TR-398 Issue 2

WiFi Performance Test Plan

Candela TECHNOLOGIES

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Test Setup Information	
Device Under Test	Anonymous Enterprise AX AP
Estimated Run Time	48 m
Actual Run Time	50.852 m

Objective

The TR-398 Issue 2 WiFi Performance test plan by the Broadband forum provides a comprehensive set of tests to qualify the performance of WiFi access points (APs) designed for residential and small office environments. Radio performance, Throughput, Connection Stability, Airtime Fairness, AP Co-existence, Mu_MIMO Performance, Spatial Consistency and Long-term Stability are some of the test areas covered in this test plan. The test plan is designed for service providers deploying in home WiFi APs to qualify the APs in the lab before deployment and for equipment makers to test during the development of the APs. Candela Technologies offers a fully automated TR-398 Issue 2 test system. The user can select from the list of 11 tests available in the GUI and all selected tests are run fully automated at one click of a button. Measurements are made and compared to the specified PASS/FAIL criteria in the TR-398 Issue 2 test plan and this report will show the summary PASS/FAIL results followed more detailed results for each test.

Summary Results

Test	Result	Candela Score	Elapsed	Info
Calibrate 802.11AX Zero Attenuation RSSI	Skipped	0	0	
Calibrate 802.11AC Zero Attenuation RSSI	Skipped	0	0	
6.1.1 Receiver Sensitivity Test	Skipped	0	0	
6.2.1 Maximum Connection Test (32-STA)	Skipped	0	0	
6.2.2 Maximum TCP Throughput Test	Skipped	0	0	
6.2.3 Airtime Fairness Test	Skipped	0	0	
Issue-3 Airtime Fairness Test	Skipped	0	0	
Issue-3 Quality of Service Test	Skipped	0	0	
Issue-3 Latency Test	2.4Ghz FAIL 5Ghz FAIL	391	50.758 m	Total CX Passing Throughput: 391 / 396 98.737% Total CX Passing 2.4 N: 60.0 / 99.0 60.606% Total CX Passing 2.4 AX: 3.0 / 99.0 3.03% Total CX Passing 5Ghz AC: 64.0 / 99.0 64.646% Total CX Passing 5Ghz AX: 3.0 / 99.0 3.03%
Issue-3 Multicast Test	Skipped	0	0	
6.2.4 Dual-Band Throughput Test	Skipped	0	0	
6.2.5 Bidirectional UDP Throughput Test	Skipped	0	0	
6.3.1 Range Versus Rate Test	Skipped	0	0	
6.3.2 Spatial Consistency Test	Skipped	0	0	
6.3.3 AX Peak Performance TCP Throughput Test	Skipped	0	0	
6.4.1 Multiple STAs Performance Test	Skipped	0	0	
6.4.2 Multiple Association / Disassociation Stability Test	Skipped	0	0	
6.4.3 Downlink MU-MIMO Performance Test	Skipped	0	0	
6.5.2 AP Coexistence Test	Skipped	0	0	
6.5.1 Long Term Stability Test	Skipped	0	0	

Issue-3 Latency Test

Summary

The Latency test intends to verify latency under low, high, and maximum AP traffic load, with 1 and 32 stations. Traffic load is 4 bi-directional TCP streams for each station, plus a low speed UDP connection to probe latency.

Test Procedure

DUT should be configured for 20Mhz on 2.4Ghz and 80Mhz on 5Ghz and stations should use two spatial streams.

1. For each combination of: 2.4Ghz N, 5Ghz AC, 2.4Ghz AX, 5Ghz AX:
2. Configure attenuators to emulate 2-meter distance between stations and AP.
3. Create 32 stations and allow one to associate with the DUT. The other 31 are admin-down.
4. Create AP to Station (download) TCP stream, and run for 120 seconds, record throughput as 'maximum_load'. Stop this connection.
5. Calculate offered_load as 1% of maximum_load.
6. Create 4 TCP streams on each active station, each configured for Upload and Download rate of offered_load / (4 * active_station_count * 2).
7. Create 1 UDP stream on each active station, configured for 56kbps traffic Upload and 56kbps traffic Download.
8.
9. Start all TCP and UDP connections. Wait 30 seconds to let traffic settle.
10. Every 10 seconds for 120 seconds, record bi-directional latency over the last 10 seconds for each UDP connection. Depending on test equipment features, this may mean you need to start/stop the UDP every 10 seconds or clear the UDP connection counters.
11. Calculate offered_load as 70% of maximum_load, and repeat steps 6 - 9 inclusive.
12. Calculate offered_load as 125% of maximum_load, and repeat steps 6 - 9 inclusive.
13. Allow the other 31 stations to associate, and repeat steps 5 - 11 inclusive with all 32 stations active.

Pass/Fail Criteria

1. For each test configuration running at 1% of maximum load: Average of all UDP latency samples must be less than 15ms.
2. For each test configuration running at 1% of maximum load: Maximum of all UDP latency samples must be less than 25ms.
3. For each test configuration running at 70% of maximum load: Average of all UDP latency samples must be less than 25ms.
4. For each test configuration running at 70% of maximum load: Maximum of all UDP latency samples must be less than 45ms.
5. For each test configuration running at 125% of maximum load: Average of all UDP latency samples must be less than 55ms.
6. For each test configuration running at 125% of maximum load: Maximum of all UDP latency samples must be less than 105ms.
7. For each test configuration: Each UDP connection upload throughput must be at least 1/2 of requested UDP speed for final 10-second test interval.
8. For each test configuration: Each UDP connection download throughput must be at least 1/2 of requested UDP speed for final 10-second test interval.

Candela Score

The Candela Score for Latency Test is calculated as:

1. 50 multiplied by the ratio of average latency compared to the pass/fail threshold.
2. 0.25 multiplied by the percentagee of individual UDP connections that passed the pass/fail latency threshold.
3. 0.25 multiplied by the percentagee of individual UDP connections that passed the pass/fail throughput threshold.

Issue-3 Latency Test Results

Type	Result	Value	P/F Value	Notes
AX 2.4Ghz STA1	INFO			Reported TCP throughput: 83.84 Mbps
AX 2.4Ghz Sta-Count 1 Speed 1%	PASS	7.67	15.00	Average UDP DL Latency: 7.67 Amount Stations passing Latency: 1 / 1 Amount Stations passing Throughput: 1 / 1 Min Sample Latency: 6.00 Max Sample Latency: 9.00
AX 2.4Ghz Sta-Count 1 Speed 70%	PASS	18.50	25.00	Average UDP DL Latency: 18.50 Amount Stations passing Latency: 1 / 1 Amount Stations passing Throughput: 1 / 1 Min Sample Latency: 12.00 Max Sample Latency: 23.00
				Average UDP DL Latency: 26.83

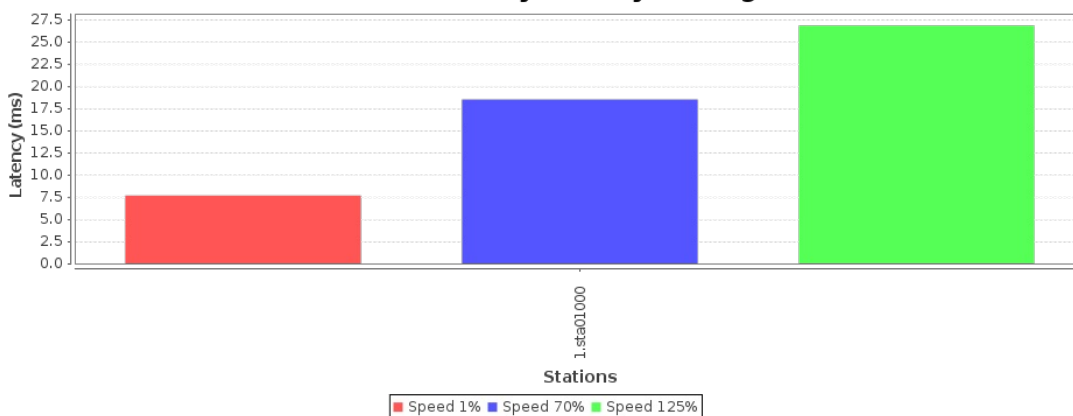| Test	Result	Value	Threshold	Details
AX 2.4Ghz Sta-Count 1 Speed 125%	PASS	26.83	55.00	Amount Stations passing Latency: 1 / 1 Amount Stations passing Throughput: 1 / 1 Min Sample Latency: 24.00 Max Sample Latency: 30.00
AX 2.4Ghz Sta-Count 32 Speed 1%	FAIL	324.99	25.00	Average UDP DL Latency: 324.99 Amount Stations passing Latency: 0 / 32 Amount Stations passing Throughput: 32 / 32 Min Sample Latency: 147.00 Max Sample Latency: 694.00
AX 2.4Ghz Sta-Count 32 Speed 70%	FAIL	637.01	45.00	Average UDP DL Latency: 637.01 Amount Stations passing Latency: 0 / 32 Amount Stations passing Throughput: 30 / 32 Min Sample Latency: 36.00 Max Sample Latency: 8,558.00
AX 2.4Ghz Sta-Count 32 Speed 125%	FAIL	1,196.84	105.00	Average UDP DL Latency: 1,196.84 Amount Stations passing Latency: 0 / 32 Amount Stations passing Throughput: 31 / 32 Min Sample Latency: 35.00 Max Sample Latency: 3,726.00
AX 5Ghz STA1	INFO			Reported TCP throughput: 899.22 Mbps
AX 5Ghz Sta-Count 1 Speed 1%	PASS	13.17	15.00	Average UDP DL Latency: 13.17 Amount Stations passing Latency: 1 / 1 Amount Stations passing Throughput: 1 / 1 Min Sample Latency: 9.00 Max Sample Latency: 17.00
AX 5Ghz Sta-Count 1 Speed 70%	PASS	13.67	25.00	Average UDP DL Latency: 13.67 Amount Stations passing Latency: 1 / 1 Amount Stations passing Throughput: 1 / 1 Min Sample Latency: 10.00 Max Sample Latency: 16.00
AX 5Ghz Sta-Count 1 Speed 125%	PASS	24.83	55.00	Average UDP DL Latency: 24.83 Amount Stations passing Latency: 1 / 1 Amount Stations passing Throughput: 1 / 1 Min Sample Latency: 22.00 Max Sample Latency: 27.00
AX 5Ghz Sta-Count 32 Speed 1%	FAIL	678.27	25.00	Average UDP DL Latency: 678.27 Amount Stations passing Latency: 0 / 32 Amount Stations passing Throughput: 32 / 32 Min Sample Latency: 72.00 Max Sample Latency: 1,930.00
AX 5Ghz Sta-Count 32 Speed 70%	FAIL	619.41	45.00	Average UDP DL Latency: 619.41 Amount Stations passing Latency: 0 / 32 Amount Stations passing Throughput: 31 / 32 Min Sample Latency: 113.00 Max Sample Latency: 2,250.00
AX 5Ghz Sta-Count 32 Speed 125%	FAIL	511.43	105.00	Average UDP DL Latency: 511.43 Amount Stations passing Latency: 0 / 32 Amount Stations passing Throughput: 31 / 32 Min Sample Latency: 128.00 Max Sample Latency: 2,689.00
N 2.4Ghz STA1	INFO			Reported TCP throughput: 48.71 Mbps
N 2.4Ghz Sta-Count 1 Speed 1%	PASS	13.17	15.00	Average UDP DL Latency: 13.17 Amount Stations passing Latency: 1 / 1 Amount Stations passing Throughput: 1 / 1 Min Sample Latency: 11.00 Max Sample Latency: 16.00
N 2.4Ghz Sta-Count 1 Speed 70%	FAIL	29.83	25.00	Average UDP DL Latency: 29.83 Amount Stations passing Latency: 0 / 1 Amount Stations passing Throughput: 1 / 1 Min Sample Latency: 27.00 Max Sample Latency: 33.00
N 2.4Ghz Sta-Count 1 Speed 125%	PASS	44.00	55.00	Average UDP DL Latency: 44.00 Amount Stations passing Latency: 1 / 1 Amount Stations passing Throughput: 1 / 1 Min Sample Latency: 41.00 Max Sample Latency: 48.00
				Average UDP DL Latency: 11.92

N 2.4Ghz Sta-Count 32 Speed 1%	PASS	11.92	25.00	Amount Stations passing Latency: 32 / 32 Amount Stations passing Throughput: 32 / 32 Min Sample Latency: 7.00 Max Sample Latency: 18.00
N 2.4Ghz Sta-Count 32 Speed 70%	PASS	38.94	45.00	Average UDP DL Latency: 38.94 Amount Stations passing Latency: 30 / 32 Amount Stations passing Throughput: 32 / 32 Min Sample Latency: 28.00 Max Sample Latency: 52.00
N 2.4Ghz Sta-Count 32 Speed 125%	FAIL	200.50	105.00	Average UDP DL Latency: 200.50 Amount Stations passing Latency: 0 / 32 Amount Stations passing Throughput: 32 / 32 Min Sample Latency: 146.00 Max Sample Latency: 375.00
AC 5Ghz STA1	INFO			Reported TCP throughput: 655.30 Mbps
AC 5Ghz Sta-Count 1 Speed 1%	PASS	12.33	15.00	Average UDP DL Latency: 12.33 Amount Stations passing Latency: 1 / 1 Amount Stations passing Throughput: 1 / 1 Min Sample Latency: 9.00 Max Sample Latency: 15.00
AC 5Ghz Sta-Count 1 Speed 70%	PASS	16.33	25.00	Average UDP DL Latency: 16.33 Amount Stations passing Latency: 1 / 1 Amount Stations passing Throughput: 1 / 1 Min Sample Latency: 14.00 Max Sample Latency: 18.00
AC 5Ghz Sta-Count 1 Speed 125%	PASS	47.00	55.00	Average UDP DL Latency: 47.00 Amount Stations passing Latency: 1 / 1 Amount Stations passing Throughput: 1 / 1 Min Sample Latency: 43.00 Max Sample Latency: 49.00
AC 5Ghz Sta-Count 32 Speed 1%	PASS	13.40	25.00	Average UDP DL Latency: 13.40 Amount Stations passing Latency: 32 / 32 Amount Stations passing Throughput: 32 / 32 Min Sample Latency: 8.00 Max Sample Latency: 19.00
AC 5Ghz Sta-Count 32 Speed 70%	FAIL	62.69	45.00	Average UDP DL Latency: 62.69 Amount Stations passing Latency: 1 / 32 Amount Stations passing Throughput: 32 / 32 Min Sample Latency: 34.00 Max Sample Latency: 94.00
AC 5Ghz Sta-Count 32 Speed 125%	PASS	101.97	105.00	Average UDP DL Latency: 101.97 Amount Stations passing Latency: 24 / 32 Amount Stations passing Throughput: 32 / 32 Min Sample Latency: 73.00 Max Sample Latency: 143.00

AX 2.4Ghz UDP Two-Way Latency (ms) for single station.

