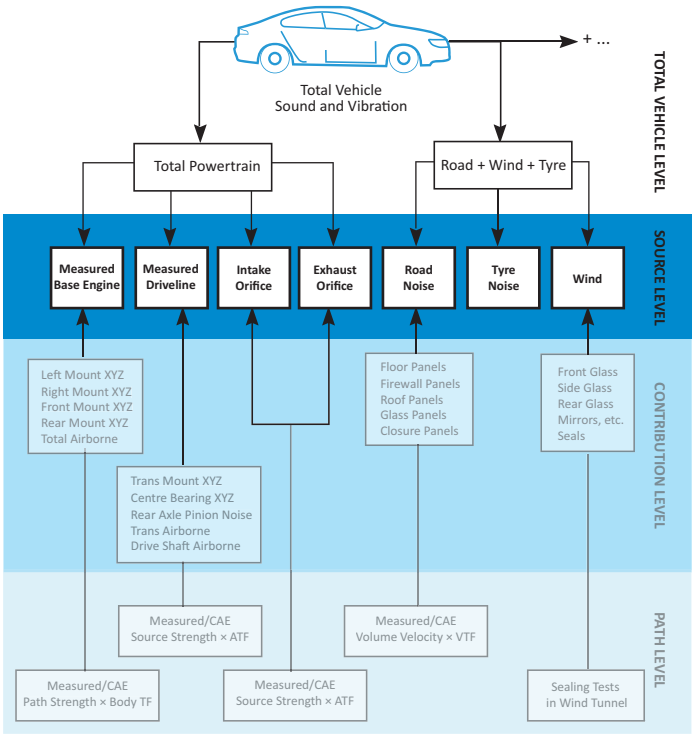
NVH Simulator Source Level Data Preparation Type 8601-L

Source Level Data Preparation Type 8601-L is an NVH Simulator module that expands the Simulator's vehicle level data preparation to create a source level model in two ways.

Firstly, it extends the order cutting algorithm to run automatically on all sources as well as receivers at the same time. This greatly speeds up the process of preparing source level models with harmonic data.

Secondly, the module's Road Noise Decomposition tool allows you to decompose measurements of total vehicle masking sounds made on the road into their component parts.



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Uses and Features

- Create a source level model
- Assign user-selectable data to the model
- Decompose road noise data into individual contributions
- Prepares and exports data in Simulator-compatible format

Source Level Data

For steady-state (constant speed) operating conditions, source level data enables the total masking portion of sound to be decomposed into road, tyre and wind noise. This requires data to be recorded from reference transducers, typically a triaxial accelerometer on each hub and a microphone fore and aft of each wheel.

The ability to manipulate source level data is a powerful tool for the NVH engineer trying to understand and balance sound sources. By listening to and modifying sounds directly at the source level (rather than the whole vehicle level), great understanding can be gained of which physical vehicle sub-systems need improvement to deliver the desired total sound.

Source Level Data within the NVH Simulator

The NVH Simulator uses a hierachical vehicle model (see Fig. 1) to represent the sounds inside a vehicle. The total vehicle sound can be decomposed successively into vehicle level and then to source level. Data can also be included in the vehicle model for individual sub-systems and components at the contribution, or parts level, or even at source strength level using the optional NVH Simulator Contribution Analyzer Type 8601-P.

Fig. 1 *An excerpt from the expanded vehicle and source level tree*

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Road Noise Decomposition

For road noise decomposition, the vehicle level is where the total sound is decomposed into the harmonics (including, but not limited to the engine orders) and the masking sound (broadband noise).

Once the vehicle level data have been decomposed to total engine and total masking, the total masking can then be further decomposed into the individual source contributions using Source Level Data Preparation Type 8601-L. Using multiple coherence techniques, the road noise is separated out to more specific sources, such as 'front wheels road structure-borne', 'rear wheels structure-borne', 'front wheels airborne', 'rear wheels airborne', etc. There will be some noise that is not coherent with any of the references and usually constitutes mostly wind noise.

Specifications

NVH Simulator Source Level Data Preparation Type 8601-L is an optional module for the NVH Simulator software. Type 8601-L expands NVH Simulator Vehicle Level Data Preparation Type 8601-K (prerequisite) to create a source level model. In this model, you can define the sound sources that will be accounted for, assign scenario-appropriate data to the model, process and then export the prepared data to the Simulator as a whole, where the model can be modified and manipulated in order to provide a fully customised scenario for jury evaluation and engineering purposes.
During engineering, contributions from the various sources to the driver's position can be determined using source path contribution tools.

Ordering Information

Software with an *-x* suffix are available either as a node-locked or floating licence. Please include licence type when ordering:

- N: node-locked, permanent (example: *8601-L-N*)
- FYG: annual floating lease, global (example: *8601-L-FYG*)
- FYL: annual floating lease, local site (example: *8601-L-FYL*)
- FY1: annual floating lease, Region 1, Americas (example: *8601-L-FY1*)
- FY2: annual floating lease, Region 2, Europe (example: *8601-L-FY2*)
- FY3: annual floating lease, Region 3, Asia (example: *8601-L-FY3*)

Type 8601-L-*x* **NVH Simulator Source Level Data Preparation**

Go to bksv.com/nvhsimulator to find out more about Brüel & Kjær's NVH analysis solutions. For a full list of NVH Simulator modules and options, see the product data.

PREREQUISITES

Type 8601-K-*x*	NVH Simulator Vehicle Level Data Preparation

OPTIONAL HARDWARE AND SOFTWARE

Type 4100	Sound Quality Head and Torso Simulator (see BP 1436)
Type 4101-B	Binaural Microphone (see BP 2562)
ZH-0677	RME® Fireface UC Audio Interface
HT-0017	Sennheiser HD650 Headphones
Type 3663-B-080	8-ch. Sonoscout System, with LAN-XI 8-ch. input + 2-ch. CAN input module, battery module, WLAN frame, and Sonoscout licence in one portable case (see BP 2463)
BZ-5950-L	Sonoscout NVH Recorder, licence (see BP 2463)

SUPPORT PRODUCTS

Software maintenance and support is included in all annual floating lease licences. For permanent, node-locked licences, the following software maintenance products are required:

M1-8601-L-N	Software Maintenance and Support Agreement for Type 8601-L-N

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