



9.5 Beta 3 Readme

Rev: 9.5.9181

Disclaimer:

The Beta build of Smaart Suite is available to users wishing to experience the *Bleeding Edge* software version that is still under active development. While using the Beta you may encounter **bugs, crashes, unexpected behavior, and awesome features.**

Please send all crash/bug reports and feedback to betafeedback@rationalacoustics.com. Please include as much detail as possible when describing how you encountered a bug or crash. Providing a step-by-step scenario for reproducing the bug/crash is immensely helpful and makes it much easier to track down the source of a problem. If a crash dump is available, please send that and the exact revision number of the build.

For more information about collection crash dumps, see our KB Article here: <https://support.rationalacoustics.com/support/solutions/articles/15000091115-what-to-do-when-smaart-keeps-crashing>

Beta Build vs. Release Build

The **Beta** and **Release** builds of Smaart have been carefully segregated to allow both to be installed on the same computer without interfering with each other. Both builds use the same licensing, so there is no licensing change required if Smaart Suite is already activated on the computer. The configuration file is stored in a different location for each build, however both builds reference the same trace file location. The default installation directory for Windows is different for each build; the OS X app bundle name is different for each build (both Beta and Release can be placed in the Applications folder).

The Beta build displays the word *BETA* in red letters in the title bar of the application. The *About* dialog displays *Smaart Suite Beta* as the application name.

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9.5 B3 Overview

Historically, there has never been a significant update for the Smaart platform beyond a 'dot' 4 release. As we've improved our feature tracking capabilities and leveraged our resources to better address our update cycle, Smaart Version 9 appears to be the first major release to have significant updates after 9.4.

9.5 beta1 included several quality-of-life improvements and elaborated on existing features to make them more robust and complete. Tolerance shading for transfer function target curves is a good example of this an expansion on an existing feature.

With 9.5 beta2 we have greatly expanded the signal generator with new noise shapes, new output schemes (more than mono), the ability to load and playback many files, and even more quality-of-life improvements.

Beta 3 adds some more useability controls to the File playback area of the generator, and normalizes noise levels when switching between random and pseudorandom.

Features Outline

Smaart 9.5 B3

- Added the ability to use band-limiting for signal generator noise contours other than Pink noise
- Updated Smaart LE signal generator to allow non-compact and updated default to non-compact
- Updated Smaart Loopback behavior when the signal generator is off
- Updated signal generation level of pseudorandom noise.

Smaart 9.5 B2

- Added Multi-File Playback to the signal generator
- Added sine wave frequency sliders to signal generator flyout
- Added mono, stereo, and multi generator playback types
- Added SMPTE standard noise type
- Added Red noise contour
- Added Pink/Red noise hybrid contour
- Added V hotkey to flush data buffer in IR Mode
- Added indication of SPL logging visible from RT and IR modes
- Added inverse pink weighting
- Added the ability to capture hidden measurements when using capture all
- Updated Leq MAX field behavior to not populate until buffer has been filled
- Updated "Pink Noise" label to "noise"
- Updated target curve error message language
- Updated the noise GUI

- Removed least significant digit from TF tolerance field
- Launching Smaart a second time now brings the existing program window to the front of the stack in Windows
- Improved behavior when using the delay finder with SyncSource measurements
- Improved view preset behavior with the live IR plot
- Improved organization of TF Graph Settings
- Improved link plot banding behavior in multi spectrum view
- Fixed a bug where the signal generator did not turn off when switching to file stimulus with no file selected for playback
- Fixed a bug where the start logging hotkey would trigger a SPL logging error message in Smaart LE

New Features from Smaart - 9.5 B1

- Added Transfer Function Target Curve tolerance
- Added support for creating Target Curves from saved data traces
- Added clock to SPL metrics list
- Added "Link plot zoom" preference
- Added coherence line thickness preference
- Added trace color assignment preference
- Updated Live IR plot label behavior
- Updated SPL alarm display behavior
- Updated SPL alarm formatting in SPL Reports
- Updated scroll bar contrast
- Fixed a bug where "Track All" command would not affect hidden measurements
- Fixed a bug where hot plug would disconnect 10EaZy and stop SPL logging

Signal Generator Enhancements

This is the most significant update to Smart's signal generator, perhaps ever. Moving the signal generator settings to a fly-up was the first step in the process which brought us here – new noise types, new ways of outputting test signals, and one of the more requested features – the ability to load multiple files into Smart, making it so that you do not need to leave Smart to playback a list of test tracks.