CSV Data for AX 2.4Ghz UDP Two-Way Latency for single station

Figure: AX 2.4Ghz UDP Two-Way Latency for single station

AX 2.4Ghz UDP Two-Way Latency (ms) for each station.

AX 2.4Ghz UDP Two-Way Latency for 32 stations

AX 2.4Ghz UDP Throughput (kbps) for each station.

AX 2.4Ghz UDP Throughput for 1 station

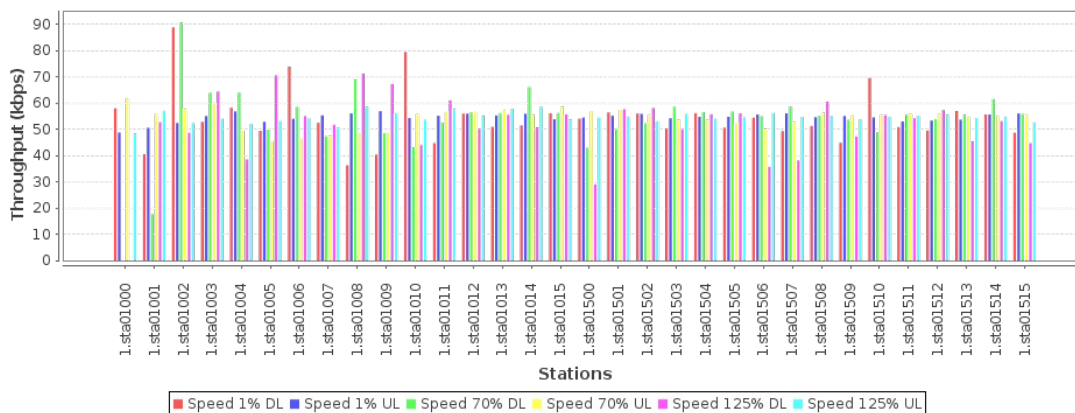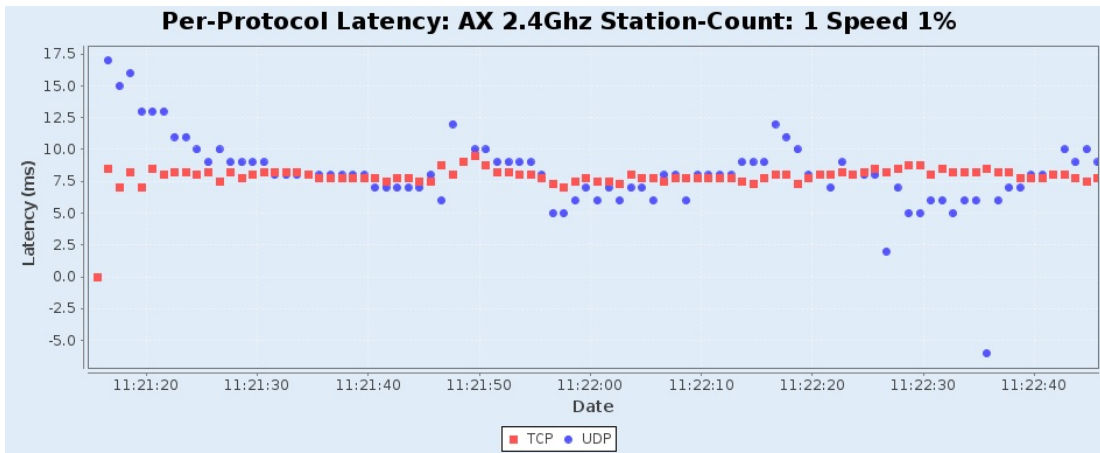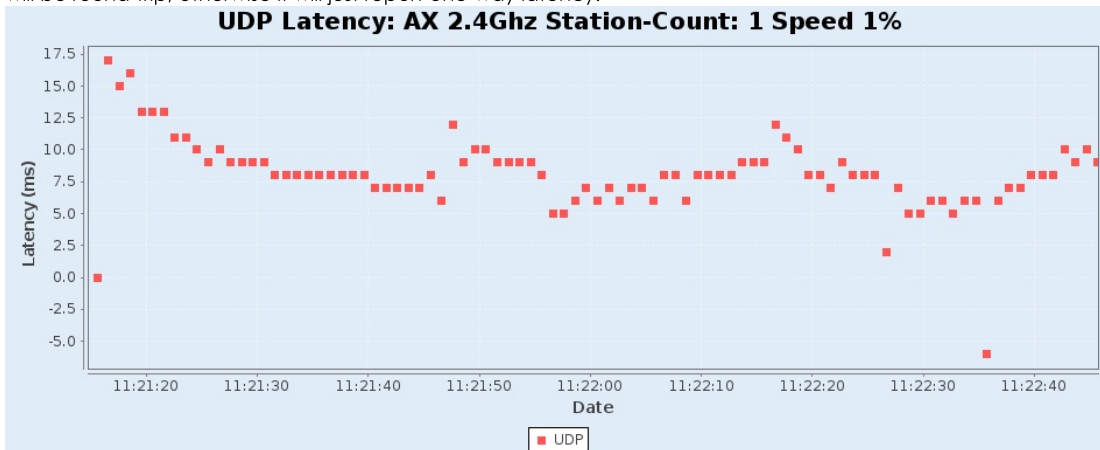AX 2.4Ghz UDP Throughput (kbps) for each station.
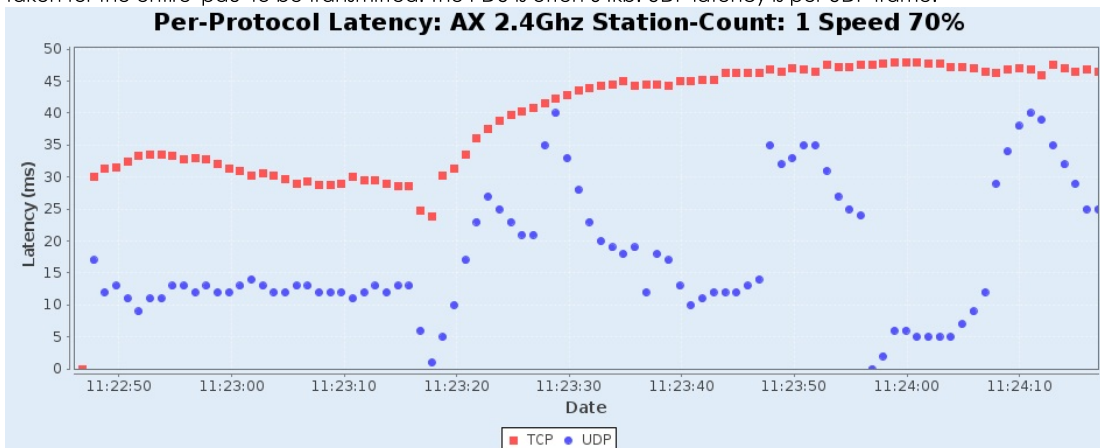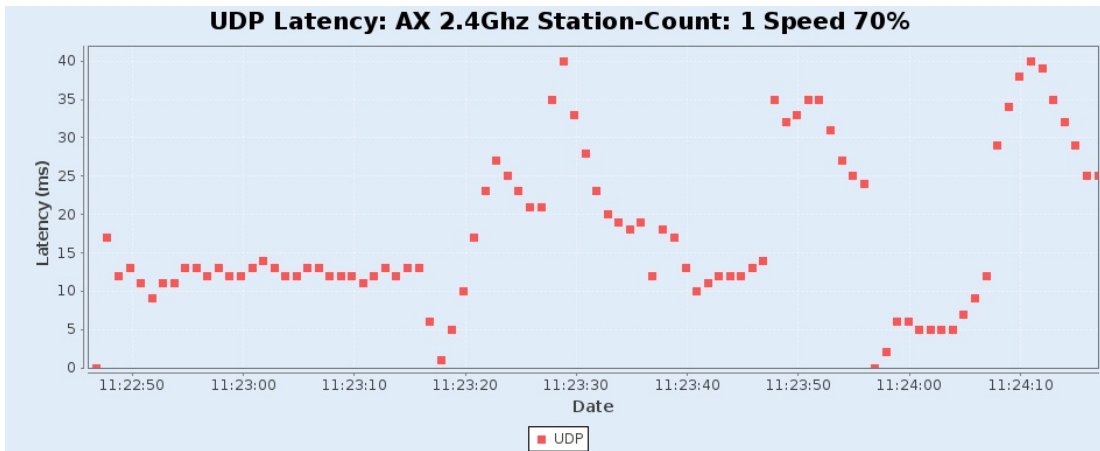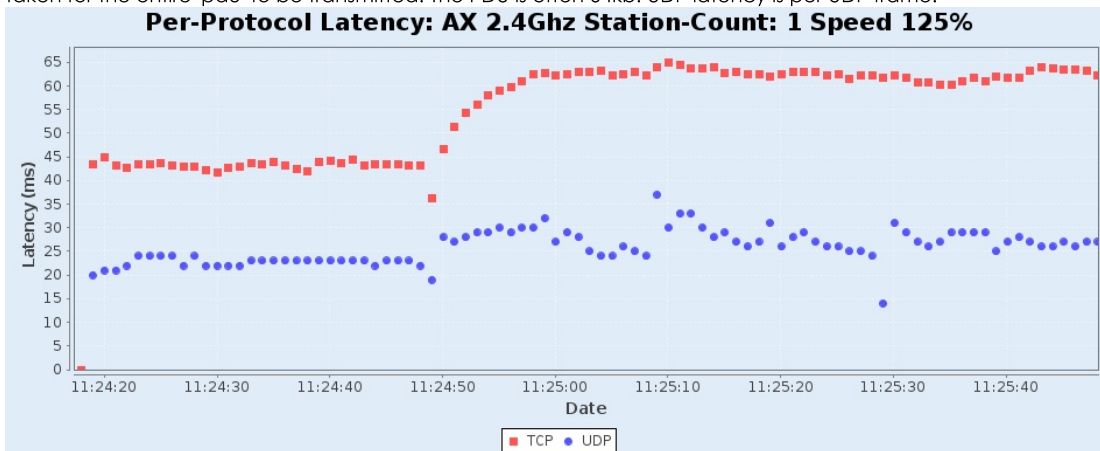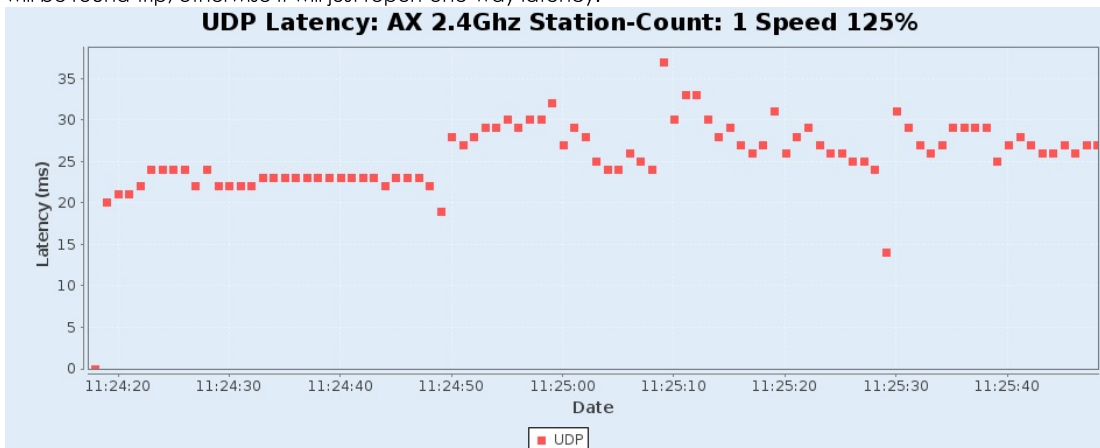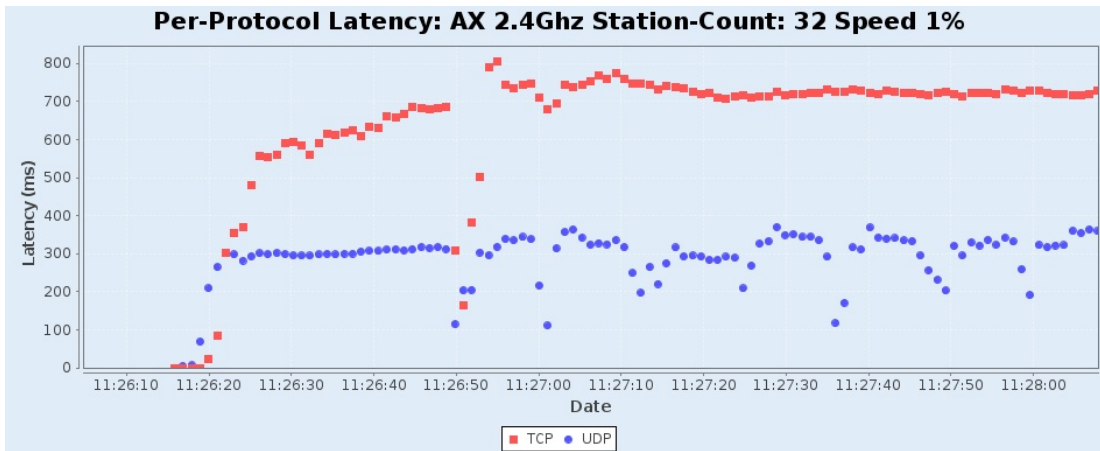
AX 2.4Ghz UDP Throughput for 32 stations

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.

