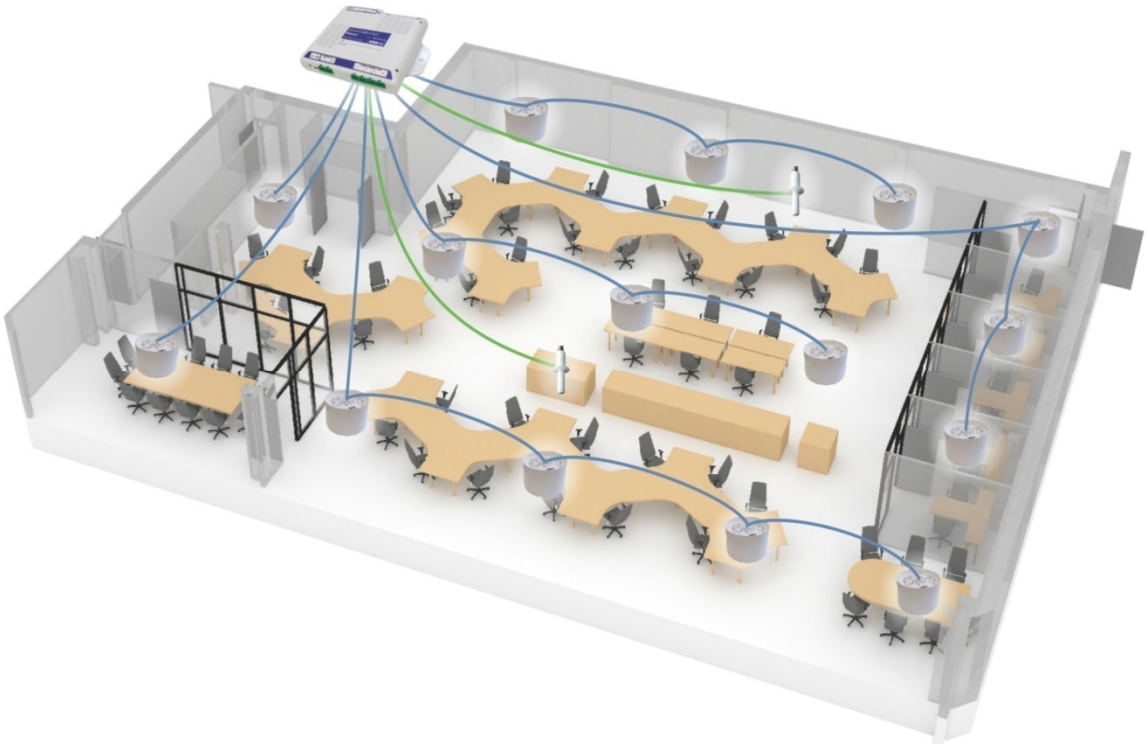
Project Manager Software

smartSMS-NET Sound Masking System
User Guide



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Content

1 Overview

The smartSMS-NET system offers a flexible approach allowing to create small installations with only a few zones up to large installations with many zones. This flexibility is offered by the smartSMS-NET controllers which are at the heart of the system.

The smartSMS-NET system offers a wide range of controllers ranging from small low-power 2-channel controllers to high-power 8-channel controllers. These controllers can be networked together to create a scalable system appropriate for small to large projects.

The smartSMS-NET Project Manager software is an essential element of the system. It allows to create, manage and operate the smartSMS-NET system. This software is extensively described in this user manual. For more information on the Project Manager Software download and installation, refer to Appendix E, smartSMS-NET Project Manager Software Installation, p.83.

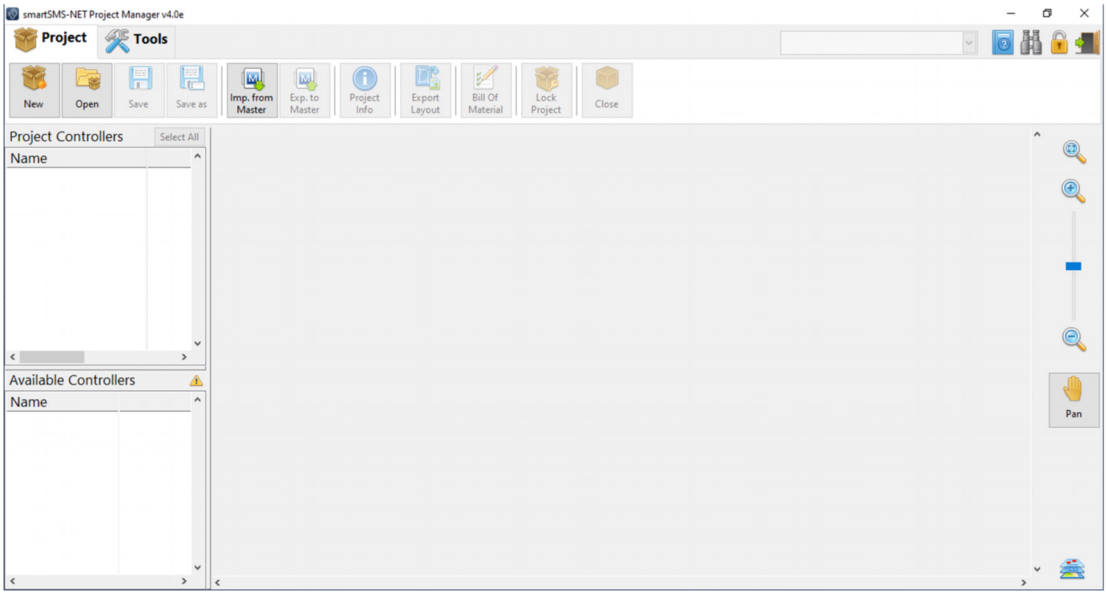
The following sections of this user manual describe in details how to create, manage and operate a smartSMS-NET sound masking system:

1) Create a smartSMS-NET project using the Project Manager software (p. 6)
2) Edit the project layout; import background image, place loudspeakers, place smartSMS-NET controllers, add wiring, etc. (p. 7)
3) Link the smartSMS-NET controllers to the project (p. 29)
4) Communicate with the smartSMS-NET controllers (p. 32)
5) Set-up system parameters; calibrate sound masking, set-up music and paging, etc. (p. 35)
6) Implement system monitoring (optional) (p. 73)
7) Implement an end-user control panel (p. 75)

2 Create a Project

The smartSMS-NET projects are software files integrating the layout and parameters of the system. Hence, the first step in any smartSMS-NET system installation is to create a smartSMS-NET project.

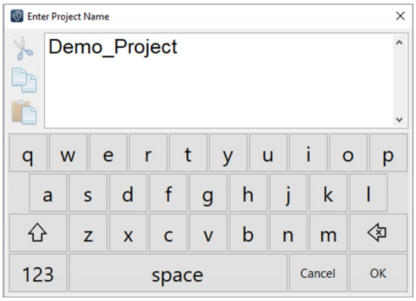
Launch the Project Manager software from the Start Menu.



The Project Manager software contains all the functions to create, edit, commission and operate a smartSMS-NET system.

1) Click on the 

button to create a new project. This will launch the new project name prompt.



2) Enter the new project name in the text field.

Note: The project name is limited to 24 characters and must not contain certain characters like spaces or slash bars "/".

3 Edit Project Layout

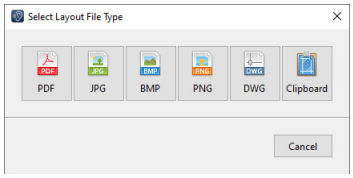
Once a project is created, the project layout needs to be laid down. The layout is the schematic view of the project; it displays the layout of zones, speakers, smartSMS-NET controllers, etc.

3.1 Import a Background Image

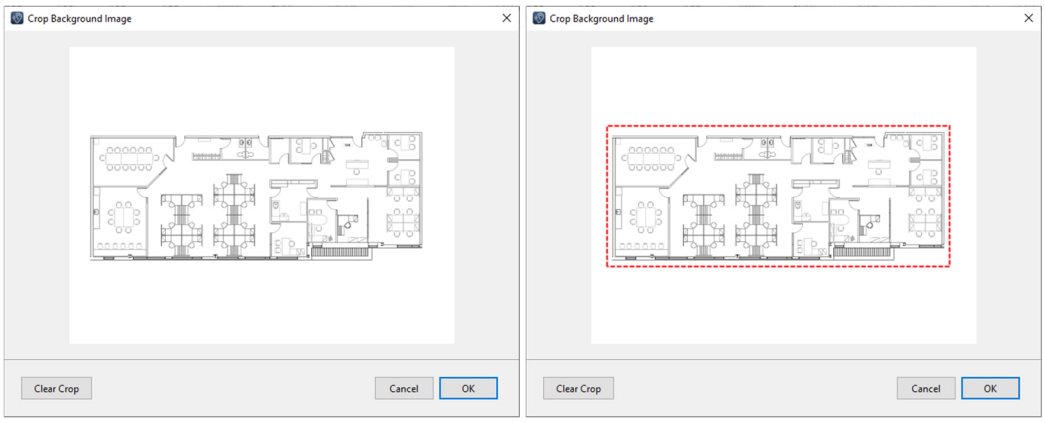
It is recommended to import a background image to the layout to make it easier to interpret and use.

1) Click on the 

button to import background image.

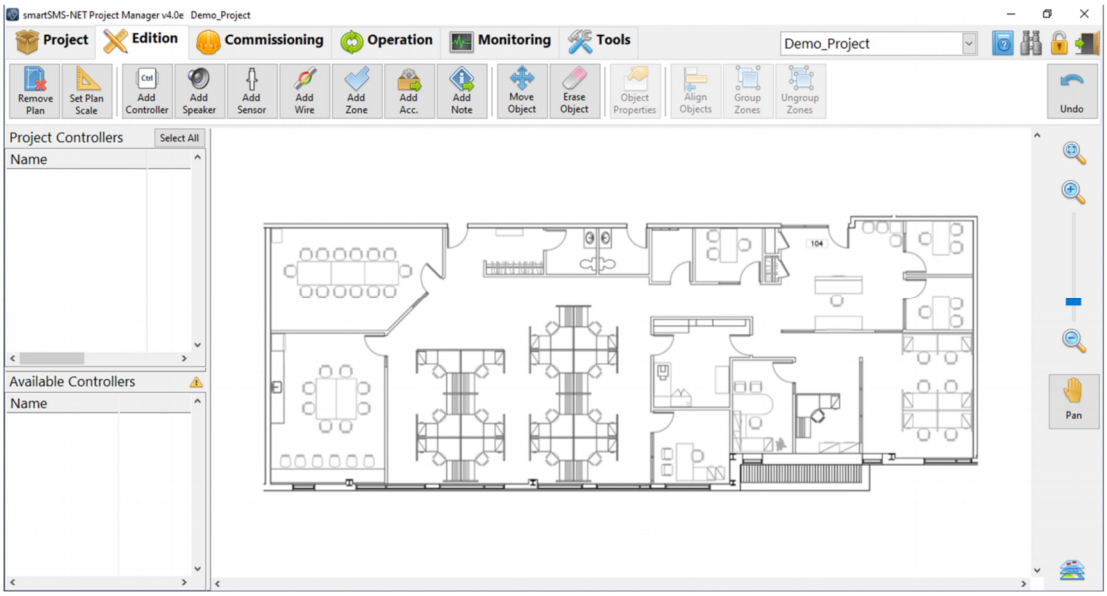


2) Select the appropriate file type from the available image types.
3) Browse for the correct file in the browser window and click “OK”.
4) On the preview window, you can crop the image if needed (click on the first corner and drag to the second to define the crop frame (red dot line))



5) Click “OK” on the preview window to confirm

After these steps, the background image will be loaded in the project and it will be displayed in the layout section of the interface:

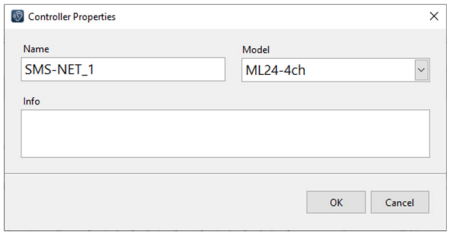


3.2 Add smartSMS-NET Controllers

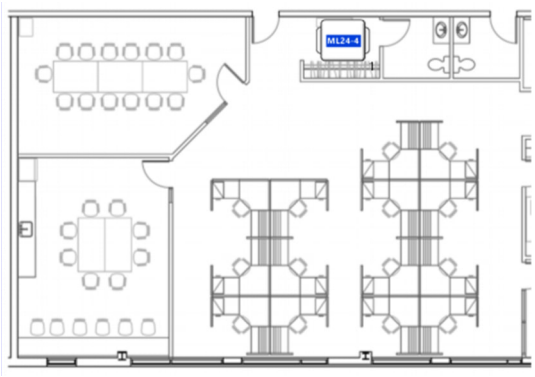
Once the background image is imported, you can add smartSMS-NET controllers on the layout. The smartSMS-NET controller is the core of the system.

1) Click on the 

button to select the "Add Controller" tool.
2) With the "Add Controller"  tool selected, click on the layout to add a smartSMS-NET controller at the desired location upon which a prompt will request the following information:
   - Controller Name (identifier)
   - Controller Model
3) Click "OK" to confirm the information



4) The "Add Controller" tool keeps being active so other controllers can be added immediately.



Note: The first controller to be added on the layout is the Master controller. The Master controller holds the global project configuration. Since every other controller refers to the Master, it's necessary to add it in the project before adding any other controller.

Note: To change the properties of the controller (name or model), select the controller on the layout and click on the 

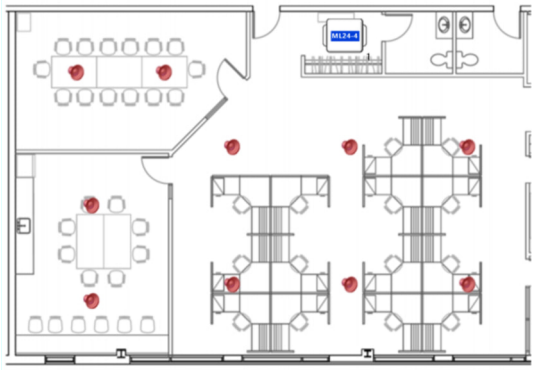
button.

3.3 Add Loudspeakers

Once the smartSMS-NET controllers are added on the layout, you can add loudspeakers to it.

1) Click on the 

button to add a loudspeaker on the layout.
2) With the "Add Loudspeaker"  tool selected, click on the layout to add a loudspeaker at the desired location.
3) The "Add Loudspeaker" tool keeps being active so other loudspeakers can be added immediately.



Note: When loudspeakers are not yet connected with wires, they appear gray. The gray overlay will disappear as soon as they get connected to a smartSMS-NET controller with wiring.

Note: Should you want to change the properties of a speaker (type, color, tap, etc.), select the speaker(s) on the layout and click on the 

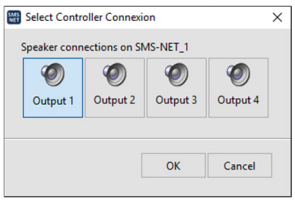
button.

3.4 Add Wires

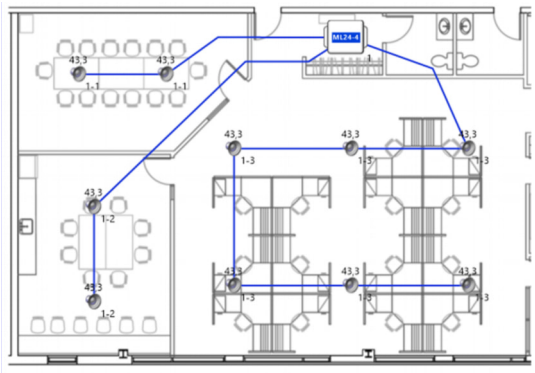
Now that smartSMS-NET controllers and loudspeakers are on the layout, they need to be connected together using wires.

1) Click on the 

button to add wiring on the layout.
2) With the "Add wire"  tool selected, click on a loudspeaker to start a wire connection.
3) Click on another speaker or on the controller to connect the other end of the cable. When clicking on the controller, a prompt interface will ask for appropriate connection to the controller connectors:



4) Select the appropriate connection on the controller and click "OK".



Note: Hold "Ctrl" to draw horizontal or vertical wire lines.

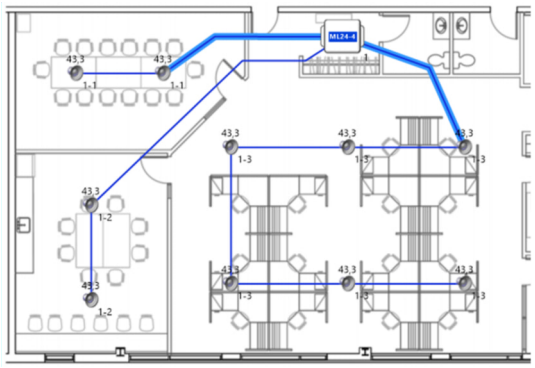
Note: Some restrictions apply to the number of speakers to be connected to a controller output, refer to controller specifications for more information.

3.4.1 Change Wire Style

On large and complex systems, the layout can be heavily loaded with wires. You can define the style of a wire to one of the following styles for better clarity of the layout:

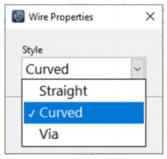
- Straight, straight lines with sharp corners at mid points
- Curved, curved line with tension nodes at mid points
- Via, two small arrows pointing from origin to destination

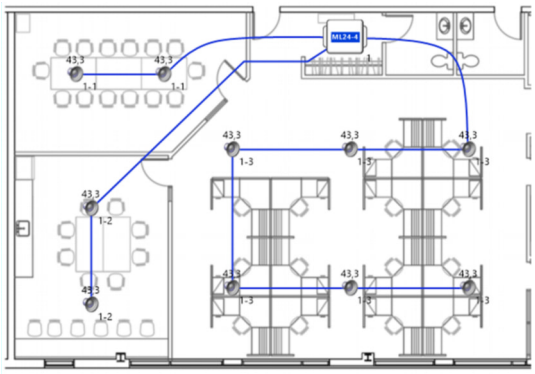
1) Select the wire(s) on the layout;



2) Double click on the last selection or click on the 

button.
3) Select the wire style.





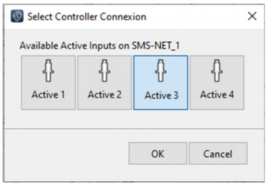
3.5 Add Active Volume Control Sensors

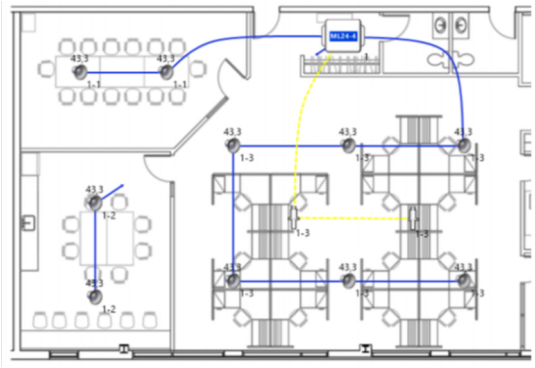
Active volume control allows adjusting automatically the sound masking volume using noise sensors. When noise activity is high (noisy) the sound masking volume will be higher and when noise activity is low (quiet) the sound masking volume will be lower. Refer to the Active Volume Control Sensors specifications for more information.

1) Click on the 

button to add an active volume control sensor on the layout.
2) With the "Add sensor"  tool selected, click on the layout to add a sensor.
3) Add a wire from the sensor to the controller.

Upon clicking on the controller to connect the end of the wire, the connection interface will display the available inputs.





Note: If some inputs are already connected to a sensor line, they will not be available in the connection interface.

Note: When using a shared input (active/auxi), the connected cable will determine the input type to be used. Refer to section 8.9, Input Type Selection, p. 65 for more info.

3.6 Add Volume Control Knobs

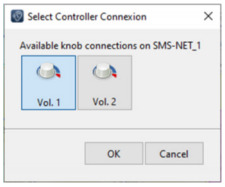
Wall mounted volume control knobs can be connected to a controller to allow a manual adjustment of the sound masking (and/or music) volume. A volume control knob can only be connected to one controller.

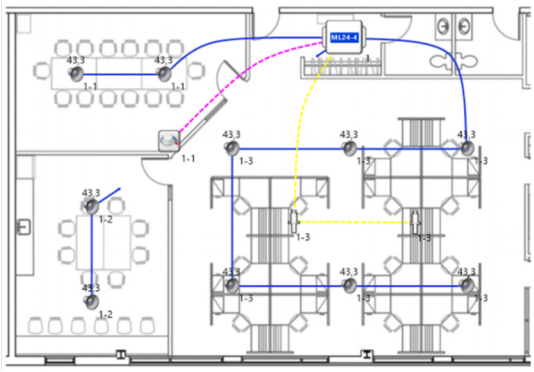
1) Click on the 

button to show available accessories.
2) Click on the 

button to add a volume control knob on the layout.
3) With the "Add knob"  tool selected, click on the layout to add a volume control knob.
4) Add a wire from the volume control knob to the controller.

Upon clicking on the controller to connect the end of the wire, the connection interface will display the available inputs.





Note: *The default volume knob is model "SMS-ZNVC" (Zone Volume Control) which connects to the controller. A volume knob can also be added to a speaker line. In such case, select model "SMS-SKVC" (Speaker Volume Control) in the volume knob properties by selecting the volume knob(s) on the layout and clicking on the* 

button.

3.7 Add Music and Paging Sources

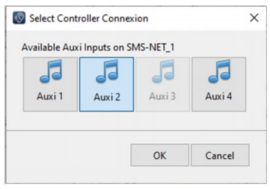
It is possible to play music and make public announcements on the smartSMS-NET system. An auxiliary source can be connected to many controllers. Refer to controller user guide form more information.

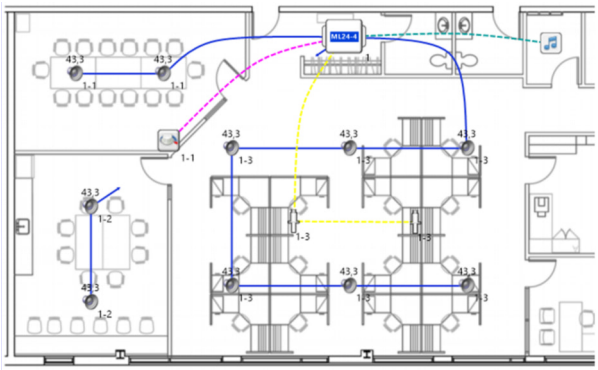
1) Click on the 

button to show available accessories.
2) Click on the 

button to add a Music/Paging source on the layout.
3) With the "Add Auxi."  tool selected, click on the layout to add a Music/Paging source.
4) Add a wire from the Music/Paging source to the controller.

Upon clicking on the controller to connect the end of the wire, the connection interface will display the available inputs. Note that if some inputs are already connected to an audio source, they will not be available in the connection interface.





Note: When using a shared input (active/auxi), a connector may already be used for active control sensor. Hence the corresponding button may be disabled. Also, the connected cable will determine the input type to be used. Refer to section 8.9, Input Type Selection, p. 65 for more info.

Note: Should you want to change the properties of an auxiliary source (music or paging), select the auxiliary source(s) on the layout and click on the 

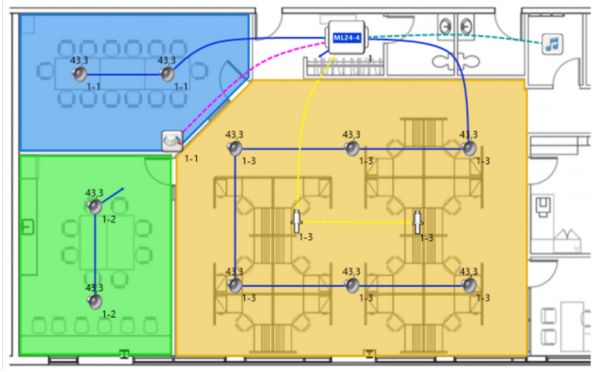
button.

3.8 Create Zones

Zones are areas of similar sound masking environment. Zones can include from one speaker line to several speaker lines from many controllers.

1) Click on the 

button to add a zone on the layout.
2) With the "Add Zone"  tool selected, click on the layout to draw the zone contour.
3) Click on the starting point to close the zone.



Note: Should you want to change the properties of a zone (name, color, transparency, etc.), select the zone(s) on the layout and click on the 

button.

Note: A speaker line can't be divided between two zones. In other words, there can't be one speaker in Zone A and one speaker in Zone B from the same speaker line.

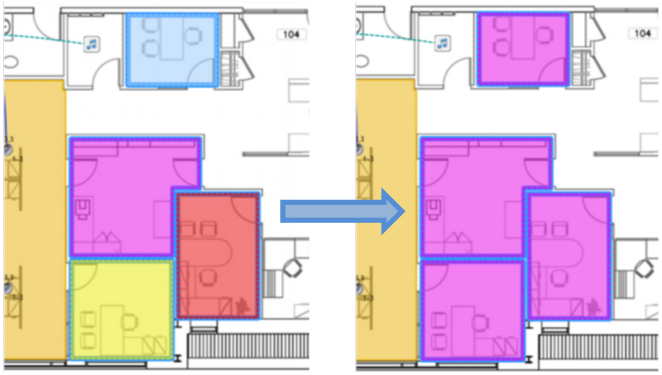
Note: Hold "Ctrl" to draw horizontal or vertical zone lines.

3.8.1 Group/Ungroup Zones

In some situations, a zone can be split in two or more rooms, such as for similar closed offices sharing the same speaker line. In such cases, you can draw a zone polygon for every closed office and group the zones as a single one.

1) Draw each zone as detailed in section 3.8;
2) Select the zones you wish to group and click on the 

button;



Note: Grouped zones can be ungrouped using the 

buttons.

3.9 Add Power-Supply

The controllers require a 24V power-supply to work. However, it is not required to include it on the layout but it is a good practice to do so to document the project and help installers.

3) Click on the 

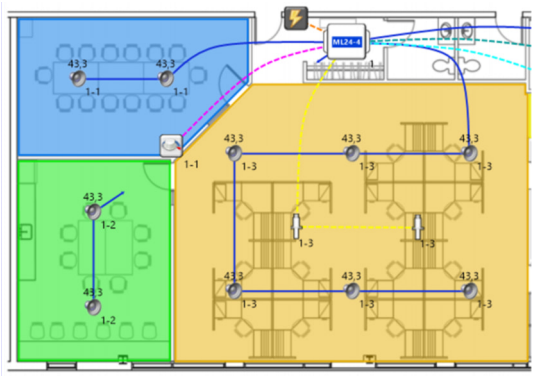
button to show available accessories.

4) Click on the 

button to add a power-supply on the layout.

5) With the "Add power-supply"  tool selected, click on the layout to add a power-supply.

6) Add a wire from the power-supply to the controller.



Note: Should you want to change the properties of a power-supply (model), select the power-supply on the layout and click on the 

button. Refer to the controller specifications for appropriate power-supply model.

3.10 Add Control Panel

An optional centralized control panel can be added to the system. This control panel can be a computer running the Project Manager software or a "SMS-CTP" touch screen interface. It is not required to include it on the layout but it is a good practice to do so to document the project and help installers.

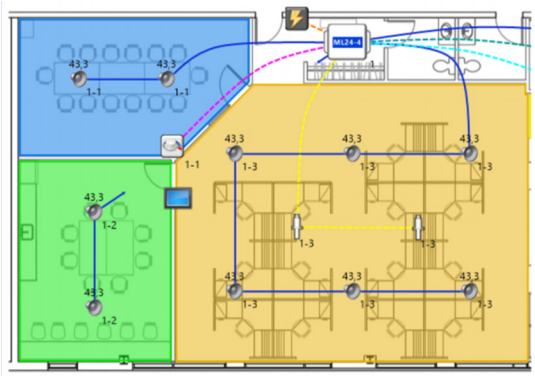
1) Click on the 

button to show available accessories.

2) Click on the 

button to add a control panel on the layout.

3) With the "Add control panel"  tool selected, click on the layout to add a control panel.



Note: Should you want to change the properties of a control panel (Computer or SMS-CTP), select the control panel on the layout and click on the 

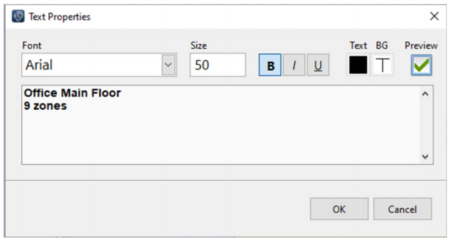
button.

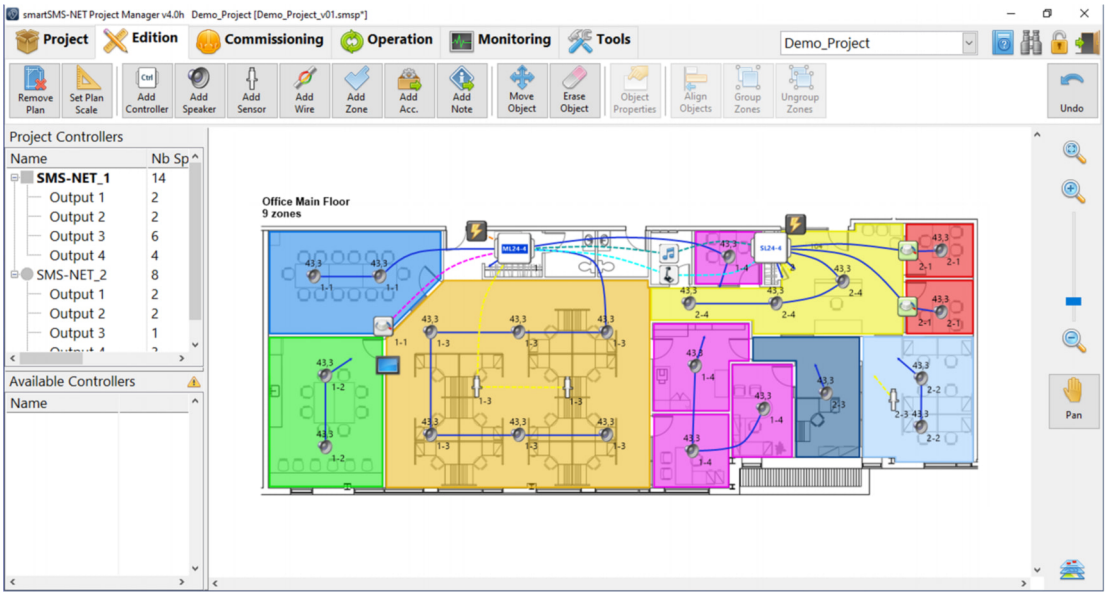
3.11 Add Text Labels

Text labels are useful to add visible information on the layout.

