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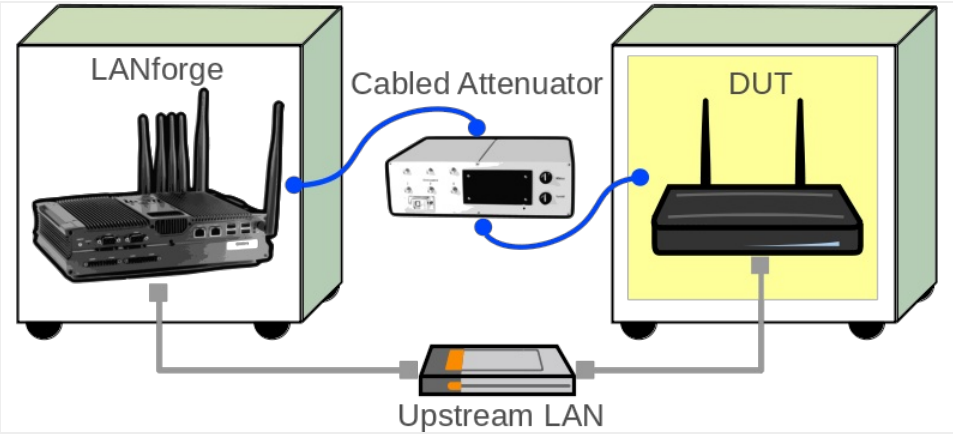
Testing Rate vs Range throughput for a WiFi Device

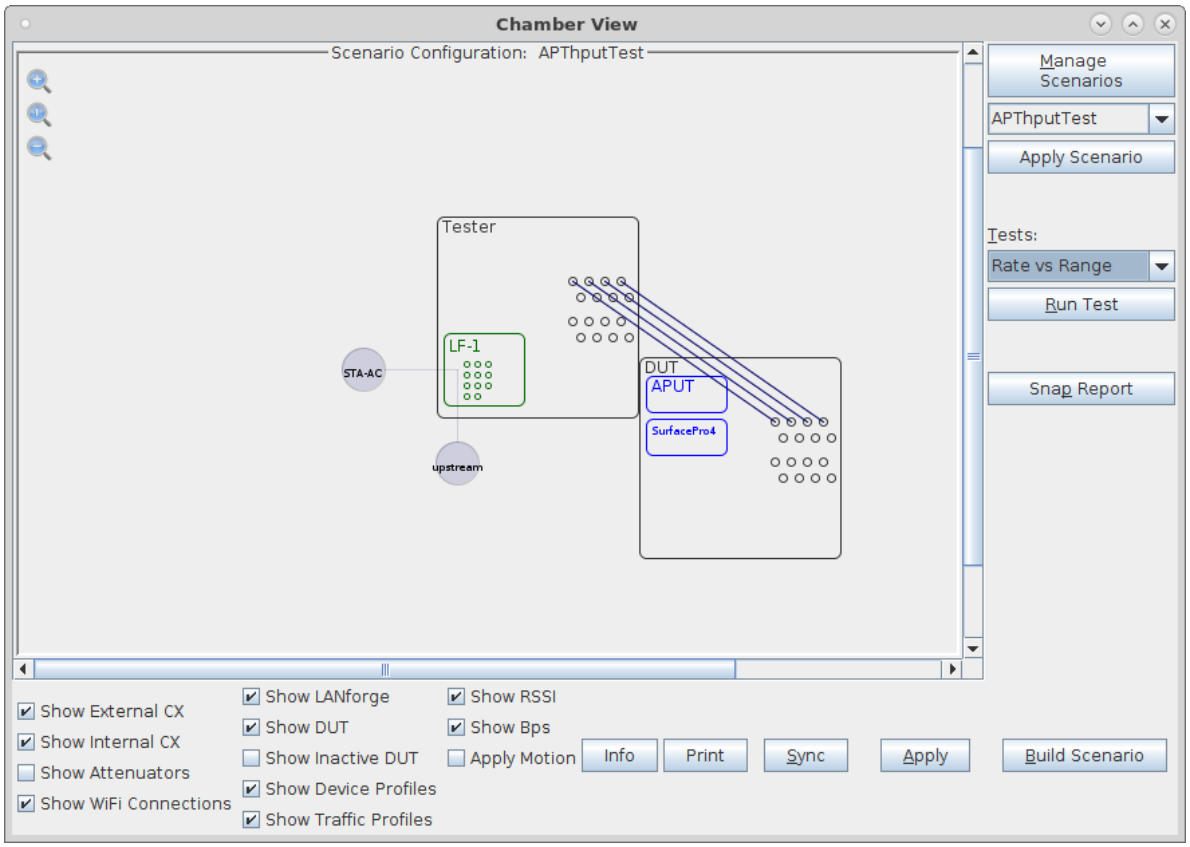
Goal: Setup and run a Rate vs Range test for an AP using theLANforge CT523c or similar system in order to test how well the AP can transmit packets at different signal levels. This is a good test of the AP's rate-control logic, as well as tx power and general ability to deal with various RF conditions. This emulates a throughput test as the user walks away from the AP.



