

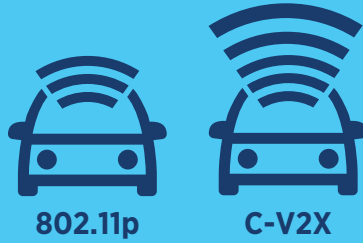


C-V2X vs. 802.11p

For connecting cars, C-V2X outperforms 802.11p in every aspect

COVERAGE RANGE

Range improvement of C-V2X vs. 802.11p at 90% PRR



RANGE IMPROVEMENT ↑



Scenario	Range improvement (m)	Range improvement (%)	Reference
Freeway (70km/h)	88 m	56%	(5)
Highway fast (10 Hz)	260 m	135%	(4)
Urban (15km/h)	30 m	60%	(6)

RELIABILITY

Ability to deliver Basic Security Message (BSM) in various conditions (90% packet received rate)



In presence of signal attenuation from real-world obstructions, C-V2X is more reliable than 802.11p

- C-V2X** + 1.3x-2.9x range advantage
- C-V2X** + 1.7x-2.2x LOS advantage

INTERFERENCE

Ability to deliver BSM when other devices emit RF energy in the V2X channel



INTERFERENCE IN CLOSE PROXIMITY

- C-V2X** vs **802.11p** + 1.7x improvement
- C-V2X** vs **802.11p** + 2.9x improvement (with the adjacent 802.11p interferer)

EVOLUTION PATH TOWARD 5G

Ability to support 5G use cases

C-V2X (as part of the 3GPP standards family)

Enhancing of existing 3GPP Release 14 + Additional V2X communication capabilities



Higher capacity



Ultra-low latency



Ultra-high reliability



Longer range



Higher data rates

5G

NET ECONOMIC BENEFITS

Value to society in four scenarios designed by Analysis Mason



V2I/N

Re-use of cellular networks to provide V2I/N

IEEE <https://futurenetworks.ieee.org/tech-focus/june-2017/cellular-v2x>

5GAA http://5gaa.org/wp-content/uploads/2018/11/P-180106-V2X-Functional-and-Performance-Test-Report_Final_051118.pdf

5G Americas http://www.5gamericas.org/files/9615/2096/4441/2018_5G_Americas_White_Paper_Cellular_V2X_Communications_Towards_5G_Final_for_Distribution.pdf

Analysis Mason <https://www.analysismason.com/contentassets/b1bd66c1baf443be9678b483619f2f3d/analysis-mason-report-for-5gaa-on-socio-economic-benefits-of-cellular-v2x.pdf>