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Sound Pressure Level Test Report

Report No. : KH1_13_0050

Date : 2013-4-3

Category: Desktop (All In One)
Module Name: PPC-6170

Customer: Advantech Technology (China) Co., Ltd.
Customer Address: NO. 600, HANPU ROAD, JIANGSU, KUNSHAN, CHINA

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Table of Content

1. Introduction	Page 2
2. General Information	Page 2
3. Testing Configuration	Page 2
4. Test Equipment	Page 3
5. Reference	Page 4
6. Notification	Page 4
7. Test Setup	Page 5-6
8. Setup Photo	Page 7
9. Testing Result	Page 8-9
10. Spectrum	Page 10-11

1. Introduction

The sample(s) with trade name "AIO", designated as "PPC-6170", was/were received at Pendec Electronics (Kunshan) Co., Ltd. on 2013-4-3 and tested on 2013-4-3. Determination of the sound pressure level test was conducted in full conformance with ISO7779: 2010 (E) (Acoustics-Measurement of airborne noise emitted by information technology and telecommunications equipment) and ISO 11201:2010 (E) (Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections.)

Pendec Laboratory is a TAF ISO/IEC 17025 accredited laboratory for acoustic tests. The test was conducted by Mary Chen. Data analysis and report generation were conducted by Mary Chen.

2. General Information

Report Version: rev 01
Applicant : Advantech
Brand name : Advantech
Manufacturer / OEM : Advantech
Product description : Desktop (All In One)
Project name : PPC-6170
Quantity : 1 unit (s)
Test procedure : ISO7779: 2010 (E)
Standard : ISO7779: 2010 (E), ISO 11201:2010 (E)

3. Testing Configuration

Environment: Temperature: 22.4 °C
Relative Humidity: 61 %
Testing Chamber: Hemi-Anechoic Chamber #1, Pendec Electronics (Kunshan) Co., Ltd.

Testing Method: The sound pressure level is performed in accordance with the procedures specified in clause 8 of ISO 7779: "Acoustics - Measurement of airborne noise emitted by information technology and telecommunication equipment, 2010 (E)"
The sound pressure level is displayed in decibels (reference:20µPa)

Frequency Bandwidth: The testing frequency bandwidth is 100Hz~20KHz in 1/3 Octave bands

Frequency Weighting: The testing frequency weighting is A-Weighted

Measurement Duration: The measurement duration is 30 seconds

Sample Installation: The testing sample is installed on the standard testing table located in the geometric center of the hemi-anechoic chamber

Uncertainty: Uncertainty = 0.50 dB(A); The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

4. Test Equipment

Item	Equipment	Brand	Type	Serial Number	Last Calibration date	Next Calibration date
1	Microphone	G.R.A.S.	Type 40AE	69245	2012-8-27	2013-8-26
2	Microphone	G.R.A.S.	Type 40AE	69246	2012-10-10	2013-10-9
3	Microphone	G.R.A.S.	Type 40AE	71354	2012-10-10	2013-10-9
4	Microphone	G.R.A.S.	Type 40AE	71357	2012-8-27	2013-8-26
5	Microphone	G.R.A.S.	Type 40AE	71355	2012-10-10	2013-10-9
6	Preamplifier	G.R.A.S.	Type 26CA	74813	2012-8-26	2013-8-25
7	Preamplifier	G.R.A.S.	Type 26CA	74811	2012-10-10	2013-10-9
8	Preamplifier	G.R.A.S.	Type 26CA	74809	2012-10-10	2013-10-9
9	Preamplifier	G.R.A.S.	Type 26CA	74815	2012-8-27	2013-8-26
10	Preamplifier	G.R.A.S.	Type 26CA	74810	2012-10-10	2013-10-9
11	Analyzer	Head Acoustics	SQLabIII	024288-092002	2012-7-4	2013-7-3

5. Reference

1. ISO7779: 2010 (E) - Acoustics - Measurement of airborne noise emitted by information technology and telecommunications equipment
2. ISO 11201:2010 (E) - Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections.

6. Notification

1. The test results are only valid for the specimen tested.
2. This test report should be used in complete form and any statement or result is partial extraction of this report is not valid.
3. The TAF and ilac logo only assures the quality system of Pendec Electronics (Kunshan) Co., Ltd. is accordance with the requirement of ISO/IEC 17025.
4. All testing data are not included in the accreditation scope of TAF. TAF does not assure whether the reporting data are correct or not. Clients shall not claim product certification, approval, or endorsement by TAF or any agency.

