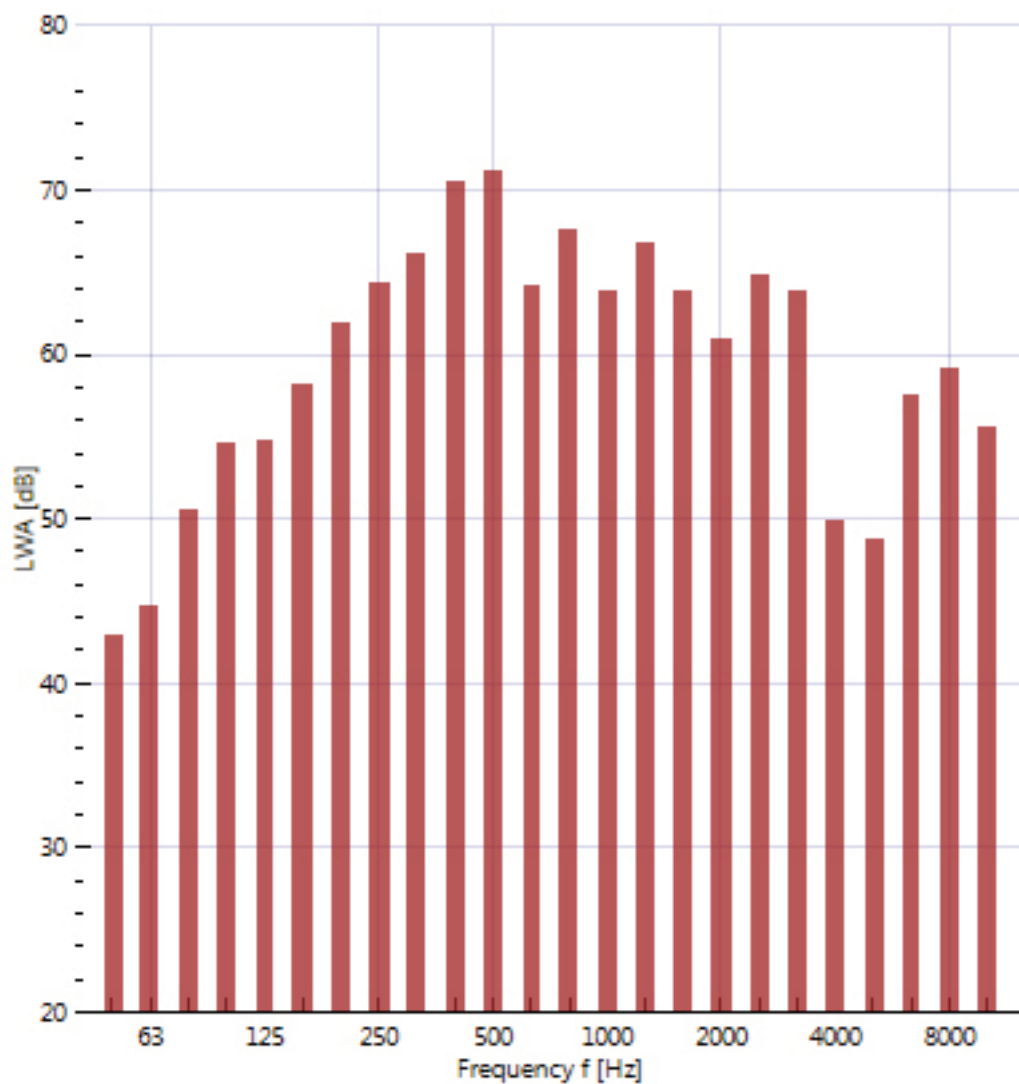


Sound Power Reporter

for XL2 Sound Level Meter



User Manual

V1.00.00

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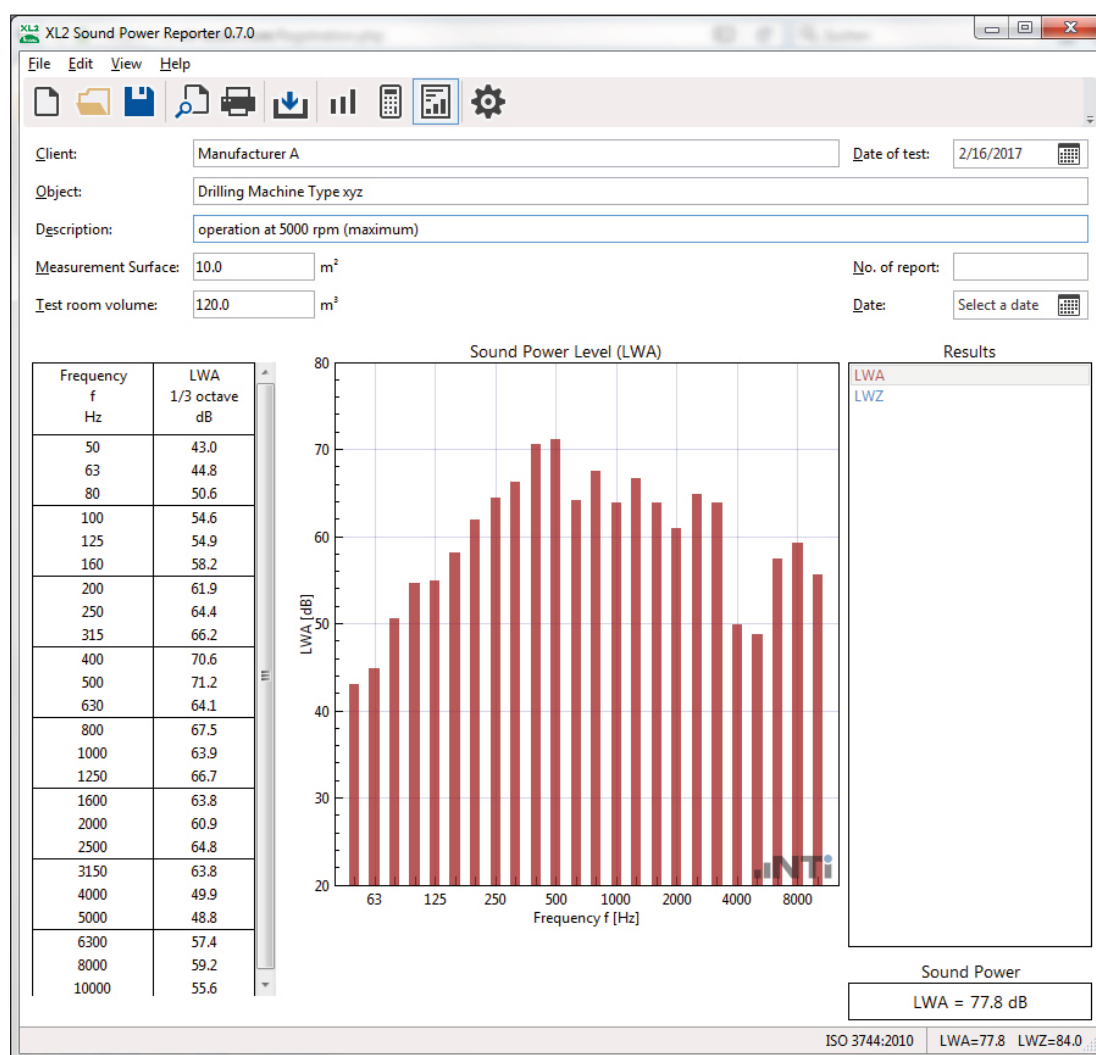
1. Introduction

Thank you for purchasing the Sound Power Option for the XL2 Sound Level Meter. This option enables the import of the measurement data into the Sound Power Reporter PC-software.

XL2 Sound Power Reporter is a PC-based software application that provides all the standard reports for sound power measurements in accordance with the following standards:

- ANSI-ASA S12.54
- ISO 3744, Determination of sound power levels and sound energy levels of noise sources using sound pressure – Engineering methods for an essentially free field over a reflecting plane

Designed for industrial professionals, this comprehensive tool uses data gathered by the XL2 Sound Level Meter, and quickly returns graphical analysis of all measurement positions. Analyzing the measurement data and producing reports is straight-forward using the Sound Power Reporter software. Just drag & drop the XL2 measurement data into the software and print the report. The following tutorial provides a step-by-step instruction.



2. Tutorial

The sound power of a source is the total power emitted by that source in all directions. The XL2 Sound Level Meter in combination with the Sound Power Reporter Software forms the professional solution for sound power measurements. The XL2 measures the noise spectrum of the device under test. Additionally it records the ambient noise and reverberation time RT60 for the required corrections. The Sound Power Reporter Software aggregates all data and provides the sound power in dB (reference to 1 pW).

The XL2 with firmware V3.24 or higher simplifies these measurements by recording each data set with the dedicated location mapping, such as "L1" for the DUT noise measurement and "B1" for the background noise. This saves a lot of time later producing the report.

Software Installation

- Install the Sound Power Reporter software on your PC.

XL2 Sound Level Meter Requirements

For Firmware V3.24 or higher

- Install the firmware V3.24 or higher on the XL2.
- Install the Sound Power Option. This enables the data import into the Sound Power Reporter software.

For Firmware V3.13 or lower

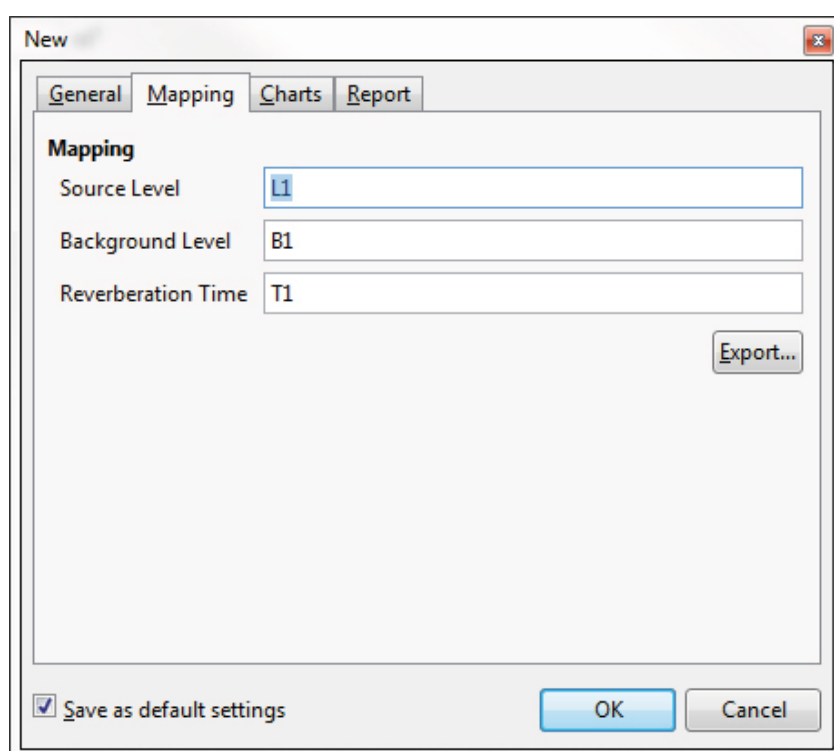
- Activate the Sound Power Option online at <https://my.nti-audio.com>. This enables to import the measurement data into the software. Just ensure your PC is online during the data import.

