# Knowledge Base

### Abaqus/CAE Plug-in to Create Direct Steady State Dynamic Analyses Based on Octave Band Width Frequencies

**Portfolio / Domain:**     SIMULIA Abaqus Unified FEA / n/a
**Product:**                     n/a

---

**QUESTION**      **How can I create a direct steady state dynamic procedure based on octave band width frequencies?**

**ANSWER**

(The following applies to Releases 6.9-1 and higher)

An Abaqus/CAE plug-in for this purpose is attached to this Answer.

In acoustics, sound pressure level is often measured in bands of frequency, rather than at individual frequencies. In acoustics literature these bands are referred to as octave, one-half octave and one-third octave, depending on the width of the bands chosen. Each band is represented by a center frequency. For the octave band analyzer, the upper frequency in each band is twice the lower frequency. For the one-half octave band, the upper frequency is $2^{1/2}$ times the lower frequency and for the one-third octave band; the ratio is $2^{1/3}$. For this plug in, the center frequencies and passbands are listed in the `octaveData.py` file that is extracted after installation.  Additional details can be found in standards ANSI S1.6-1984 and ISO R 266.

#### Installation

To install the plug-in, save the attached archive file to one of the following directories:

> *abaqus_dir*\abaqus_plugins where *abaqus_dir* is the Abaqus parent directory
>
> *home_dir*\abaqus_plugins where *home_dir* is your home directory
>
> *current_dir*\abaqus_plugins where *current_dir* is the current directory

Note that if the `abaqus_plugins` directory does not exist in the desired path, it must be created. The *plugin_dir* directory can also be used, where *plugin_dir* is a directory specified in the `abaqus_v6.env` file by the environment variable **plugin_central_dir**. You can store plug-ins in a central location that can be accessed by all users at your site if the directory to which **plugin_central_dir** refers is mounted on a file system that all users can access. For example,

> `plugin_central_dir = r'\\fileServer\sharedDirectory'`

On Windows platforms, right click on the archive files and select **WinZip → Extract to here**. On Linux platforms, type **unzip Create SSD Direct Step Plug-in.zip** at the command prompt. A folder named abq_CreateSSDStep and a file named `createSSDStep_plugin.py` will be extracted.

Note that the plug-in will not function properly if this procedure is not followed.

#### Usage

To access the plug-in switch to the Step module of Abaqus/CAE and select **Plug-ins → NVH → Acoustics → Create SSD Direct Step....**

The plug-in creates a direct-solution steady state dynamics step with data lines derived from the lower and upper center frequencies you specify.

The dialog box of the plug-in is shown below. In this example, the first one-third octave band will have a center frequency of 16, the last band will have a center frequency of 20000, and the remaining portion of the range will be filled with one-third bands that have appropriate center frequencies.
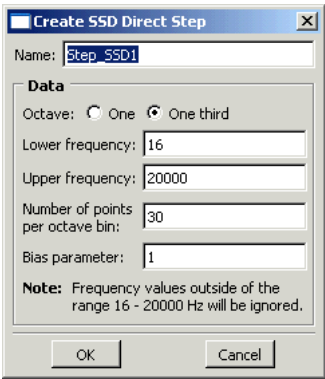


#### Disclaimer

The attachments to this article are subject to certain usage conditions.  Please click here for details.

*Revision History*

| 22 Feb 10 | Initial release 1.1-1 |
|-----------|------------------------|

---

**KEYWORDS**      acoustics, octave, SSD, steady, state , dynamics, step, create, plug, automate, procedure, frequency

---

**ATTACHMENT**      Create_SSD_Step_Plug-in.zip     answer_4262_fig1.png     answer_4262_fig2.png

SUBSCRIBE TO
CHANGES

RATING               On a scale of 1-5, how would you rate the technical content of the article?

Please rate this article...

LET US KNOW
IF THIS ARTICLE
NEEDS TO BE
ENHANCED

UNCLEAR          MISSING INFO          DUPLICATE          OUT OF DATE          ERROR DETECTED

See Comments (1)

MY FAVORITE CONTENT