New Pseudorandom Noise Contours

Red Noise, sometimes referred to as brown noise, exhibits a -6dB/oct decrease in energy, or a power spectrum proportional to $1/(\text{frequency squared})$. This noise source has a significant amount of low-frequency energy and should not be considered a reliable noise source for finding delay times with transfer function measurements.

Pink-Red is a hybridized noise contour created by Rational Acoustics which transitions from pink to red at 1kHz. This way, the HF energy transitions to a *Red* contour higher in frequency, making it more useable than Red noise for full range systems, while not exciting as much high frequency content, which can be fatiguing to both our ears and our loudspeakers.

Pink and *Speech Weighted* are unchanged from previous versions of Smart.

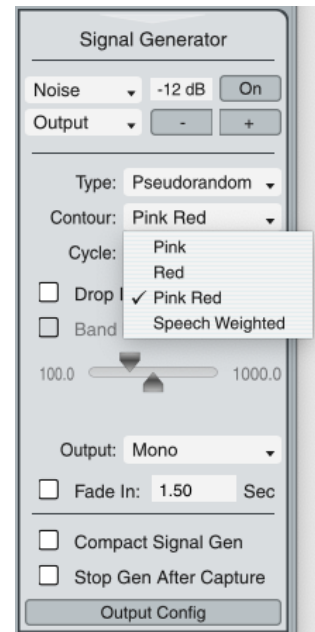


Figure 1: New Noise Contours

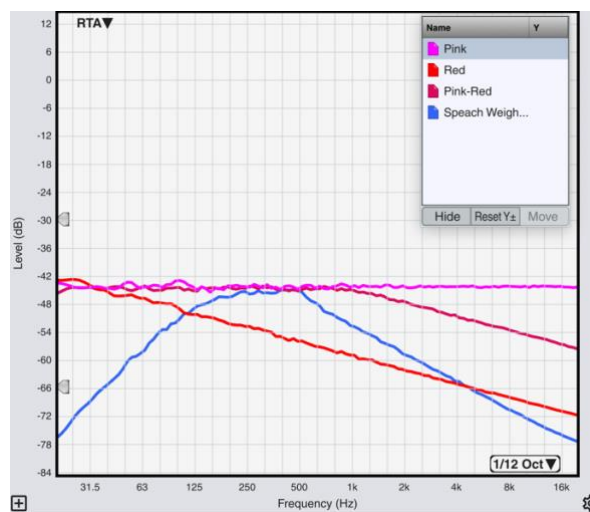


Figure 2: All Noise Contours, Spectrum View

SMPTE Noise

This selection configures the signal generator to output a noise signal that corresponds to the Society of Motion Picture and Television Engineers definition in the SMPTE ST 2095-1 draft. There are no user-definable settings for SMPTE noise.

SMPTE Noise has the following characteristics:

| | |
|-----------------------------|---|
| Crest Factor | 11.5 – 12 dB |
| Pink Noise signal bandwidth | 10 Hz – 22.4 kHz |
| Energy uniformity | +/- 0.25 dB for any 1/3oct band from 20 Hz – 16 kHz |
| Min. unique signal period | 10 secs |

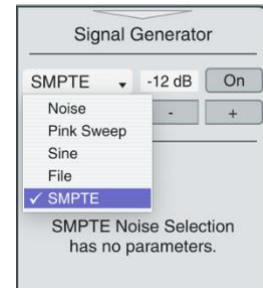


Figure 3: SMPTE Noise Selection

Output Selection: Mono, Stereo, Stereo +, Multi

This adds the ability to select between different output schemes for Noise and File sources.