1) Click on the  button to show available notes.
2) Click on the  button to add a text label on the layout.
3) With the "Add text"  tool selected, click on the layout to add a text label.

Upon clicking the layout, a rich text edit box opens. Enter the text and font for the text label.





Note: Using the "Preview" checkbox allows viewing the resulting text format as it will appear on the layout.

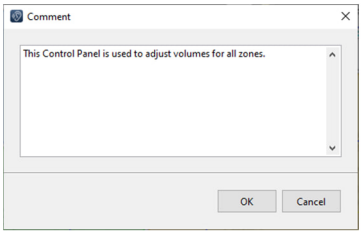
Note: The size of the text label will adapt to the zoom, the text will appear larger when zooming in and smaller when zooming out.

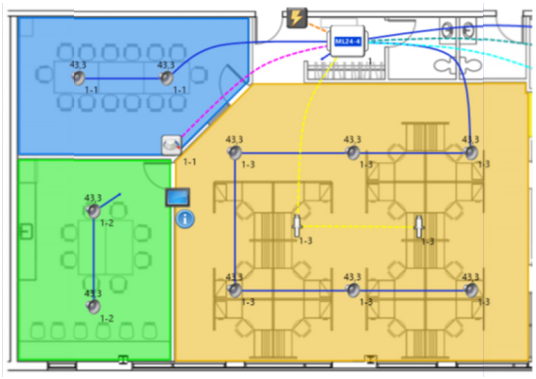
3.12 Add Info Dialogs

Info dialogs are useful to add an interactive comment on the layout.

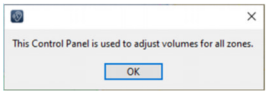
1) Click on the  button to show available notes.
2) Click on the  button to add an info dialog icon on the layout.
3) With the "Add info"  tool selected, click on the layout to add an info dialog icon.

Upon clicking the layout, a text box opens. Enter the text for the info dialog.





Clicking on the  icon on the layout in any mode but "Edition" will show a dialog with the information:



3.13 Add Dimensions

Dimensions are useful to communicate spacing information to installers such as loudspeaker spacing for instance.

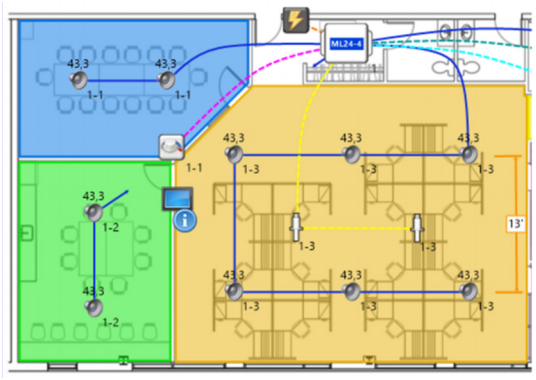
1) Click on the 

button to show available notes.

2) Click on the 

button to add a dimension on the layout.

3) With the "Add dimension"  tool selected, click on the layout to add the two endpoints of the dimension line.



Note: The layout scale must be defined in order to add dimension lines to the layout. Refer to section 3.14 for more information.

Note: Should you want to change the units of a dimension line (m, ft., ft. (fract)), select the dimension line on the layout and click on the 

button.

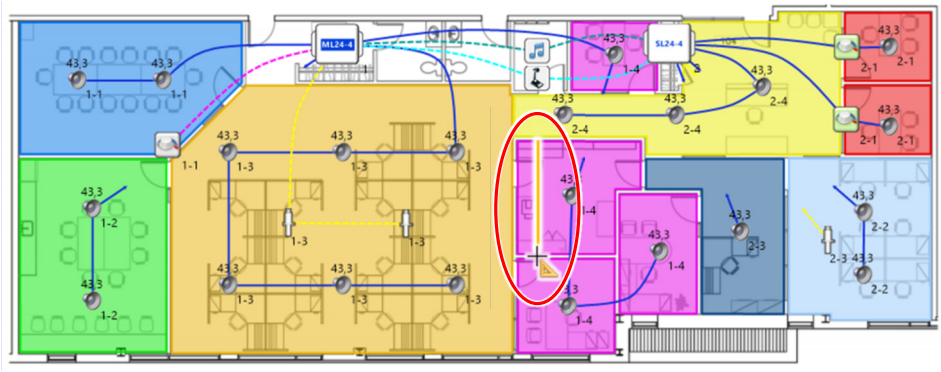
3.14 Set Layout Scale

It is recommended to set the layout scale in order to use all the features of the Project Manager software. The features requiring appropriate scale definition includes zone area calculation, wire length estimation, dimension lines, etc.

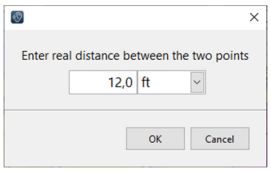
1) Click on the 

button to set the plan scale.

2) With the "Set Scale"  tool selected, click on the layout to draw a line between two points between which you know the real-world distance in meters or feet.



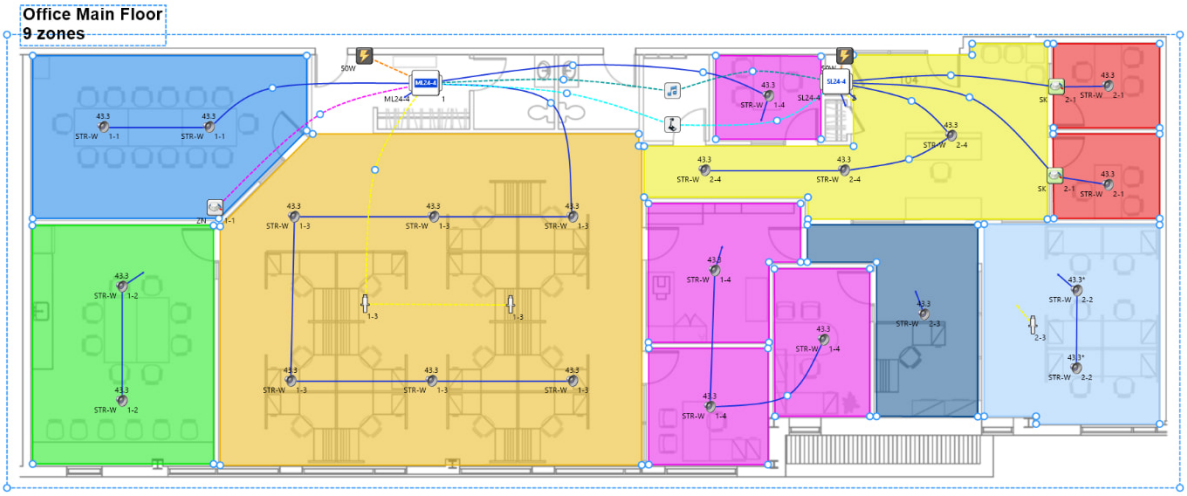
3) Enter the real-world distance between the two points in meters or feet.



3.15 Move Objects

4) Click on the  button to select the “Move” tool;

The “Move” tool activation will display the nodes and vertices that can be moved.



5) With the “Move”  tool selected, click and drag an object to change its location.

Note: Holding the “ctrl” key while dragging an object will force an orthogonal displacement.

Note: Many objects can be moved at once by selecting them first and then use the keyboard arrows while holding the “ctrl” key pressed. One can increase the displacement by holding the “shift” key as well.

3.16 Erase Objects

1) Click on the  button to select the “Erase” tool;

2) With the “Erase”  tool selected, click an object to erase it.

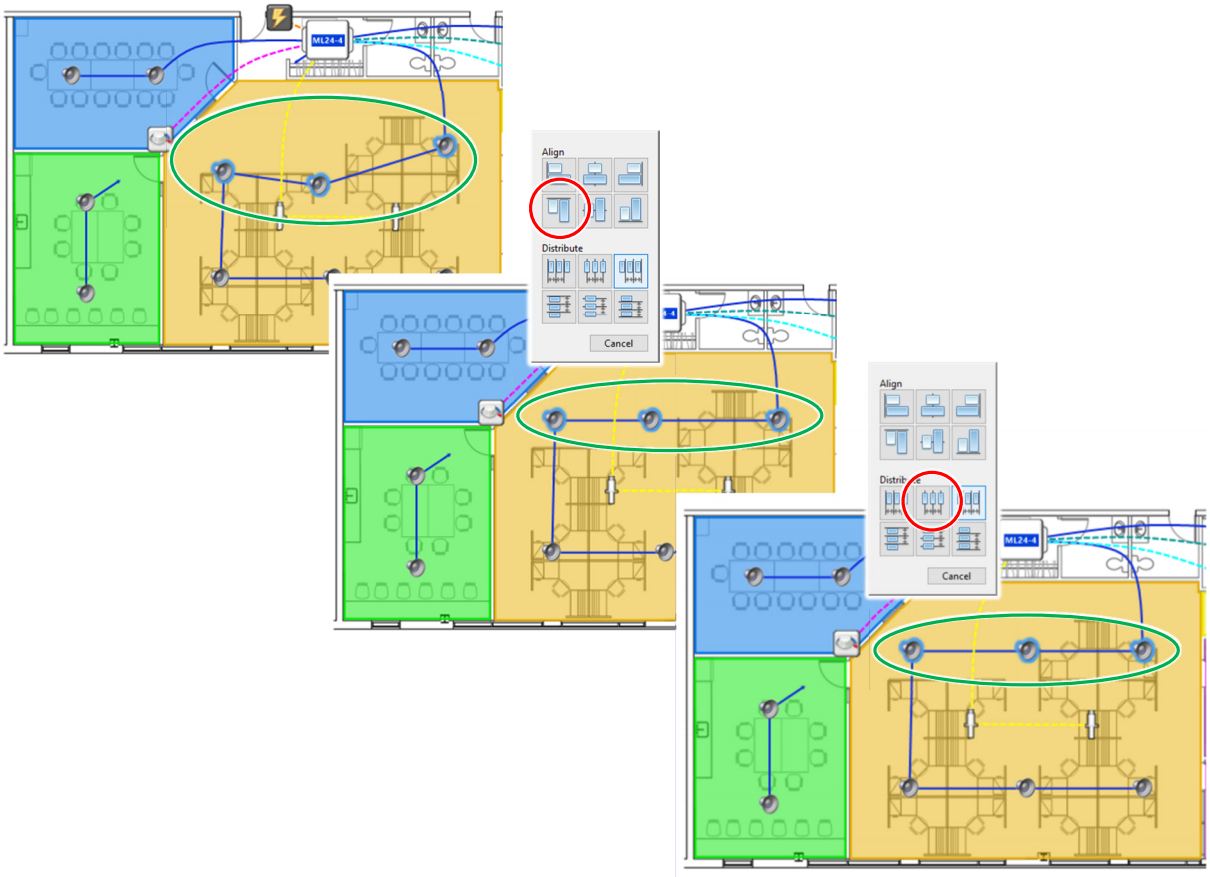
Note: Many objects can be erased at once by selecting them first and then hit the “del” key on the keyboard.

3.17 Align and Distribute Objects

It's often useful to align and distribute objects evenly on the layout, especially when covering a large area with speakers.

1) Select the objects on the layout.
2) Click on the 

button to show the align palette.
3) Click on the desired alignment/distribute function.

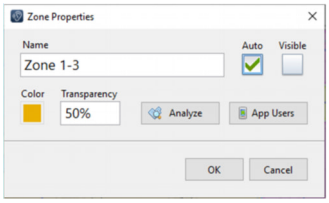


3.18 Analyze Zone Coverage

A zone can be analyzed for appropriate sound masking coverage. The coverage quality is defined by the distance from each speaker to the other and by the zone acoustical environment. For example, surface speakers must be closer to each other than plenum speakers to avoid getting noticeable "hot-spots".

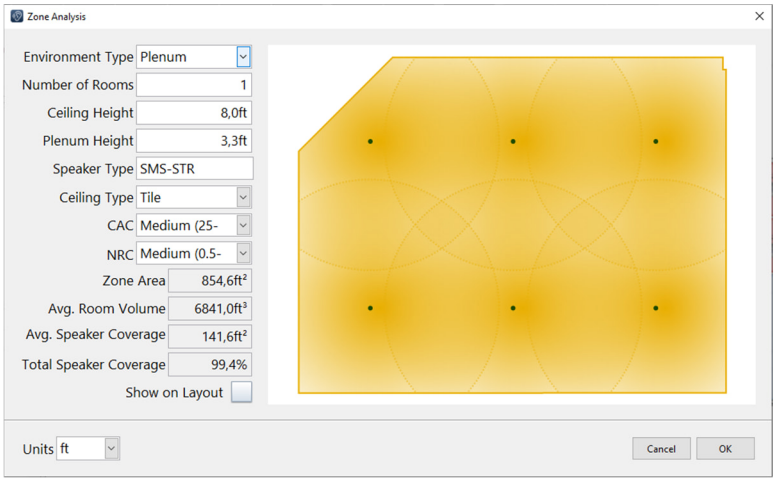
1) Select a zone on the layout and lick on the 

button to open the Zone Properties interface.



2) Click on the 

button to access the Zone Analysis interface.

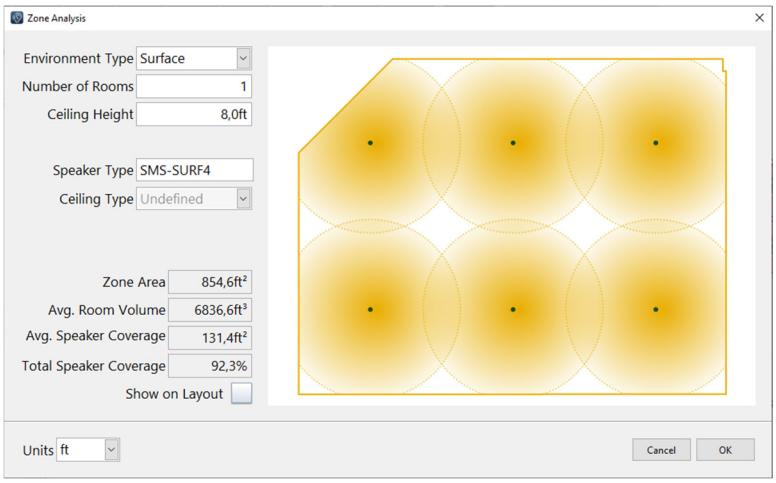


The top-left controls allow defining the acoustical environment and the bottom-left indicators show the result of the analysis. The image on the right shows the coverage of each loudspeaker.

The "Total Speaker Coverage" should be 100% of the zone area. If the "Speaker Coverage" is less than 100%, the zone image will show white areas meaning insufficient coverage. When this occurs, it's recommended to increase the speaker density over the zone surface.

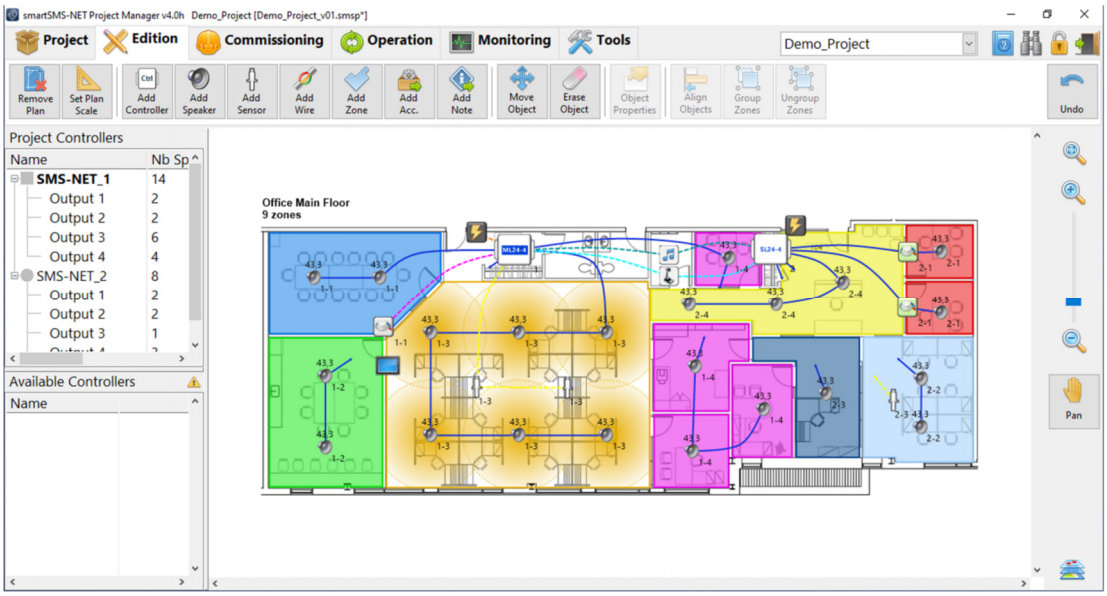
The "Average Speaker Coverage" indicates the average area covered by each loudspeaker.

The above example shows an appropriate coverage. However, the same spacing may be insufficient in other situations such as when surface speakers must be used:



In the above example with insufficient coverage, it's recommended to increase the speaker density to cover the zone appropriately.

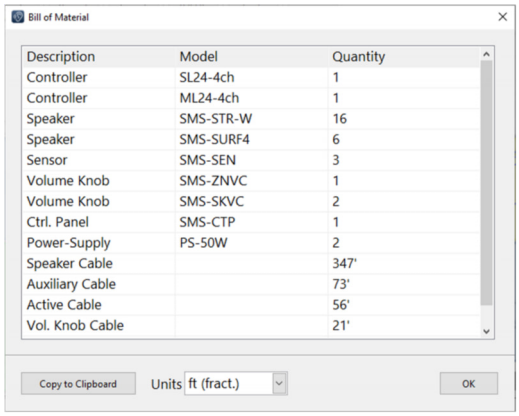
To help design, you can show the coverage of the selected zone on the layout by clicking the "Show on Layout" checkbox.



3.19 List System Components

Once the layout is finished, the list of components ("Bill of Material", or "BOM") can be displayed. Click on the 

button from the Project toolbar to access the Bill of Material:



Note: Wire quantity is a rough estimate based on the layout scale and layout wire length. A more conservative estimate of the needed cable length would be to double this quantity.

3.20 Export Layout Image

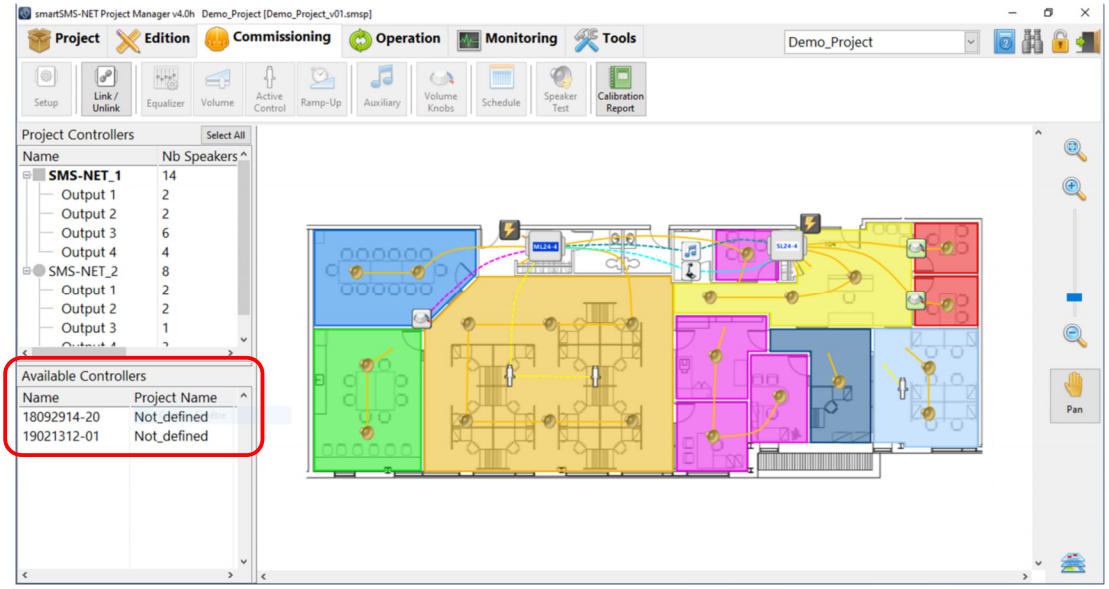
The layout image can be exported using the 

button from the Project toolbar. This function exports the image as a *.png file which can be used in a Word document or sent in an email.

4 Link Controllers to the Project

Subsequent to project edition and before commissioning the system, it is necessary to link physical controllers to their virtual alias in the software. In order to do so, follow these steps:

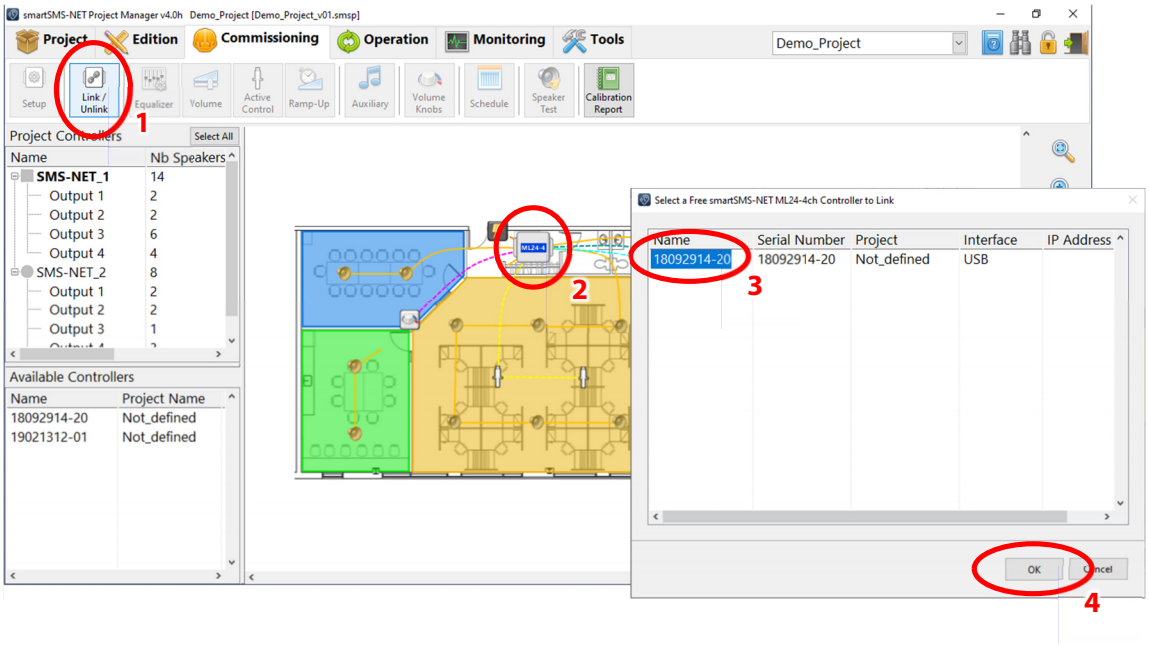
1) Connect the controller(s) to the computer using a USB cable, Wi-Fi or Ethernet. The connected controllers should appear in the "Available Controllers" list on the lower left corner of the main interface.



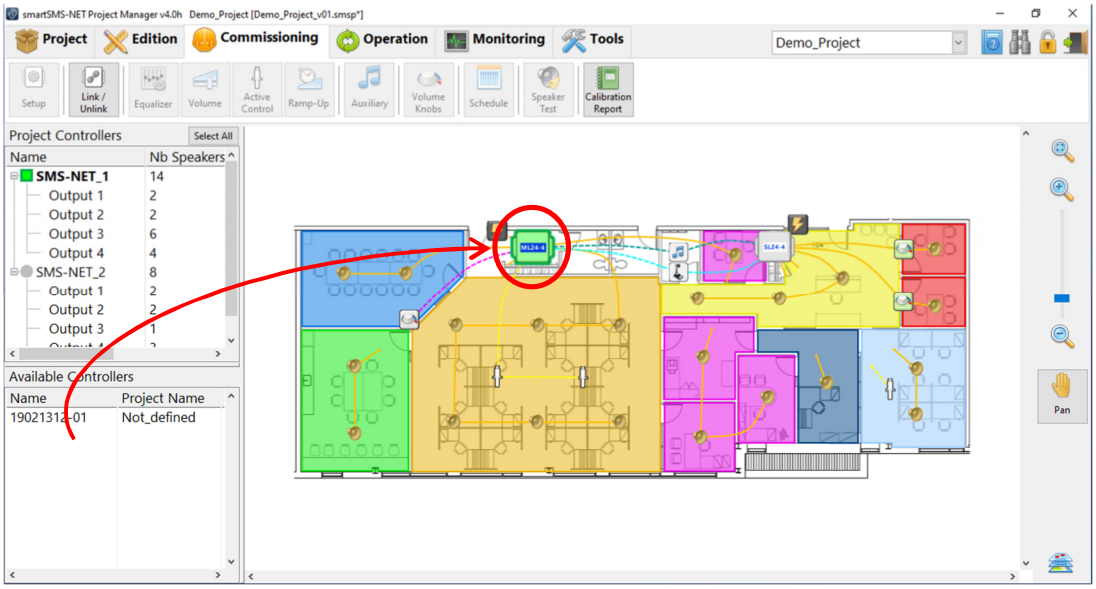
2) Click on the  button to select the "Link" tool.

3) With the "Link"  tool selected, click on a controller on the layout to identify the target controller. This will display a list of detected and available controllers that match the model of the controller on the layout.
   - The first controller to be linked must be the Master controller.
   - The controller model must match the model of the layout controller in order to be linked. In other words, ML24 types can only be linked to a ML24 layout alias, SL24 with SL24, etc.

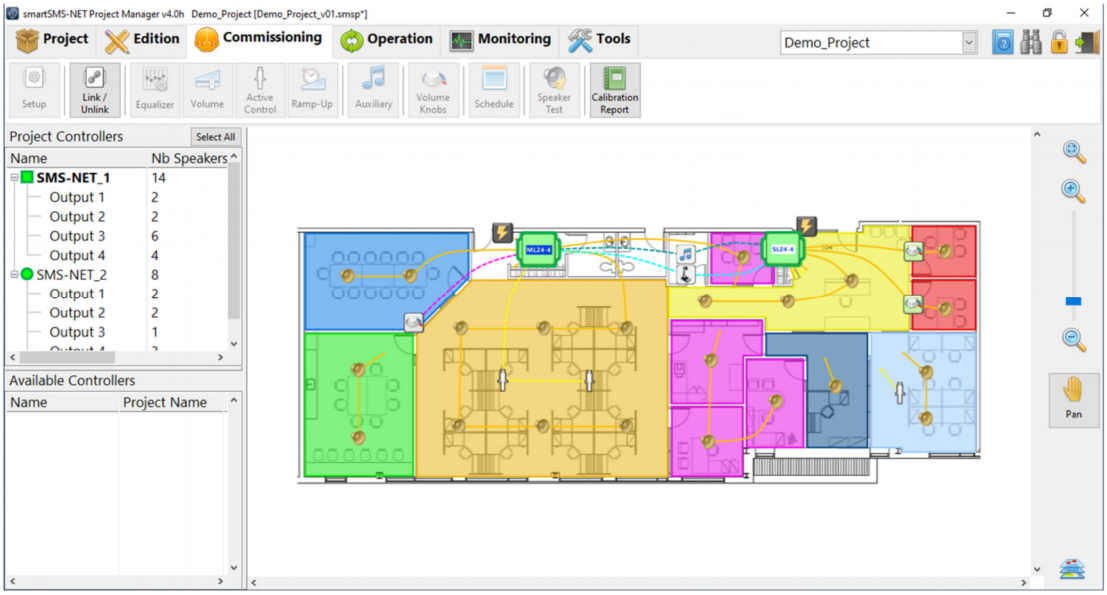
4) Select the available controller from the list and click "OK". This operation will link the physical controller to its alias on the layout.



Following this process, the controller should be linked and synchronized with the project and its icon should turn green indicating that the controller is synchronized and updated. Note that the selected controller is not visible anymore in the "Available Controllers" list because it's now linked to the current project.



Repeat the process until all the controllers are linked:



Once a controller is linked to the project, any change of parameter made to the virtual controller in the software will be synchronized to the physical controller.

5 Communicate with the Controllers

Once the system components are installed on site, a communication network needs to be implemented for the Project Manager software to communicate with the smartSMS-NET controllers. This communication network can be temporary for simple system commissioning or permanent for system requiring an end-user control panel.

The smartSMS-NET controllers can be connected to the Project Manager software using one of the available communication interfaces:

- **USB**
- Local Area Network (LAN) using **Wi-Fi** (wireless) or **Ethernet** (wired)

All these communication interfaces can be used transparently on the same project meaning that smartSMS-NET controllers can be connected using USB, Wi-Fi or Ethernet without limitation.

Note that communication is required to change system parameters but is not required for normal operation unless an end-user control panel or system monitoring is required.

5.1 Communicate using USB

The smartSMS-NET controllers can be connected using the USB port. Many controllers can be connected at the same time using available ports on the computer or through a USB hub.

Although this structure is very easy to implement, USB communication is not recommended for permanent communication for which Wi-Fi or wired networks are recommended.

5.2 Communicate using Local Area Network (LAN)

The smartSMS-NET controllers are all equipped with a networking interface allowing them access to a Local Area Network (LAN). They offer an Ethernet (cabled) interface and a Wi-Fi interface (wireless).

It is required to use a router to establish the network through which the smartSMS-NET controllers and the computer (with the Project Manager software) will communicate. The link between the router and each device can be either wireless or wired depending on the available interface on the router, computer and controllers.

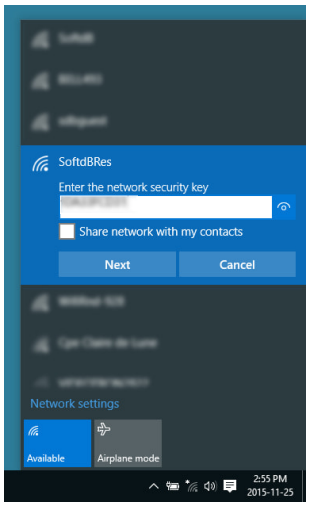
5.2.1 Create a Basic Network

The basic wireless network setup is mainly used to set-up the system parameters during commissioning (calibrate masking equalizers, etc.)

