

Wi-Fi 6E Testing with LANforge

Wi-Fi 6E is an extension of the **Wi-Fi 6** (802.11ax) standard. It allows an unlicensed 6 GHz frequency band to be used. Wi-Fi 6E extends all the Wi-Fi 6 features and capabilities into the 6GHz band to allow greater efficiency, higher throughput, and increased security. With Wi-Fi 6E, a total of **1200MHz spectrum is available**. This allows more capacity, wider channels, and less interference. Wi-Fi 6E devices operating on the 6GHz band have access to:

- 59 additional 20MHz channels
- 29 additional 40MHz channels
- 14 additional 80MHz channels
- 7 additional 160MHz channels

(Wi-Fi 6E may be abbreviated as 6E below.)

Below image represents the 6E testcases that we covered using our LANforge.

 [Slide Presentation for Candela 6E Test Solution](#)



Wi-Fi 6E Test Cases



6E Throughput Benchmark
This test gives the 6E performance with different packet sizes, channel BWs, traffic types, MIMO types.



Client Capacity
WiFi Capacity test is designed to measure performance of an Access Point when handling several 6E WiFi Stations.



Near/Far Clients, Band Steering
Measure the performance and stability of the 6E clients based on low and high RSSI levels



Tri-band Performance
Running traffic on 2.4, 5 & 6Ghz clients simultaneously.



6E RvR and RvO
This test measures the 6E performance over distance and different antenna orientation of the access point.



OFDMA Performance
This test gives the downlink and uplink OFDMA performance for the multiple 6E clients. Sizes of RUs allocated to different users



Latency
This test intends to verify latency under low, high and maximum AP traffic load with multiple stations



Airtime Fairness, QoS
Airtime Fairness Test intends to verify the capability of Wi-Fi device to ensure the fairness of airtime usage.



MU-MIMO
This test measures the 6E Downlink and uplink multiuser, multi input, multi output

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Fully Automated

Candela Technologies offers a fully automated Wi-Fi 6E test system. This includes all the required test hardware, including:

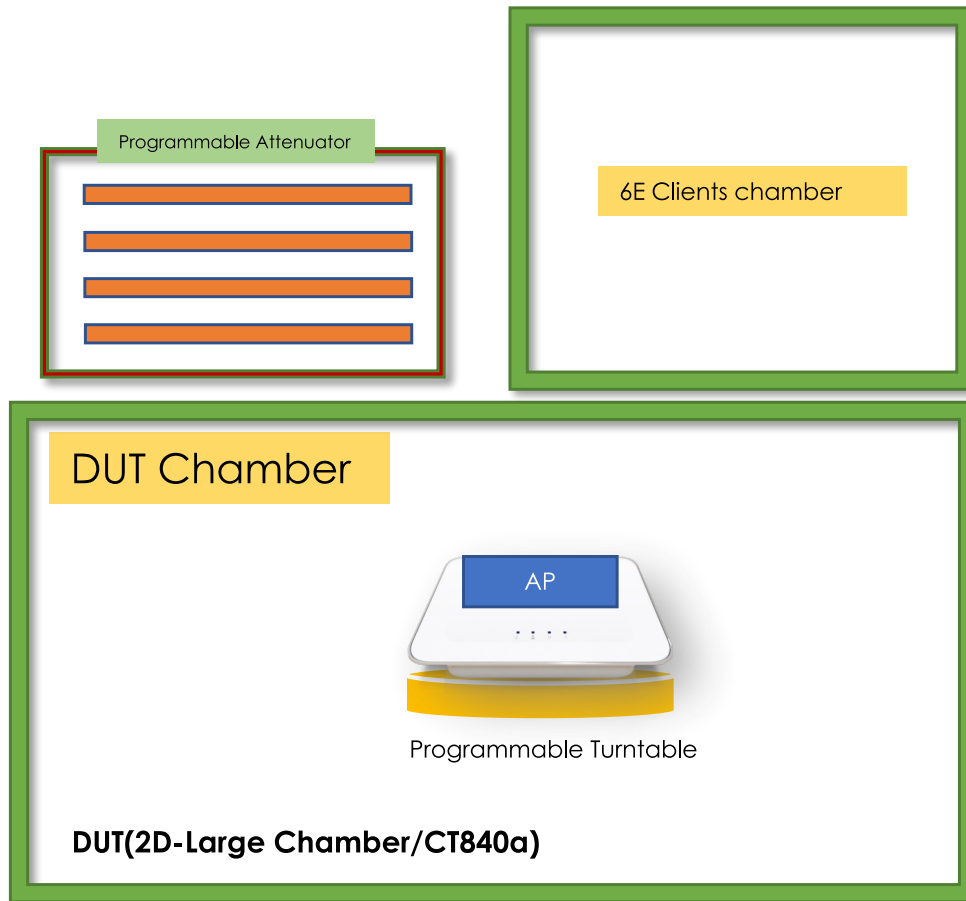
- multi-station emulator
- traffic generator
- RF enclosures
- turntable
- and programmable attenuators

