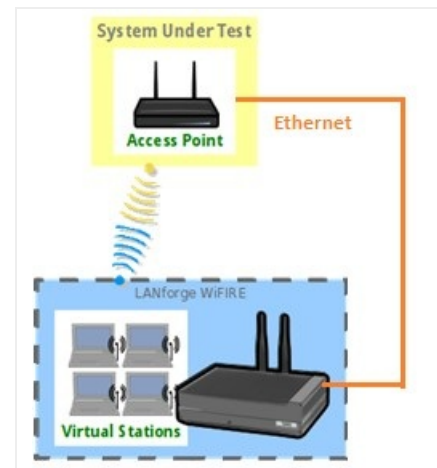


Testing AP performance and stability with the AP-Auto Automated test suite.

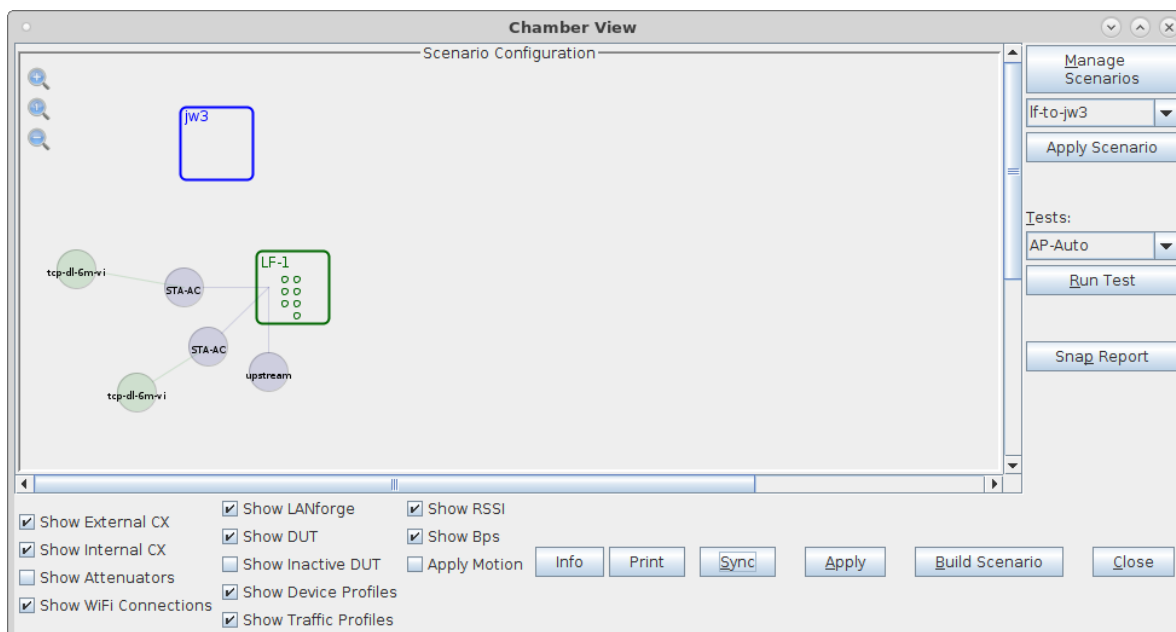
Goal: Setup and run a AP-Auto test for an AP using the LANforge CT522 or similar system in order to test how well the AP can handle station load, performance, and stability. The AP-Auto test is similar to the TR-398 test, but is designed to be functional with a minimum amount of test equipment. A 2-radio LANforge system and DUT is all that is required to run these tests.

In this test scenario, the LANforge CT522 is used to create stations and run throughput, stability, and station capacity tests. This example assumes you have some experience with Chamber View, and that you have a LANforge system and a DUT AP. The AP and LANforge may be in chambers, but that is not required. This feature requires LANforge version 5.4.1 or higher.



1. Configure Chamber View for AP-Auto and Similar Tests.

- A. Open Chamber View by clicking on the 'Chamber View' button in the LANforge-GUI. If you have an appropriate scenario and DUT 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. When complete, your configuration should look something like this. The 'jw3' is the DUT AP, and LF-1 is the LANforge system.



