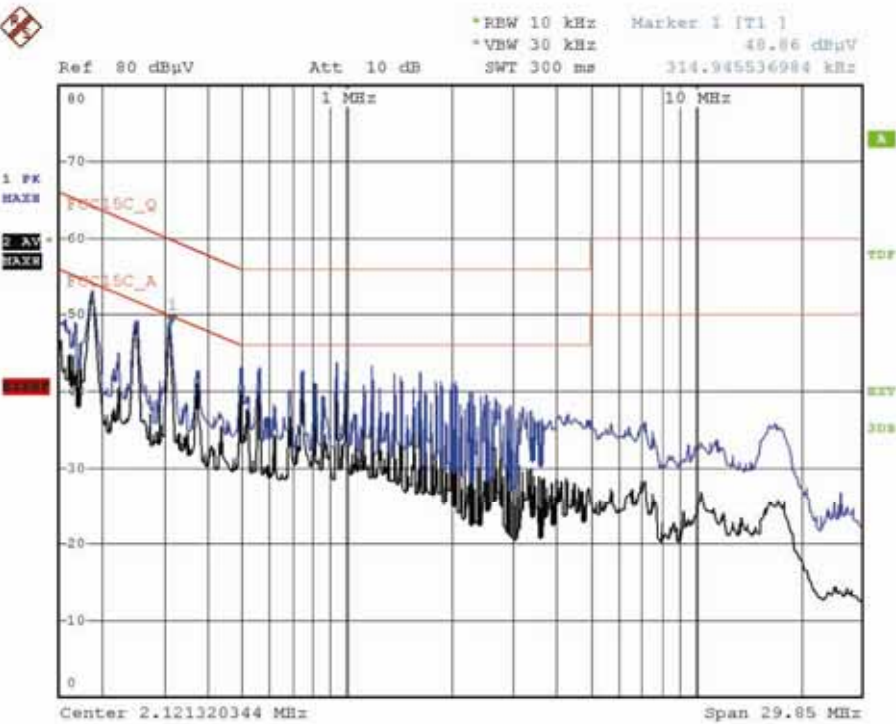


Frequency (MHz)	Reading Level (dBμV)	Limit (dBμV)	Over limit (dB)	
0.187	50.3	64.15	-13.85	QP
0.187	45.1	54.15	-9.05	AV
0.249	46.6	61.77	-15.17	QP
0.249	41.4	51.77	-10.37	AV
0.315	45.6	59.84	-14.24	QP
0.315	41.4	49.84	-8.44	AV

Conducted disturbance

EUT: Aeon Z-Stick Z-Wave USB Adapter
Op Cond: Connect to PC
Test Spec: N
Comment: AC 120V/60Hz
Data: 2009-07-27

M/N: DSA02203-ZWUS



Frequency (MHz)	Reading Level (dBμV)	Limit (dBμV)	Over limit (dB)	
0.187	50.9	64.15	-13.25	QP
0.187	45.3	54.15	-8.85	AV
0.252	46.3	61.69	-15.39	QP
0.252	41.0	51.69	-10.69	AV
0.315	45.2	59.84	-14.64	QP
0.315	41.1	49.84	-8.74	AV

5. Radiation Interference

5.1. Requirements (15.249, 15.209):

FIELD STRENGTH of Fundamental:	FIELD STRENGTH of Harmonics	S15.209	
902-928 MHZ		30 - 88 MHz	40 dBuV/m @3M
2.4-2.4835 GHz		88 - 216 MHz	43.5
94 dB μ V/m @3m	54 dB μ V/m @3m	216 - 960 MHz	46
		ABOVE 960 MHz	54dBuV/m

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation.

5.2 Test Results

PASS.

Please refer the following pages.

FCC ID: XBA20090807

Data:

Horizontal							
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit
	dB	dB/m	dB	dBμV			dB
136.10	0.95	8.93	41.27	62.00	30.61	43.50	-12.89
245.05	1.39	12.09	41.30	64.60	36.78	46.00	-9.22
908.421	3.00	21.11	38.52	79.61	65.20	94.0	-28.80
1,816.800	3.11	27.52	39.21	48.39	39.81	54.0	-14.19
2,725.210	3.11	32.16	35.17	29.94	30.04	54.0	-23.96
3,633.600	3.12	35.31	35.01	32.50	35.92	54.0	-17.92
4,542.020	3.13	36.40	34.79	26.80	31.54	54.0	-22.46
5,450.410	3.14	37.84	34.52	21.94	28.40	54.0	-25.60
6,358.880	3.14	38.65	34.37	19.70	27.12	54.0	-26.88
7,267.310	3.15	38.98	34.04	14.96	23.05	54.0	-30.95
8,175.720	3.15	39.32	33.81	13.48	22.14	54.0	-31.86
9,084.130	3.16	40.02	33.58	14.20	23.80	54.0	-30.20

Vertical							
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit
	dB	dB/m	dB	dBμV			dB
150.30	1.07	8.31	41.25	64.11	32.24	43.50	-11.26
300.05	1.61	13.06	41.36	65.25	38.56	43.50	-4.94
908.410	3.00	21.11	38.52	78.91	64.50	94.0	-29.50
1,816.800	3.11	27.52	39.21	47.83	39.25	54.0	-14.75
2,725.210	3.11	32.16	35.17	36.01	36.11	54.0	-17.89
3,633.600	3.12	35.31	35.01	26.92	30.34	54.0	-23.66
4,542.020	3.13	36.40	34.79	25.26	29.98	54.0	-24.00
5,450.410	3.14	37.84	34.52	20.66	27.12	54.0	-26.88
6,358.880	3.14	38.65	34.37	18.88	26.30	54.0	-27.70
7,267.310	3.15	38.98	34.04	14.66	22.75	54.0	-31.25
8,175.720	3.15	39.32	33.81	13.21	21.87	54.0	-32.13
9,084.130	3.16	40.02	33.58	12.60	22.20	54.0	-31.80

Emissions attenuated more than 20 dB below the permissible value are not reported.

6. Occupied Bandwidth

6.1. Requirements (15.249):

The field strength of any emissions appearing outside the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 50 dB below the level of the carrier or to the general limits of 15.249.

6.2 Test Results

Pass.

Please refer the following plot.

