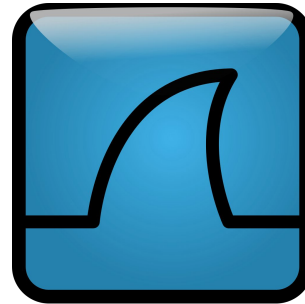


Modulation Format vs Data Rate

ET4394 - Wireshark Project

Renzo Arreaza
Marcelo Guerrero

4567560
4736605



Content

- Method
- Results
- Conclusion

Method

- Python script
 - Data gathering (Tshark)
 - Data sorting
- Matlab
 - Plotting

Method

- Tshark command

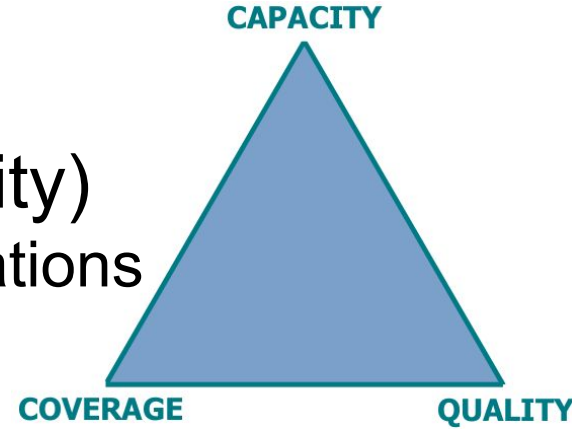
```
"sudo tshark -i "+interface+" -T fields -e wlan_radio.phy -e wlan_radio.data_rate -e  
wlan_radio.11n.mcs_index -e wlan.bssid -e wlan.da -e frame.time_epoch -f \"wlan type data subtype data  
or wlan type data subtype qos-data\" -E separator=, -E quote=d -a duration:\"+str(duration*60)+\" >  
"+filename
```

- Display filters

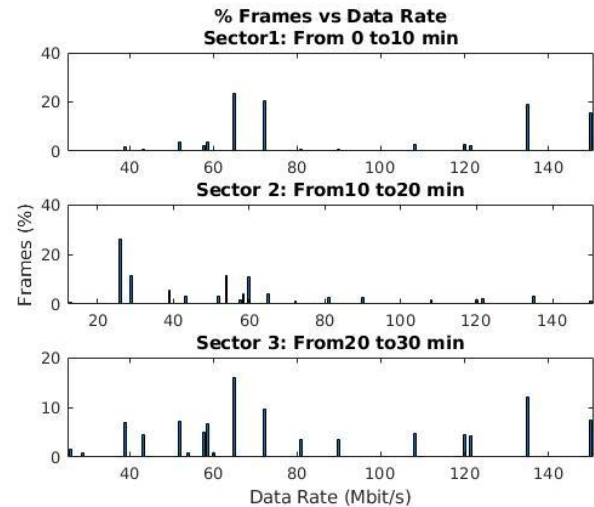
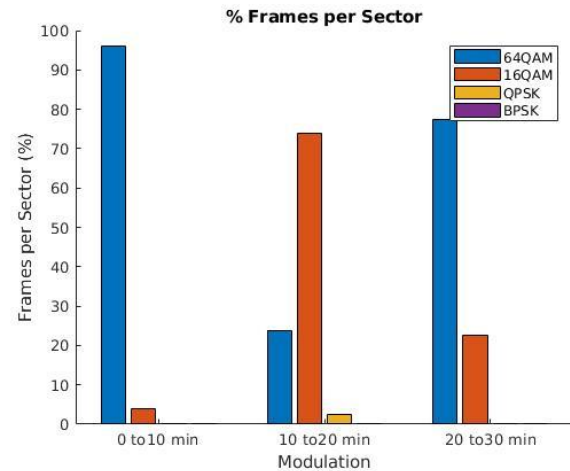
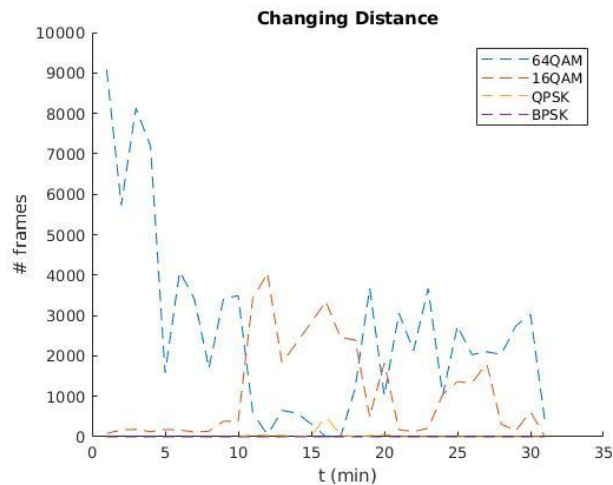
- wlan_radio.phy
- wlan_radio.data_rate
- wlan_radio.11n.mcs_index
- wlan.bssid
- wlan.da
- frame.time_epoch