Mapping File for XL2

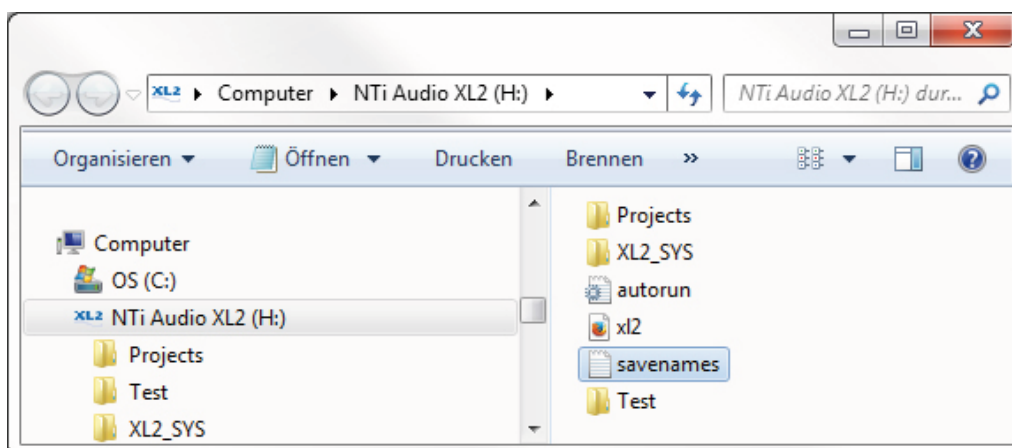
The measurement task onsite is made up of a several separate measurements. The XL2 Sound Level Meter may assign each of these measurements with a dedicated mapping, e.g. "L1" for the noise measurements of the DUT. This feature supports automated post-processing and reporting in the Sound Power Reporter software.

- Load the text file "savenames.txt" with the user defined mapping, such as "L1", "B1", ..., into the root directory of the XL2. The text file "savenames.txt" may be generated by the Sound Power Reporter software as follows:

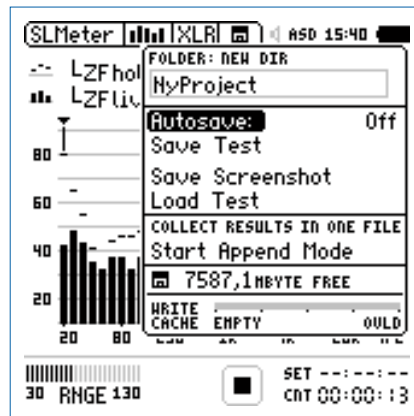
- Start the software
- Click on **Settings**
- Select the tab **Mapping**
- Click **Export...**



- Load the txt-file "savenames.txt" with the various mappings onto the root directory of the XL2.



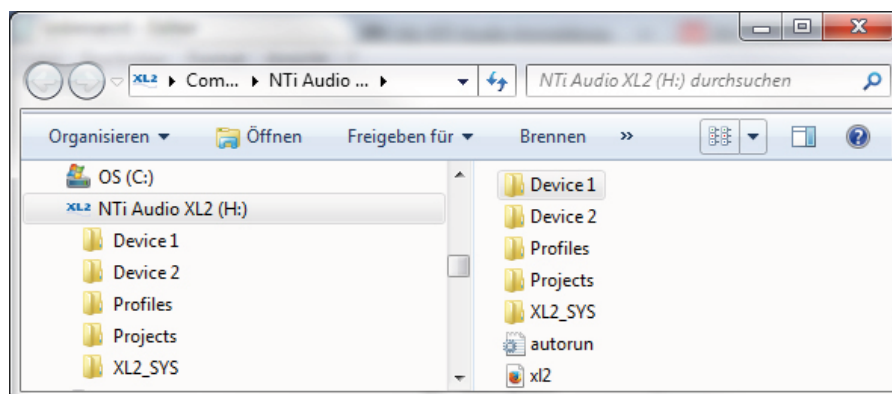
- Next select "Autosave: Off" in the XL2 memory menu. This allows you to store each individual measurement with the desired mapping. The XL2 then uses the same mapping for subsequent measurements by default.



Set XL2 Memory Structure for Multiple Devices

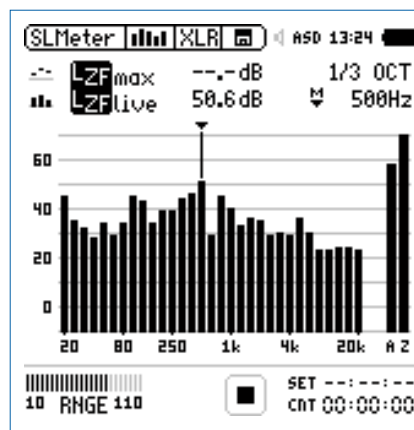
In applications with multiple devices measured sequentially it is recommended to use a separate memory folder on the XL2 Sound Level Meter for each device. All measurements belonging to a single device are then stored in the same folder on the XL2 memory card. Measurements belonging to multiple devices can be later copied into the individual device folders on the computer. Each device will be an individual project later on in the Sound Power Reporter software.

- Connect the XL2 to the computer and select "Mass Storage"
- Open the folder "Projects"
- Generate new subfolders for each device, e.g. Device 1, Device 2, ...



Perform RTA Noise Measurements

- Select the SLMeter measurement function on the XL2.
- Select the RTA screen and 1/3 octave resolution measurements.
- Ensure the frequency weighting "Z" is selected (= no weighting).
- Start the measurement.
- Stop the measurement after 20 seconds.



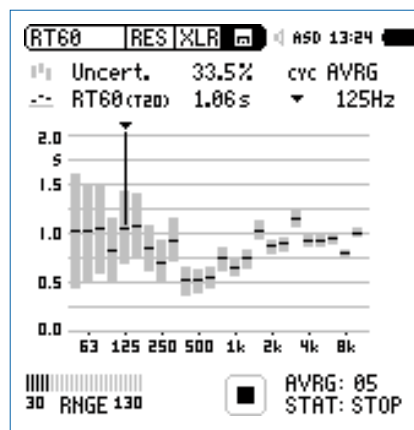
- Open the memory menu and select "Save Test"
- The XL2 displays the Save Test pop-up; select "Sound-Power" at the right end of the first line.



- Select the applicable mapping
- Confirm your selection with the enter key and save the measurement. The XL2 saves the measurement data with a file name such as "L1_SLM_001_RTA_3rd_Report.txt"
- Continue with the further measurements in the same manner.

Perform RT60 Reverberation Time Measurements

- Select the RT60 measurement function on the XL2.
- Select 1/3 octave resolution (requires the optional Extended Acoustic Pack pre-installed in the XL2).
- Start the measurement.
- Stop the measurement.



- Open the memory menu and select "Save Test"
- The XL2 displays the Save Test pop-up; select "Sound-Power" at the right end of the first line.



- Select the applicable mapping
- Confirm your selection with the enter key and save the measurement. The XL2 saves the measurement data with a file name such as "T1_RT60_000_Report.txt"
- Continue with the further measurements in the same manner.

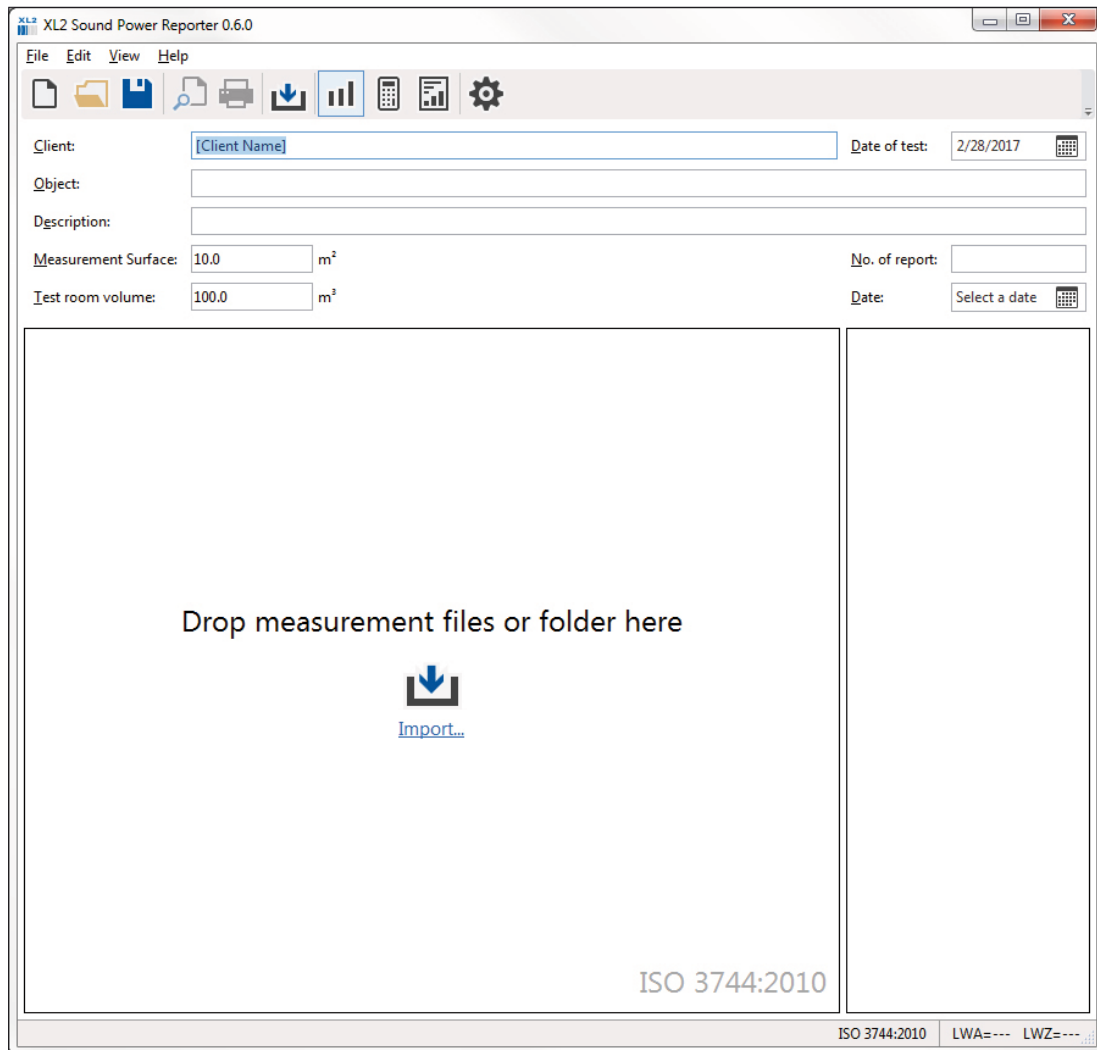
Import Measurement Data into the Software