With the **CT523c LANforge** chassis we can test all the features like:

- Airtime Fairness

- OFDMA
- MU-MIMO
- OWE

Block Diagram



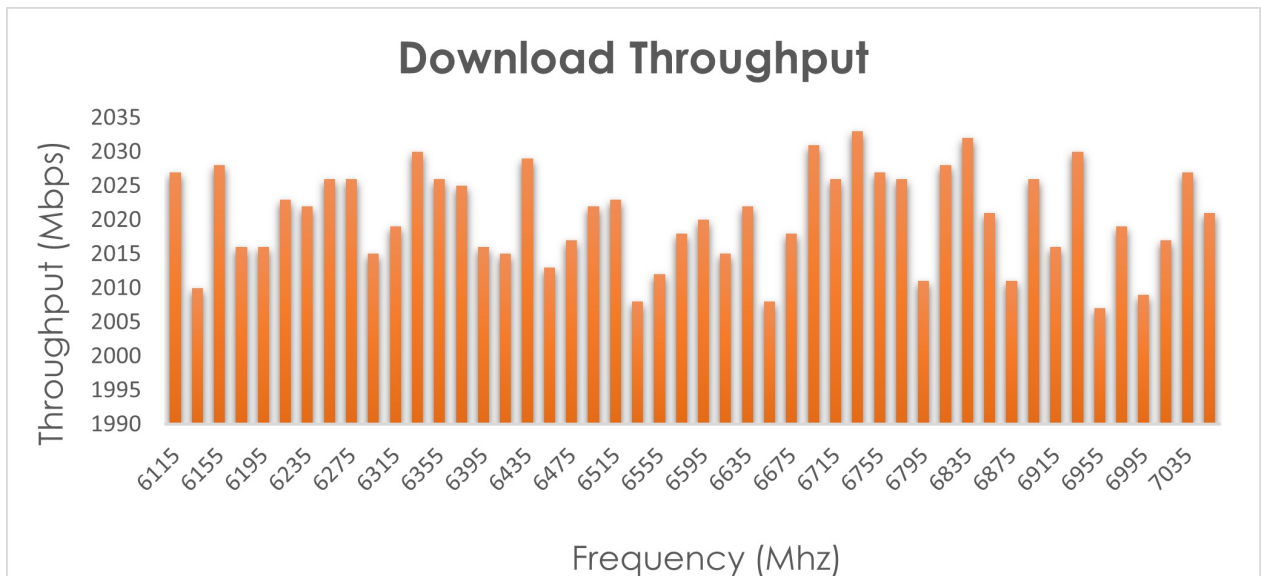
This testbed uses 36 AX210 tri-band 2.4/5/6E radios for testing. The test setup, testbed components, and environment are all created as per our requirements.

Some of the components may be different than pictured depending on the options purchased. Please ask your sales representative for details.