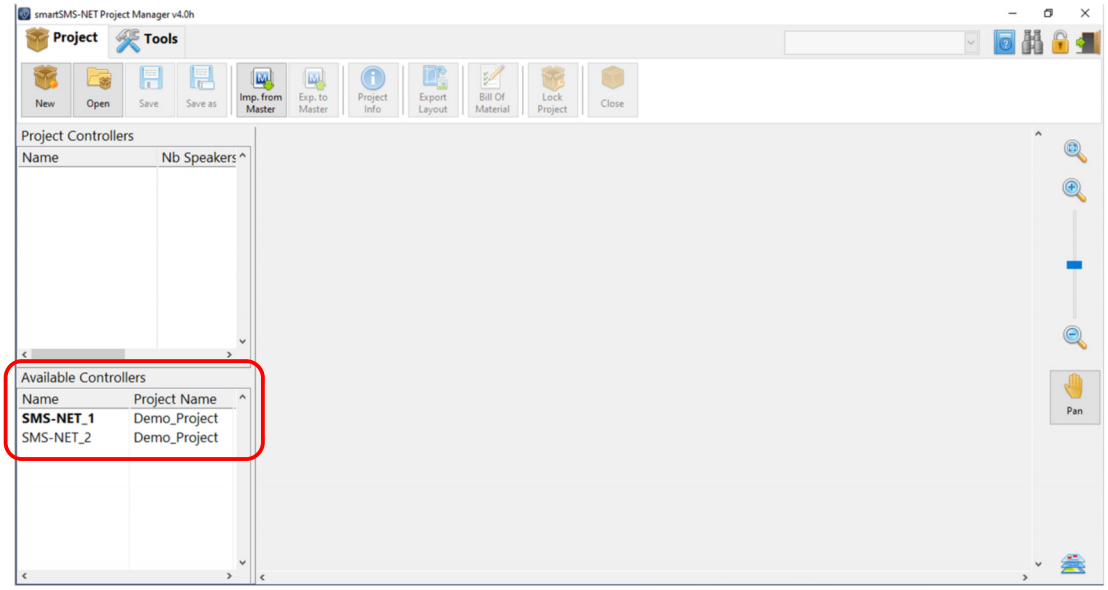
- Step 1: Connect the **pre-configured wireless router** to a power outlet to establish the wireless network. Make sure the wireless network can be reached by the smartSMS-NET controllers as well as the computer. The coverage distance of the Wi-Fi network is about 50 m (165') but it can be affected by barriers such as walls and floor/ceiling assemblies.

Note: For a more complex network configuration, refer to Appendix C smartSMS-NET System Networking, p. 87.

- Step 2: Connect the computer to the **SoftdBRes** wireless network:



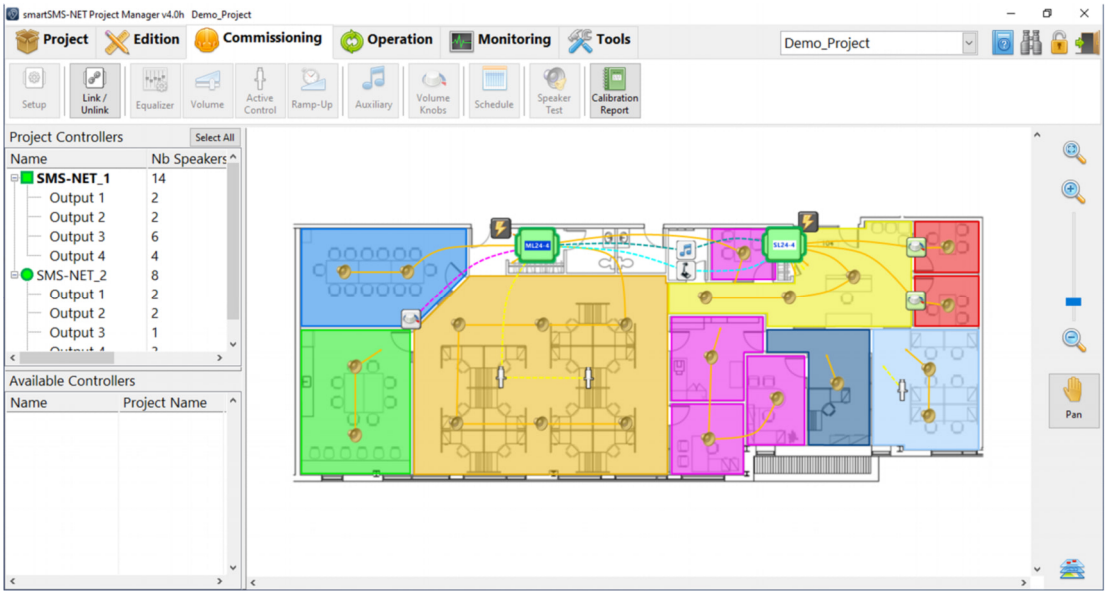
- Step 3: Open the Project Manager software and wait for smartSMS-NET controllers to be detected. It can take a few seconds until the smartSMS-NET controllers show up in the software.



6 Set-up System Parameters

Once the system components are installed on-site and wired, the system parameters needs to be set-up.

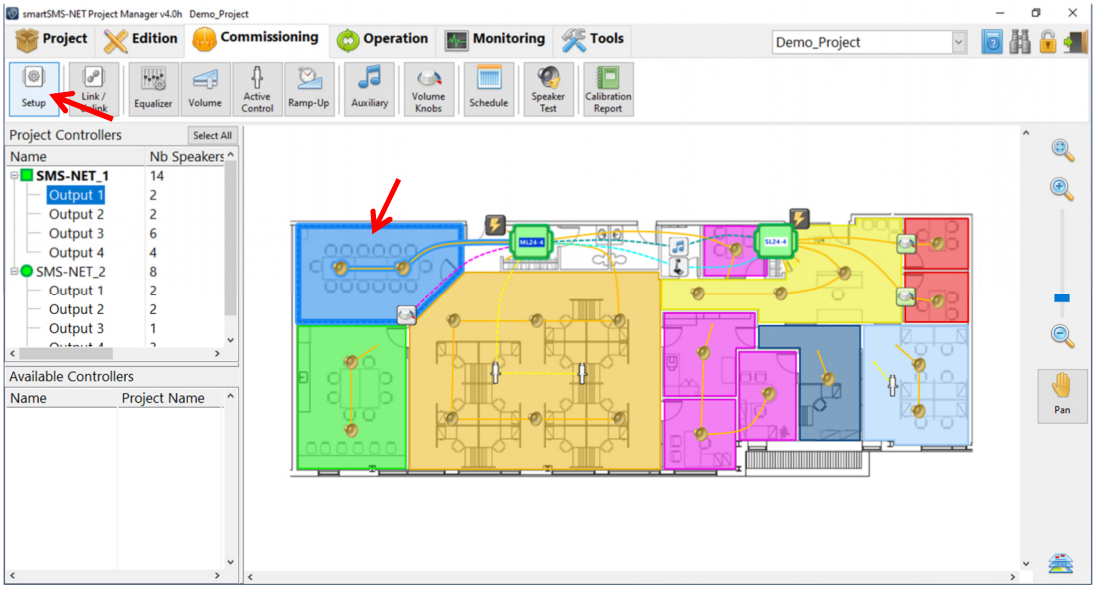
Using the Project Manager software, go to the commissioning toolbar to enter the commissioning mode.



Note: Most of the system parameters can be set before the system is installed and even before the controllers are linked to the project. The setup parameters are contained in the project file and can be set on the virtual controller before it is linked. When the virtual controller is linked to a physical controller, the parameters set for the virtual controller are uploaded and synchronised to the physical device.

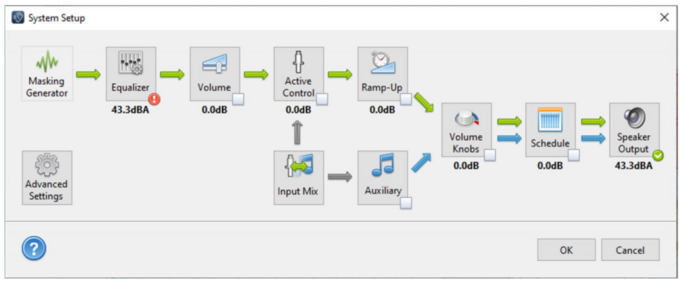
6.1 Enter System Setup

Select the zone or the output channel to set-up. Multiple zones and multiple output channels can be selected at the same time to set-up the parameters of the selected items simultaneously.

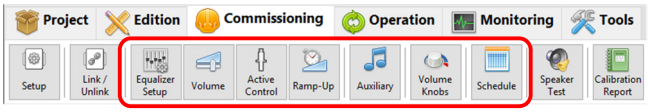


With a zone or a speaker channel selected, click on the 

button to enter the setup interface.



The setup interface makes all parameters available at once. Note that some of these parameters are also accessible directly from the commissioning toolbar as quick-access functions:



6.2 Adjust the Sound Masking Equalizer

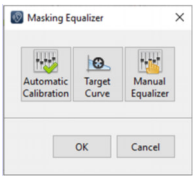
The sound masking equalizer defines the spectrum shape of the masking sound. This equalizer must be adapted to the acoustical environment to produce an appropriate masking sound. There are two ways to adjust the sound masking equalizer:

The first one is to calibrate the equalizer using a test microphone. This method is recommended as it provides very precise results. Refer to section 8.2.1 Calibrate the Sound Masking Equalizer, p. 38 for more information.

The second one it to manually adjust the equalizer by simply adjusting each equalizer band individually, or by selecting a predefined equalizer. This method is less precise than equalizer calibration and is generally used when it's not possible to perform an automatic calibration. Refer to section 8.2.2 Manually Adjust the Sound Masking Equalizer, p. 45 for more information.

Click on the 

button from the Setup Interface to enter the sound masking equalizer setup and access these functions:



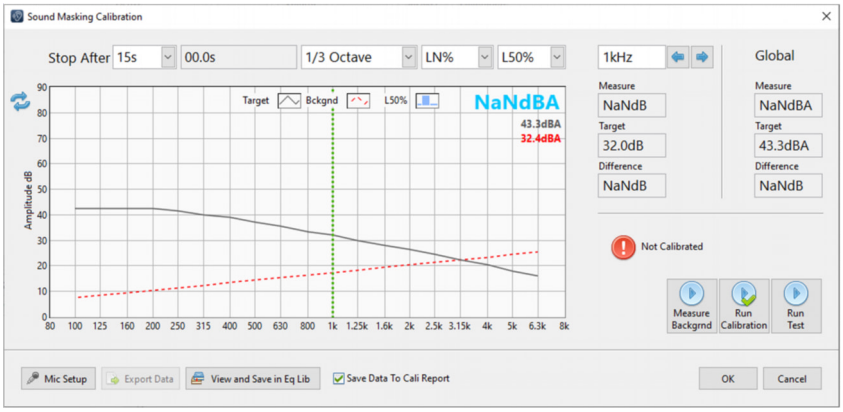
6.2.1 Calibrate the Sound Masking Equalizer

The sound masking equalizer can be calibrated to fit a target sound spectrum. It is highly recommended to calibrate the sound masking equalizer to increase comfort and effectiveness of the sound masking system. For more information on the target spectrum, refer to section 8.2.3 Select the Sound Masking Target Spectrum, p. 46.

To calibrate the sound masking you need to have a calibration microphone. For more information on the calibration microphone, refer to Appendix J, Set-Up the Calibration Microphone, p. 108.

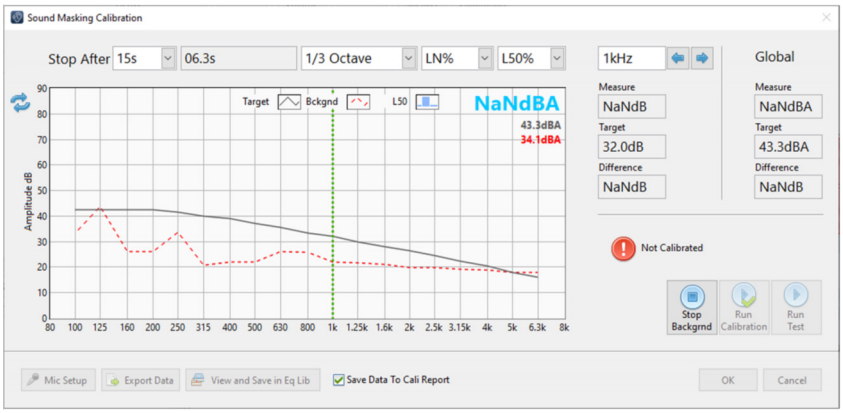
1) Click on the 

button from the Sound Masking Equalizer Setup to enter the sound masking equalizer calibration interface.



2) Click on the 

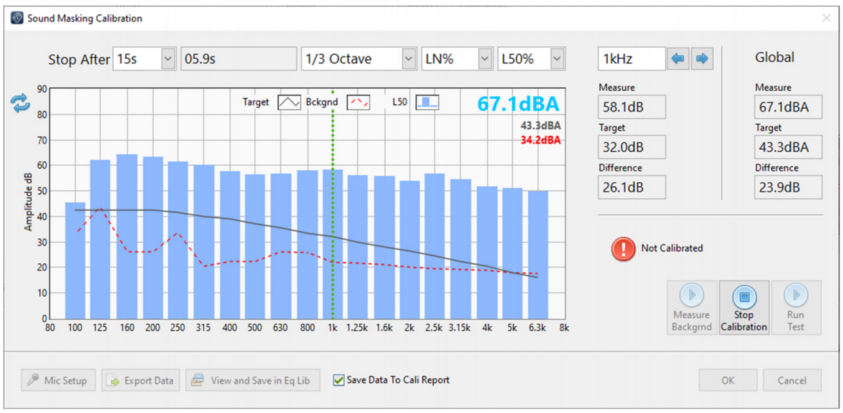
button to measure the background noise of the room.
   a) The selected output channel(s) will be muted to record the background noise (the noise level without the sound masking).
   b) While the measurement is running, walk slowly in the room to cover most of the zone and avoid speaking or making noise; this measurement requires a quiet environment.



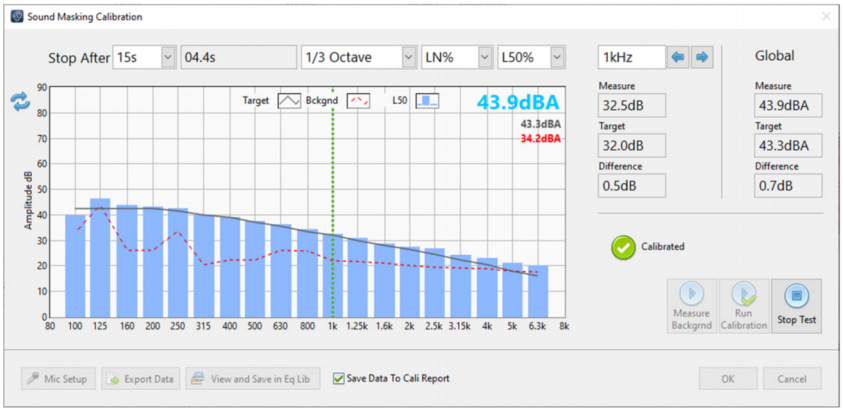
Note: The background noise determines the lowest sound masking level that can be reached. If the background noise is higher than the desired sound masking level, it will not be possible to reach the desired sound masking level.

3) Click on the 

button to start the calibration process.
   a) The calibration process generates a high volume noise on the speakers, and a reference measurement is started to record the reference sound levels.
   b) While the measurement is running, walk slowly in the room to cover most of the zone.

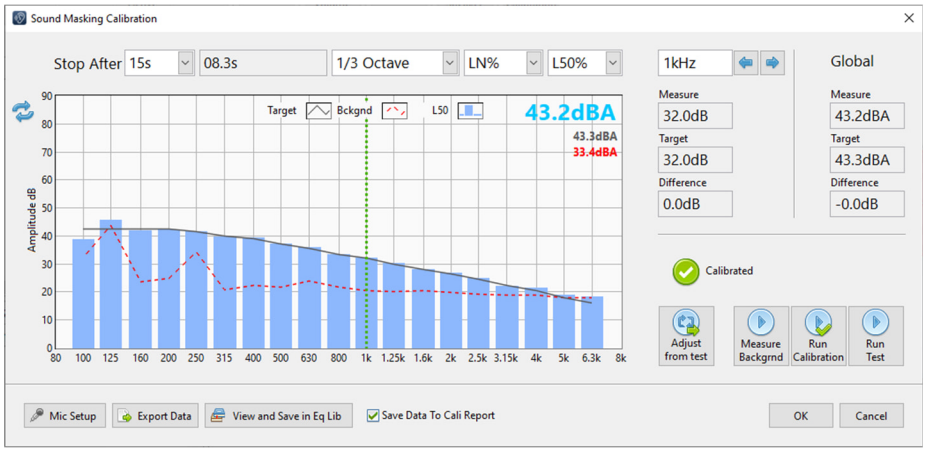


   c) The equalizer calibration is computed and applied on the equalizer, and a test measurement is started to check the calibrated sound level.
   d) While the measurement is running, walk slowly in the room to cover most of the zone and avoid speaking or making noise; this measurement requires a quiet environment.



4) You can click on the  button to adjust the equalizer calibration more finely.

At this point, the equalizer should be calibrated and the calibration status icon should turn to  . The resulting masking sound spectrum should be very close to the target spectrum.

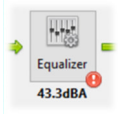


Note: There can be situations where it is hard to reach the target spectrum. This may be caused by the background noise being too high, like at 125Hz in the above example.

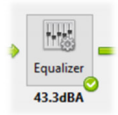
If some frequency bands are not matching the target spectrum to your liking, refer to section 8.2.2 Manually Adjust the Sound Masking Equalizer, p. 45.

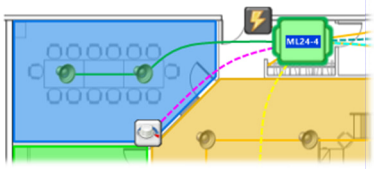
After this process, the bullet next to the Equalizer Setup button will turn to a green thick mark meaning the sound masking equalizer was calibrated. Also, the calibrated speaker lines will be drawn in green indicating a calibrated speaker line.

Before calibration



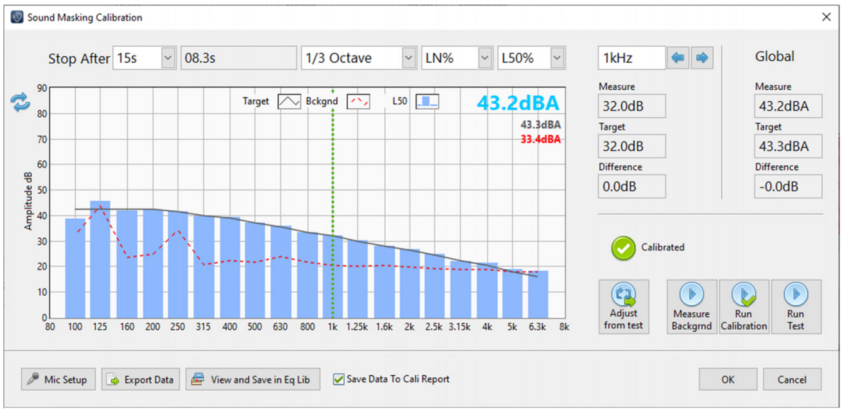
After calibration





Calibration Report

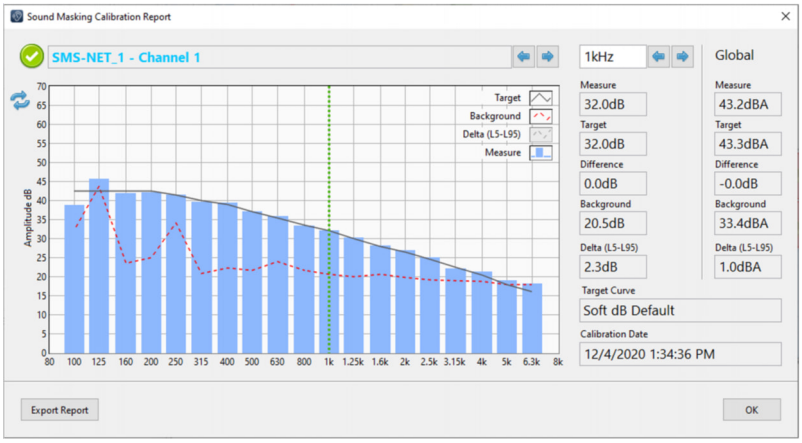
During the calibration process, the final sound measurement is automatically saved in the Calibration Report.



Note: If you don't want to save the measurement to the calibration report and overwrite the previous measurement, uncheck the "Save Data to Cali Report" checkbox before making the measurement.

To view the calibration report, click on the 

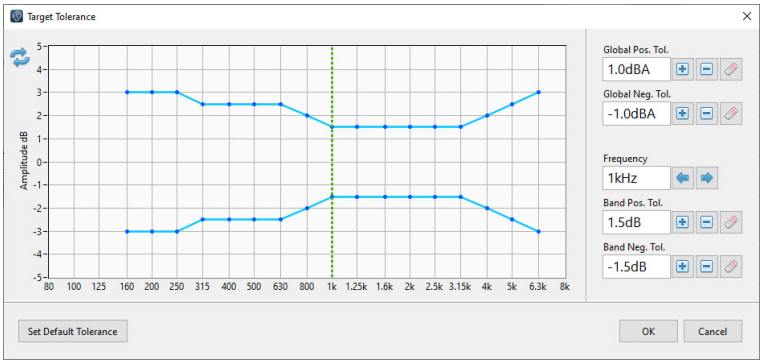
button from the Commissioning toolbar. This interface allows viewing the calibration data for every output channel from the project.



Target Spectrum Tolerance

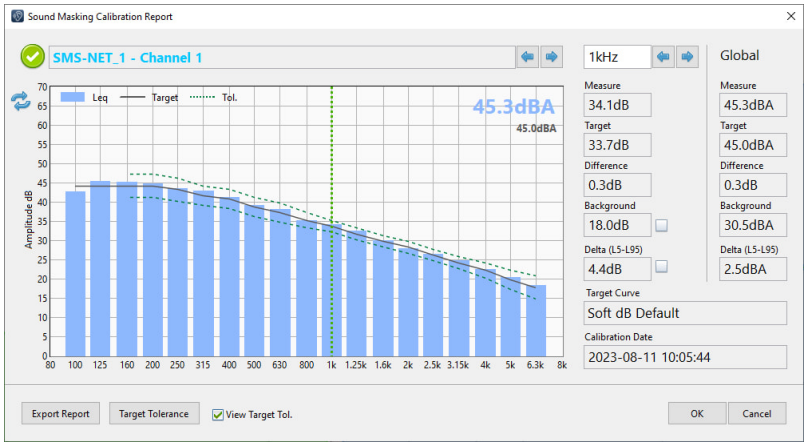
It's not uncommon to see target tolerances in project specifications. For instance, the specifications will often specify a target spectrum and sometimes a tolerance on the said spectrum, as an example "±1 dB for every 1/3 octave band between 200 Hz and 8kHz".

One can define the target spectrum tolerance to be used for the project by clicking on the "Target Tolerance" button from the "Calibration Report" user interface.



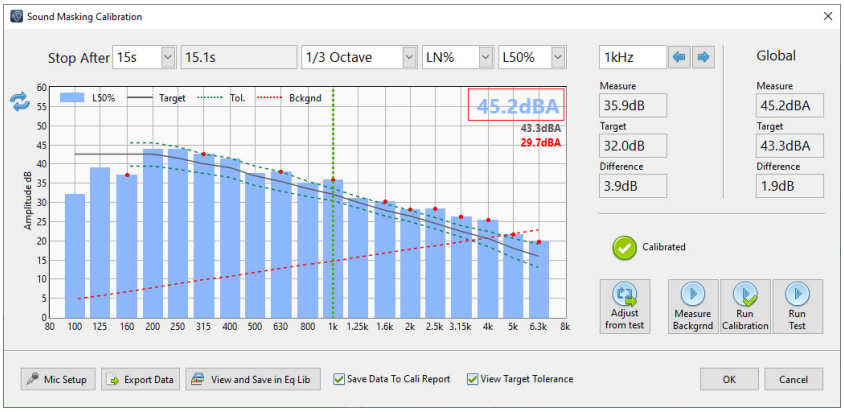
This interface allows defining the target tolerance for every 1/3 octave band and also for the global level. One can discard the tolerance for specific 1/3 octave bands by clicking on the "erase" button, for instance when the specified tolerance doesn't cover the complete frequency range of the target curve. The same can be done for the global level if the tolerance on global level is not relevant for the project.

Once defined, this target spectrum tolerance can be displayed in the calibration report by checking the "View Target Tolerance" checkbox. Note that this checkbox also enables the target tolerance to be exported when clicking on "Export Report".



If any frequency band exceeds the target spectrum tolerance, a red dot will be shown on the band indicating the exceedance.

The target spectrum tolerance can also be displayed during the calibration process by clicking on the “View Target Tolerance” checkbox in the “Sound Masking Calibration” user interface.

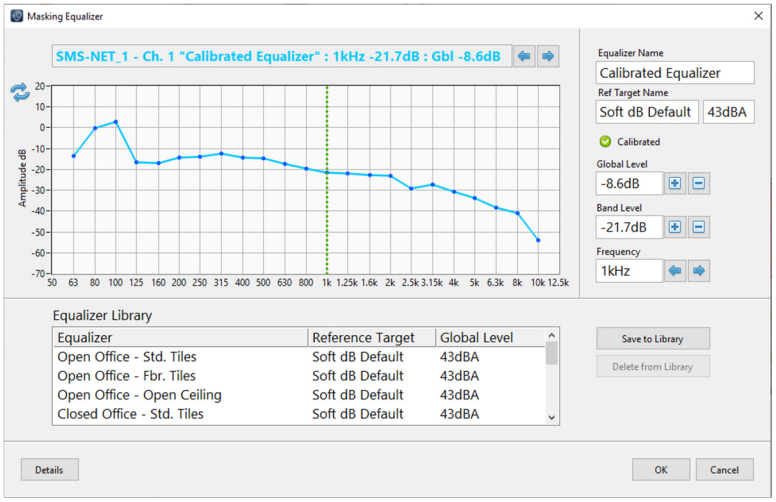


6.2.2 Manually Adjust the Sound Masking Equalizer

Even though the automatic calibration is strongly recommended to adjust the sound masking equalizer, there can be situations where it's not possible to do so. In such cases, the equalizer can be manually adjusted and/or selected from a library of predefined equalizers.

Click on the 

button to open the "Masking Equalizer" interface.



The top part of the interface shows the current equalizer where each individual band can be adjusted. In addition it displays the associated target spectrum and the "calibrated" status. In the example above, the interface presents the equalizer resulting from an automatic calibration.

The bottom part of the interface shows a library of predefined equalizers. Simply click on an entry to apply the wanted equalizer. This library can also be used to store user-defined equalizers to be recalled later. The equalizer library contains the following equalizers:

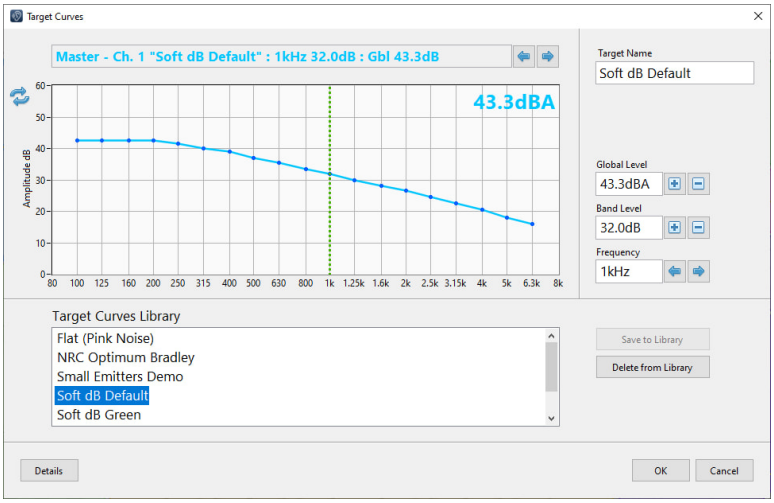
- Closed Office – Std. Tiles
- Closed Office – Fbr. Tiles
- Closed Office – Open Ceiling
- Open Office – Std. Tiles
- Open Office – Fbr. Tiles
- Open Office – Open Ceiling
- SURF Speakers (43 dBA)
- High Open Ceiling
- FLAT Speaker – Open Ceiling
- FLAT Speaker – Underfloor
- HDN Speaker – Drywall
- HDN Speaker – Std. Tiles

6.2.3 Select the Sound Masking Target Spectrum

The sound masking target curve is a specific sound spectrum used in the calibration process as a reference. The equalizer is adjusted so the acoustic output of the sound masking system matches the target spectrum.

Click on the 

button to open the "Target Curves" interface.



The target curve library contains the following spectra:

- "**Soft dB Default**" is the recommended Soft dB sound masking spectrum for most applications.
- "**Soft dB Mellow**" is a deeper sound masking spectrum.
- "Soft dB Green" is a midrange sound masking spectrum with less bass and treble. This target spectrum is recommended for large rooms with high ceilings.
- "Soft dB Underfloor" is a sound masking spectrum optimized for underfloor applications. This spectrum is similar to Soft dB default, but with a lower bass content.
- "NRC Optimum Bradley" is sometime seen in system specifications and is an overall pleasant sound masking spectrum.
- "Flat (Pink Noise)" generates a true pink noise and is to be used only for demonstration purposes or as a starting point to define a custom target spectrum.
- "Small emitters demo" is to be used only to demonstrate how small emitters can degrade comfort with it's high treble sound. Soft dB doesn't recommend using this target spectrum on a project.

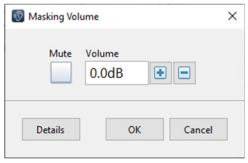
*Note: The recommended target curve to use is either **Soft dB Default** or **Soft dB Mellow**. The later has more bass and less treble than Soft dB Default. Custom curves can also be added to the library.*

6.3 Adjust the Sound Masking Volume

Once the sound masking spectrum is calibrated according to a specific target curve, there shouldn't be a need to change the volume. However, if it's needed you can change the sound masking in the sound masking volume interface:

Click on the 

button from the Setup Interface to open the "Masking Volume" interface.

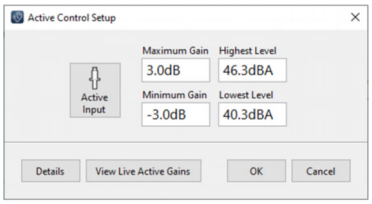


6.4 Set-Up the Sound Masking Active Volume Control

The active volume control allows increasing or lowering the sound masking volume automatically based on the noise activity measured by active control sensors. When noise activity in a zone is higher, the sound masking level will slowly increase and when the sound activity is lower, the sound masking level will slowly decrease. This feature allows to adjust automatically the sound masking at the optimum level.

