

## Phase Noise to Jitter Calculator

### Overview:

Abracon Corporation has designed a Phase Noise to Jitter Calculator tool to assist customers in evaluating both Phase Noise and rms jitter performance of oscillator products.

This tool offers three distinct options:

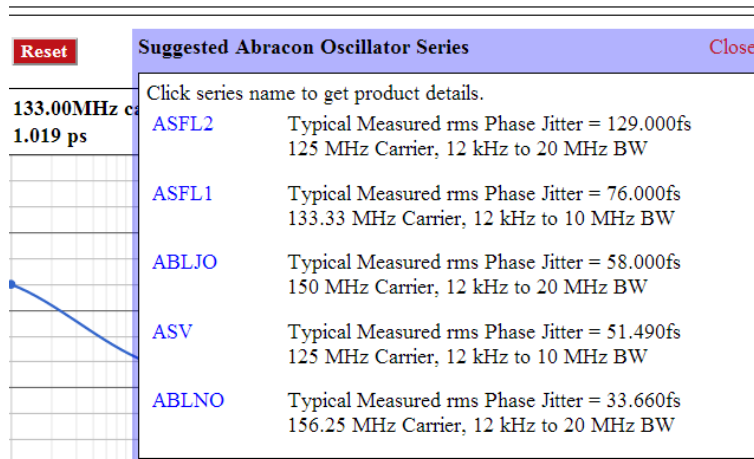
- 1) Customers who are interested in general requirements for various applications can select an application from the “**Load Application**” dropdown box
- 2) Customers who are interested in typical performance of Abracon oscillators can select a oscillator series at a particular carrier frequency from the “**Load Product**” dropdown box
- 3) Customers who are interested in evaluating jitter on an arbitrary set of Phase Noise figures at various offsets can enter the “**Carrier Frequency**” and the phase noise data in the table under “**Step 2**”; and then click on “**Calculate**”. This tool will then generate the Phase Noise plot, as well as calculate the rms jitter over the specified bandwidth

**Carrier Frequency:** If the user enters a carrier frequency in MHz, such as “25”, the “**Load Product**” dropdown box will automatically lists all data files currently available for evaluation at 25MHz. Selecting one of these files will automatically:

- Load the data in the table under “**Step 2**”
- Construct the Phase Noise plot
- Calculate the rms jitter over the BW the data was collected


### **Suggested Abracon Oscillator Series:**

By clicking on the “**Show**” button all oscillators that have typical measured rms jitter of equal to or less than the displayed data will be listed for carrier frequency with-in  $\pm 20\%$  of the specified carrier frequency



Series Name	Typical Measured rms Phase Jitter	Carrier Frequency	Bandwidth (BW)
ASFL2	129.000fs	125 MHz	12 kHz to 20 MHz
ASFL1	76.000fs	133.33 MHz	12 kHz to 10 MHz
ABLJO	58.000fs	150 MHz	12 kHz to 20 MHz
ASV	51.490fs	125 MHz	12 kHz to 10 MHz
ABLNO	33.660fs	156.25 MHz	12 kHz to 20 MHz

Abracon oscillators meeting the rms jitter specifications are listed in this window. The series name listed in **Blue** are hyperlinked to that particular oscillator series' landing page. Clicking these links will take the user to the respective landing page where additional information is available including data sheets, inventory, RoHS compliance documentation, etc. (available under the "**Support Docs**" link).

Show 25 entries		Showing 1 to 1 of 1 entries							Series Name: ASFL2	
Series	Type	Frequency Range	Voltage	Output	Temp Range	Stability	Package	Height	Documents	
 ASFL2	XO	321kHz to 125MHz	2.5V	LVC MOS TTL	0 to 50°C -10 to 60°C -10 to 70°C -20 to 70°C -30 to 70°C -30 to 85°C -40 to 85°C	±20ppm ±20ppm ±20ppm ±20ppm ±25ppm ±25ppm ±25ppm	5.0 x 3.2mm 4 Pad SMD	1.40mm	<a href="#">Datasheet</a> <a href="#">Inventory</a> <a href="#">Support Docs</a>	

**Calculate**

The calculate button can be used to either:

- Calculate the rms jitter of the phase noise data manually entered in the table
- Evaluate the jitter over a narrower BW by deleting the Phase Noise data points that are not needed in the table. Please take note the same BW has to be assigned under "**Enter Integration Bandwidth**" to execute this task

**Create PDF**








Clicking this button creates a pdf file of the table and the phase noise plot, which can then be locally saved on the user's computer


**Reset**

This button resets the page to the original condition (blank), and the user can restart the process

Data under **Step 2:**

**Step 2:**  
Enter / Edit Offset & Amplitude data

Offset (Hz)	Amplitude (dBc/Hz)	Add Line
10	-40	
100	-70	
1,000	-80	
10,000	-110	
100,000	-120	
1,000,000	-140	
10,000,000	-145	
20,000,000	-150	
Offset (Hz)	Amplitude (dBc/Hz)	Add Line

The user can add additional data points by clicking on "**Add Line**", such as data at 40MHz offset from the carrier or, can delete data point(s) by clicking on the  button.

**Note:**

In most instances, the **Calculated** rms jitter will be worse than the **Typical Measured** rms jitter under “**Show Abracon Oscillator Series**”. The reason being, the measured data is collected using either E5052A SSA or Comstron PN-9000 Phase Noise equipment and comprises of greater number of data points than the “**Calculated**” value.

**Disclaimer:**

This tool is designed to assist customers in the quick evaluation of rms phase jitter. The general information related to Application Specific phase noise data is available in public domain. The calculations and charting routine is executed in Java Script and no claims (*specific or implied*) are being made as to the originality of this algorithm.