7.1 Test setup for Operator Position

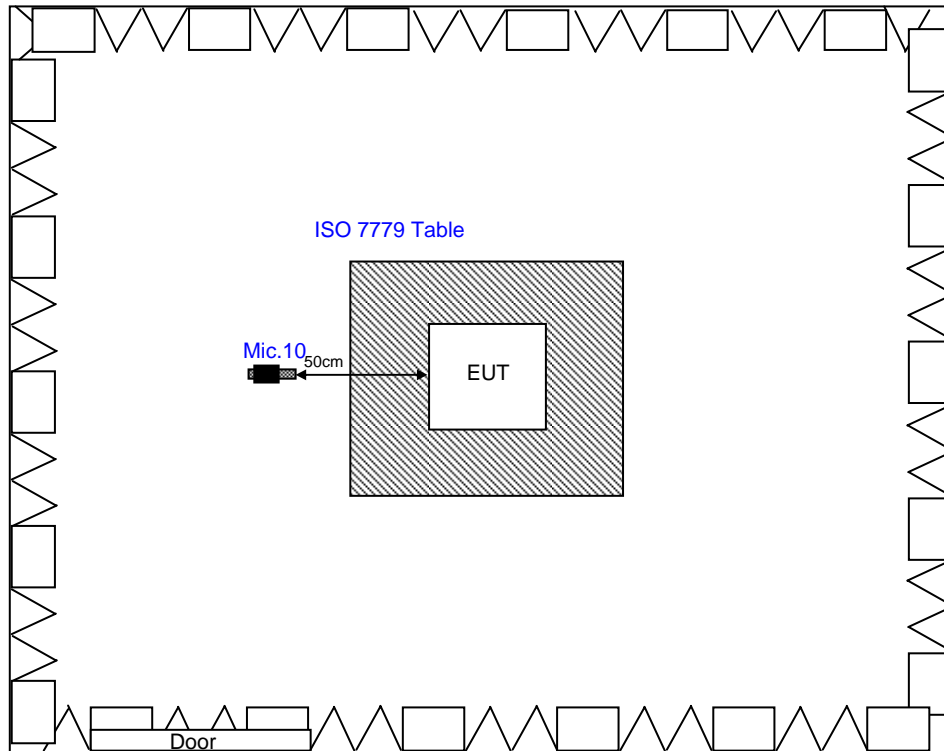


Fig. 1 Location of EUT and microphone position (Top view)

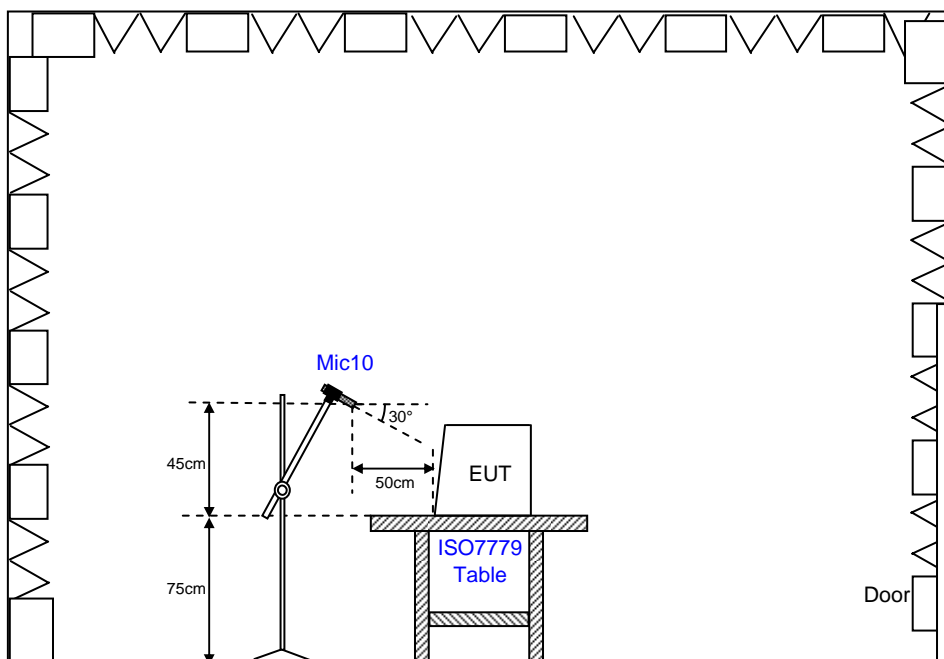


Fig. 2 Location of EUT and microphone position (Side view)

