



Sharing 6 GHz in Time: A 5G gNB that Listens Before Talking

**Time-domain coexistence of 5G NR (band n104) and Wi-Fi 6E
on the same channel**

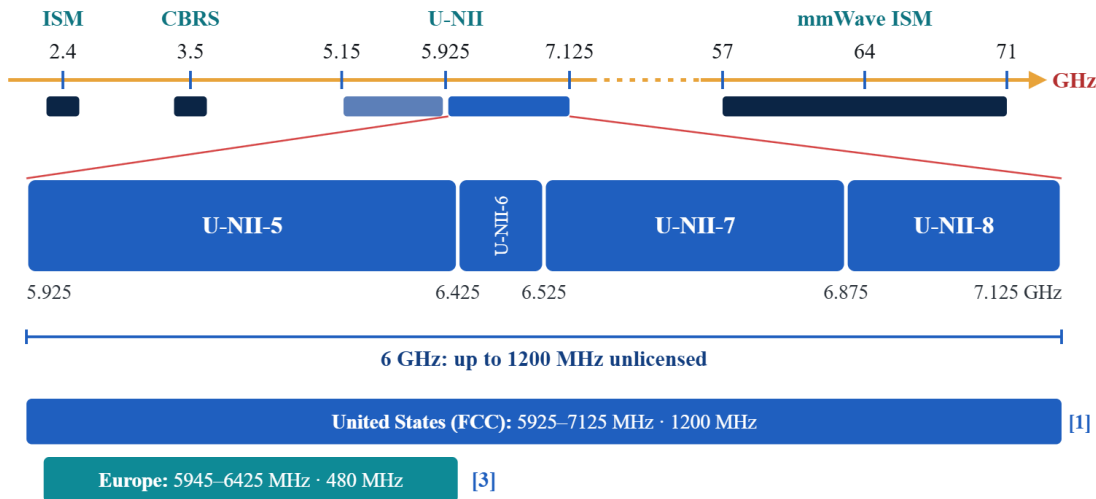
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Motivation

Low and bursty Wi-Fi airtime

leaves exploitable idle gaps

Goal



Increase spectral efficiency through **time-domain coexistence**: NR opportunistically fills Wi-Fi idle gaps

