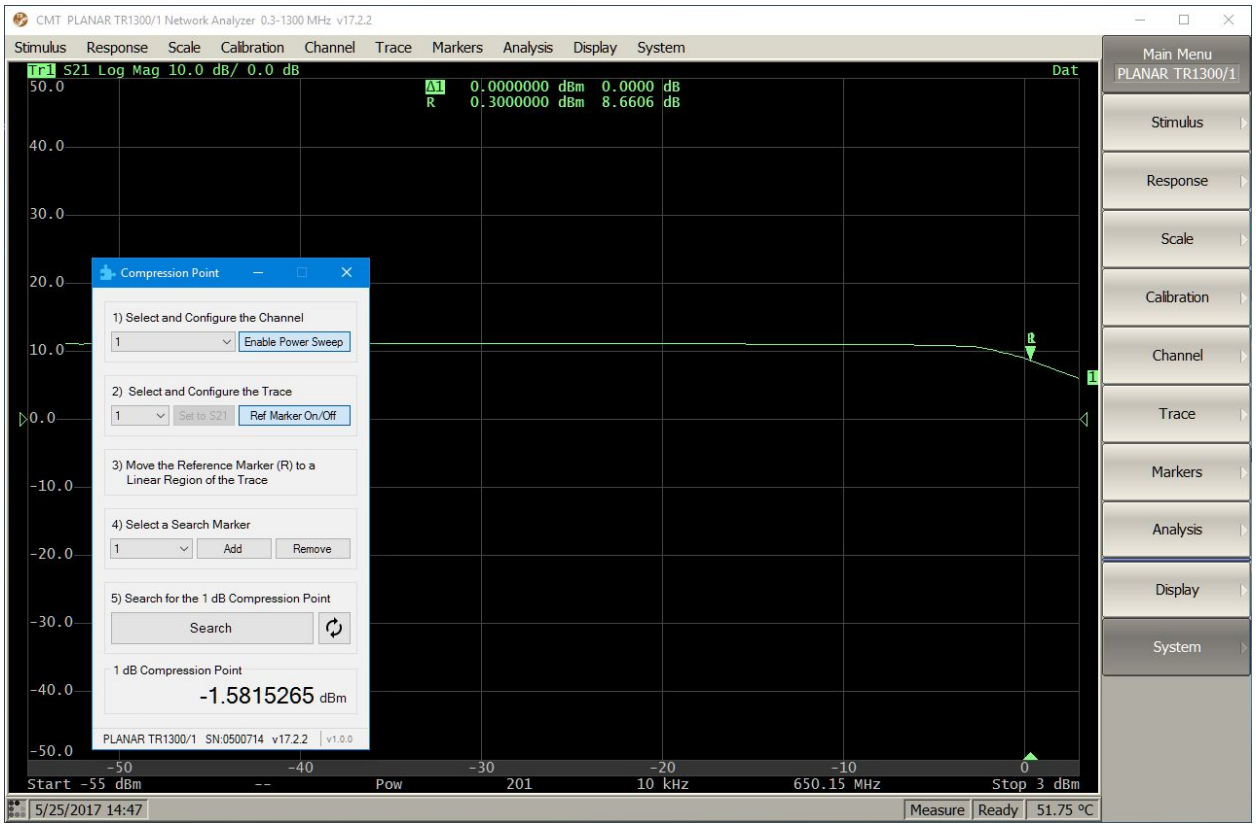
COPPER MOUNTAIN TECHNOLOGIES

User Guide

Compression Point Plug-in



Introduction

Compression is defined as the transition between the linear and nonlinear regions of the output of an active device such as an amplifier. The Compression Point Plug-in allows you to quickly determine the 1dB compression point using Power Sweep mode which is available on the TR, S2, and S4 families of Copper Mountain Technologies VNAs.

