



聲學測試實驗室

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## Sound Pressure Level Test Report

Report No. : PH2\_09\_0227-1

Date : 2009/6/30

**Category: Network Attached Storage**

**Project Name: N5500**

**Thecus Tech., Corp.**

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Taipei County, Taiwan R.O.C.

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## 1. Introduction

One network attached storage (NAS), designated as "N5500" , was received at PAL Acoustics Technology Ltd. on 2009-06-30 and tested on 2009-06-30. Determination of the sound pressure level test was conducted in full conformance with ISO7779:1999 (Acoustics-Measurement of airborne noise emitted by information technology and telecommunications equipment ) and ISO11201 (Acoustics-Noise emitted by machinery and equipment-measurement of emission sound pressure levels at a work station and at other specified positions-engineering method in an essentially free field over a reflecting plane).

PAL Acoustics Technology Ltd. is a TAF ISO/IEC 17025 accredited lab for acoustic tests. The test was conducted by Kevin Tang. Data analysis and report generation were conducted by Kevin Tang.

## 2. General Information

**Report Version:** Ver.01  
**Applicant :** Thecus Tech., Corp.  
**Manufacturer / OEM :** Thecus Tech., Corp.  
**Product description :** Category: NAS  
HDD model name: HITACHI HDT721032SLA360  
HDD quantity: 5 unit (s)  
HDD capacity: 320 GB  
HDD size: 3.5"  
**Project name :** N5500  
**Quantity :** 1 unit (s)  
**Test procedure :** ISO 7779 rev1999  
**Standard :** ISO 7779 rev1999, ISO 11201 rev1995

## 3. Testing Configuration

**Environment:** Temperature: 23.8 °C  
Relative Humidity: 58.0 %  
Barometric pressure: 100.0 kPa  
Testing Chamber: Hemi-Anechoic Chamber #2, PAL Taipei

**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, 1999(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 10 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 = 0.21 dBA; 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	34309	2008/11/13	2009/11/12
2	Microphone	G.R.A.S.	Type 40AE	34320	2008/11/13	2009/11/12
3	Microphone	G.R.A.S.	Type 40AE	34324	2008/11/13	2009/11/12
4	Microphone	G.R.A.S.	Type 40AE	34503	2008/11/13	2009/11/12
5	Preamplifier	G.R.A.S.	Type 26CA	33740	2008/11/13	2009/11/12
6	Preamplifier	G.R.A.S.	Type 26CA	33744	2008/11/13	2009/11/12
7	Preamplifier	G.R.A.S.	Type 26CA	33745	2008/11/13	2009/11/12
8	Preamplifier	G.R.A.S.	Type 26CA	33756	2008/11/13	2009/11/12
9	Microphone calibrator	B&K	4231	2326946	2008/11/11	2009/11/10
10	Analyzer	Head Acoustics	SQLabIII	030811-112004	2008/11/9	2009/11/8

## **5. Reference**

1. ISO7779: 1999 - Acoustics - Measurement of airborne noise emitted by information technology and telecommunications equipment.
2. ISO11201: 1995 - Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at a work station and at other specified positions - Engineering method in an essentially free field over a reflecting plane.

## **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 PAL Acoustic Technology Ltd. is accordance with the requirment 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. Test Setup

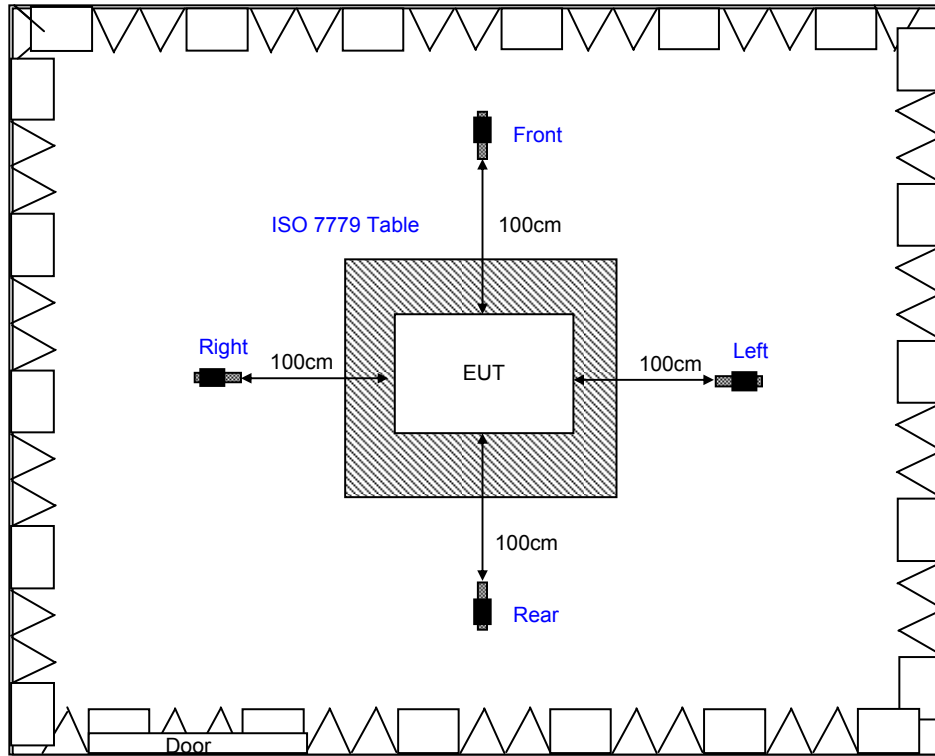


Fig. 1 Location of EUT and microphone position (Top view)