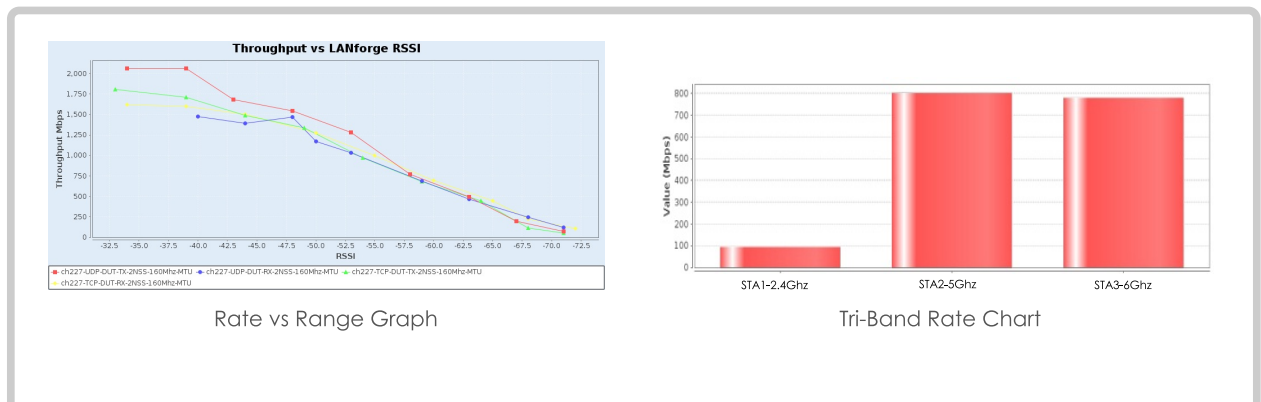


Wi-Fi 6E Sample Charts

Example chart represents the download throughput across all the 6E channels.

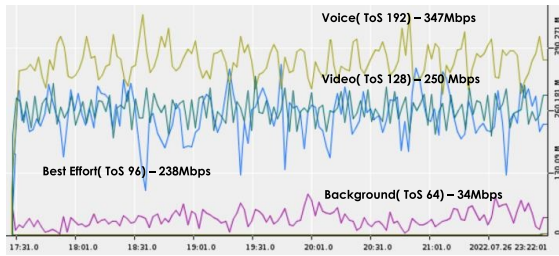


Please see the below example results (Wi-Fi Capacity, Dataplane, Triband Performance, Latency etc..) that we ran across with multiple 6E Access Point using our LANforge software

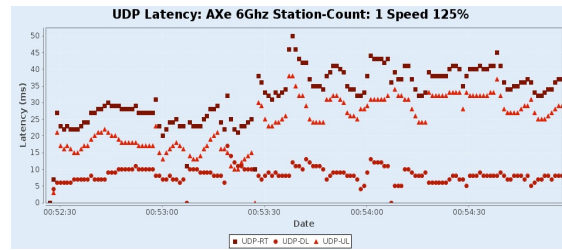


Rate vs Range Graph

Tri-Band Rate Chart



ToS Traffic Graph



High-Traffic Latency Chart

i Example 6E report generated by LANforge



Hardware Components

- LANforge Multi-station Emulation and Traffic Generation Hardware:
36 -11ax radios, dual 1/2.5/5/10g Eth ports
- CT820a-Medium RF Chambers
- CT840a Large RF Chamber with Programmable Turntable
- CT714b 4 Port Programmable Attenuators
- RF Splitters/Combiners
- Directional Antennas (optional)
- RF Cables

Lead Times

Most LANforge systems can generally be shipped within 2-3 weeks of customer PO. RF chambers and attenuators may need 6-8 weeks of lead time. Direct-from-the-factory shipping is available for the RF chambers to decrease shipping costs and lead times.

TaaS/Onsite Support

Customers with only occasional test needs can use our Test as a Service option. Candela engineers can do the testing for you in our fully equipped test lab and provide a detailed test report with recommendations.

For more information, please contact sales@candelatech.com or give us a call at: 1-360-380-1618

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