Click on the 

button to open the "Active Control Setup" interface.



To use the active volume control, enable the active control input on the selected output channels from the layout. Then, enter the high and low limits. The high and low limits set the range in which the active control adjusts the volume. The recommended levels are -3dB to +3dB on the calibrated sound masking level.

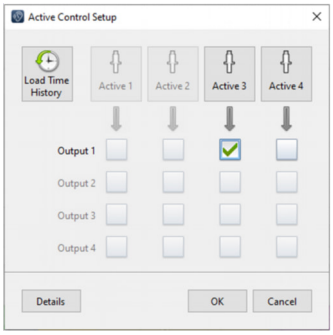
Hence, if the calibrated sound masking level is 43 dBA, the resulting maximum and minimum will be:

- 46 dBA when noise activity is high (noisy)
- 40 dBA when noise activity is low (quiet)

6.4.1 Select the Active Volume Control Sensor Input

To select which active sensor input controls which output channel, click on the 

button to show the active control mixer:



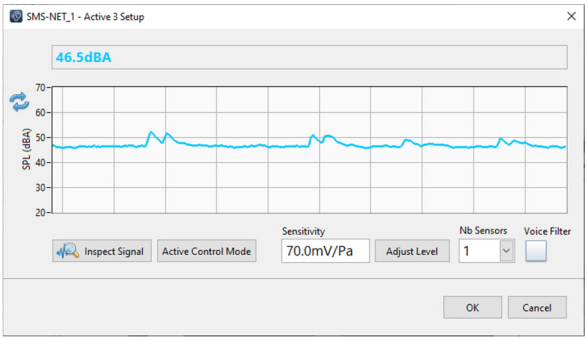
Click on the desired check box to enable an active control input for a specific output channel. Note that only one active input can be used per output but the same active control input can control more than one output channel.

Note: If the buttons and check-boxes for an active control input are disabled and greyed, it means that the input connector is already used as an auxiliary (paging/music) input. Refer to section 8.9, Input Type Selection, p. 65 for more information on selecting the input type for shared inputs.

Adjust the Active Volume Control Sensor Input

Click on the 

button to enter the active volume control sensor input setup:

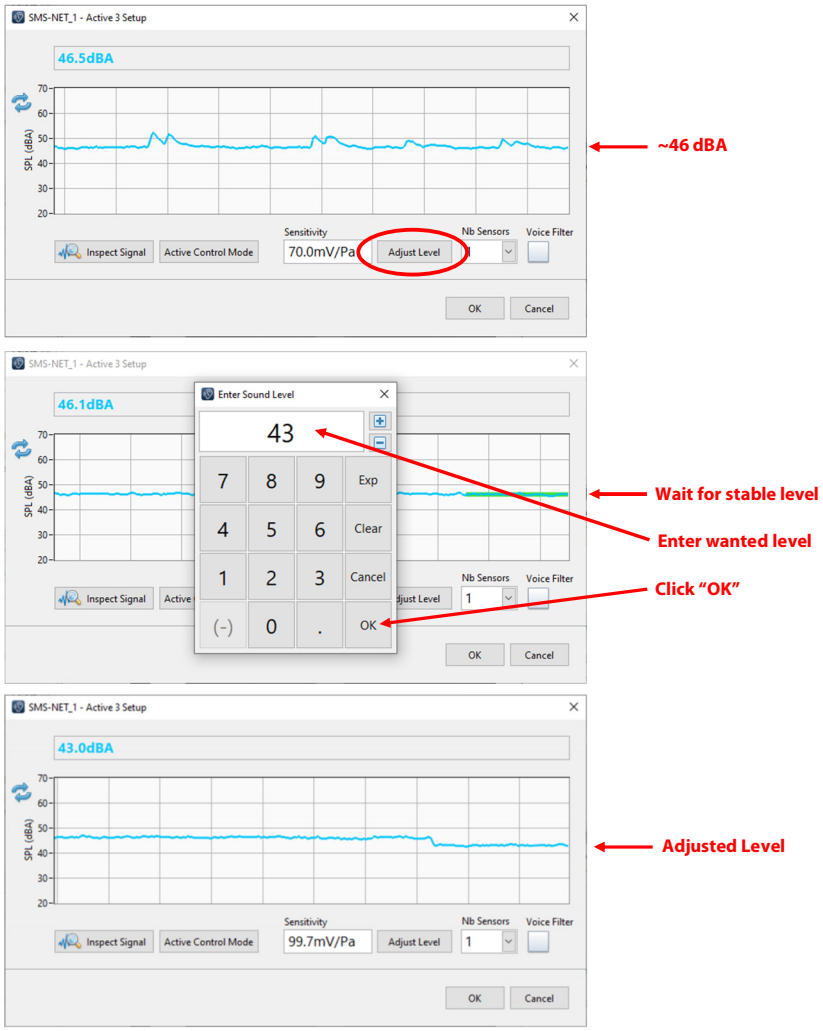


The Active Volume Control Input setup interface displays a time history of the sound pressure level (SPL) measured by the sensor. The sound levels should be between 40 dBA (sound masking level without activity) to 70 dBA (ambient noise with strong activity).

Adjust Input Level

The active control input does not need to be calibrated to work correctly. However, there can be situations where it's needed to adjust the displayed level in order to give better results, especially when active control historic files are to be downloaded.

Enter the number of sensors in the Nb Sensors 1 drop-down menu and click on the Adjust Level button to adjust the displayed level to the ambient sound level.



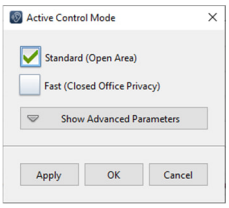
Note: It is recommended to perform this operation with sound masking ON but without any other ambient noise. In this situation, the ambient sound level should be equal to the target curve level. Hence, the level to enter upon level adjustment should be the target curve level.

Note: In some environments with noise (acoustical or electrical), a "Voice Filter" can be applied on the signal to pick-up frequencies from 200 Hz to 3.5 kHz.

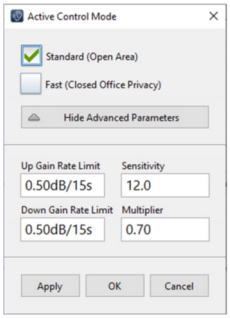
Adjust Active Control Mode

Click on the Active Control Mode button to select from the two available modes:

- **Standard (Open Area)**: This mode should be used when using active volume control to adjust the sound masking volume as a function of the ambient noise activity in an open area.
- **Fast (Closed Office Privacy)**: This mode should be used when using active volume control to adjust the sound masking volume of an adjacent zone from the noise activity of a closed office. Its purpose is to increase the sound masking around a closed office when people are speaking inside the closed office to increase privacy.



It is recommended to use one of these two modes for active control speed. However, the advanced parameters can be modified should one want to fine tune the active control:



The "Up Gain Rate Limit" and "Down Gain Rate Limit" are the maximum volume increase and decrease per analysis period (15s).

The "Sensitivity" along with the "Multiplier" values is used to determine the behavior of the active controller. Low sensitivity values (8 and less) require louder activities in the room to increase the sound masking volume while high sensitivity values will increase the sound masking volume even for a room with a low activity. When set higher than 1, the multiplier allows reaching the high or low limit of the active gain in a shorter time.

View Active Control Time History

The smartSMS-NET controller records the sound level time history (activity noise and background noise) on its on-board memory. This data can be downloaded later for further analysis and tuning of the active volume control.

Click on the 

button to load the active control time history in the post-processing utility. For more information on this utility, refer to Appendix R Post-Process Active Control History Files, p. 115.

The active control time history can also be downloaded automatically to monitor the sound environment of the office. For more information on this feature, refer to section 9.2 Set-Up Automatic Active Control History, p. 74.

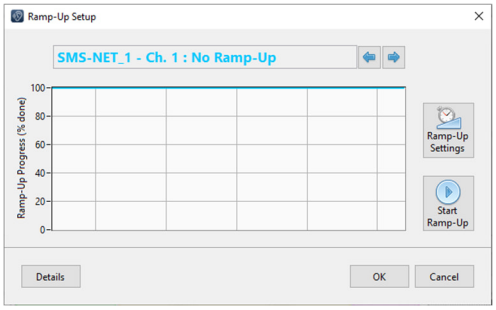
Note: The maximum duration of the time history is 7 days.

6.5 Set-Up the Sound Masking Ramp-Up

The sound masking ramp-up allows slowly increasing the sound masking volume following a system installation. The sound masking advent will be unnoticed if the sound masking volume increases slowly over a period of a few days to a few weeks.

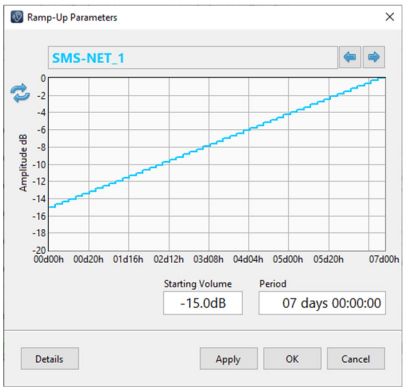
Click on the 

button to open the "Sound Masking Ramp-Up" interface.



To adjust the ramp-up slope, click on the 

button.

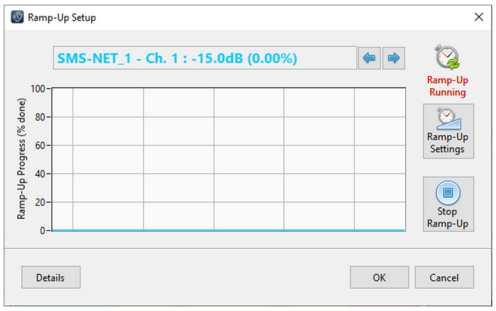


Note: There is one Ramp-Up timer per controller and each output channel can be activated on this single timer.

6.5.1 Start the Sound Masking Volume Ramp-Up

Click on the 

button to start the ramp-up process for the selected output channels.



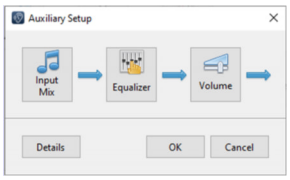
Following the "Start Ramp-Up" command, the sound masking volume goes down and starts to gradually increase over the specified period.

Note: The "Start Ramp-Up" command initiates the ramp-up function on the selected output channels only. Should you want to initiate the ramp-up for the whole project, select all channels on the layout plan and click on the "Start Ramp-Up" button.

6.6 Set-Up Music and Paging (Auxiliary)

Click on the 

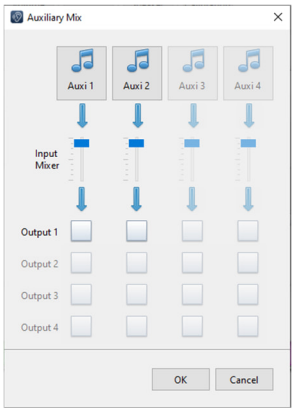
button to open the "Auxiliary Setup" interface.



6.6.1 Select the Auxiliary Inputs

Click on the 

button to select the auxiliary inputs to mix to the selected outputs:



All available auxiliary input can be activated on a given output channel. The most used setup is to use one auxiliary input for paging and another one for music.

It is recommended to use the Auxiliary Input 1 for paging as it can be activated as a triggered channel for important paging announcements. For more information, refer to section Paging Trigger, p. 57 for more information on this feature.

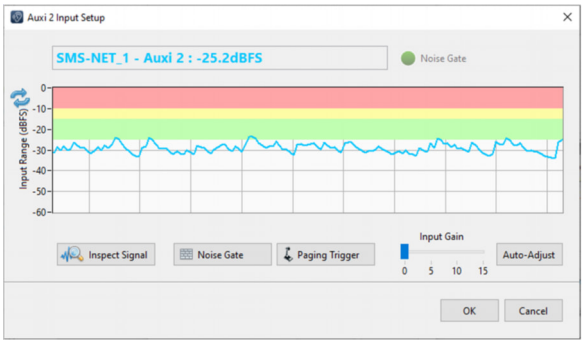
Note: *If the buttons and check-boxes for an auxiliary input are disabled and greyed, it means that the input connector is already used as an active volume control sensor input. Refer to section 8.9, Input Type Selection, p. 65 for more information on selecting the input type for shared inputs.*

Auxiliary Input Gain

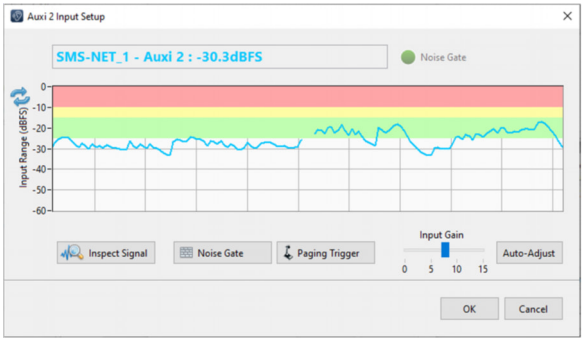
The first thing to do when using the auxiliary inputs is to adjust the input gain. The following steps explain how to adjust the input gain correctly:

1) Make sure the auxiliary input is appropriately connected to an audio source. Refer to controller user guide for more information.
2) Adjust the volume of the audio source at **75%** (if available).
3) Click on the 

button to access the selected auxiliary input.



4) Check the signal historic. The blue line corresponding to the audio signal amplitude should be between -15 and -25 dB (green area).
5) If the signal is not between -15 and -25 dB, click on “Auto-Adjust” to adjust the gain automatically. You can also adjust the gain manually using the “Input Gain” slider.

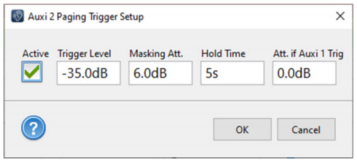


6) Following the gain adjustment, the audio signal should be between -15 and -25 dB (green zone). If the signal is still below this range, the source is too low and you must increase the source volume.

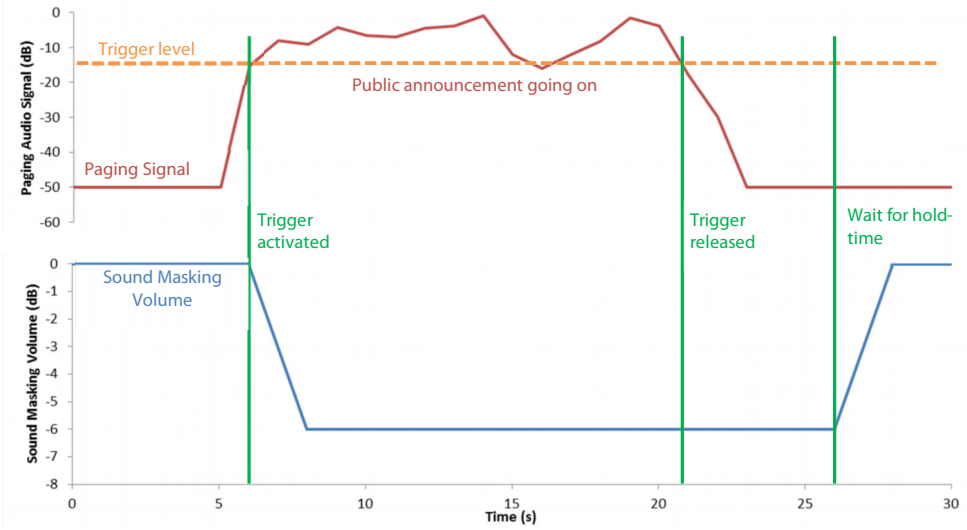
Paging Trigger

The Paging Trigger is only available when the auxiliary input is configured as a paging input. For more information about the input types, refer to section 8.9, Input Type Selection, p. 65.

Click on the Paging Trigger button from the auxiliary input setup to enter the paging trigger setup:



The trigger monitors the audio signal on the auxiliary input and when the audio signal reaches a certain level (meaning that a public announcement is going on), it lowers the sound masking and holds it down until the announcement is over. When the announcement is over, the sound masking volume goes back to normal.



Note: If volume control knobs are installed and set to control the auxiliary input, they are momentarily disabled during the paging to make sure the public announcement is heard.

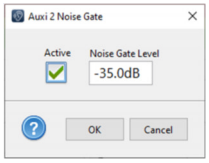
Priority Call Function

The "Priority Call" function allows lowering the other auxiliary inputs volume while there is a paging announcement on auxiliary input 1. Use the "Att. If Auxi 1 Trigg." control to set by how many dB you want the current auxiliary input to be attenuated when Auxiliary input 1 is triggered. This option is available only for auxiliary inputs other than 1.

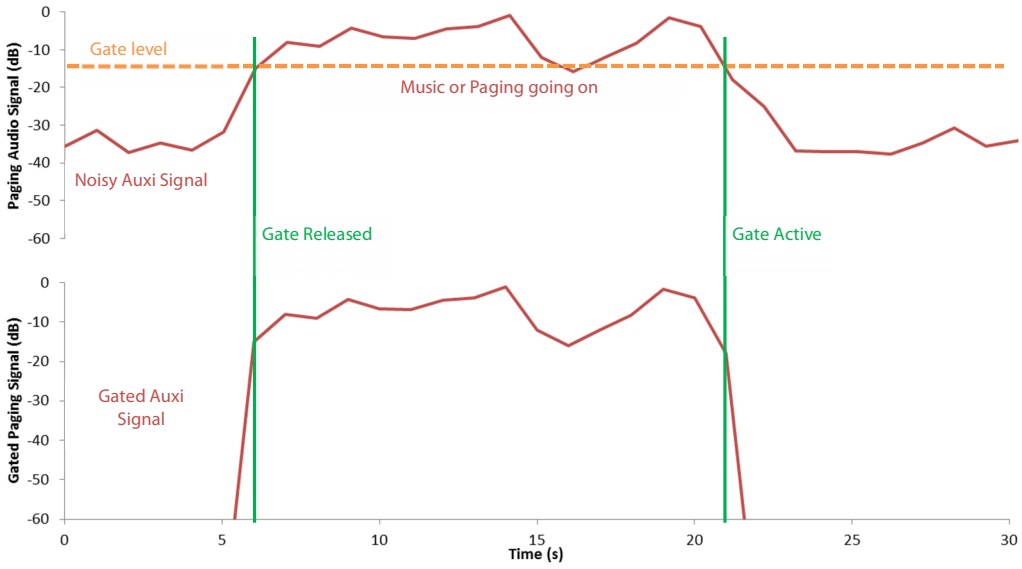
Noise Gate

The noise gate should be used when the auxiliary signal contains a low amplitude noise like a "hum" or a "buzz".

Click on the Noise Gate button from the auxiliary input setup to enter the noise gate setup:

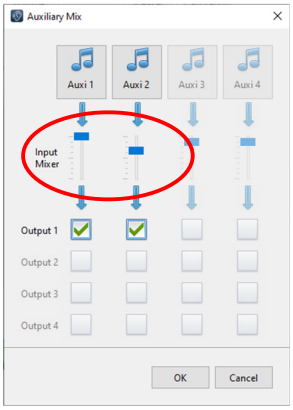


The "Noise Gate" mutes the auxiliary input when the audio signal on this input is lower than the gate level.



6.6.2 Adjust the Auxiliary Input Mixer

Once the input gain has been set for each individual input, the respective volume of each auxiliary input can be set using the mixer volume. The mixer volume is used when using multiple auxiliary inputs for music and paging. One could want to adjust the volume of the music input lower than the volume of the paging. Use the vertical cursors to adjust the volume of each input with respect to the other:

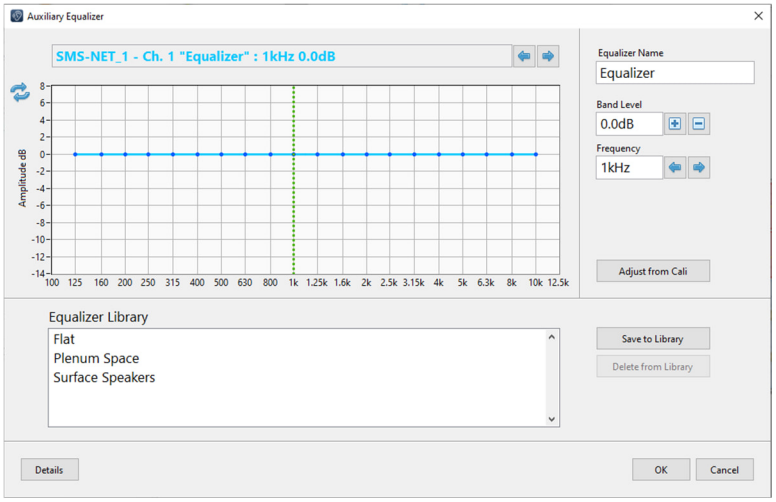


6.6.3 Adjust Auxiliary Output Equalizer

Once the auxiliary inputs are adjusted (gain and mixer volume), they are fed to the output channel on which an equalizer can be set to enhance the audio quality. Each output channel has its own equalizer.

Click on the 

button to open the auxiliary equalizer interface:



The top part of the interface shows the current equalizer where each individual band can be adjusted.

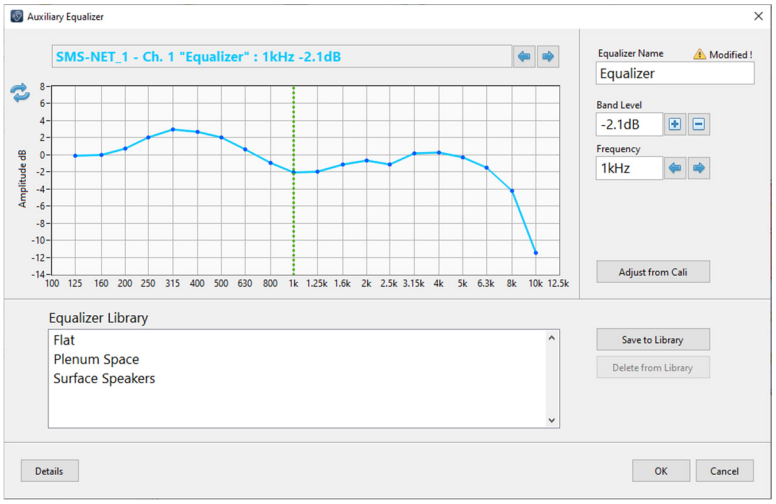
The bottom part of the interface shows a library of predefined equalizers. Simply click on an entry to apply the wanted equalizer. This library can also be used to store user-defined equalizers to be recalled later. The equalizer library contains the following equalizers:

- "Flat" (should be used for open ceiling)
- "Plenum Space" (should be used for speakers in plenum space to compensate for ceiling tile transmission loss and up-firing speaker configuration)
- "Surface Speaker" (should be used for surface loudspeakers)

Using the Sound Masking Calibration to Adjust the Auxiliary Equalizer

The configuration of the loudspeakers as well as the environment in which they are installed can affect the audio sound quality. For example, up-firing speakers located in the plenum space will not sound the same as direct-field surface speakers. Therefore, the auxiliary equalizer should be adjusted to compensate for the effect of the environment on the audio sound.

The sound masking calibration process[1] integrates all the necessary information to automatically adjust the auxiliary equalizer. To automatically adjust the auxiliary equalizer according to the calibration data, simply click on the Adjust from Cali button.



The resulting equalizer will produce a flat frequency response in the environment which enhances the audio quality and makes the music quality more even across zones with different speaker configuration and acoustical environment.

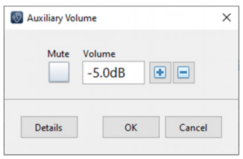
[1] For more information on the sound masking calibration, refer to section 8.2.1 Calibrate the Sound Masking Equalizer, p. 40.

6.6.4 Adjust Auxiliary Output Volume

The auxiliary volume is applies to the music/paging signal for each output channel.

Click on the 

button to control the general auxiliary volume.



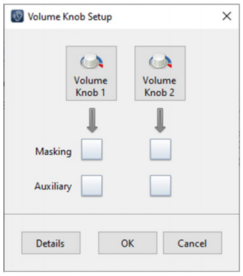
6.7 Set-Up Volume Control Knobs

The smartSMS-NET system provides two volume control knob inputs per controller. This section gives information on the software parameters regarding volume control knobs.

Refer to controller and volume knob user guide for more information on hardware installation and wiring.

Click on the 

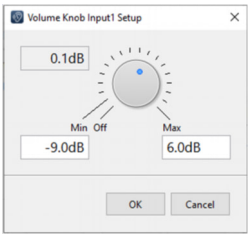
button to open the "Volume Knob Setup" interface.



The volume control knobs can control the volume of sound masking and/or auxiliary (music and paging)

The knob maximum and minimum volumes can be set by clicking on the 

buttons.



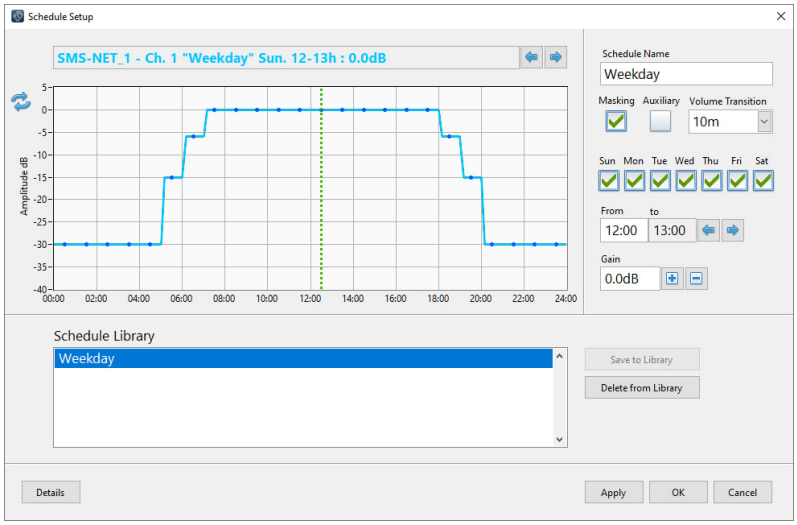
Note: A volume knob can be tested using this interface. Turn the volume knob and the knob image on the software interface should turn at the same position.

6.8 Set-Up the Volume Schedule

The volume schedule allows adjusting the volume of the sound masking and/or the music according to certain periods of the day and certain days of the week.

Click on the 

button to open the "Volume Schedule" interface.



1) Click on the check boxes on the upper-right corner to enable the volume schedule for the selected zone(s), controller(s) or speaker(s). The volume schedule can be set for sound masking and/or music on the given channel.
2) Select the volume transition from the drop-down menu. This volume transition is the time taken by the controller to go from one volume to the next when the hour changes. This transition can be adjusted from 0s (instant volume change) to 1h.
3) Select the days of the week using the check-boxes.
4) Click on the graph to select the period to modify, or select the period on the "From/To" numeric field.
5) Click on the "Gain" numeric field or click on the graph to change the calendar gain of the selected period.
6) Repeat the process for all days of the week.

Note: *You can save and recall schedule templates using the schedule library. This is useful when one wants to apply a specific schedule to multiple controllers, or when a typical schedule is repeatedly used for many projects.*

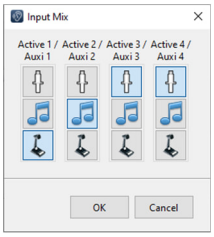
6.9 Input Type Selection

Most controllers offer shared input connectors which can act as an active volume control sensor input or an auxiliary (music/paging) input. There are two ways to define the input type for each input connector:

The first way is by drawing a wire to the controller on the layout. If a sensor is connected, it will define the input as a sensor input and when an auxiliary source is connected, it will define it as an auxiliary input.

The second way is to manually force it in the input mix interface. Click on the 

button from the Setup interface to access the input mix interface:

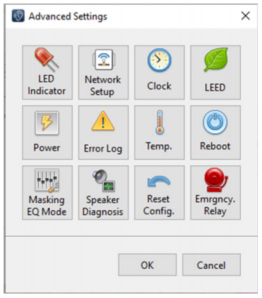


Note: This interface may look different depending on the controller model. Some models offer more inputs than other. Refer to controller specifications for more details.

6.10 Advanced Settings

Click on the 

button to open the "Advanced Settings" interface



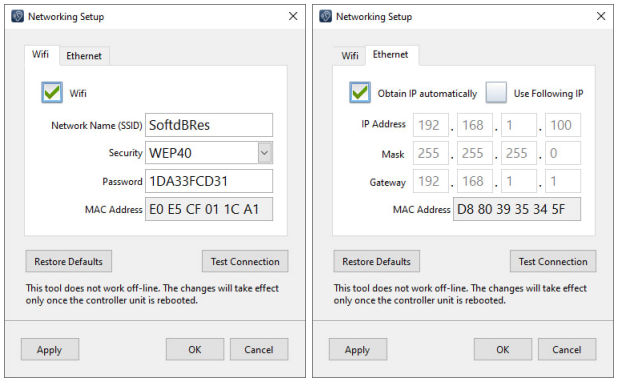
6.10.1 LED Indicator

The lighting mode of the LED indicator on the controller can be changed to the following:

- Always OFF
- Always ON
- Flash when connected

6.10.2 Network Setup

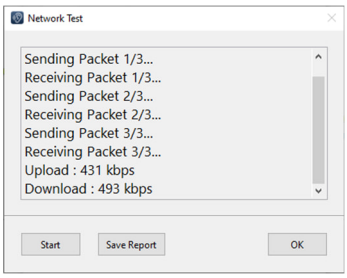
The Network setup allows to set-up the Network name (SSID), Security type, and password used by the controller to connect to the wireless network. You can also set a static IP when using Ethernet. This utility requires the controller to be connected, it can't be used offline.



Testing Network Communication

You can test the network communication of a controller by clicking on the 

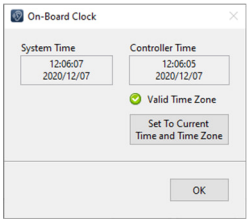
button. The test will send data packets on the network and will evaluate the connection quality. The connection transfer speed should be over 200 kbps (over 400 kbps is excellent). You can also perform this test on USB to troubleshoot a network connection.



6.10.3 On-Board Clock

The controller on-board clock is used for the volume schedule (section 8.8 Set-Up the Volume Schedule, p. 64) and the LEED schedule (section8.10.6, LEED Schedule, p. 68).

This interface allows adjusting the time and time zone used by the controller on-board clock.



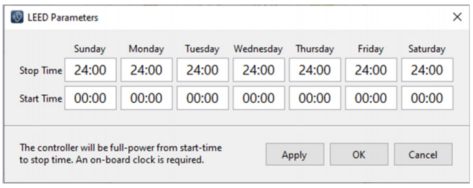
Click on the Set To Current Time and Time Zone button to adjust the time and time zone to the time parameters of the computer.