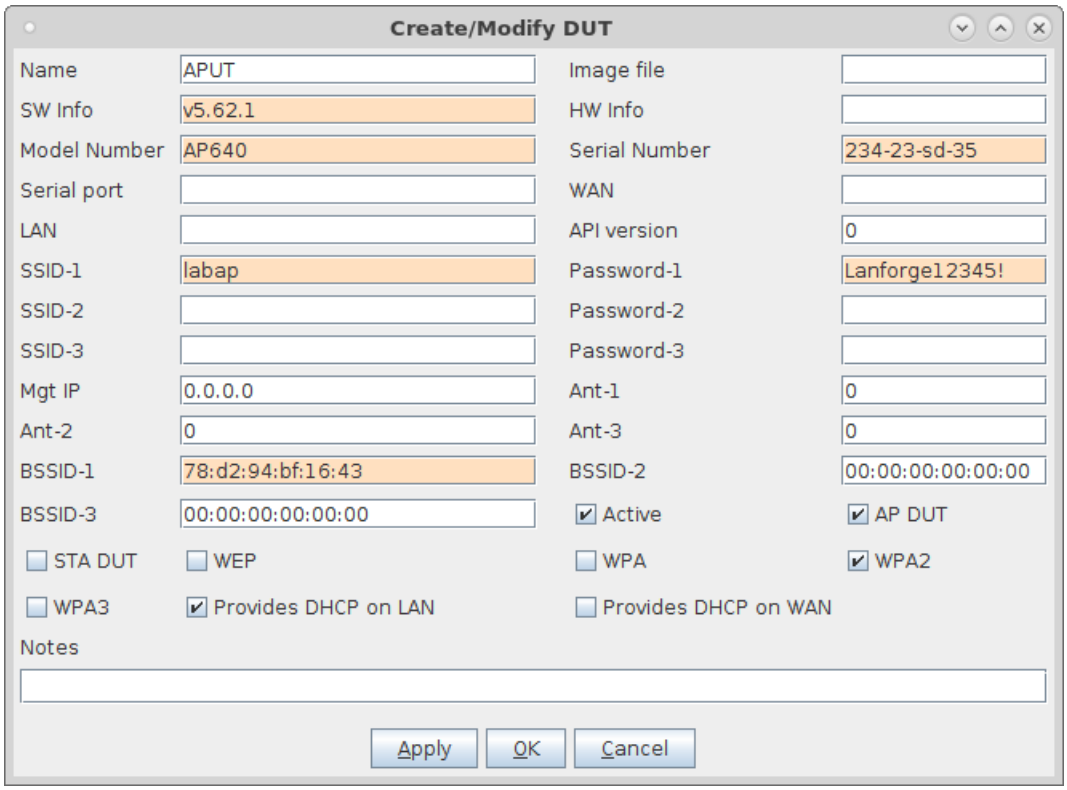
In this test scenario, the LANforge CT523c is used to generate packets on the Ethernet port towards the wired side of the AP. The AP will then transmit the frames to the LANforge WiFi station. This example assumes you have some experience with Chamber View, and that you have a LANforge system, a programmable attenuator like the CT704b and two isolation chambers like the CT820a. The AP should be in one chamber, the LANforge system is in the other chamber, and the Attenuator is cabled between them. This feature is in LANforge version 5.3.9 and higher.