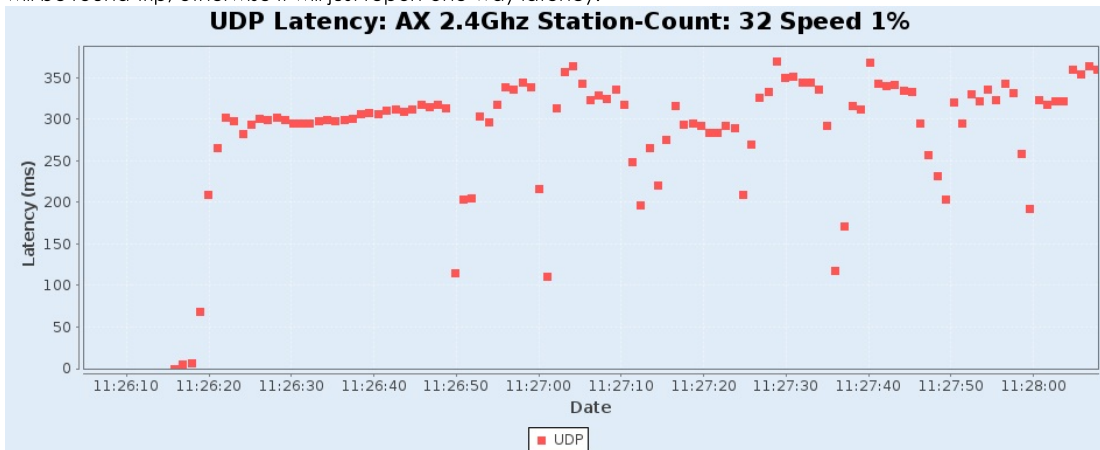Per-Protocol Latency: AX 2.4Ghz Station-Count: 1 Speed 1%

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

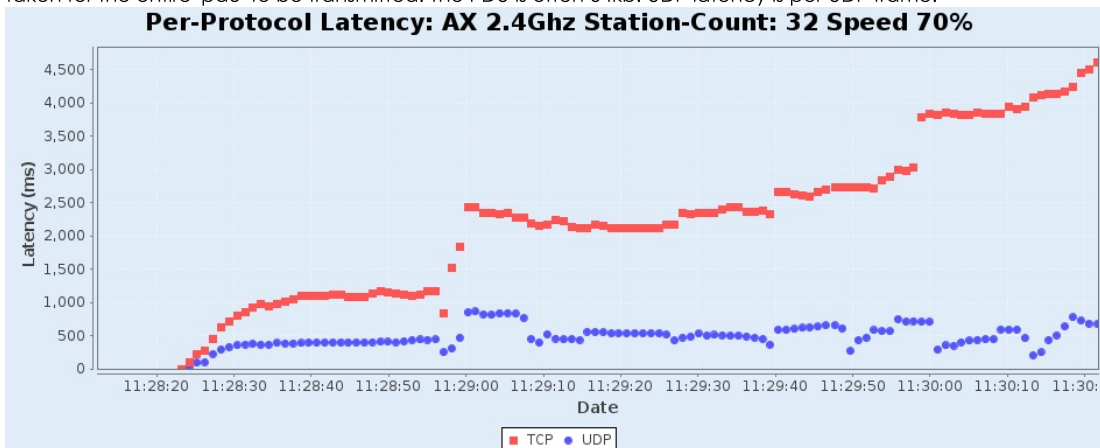UDP Latency: AX 2.4Ghz Station-Count: 1 Speed 1%

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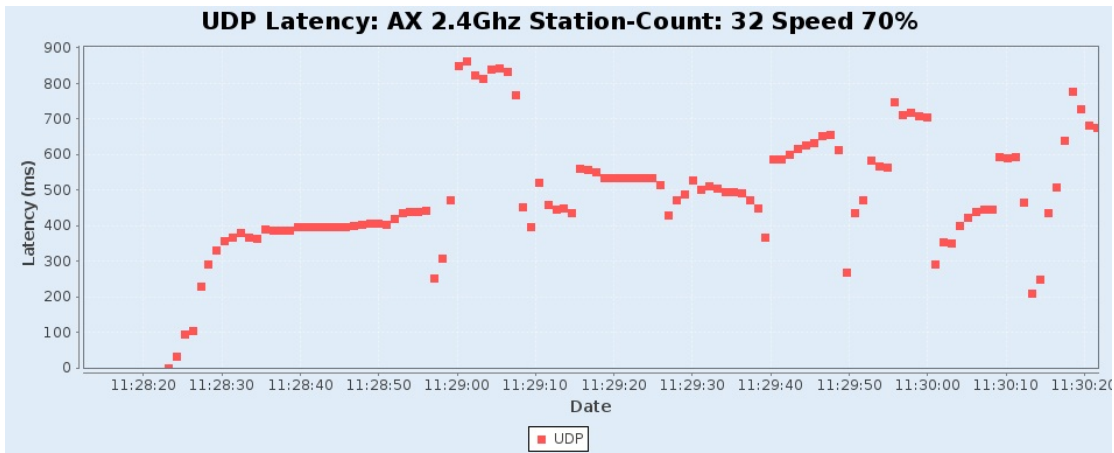Per-Protocol Latency: AX 2.4Ghz Station-Count: 1 Speed 70%

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

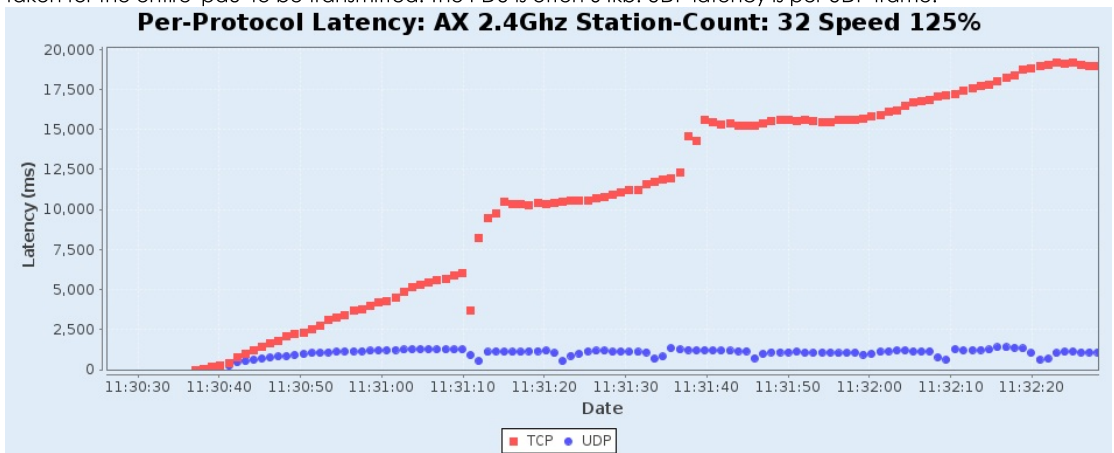**UDP Latency: AX 2.4Ghz Station-Count: 1 Speed 70%**

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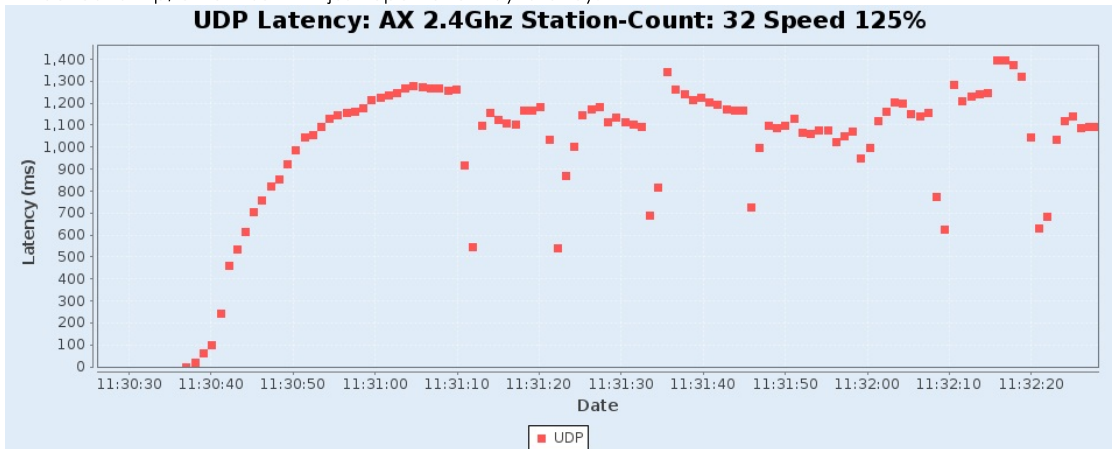**Per-Protocol Latency: AX 2.4Ghz Station-Count: 1 Speed 125%**

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

UDP Latency: AX 2.4Ghz Station-Count: 1 Speed 125%

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.

Per-Protocol Latency: AX 2.4Ghz Station-Count: 32 Speed 1%

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

UDP Latency: AX 2.4Ghz Station-Count: 32 Speed 1%

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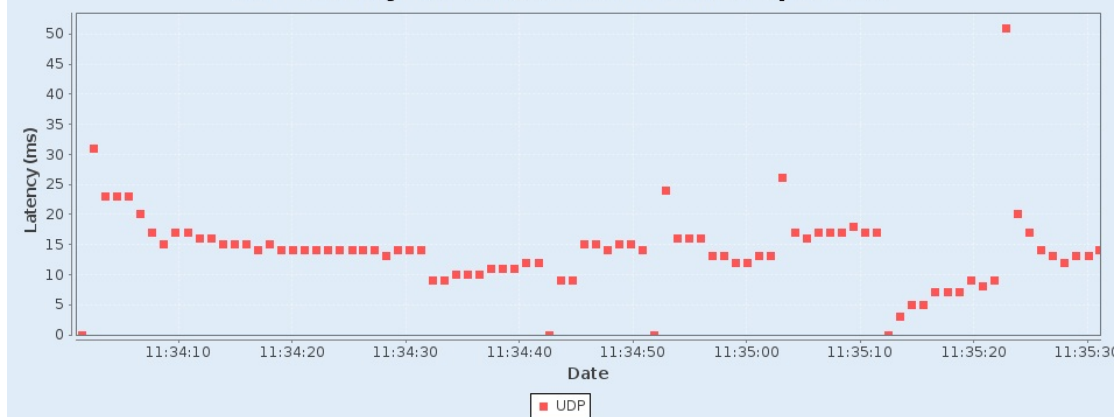
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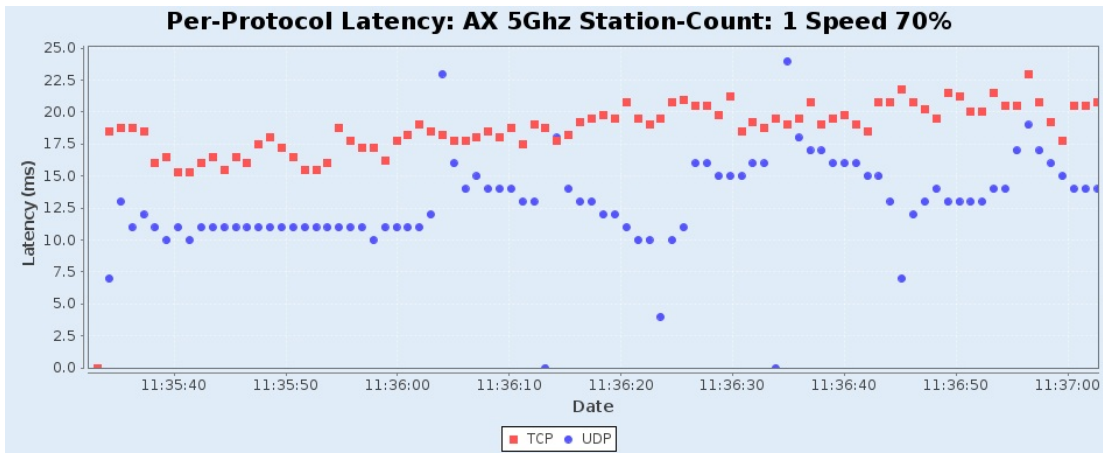

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

AX 5Ghz UDP Two-Way Latency (ms) for single station.

CSV Data for AX 5Ghz UDP Two-Way Latency for single station

AX 5Ghz UDP Two-Way Latency for single station

AX 5Ghz UDP Two-Way Latency (ms) for each station.

CSV Data for AX 5Ghz UDP Two-Way Latency for 32 stations

AX 5Ghz UDP Two-Way Latency for 32 stations

AX 5Ghz UDP Throughput (kbps) for each station.

CSV Data for AX 5Ghz UDP Throughput for 1 station

AX 5Ghz UDP Throughput for 1 station

AX 5Ghz UDP Throughput (kbps) for each station.