Note: Make sure the time and time zone used on your computer are valid: they will be used to set the time and time zone on the controller.

Note: The time zone is used to set the dates of daylight saving (summer time) and the time offset to use during this period.

6.10.4 LEED Schedule

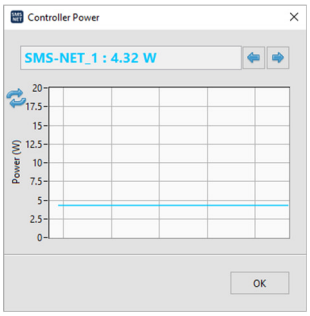
The LEED schedule allows putting the controller in low-power mode on a schedule basis.



If the controller is to be working normally from 6 AM to 10 PM, set the start time to 6:00 and the stop time to 22:00.

6.10.5 Power

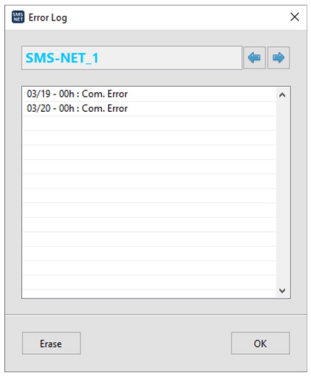
This interface allows viewing the current power drawn from the power-supply. This can be useful when troubleshooting power demanding installations.



Note: Not all controllers are equipped with power monitoring. Refer to controller specifications for more information.

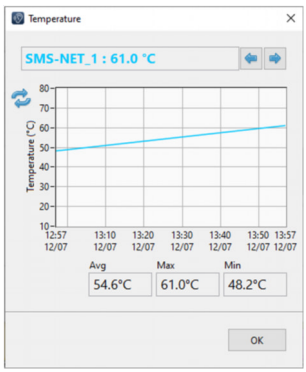
6.10.6 Error Log

This interface allows viewing the error log on a controller. This can be useful when troubleshooting.



6.10.7 Temperature

This interface allows to view the current temperature and also to see the temperature history (24h, 30 days = 720 values).



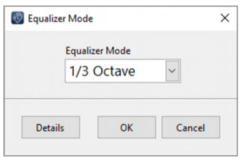
Note: On some older controller models with optional on-board clock may not be equipped with temperature monitoring.

6.10.8 Reboot SMS

This function allows to reboot the selected controller(s).

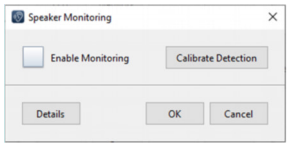
6.10.9 Sound Masking Equalizer Mode

There are 2 sound masking equalizers available, 1/3 octave band and Fine Bands. Both of the equalizers are calibrated at the same time in the calibration process.



6.10.10 Speaker Monitoring

This function allows to set-up the speaker monitoring for the selected output channels. The acoustic speaker monitoring plays a sound on the loudspeakers and this sound is picked-up by the sensors and compared to a reference level.



Click on "Calibrate Detection" to calibrate the reference sound level used for detection.

Note: The speaker monitoring needs active control sensors installed and activated on the selected output channel.

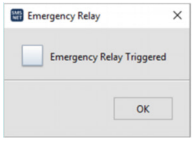
Refer to section 9 Implement System Monitoring, p. 73 for more information on monitoring.

6.10.11 Reset Controller Configuration

This function restores the default configuration on the controller.

6.10.12 Emergency Relay

This interface allows viewing the current state of the Emergency Mute Relay.



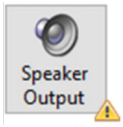
Note: Not all controllers are equipped with an emergency relay. Refer to controller specifications for more information.

6.11 Output Channel Overview

The Setup Interface offers an output channel overview to see all the current setting values for a specific output channel. Additionally, it displays the available “headroom”. The headroom shows how many decibels are still available before the output saturates.

When the headroom is higher than 3 dB, there is no warning. When the headroom is below 3 dB, a warning is displayed meaning the output is close to saturation. When the headroom is 0 or less, a critical warning is displayed meaning that saturation will occur.

No Warning



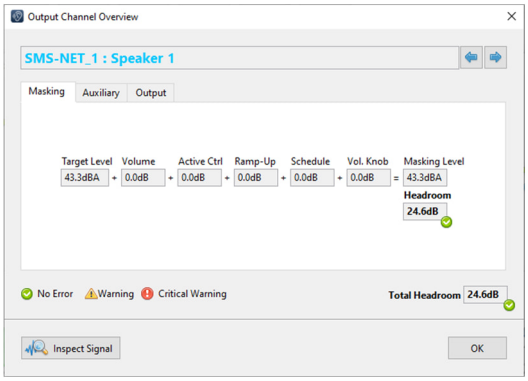
Warning

Critical Warning

- **No Warning**: the output level is OK, no action is required.
- **Warning**: The output level can be close to the maximum limit; review the parameters to identify the cause.
- **Critical Warning**: The output can exceed the maximum limit; review the parameters to identify the cause.

When a warning or a critical warning is detected, click on the 

button to open the speaker output overview interface:



6.12 Color Codes in Commissioning Mode

6.12.1 Controller Icon Color Overlay

The color overlay of the controller indicates the connection status. The controller can be connected using USB or LAN. The table below shows the color overlay code of the controller icon on the layout and its symbol in the project list.

Color Overlay	Linked to the project	Connected (USB or LAN)
Gray	NO	-
Green	YES	YES
Yellow	YES	NO

If the color overlay is gray, it means that the controller is not linked to a physical controller. Refer to section 5, Link Controller, p. 29, for more information on linking controllers.

6.12.2 Controller Icon Color Contour

The color contour of the controller indicates the updated status.

The parameters of the controller can be changed either online or offline. If the controller is online (connected) while making those changes, the controller will be synchronised automatically. However, if the changes are made while the controller is offline (not connected), the changes will not be updated on the physical controller until it is online again. The status of the controller will be "not updated" until that moment.

The table below shows the color contour code of the controller icon on the layout and its symbol in the project list.

Color Contour	Synchronised
Green	YES
Yellow	NO

6.12.3 Speaker Line Color

In commissioning mode, the speaker lines are colored to indicate their calibration status. The calibration status refers to the sound masking equalizer calibration status. Refer to section 6.2.1 Calibrate the Sound Masking Equalizer, p. 38 for more information on sound masking equalizer calibration.

Color	Calibrated
Green	YES
Yellow	NO

7 Implement System Monitoring

Once the system is installed and calibrated, it is possible to implement monitoring. The system monitoring feature performs periodic system diagnosis and active control history reporting.

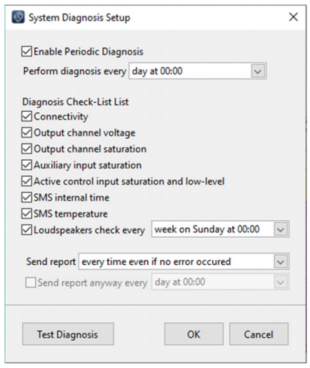
Note: The monitoring feature requires a computer to communicate 24/7 with the controllers.

7.1 Set-Up Automatic System Diagnosis

The system diagnosis process allows performing a complete diagnosis of the system periodically.

Click on the 

button to set-up the system diagnosis parameters.



Reports can be sent at each diagnosis period or only if an error or warning was detected during the system diagnosis.

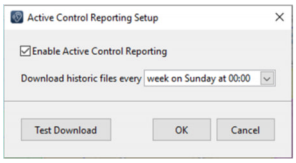
To be sure the periodic system diagnosis is working it can send an “OK” report periodically.

7.2 Set-Up Automatic Active Control History Downloads

The automatic active control history reporting allows downloading the history of the sound levels measured by the active volume control sensors. The history files can be opened using the Active Control History Post-Processing Tool (refer to Appendix J, Post-Process Active Control History Files, p. 115). The sound level history provides useful information on the acoustical environment of the office.

Click on the 

button to set-up the active control reporting parameters.

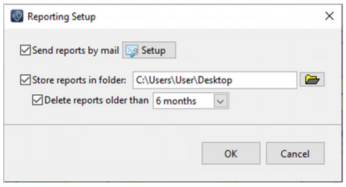


7.3 Set-Up Reporting

The Project Manager software stores the reports locally on the computer and/or sends them by email.

Click on the 

button to set-up the reporting.



7.4 Start System Monitoring

The system monitoring is a process which runs in the Operation mode. The Operation mode is a simpler interface of the Project Manager for the end-user. For more information on the Operation mode, refer to section 11, Turn the Project Manager Software in a Control Panel, p. 78.

Click on the 

button to start the system monitoring. This operation will lock the interface in Operation mode and start the system monitoring process.

8 Lock Project Configuration

When a project is completed, it can be locked to avoid any unwanted modifications. To do so, click on the 

button from the "Project" tab. This will block access to the "Edition", "Commissioning" and "Monitoring" tabs when this project is opened. Upon locking a project, a password can be added to increase the security level.

Should you want to unlock the project, click on the 

from the "Project" tab. If a password was added, it will be asked.

Note: Contact Soft dB at support.masking@softdb.com if you forget the password.

9 Save and Recall a Project File

9.1 Saving the project file as a *.smsp file

At many points in the process, whether it's during layout edition or system commissioning, you can save different versions of the project file using the 

and 

buttons. This will store the project file as a *.smsp file. There is no relation between the internal project name and the *.smsp file name; you can name the file with any name and the internal project name will remain the same.

It's recommended to save multiple versions of the project file along the process to create backup files.

9.2 Exporting the project file to the master controller

A copy of the project file can be stored in the master controller internal memory. This feature is designed to keep a copy of the project file along with the physical system to avoid losing it.

To export the project file on the Master controller, click on the 

button from the project toolbar.

9.3 Recalling a project file

A project file can be recalled to restore a system to a known state. For instance at the end of commissioning, it's highly recommended to save a copy of the project file, either by saving a *.smsp file and/or by exporting it on the master controller. That way, should the end-user experience any problem with the system, this reference copy can be used to restore the system to this reference state.

To recall a project file, simply open the project file by clicking on the 

button to load it from a *.smsp file or click on the 

button to load the project from the master controller. Once the project file is opened, the Project Manager software will synchronise every controller linked to the project.

10 Project Info

Click on the  button to open the "Project Info" interface:

The available information is:

- Project name: Internal project name that physical controllers relate to.
- Info: Any useful information which the user wants to add to a project file.
- Creation date: Creation date for the project file.
- Last SMS Update: Indicate the date and time of the last controller synchronisation. It also indicates which user did the modification (computer name) and which version of the software was used.

Note: This interface also contains a function to create a system report for Crestron integrators. This report includes a layout plan of controllers, loudspeakers and zones. Each controller is listed in a table along with its physical address (MAC Address). Refer to Appendix I, Generating a Project Report for Crestron Integrator, p. 114 for more information.

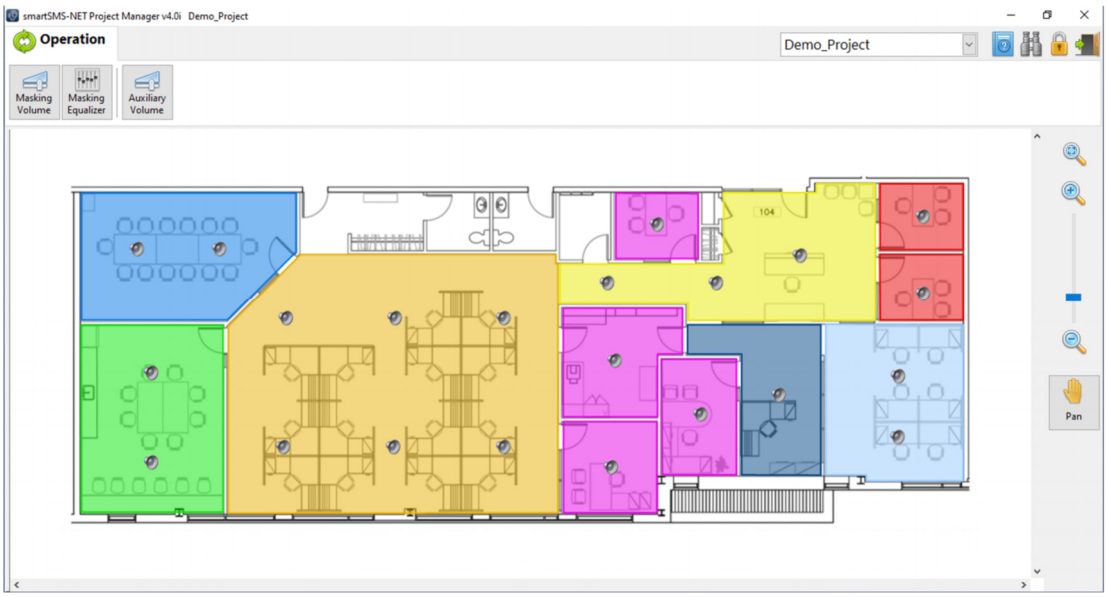
11 Turn the Project Manager Software in a Control Panel

The Project Manager software offers an end-user interface which can be used as a control panel for the smartSMS-NET system. The purpose of this interface is to leave a simpler software interface to unskilled end-users as a control panel. This software mode is called the “Operation Mode”.

Follow these steps to turn the interface in operation mode:

1) Open the project file(s). Note that more than one project files can be opened for multi-project installations such as for buildings with multiple floors.
2) Click on the icon from the quick access toolbar at the top-right corner of the interface
3) You can add a password to prevent the end-user from unlocking the interface.

At the end of these steps, the interface should be locked in operation mode. To unlock the interface, simply click on the icon from the quick access toolbar.



The Operation Mode interface shows only the operation toolbar which contains only basic management functions.

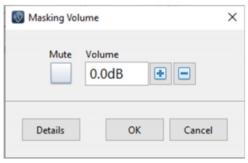
Note: *At this point, it’s not possible to close the project or open additional projects. If the Project Manager Software is closed and reopened, it will automatically reopen in “Operation Mode” with the target projects already opened. All operations to save and recall a project are handled automatically without the intervention of the user.*

11.1 Change Sound Masking Volume in Operation Mode

This function allows the end-user to change the sound masking volume for a specific zone or group of zones.

1) On the layout select the zone(s), controller(s) or speaker line(s) on which the sound masking volume needs to be changed.
2) Click on the 

button to open the “Masking Volume” interface.
3) Click on the “Volume” field to enter directly the masking volume or click on the “Mute” check-box should the sound masking be muted.

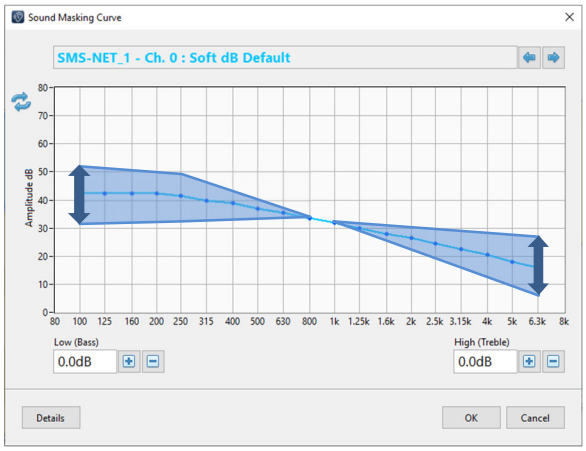


11.2 Change Sound Masking Bass and Treble in Operation Mode

This function allows the end-user to change the sound masking bass and treble for a specific zone or group of zones.

1) On the office layout select the zone(s), controller(s) or speaker line(s) on which the sound masking equalizer needs to be changed.
2) Click on the 

button to open the "Sound Masking Curve" interface.
3) Click on the bass and treble fields to change the low frequency and high frequency gain of the sound masking equalizer.

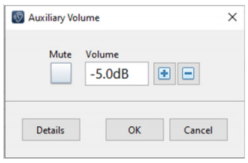


11.3 Change Music/Paging Volume in Operation Mode

This function allows the end-user to change the music and paging volume for a specific zone or group of zones.

1) On the office layout select the zone(s), controller(s) or speaker line(s) on which the auxiliary volume needs to be changed.
2) Click on the 

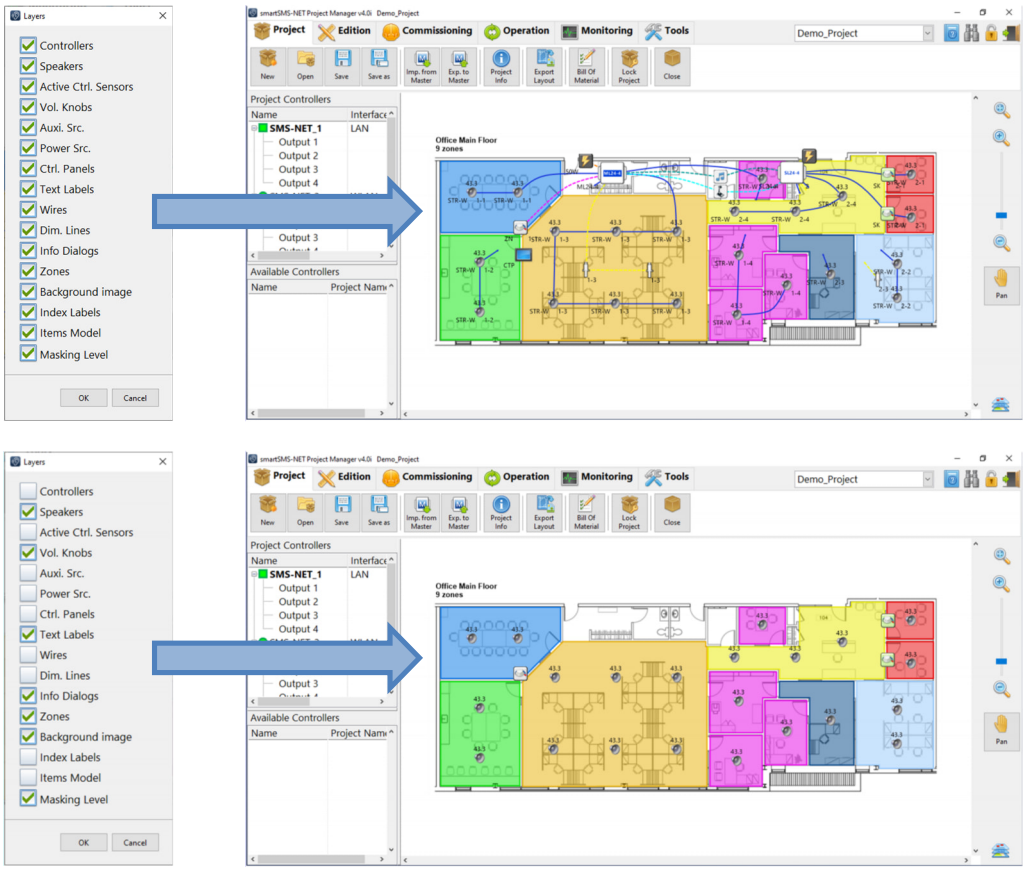
button to open the "Auxiliary Volume" interface.
3) Click on the "Volume" field to enter directly the auxiliary volume or click on the "Mute" check-box should the music and paging be muted.



11.4 Visible Layers

When leaving the system to the end user, it's a good practice to hide most system components from the layout and only show zones, speakers and masking levels. This way, the end-user only has to select a zone or a speaker to make changes to the system.

Click on the button in the down-right corner of the main interface to open the Layers interface:



Note: The Mask Level indicates the sound masking level over each loudspeaker. An asterisk next to the label indicates that active volume control, ramp-up, volume knob or schedule is activated on this channel and may affect the sound masking level.

Note: It's important to show/hide layers before turning the interface to operation mode because the "layers" button is not accessible in operation mode.

Appendix A smartSMS-NET Project Manager Software End-User License Agreement

Please read this End-User License Agreement ("Agreement") carefully before downloading, installing or using the smartSMS-NET Project Manager software (“Software”).

By downloading installing or using the Software, you are agreeing to be bound by the terms and conditions of this Agreement. If you do not agree to the terms of this Agreement, do not download, or install, or use the Software.

License

Soft dB grants the user a revocable limited license to download, install and use the Software solely for use with a smartSMS-NET sound masking system, strictly in accordance with the terms of this Agreement.

Restrictions

You agree not to, and you will not permit others to license, sell, rent, lease, assign, distribute, host, outsource, disclose or otherwise commercially exploit the Software.

Modifications to Software

Soft dB reserves the right to modify, suspend or discontinue, temporarily or permanently, the Software or any service to which it connects, with or without notice and without liability to you.

Term and Termination

This Agreement shall remain in effect until terminated by you or Soft dB.

Soft dB may, in its sole discretion, at any time and for any or no reason, suspend or terminate this Agreement with or without prior notice.

This Agreement will terminate immediately, without prior notice from Soft dB, in the event that you fail to comply with any provision of this Agreement. You may also terminate this Agreement by deleting the Software and all copies thereof from your computer.

Upon termination of this Agreement, you shall cease all use of the Software and delete all copies of the Software from your computer.

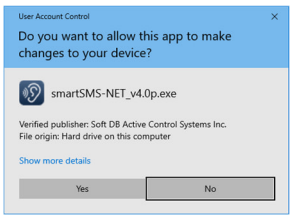
Severability

If any provision of this Agreement is held to be unenforceable or invalid, such provision will be changed and interpreted to accomplish the objectives of such provision to the greatest extent possible under applicable law and the remaining provisions will continue in full force and effect.

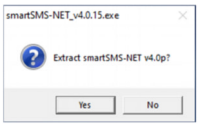
Appendix B smartSMS-NET Project Manager Software Installation

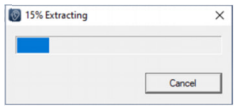
Contact Soft dB at info@softdb.com to request a software installer download link.

Double-click on the installer executable to extract the software installer:

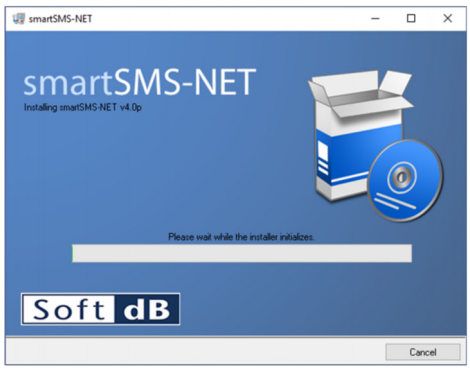


Click “Yes” on the User Account Control to allow the software to be installed (administrator rights required)

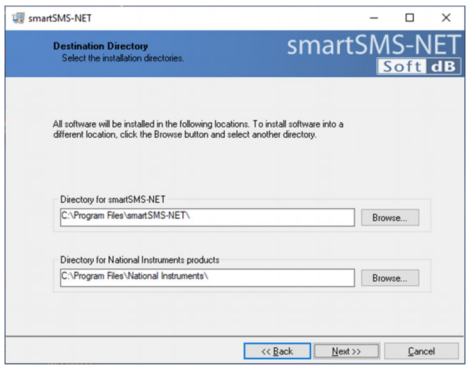




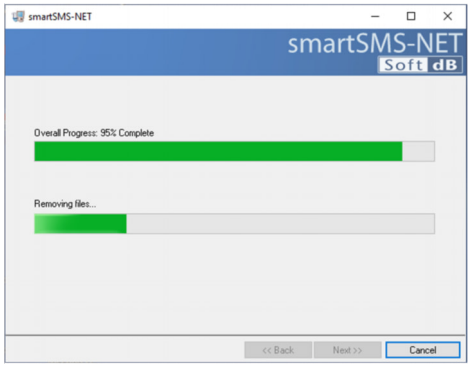
Once the Installer is extracted and opened, click on “Next”:



Click on “Next” to select the install directory:



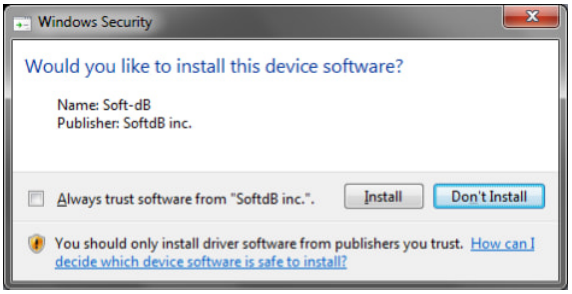
Click “Next” to start installation:



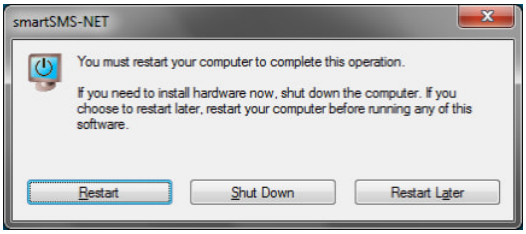
Click on “Next” to finish installation

After the installation, the drivers are installed:

Click on “Install” to install the drivers (administrator rights required)



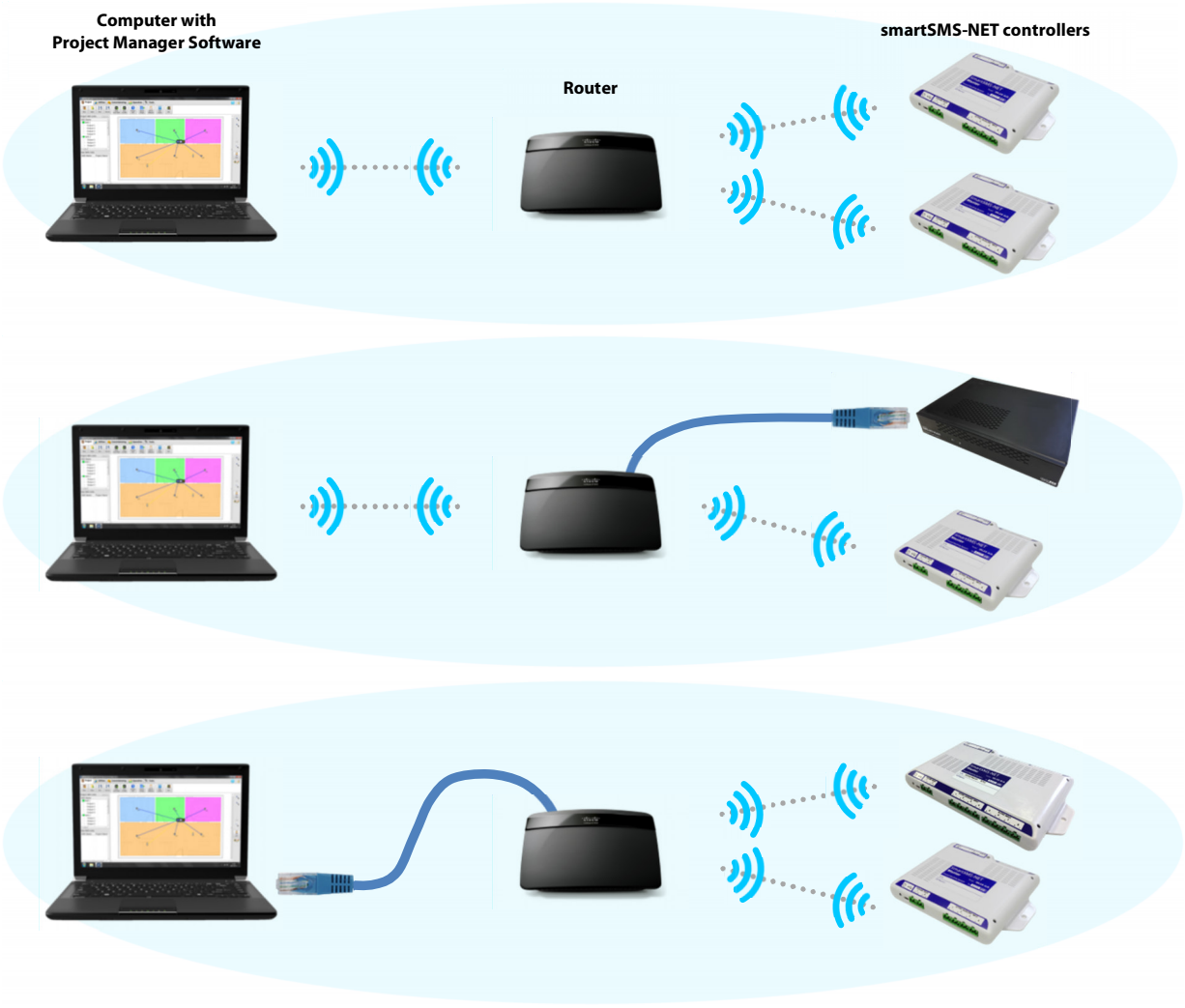
Restart the computer to use the software:



Appendix C smartSMS-NET System Networking

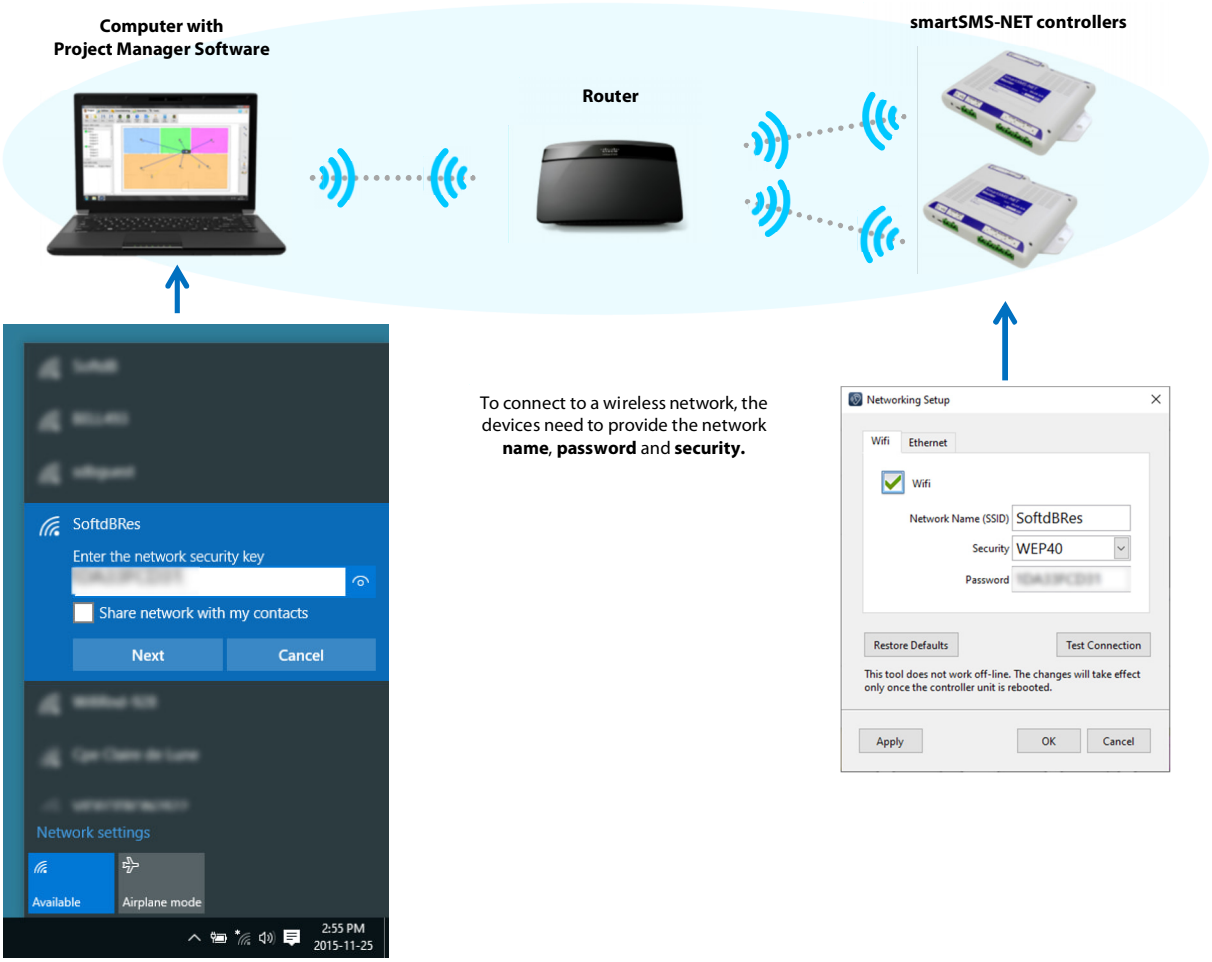
A-C.1 Basics of Networking

It is required to use a router to establish the network through which the controllers and the computer (with the Project Manager software) will communicate. The link between the router and each device can be either wireless or wired depending on the available interface on the router, computer and controllers. The following figures show different configurations using wireless network, wired network or a combination of both. Many configurations are possible; the ones shown below are only a small subset of all possible configurations.