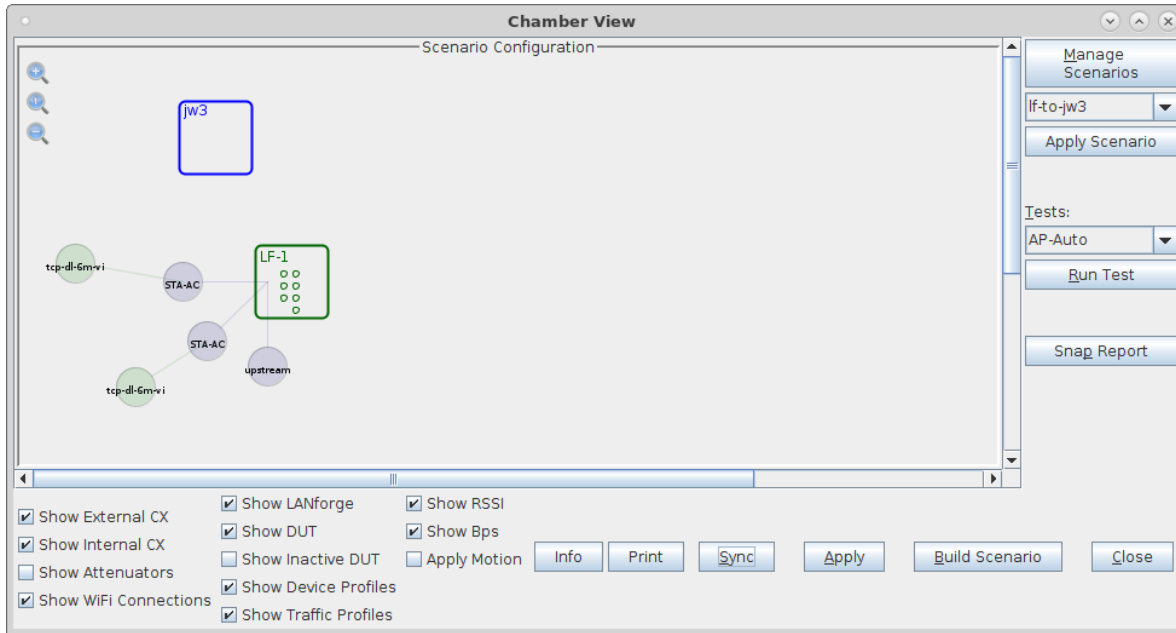
- B. Create a Device Under Test (DUT) Profile that matches your AP. The BSSID is important to configured so that LANforge knows when it is connected to the correct AP.

- C. 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). The traffic flow in the scenario is not required for the AP-Auto test, but it will not cause any trouble if you have traffic configured in the scenario.