- Start the Sound Power Reporter software.
- Click on **File** -> **New**

The 'New' dialog box is shown with the following settings:

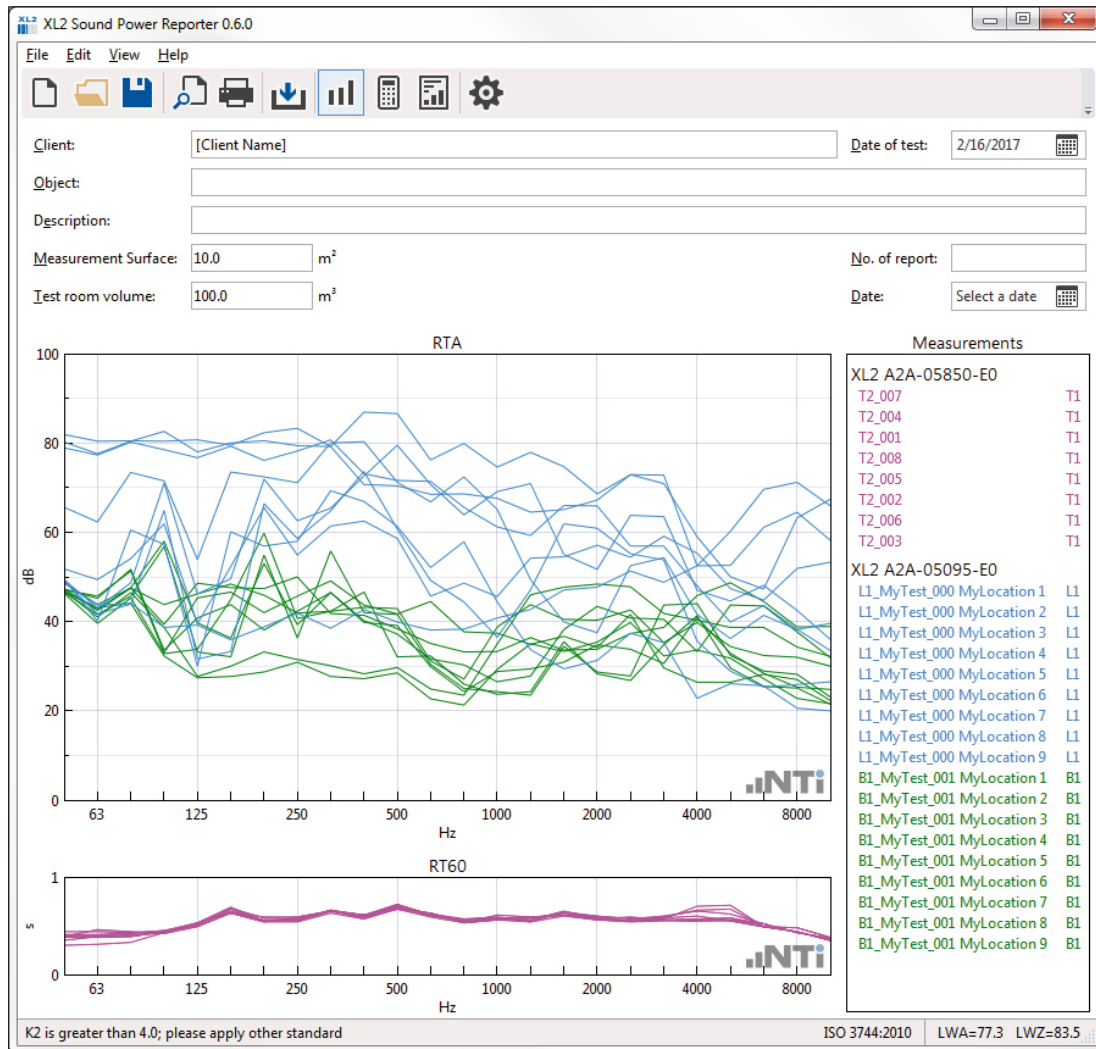
- Standard:** ISO 3744
- Resolution:** 1/3 Octave
- Frequency Range:** Min 50 Hz, Max 160 Hz
- Results:** ☒ LA, ☒ LZ
- Unit:** m
- ☒ Save as default settings

- Select your requested **Standard**
- Select the frequency **Resolution**
- Select the **Frequency Range**
- Define the required **Results**
- Select **Unit**
- Confirm with **OK**



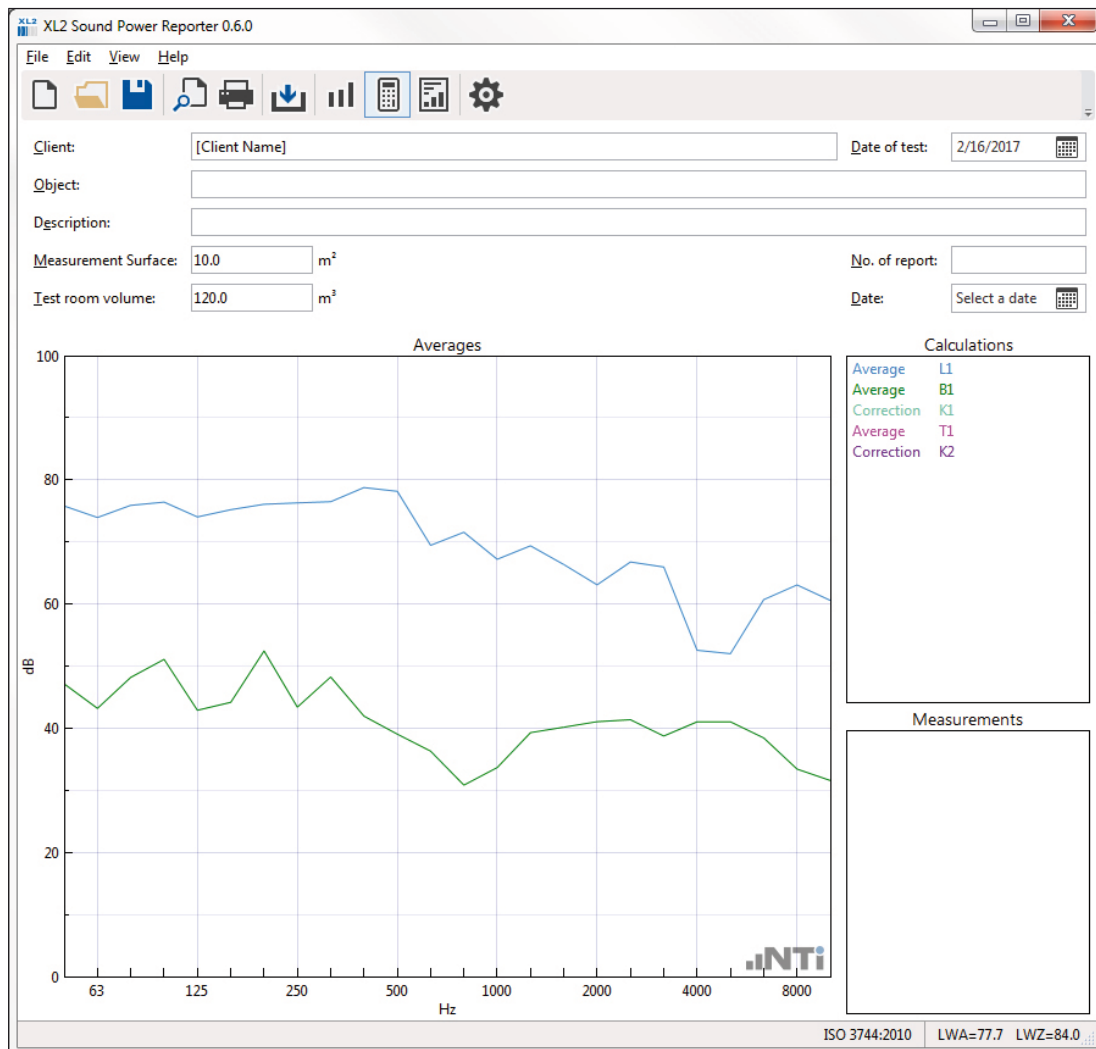
👉 The measurement view with the message “Drop measurement files or folder here” is displayed.

- Drag and drop the complete device folder from the XL2 memory card into the software.
The project folder should include the RTA data, the RT60 data and the *.xl2 system files