A-C.2 Notes on Wireless Networks

To connect to a wireless network, a device needs to know the **name** of the network, the **password** and the **security** encryption type. Hence, the controllers need to know this information to correctly connect to the wireless network. The computer also requires this information when accessing the wireless network:



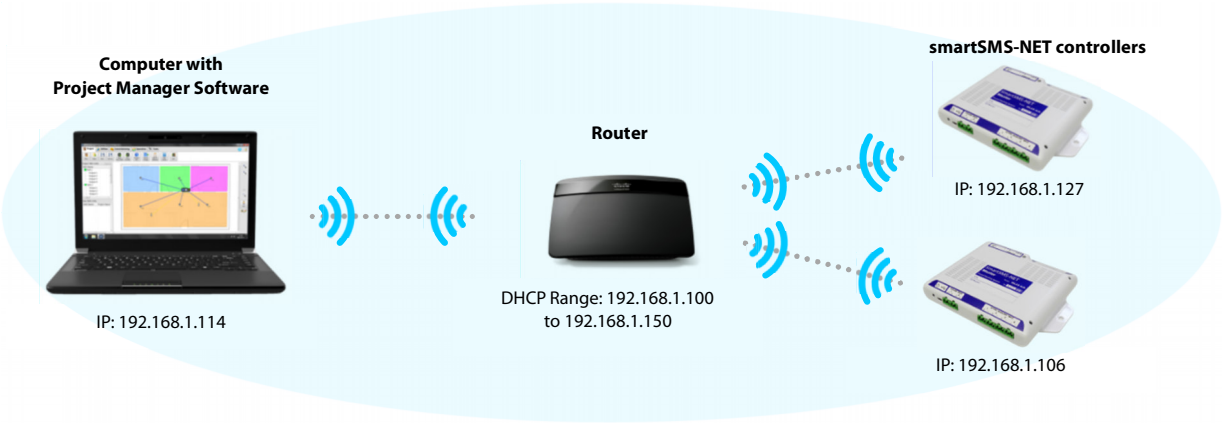
A-C.3 Notes on Wired Networks

To connect to a wired network, the devices **do not have to specify the name and security** because they are physically connected. Hence the connection is automatic as soon as a cable is connected from the device to the router.

Hence, to connect a smartSMS-NET controller to a wired network, you just have to connect an Ethernet cable from the smartSMS-NET controller to the router. Note that not all smartSMS-NET controllers are equipped with an Ethernet cable port. Refer to the controller specifications for more information.

A-C.4 Notes on IP Addresses

Once a device is connected to the network (whether on a wired or wireless network) it receives an IP address from the router. The router automatically attributes these IP addresses within a range of address which is typically **192.168.1.100** to **192.168.1.150**. The following figure shows an example:

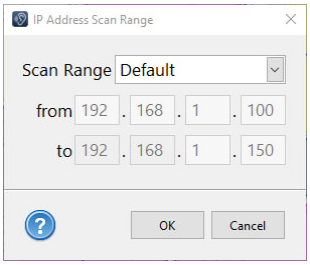


The range used by the router for automatic IP attribution is called the DHCP range. Using the range 192.168.1.100 to 192.168.1.150, up-to 50 devices can be connected at the same time on the network. The range could theoretically be extended up-to 254 devices from 192.168.1.2 to 192.168.1.255. Note that 192.168.1.1 is the IP address of the router itself.

To find the smartSMS-NET controllers on the network, the Project Manager software needs to query each IP address within the DHCP range. Once a smartSMS-NET controller is discovered, it becomes available in the Project Manager software.

Click on the 

button from the "Tools" toolbar to select the appropriate IP range.



- Default: Range used by Soft dB pre-configured router (192.168.1.100 to 150)
- Automatic: Range guessed from computer IP address
- Manual: Range manually entered for specific situations
- Static IPs: Specific IP addresses entered manually for installations spanning a large network with many subnets.

A-C.5 Soft dB Pre-Configured Router

A pre-configured router is available from Soft dB to establish a network. When powered-on, the router automatically establishes a network with the following parameters:

- Model: Linksys WRT160N, E900/N300 (or other compatible version)
- Base Address: 192.168.1.1
- Login: admin
- Password: admin
- Wi-Fi Name: SoftdBRes
- Wi-Fi Security: WEP 40/64-bits (10 hex digits)
- Wi-Fi Password: Contact info@softdb.com for the default WiFi password
- DHCP Range: 192.168.1.100 to 192.168.1.150

You can also configure your own router. Refer to A-C.11 Configure a Router with the Default Parameters, p. 98 for more information.

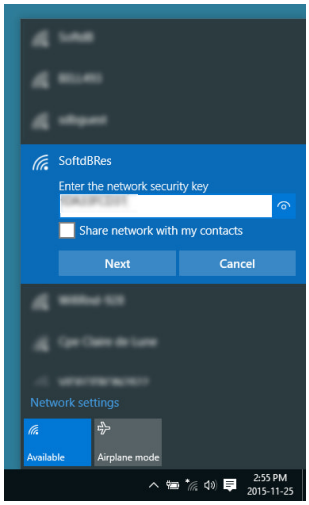
The smartSMS-NET controllers are configured in factory with the same Wi-Fi parameters so that they connect automatically to this Wi-Fi network.

A-C.6 Create a Basic Network

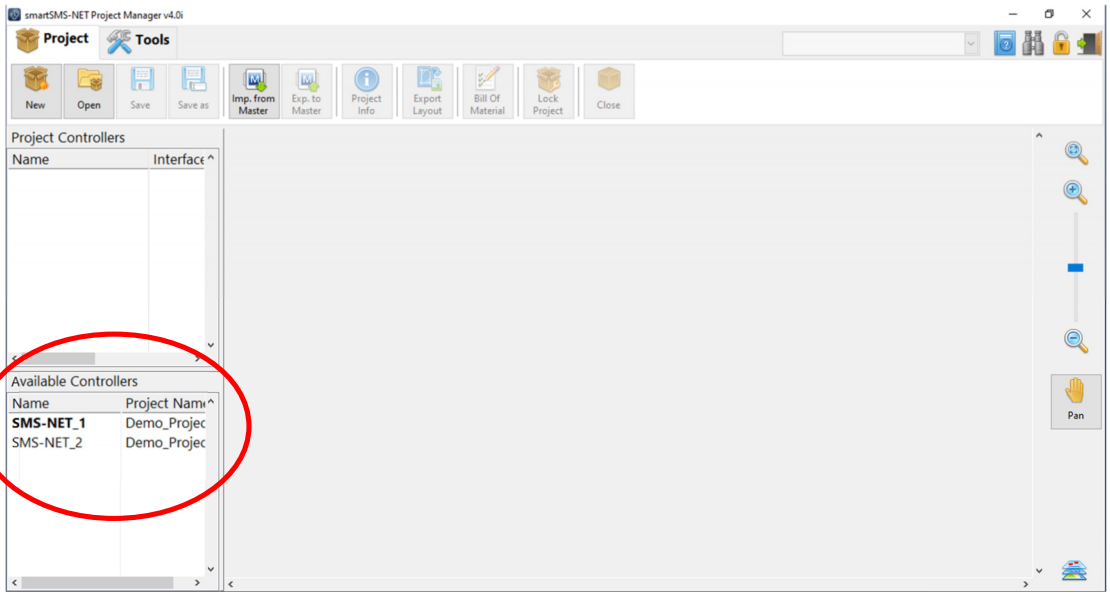
The basic wireless network setup is mainly used to set-up the system parameters during commissioning (calibrate masking equalizers, etc.)

- Step 1: Connect the **pre-configured wireless router** to a power outlet to establish the wireless network. Make sure the wireless network can be reached by the smartSMS-NET controllers as well as the computer. The coverage distance of the Wi-Fi network is about 50 m (165') but it can be affected by barriers such as walls and floor/ceiling assemblies.

- Step 2: Connect the computer to the **SoftdBRes** wireless network:

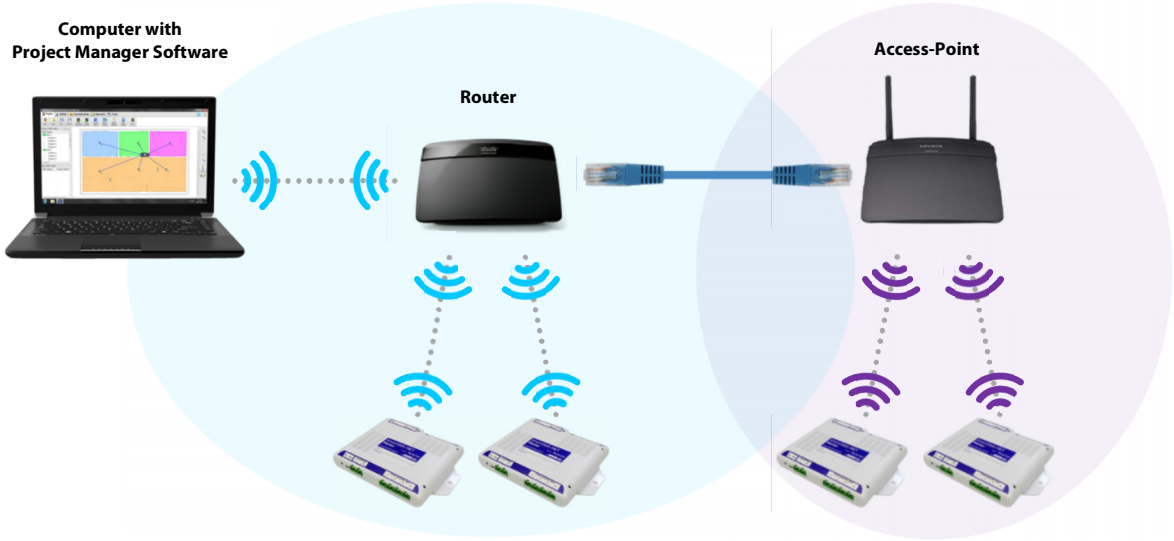


- Step 3: Open the Project Manager software and wait for smartSMS-NET controllers to be detected. It can take a few seconds until the smartSMS-NET controllers show up in the software.



A-C.7 Create an Extended Network using an Access-Point

This setup is used when some controllers are not in reach of the wireless network from the router. This may be caused by a great distance between the controllers and the router or by structural barriers such as walls and floor/ceiling assemblies. In this case, it is recommended to use an access-point to extend the wireless network range.



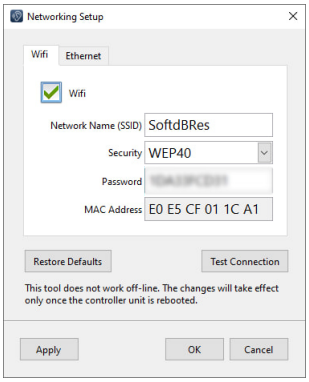
- Step 1: Establish a basic wireless setup (refer to section A-C.6 Create a Basic Network, p. 90)
- Step 2: Configure an access-point with a different network name such as **SoftdBRes_2**. For more information on how to configure an access-point, refer to A-C.12 Configure an Access-Point, p. 101.
- Step 3: Connect the access-point to the wireless router using a network cable.

- Step 4: Configure the controllers to go under the access-point wireless network with the appropriate network name:
  a) Connect each controller to the computer using a USB cable

b) Access its wireless network setup by clicking on the 

from the Tools toolbar in the Project Manager software. For more information on this utility, refer to Appendix H, p. 112.

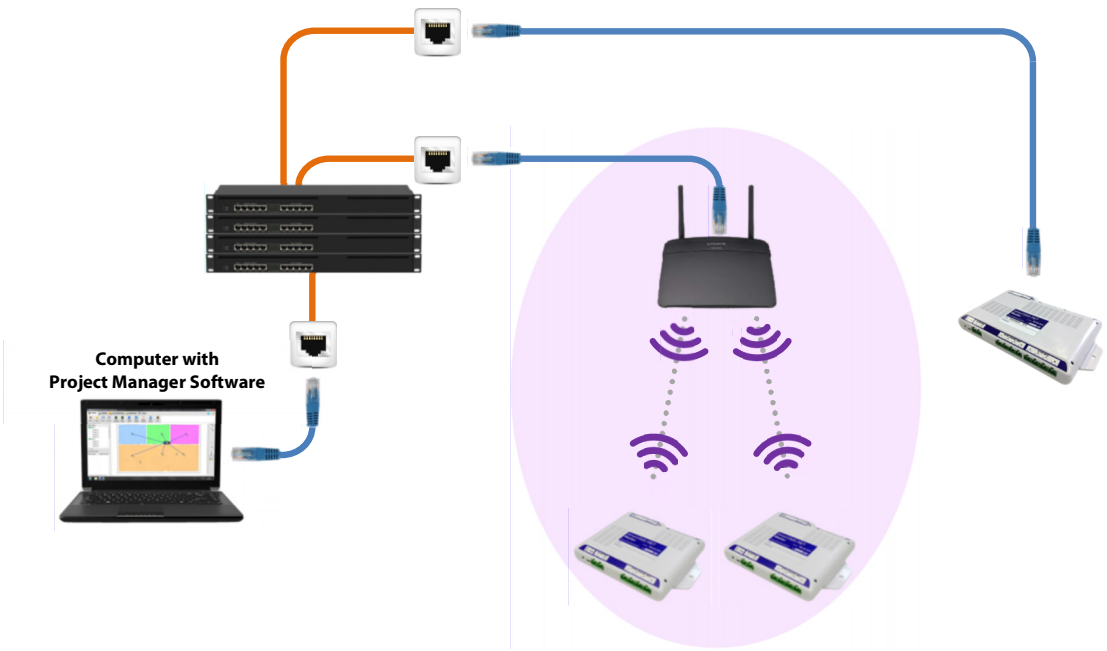
c) Match the network name used by the controller to match the network name of the access-point :



At this point the access-point should be appropriately configured and connected to the router. It should broadcast another wireless network named SoftdBRes_2 and the targeted smartSMS-NET controller should be correctly configured and connected on this network.

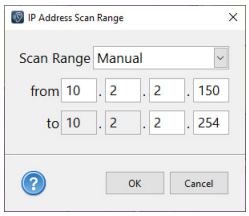
A-C.8 Connect to an Existing Network

This setup is used when a permanent network is required for 24/7 access through an existing network.



- Step 1: Contact the IT manager to receive the authorisation to connect wireless access-point(s) to the network. Make sure port TCP 50,000 is opened on the client network.
- Step 2: Ask the IT manager for the parameters to use to configure the access-point(s):
  - Network Name (SSID),
  - Security (WEP or WPA personal),
  - Password.
- Step 3: Configure the access-point(s) using the provided parameters. For more information on how to configure an access-point, refer to A-C.12 Configure an Access-Point, p. 101.
- Step 4: Connect the access-point(s) to the client's network using a network cable.
- Step 5: Configure the smartSMS-NET controllers to connect to the access-point wireless network using the "SMS Wifi Setup" utility from the Tools toolbar of the Project Manager software. For more information on this utility, refer to Appendix L Change a smartSMS-NET Controller Network Setup, p. 112.
- Step 6: Ask the IT manager for the DHCP range of the network.
- Step 7: Configure the Project Manager software with the appropriate IP address range provided by the IT manager:
  a) Open the Project Manager software.
  b) Click on the 

button from the Tools toolbar.
  c) Select "Manual" from the drop-down menu;
  d) Enter the same DHCP IP address range provided by the IT manager;

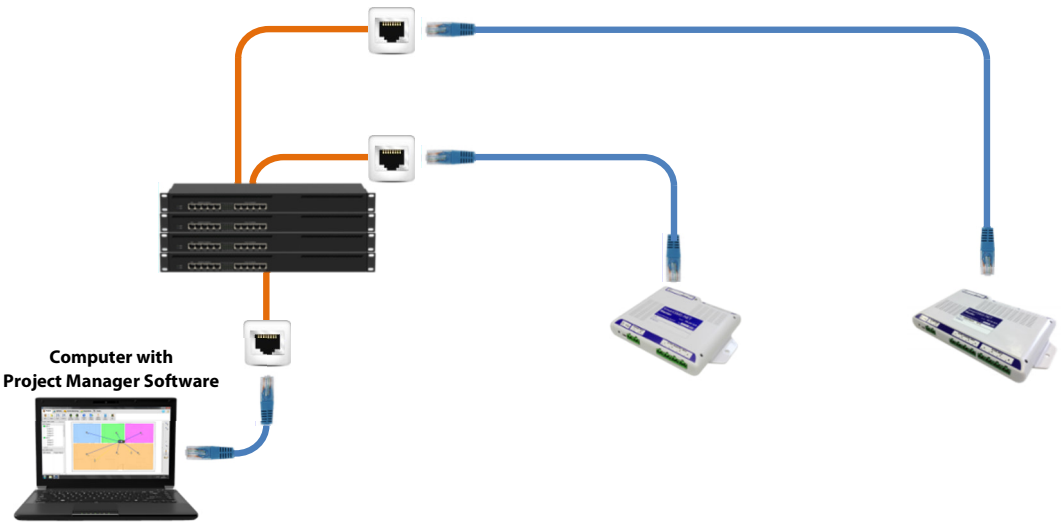


Note: The "Automatic" mode can also be used in this situation. The automatic mode guesses the scan range using the computer IP address provided it uses the same base address as the DHCP range.

Note: It is recommended to use dedicated access-points to connect the smartSMS-NET controllers to an existing network. Using the client wireless network may not work due to incompatibilities with the smartSMS-NET Wi-Fi module specifications.

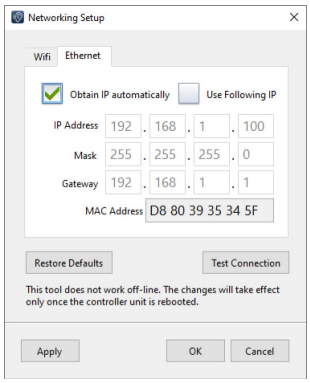
A-C.10 Connect to an Existing Network using Ethernet and Static IPs

When connecting to an existing network, it may be required to use a static IP for each controller instead of a dynamic IP provided by a DHCP server. The static IP mode can be used only for the Ethernet port of the controller. The WiFi module only works with a dynamic IP. Also, using a static IP for the Ethernet port automatically disables the WiFi module.



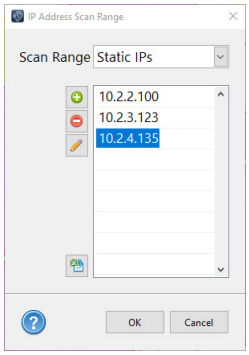
- Step 1: Contact the IT manager to receive the reserved address for each controller:
  - Static IP;
  - Gateway Address;
  - Subnet Mask.
  - Make sure port TCP 50,000 is opened on the client network.
- Step 2: Connect to each controller using a USB cable to configure the smartSMS-NET controllers.
- Step 3: Access the controller network setup by clicking on the 

from the Tools toolbar in the Project Manager software.
- Step 4: Click on the Ethernet tab and select “Use following IP”. Enter the static IP, Mask and Gateway used by the smartSMS-NET controller.



- When using Static IPs, it's recommended to use the "static" scanning mode in the Project Manager software to scan only a determined set of IP addresses.
- Click on the 

button from the "Tools" toolbar. Select "Static IPs" from the "Scan Range" drop-down menu to display the static IP list:



*Note: A static IP address list can be imported from a *.csv file by clicking the "Import from CSV" button. The *.csv file needs to have one IP address per row.*

A-C.11 Configure a Router with the Default Parameters

A pre-configured router is available from Soft dB to establish a network. When powered-on, the router automatically establishes a network with the following parameters:

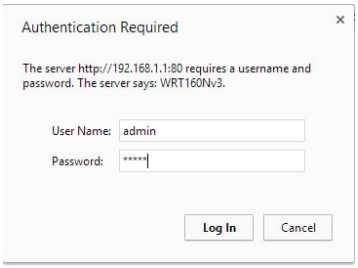
- Model: Linksys WRT160N, E900/N300 (or other compatible version)
- Base Address: 192.168.1.1
- Login: admin
- Password: admin
- Wi-Fi Name: SoftdBRes
- Wi-Fi Security: WEP 40/64-bits (10 hex digits)
- Wi-Fi Password: Contact info@softdb.com for the WiFi password
- DHCP Range: 192.168.1.100 to 192.168.1.150

WRT160N

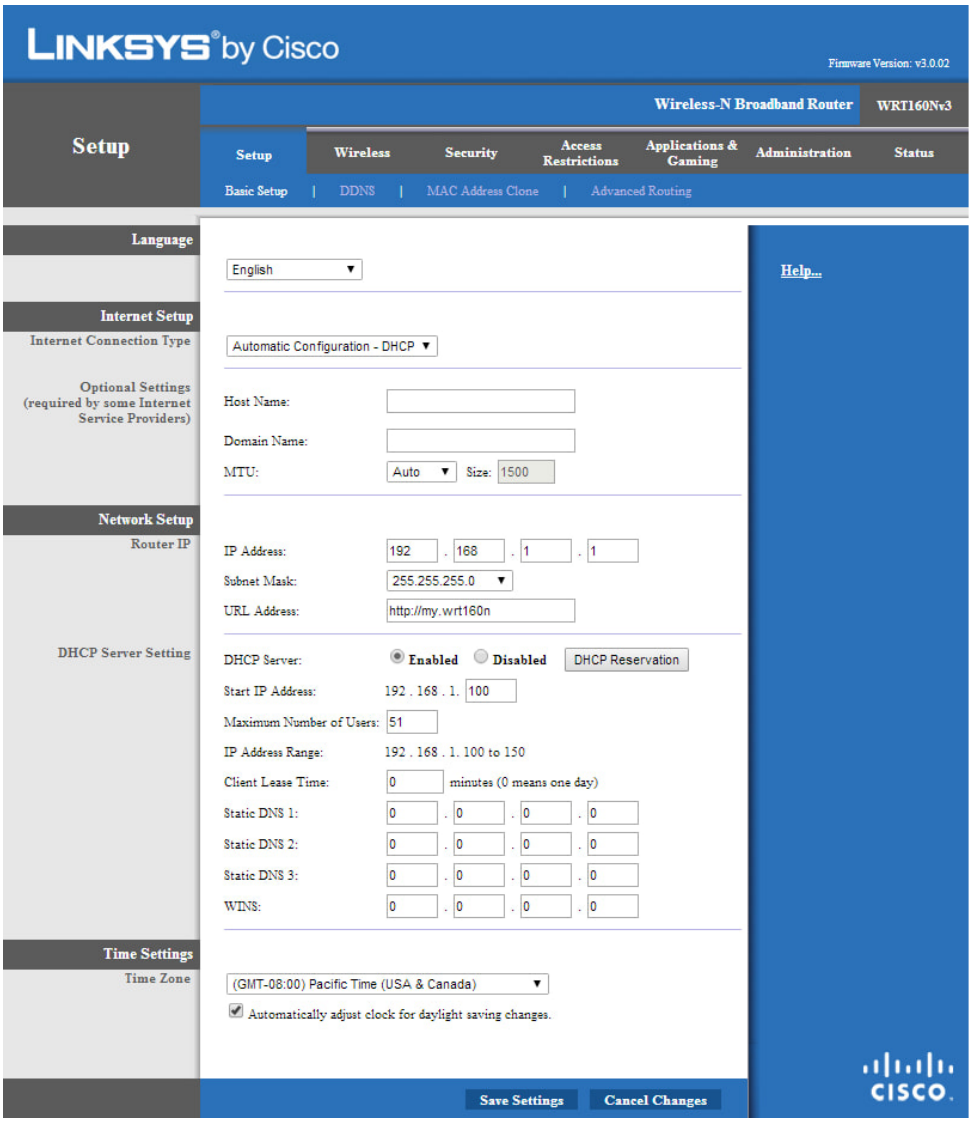
E900/N300

Follow these steps to reproduce the same set-up on a new router

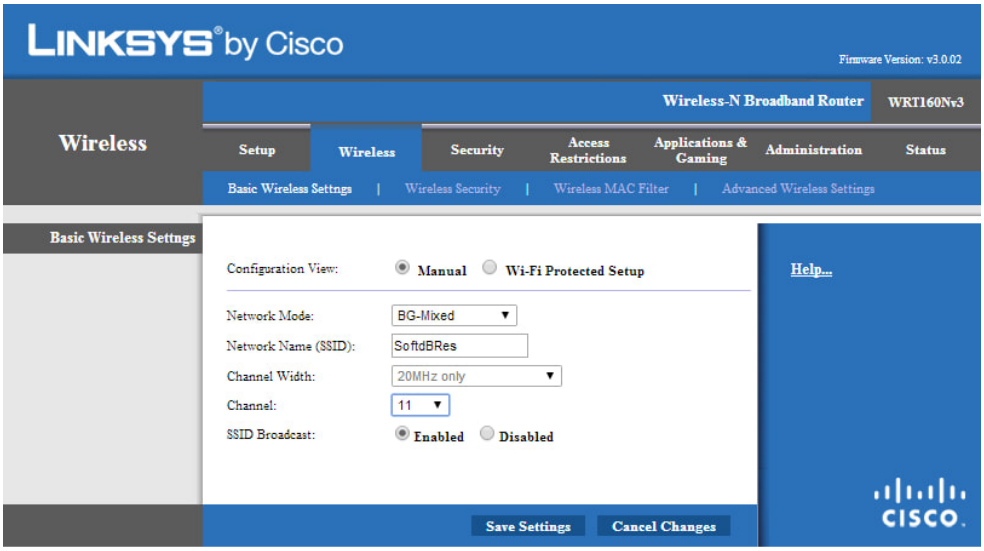
1) Connect the router to a PC using an Ethernet cable in one of the four Ethernet ports of the router.
2) Use an Internet browser to access the router at its base address (type the following IP "192.168.1.1" in the address field of the internet browser).
3) Connect with the User Name *admin* and the password *admin*.



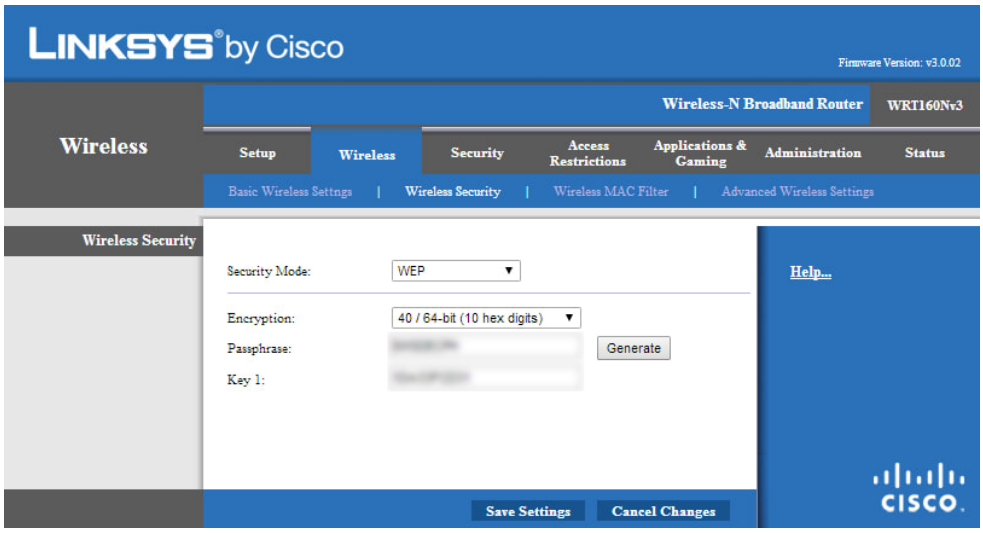
4) Set the basic set-up to force a range of 192.168.1.100 to 192.168.1.150:


LINKSYS by Cisco
Firmware Version: v3.0.02
Setup
Wireless-N Broadband Router
WRT160Nv3
Setup
Wireless
Security
Access Restrictions
Applications & Gaming
Administration
Status
Basic Setup | DDNS | MAC Address Clone | Advanced Routing
Language
English
Help...
Internet Setup
Internet Connection Type
Automatic Configuration - DHCP
Optional Settings (required by some Internet Service Providers)
Host Name:
Domain Name:
MTU:
Auto
Size:
1500
Network Setup
Router IP
IP Address:
192 . 168 . 1 . 1
Subnet Mask:
255.255.255.0
URL Address:
http://my.wrt160n
DHCP Server Setting
DHCP Server:
Enabled
Disabled
DHCP Reservation
Start IP Address:
192 . 168 . 1.
100
Maximum Number of Users:
51
IP Address Range:
192 . 168 . 1. 100 to 150
Client Lease Time:
0
minutes (0 means one day)
Static DNS 1:
Static DNS 2:
Static DNS 3:
WINS:
Time Settings
Time Zone
(GMT-08:00) Pacific Time (USA & Canada)
Automatically adjust clock for daylight saving changes.
Save Settings
Cancel Changes
cisco

5) Activate and configure the Wireless network with the following set-up:



6) Activate the Wireless security with the following set-up:



In general, the router can be used to cover a small installation and all controllers will be visible at once. If not, a simple solution is to move the router to reach the smartSMS-NET controllers by group.