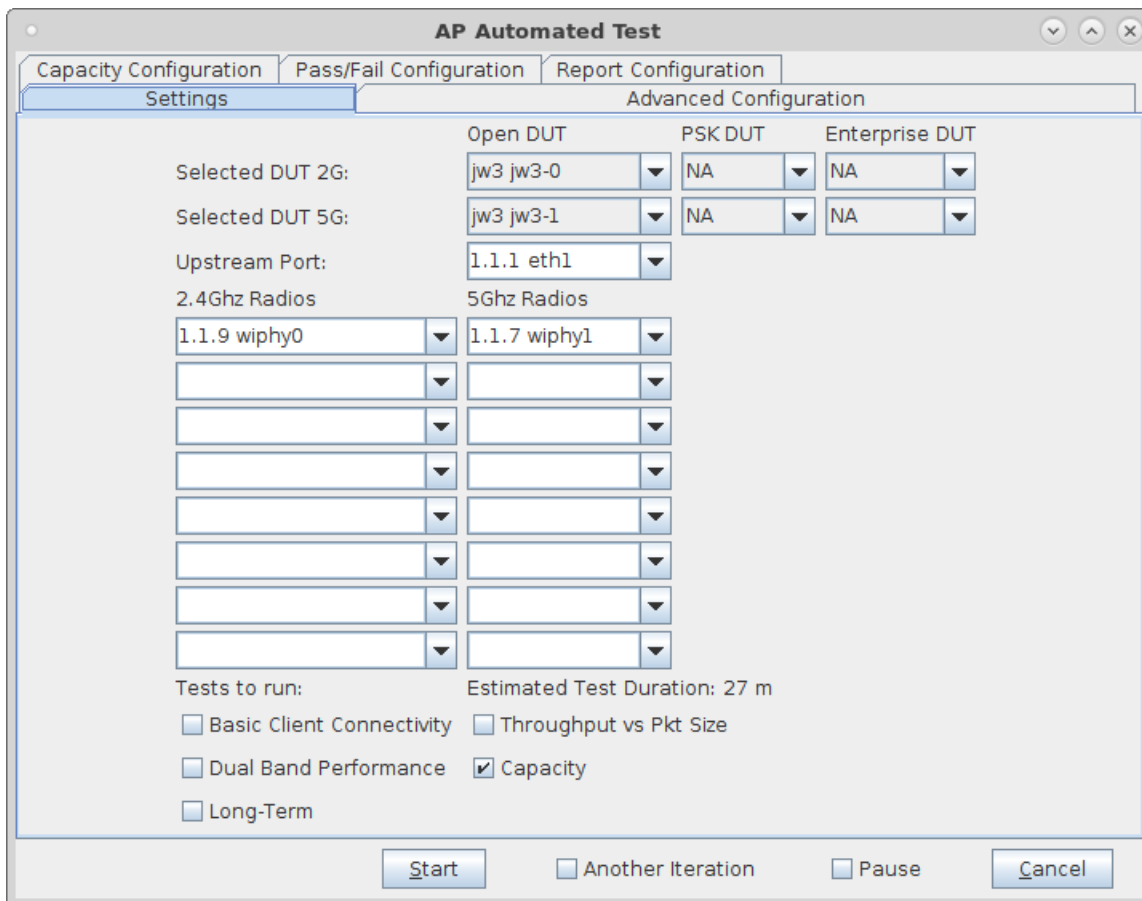
Del	Resource Profile	Amount	Uses-1	Uses-2	Frequency	Maps To	Traffic-1
X	1.1 STA: STA-AC	1 (1)	wiphy1	AUTO	AUTO (-1 Mhz)	DUT: jw3 Radio-2	tcp-dl-6m-vi
X	1.1 STA: STA-AC	1 (1)	wiphy0	AUTO	AUTO (-1 Mhz)	DUT: jw3 Radio-1	tcp-dl-6m-vi
X	1.1 Upstream: upstream	1 (1)	eth1	AUTO	AUTO (-1 Mhz)	DUT: jw3 LAN	NA