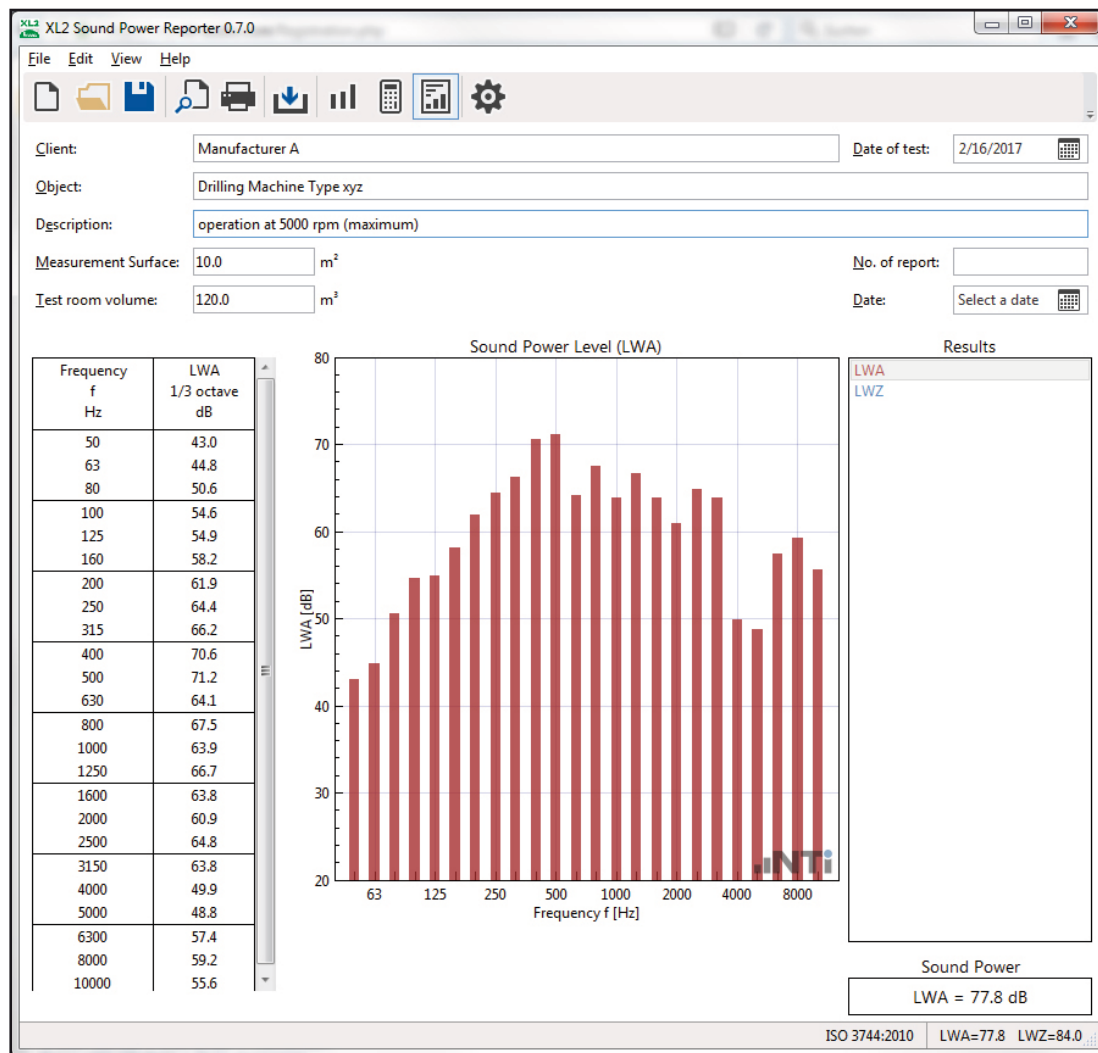
- Verify the measurement data and delete any false readings from the **Measurements** list on the right.

- Select **View -> Calculations** in the menu bar and verify the individual averaged results.



- Select the **View -> Results**.

👉 The sound power data and chart is displayed.



- Complete the header data with information about client, object, description, measurement surface area and room volume.
- Print the sound power report.

👉 Congratulations, your first report is completed!

3. Main Menu

Toolbar



- ① **New Project**
A project contains the measurement data of one device. The sound power is calculated in accordance with the selected standard.

 - Select your requested **Standard**
 - Select the frequency **Resolution**
 - Select the **Frequency Range**
 - Define the required **Results**
 - Select **Unit**
 - Confirm with **OK**
- ② **Open Project File**
Select an existing project file *.xlsp.
- ③ **Save Project File**
Save the actual sound power data as project file *.xlsp
- ④ **Print Preview**
The sound power reports for the selected results are displayed.
- ⑤ **Print**
The sound power reports for the selected results are printed.
- ⑥ **Import**
Select the folder containing the original XL2 measurement data *.txt and *.xl2 files and confirm with "Select folder". All measurement files within the selected folder are imported into the software.

⑦ **Measurements View**

The original XL2 measurement data is visualized in the user defined frequency range from 50 Hz to 10 kHz. By default all measurement data, as well as the speaker position for the sound power calculation, are automatically assigned to the corresponding source noise or background noise. Alternatively the data can be assigned manually.

⑧ **Calculations View**

Displays the average of the

- source noise level
- background noise level
- reverberation time RT60

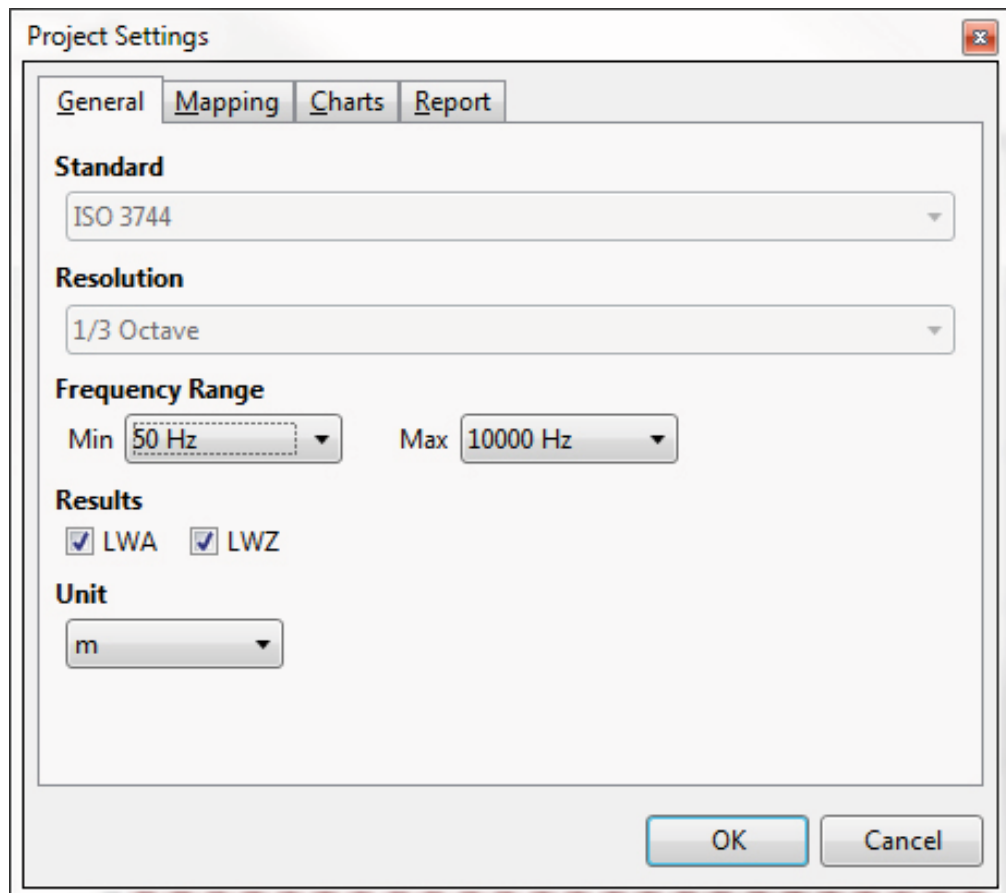
⑨ **Results View**

Displays the following sound Power results based on the selected result type:

- Table spectral sound power levels of user-defined frequency range within 50 Hz to 10 kHz
- Standardized chart of user-defined frequency range within 50 Hz to 10 kHz.
- Single number sound power

10 Settings

- General**
- Select the **Frequency Range**
 - Define the required **Results**
 - Select **Unit**
 - Confirm with **OK**



The screenshot shows the 'Project Settings' dialog box with the 'General' tab selected. The dialog has four tabs: 'General', 'Mapping', 'Charts', and 'Report'. The 'General' tab contains the following settings:

- Standard:** A dropdown menu set to 'ISO 3744'.
- Resolution:** A dropdown menu set to '1/3 Octave'.
- Frequency Range:** Two dropdown menus. 'Min' is set to '50 Hz' and 'Max' is set to '10000 Hz'.
- Results:** Two checkboxes, 'LWA' and 'LWZ', both of which are checked.
- Unit:** A dropdown menu set to 'm'.

At the bottom right of the dialog are 'OK' and 'Cancel' buttons.

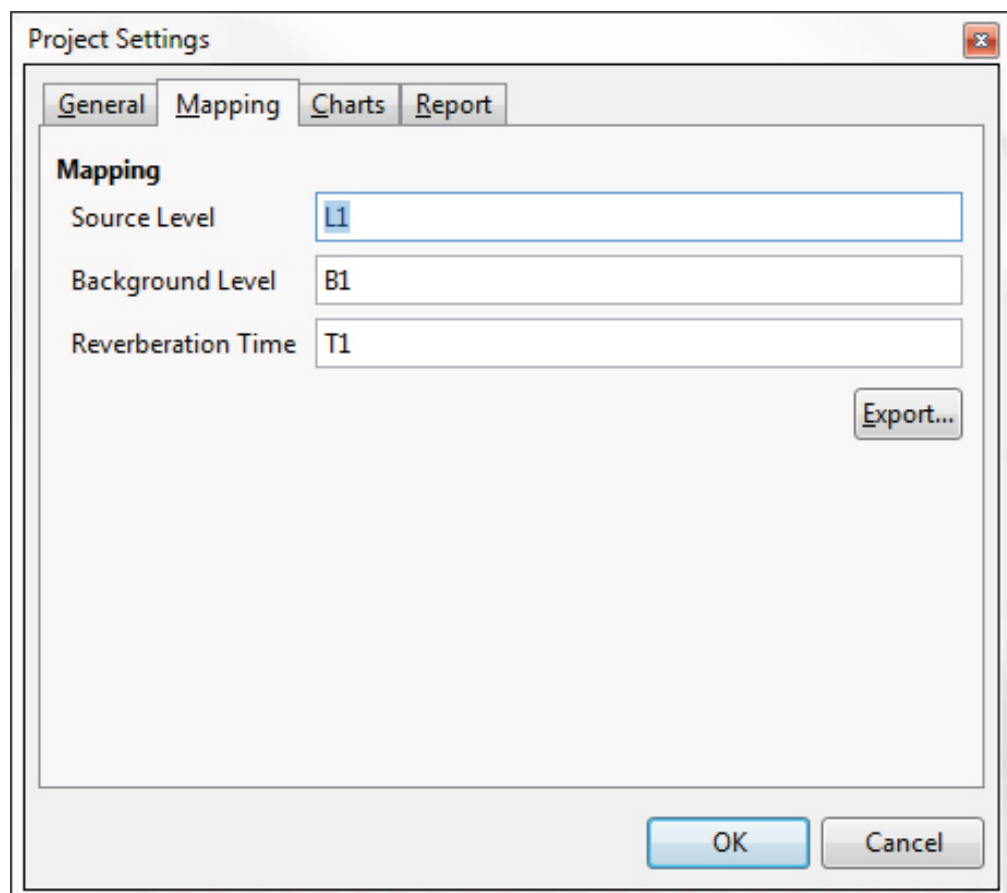
10 Settings

Mapping Sound Power measurements require the recording of noise spectras around the running device under test and the ambient noise at the same microphone positions. The XL2 with firmware V3.24 or higher simplifies the data handling of these measurements by recording each data set with a dedicated mapping, such as "L1" for the noise spectras around the running device under test.