NOTE

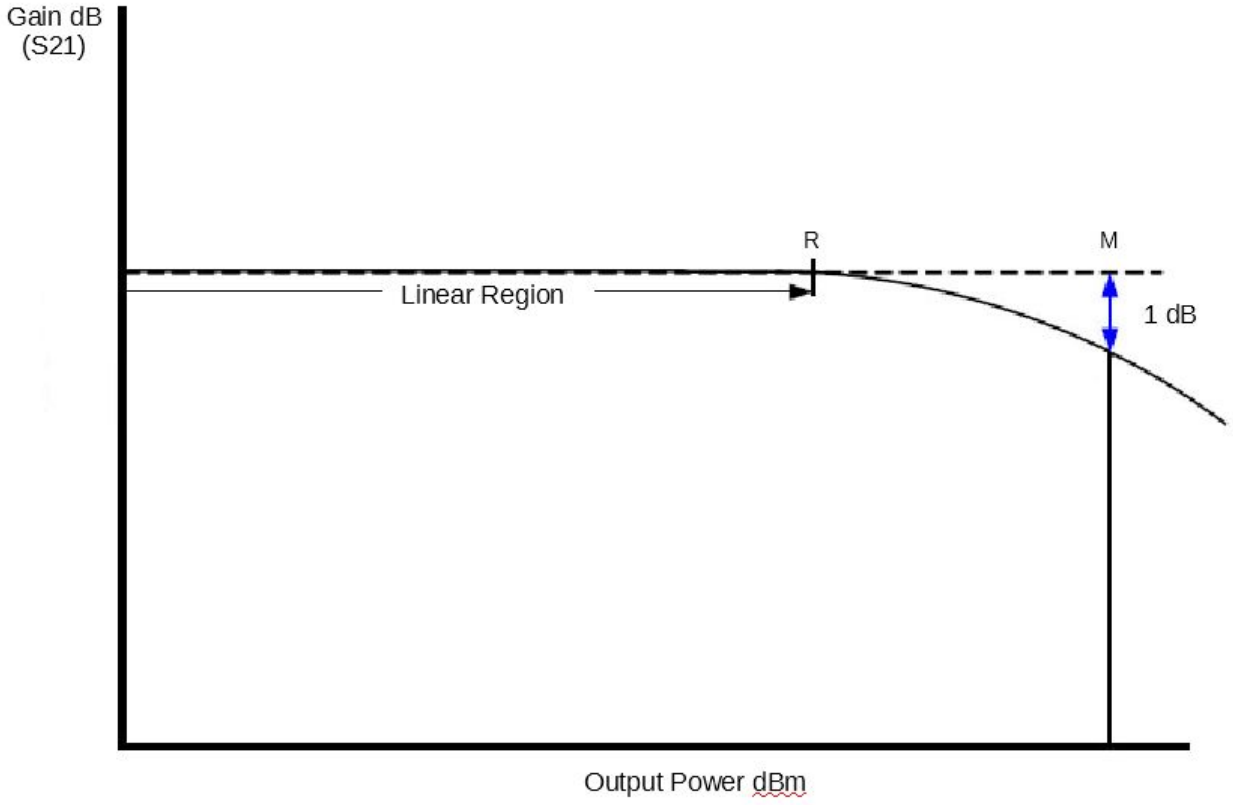
The Compression Point Plug-in is not supported by the RVNA (R family) software.

Plug-in Installation and Startup

1. Close the VNA software application (if running).
2. Copy the file Compression Point.exe into the Plugins directory (e.g, C:\VNA\S2VNA\Plugins).
3. Open the VNA software application.
4. Start the Compression Point plug-in by clicking the following buttons on the right panel of the VNA software application: System > Plugins > Compression Point

Setup

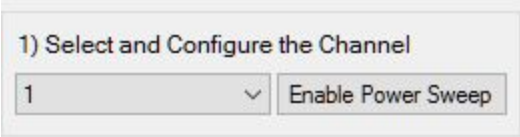
During Power Sweep mode the power to the DUT is adjusted or “swept” over a linear range at a fixed frequency and displayed along the x-axis of the graph. When the measurement parameter of the trace is set to S21 the gain (ratio of the output power over input power) is displayed on the y-axis. Thus we have a graph of output power versus gain on which we can determine the compression point.