Noise signals have the options of Mono, Stereo, and Multi (Multi-channel) output.

- **Mono**: when Mono is selected, the same noise seed is sent to each enabled output. This is the default selection for noise.
- **Stereo**: Independent noise generation for odd and even numbered channels. One noise seed is sent to all enabled odd numbered output channels, and a different noise seed is sent to all enabled even numbered channels (2 unique noise signals total).
- **Multi**: This selection is disabled unless pseudorandom noise is selected. Each output enabled for use will have a unique noise seed. There is no limit to the number of channels that can have a unique output seed.

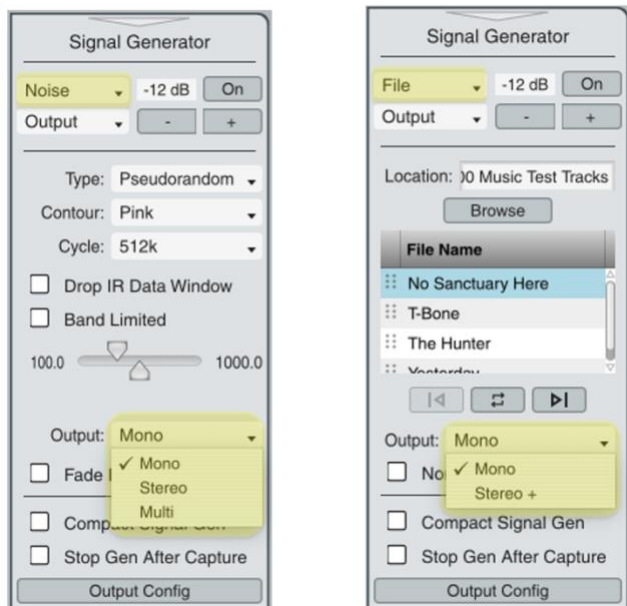


Figure 4: Output Selection for Noise (Left) and File Playback (Right)

File signals have the options of *Mono* and *Stereo+*

- *Mono*: the files channels are summed to mono and the mono sum is sent to all selected output channels.
- *Stereo+*: If a file is stereo, the first channel of a .wav file is sent to all odd numbered channels (1, 3, 5, etc), and the second channel of a .wav file is sent to all even numbered channels (2, 4, 6, etc). If the file contains more than 2 channels, then all channels are accommodated in the order they are presented. For example, if a 5.1 channel FL/FR/Center/LFE/SL/SR, and outputs 1, 2, 3, 4, 5, 6 are selected – those channels would receive the outputs as presented from the file.

Multi-File Playback

Often requested has been the ability to load multiple files to Smaart for playback, in other words, to have a media player built into Smaart. For various reasons this did not get prioritized because the generator was always a mono playback device; this of course is no longer true. With 9.5 we've built a simple and straightforward media playback area in the *File* selection of the generator. This allows you to select multiple .wav/.aiff files and load them directly to Smaart for playback, effectively creating a playlist in Smaart.

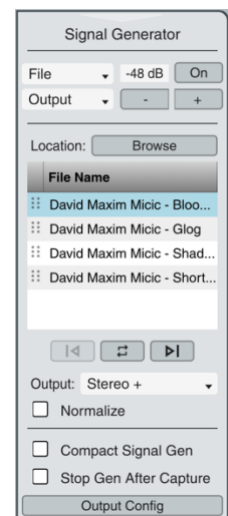
The output sources will respect your selection under the *Output* selection, detailed above.

Importing Files – you can either select *Browse* and locate the desired .wav or .aiff file to load in to Smaart, or right select directly in the play list area and select *Import*.

Removing Files – to remove a file from the playlist, right select > remove.

Start/Stop – The *On* button acts as the run button for file playback. Note this is not a play/pause button. When the generator is turned off and back on again, the selected file will start at the beginning.

Repeat – Selecting the repeat button in between the *Next* and *Previous* arrows will repeat the selected file rather than going to the next song in the playlist.