Storing the measurement data with this mapping on the XL2 supports the automated data assignment to DUT noise or background noise during the data import into the Sound Power Reporter software.

- Click on **Export...**; this generates the text file savenames.txt
- Load the txt-file "savenames.txt" with the mappings "L1" and "B1" onto the SD card of the XL2.
- Copy this file onto the root directory of the XL2 memory card
- Select the memory menu on the XL2 and set **Autosave: Off**

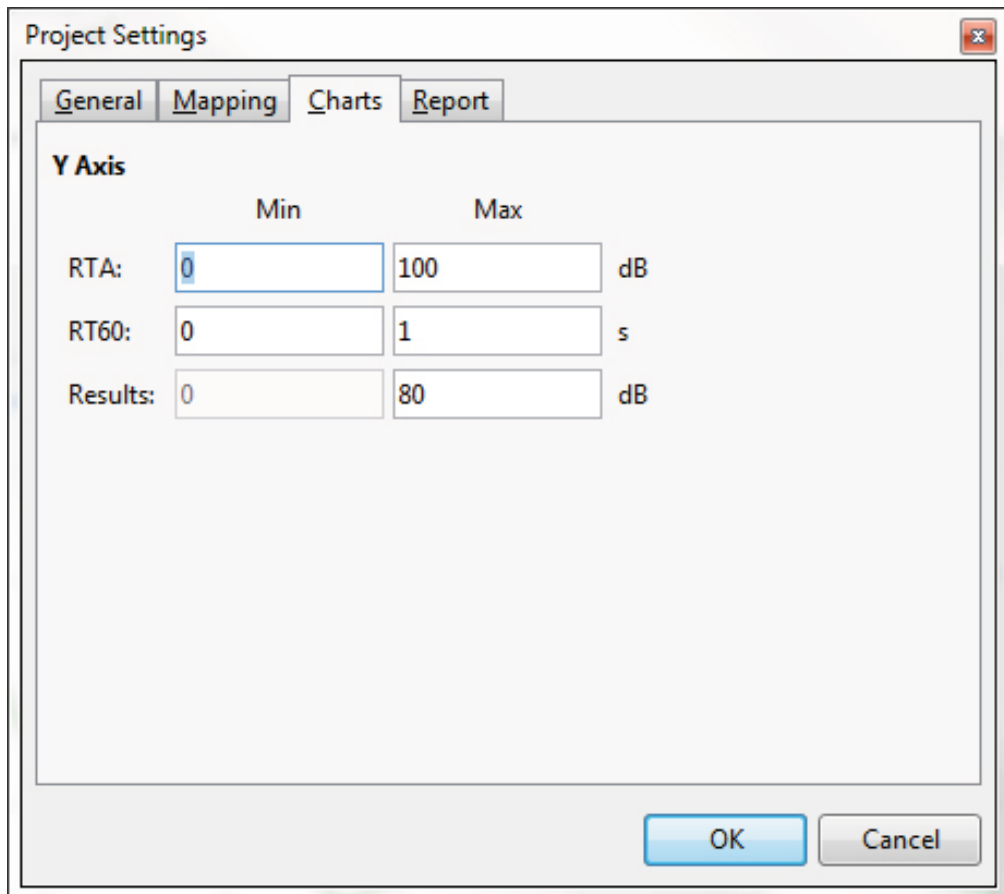
👉 Each measurement can be manually stored on the XL2 with one of the pre-defined mappings.



10 Settings

Charts

- RTA** Set the Y-axis scaling for measurements and calculations view
- RT60** Set the Y-axis scaling for measurements and calculations view
- Results** Set the Y-axis scaling for the chart in results view.



Project Settings

General Mapping **Charts** Report

Y Axis

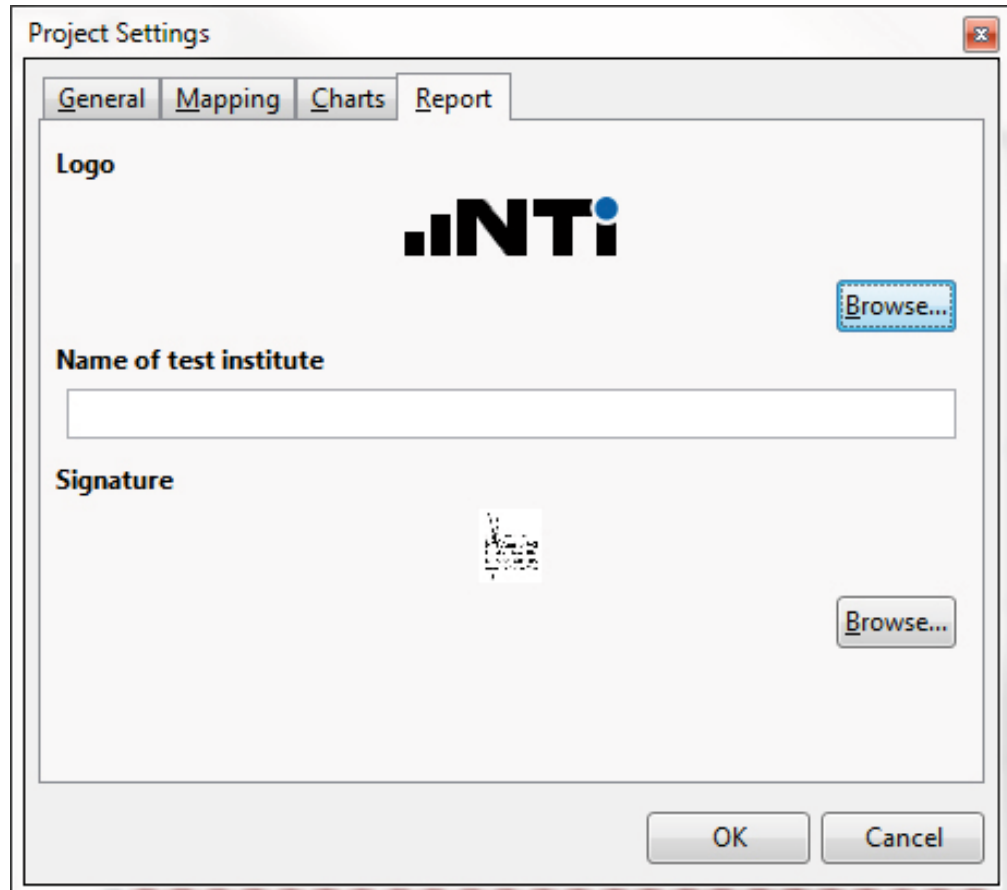
	Min	Max	
RTA:	0	100	dB
RT60:	0	1	s
Results:	0	80	dB

OK Cancel

10 Settings

Report

- Load your company logo for the printed measurement reports
- Set the **Name of the test institute**, e.g. your company name
- Load your **Signature** for the printed measurement reports



Menu

The software offers the following menu functionalities:

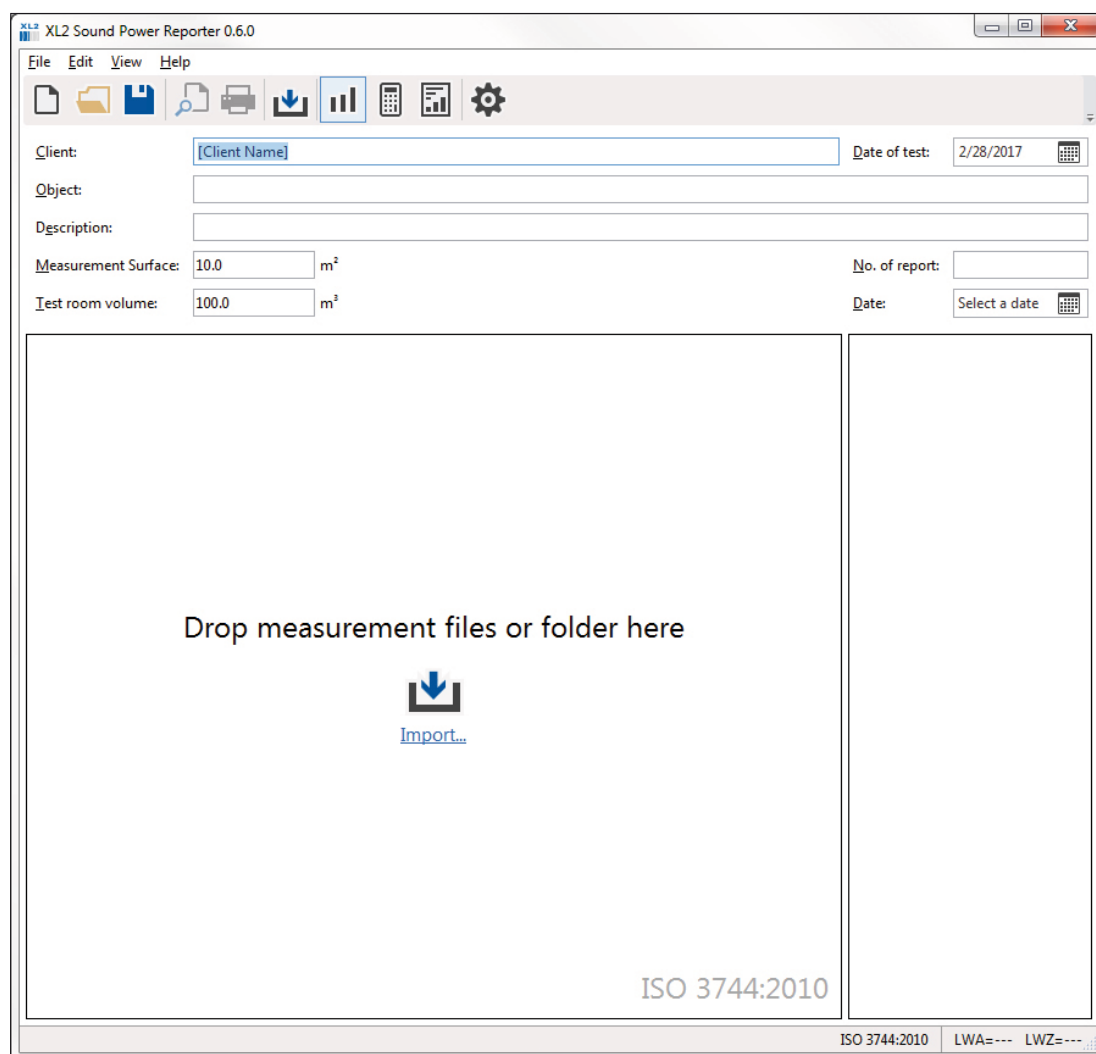
File	New...	<p>A project contains the measurement data of one device. The sound power is calculated in accordance with the selected standard.</p> <ul style="list-style-type: none">• Select your requested Standard• Select the frequency Resolution• Select the Frequency Range• Define the required Results• Select Unit• Confirm with OK
	Open...	Select an existing project file *.xlsp.
	Save	Save the actual sound Power data as project file *.xlsp.
	Save as...	Save the project with selectable name and path
	Print Preview	The sound power reports for the selected results are displayed.
	Print	The sound power reports for the selected results are printed.
	Import	<div>Folder... Select a folder in order to import all measurement data stored in this folder</div> <div>File... Select a single measurement data file *.xl2</div>
File	Preferences...	<p>Language Selection</p> <p>The Sound Power Reporter software is available in English and German languages. The default setting uses the language of the operating system installed on your computer. Select the language as follows:</p> <ul style="list-style-type: none">• Select File in the menu.• Select Preferences...• Select the language. Changing the language will require a restart of the software.• Confirm the settings with OK.