2. Use Chamber View for the AP-Auto test.

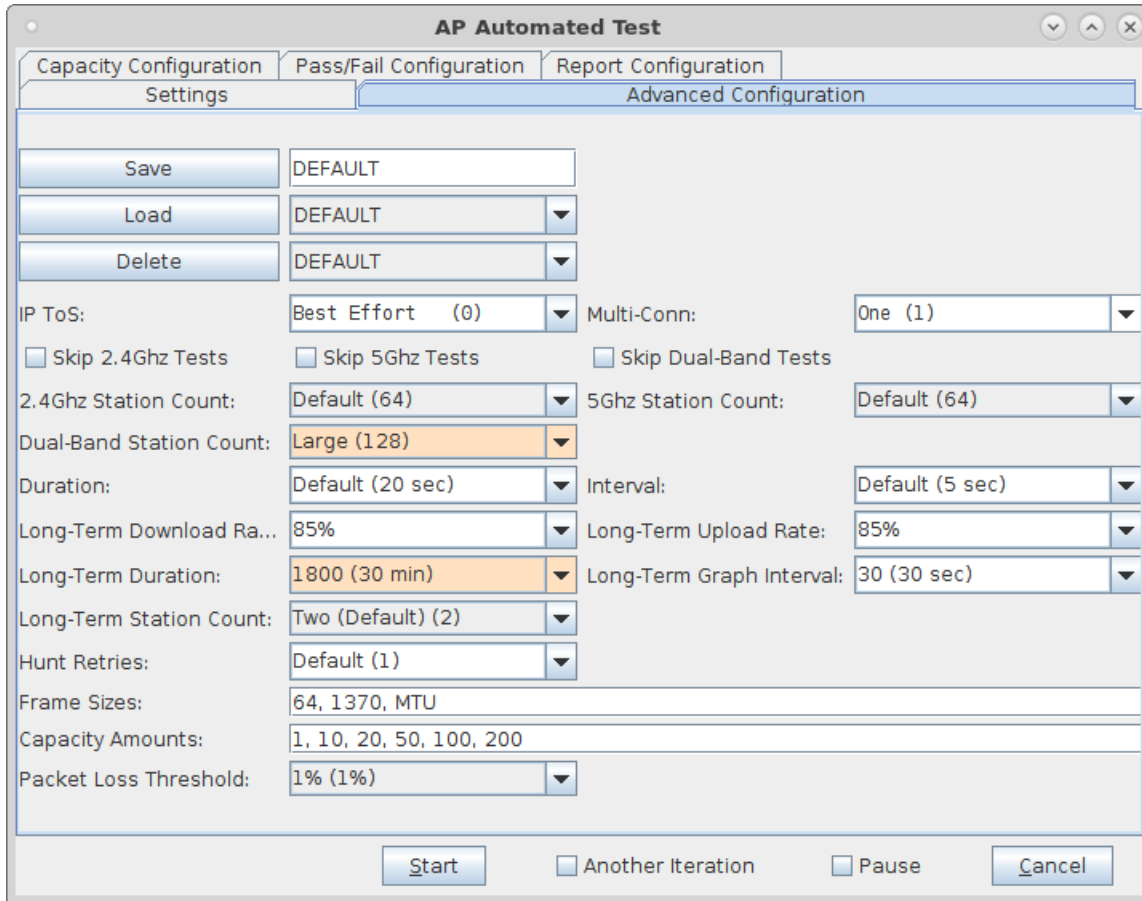
- A. Open Chamber View by clicking on the 'Chamber View' button in the LANforge-GUI. Load appropriate scenario. Apply the Scenario, then Build the scenario.



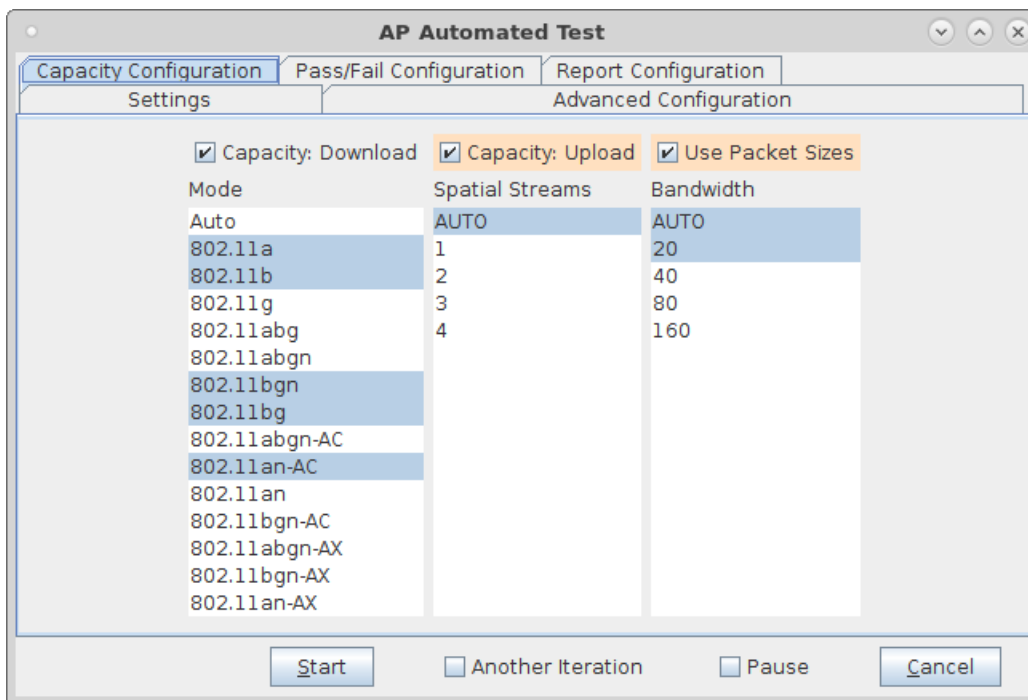
- B. Select the **AP-Auto** test and click **Run Test**. You should see the AP-Auto Test configuration window pop up. It will remember the last configuration for most fields, and you can also save and load configurations on the 'Advanced Configuration' tab.. Select the DUT 2G and DUT 5G SSIDs. This test requires that Open or PSK is filled out. The enterprise SSID is optional. Use 'NA' for SSIDs that are not enabled. Select the LANforge radios to be used in this test. You need at least one 2.4Ghz radion and one 5Ghz radio for full functionality. At the bottom, select the test cases to be run.:



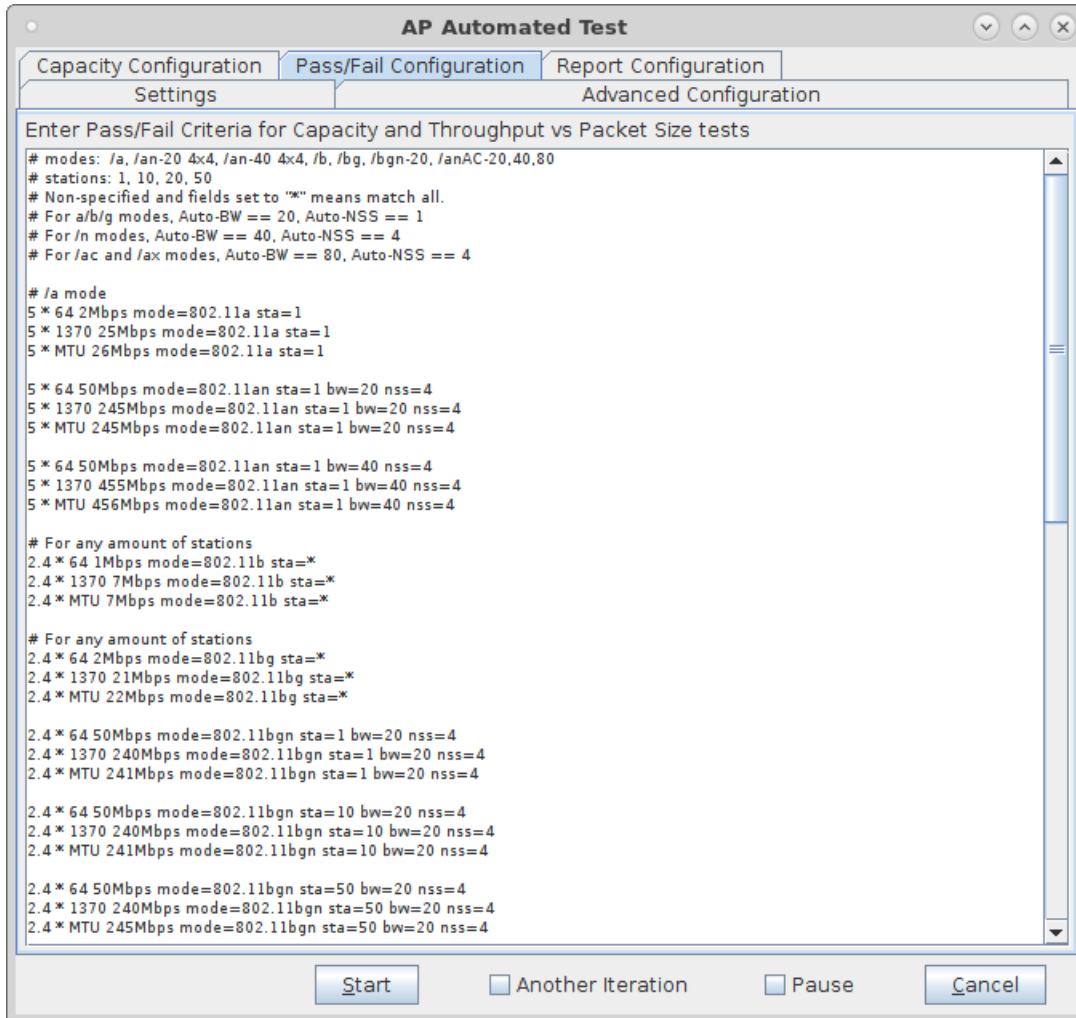
C. The Advanced Configuration tab lets you save and restore test configurations and also tune the behaviour of the automated tests.:



D. The Capacity Configuration tab lets you configure the Capacity test. By default, it will run with maximum capabilities and MTU frame size in the downstream direction. But, you can use this tab to also enable upstream traffic, iterate over different Modes, Spatial Streams and Bandwidths, as well as use the various packet sizes configured on the 'Advanced Configuration' tab.:



- E. The Pass/Fail Configuration tab lets you enter pass/fail criteria based on wifi modes, packet sizes, spatial streams and more. If you do not fill in this section, then the test will attempt to provide some basic automated pass/fail criteria, and you can also just ignore the pass/fail for the Capacity and packet-size tests and let a human judge the results.:



- F. Here is an example set of pass/fail criteria in text form for easier cut/paste

```

# modes: /a, /an-20 4x4, /an-40 4x4, /b, /bg, /bgn-20, /anAC-20,40,80
# stations: 1, 10, 20, 50, ...
# Non-specified and fields set to "*" means match all.
# For a/b/g modes, Auto-BW == 20, Auto-NSS == 1
# For /n modes, Auto-BW == 40, Auto-NSS == 4
# For /ac and /ax modes, Auto-BW == 80, Auto-NSS == 4

# /a mode
5 * 64 2Mbps mode=802.11a sta=1
5 * 1370 25Mbps mode=802.11a sta=1
5 * MTU 26Mbps mode=802.11a sta=1

5 * 64 50Mbps mode=802.11an sta=1 bw=20 nss=4
5 * 1370 245Mbps mode=802.11an sta=1 bw=20 nss=4
5 * MTU 245Mbps mode=802.11an sta=1 bw=20 nss=4

5 * 64 50Mbps mode=802.11an sta=1 bw=40 nss=4
5 * 1370 455Mbps mode=802.11an sta=1 bw=40 nss=4
5 * MTU 456Mbps mode=802.11an sta=1 bw=40 nss=4

# For any amount of /b stations
2.4 * 64 1Mbps mode=802.11b sta=*
2.4 * 1370 7Mbps mode=802.11b sta=*