Transfer Function Target Curve Tolerance

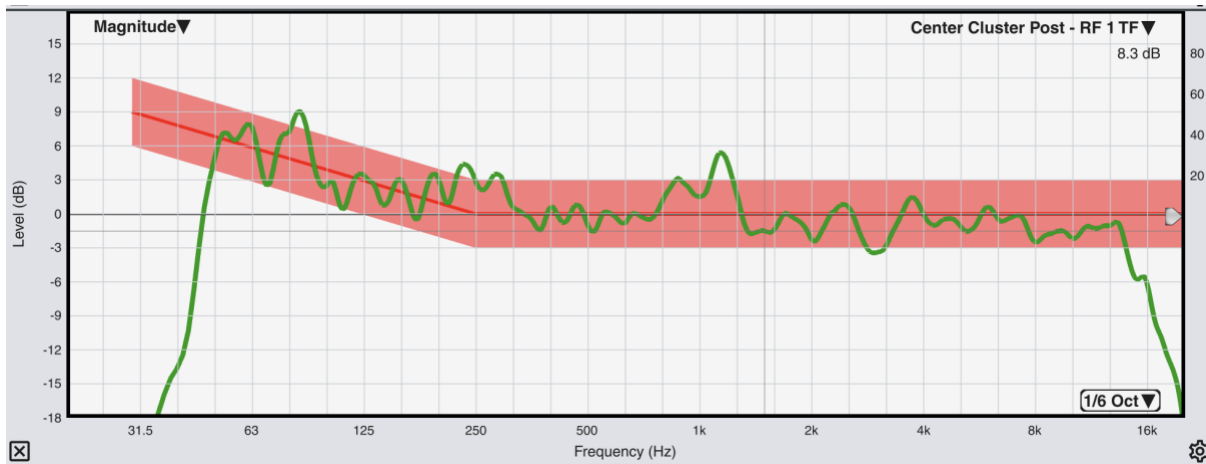


Figure 5: the "9 dB Haystack" Curve with 3dB Tolerance Applied

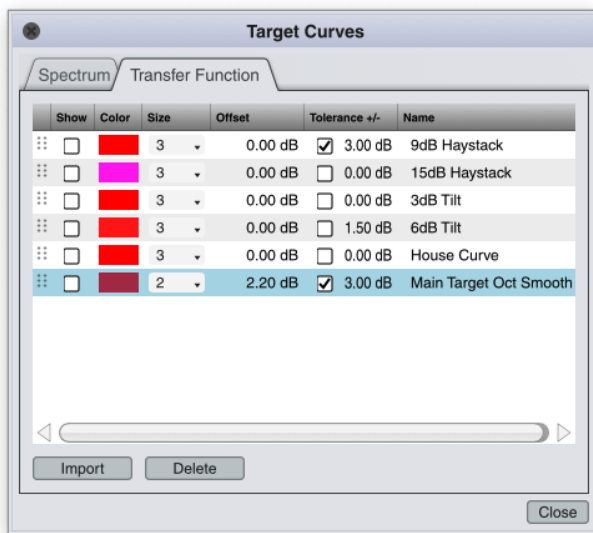


Figure 6: TF Target Curve 9.5

Added to the TF Target Curves dialog is a column to include a *Tolerance* value. Once enabled via check box, a gradient shade of the target curve color will be drawn above and below the target curve.

For example, a tolerance of 3.00 dB (yes we know, 2 decimal places is overkill and this will be adjusted to only reflect tenths not hundredths) will draw a shaded area totaling 6dB – 3dB above and 3dB below. See the example above.

Creating Target Curves from Stored Traces

Available from the right click menu on stored data traces, you will see a new option to *Export as Target Curve*. This option is available for both spectrum and transfer function data and will create a target curve from the data you have selected, where both banding/smoothing values as well as any Y offsets are maintained regardless of the current plot settings.