7.2 Test Setup for Bystander Position

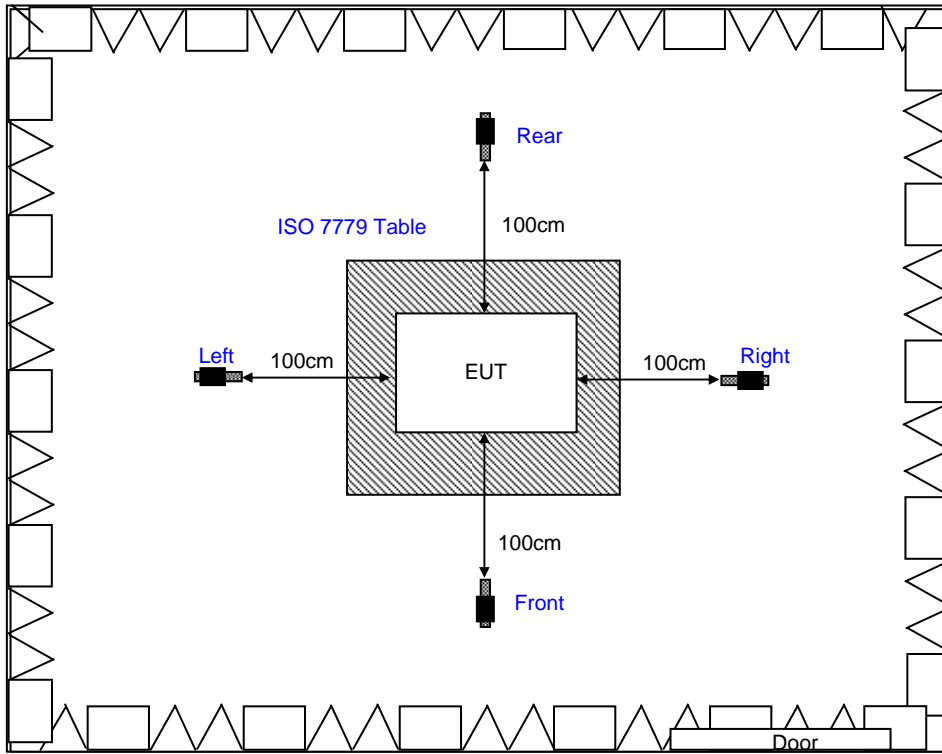


Fig. 3 Location of EUT and microphone position (Top view)

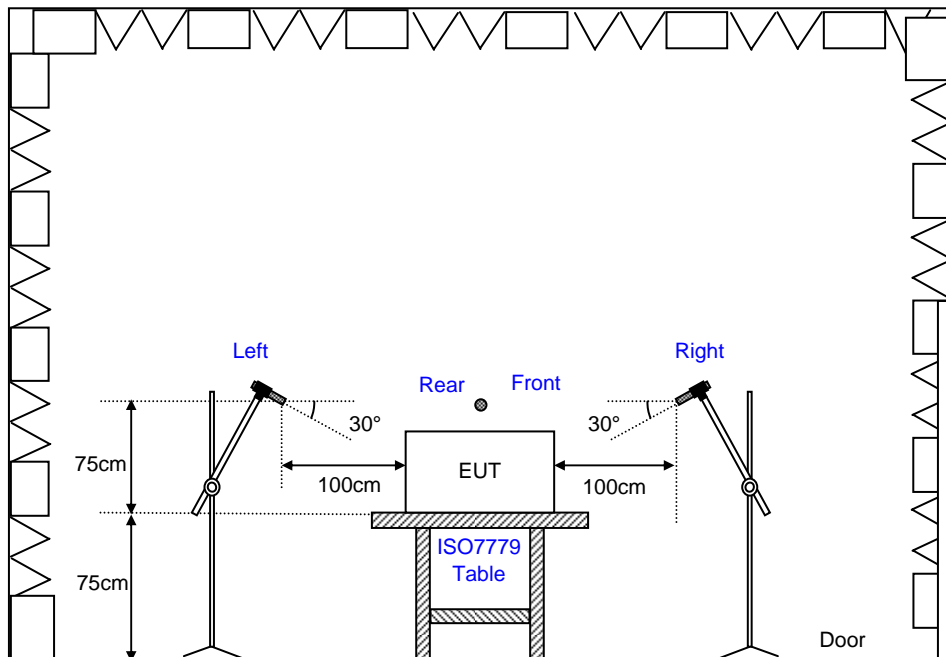


Fig. 4 Location of EUT and microphone position (Side view)