If the installation is larger and/or is spread over several floors, a more complex network can be built to allow communication with all controllers at once.

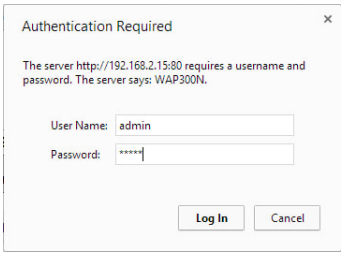
A-C.12 Configure an Access-Point

For a larger installation and if the pre-configured router is not enough to cover the entire building, alternative solutions can be developed. The solutions are based on the use of Ethernet access points (AP) and Ethernet switches connected with the pre-configured router or the main router of the building network. The next sections present these Ethernet devices.

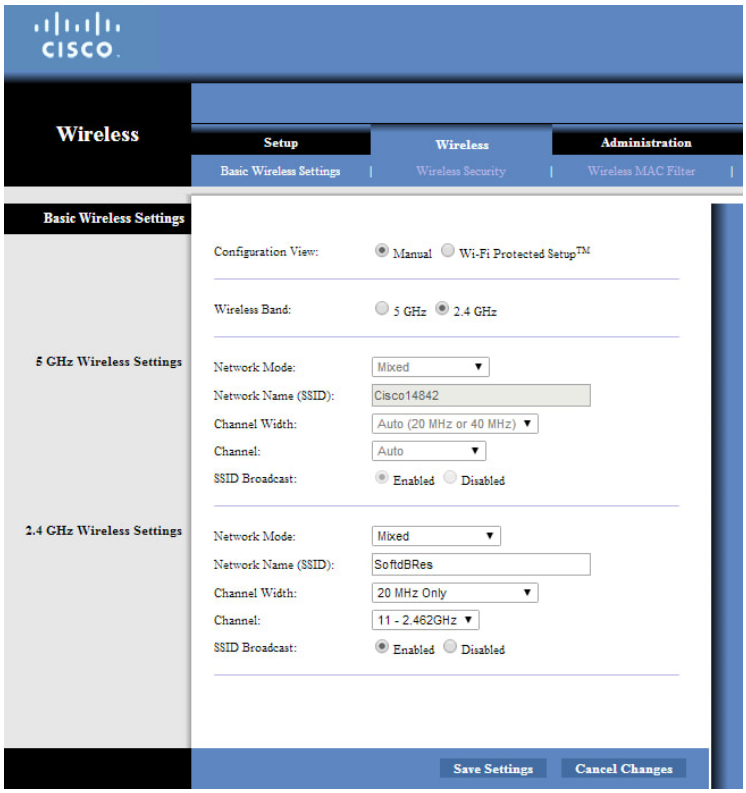
The access points (AP) are wireless devices that can be placed in the building to reach the controllers by group in a way to cover the entire installation. We suggest using the WAP300N from Linksys:

The access point must be configured to allow an automatic connection with the controllers. Follow these instructions:

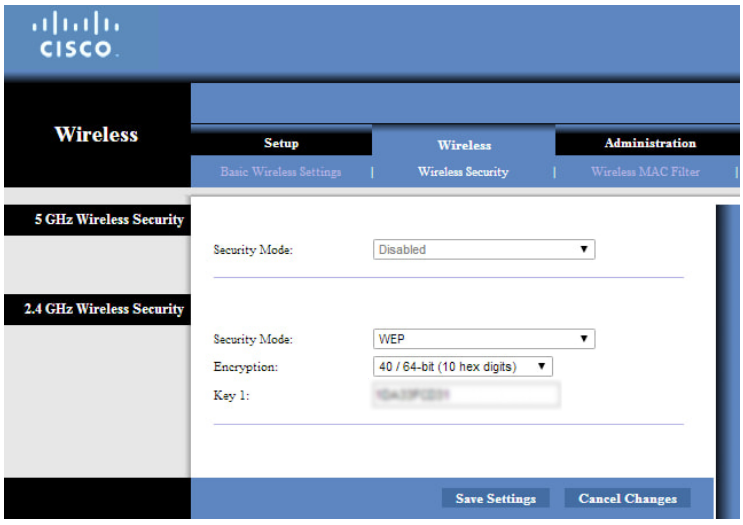
1) If an access point is used, the main router must not have the same SSID (network name) or the Wireless of the router must be disabling to avoid conflicts (set the Network Mode at Disable in the Wireless tab during the configuration procedure of the router).
2) Then connect the access point to one of the four Ethernet ports of the router with an Ethernet cable and use an Internet browser to configure the AP. The IP address of the AP is determined by the main router (go to the configuration address of the router 192.168.1.1 first to know the IP address of the AP in the DHCP tab and the Status function). The user name of the AP is admin and the password is admin.



3) The Wireless network must be set with the following set-up:



4) Set the Wireless security of the access point:



Note that the WEP security mode does not support the Wi-Fi Protected Set-up option. Even if the Manual mode is used, the configuration utility will display a warning message.

A-C.13 Use Ethernet Switches

The switches can be used when more Ethernet ports are required. The switches can be used as is without configuration. Simply connect the source Ethernet cable from the main router and the access point with the switch. We suggest using the SE1500 from Linksys.

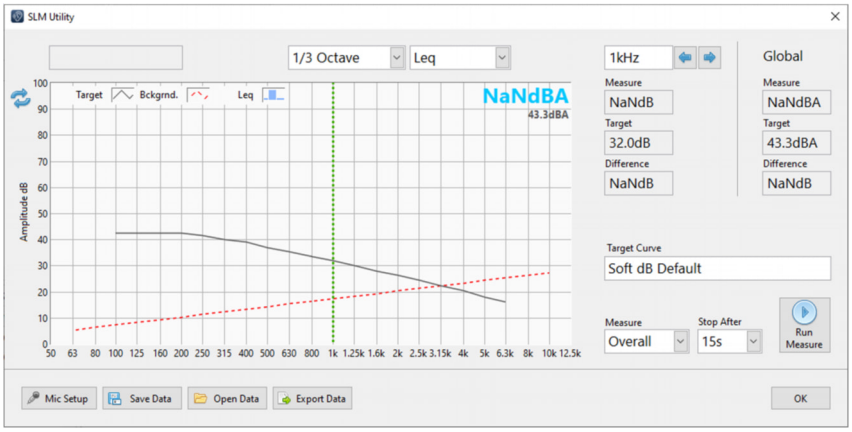
Appendix D Perform Sound Level Measurements

A-D.1 Using the SLM Utility

The Project Manager Software includes a sound level meter (SLM) and spectrum analysis utility which is useful during smartSMS-NET system commissioning.

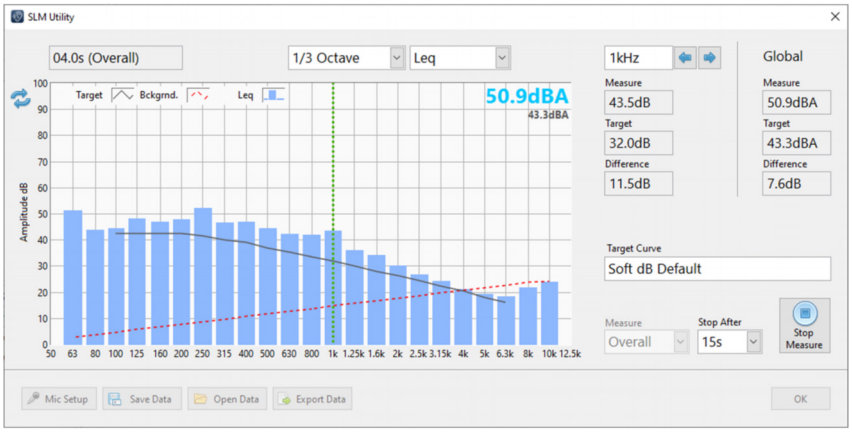
To open the SLM utility, click on the 

button from the "Tools" toolbar of the main interface or from the main setup interface in commissioning mode.

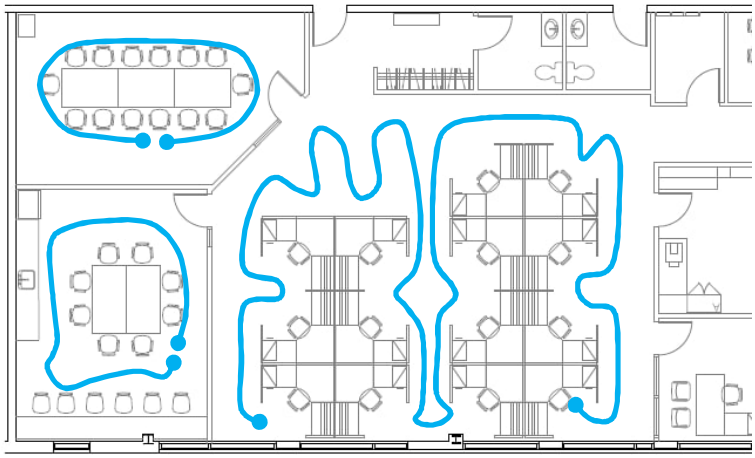


To use the SLM utility you need to have a compatible microphone. For more information on the microphone, refer to Appendix J, Set-Up the Calibration Microphone, p. 108 of this user guide.

Click on the  button to start a measurement.



When performing a sound measurement, it is recommended to move slowly in the room in order to average the ambient sound of the room. Try to cover most of the room area the best you can while moving around the furniture.



A-D.2 Performing an Overall Measurement

An overall measurement is recommended at the end of the installation to measure the overall sound masking level and spectra in a zone.

1) Select the Target Curve against which you want to view the measurement results by clicking on the “Target Curve” field.
2) Select “Overall” from the “Measure” drop-down menu. This will perform an overall average during the measurement.
3) Start the measurement.

4) Walk quietly around the room while the measurement is running.
5) Stop the measurement.
6) Save the results by clicking on the "Save Data" button for documentation.

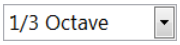
A-D.3 Performing a Live Measurement

A live measurement is recommended to see if the sound masking level and spectra is homogeneous (consistent) in a zone.

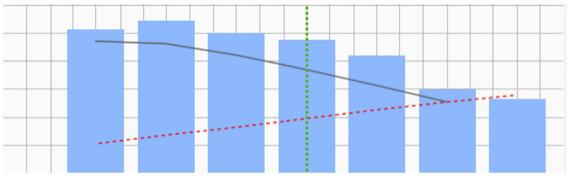
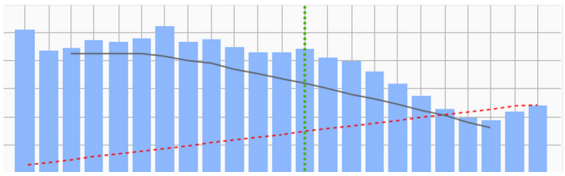
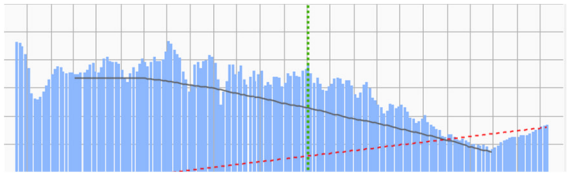
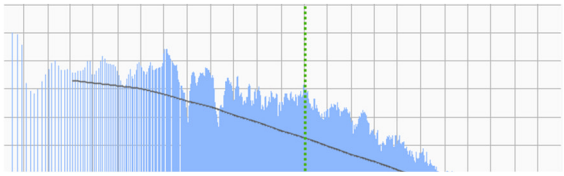
1) Select the Target Curve against which you want to view the measurement results by clicking on the "Target Curve" field.
2) Select "Live" from the "Measure" drop-down menu. This will show the live (current) sound level during the measurement.
3) Start the measurement.
4) Walk quietly around the room while the measurement is running and check if the sound spectrum matches the target curve. Identify any location at which the sound spectrum is too high or too low compared to the target curve.
5) Stop the measurement.

This procedure may be needed in large open areas where the ambient sound environment can be heterogeneous.

A-D.4 Spectrum Types

Multiple sound spectrum types are available and can be selected from the 

drop-down menu.

- 1/1 Octave Bands: 
- 1/3 Octave Bands: 
- 1/24 Octave Bands: 
- Narrow Bands: 

A-D.5 Overall Measurement Data Types

Several data types are available for an overall measurement:

- Leq (Equivalent Sound Level): is the linear average of the sound level. This data type is the most common.
- LN% (Percentile Levels): is the statistical distribution of the sound level:
  - L5% is the sound level exceeded 5% of the time and represents the high sound levels.
  - L50% is the median sound level and is often used to calibrate the sound masking.
  - L95% is the sound level exceeded 95% of the time and represents the background sound level.

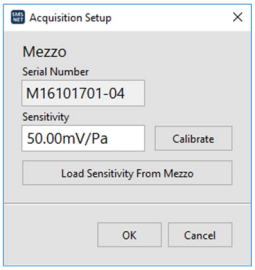
Note: The difference between L95% and L5% is an indicator of sound level variations during the measurement. If the L5% and L95% are close to each other it means the sound is very constant over the measurement duration. On the other hand, if the L5% and L95% are very far apart, it means that large variations in the sound are present.

Appendix E Set-Up the Calibration Microphone

A-E.1 Using a Mezzo Precision Microphone

The Mezzo is one of the recommended calibration microphones to use with the smartSMS-NET Project Manager software. Visit www.softdb.com/products/mezzo/ for more information.

To use a Mezzo microphone with the Project Manager software, simply connect the Mezzo to the computer with the provided USB cable and it will be automatically detected. To adjust the microphone sensitivity, click on the Mic Setup button to enter the microphone setup:

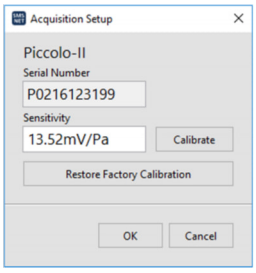


You can set the sensitivity manually, calibrate it using a sound pressure calibrator, or load the factory sensitivity from the Mezzo internal memory.

A-E.2 Using a Piccolo-II Sound Level Meter

The Piccolo-II is one of the recommended calibration microphones to use with the smartSMS-NET Project Manager software. Visit www.softdb.com/products/piccolo2/ for more information.

To use a Piccolo-II sound level meter with the Project Manager software, simply connect the Piccolo-II to the computer with the provided USB cable and it will be automatically detected. To adjust the microphone sensitivity, click on the Mic Setup button to enter the microphone setup:



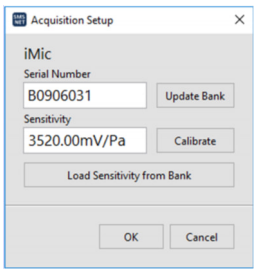
You can set the sensitivity manually, calibrate it using a sound pressure calibrator, or load the factory sensitivity from the Piccolo-II internal memory.

A-E.3 Using an iMic Microphone (Discontinued)

The iMic calibration microphone is discontinued. This section is left for reference only.

The iMic calibration microphone is discontinued. It is recommended to use a Mezzo precision microphone or a Piccolo-II sound level meter instead.

To use an iMic microphone with the Project Manager software, simply connect the iMic to the computer with the provided USB cable and it will be automatically detected. To adjust the microphone sensitivity, click on the Mic Setup button to enter the microphone setup:



Make sure to enter the correct serial number for the iMic in order to use the appropriate calibration data from the iMic calibration bank (iMic database).

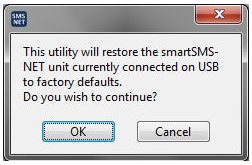
With an appropriate serial number entered, you can set the sensitivity manually or calibrate it using a sound pressure calibrator. You can also return to the iMic default sensitivity by loading it from the database.

Appendix F Reset a smartSMS-NET Controller to Factory Defaults

Follow these steps to reset a smartSMS-NET controller to the factory defaults:

1) Connect the smartSMS-NET controller using a USB cable
2) Click on the 

button from the Tools toolbar in the Project Manager software.



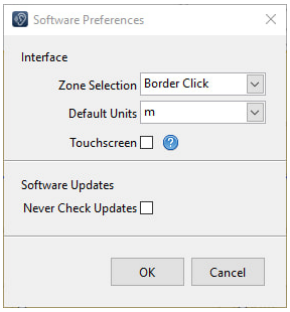
3) Click “OK”.

WARNING: This utility will reset all the parameters to factory defaults!

Appendix G smartSMS-NET Project Manager Software Preferences

1) Click on the 

button from the Tools toolbar in the Project Manager software.



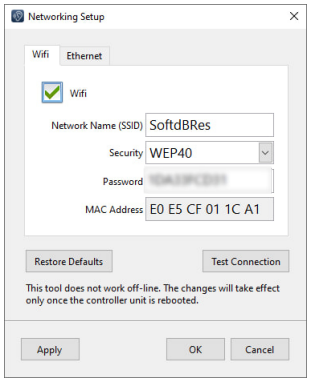
- The "Zone Selection" drop-down menu allows setting how the user can select a zone, either by clicking inside the zone or by clicking on the border.
- The "Defaults Units" drop-down menu allows setting the default units for the layout. These can be "Meters", "Feet" or "Feet Fractional".
- The "Touchscreen" checkbox allows setting if the user interface uses screen keyboards when touching a field (touchscreen mode) or use the hardware keyboard (not touchscreen).
- The "Software Updates" section allows to disable the automatic software update check at the software launch. This is only recommended if the Project Manager is installed as a Control Panel.

Appendix H Change a smartSMS-NET Controller Network Setup

Follow these steps to change the network setup of a smartSMS-NET controller:

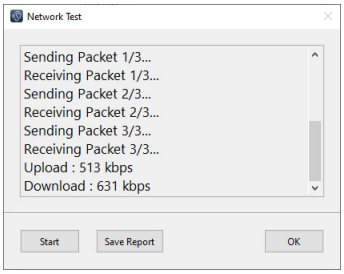
1) Connect the smartSMS-NET controller using a USB cable
2) Click on the 

button from the Tools toolbar in the Project Manager software.
3) Enter the Network Name (SSID), Security and Password.
4) Click "OK".



You can test the wireless communication of a controller by clicking on the 

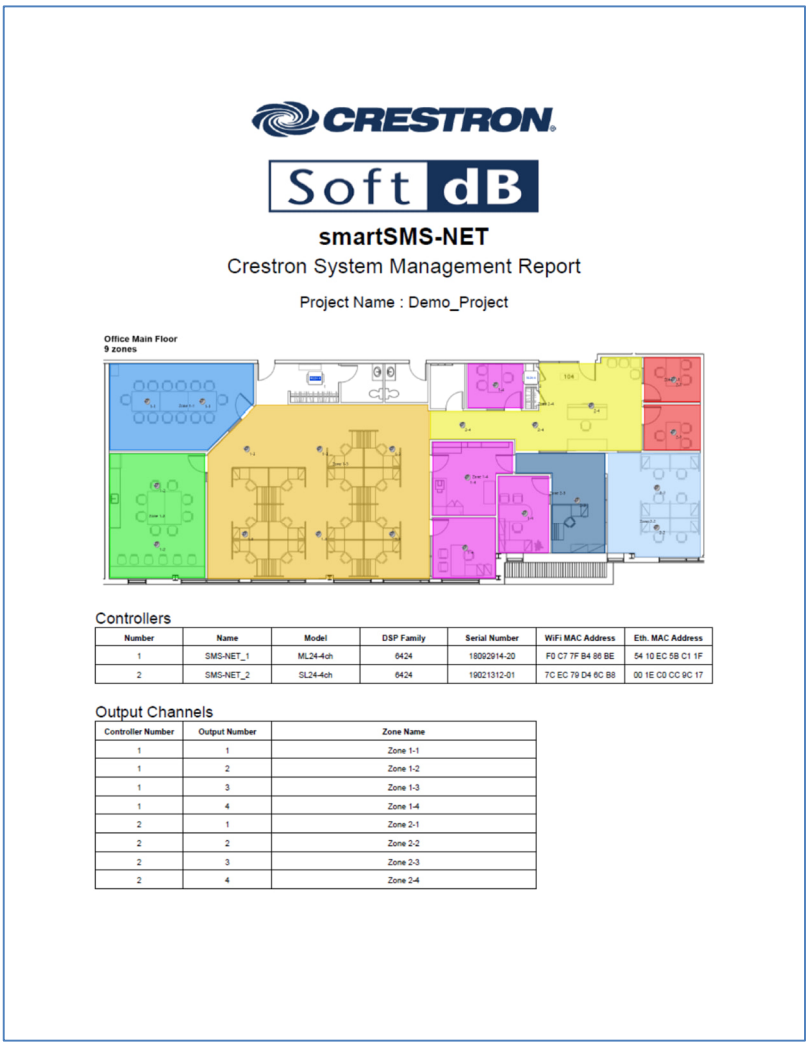
button. The test will send data packets over WiFi and will evaluate the connection quality. The connection transfer speed should be over 200 kb/s (over 400kb/s is excellent).



Appendix I Generating a Project Report for Crestron Integrator

The smartSMS-NET system is compatible with Crestron advanced control, automation, and unified communications systems[2]. To integrate the smartSMS-NET system to a Crestron system, the smartSMS-NET project structure and layout must be forwarded to the Crestron Integrator.

This information is available as a document which can be created using the Project Manager Software. Use the "Generate Crestron Report" function in the "Project Info" interface to generate the report.



CRESTRON

Soft dB

smartSMS-NET

Crestron System Management Report

Project Name : Demo_Project

Office Main Floor
9 zones

Controllers

Number	Name	Model	DSP Family	Serial Number	WiFi MAC Address	Eth. MAC Address
1	SMS-NET_1	ML24-4ch	6424	18092914-20	F0 C7 7F B4 86 BE	54 10 EC 5B C1 1F
2	SMS-NET_2	SL24-4ch	6424	19021312-01	7C EC 79 D4 6C B8	00 1E C0 CC 9C 17

Output Channels

Controller Number	Output Number	Zone Name
1	1	Zone 1-1
1	2	Zone 1-2
1	3	Zone 1-3
1	4	Zone 1-4
2	1	Zone 2-1
2	2	Zone 2-2
2	3	Zone 2-3
2	4	Zone 2-4

[2] Crestron 3-SeriesProcessor only

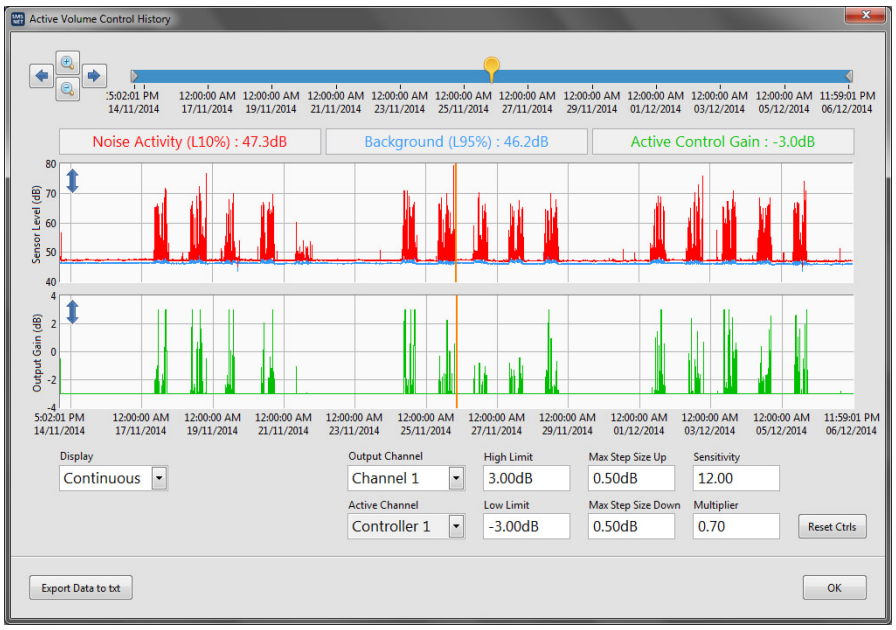
Appendix J Post-Process Active Control History Files

The Project Manager Software includes a utility to post-process active-control history files.

The active control history files can be downloaded manually from the smartSMS-NET controller using the "Load Time History" button from the active control setup interface (see section View Active Control Time History, p. 52), or automatically through system monitoring (see section 9.2 Set-Up Automatic Active Control History, p. 74).

To access the active control time history post-processing utility, click on the 

button from the "Tools" toolbar and browse to the active control history file (*.oba) to load. Note that several files (of different weeks can be loaded at the same time):

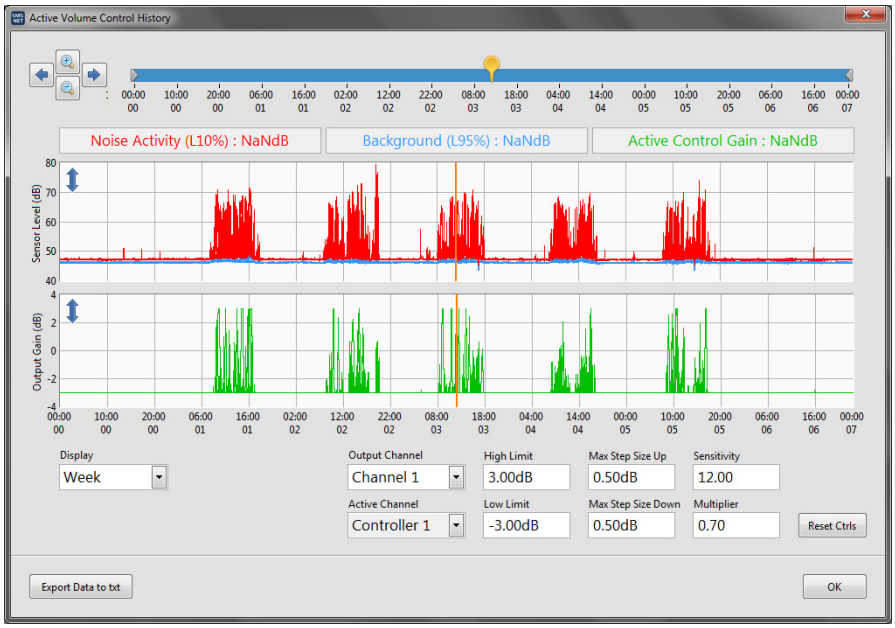


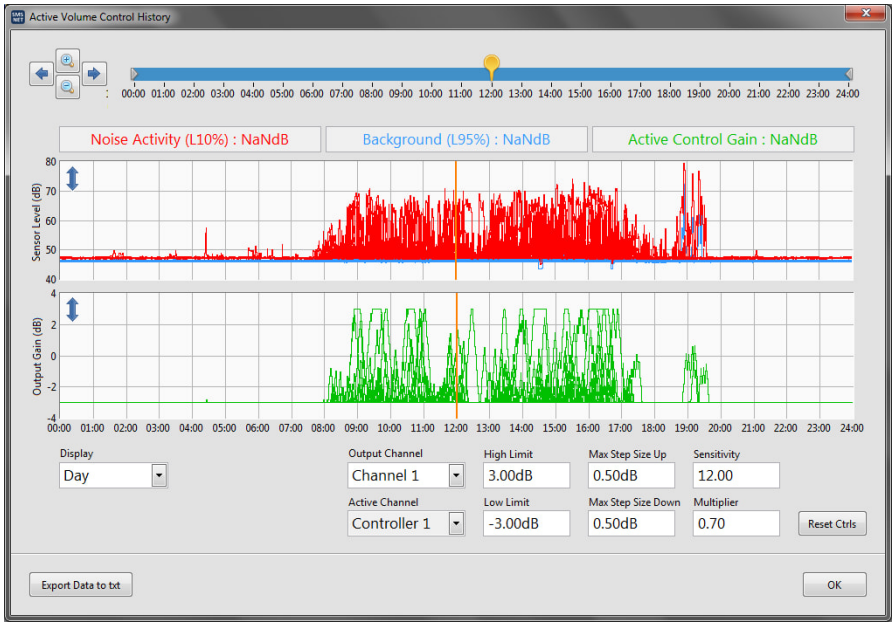
The top graph shows the sound level recorded by the sensor: the red line shows the noise activity and the blue line shows the background noise.

The bottom graph shows the resulting active control gain from the processing of the sound levels using the active control parameters (Gain limits, Max step size, Sensitivity and Multiplier). For more information on the active control parameters refer to section 8.4 Set-Up the Sound Masking Active Volume Control, p. 48.

The above example shows 3 weeks of active control time history. Each day can be clearly identified by the noise activity period ranging from 8 AM to 6 PM.

Weeks and days can be superimposed to show trends:


Active Volume Control History
Noise Activity (L10%) : NaNdB
Background (L95%) : NaNdB
Active Control Gain : NaNdB
Sensor Level (dB)
Output Gain (dB)
Display
Week
Output Channel
Channel 1
High Limit
3.00dB
Max Step Size Up
0.50dB
Sensitivity
12.00
Active Channel
Controller 1
Low Limit
-3.00dB
Max Step Size Down
0.50dB
Multiplier
0.70
Reset Ctrls
Export Data to txt
OK


Active Volume Control History
Noise Activity (L10%) : NaNdB
Background (L95%) : NaNdB
Active Control Gain : NaNdB
Sensor Level (dB)
Output Gain (dB)
Display
Day
Output Channel
Channel 1
High Limit
3.00dB
Max Step Size Up
0.50dB
Sensitivity
12.00
Active Channel
Controller 1
Low Limit
-3.00dB
Max Step Size Down
0.50dB
Multiplier
0.70
Reset Ctrls
Export Data to txt
OK

Appendix K Evaluating Speech Privacy

The Project Manager software includes a utility for evaluating Speech Privacy. Two methods are available for two common environments: Open Offices and Closed Offices. These two methods are based on the following standards:

- ASTM E 1130: Standard Test Method for Objective Measurement of Speech Privacy in Open Offices Using Articulation Index.
- ASTM E2638: Standard Test Method for Objective Measurement of the Speech Privacy Provided by a Closed Room.

To access the Speech Privacy Test utility, click on the 

button from the Tools toolbar.

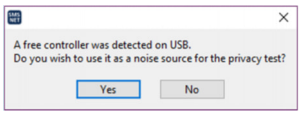
Note: A measurement microphone such as the Mezzo Precision Microphone is required. For more information, refer to Appendix J, Set-Up the Calibration Microphone, p.108.

