Output_Equations_VSS

Where To Find This Example
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Understanding AWR .emz Files

Design Notes

USING OUTPUT EQUATIONS WITH VSS TIME DOMAIN MEASUREMENTS

This project demonstrates how output (measurement) equations can be used with the VSS time domain measurements. There are several necessary steps to use measurement equations with the VSS time domain measurements. The VSS frequency analysis measurements, found in the **System > RF Budget Analysis** category, do not require these extra steps.

Overview

ACPR is computed using both measurement equations and the built-in ACPR measurement. For this example the main channel has center frequency of 100 GHz and a bandwidth of 2 GHz. The adjacent channel has center frequency of 101.5 GHz and a bandwidth of 1 GHz.

Two CH_PWR measurements are used in computing ACPR, the first for measuring the power in the main channel and the second for measuring power in the adjacent channel. ACPR is then the power of the adjacent channel in dB minus the power of the main channel in dB.

Steps for output equations:

1. Create the measurements desired in a table or graph. In this example the Powers table contains the CH_PWR measurements for the main and adjacent channels. It also contains the built-in ACPR measurement for reference purposes.

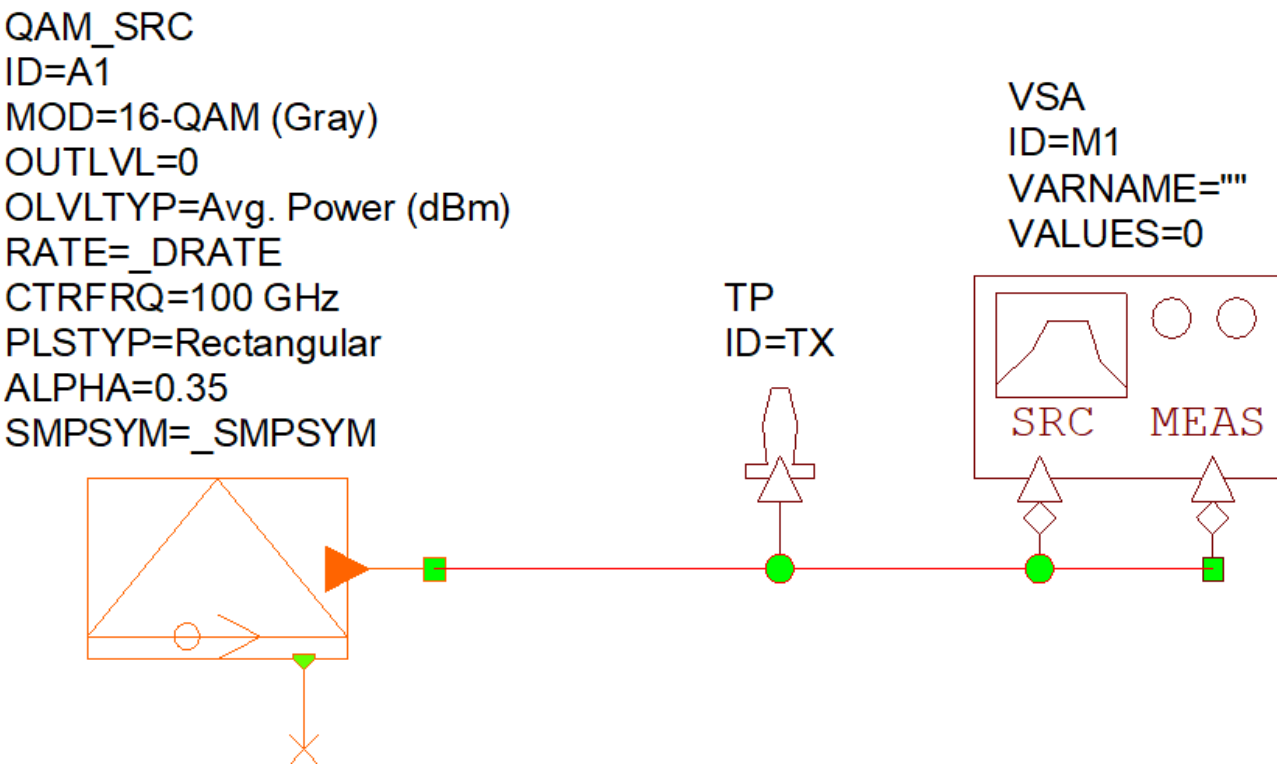
2. Create the desired measurement equations in the Output Equations window with the exact settings as those in the table/graph. The simplest way to do this is to first bring the Output Equations window to the foreground, then click and drag the desired measurement form the Project tree to the Output Equations window. This method will create a measurement equation with a generic name, which can then be edited.

Another way to create measurement equations is to first open the properties for the measurement in the table/graph and choose **OK**. Then immediately add a new measurement equation to the output equations window (**Draw > Add Output Equations**). The new measurement equation dialog box will then contain the settings of the measurement from the table/graph and the user can define the variable name for this equation.