8. Setup Photo



Fig. 5 Setup photo (Overall view)



Fig. 6 Setup photo (Close view)

9.1 Test Result for Operator Position (PPC-6170)

No.	Mode	Sound Pressure Level (dB(A))	Back Ground Noise Correction(dB(A))	Sound Pressure Level
		Mic. 10 (Measured)	K _{1A}	Mic. 10 (Corrected)
0	Background Noise	16.0	-	-
1	PPC-6170_Burn in test	37.9	0.0	37.9
2	PPC-6170_Idle	34.9	0.0	34.9

Note: If the difference between measured sound pressure levels and background noise < 6 dB, the corrections for background noise to be applied is 1.3 dB for accuracy grade 2 (according to Sec.5.4.2 of ISO 11201:2010(E)). For some cases, the corrected sound pressure level might be lower than the background noise. It can be assumed that the source emits little or no measurable noise, and that the data reported represent upper bounds to the emission sound pressure level.

9.2 Test Result for Bystander Position (PPC-6170)

No.	Mode	Sound Pressure Level, Measured (dB(A))				Background Noise Correction (dB(A))				Sound Pressure Level, Corrected (dB(A))				SPL, Corrected (dB(A))
		Front	Right	Rear	Left	K _{1A} , Front	K _{1A} , Right	K _{1A} , Rear	K _{1A} , Left	Front	Right	Rear	Left	Average
0	Background noise	16.5	16.4	16.4	16.4									
1	PPC-6170_Burn in test	33.2	35.0	39.9	34.5	0.0	0.0	0.0	0.0	33.2	35.0	39.9	34.5	36.5
2	PPC-6170_Idle	30.0	30.9	36.6	31.4	0.2	0.2	0.0	0.0	29.8	30.7	36.6	31.4	33.1

Note: If the difference between measured sound pressure levels and background noise < 6 dB, the corrections for background noise to be applied is 1.3 dB for accuracy grade 2 (according to Sec.5.4.2 of ISO 11201:2010(E)). For some cases, the corrected sound pressure level might be lower than the background noise. It can be assumed that the source emits little or no measurable noise, and that the data reported represent upper bounds to the emission sound pressure level.