👉 The software closes and restarts with the selected language.

	Recent	Select a recently-opened project.
	Exit	Close the software.
Edit	Cut	Cut the text from any text box.
	Copy	Copy the data selected in the right-hand Measurements , Calculations or Results box.
	Paste	Paste the copied text into any text box.
	Delete	Delete the data selected in the right-hand selection box in Measurements .
	Select All	Select all data in the right-hand Measurements box (applicable in Measurements View only).
View	Measurements	Select the Measurements View.
	Calculations	Select the Calculations View.
	Results	Select the Results View.
Help	Online Help	Link to download the user manual in PDF form
	Check for Updates...	Checks for available updates of the XL2 Sound Power Reporter software.
	About	Lists version and copyright details of the software.

4. Data Import

The XL2 measurement data may be imported into the software by drag and drop. The minimum requirement for a successful data import is an XL2 with firmware V3.24 or higher and activated Sound Power Option. Instruments using an older firmware may benefit from the online activation of the option without installation on the device. The Sound Power Reporter software verifies the available option online during the data import.

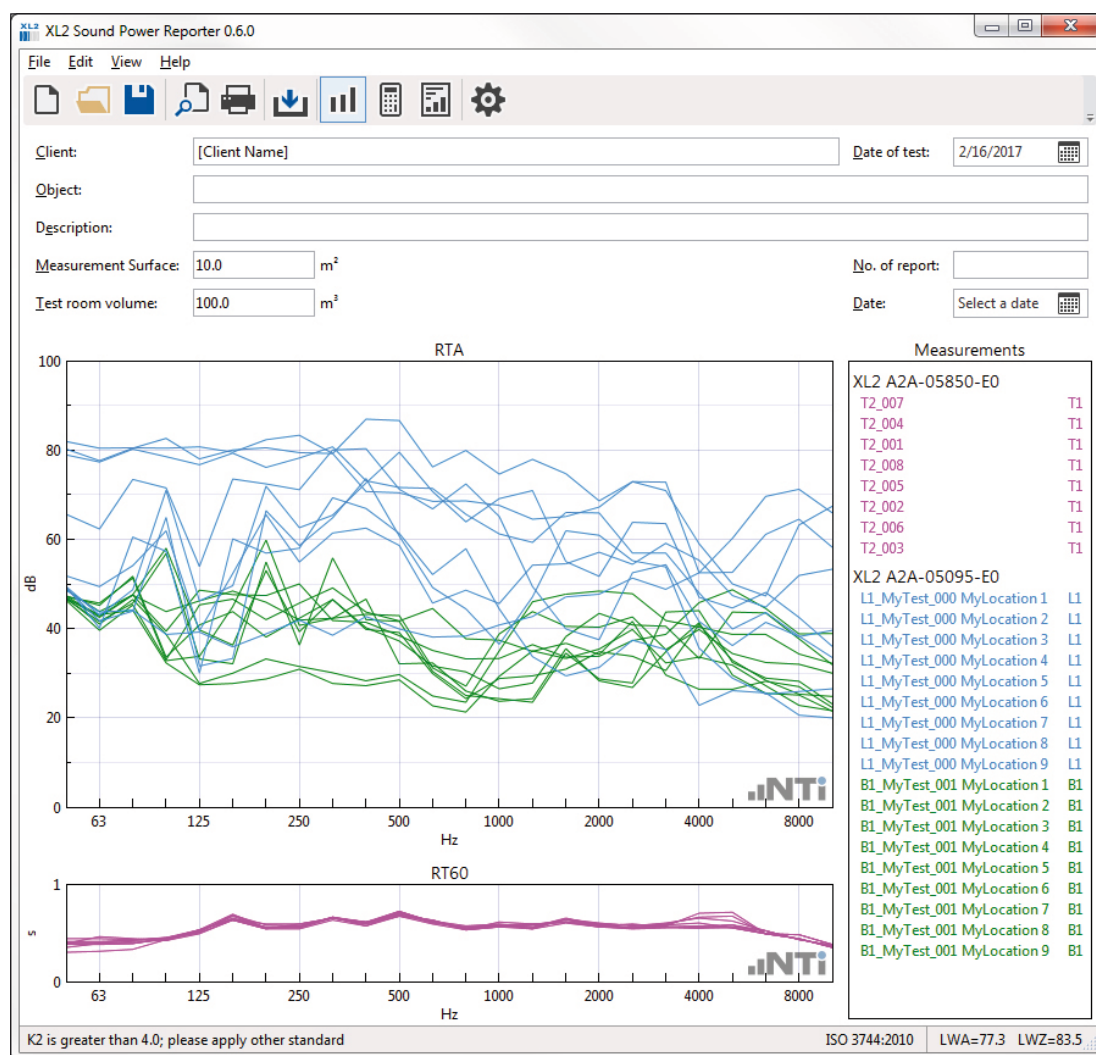


Kindly ensure, prior the data import, that the device folder contains all required measurement data (*.txt) and *.xl2 system files of each recorded measurement.

Sound Power Reporter offers multiple possibilities to import measurement data:

- Select the complete device folder with all measurement data. Drag and drop it into the “Add your measurements here” field.

- Select all *.xl2 files in the device folder with all measurement data. Drag and drop the data into the “Add your measurements here” field.
- Click on **Import** in the menu bar and select the device folder. Confirm the selection.
- Click on **Import** in the menu bar and open the device folder. Confirm the selection.
- Click on **File -> Import** and select the folder, single or multiple data files. Confirm the selection.



👉 The measurement data is imported.

All measurement data with mapping information in the file name are assigned automatically by the software, e.g. “L1_SLM_001_RTA_3rd_Report.txt” is assigned to L1 (=source noise). Alternatively the mapping may be assigned manually to source or background noise:

- Select the measurement with the mouse
- Click on the right mouse button
- Select **Assign To**
- Assign the measurement

5. Analysis and Reporting Views

The Sound Power Reporter software offers three views for fast data analysis and straight-forward reporting in accordance with the standard.



