

12/14/2007

## TOOL TEST LOADED SUMMARY SHEET

NAME OF DEVICE UNDER TEST (DUT)	Hammer Drill
TEST ENGINEER	Edward Zechmann, Prashant Kulkarni
TEST DATE	1/25/2005
TEST DESCRIPTION	Sound Power Level Measurement
TEST LOCATION	UC ANECHOIC LAB
MANUFACTURER	Bosch
MODEL	11236VS
SERIAL NUMBER	489003270
MODE OF OPERATION	Normal
RUN NUMBER	1
YEAR MADE	
DIMENSIONS (inches)	LENGTH 16, WIDTH 4, HEIGHT 9
TECHNICAL SPECIFICATIONS	SDS chuck 1 1/8 inch hammer drill
MOUNTING CONDITIONS	Hammer drill pushed into concrete block in sand in a cardboard box
LOADING CONDITIONS	FULL SPEED, LOADED WITH CONCRETE BLOCK
K1 (dBA)	0
K2 (dBA)	1.07
TEMPERATURE (FARHENHEIT, CELSIUS)	82 F, 28 C
HUMIDITY %	13
BAROMETRIC PRESSURE ("Hg, Pa)	29.01 "Hg, 98,230 Pa
TEST ENVIRONMENT	SEMI ANECHOIC, SEMI HEMISPHERICAL
TOOL TESTING STANDARD	ANSI S12.15-1992
MEASUREMENT STANDARD	ISO 3744:1994-05-01
MICROPHONE SET-UP	10-MICROPHONES
SURFACE RADIUS	2.00 meters
RATED POWER (WATTS)	900
ACTUAL INPUT POWER (WATTS)	NA
VOLTAGE (VOLTS)	NA
CURRENT (AMPS)	NA
RATED RPM	850
ACTUAL RPM	NA
SOUND POWER LEVEL (dBA)	104.7
SOUND POWER (WATTS) A-weighted	0.02969
SWLA - k2 (dBA)	103.7
SWLA - k2 (WATTS) A-weighted	0.02323
SOUND PRESSURE LEVEL @ (2m) (dBA)	90.7
AT THE NOMINAL HEARING ZONE OF OPERATOR	
SOUND PRESSURE LEVEL (dBA)	99.8

12/14/2007

## Average Directivity Study

DUT	Hammer Drill
Manufacturer	Bosch
Model Number	11236VS
Serial Number	489003270
Mode	Normal
Run Number	1

### A-weighted Sound Pressure Level

Mic #	Position1 dBA	Position2 dBA
0	86.4	
1	90.1	
2	89.7	
3	89.7	
4	84.8	
5	90.7	
6	90.1	
7	92.8	
8	93.2	
9	93.0	
10	99.8	
dB difference	8.4	

### A-weighted Directivity Index

Mic #	dBA	dBA
0	-4.5	
1	-0.8	
2	-1.3	
3	-1.3	
4	-6.1	
5	-0.2	
6	-0.9	
7	1.8	
8	2.3	
9	2.1	
10	8.9	

12/14/2007

# TOOL TEST LOADED DATA SHEET

## PRODUCT INFORMATION

DUT Hammer Drill  
 Manufacturer Bosch  
 Model Number 11236VS  
 Serial Number 489003270  
 Mode of Operation Normal  
 Run Number 1

## TEST CONDITIONS

Actual Power (watt) NA  
 Voltage (Volts) NA  
 Current (Amps) NA  
 Actual RPM NA  
 Temperature (Deg. F) 82 F, 28 C  
 Humidity (%) 13  
 Baro. Press. (inch of Hg) 29.01 "Hg, 98,230 Pa

### Measurement Data

#### Linear (unweighted) Position 1

Sound Power (dB)	109.35	109.35	110.10	110.10	110.55	110.59	110.84	110.48	110.48	109.65	110.77
Sound Power (Watts)	0.08619	0.08619	0.10237	0.10237	0.11346	0.11466	0.12141	0.11176	0.11176	0.09233	0.11946
Sound Pressure (dB)	95.35	95.35	96.10	96.10	96.55	96.59	96.84	96.48	96.48	95.65	96.77

#### A-weighted Position 1

Sound Power (dBA)	104.01	104.01	104.88	104.88	104.49	104.89	104.68	105.33	105.33	104.41	104.85
Sound Power (Watts)	0.02518	0.02518	0.03073	0.03073	0.02813	0.03086	0.02937	0.03411	0.03411	0.02761	0.03054
Sound Pressure (dBA)	90.01	90.01	90.87	90.87	90.49	90.89	90.68	91.33	91.33	90.41	90.85

### Calculations

#### Average A-weighted Sound Data

Sound Power (dBA) 104.73  
 Sound Power (Watts) 0.02969  
 Sound Pressure (dBA) 90.72

Std. Deviation SWLA 0.4460  
 95 % Confidence Level 0.2415  
 Mean SWLA-k2 103.66  
 Mean SPLA-k2 89.65