1. Configure Chamber View for Rate vs Range and Similar Tests.

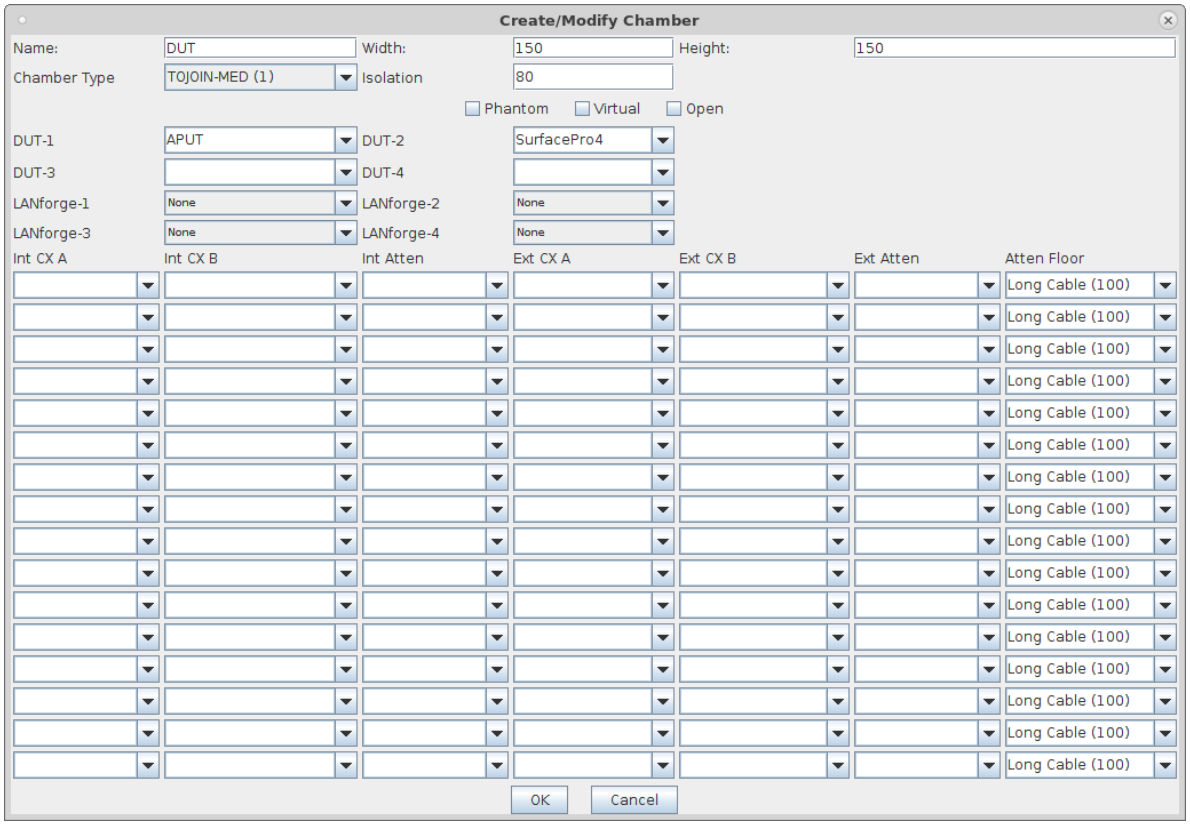
A. Open Chamber View by clicking on the 'Chamber View' button in the LANforge-GUI. If you have an appropriate scenario already created, then skip to the next section, otherwise you will need to build a scenario that matches your system. You can right-click in Chamber View to create various objects.