10. Spectrum (1)

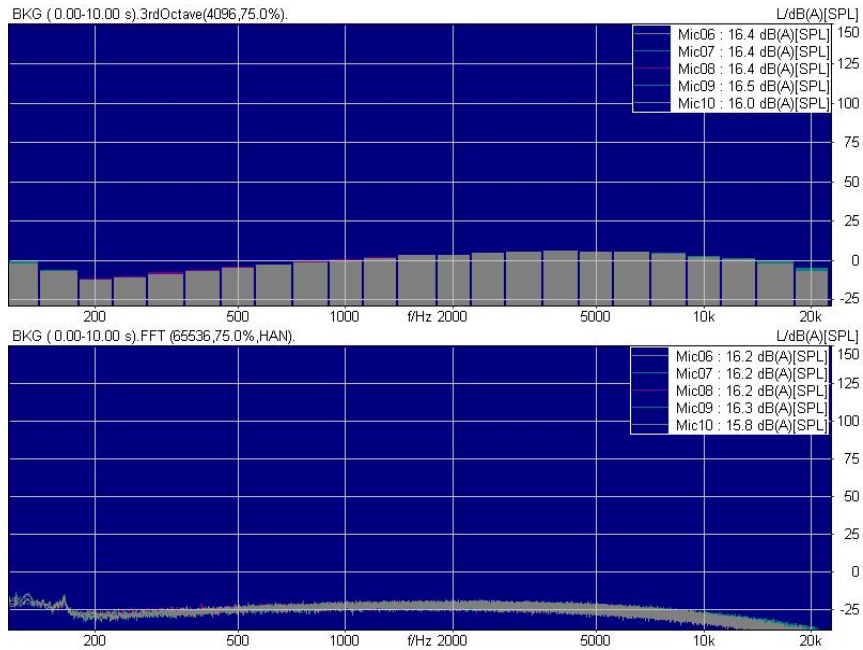


Fig. 7 Background noise

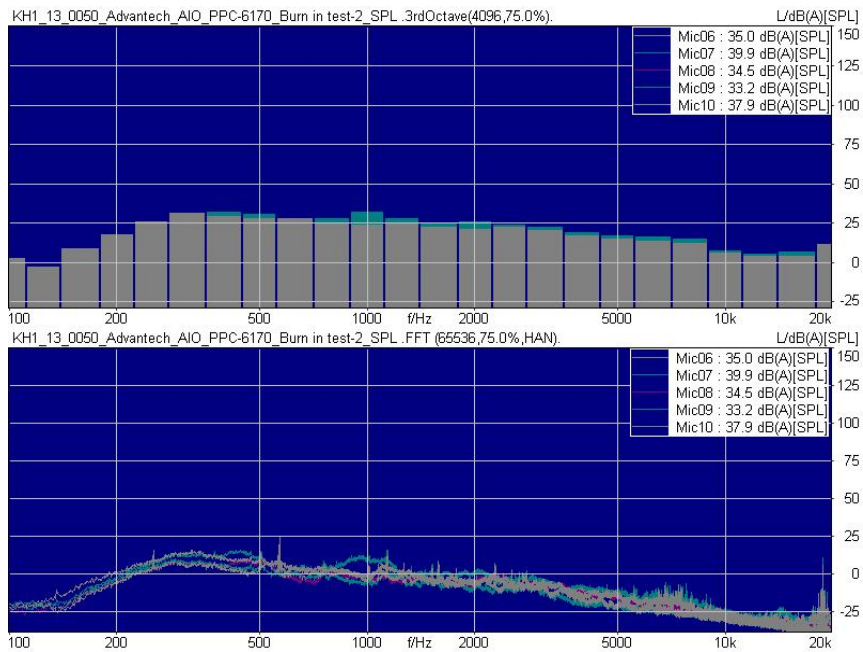


Fig. 8 PPC-6170_Burn in test

10. Spectrum (2)

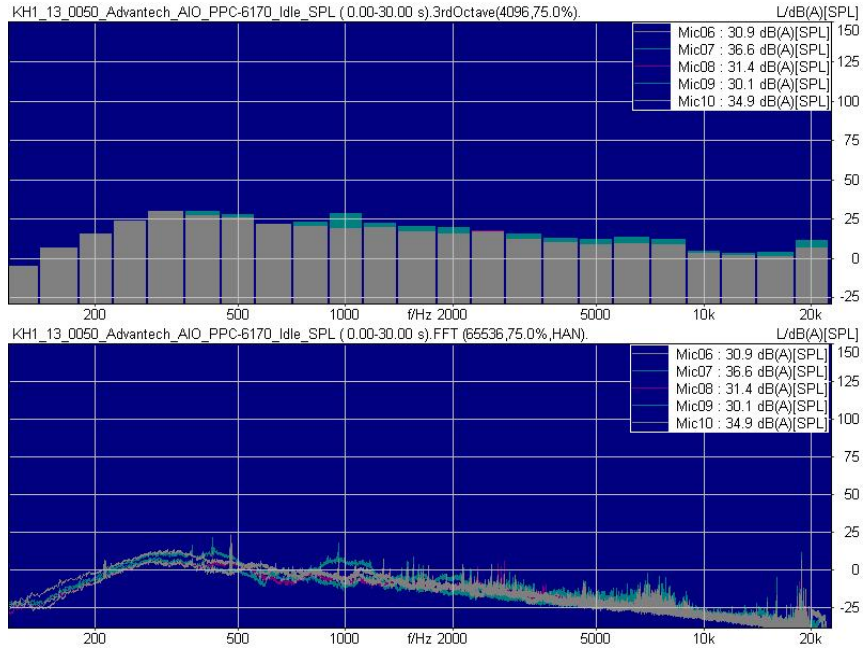


Fig. 9 PPC-6170_Idle