Method

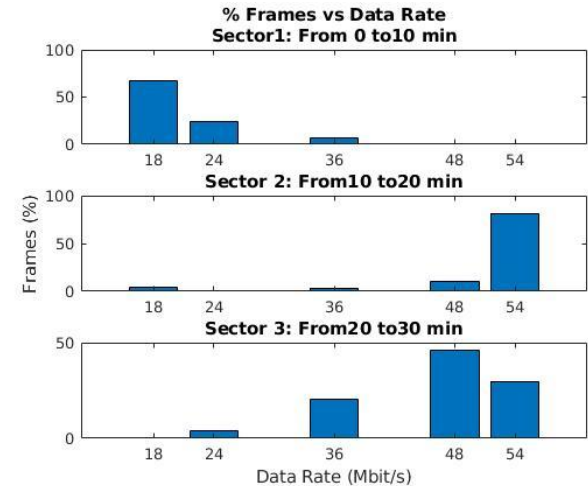
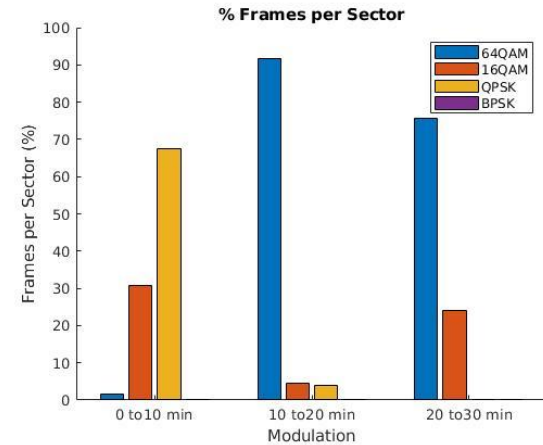
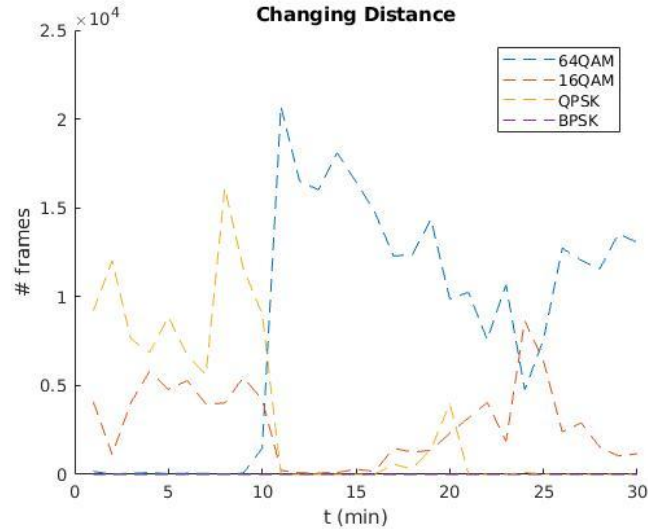
- Test 1 (Coverage vs Quality)
 - Single user in different locations
- Test 2 (Quality vs Capacity)
 - Varying number of users in one location



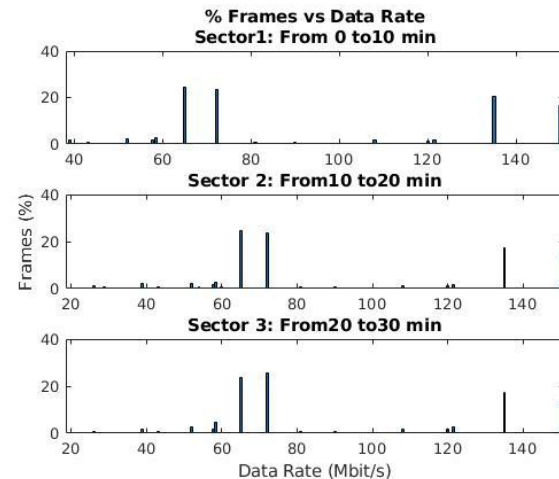
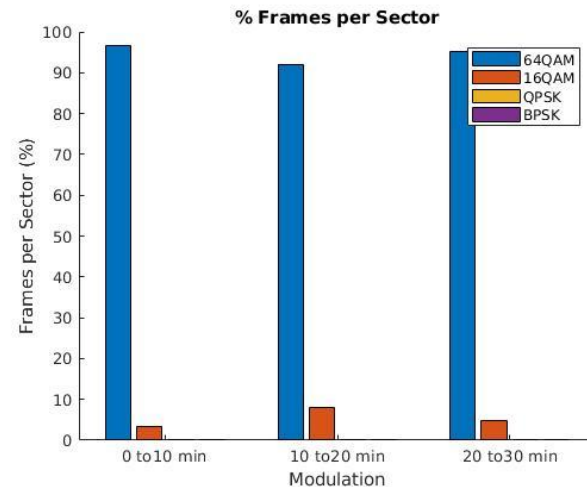
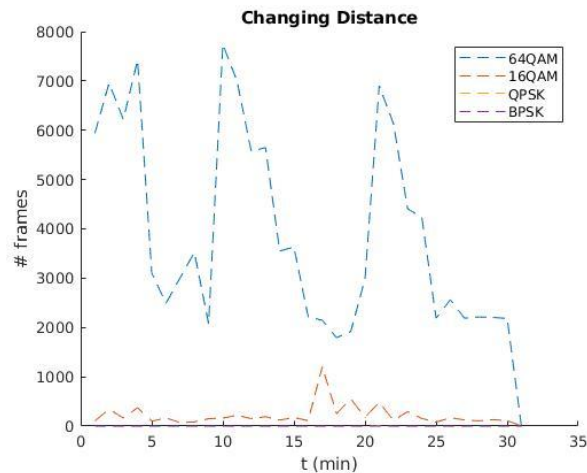
Test 1 - 802.11n



