How Datasets Work

PathWave RF Synthesis (Genesys) and PathWave System Design (SystemVue)

When you run any RF System simulation, (at least) two datasets are created. The spectrum dataset contains the power spectrum at each node of the circuit. In this dataset, \( P_1 \) is the spectrum at node 1, \( P_2 \) is the spectrum at node 2, and so on. By default, its name contains the name of the Analysis, Design, and the word ‘Data’. See Figure 1.

The path dataset is very different, and always appears inside a folder such as “System1_Data_Folder”. Notice that its name ends with the name of the path. It contains all measurements taken along the path defined on the analysis’s Paths tab, Figure 2.

Over 100 measurements are calculated during simulation. To see the entire list, search for “Spectrasys Measurement Index” in Help → Topics and Index.

Several measurements can be seen in the list, such as Carrier-to-Noise Ratio (CNR) shown in Figure 2.

Figure 1. This is **System1_Sch1_Data**. Figure 2. **System1_Sch1_Data_Path1**
To graph a measurement, right-click on the measurement’s name in the list and choose **Add to Graph → New Graph**. A new rectangular graph will open with the measurement on the vertical axis, and the parts along the path on the horizontal axis.

Any number of paths can be defined on the Paths tab of the analysis. Recall that a path can begin on any node and end on any other node. Paths can even go in the reverse direction on the schematic; for instance, it can begin on a local oscillator and end at the receive antenna! In this case, the simulation will create one dataset per path in the path folder.

![Cascaded Gain](image)

**Figure 3.** That condition might look like this

With multiple datasets from multiple paths and multiple simulations and designs, there must be a way to selectively pull a variable from one specific dataset. That is done with either of two useful functions: **using()** and **getvariable()**.

**Figure 4. Example**

On Line 1 of the Equations, **using()** essentially opens a dataset for reading. On Line 3, **P2** is **read from that dataset**, and used in the computation on Line 5. Any subsequent references to variables will continue to look in that dataset for the variables.

In a similar way, **getvariable()** can be used to make a single read from any dataset. **Using()** is persistent; **getvariable()** is one-time.

Understanding how datasets work is key to managing data in your workspaces. Parts along the Path CGAIN
To learn more please use these links:

- **PathWave System Design (SystemVue)**
- **PathWave RF Synthesis (Genesys)**

Learn more at: [www.keysight.com](http://www.keysight.com)

For more information on Keysight Technologies’ products, applications or services, please contact your local Keysight office. The complete list is available at: [www.keysight.com/find/contactus](http://www.keysight.com/find/contactus)