A-K.1 Configuring a Noise Source

A broadband noise source must be used to perform these tests. A smartSMS-NET controller along with a SMS-DIRECT loudspeaker can be used for this purpose.

To configure a controller with the appropriate parameters, connect a free controller (not associated to a project) using the USB cable and click on the 

button from the Tools toolbar to access the Speech Privacy utility. The utility will detect the free controller and will ask to configure it.



When the configuration is done, the controller can be disconnected.

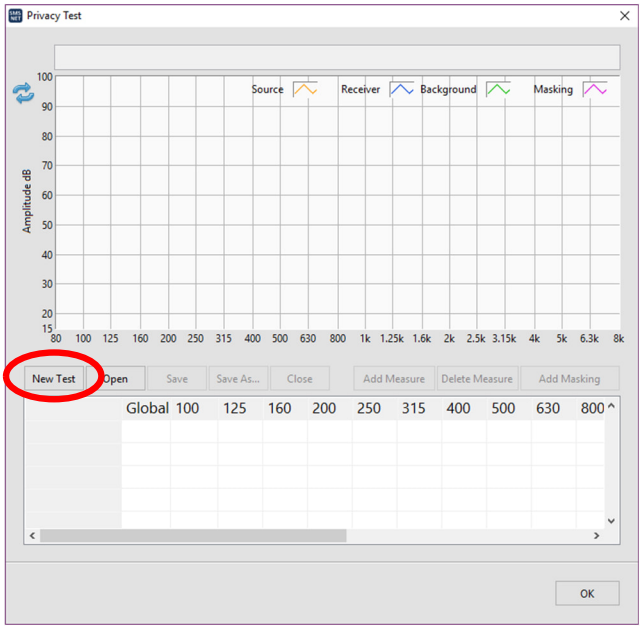
Note: The controller must be free to be configured. If the controller was previously associated with a project, you may have to reset it using the "Factory Reset".

A-K.2 Performing a Speech Privacy Test for an Open Office

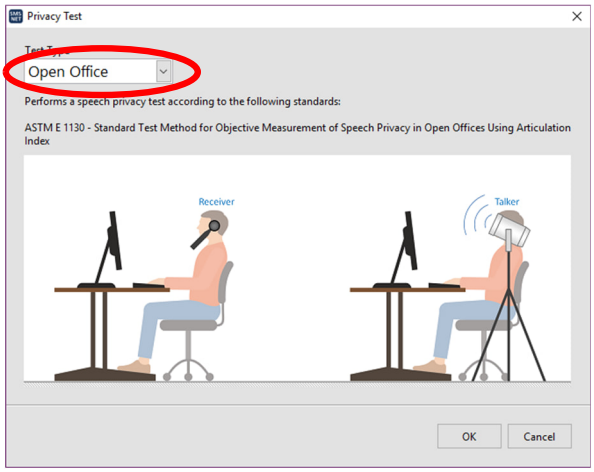
This test method describes a means of measuring speech privacy objectively between two locations in open offices. This test method relies upon the Articulation Index which predicts the intelligibility of speech for a pair of talker and listener in an open office.

Click on the 

button from the Tools toolbar to access the Speech Privacy Test utility. Click on the "New Test" button to create a new Privacy Test document:



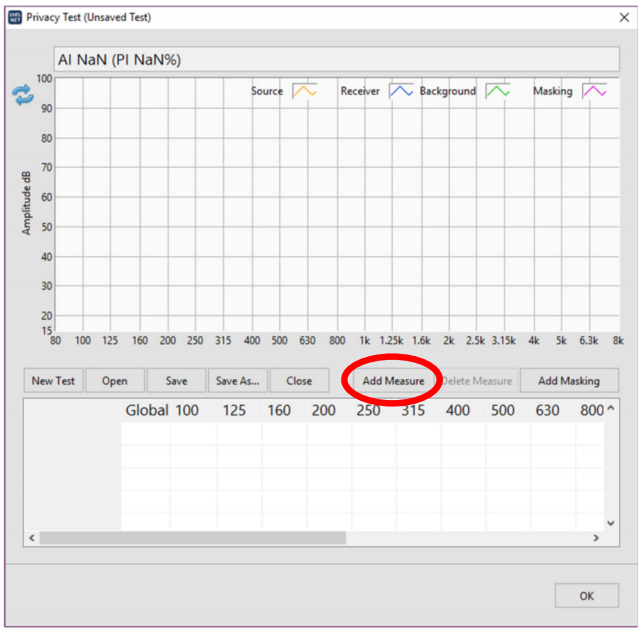
On the Test Type prompt, select "Open Office":



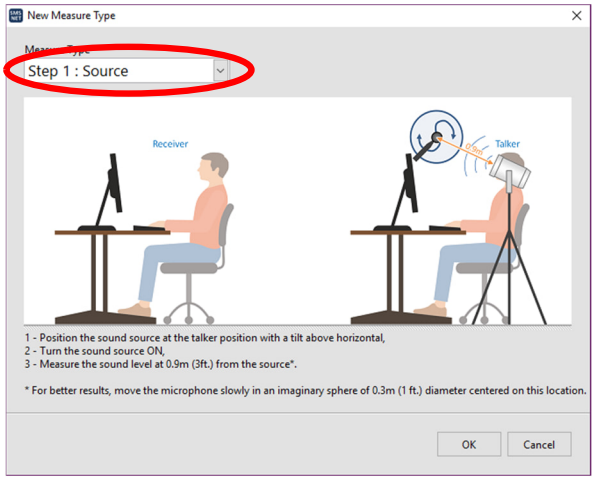
Note: Sound masking should be turned OFF during this test. A sound masking curve can be added after the test to see its effect on the Speech Privacy rating.

A-K.2.1 Measuring the Source Levels

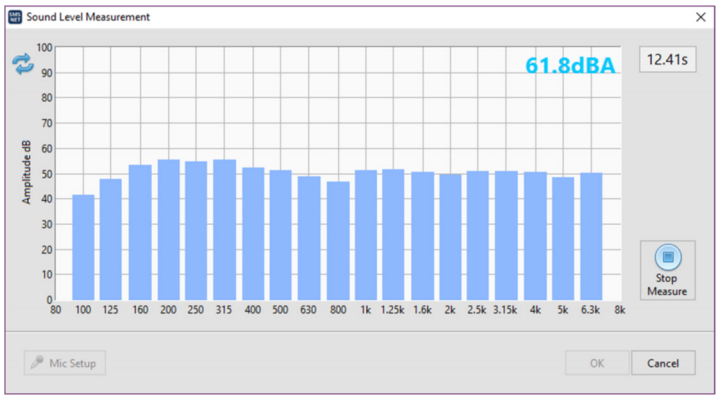
Click on the "Add Measure" button to add a measurement to the test document.



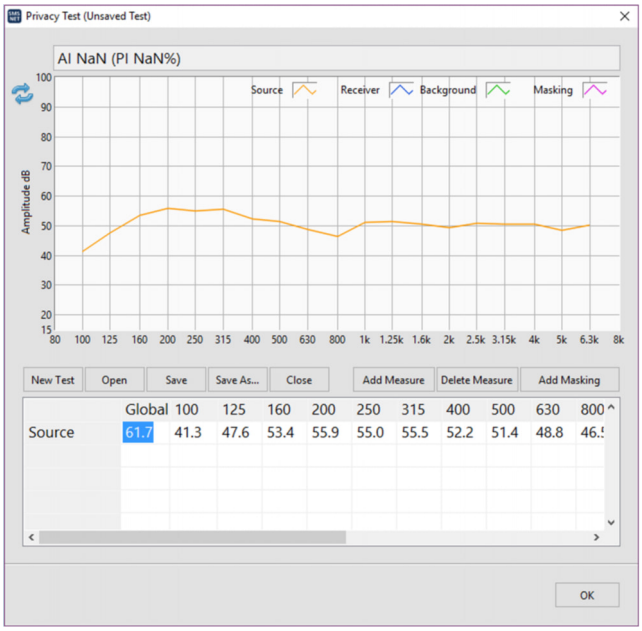
On the new measurement prompt, select "Source" from the drop-down menu and click OK.



Position the noise source loudspeaker at the talker location with a tilt above horizontal and turn it ON. Measure the sound level at 0.9 m (3 ft.) from the loudspeaker. For better results, move the microphone slowly in an imaginary sphere of 0.3 m (1 ft.) diameter centered on this location.

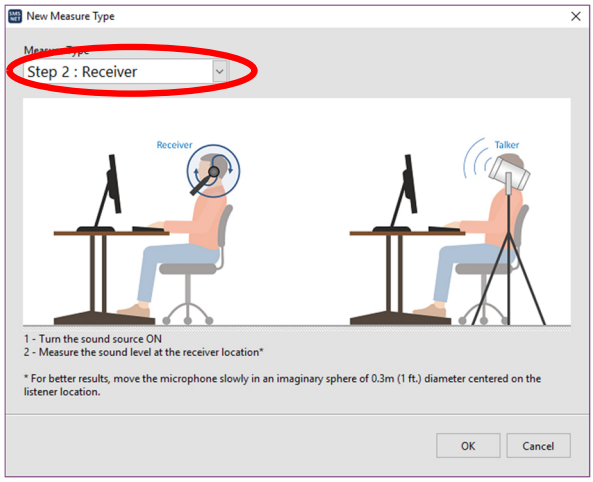


When the measurement is done, click on “OK” to accept the measurement.

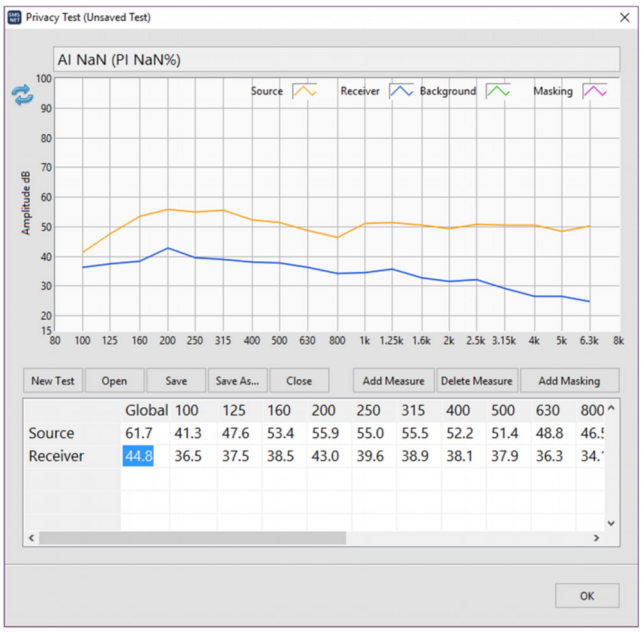


A-K.2.2 Measuring the Receiver Levels

Click on “Add Measure” and select “Receiver” from the drop-down menu on the measure type prompt.

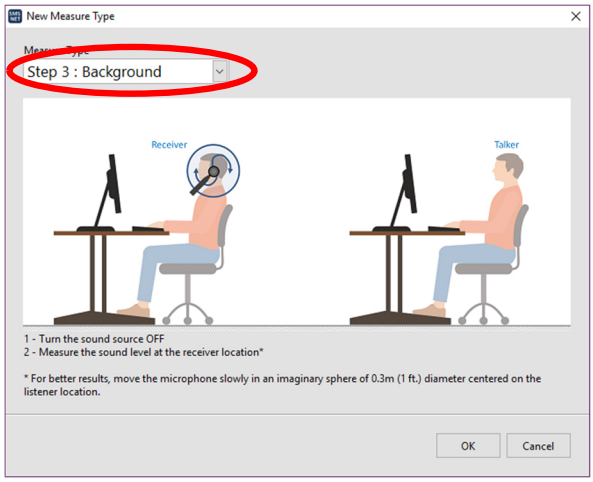


With the noise powered ON, measure the sound level at the receiver location. For better results, move the microphone slowly in an imaginary sphere of 0.3 m (1 ft.) diameter centered on the listener location. When the measurement is done, click on “OK” to accept the measurement.

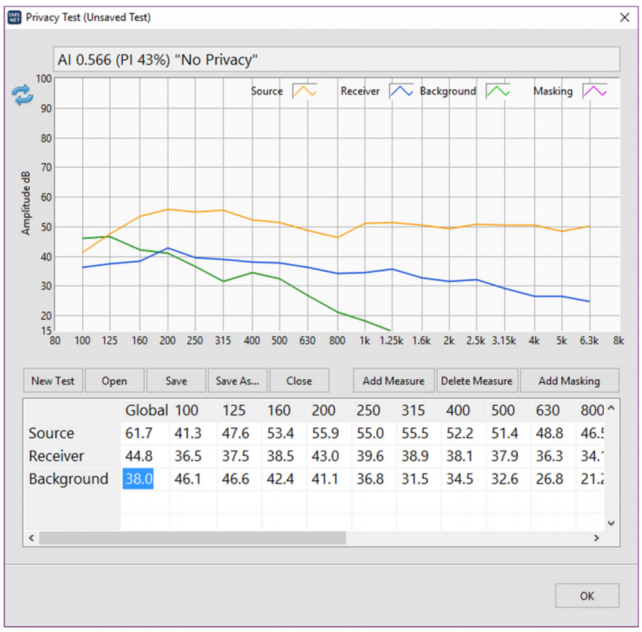


A-K.2.3 Measuring the Background Noise Levels

Click on “Add Measure” and select “Background” from the drop-down menu on the measure type prompt.



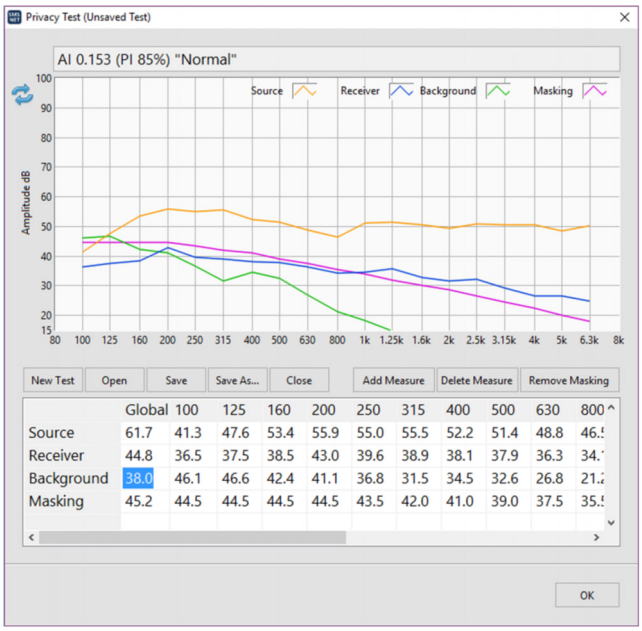
With the noise turned OFF, measure the sound level at the receiver location. For better results, move the microphone slowly in an imaginary sphere of 0.3 m (1 ft.) diameter centered on the listener location. When the measurement is done, click on “OK” to accept the measurement.



When the 3 main measurement types are performed, the Articulation Index and Privacy Index are calculated.

A-K.2.4 Adding Sound Masking

Click on the "Add Masking" button and select the sound masking curve from the library.



Upon adding a sound masking curve, the Articulation Index and Privacy Index are calculated.

A-K.2.5 Analyzing Results

The following table lists the relationship of Articulation Index and Privacy Index to subjective speech privacy ratings:

AI	PI	Subjective Rating
AI ≤ 0.05	PI ≥ 95	Confidential
0.05 < AI ≤ 0.2	95 > PI ≥ 80	Normal
0.2 < AI ≤ 0.3	80 > PI ≥ 70	Poor
0.3 < AI ≤ 0.4	70 > PI ≥ 60	Bad
0.4 < AI	60 > PI	No Privacy

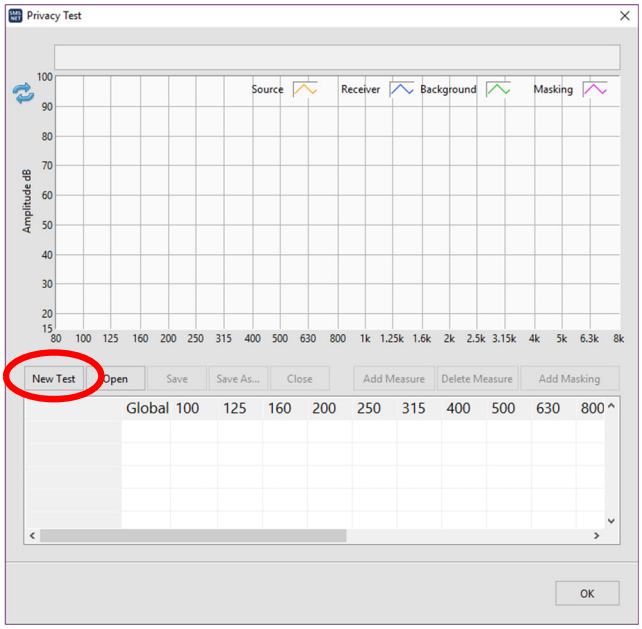
Note: For the current test, the speech privacy rating was PI 43% "No Privacy" without masking and increased to PI 85% "Normal" after adding sound Masking.

A-K.3 Performing a Speech Privacy Test for a Closed Office

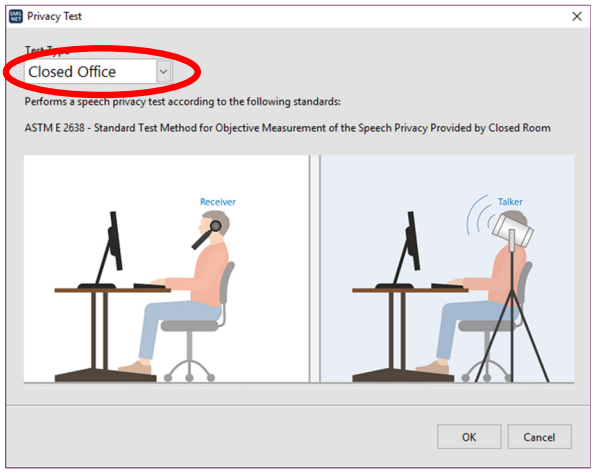
This test method describes a test procedure for measuring the degree of speech privacy provided by a closed room. For conversations occurring within the room, and with a potential eavesdropper located outside the room.

Click on the 

button from the Tools toolbar to access the Speech Privacy Test utility. Click on the "New Test" button to create a new Privacy Test document:



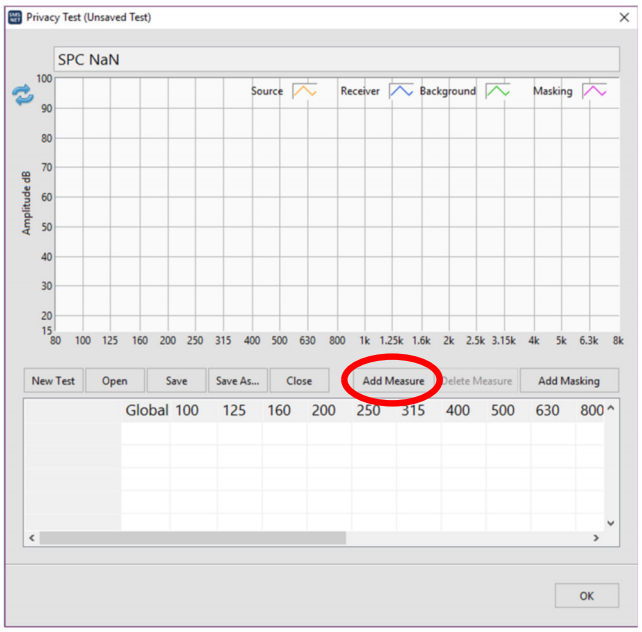
On the Test Type prompt, select "Closed Office":



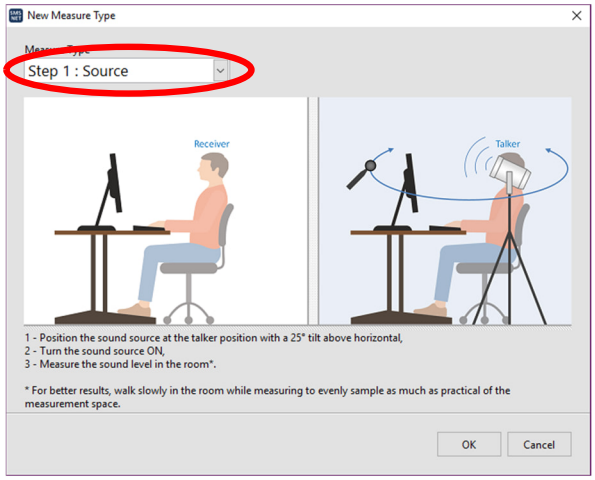
Note: Sound masking should be turned OFF during this test. A sound masking curve can be added after the test to see its effect on the Speech Privacy rating.

A-K.3.1 Measuring the Source Levels

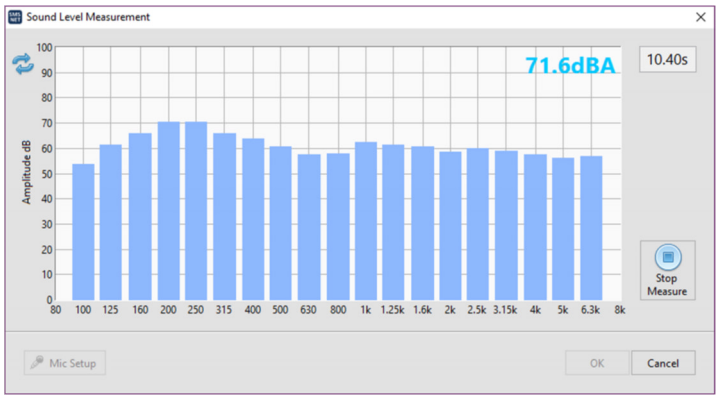
Click on the "Add Measure" button to add a measurement to the test document.



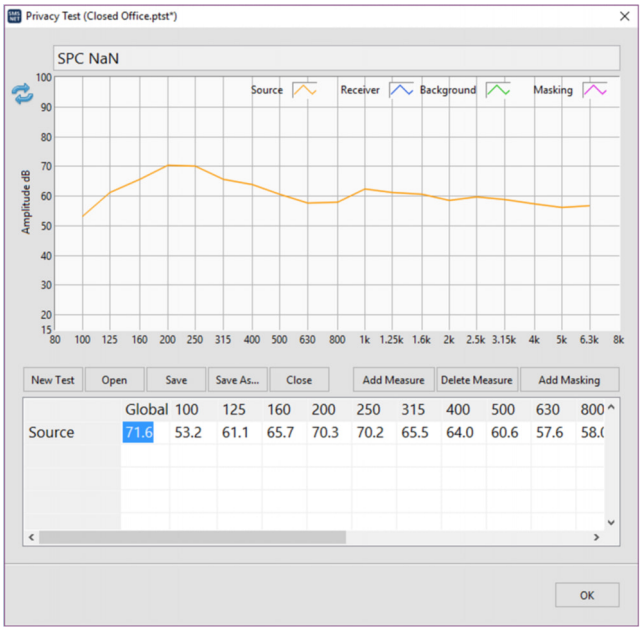
On the new measurement prompt, select "Source" from the drop-down menu and click OK.



Position the noise source loudspeaker at the talker location with a tilt above horizontal and turn it ON. Measure the sound level in the room. For better results, walk slowly in the room to evenly sample as much as practical of the measurement space.

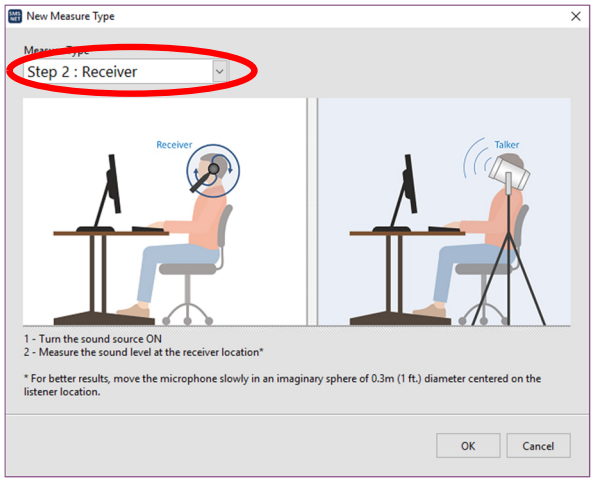


When the measurement is done, click on “OK” to accept the measurement.

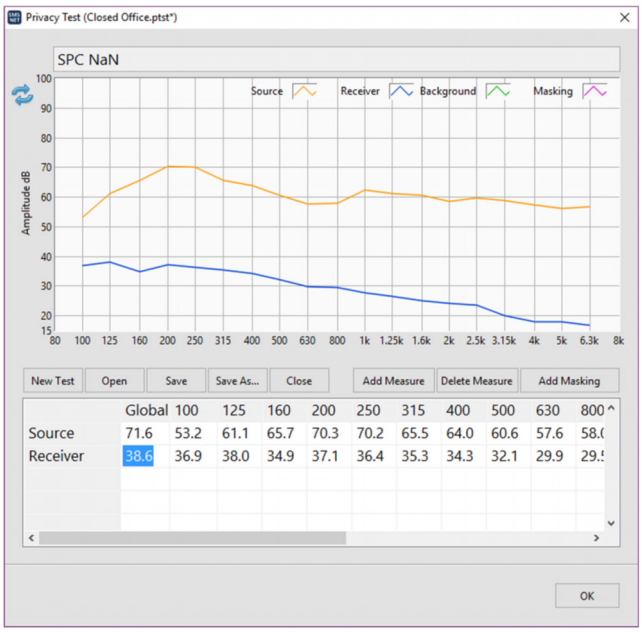


A-K.3.2 Measuring the Receiver Levels

Click on “Add Measure” and select “Receiver” from the drop-down menu on the measure type prompt.

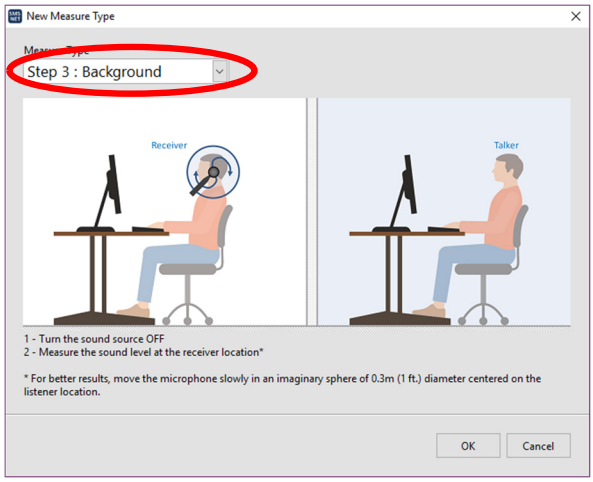


With the noise powered ON, measure the sound level at the receiver location. For better results, move the microphone slowly in an imaginary sphere of 0.3 m (1 ft.) diameter centered on the listener location. When the measurement is done, click on “OK” to accept the measurement.

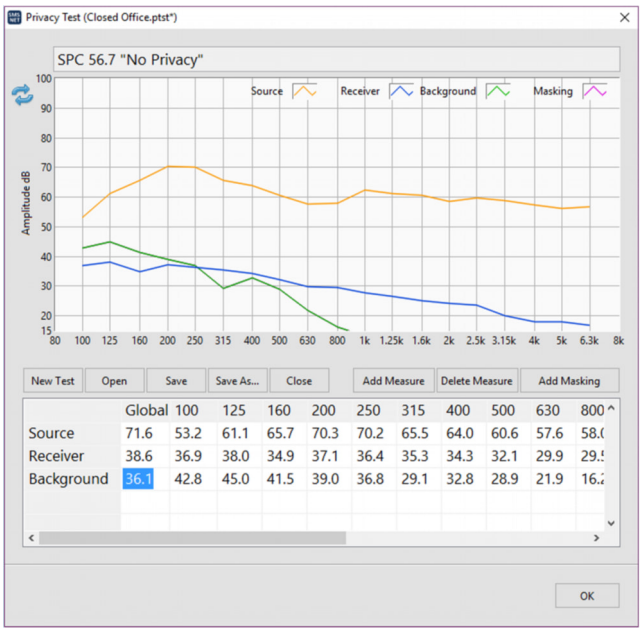


A-K.3.3 Measuring the Background Noise Levels

Click on “Add Measure” and select “Background” from the drop-down menu on the measure type prompt.



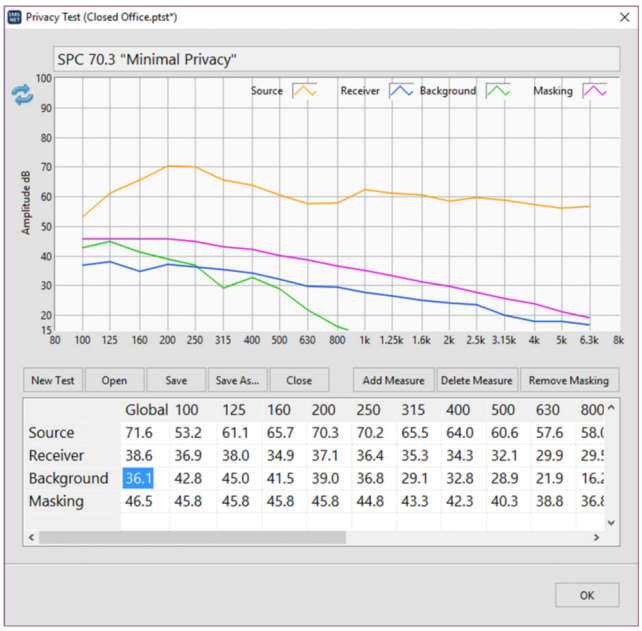
With the noise turned OFF, measure the sound level at the receiver location. For better results, move the microphone slowly in an imaginary sphere of 0.3 m (1 ft.) diameter centered on the listener location. When the measurement is done, click on “OK” to accept the measurement.



When the 3 main measurement types are performed, the Articulation Index and Privacy Index are calculated.

A-K.3.4 Adding Sound Masking

Click on the “Add Masking” button and select the sound masking curve from the library.



Upon adding a sound masking curve, the Articulation Index and Privacy Index are calculated.

A-K.3.5 Analyzing Results

The following table lists the relationship of Speech Privacy Class to subjective ratings of speech privacy:

SPC	Subjective Rating
70	Minimal Privacy
75	Standard Privacy
80	Standard Security
85	High Security
90	Very High Security

Note: For the current test, the speech privacy rating was SPC 56.7 “No Privacy” without masking and increased to SPC 70.3 “Minimal Privacy” after adding sound Masking: an increase of 13.6.