NR standalone

100 % airtime



Wi-Fi only

a few % airtime



NR + Wi-Fi

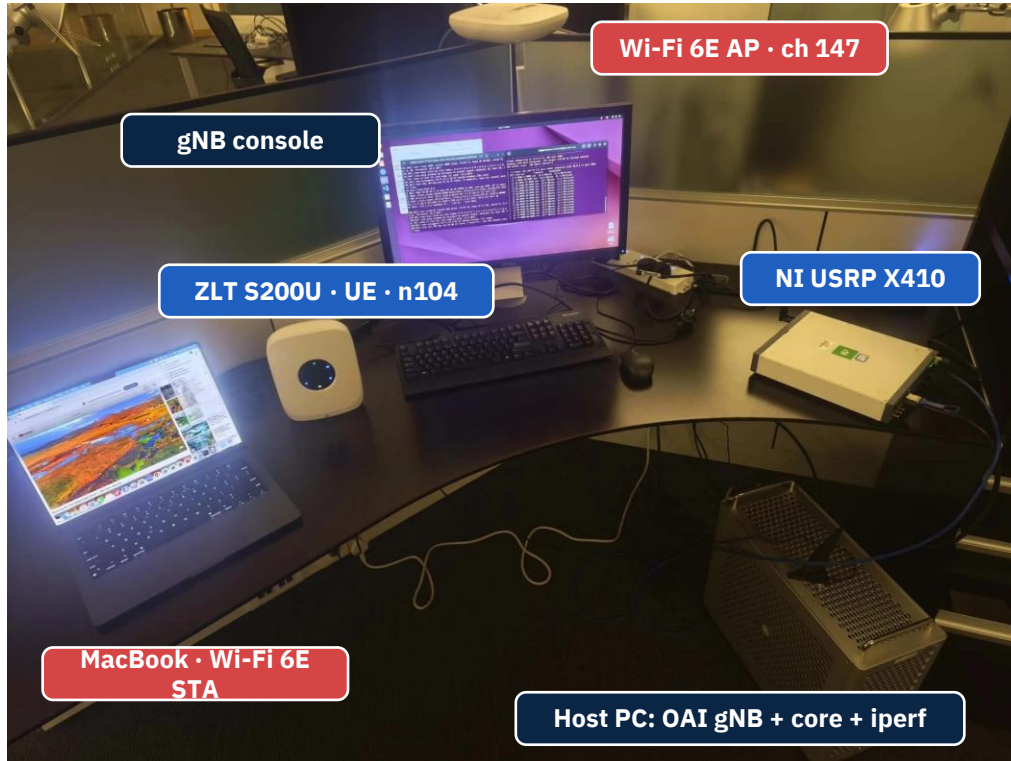
Target airtime behavior



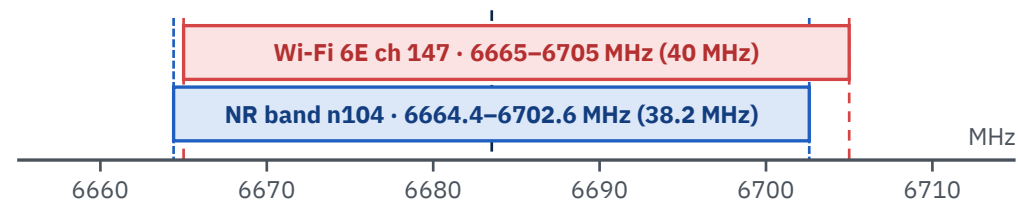
Scenario	Wi-Fi airtime	Ref
2.4 / 5 GHz, 95 % of APs	< 2 %	[1]
2.4 / 5 GHz, 99 % of APs	≤ 7 %	[1]
Airports, 6 GHz (median)	0.39–5.88 %	[2]
Airports, 5 GHz (median)	9.80–26.67 %	[2]

- **gNB only:** Mainly the gNB's MAC-layer scheduling changes without changing the UE nor Wi-Fi devices
- **Wi-Fi friendly:** Do not disturb or influence Wi-Fi activity
- **Fast reaction:** React as fast as possible given the gNB processing delays

Experimental setup

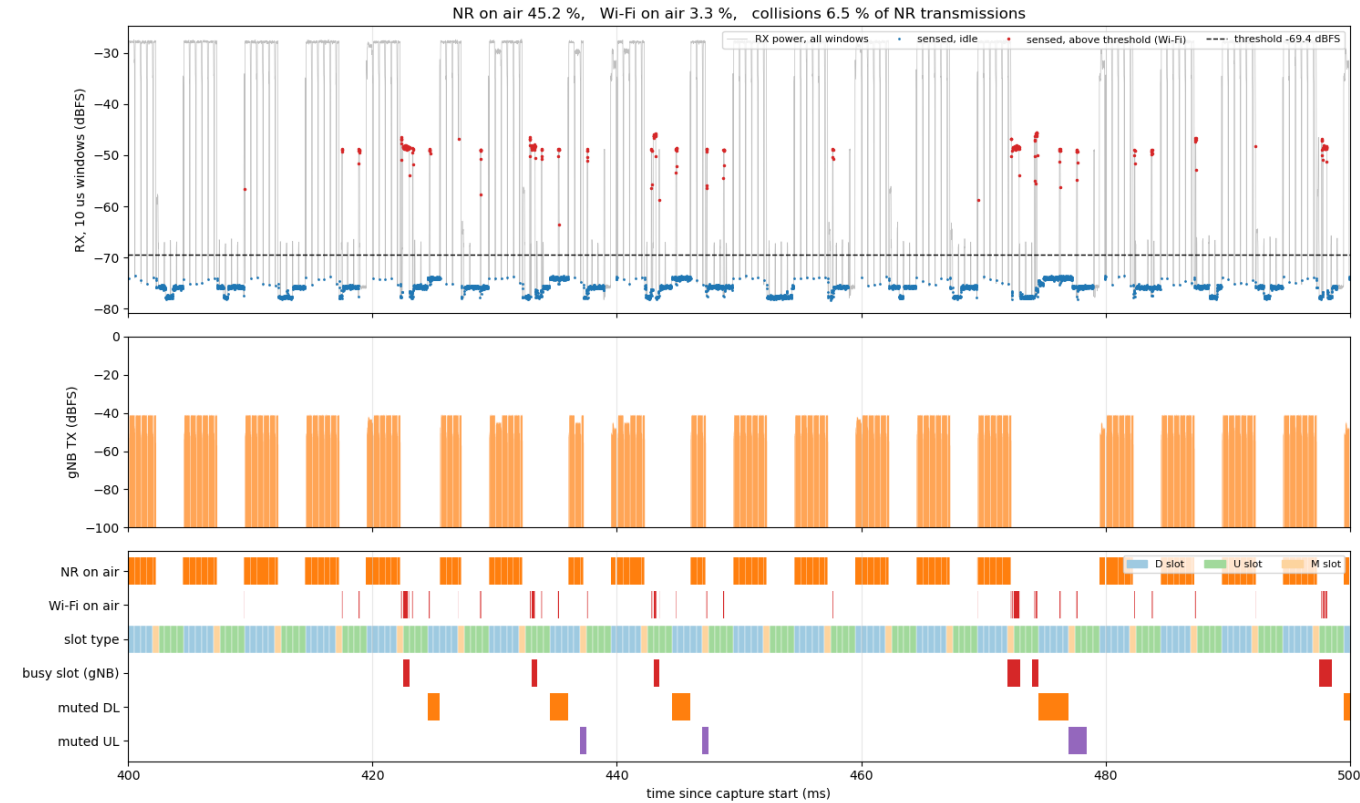


Spectrum overlap



Results

Scenario: Wi-Fi 6E STA streaming 8K video; NR traffic generated with iperf



3.3 %
Wi-Fi on air

45.2 %
NR on air

6.5 %
Collisions