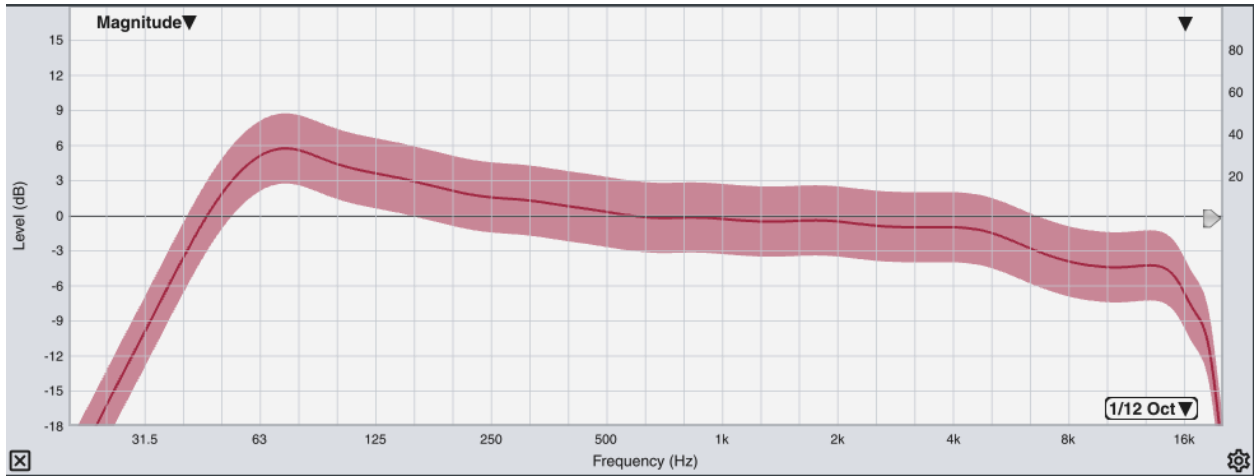


Figure 7 Target Curve Created from Stored Data

In the image above we've created a transfer function target curve from a stored measurement set to Octave smoothing. Note that the plot smoothing is set to 1/12 octave. In the image below, we can see 1/12 octave smoothed data with y-offset applied, as well as the stored target curve, and that both the smoothing and y-offset are ignored by the target curve.

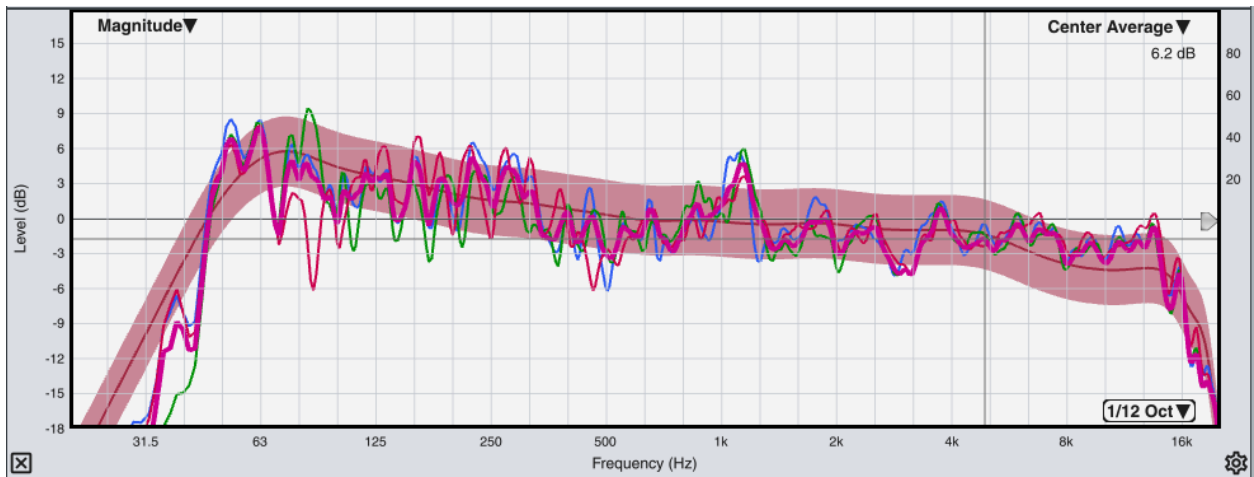


Figure 8 Target Curve Created from Stored Data with Data Displayed