```

```
2.4 * MTU 7Mbps mode=802.11b sta=*

# For any amount of /bg stations
2.4 * 64 2Mbps mode=802.11bg sta=*
2.4 * 1370 21Mbps mode=802.11bg sta=*
2.4 * MTU 22Mbps mode=802.11bg sta=*

# For /bgn 20Mhz stations.
2.4 * 64 50Mbps mode=802.11bgn sta=1 bw=20 nss=4
2.4 * 1370 240Mbps mode=802.11bgn sta=1 bw=20 nss=4
2.4 * MTU 241Mbps mode=802.11bgn sta=1 bw=20 nss=4

2.4 * 64 50Mbps mode=802.11bgn sta=10 bw=20 nss=4
2.4 * 1370 240Mbps mode=802.11bgn sta=10 bw=20 nss=4
2.4 * MTU 241Mbps mode=802.11bgn sta=10 bw=20 nss=4

2.4 * 64 50Mbps mode=802.11bgn sta=50 bw=20 nss=4
2.4 * 1370 240Mbps mode=802.11bgn sta=50 bw=20 nss=4
2.4 * MTU 245Mbps mode=802.11bgn sta=50 bw=20 nss=4

2.4 * 64 50Mbps mode=802.11bgn sta=100 bw=20 nss=4
2.4 * 1370 235Mbps mode=802.11bgn sta=100 bw=20 nss=4
2.4 * MTU 245Mbps mode=802.11bgn sta=100 bw=20 nss=4

2.4 * 64 50Mbps mode=802.11bgn sta=200 bw=20 nss=4
2.4 * 1370 230Mbps mode=802.11bgn sta=200 bw=20 nss=4
2.4 * MTU 235Mbps mode=802.11bgn sta=200 bw=20 nss=4

# 40Mhz /n on 2.4, same values for all number of stations currently.
2.4 * 64 50Mbps mode=802.11bgn sta=* bw=40 nss=4
2.4 * 1370 280Mbps mode=802.11bgn sta=* bw=40 nss=4
2.4 * MTU 281Mbps mode=802.11bgn sta=* bw=40 nss=4

# For /an-AC 20Mhz stations.
5 * 64 50Mbps mode=802.11an-AC sta=1 bw=20 nss=4
5 * 1370 300Mbps mode=802.11an-AC sta=1 bw=20 nss=4
5 * MTU 305Mbps mode=802.11an-AC sta=1 bw=20 nss=4

# For /an-AC 40Mhz stations
5 * 64 50Mbps mode=802.11an-AC sta=1 bw=40 nss=4
5 * 1370 615Mbps mode=802.11an-AC sta=1 bw=40 nss=4
5 * MTU 630Mbps mode=802.11an-AC sta=1 bw=40 nss=4

# For /an-AC 80Mhz stations.
5 DL 64 50Mbps mode=802.11an-AC sta=1 bw=80 nss=4
5 DL 1370 1300Mbps mode=802.11an-AC sta=1 bw=80 nss=4