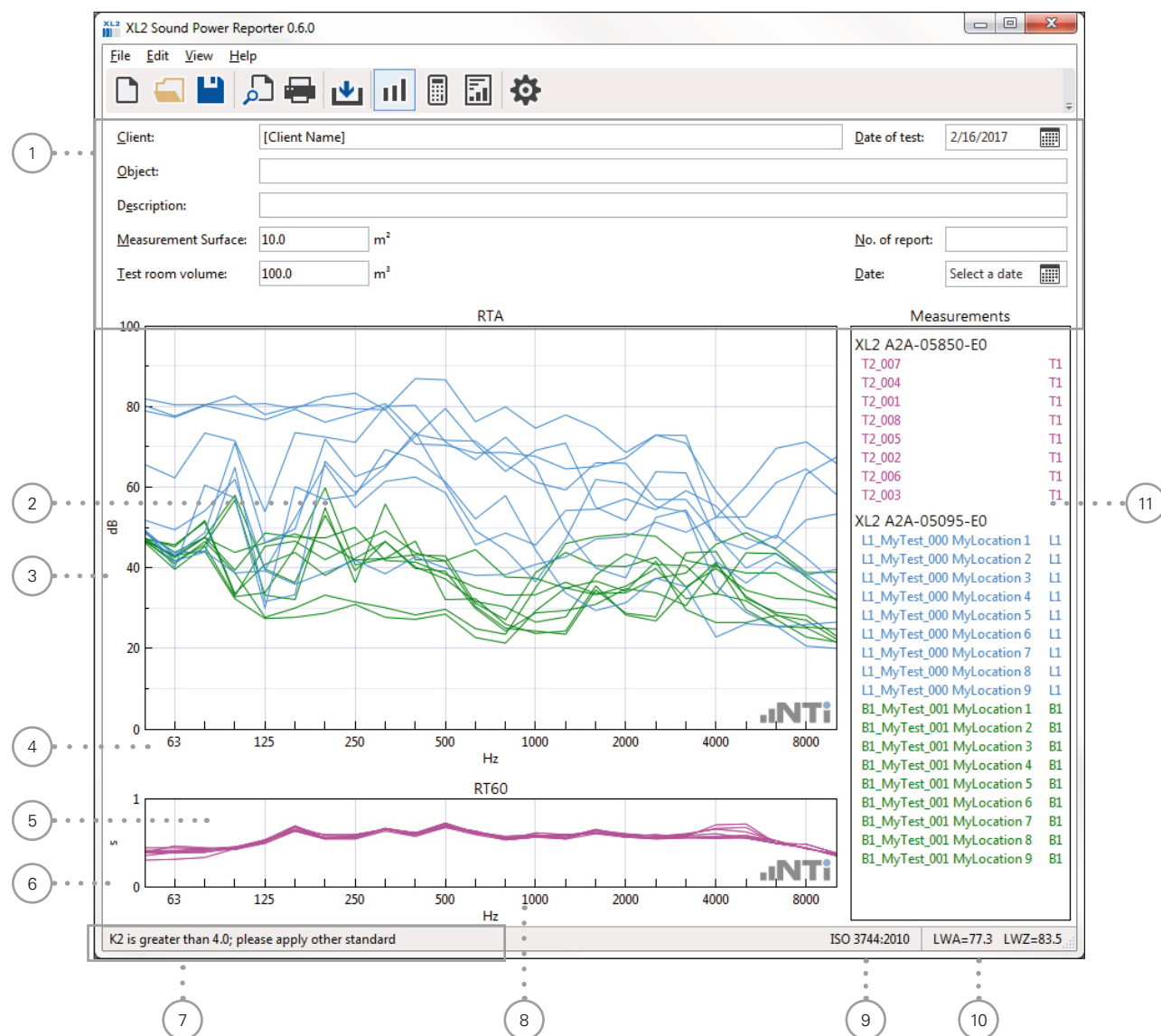
① **Measurements View**

② **Calculations View**

③ **Results View**

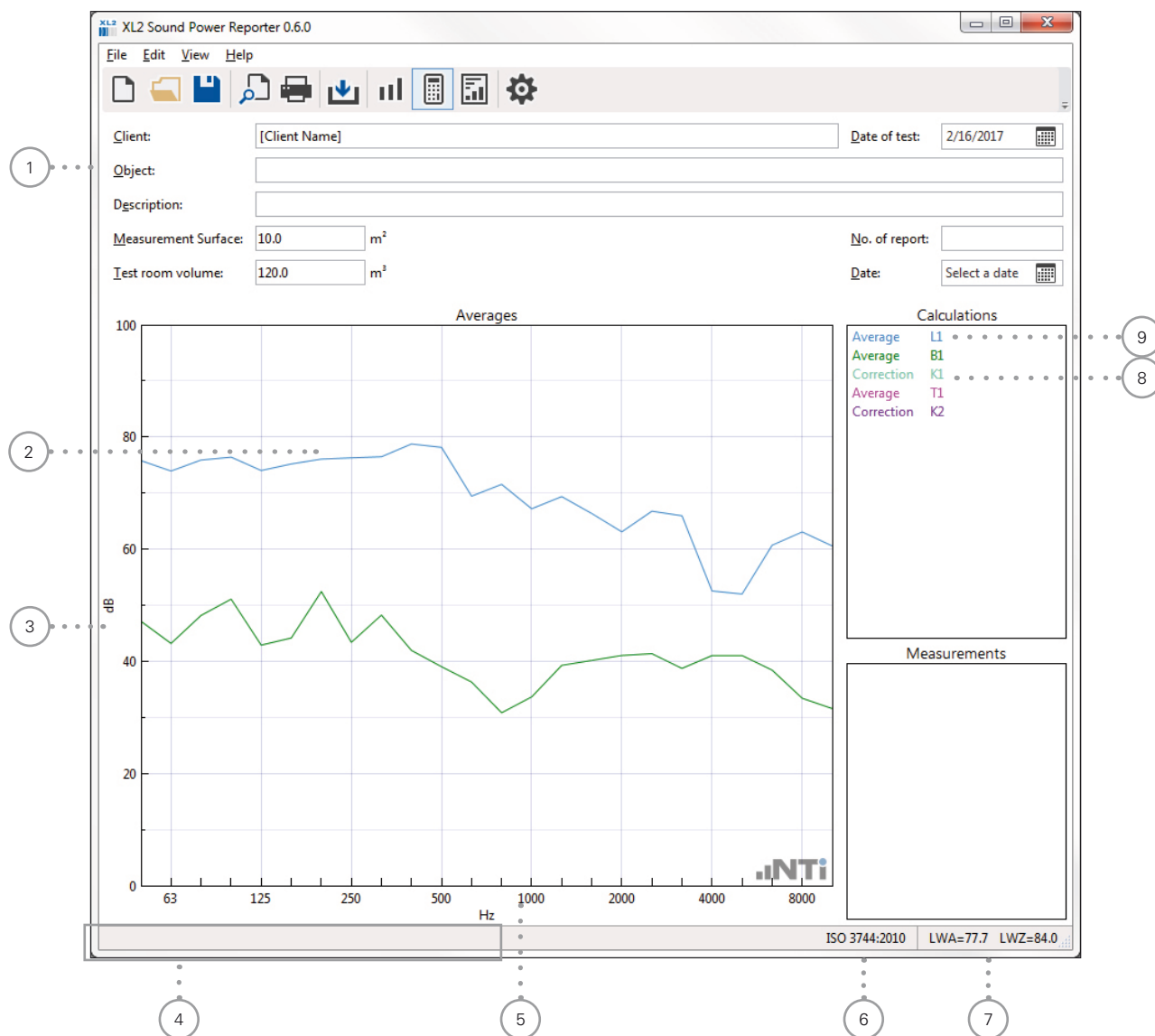
Measurements View

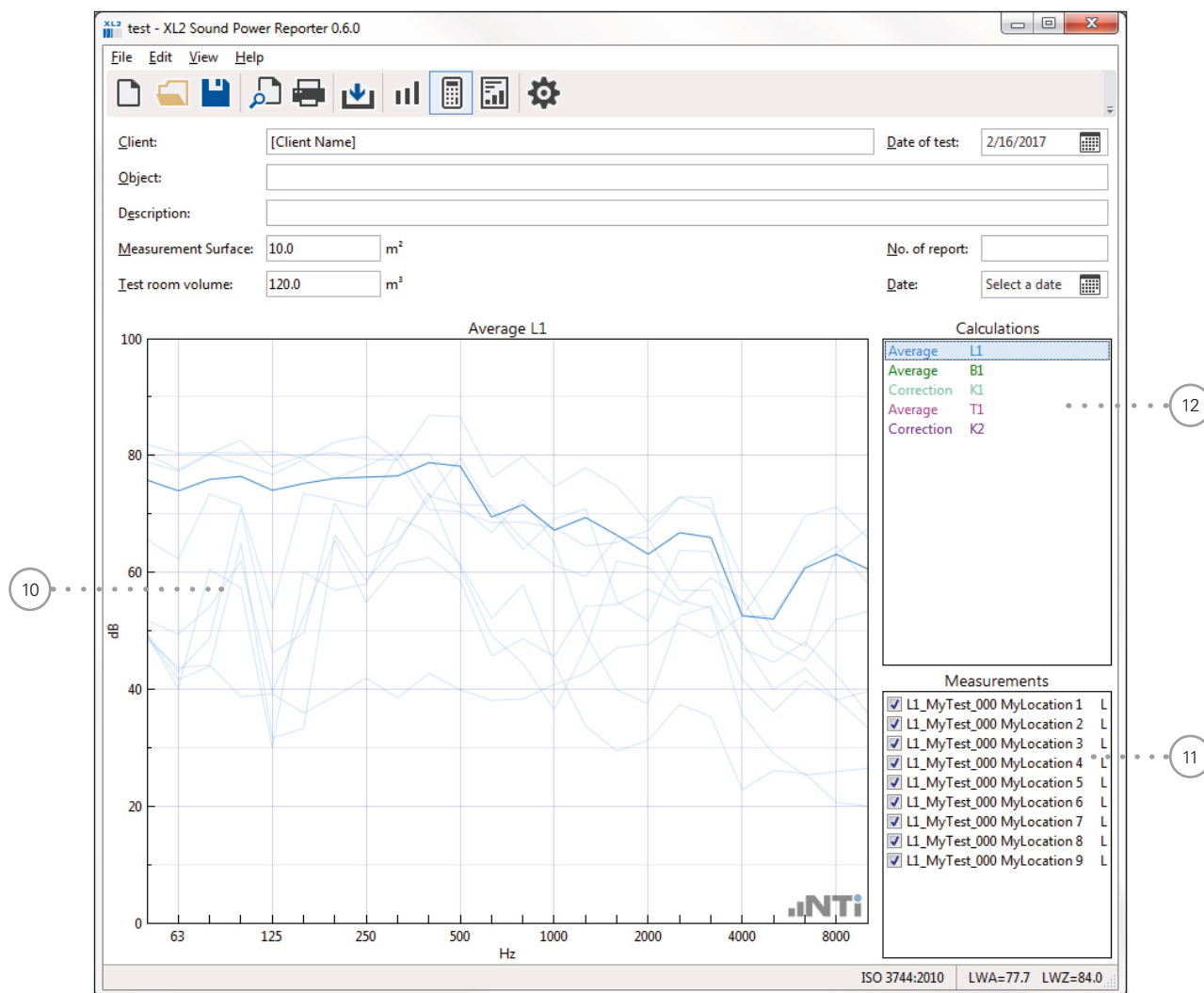
By default all measurement data are automatically assigned to the corresponding sending or receiving room, as well as the speaker position for the sound Power calculation. Alternatively the data can be assigned manually.



- ① **Details**
These data are listed in the header of the sound power report. The measurement surface of the device and volume parameters are used for the sound power calculation.
- ② **RTA Measurements Chart**
The original XL2 measurement data is visualized in the user-defined frequency range within 50 Hz to 10 kHz.
- ③ **Y-Axis of RTA Measurements Chart**
Set the Y-axis in **Settings -> Charts**
- ④ **X-Axis of RTA Measurements Chart**
The X-axis is user-defined within 50 Hz to 10 kHz.
- ⑤ **RT60 Measurements Chart**
The original XL2 measurement data is visualized in the user-defined frequency range within 50 Hz to 10 kHz.
- ⑥ **Y-Axis of RT60 Measurements Chart**
Set the Y-axis in **Settings -> Charts**
- ⑦ **Guideline Bar**
Additional information about displayed measurement data is listed here.
- ⑧ **X-Axis of RT60 Measurements Chart**
The X-axis is user-defined within 50 Hz to 10 kHz.
- ⑨ **Standard**
Selected standard for the sound power calculation and reporting.
- ⑩ **Sound Power Result**
Reads the single number results. Select the calculated results in **Settings -> General**
- ⑪ **Measurements List with Mappings**
List all the imported XL2 measurement data files with the automatically-assigned mapping. The mapping may be assigned manually to source noise or background noise:
 - Select the measurement with the mouse
 - Click on the right mouse button
 - Select **Assign To**
 - Assign the measurement