CSV Data for AX 5Ghz UDP Throughput for 32 stations

AX 5Ghz UDP Throughput for 32 stations

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will b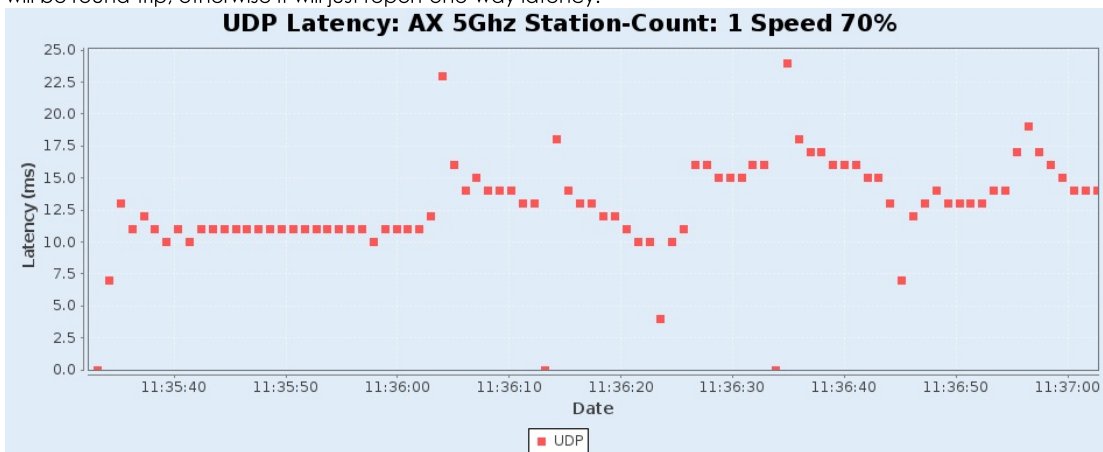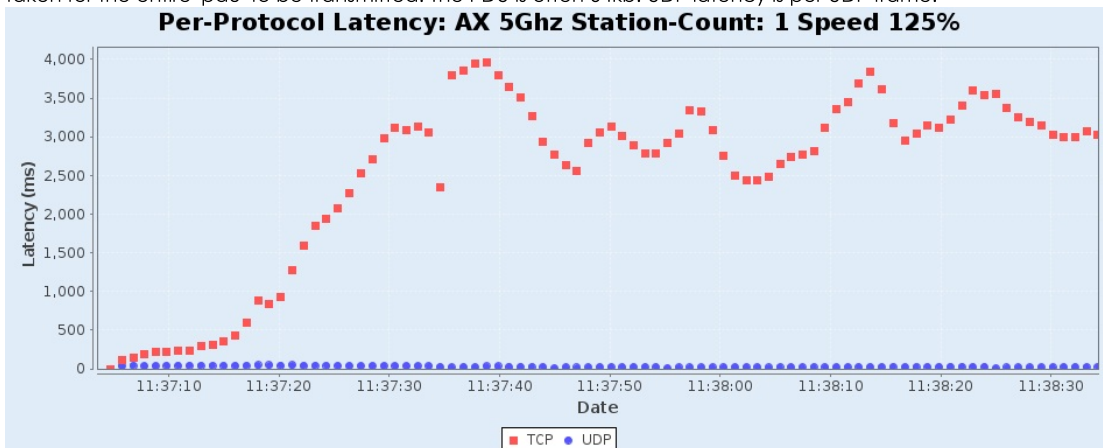e round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.

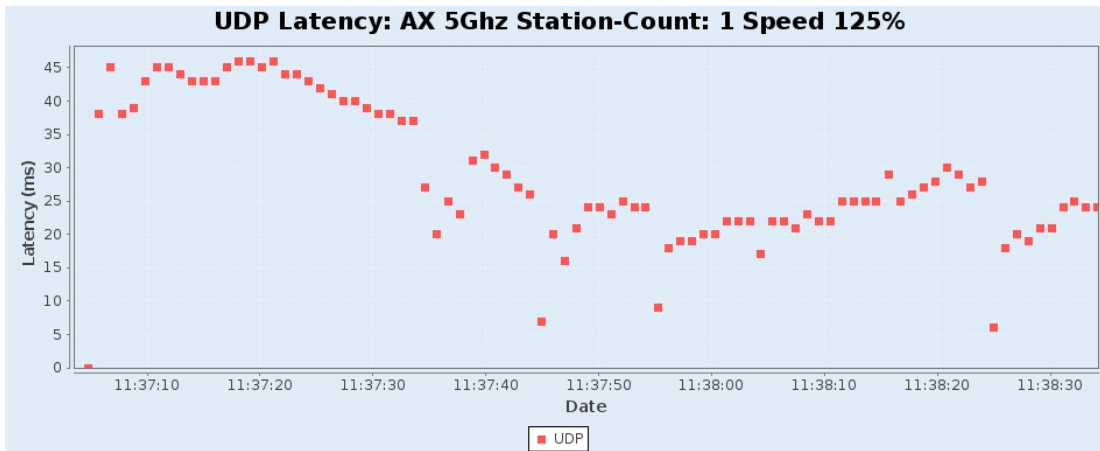**Per-Protocol Latency: AX 5Ghz Station-Count: 1 Speed 1%**

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

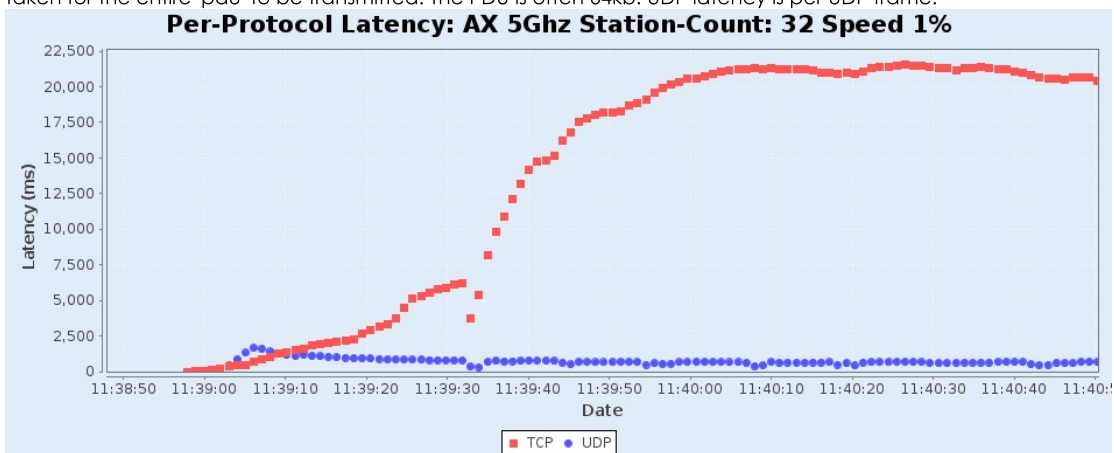**UDP Latency: AX 5Ghz Station-Count: 1 Speed 1%**

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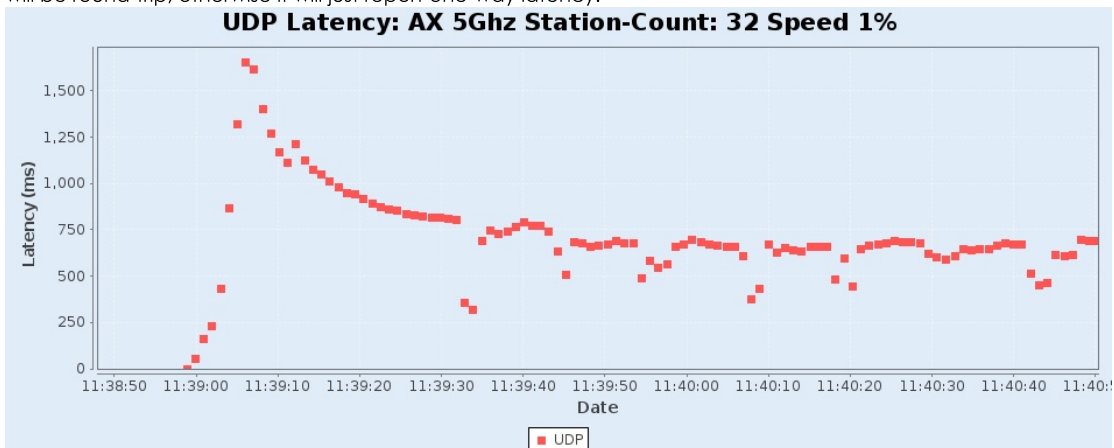Per-Protocol Latency: AX 5Ghz Station-Count: 1 Speed 70%

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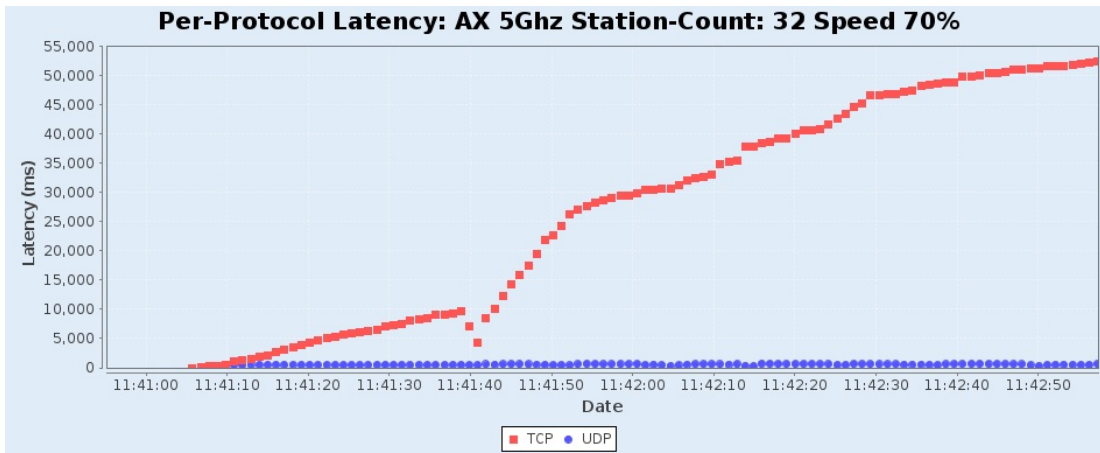UDP Latency: AX 5Ghz Station-Count: 1 Speed 70%

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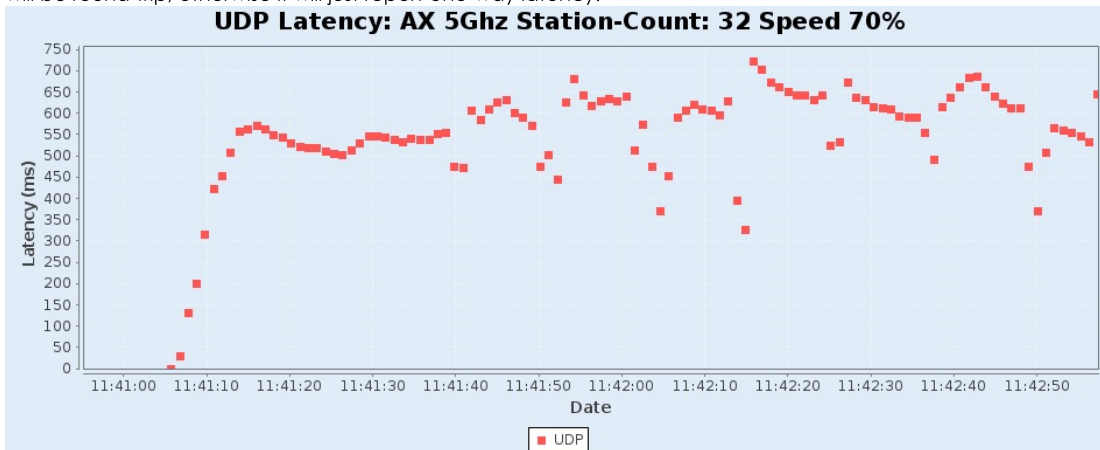Per-Protocol Latency: AX 5Ghz Station-Count: 1 Speed 125%

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

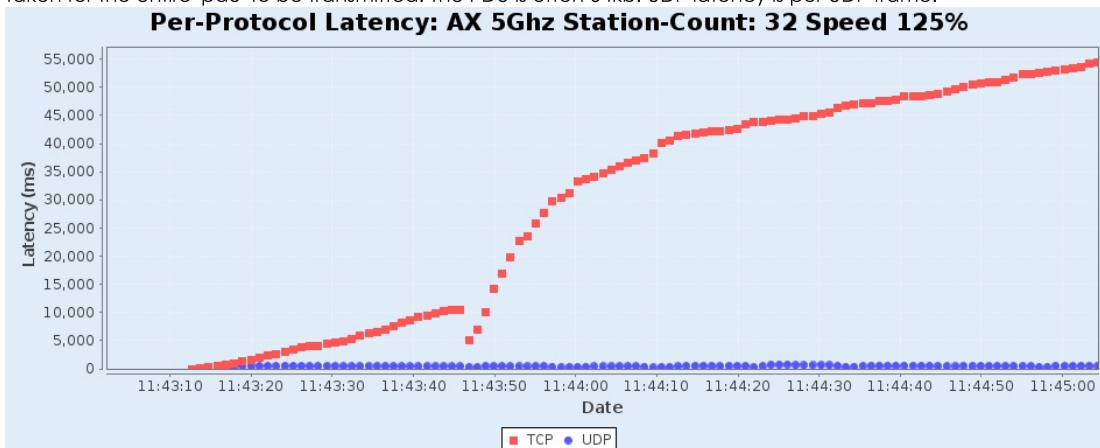**UDP Latency: AX 5Ghz Station-Count: 1 Speed 125%**

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Per-Protocol Latency: AX 5Ghz Station-Count: 32 Speed 1%
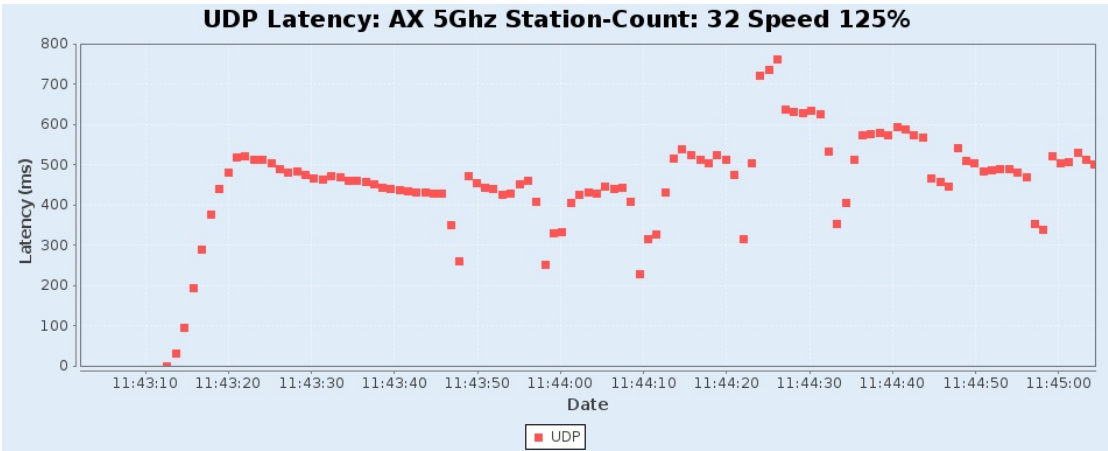
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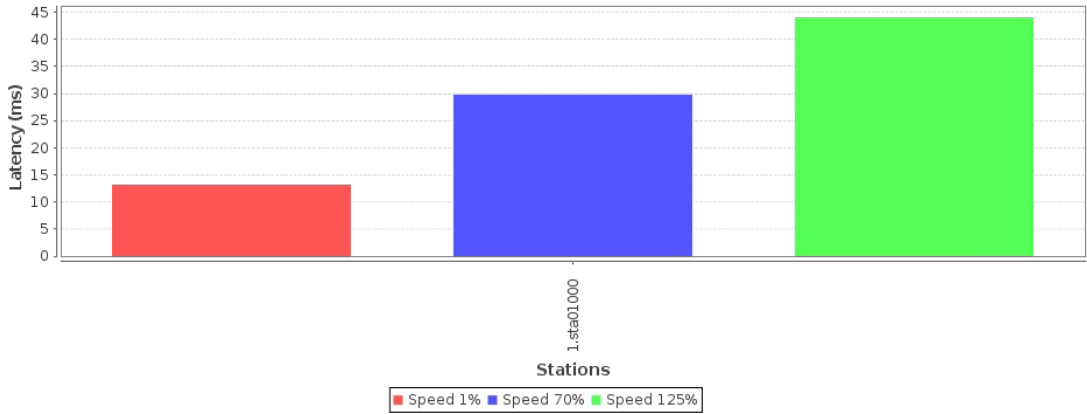Per-Protocol Latency: AX 5Ghz Station-Count: 32 Speed 70%