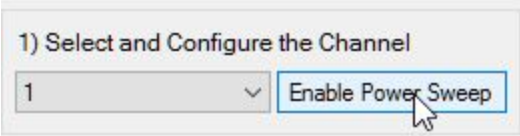
Operation

Select and Configure the Channel

First select the desired VNA channel from the drop-down box on the plug-in.



Click the “Enable Power Sweep” toggle button to engage power sweep mode for the selected channel.



On the VNA software application adjust the desired CW Frequency by clicking the Stimulus > Power > CW Freq buttons.

Also adjust the Power Range as necessary by clicking Stimulus > Start and Stimulus > Stop. The power level values are entered in units of dBm.

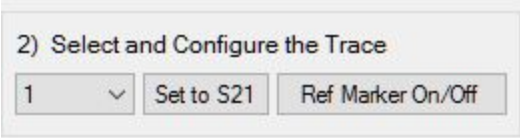
IMPORTANT

Ensure the power remains in a range that will not damage the device being tested prior to connecting it.

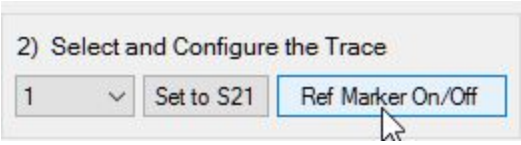
Select and Configure the Trace

From the drop-down box on the plug-in select the desired VNA trace.

You can conveniently set the measurement parameter of the selected trace by clicking the “Set to S21” button.



Click the “Ref Marker On/Off” button to toggle the reference marker on. You will use this marker for calculating the 1dB compression point.



NOTE

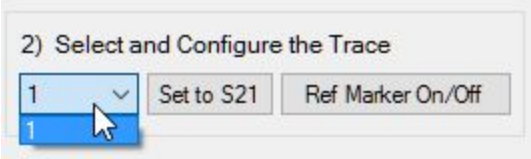
When the Compression Point Plug-in is running it is not possible to manually change the channel or trace from the VNA application’s UI. However you can easily select the channel and trace using the plug-in.

Move the Reference Marker (R) to a Linear Region of the Trace

Now drag-and-drop the reference marker so that it is located somewhere along the linear (or flat) area of the trace.

Select a Search Marker

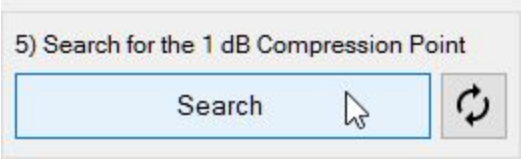
The search marker will be automatically placed at the 1dB compression point when the search function is performed. You can choose an existing marker from the drop-down box.



You can add a marker by clicking the “Add” button or remove the selected marker by clicking the “Remove” button.

Search for the 1dB Compression Point

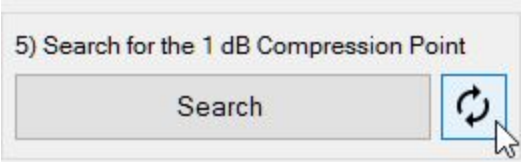
Simply click the “Search” button to locate the 1 dB Compression Point.



The search marker will be automatically placed at the 1dB compression point. This is done via the following process:

1. The search marker is automatically moved to the same location on the x-axis (output power axis) as the reference marker.
2. The Markers > Marker Search > Target > Target Value is automatically set to the value of the reference marker y-axis (gain axis) value minus 1.0 dB.
3. The Markers > Marker Search > Target > Search Target Right function is automatically performed. This will located the 1dB compression point.

If desired, click the loop button to continuous repeat the 1dB compression point search once each second. Click the button again to stop looping.



Output Power Level at 1dB Compression Point

The output power level at the 1dB compression point is displayed in dBm at the bottom of the plug-in.