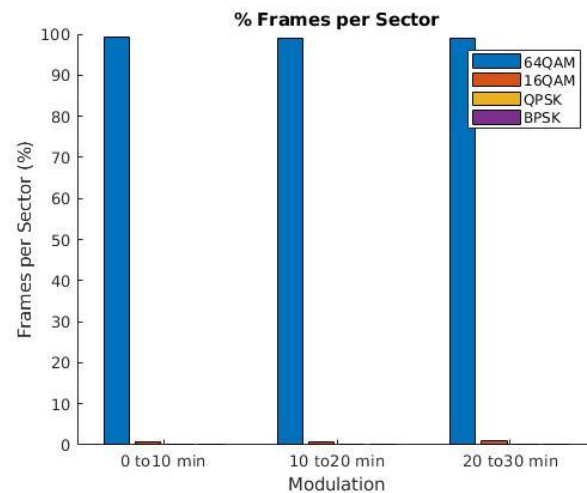
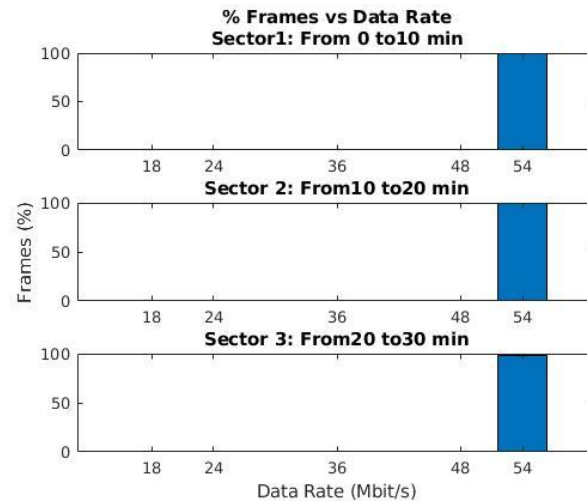
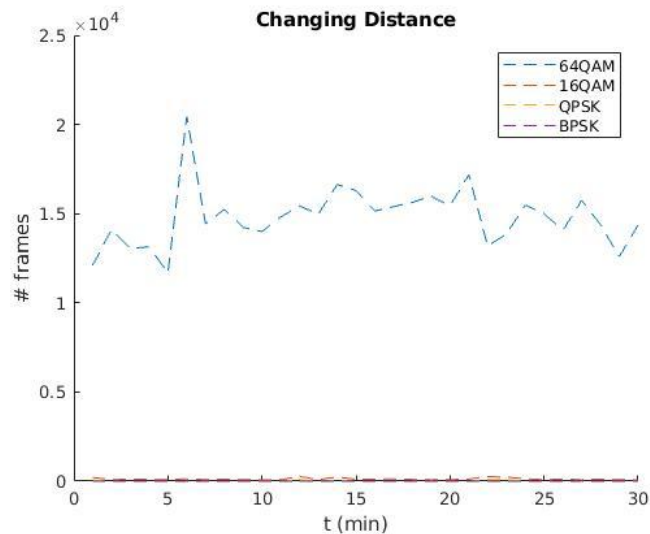
Test 1 - 802.11g



Test 2 - 802.11n



Test 2 - 802.11g



Conclusions

- No direct relation between modulation and data rate
 - Coding rate
 - Bandwidth of the channel
 - Spatial streams
 - Guard intervals
- CCQ tradeoff

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