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Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. 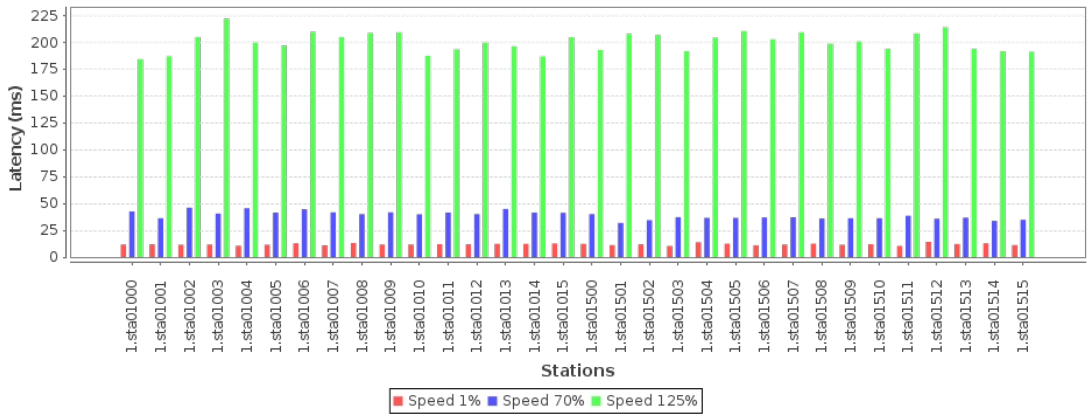TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.

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UDP Latency: AX 5Ghz Station-Count: 32 Speed 125%

N 2.4Ghz UDP Two-Way Latency (ms) for single station.

CSV Data for N 2.4Ghz UDP Two-Way Latency for single station

N 2.4Ghz UDP Two-Way Latency for single station
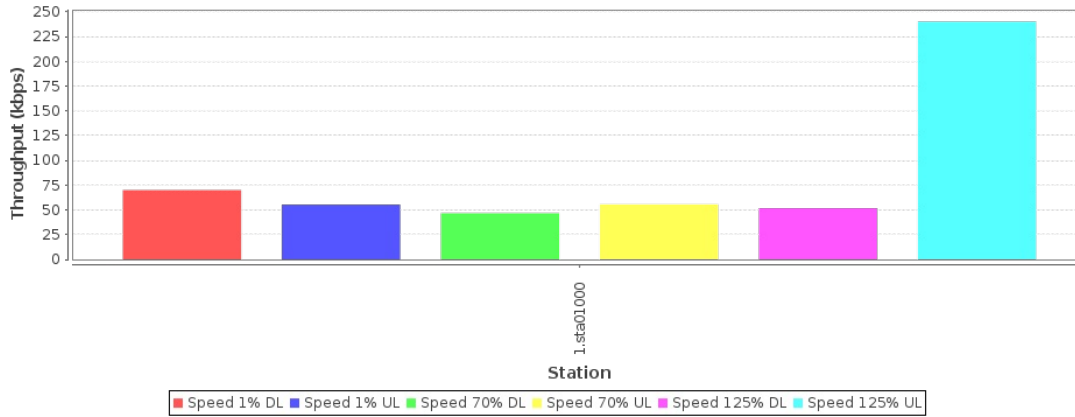

N 2.4Ghz UDP Two-Way Latency (ms) for each station.

CSV Data for N 2.4Ghz UDP Two-Way Latency for 32 stations

N 2.4Ghz UDP Two-Way Latency for 32 stations

N 2.4Ghz UDP Throughput (kbps) for each station.
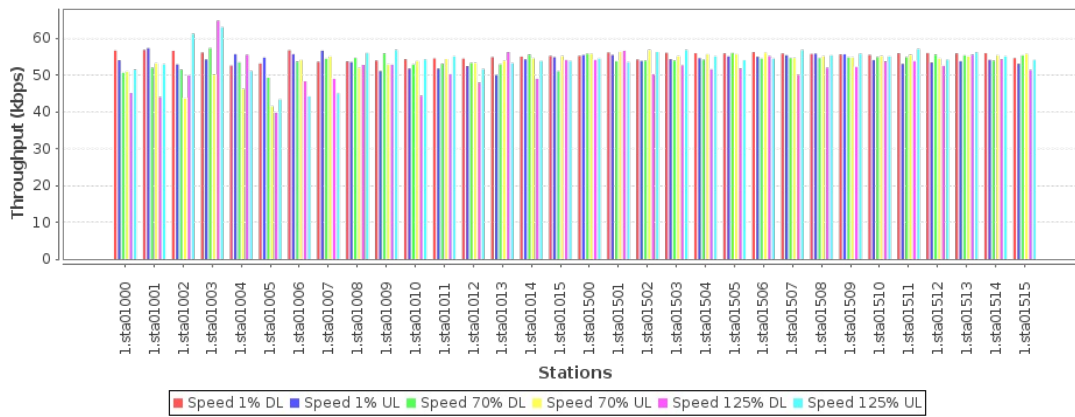
CSV Data for N 2.4Ghz UDP Throughput for 1 station

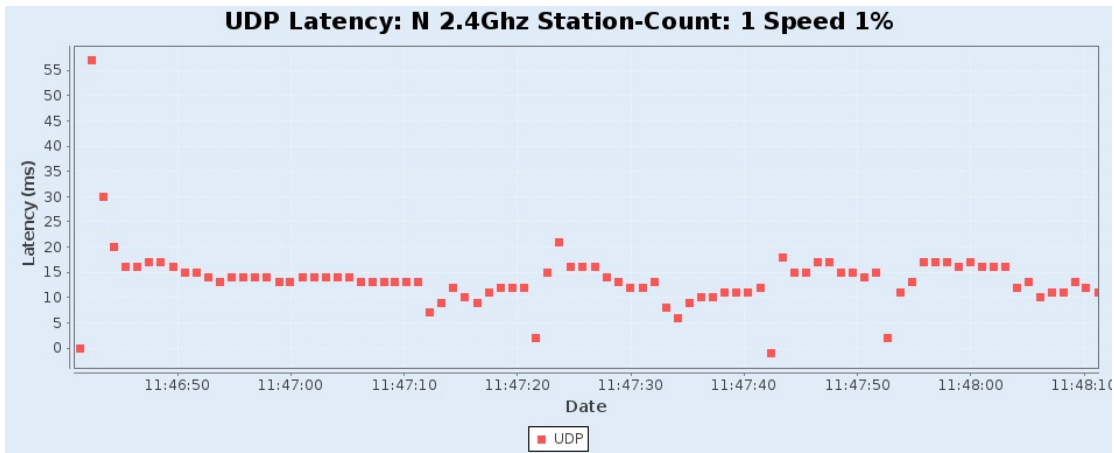N 2.4Ghz UDP Throughput (kbps) for each station.

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.
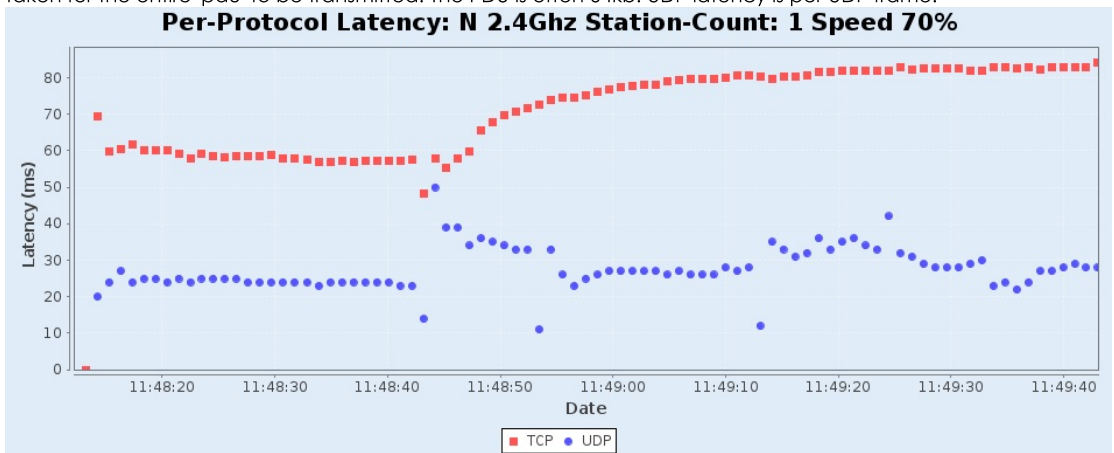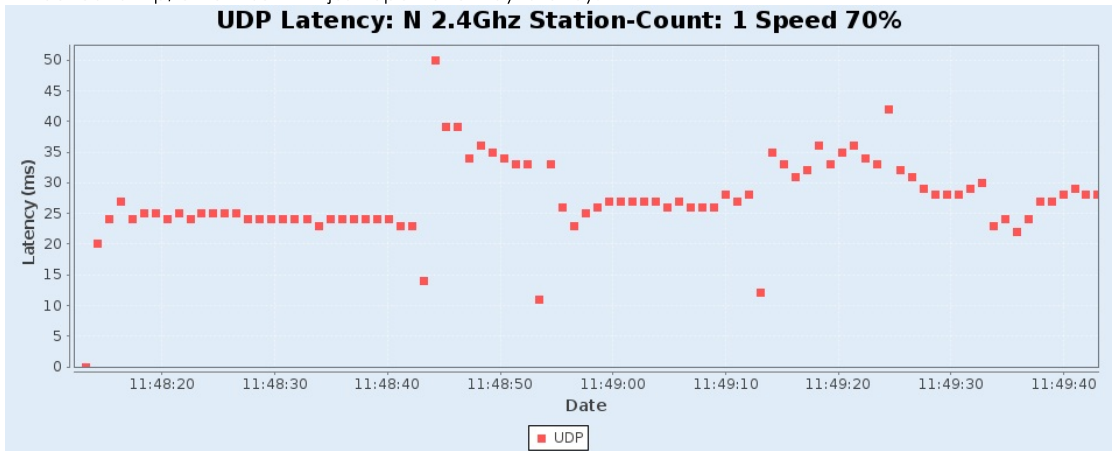

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

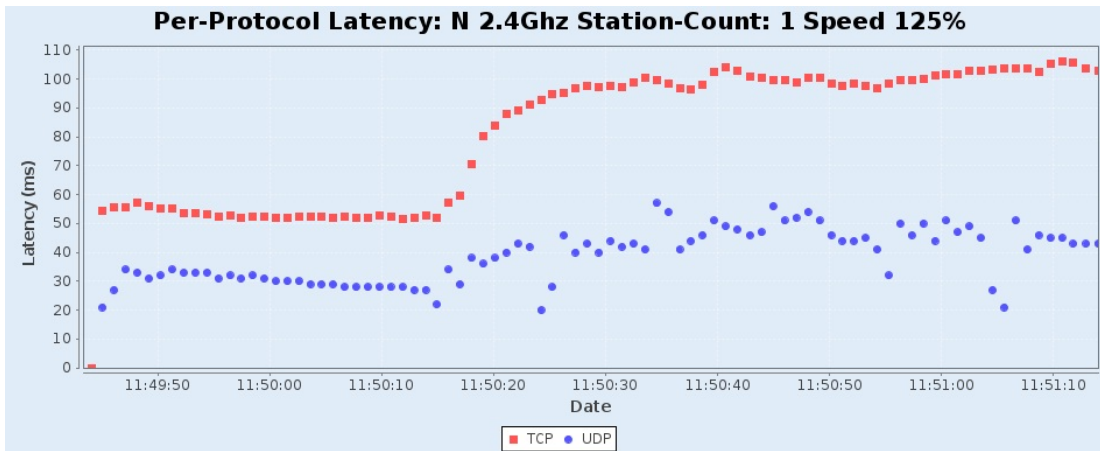**UDP Latency: N 2.4Ghz Station-Count: 1 Speed 1%**

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.