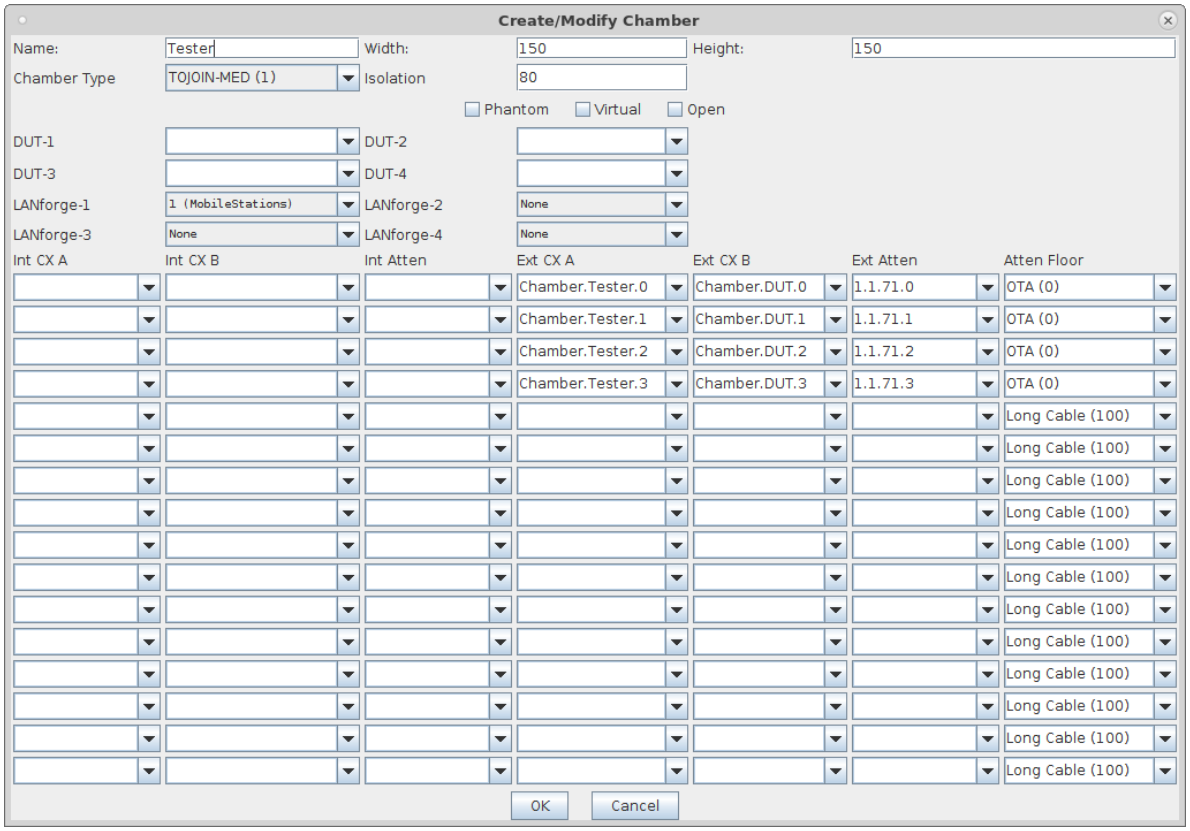
B. Create a Device Under Test (DUT) Profile that matches your AP. The BSSID is important to configured so that LANforge knows when it is connected to the correct AP.



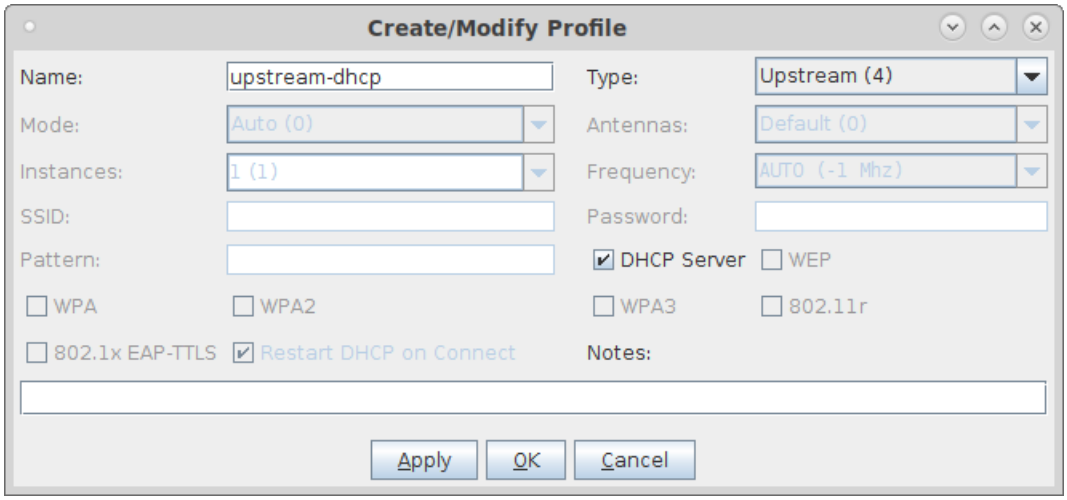
C. Create a chamber object to hold the DUT, and add the DUT to that chamber. If you have no chambers, you can create a fake chamber, but your test will not be isolated and may not function as desired.