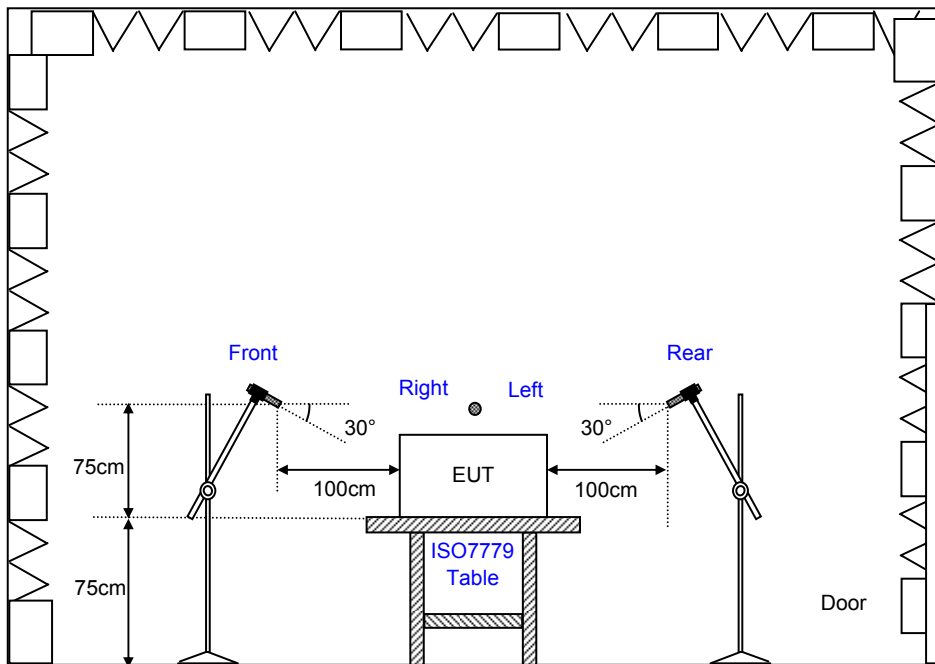


Fig. 2 Location of EUT and microphone position (Side view)

## 8. Setup Photo



Fig. 3 Setup photo (Overall view)



Fig. 4 Setup photo (Close view)

**9. Test Result**

No.	Mode	Measured Sound Pressure Level dB(A)				Background Noise Correction dB(A)				Corrected Sound Pressure Level dB(A)				Corrected Sound Pressure Level dB(A)
		Front	Rear	Right	Left	K <sub>1A</sub> , Front	K <sub>1A</sub> , Rear	K <sub>1A</sub> , Right	K <sub>1A</sub> , Left	Front	Rear	Right	Left	Average
	BKG	15.3	15.7	17.3	17.2									
1	N5500_Operating	29.2	33.7	32.6	33.4	0.2	0.0	0.0	0.0	29.0	33.7	32.6	33.4	32.5

Note: Operating means the system is "power on"



**10. Spectrum**

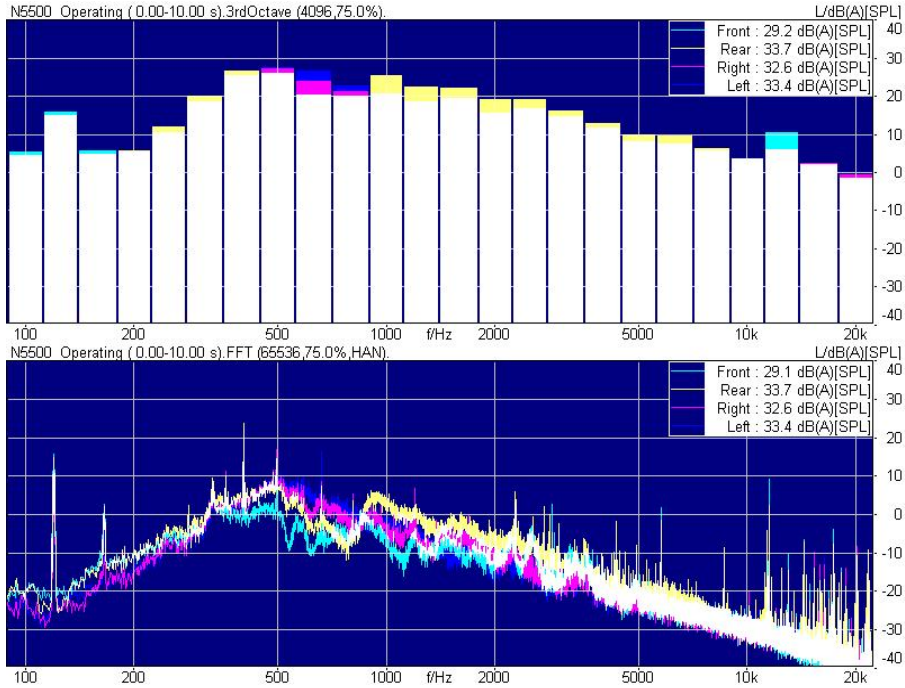


Fig. 5 N5500 Operating