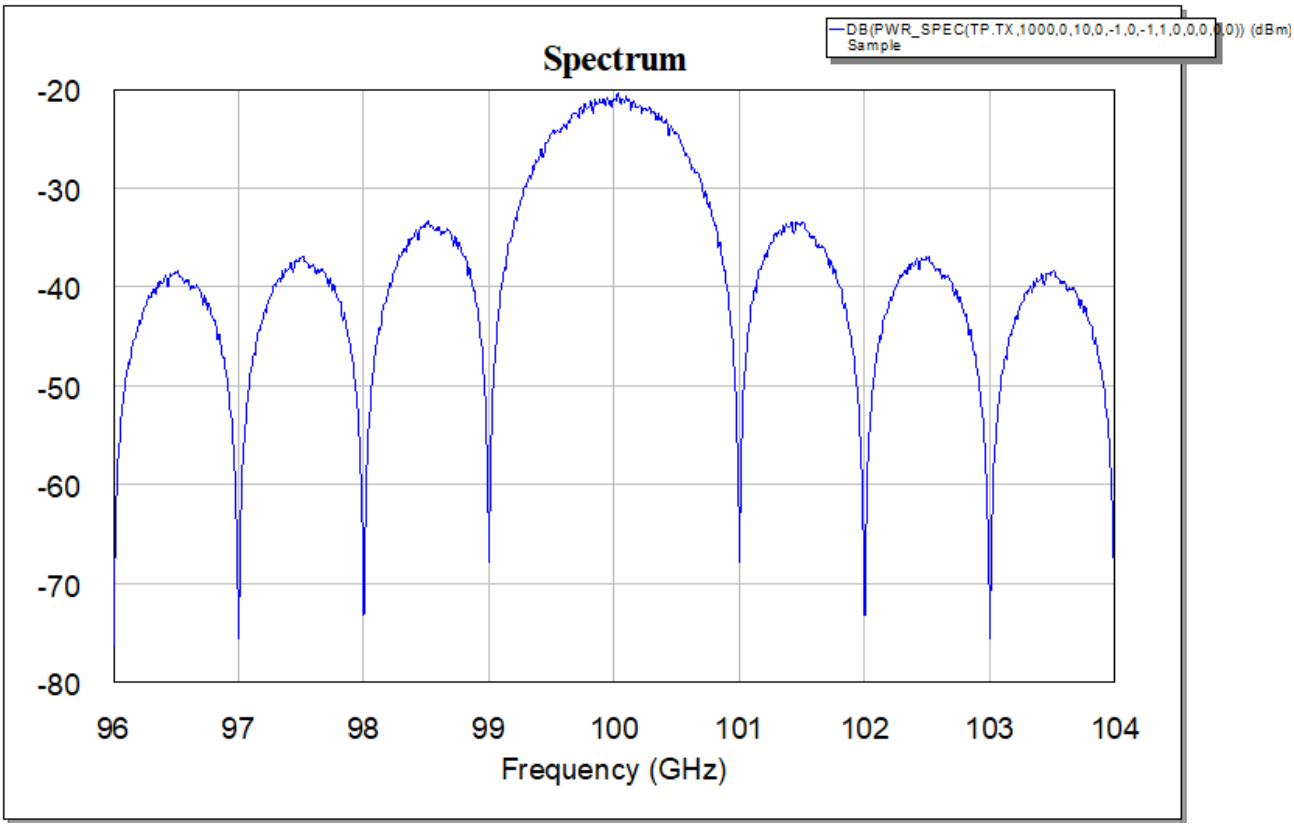
3. Run the simulation until all the measurements used in measurement equations have data ready in the table/graphs. To provide consistent results, it often helps to set a simulation stop time in the System Options dialog box. In this example, a simulation stop time of 10000 ns has been set. You can then run VSS until the simulation stops. When the simulation stops the CH_PWR measurements in the Powers table will display their values.

4. Choose **Run/Stop System Simulators**. The results in the Output Equations window should then appear, displaying an ACPR of -15.34 dB.

System Diagram - Sample



Graph - Spectrum



Graph - Powers

DB(PWR_vsT(TP.TX, 100,4,2,4,0,1000,0,10,0, -1,0, -1,1,0,0,0.5,0,0,0,0,0)) (ns) Sample Time	DB(PWR_vsT(TP.TX, 100,4,2,4,0,1000,0,10,0, -1,0, -1,1,0,0,0.5,0,0,0,0,0)) (dBm) Sample Power	DB(PWR_vsT(TP.TX, 101.5,4,1,4,0,1000,0,10,0, -1,0, -1,1,0,0,0.5,0,0,0,0,0)) (ns) Sample Time	DB(PWR_vsT(TP.TX, 101.5,4,1,4,0,1000,0,10,0, -1,0, -1,1,0,0,0.5,0,0,0,0,0)) (dBm) Sample Power	DB(ACPR(VSA.M1, 100,4,2,4,1.5,4,1,4,1,0,0,0,0,1000,0,10,0, -1,0,-1,0,0.5,0,1,0)) (dBm) Sample Power	D
9984	-0.425897	9984	-15.7685	-0.00524592	-1