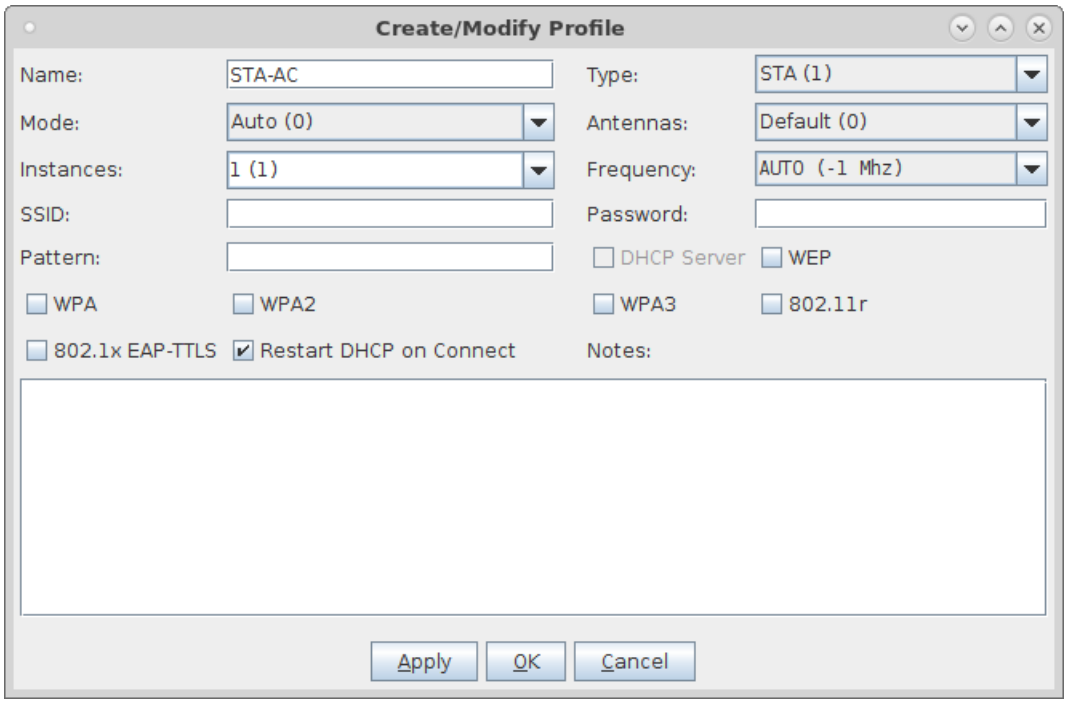
D. Create a chamber object to hold the LANforge system, and add the LANforge to it. Add connections from this chamber to the DUT chamber, specifying the proper Attenuator modules. Please view our other cookbook on setting up attenuator connections in LANforge.