5 DL MTU 1300Mbps mode=802.11an-AC sta=1 bw=80 nss=4
5 UL 64 50Mbps mode=802.11an-AC sta=1 bw=80 nss=4
5 UL 1370 1100Mbps mode=802.11an-AC sta=1 bw=80 nss=4
5 UL MTU 1100Mbps mode=802.11an-AC sta=1 bw=80 nss=4

5 DL 64 50Mbps mode=802.11an-AC sta=10 bw=80 nss=4
5 DL 1370 1300Mbps mode=802.11an-AC sta=10 bw=80 nss=4
5 DL MTU 1300Mbps mode=802.11an-AC sta=10 bw=80 nss=4
5 UL 64 50Mbps mode=802.11an-AC sta=10 bw=80 nss=4
5 UL 1370 1200Mbps mode=802.11an-AC sta=10 bw=80 nss=4
5 UL MTU 1200Mbps mode=802.11an-AC sta=10 bw=80 nss=4
```

```

5 * 64 50Mbps mode=802.11an-AC sta=50 bw=80 nss=4
5 * 1370 1200Mbps mode=802.11an-AC sta=50 bw=80 nss=4
5 * MTU 1200Mbps mode=802.11an-AC sta=50 bw=80 nss=4

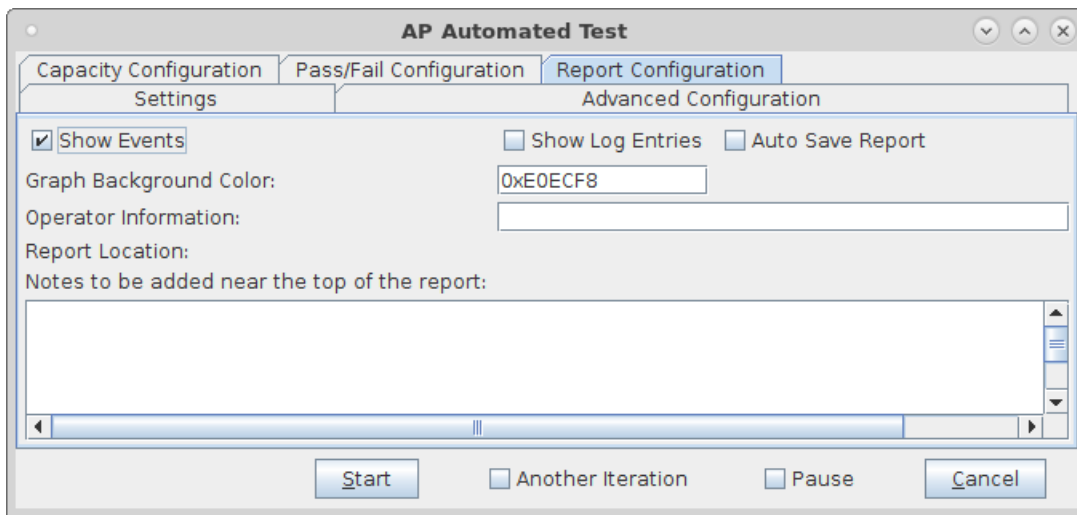
5 * 64 50Mbps mode=802.11an-AC sta=100 bw=80 nss=4
5 * 1370 1100Mbps mode=802.11an-AC sta=100 bw=80 nss=4
5 * MTU 1100Mbps mode=802.11an-AC sta=100 bw=80 nss=4

# Auto (full capabilities) entries, for tput test, DUT is wave-1 3x3/2x2
2.4 * 64 50Mbps mode=Auto sta=* bw=Auto nss=Auto
2.4 * 1370 280Mbps mode=Auto sta=* bw=Auto nss=Auto
2.4 * MTU 282Mbps mode=Auto sta=* bw=Auto nss=Auto

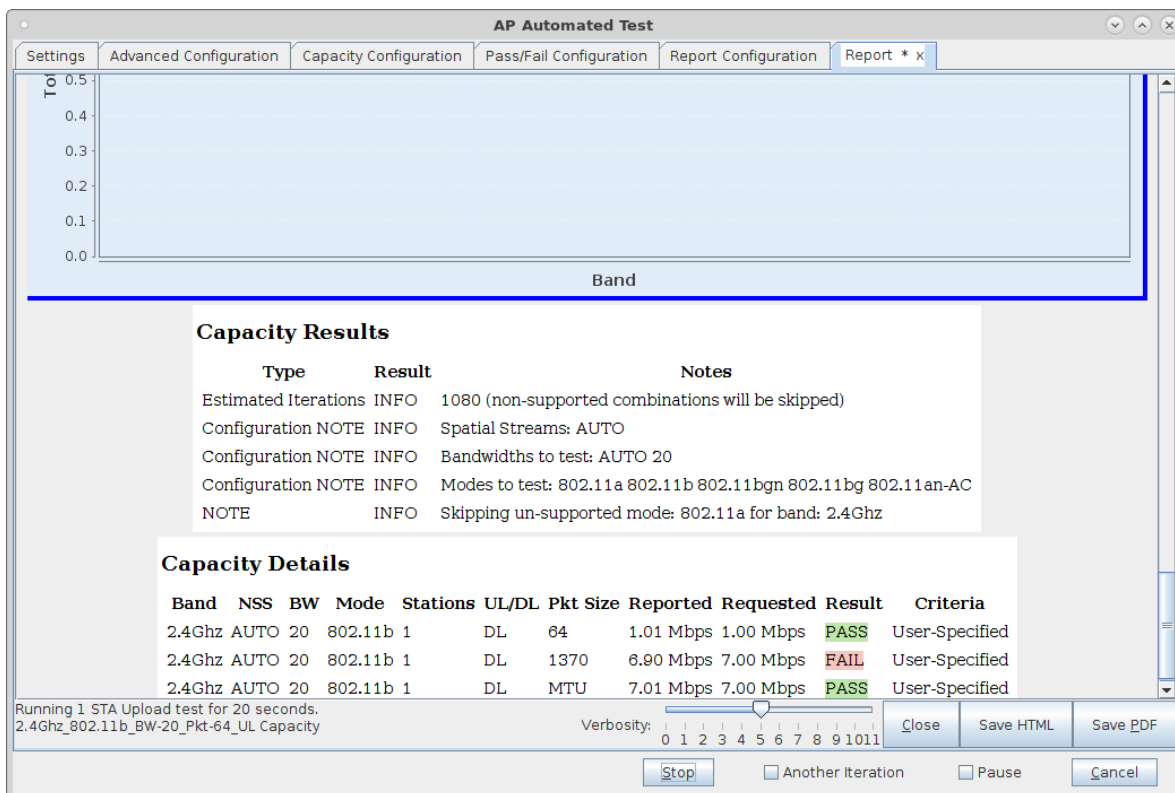
5 * 64 50Mbps mode=Auto sta=* bw=Auto nss=Auto
5 * 1370 650Mbps mode=Auto sta=* bw=Auto nss=Auto
5 * MTU 650Mbps mode=Auto sta=* bw=Auto nss=Auto

```

G. The Report Configuration tab lets you add some notes and other details to the generated report.:



H. 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 tab will be created and will be updated as the test runs.



- I. 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 AP-Auto Report](#).

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