Per-Protocol Latency: N 2.4Ghz Station-Count: 1 Speed 70%
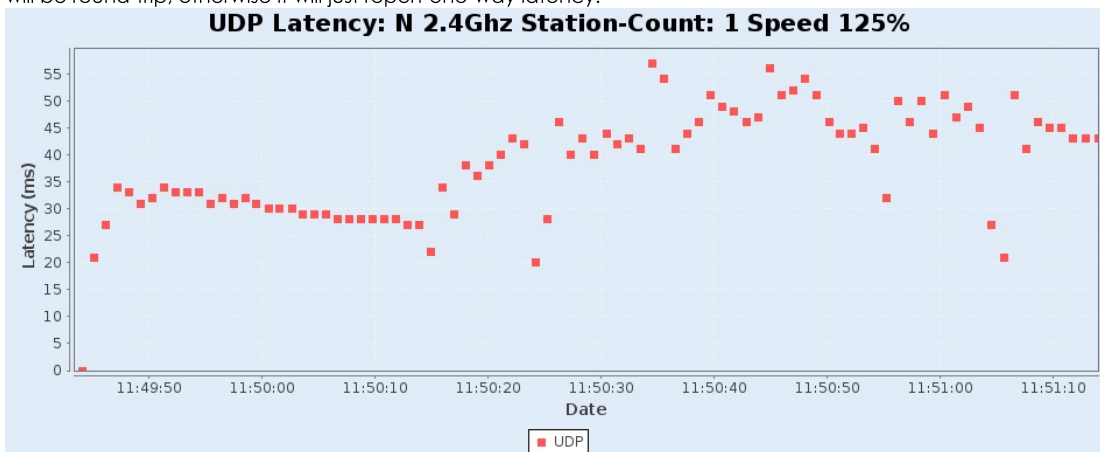
UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

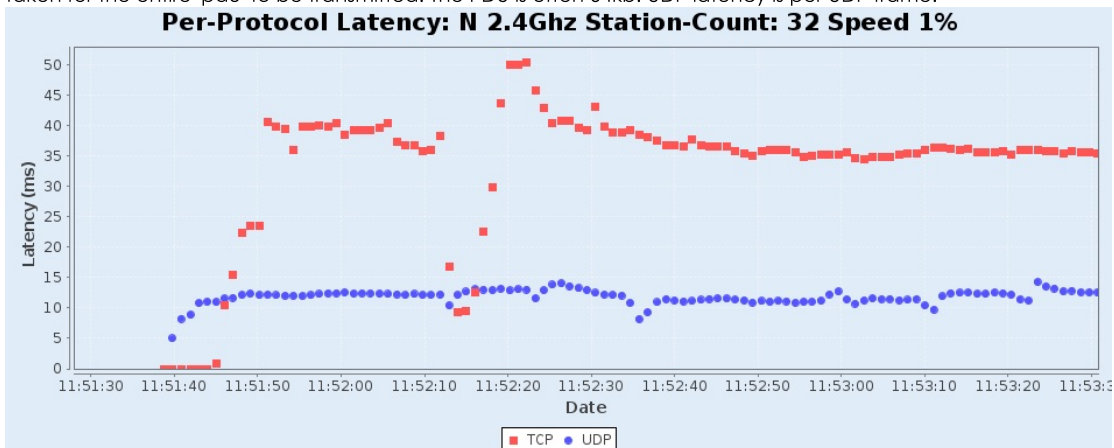**UDP Latency: N 2.4Ghz Station-Count: 1 Speed 70%**

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.

Per-Protocol Latency: N 2.4Ghz Station-Count: 1 Speed 125%

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

UDP Latency: N 2.4Ghz Station-Count: 1 Speed 125%

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.

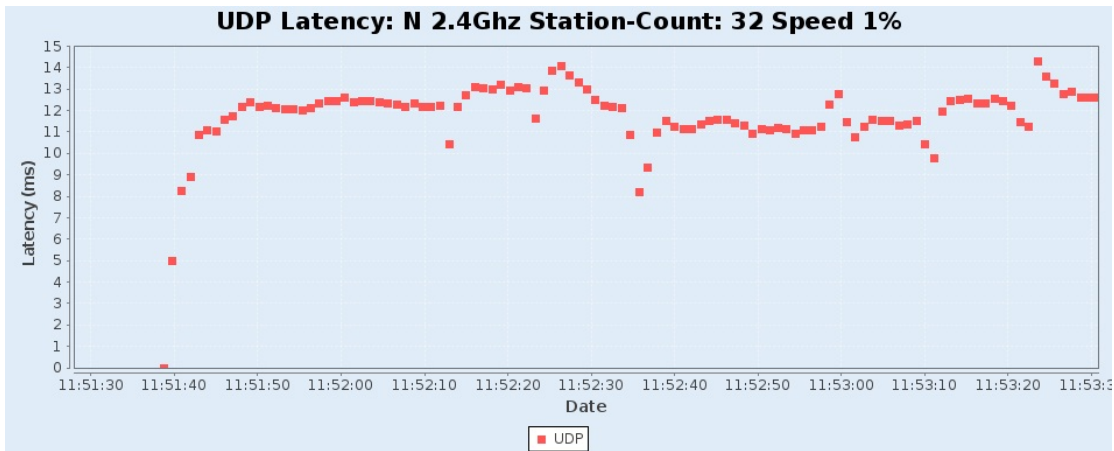
Per-Protocol Latency: N 2.4Ghz Station-Count: 32 Speed 1%

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.
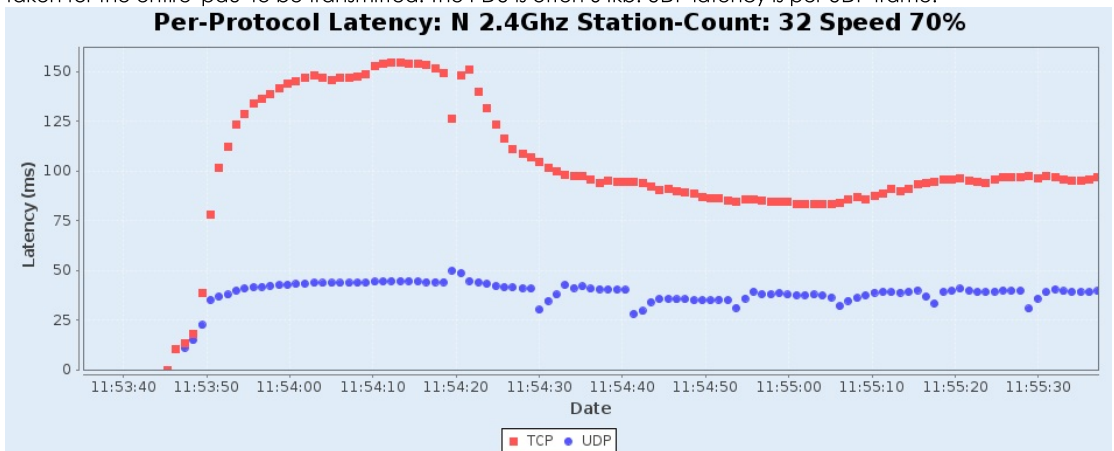
Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.
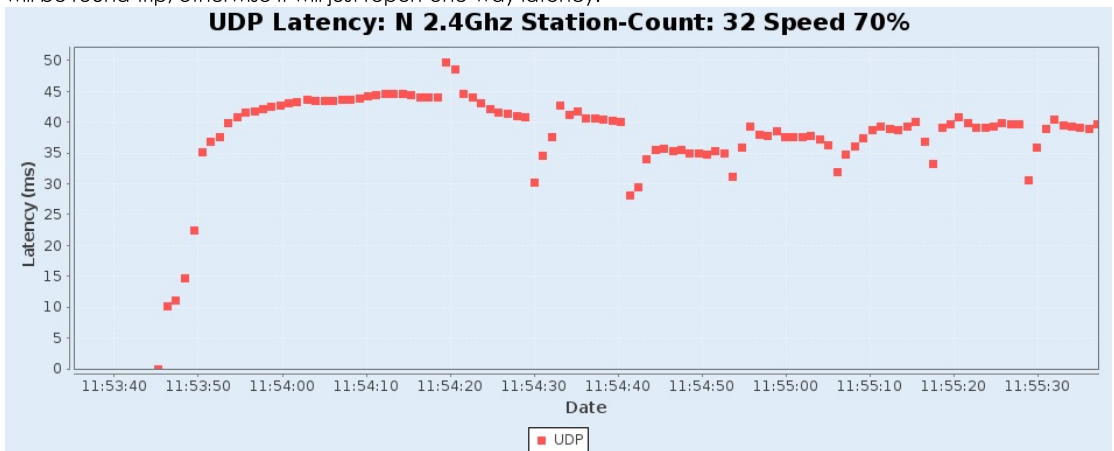

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.
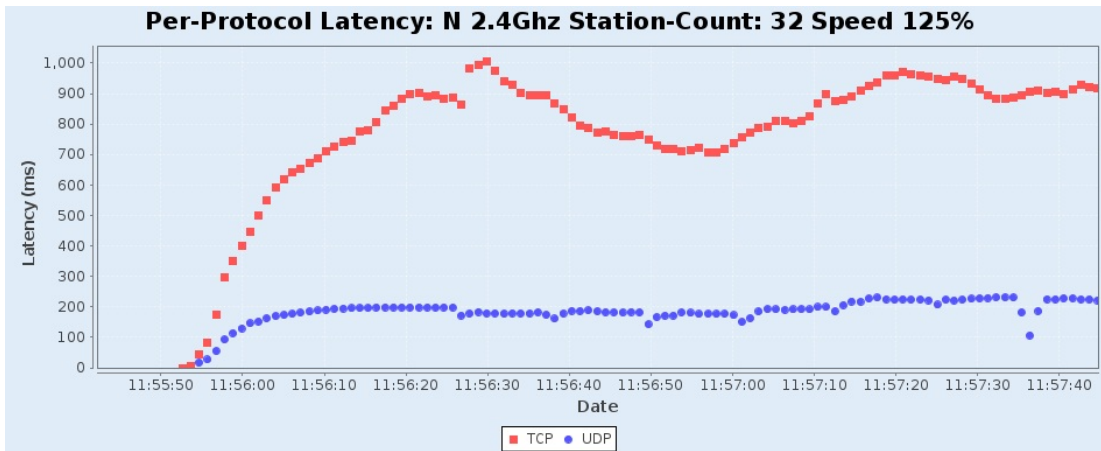

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.

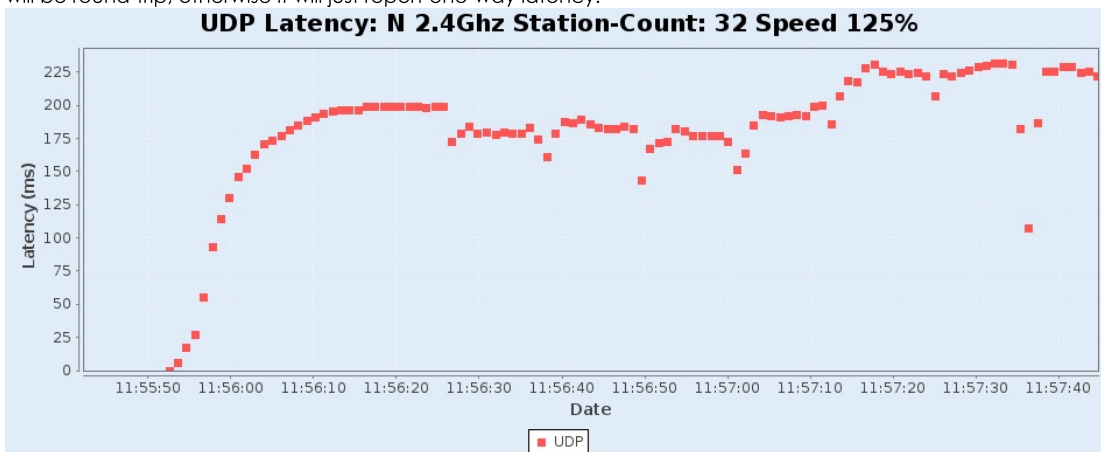Per-Protocol Latency: N 2.4Ghz Station-Count: 32 Speed 125%

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

UDP Latency: N 2.4Ghz Station-Count: 32 Speed 125%

AC 5Ghz UDP Two-Way Latency (ms) for single station.

CSV Data for AC 5Ghz UDP Two-Way Latency for single station

AC 5Ghz UDP Two-Way Latency for single station

AC 5Ghz UDP Two-Way Latency (ms) for each station.

CSV Data for AC 5Ghz UDP Two-Way Latency for 32 stations

AC 5Ghz UDP Two-Way Latency for 32 stations

AC 5Ghz UDP Throughput (kbps) for each station.

AC 5Ghz UDP Throughput for 1 station

AC 5Ghz UDP Throughput (kbps) for each station.

AC 5Ghz UDP Throughput for 32 stations

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.
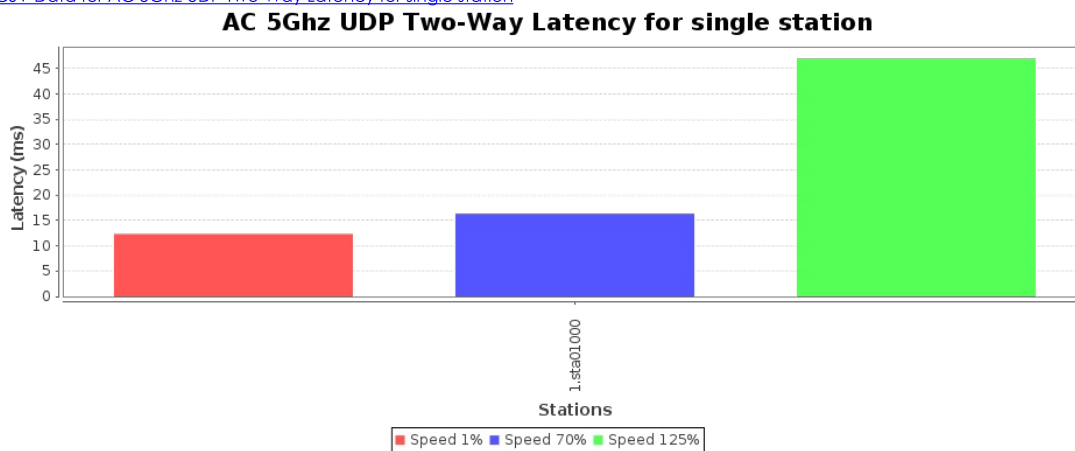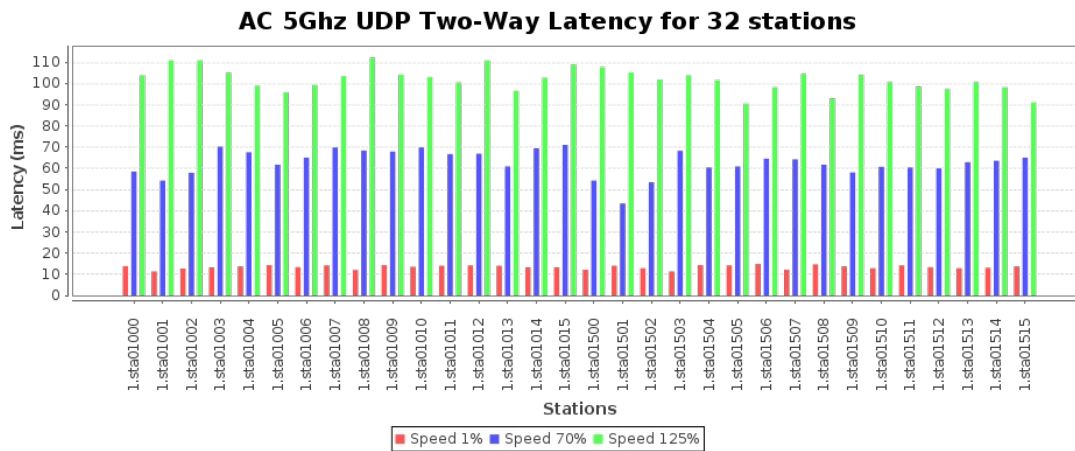
UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.