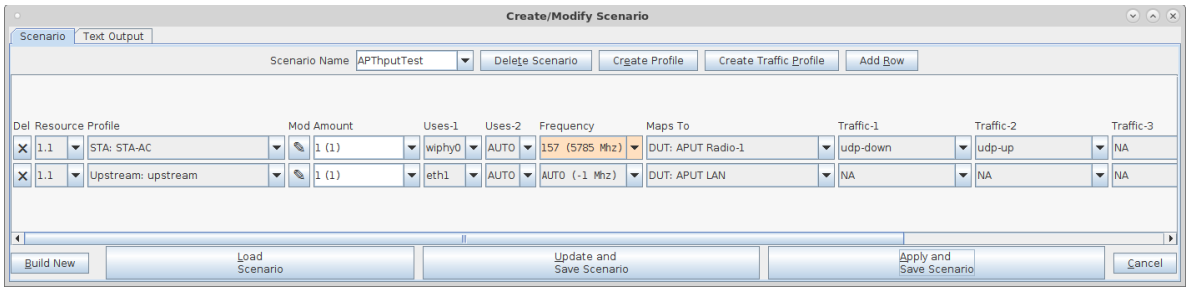
E. Configure an Upstream profile using eth1 on the LANforge system.



F. Configure an STA profile on the LANforge system.

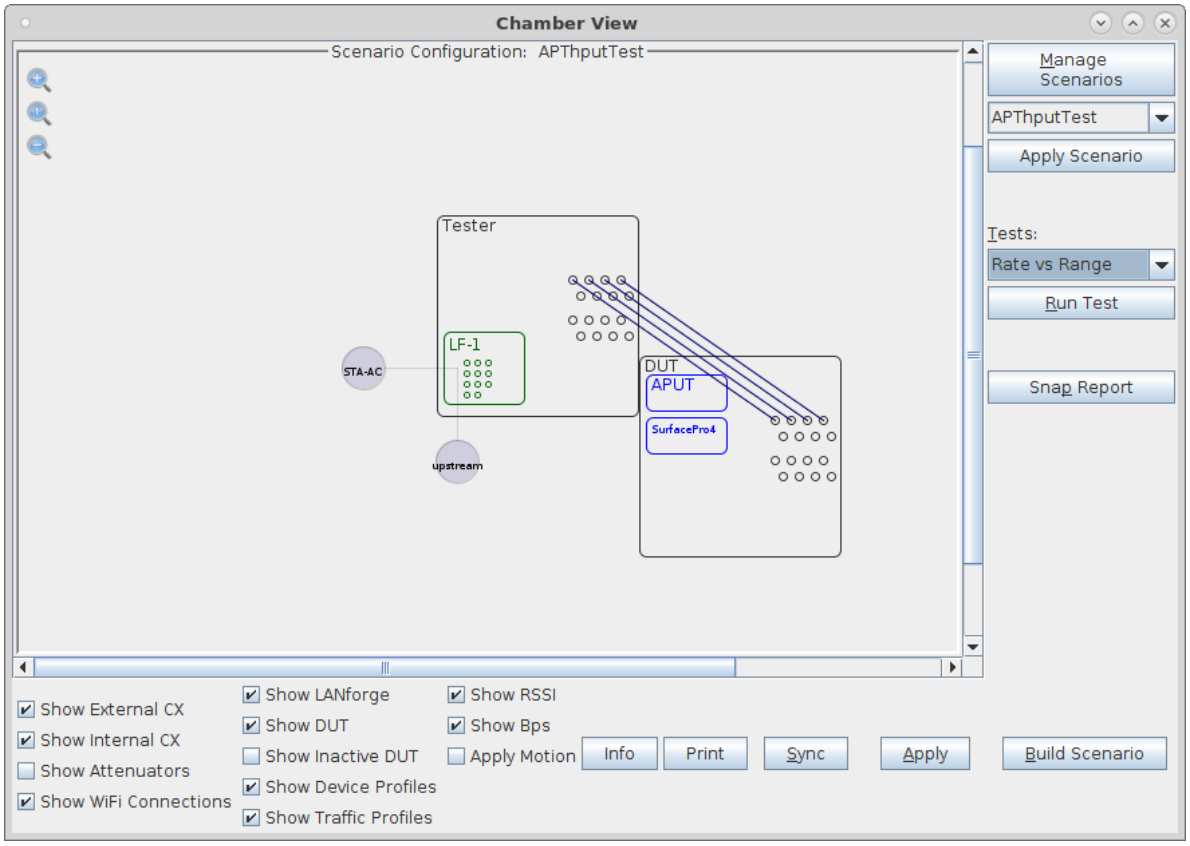


G. Configure a Chamber View Scenario and add the STA profile (mapped to desired wiphyX radio and DUT). Add an upstream profile mapped to DUT LAN side (or possibly WAN side if that is more appropriate for your DUT).