Calculations View





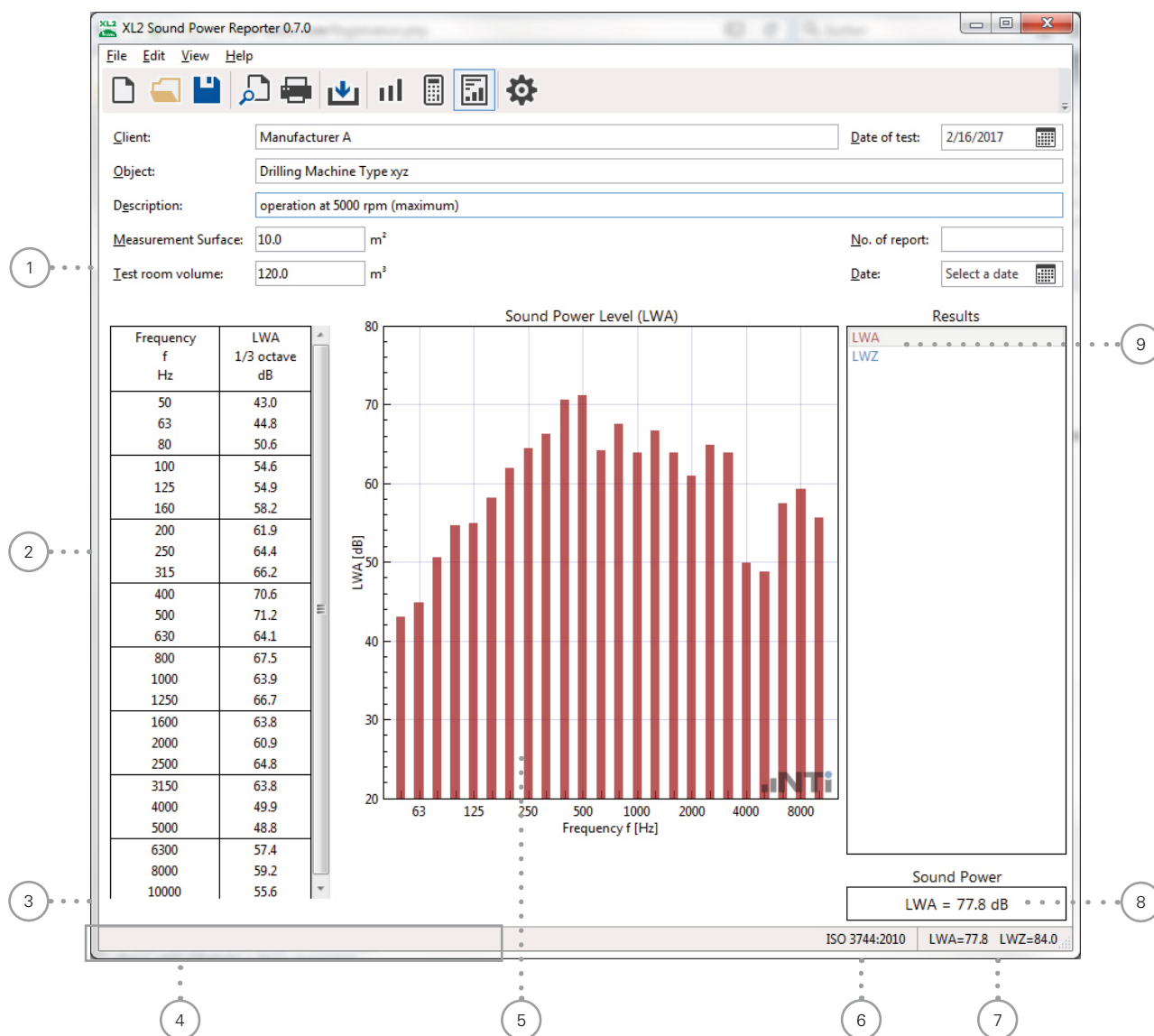
- 1 **Details**
These data are listed in the header of the sound power report. The measurement surface of the device and volume parameters are used for the sound power calculation.
- 2 **Chart**
The averaged measurement data for source and background noise is visualized in the user-defined frequency range within 50 Hz to 10 kHz.
- 3 **Y-Axis**
Set the Y-axis in **Settings -> Charts**
- 4 **Guideline Bar**
Additional information about displayed measurement data is listed here.

- ⑤ **X-Axis**
The X-axis is user-defined within 50 Hz to 10 kHz.
- ⑥ **Standard**
Selected standard for the sound power calculation and reporting.
- ⑦ **Sound Power Result**
Reads the single number results. Select the calculated results in **Settings -> General**
- ⑧ **Corrections**
Select **Correction K1** and view the applicable background noise correction.
- ⑨ **Average**
 - Averaged data sets for sound power calculation.
 - Select **Average L1** for detailed verifications of the measurement data used for the average calculation.
 - Press ESC on the keyboard to return to the default view with all averaged measurements.
- ⑩ **Detailed View**
Displays all measurement data and the averaged result for the selected parameter.
- ⑪ **Measurements Selection**
Disable any measurement data, which shall not be used for the average calculation.
- ⑫ **Selected Average Parameter**
Select the parameter for detailed analysis.

Results View

The results view displays the following sound Power results based on the selected result type:

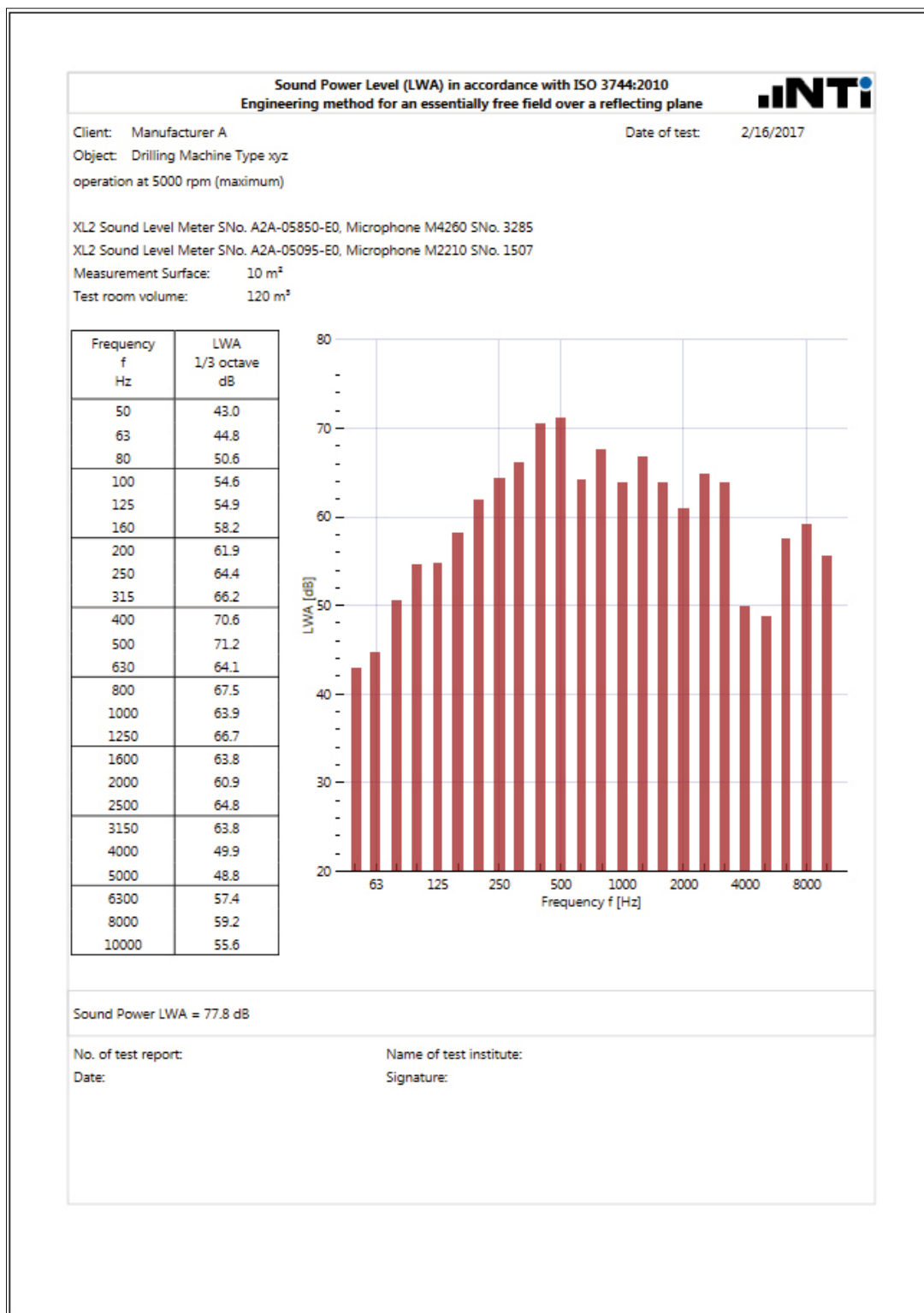
- Table in the user-defined frequency range within 50 Hz to 10 kHz.
- Standardized chart in the user-defined frequency range within 50 Hz to 10 kHz.
- Sound Power Level LWA or LWZ



- ① **Details**
These data are listed in the header of the sound power report. The measurement surface of the device and volume parameters are used for the sound power calculation.
- ② **Results Table**
Sound power results in the user-defined frequency range within 50 Hz to 10 kHz. The results are corrected to the signal level of background noise. In case of a fixed correction is applied, then the applicable frequency bands are marked by a "*", see ③.
- ③ **Information about Background Noise Correction**
A fixed background noise correction applied in the table ② at frequency bands marked by "*".
- ④ **Guideline Bar**
Additional information about displayed measurement data is listed here.
- ⑤ **Results Chart**
Sound power results spectrum in the user-defined frequency range within 50 Hz to 10 kHz.
- ⑥ **Standard**
Selected standard for the sound power calculation and reporting.
- ⑦ **Sound Power Result**
Reads the single number results. Select the calculated results in **Settings -> General**.
- ⑧ **Sound Power Result**
Reads the single number results selected in ⑨.
- ⑨ **Result Selector Box**
Select the required sound power result here. The available results are preset in **Settings -> General**.

6. Sound Power Report

The software generates automated reports in accordance with the supported standards. Print the reports for the selected results.



7. Specifications

Standards	<ul style="list-style-type: none">• ISO 3744• ANSI-ASA S12.54
Results	<ul style="list-style-type: none">• LWA, LWZ (broadband, 1/1 octave and 1/3 octave)• Average Noise Level• Average Ambient Level• Average RT60• Correction K1, K2
Reporting	<ul style="list-style-type: none">• PDF via PDF-printer• XPS• Data export to MS Excel
Licensing	<ul style="list-style-type: none">• Install Sound Power Option into XL2 or activate Sound Power Reporter 365 online at my.nti-audio.com; this enables the import of measurement data into the Sound Power Reporter software• Sound Power Reporter can be installed on multiple computers
Operating System	<ul style="list-style-type: none">• Windows Vista, 7, 8.x and 10
XL2 Requirements	<ul style="list-style-type: none">• Installed optional Extended Acoustic Pack to measure the RT60 reverberation time and therefore the Sound Power in 1/3 octave band resolution.
Order Information	<ul style="list-style-type: none">• Sound Power Option (permanently installed option in XL2) NTi Audio # 600 000 434• Sound Power Reporter 365 (annual subscription service) NTi Audio # 600 000 435

All information is subject to change without notice.