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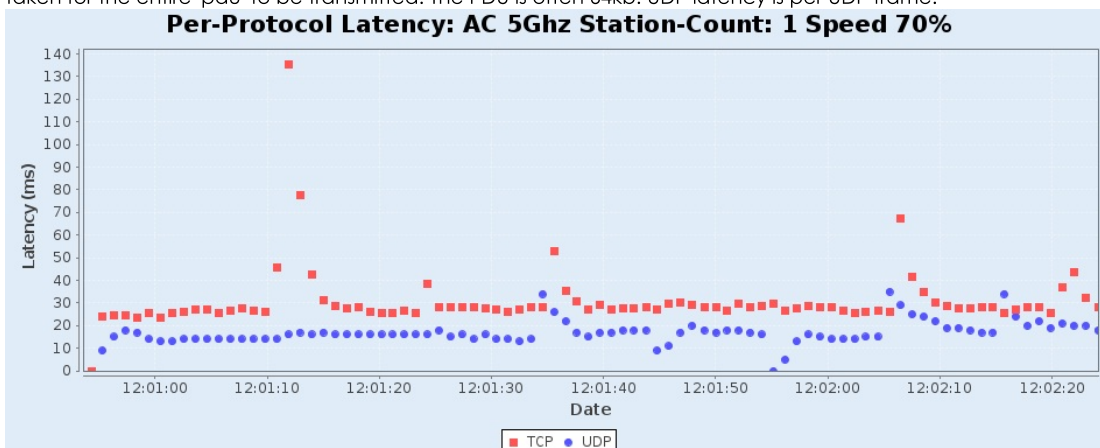
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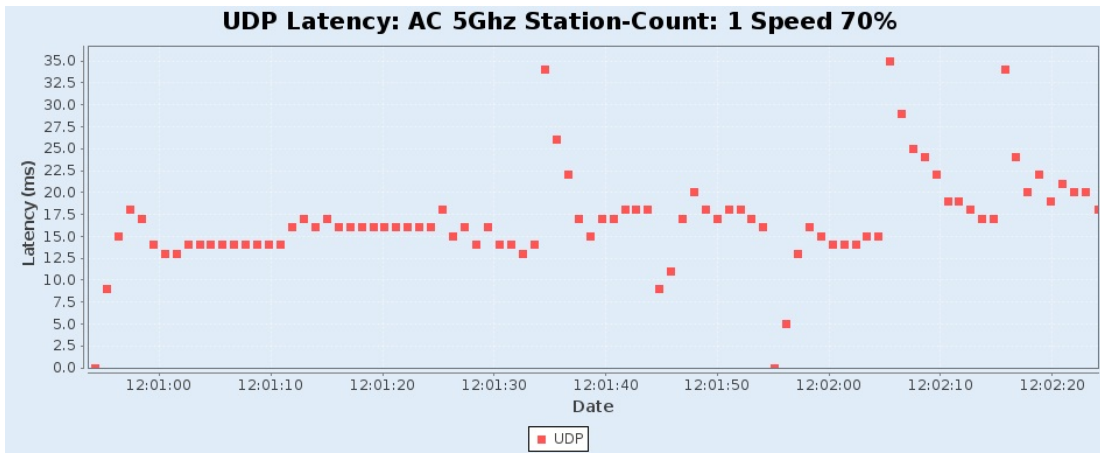

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.
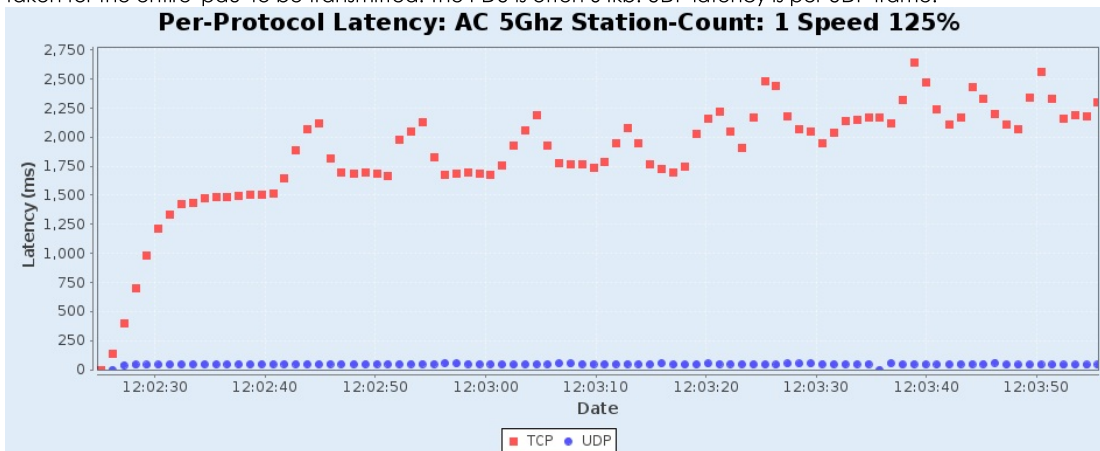

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.

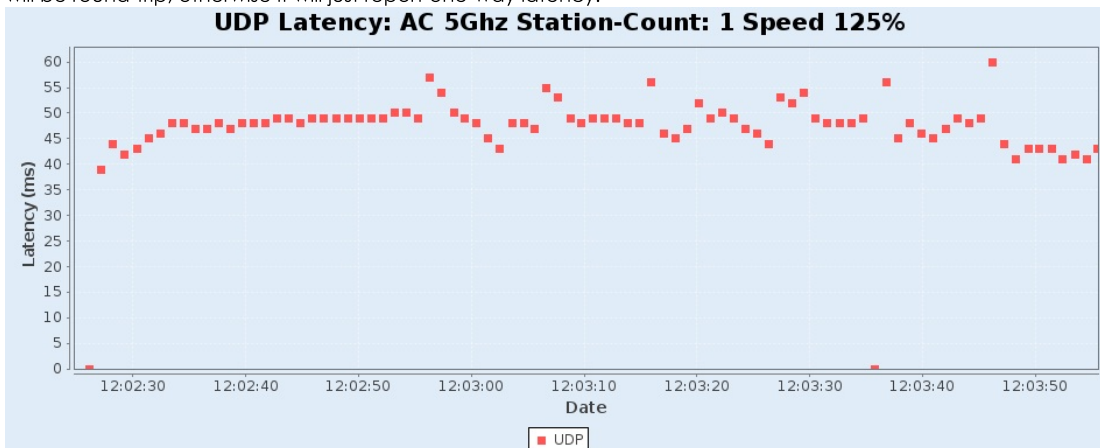Per-Protocol Latency: AC 5Ghz Station-Count: 32 Speed 1%

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

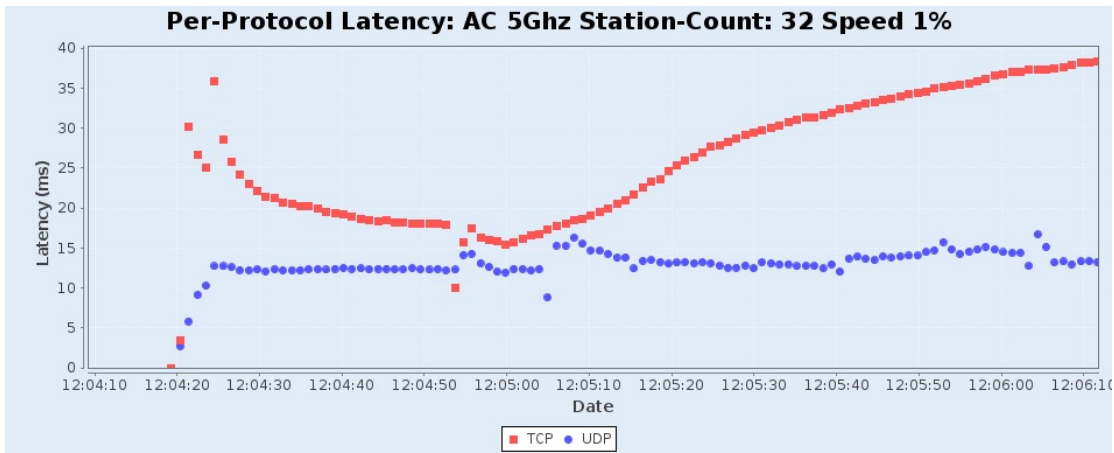UDP Latency: AC 5Ghz Station-Count: 32 Speed 1%

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.

Per-Protocol Latency: AC 5Ghz Station-Count: 32 Speed 70%

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.

UDP Latency: AC 5Ghz Station-Count: 32 Speed 70%

Per-Protocol Latency Graph shows the average latency for the different protocol types created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency. TCP latency may be misleading because it the time taken for the entire 'pdu' to be transmitted. The PDU is often 64kb. UDP latency is per UDP frame.

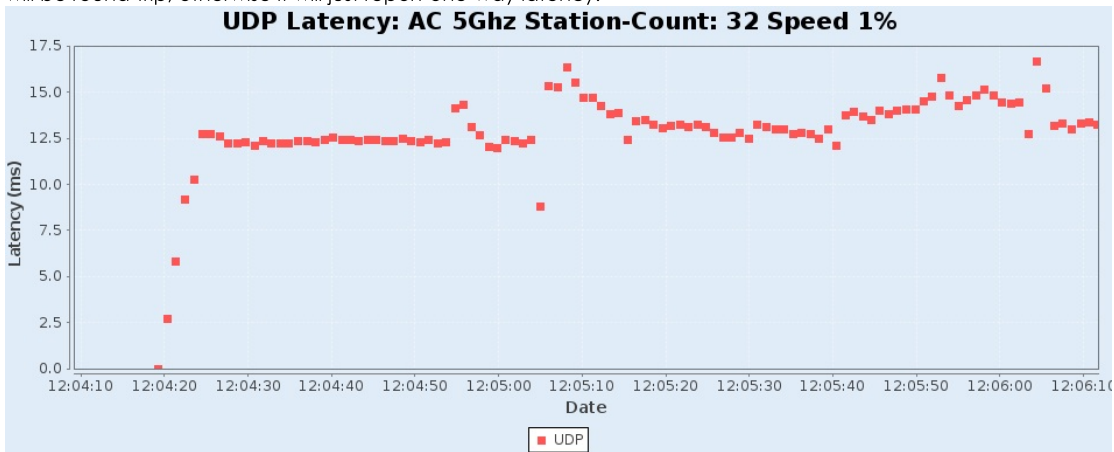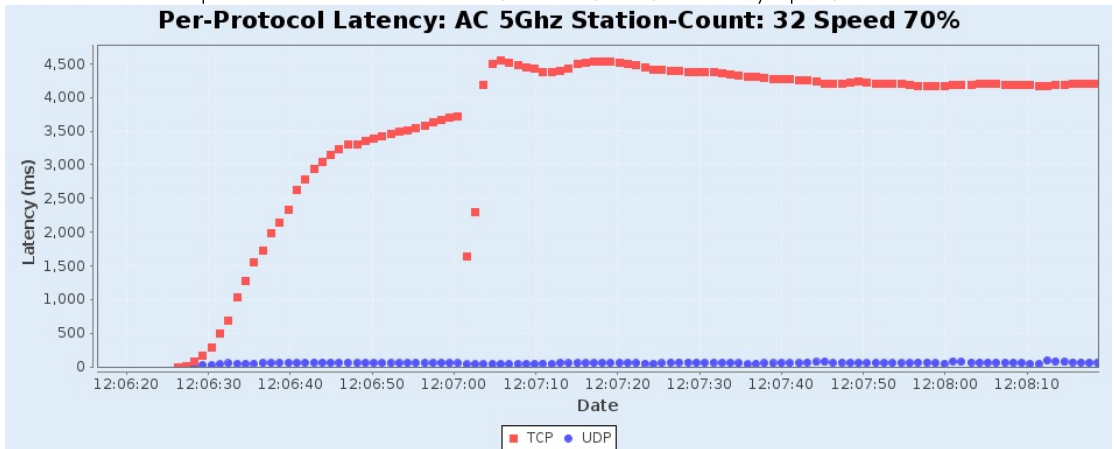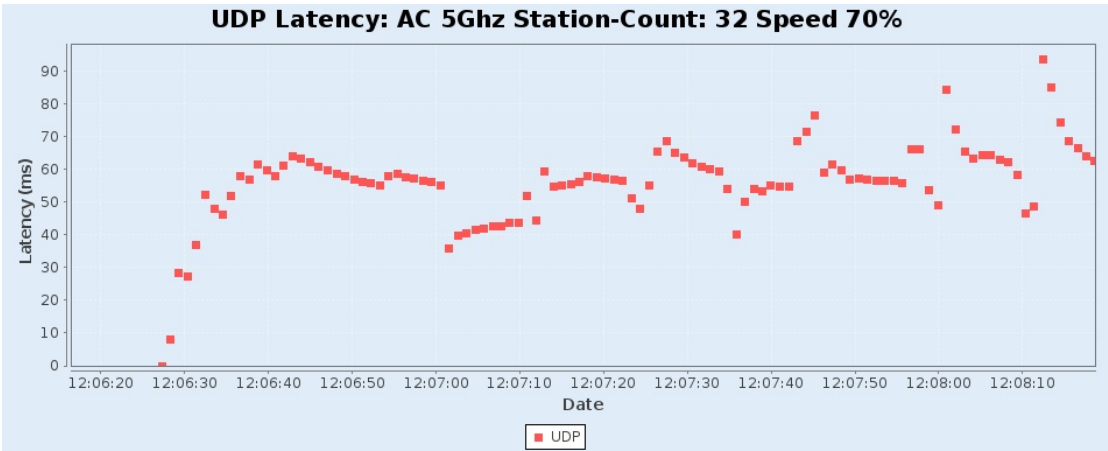Per-Protocol Latency: AC 5Ghz Station-Count: 32 Speed 125%