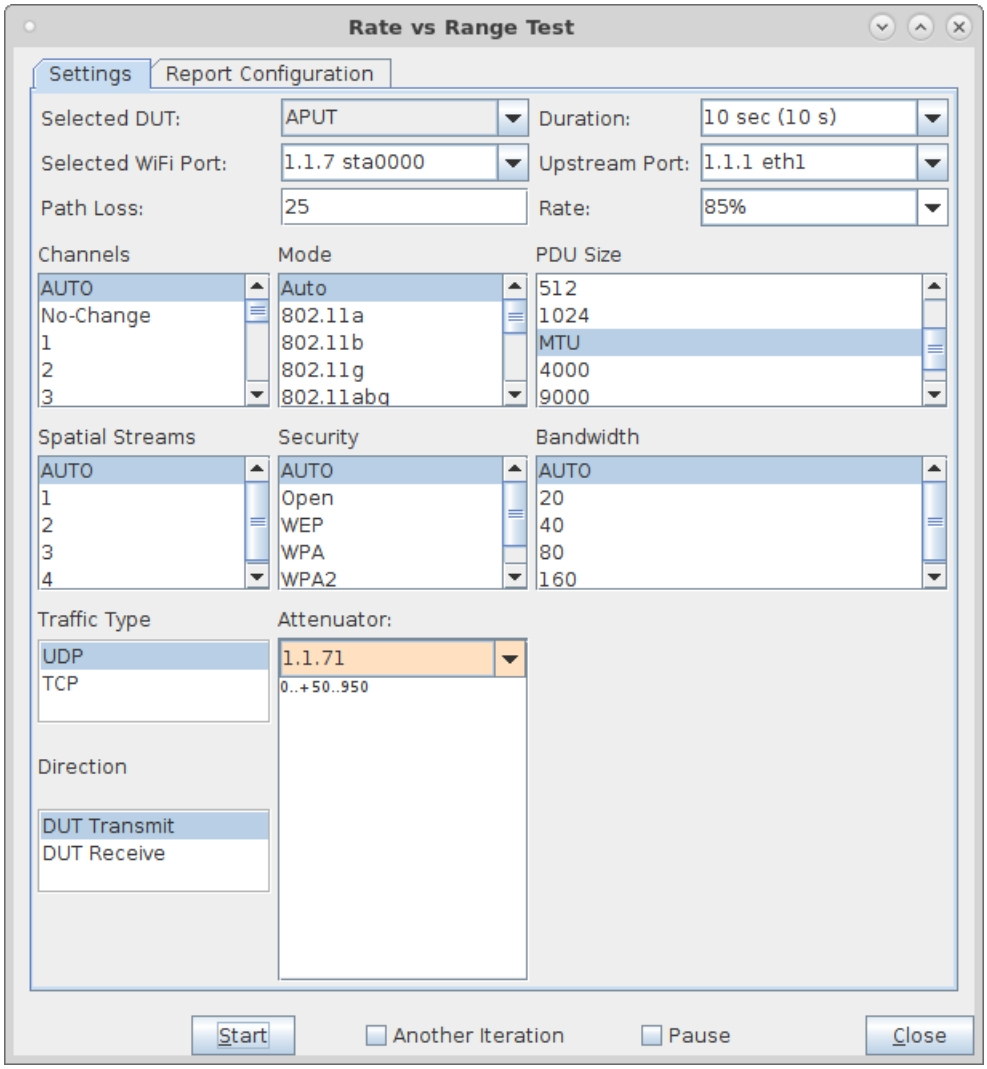


2. Use Chamber View to run a Rate vs Range test.

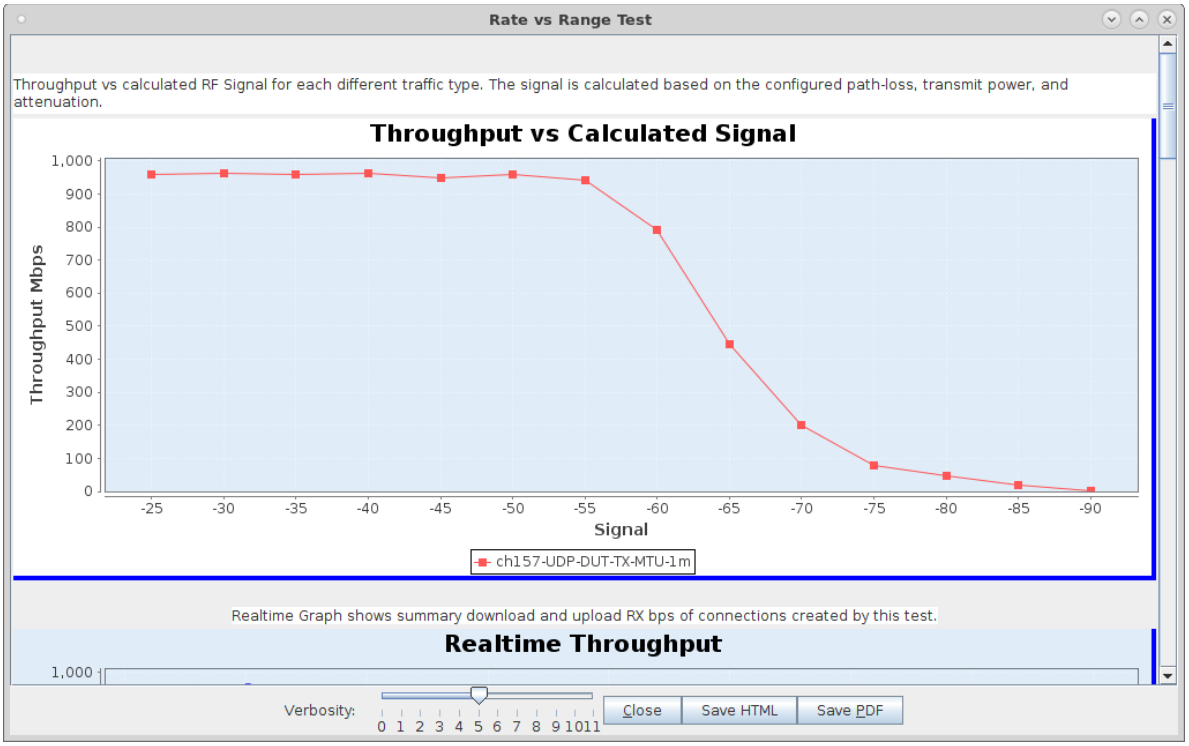
A. Open Chamber View by clicking on the 'Chamber View' button in the LANforge-GUI. Load appropriate scenario or create a new scenario as needed. Apply the Scenario, then Build the scenario.



B. Select the **Rate vs Range** test and click **Run Test**. You should see the Rate vs Range Test configuration window pop up. It will remember the last configuration for most fields. Select the DUT and WiFi station device, and select the combinations of traffic types you wish to send. Be sure to select the attenuator and configure the attenuation steps. In this case, we have antenna over-the-air connection inside one of the chambers, with total path-loss at zero attenuation of about 25db. One interesting way to use this tool is to select the 'Another Iteration' checkbox. When the curren test is complete, you will see a popup message notifying completeness. You can then reconfigure the DUT (by changing firmware versions, or some other configuration), and then re-run the test. The second test will be displayed on the same graphs, so it is easy to compare the difference. This particular test is not using that feature, however:



C. When the configuration is complete, click the **Start** button (which will change to 'Stop' once start is clicked) to start the test. An interactive report window will be created and will be updated as the test runs.



D. When the test is complete, click the **Save HTML** button to save an HTML report and generate the PDF. The PDF file will be linked from the HTML page. You can also click 'Save PDF' and the browser will be directed to open the pdf file directly. Please see this example Rate vs Range Report