UDP Latency Graph shows the average latency for the UDP traffic created by this test. If opposite-direction traffic is selected, the the latency will be round-trip, otherwise it will just report one-way latency.
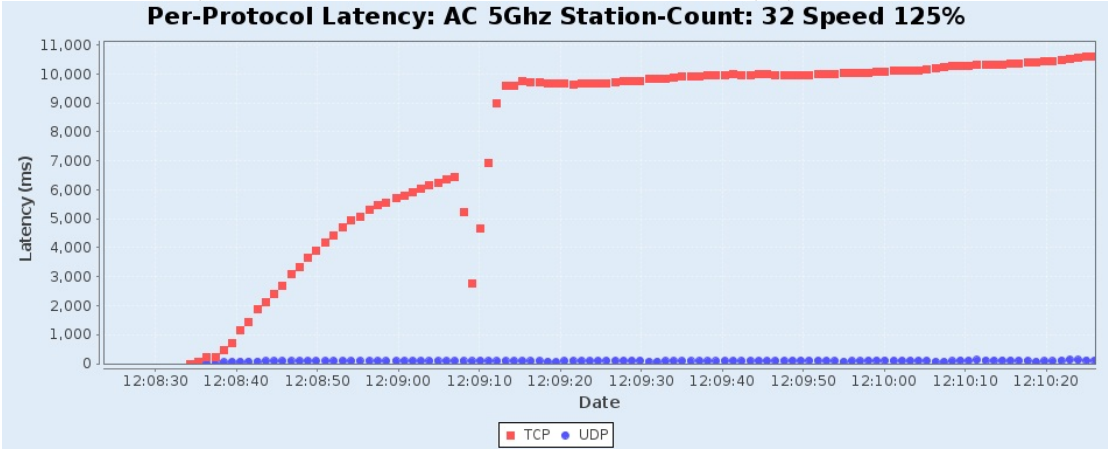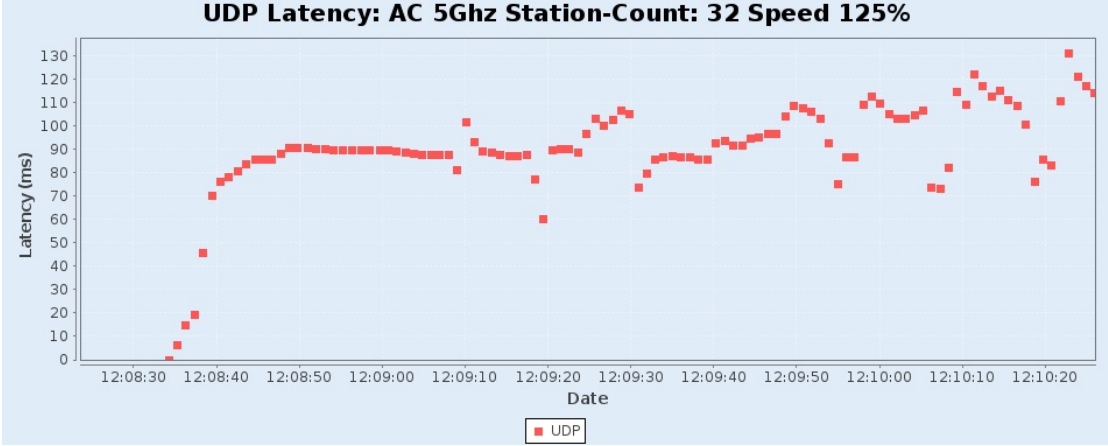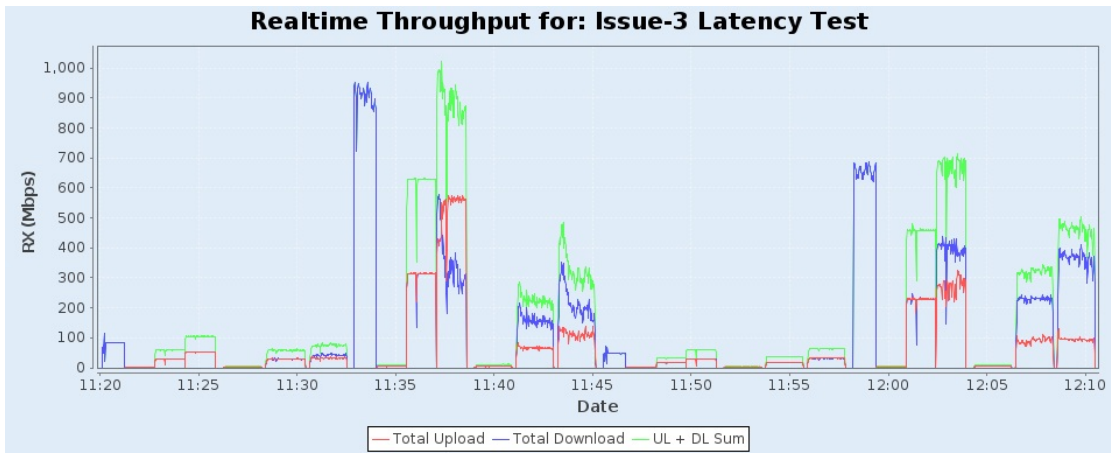

UDP Latency: AC 5Ghz Station-Count: 32 Speed 125%

Realtime Throughput for: Issue-3 Latency Test

Realtime Throughput for: Issue-3 Latency Test

[Key Performance Indicators CSV](#)

Test configuration and LANforge software version	
Auto-Helper	true
Allow-11w (MFP/PMF)	true
Skip 2.4Ghz Tests	false
Skip 5Ghz Tests	false
Duration-120	30
Duration-60	20
Channel 2Ghz	1
Channel 5Ghz	36
Extra Download Path-loss	0
TX Power	20
Multi-Conn	5
ToS	0
Upstream Port	1.2.eth2 Firmware: 0x80000aef, 1.1876.0 Resource: ct523c-3b89
Turn-Table Chamber	TR-398
Configured 2m 2.4Ghz RSSI	-26
Configured 2m 5Ghz RSSI	-30
Opposite-Speed:	20000
Randomize Offered Load	false
Max-CX Offered Load:	1000000
Max-CX 2Ghz N rate:	2000000
Max-CX 2Ghz AX rate:	3000000
Max-CX 5Ghz AC rate:	8000000
Max-CX 5Ghz AX rate:	10000000
Throughput N 2Ghz rate:	100000000
Throughput AC 5Ghz rate:	560000000
Throughput AX 2Ghz rate:	200000000
Throughput AX 5Ghz rate:	720000000
Throughput AX 2Ghz rate:	300000000
Throughput AX 2x2 5Ghz rate:	1100000000
Throughput AX 4x4 5Ghz rate:	1100000000
ATF Max NSS:	2
ATF Attenuation:	0
Max allowed packet loss%:	0.05
Assoc/Disassoc Traffic %:	99
Requested Rx-Sens Speed	65%
RxSens Rotation Degrees:	90
RxSens Start Step:	4
Attenuation Adjustment	0

Stop RX-Sens at pass	false
Pause on zero throughput	false
Use Virtual AX Stations	true
Auto-Calibrate Interferer	false
Interferer AC 5G-80Mhz:	195.00 Mbps
Interferer AC 5G-40Mhz:	90.00 Mbps
Interferer AC 2.4G-20Mhz:	32.00 Mbps
Interferer AX 5G-80Mhz:	195.00 Mbps
Interferer AX 5G-40Mhz:	90.00 Mbps
Interferer AX 2.4G-20Mhz:	32.00 Mbps
Spatial Rotation Degrees:	30
Test Retries:	0
Stability Duration-180	180
Stability Max-Iterations	16
Stability UDP Duration	15 m
Calibration Mode:	4
Calibration NSS:	1
WiFi Radio 0	1.1.2 wiphy0 Resource: ct523c-3b29
WiFi Radio 1	1.1.3 wiphy1 Resource: ct523c-3b29
WiFi Radio 2	1.1.4 wiphy2 Resource: ct523c-3b29
WiFi Radio 3	1.1.5 wiphy3 Resource: ct523c-3b29
WiFi Radio 4	1.1.6 wiphy4 Resource: ct523c-3b29
WiFi Radio 5	1.1.7 wiphy5 Resource: ct523c-3b29
WiFi AX Radio 0	1.2.wiphy0 Firmware: release/core64::8f59b80b Resource: ct523c-3b89
WiFi AX Radio 1	1.2.wiphy1 Firmware: release/core64::8f59b80b Resource: ct523c-3b89
WiFi AX Radio 2	1.2.wiphy2 Firmware: release/core64::8f59b80b Resource: ct523c-3b89
WiFi AX Radio 3	1.2.wiphy3 Firmware: release/core64::8f59b80b Resource: ct523c-3b89
WiFi AX Radio 4	1.2.wiphy4 Firmware: release/core64::8f59b80b Resource: ct523c-3b89
WiFi AX Radio 5	1.2.wiphy5 Firmware: release/core64::8f59b80b Resource: ct523c-3b89
WiFi AX Radio 6	1.2.wiphy6 Firmware: release/core64::8f59b80b Resource: ct523c-3b89
WiFi AX Radio 7	1.2.wiphy7 Firmware: release/core64::8f59b80b Resource: ct523c-3b89
WiFi AX Radio 8	1.2.wiphy8 Firmware: release/core64::8f59b80b Resource: ct523c-3b89
WiFi AX Radio 9	1.2.wiphy9 Firmware: release/core64::8f59b80b Resource: ct523c-3b89
WiFi AX Radio 10	1.2.wiphy10 Firmware: release/core64::8f59b80b Resource: ct523c-3b89
WiFi AX Radio 11	1.2.wiphy11 Firmware: release/core64::8f59b80b Resource: ct523c-3b89
WiFi AX Radio 12	1.3.wiphy0 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 13	1.3.wiphy5 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 14	1.3.wiphy10 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 15	1.3.wiphy15 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 16	1.3.wiphy1 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 17	1.3.wiphy6 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 18	1.3.wiphy11 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 19	1.3.wiphy16 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 20	1.3.wiphy2 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 21	1.3.wiphy7 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 22	1.3.wiphy12 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 23	1.3.wiphy17 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 24	1.3.wiphy3 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 25	1.3.wiphy8 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 26	1.3.wiphy13 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 27	1.3.wiphy18 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 28	1.3.wiphy4 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 29	1.3.wiphy9 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 30	1.3.wiphy14 Firmware: release/core64::8f59b80b Resource: ct523c-de7c
WiFi AX Radio 31	1.3.wiphy19 Firmware: release/core64::8f59b80b Resource: ct523c-de7c

Attenuator 0	rssi-0-2.4Ghz: -12 rssi-0-5Ghz: -35 atten: 1.1.3094.0
Attenuator 1	rssi-0-2.4Ghz: -12 rssi-0-5Ghz: -35 atten: 1.1.3094.1
Attenuator 2	rssi-0-2.4Ghz: -12 rssi-0-5Ghz: -35 atten: 1.1.3094.2
Attenuator 3	rssi-0-2.4Ghz: -12 rssi-0-5Ghz: -35 atten: 1.1.3094.3
Attenuator 4	rssi-0-2.4Ghz: -18 rssi-0-5Ghz: -35 atten: 1.1.3102.0
Attenuator 5	rssi-0-2.4Ghz: -18 rssi-0-5Ghz: -35 atten: 1.1.3102.1
Attenuator 6	rssi-0-2.4Ghz: -18 rssi-0-5Ghz: -35 atten: 1.1.3099.0
Attenuator 7	rssi-0-2.4Ghz: -18 rssi-0-5Ghz: -35 atten: 1.1.3099.1
Attenuator 8	rssi-0-2.4Ghz: -22 rssi-0-5Ghz: -42 atten: 1.1.3102.2
Attenuator 9	rssi-0-2.4Ghz: -22 rssi-0-5Ghz: -42 atten: 1.1.3102.3
Attenuator 10	rssi-0-2.4Ghz: -22 rssi-0-5Ghz: -42 atten:
Attenuator 11	rssi-0-2.4Ghz: -22 rssi-0-5Ghz: -42 atten:
AX Attenuator 0	AX rssi-0-2.4Ghz: -14 rssi-0-5Ghz: -35 atten: 1.1.3100.3
AX Attenuator 1	AX rssi-0-2.4Ghz: -14 rssi-0-5Ghz: -35 atten: 1.1.3100.2
AX Attenuator 2	AX rssi-0-2.4Ghz: -14 rssi-0-5Ghz: -35 atten: NA
AX Attenuator 3	AX rssi-0-2.4Ghz: -14 rssi-0-5Ghz: -35 atten: NA
AX Attenuator 4	AX rssi-0-2.4Ghz: -19 rssi-0-5Ghz: -35 atten: 1.1.3100.1
AX Attenuator 5	AX rssi-0-2.4Ghz: -19 rssi-0-5Ghz: -35 atten: 1.1.3100.0
AX Attenuator 6	AX rssi-0-2.4Ghz: -19 rssi-0-5Ghz: -35 atten:
AX Attenuator 7	AX rssi-0-2.4Ghz: -19 rssi-0-5Ghz: -35 atten:
AX Attenuator 8	AX rssi-0-2.4Ghz: -23 rssi-0-5Ghz: -42 atten: 1.1.3099.3
AX Attenuator 9	AX rssi-0-2.4Ghz: -23 rssi-0-5Ghz: -42 atten: 1.1.3099.2
AX Attenuator 10	AX rssi-0-2.4Ghz: -23 rssi-0-5Ghz: -42 atten:
AX Attenuator 11	AX rssi-0-2.4Ghz: -23 rssi-0-5Ghz: -42 atten:
Show Events	true
Build Date	Wed Feb 16 12:27:09 PST 2022
Git Version	bdf4e3edac688e0410ccf334d18573f0d5df623c

CSV Data

META Information for TR-398 Issue 2

Candela
TECHNOLOGIES