



du exceeds 2.4 Gbps data rates with 5G Carrier Aggregation on mid-band in commercial network

- Peak 5G user data rates of 2.4 Gbps
- Two carriers on 3.5 GHz TDD spectrum
- 200 MHz of uncompromised bandwidth
- Solid foundation for multi-carrier 5G evolution

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“At du, our 5G focus is in providing unmatched speed, capacity and coverage for people and businesses. 5G Carrier Aggregation is a real game-changer for us in terms of superior throughput.

We see Nokia as a trusted partner based on its industry-leading Carrier Aggregation technology and radio network expertise. Nokia AirScale radio products enable us to fully leverage our 200 MHz bandwidth of spectrum with just one 64 TRX massive MIMO antenna.

In our commercial 5G network, we have achieved data rates exceeding 2.4 Gbps on the latest smartphones supporting Carrier Aggregation from vendors such as Apple and Samsung, by aggregating two mid-band carriers.

As the next exciting step in offering even higher 5G performance, together with Nokia we have successfully demonstrated **data rates above 4.5 Gbps with three component Carrier Aggregation.**“

Ahmed AlShal

Acting Head of Technology Planning at du



In 2019, the United Arab Emirates was **one of the first countries globally** and the first among the Arab countries to launch **commercial 5G** networks.

One of the leading telecommunications service providers in the United Arab Emirates (UAE), du has close to 7 million mobile subscribers.

It offers fixed line, mobile telephony, internet and digital television services across the UAE. du's vision is to “add life to life” by bringing the benefits of ICT to everyone, while making its people and communities happier.

Nokia is a key Radio Access Network (RAN) provider for du, including all the major cities with highest mobile traffic volumes.

This case study describes how Nokia's 5G Carrier Aggregation solution and AirScale radio access products helped du achieve Multi-Gigabit data rates on mid-band spectrum in Abu Dhabi, the capital of the UAE.

Objective: providing high data rates to mobile users in busy commercial areas

With the fast introduction of 5G, the mobile users in the UAE are looking for seamless coverage and data speeds in the busy commercial areas such as malls and concert venues.

The weather in the UAE is very hot especially in the summer months, and typically, families can spend an entire day at the malls where they have access to shopping, governmental services, entertainment and restaurants. Mobile users access bandwidth-hungry video streaming

and gaming services with their own devices at the malls, which makes them important locations for impeccable 5G performance.

The capital city, Abu Dhabi, hosts international sports events and high-profile concerts where many spectators want to share their experiences with friends and families right from the venue. High-capacity 5G networks are key to enabling best possible mobile user experience.

To meet the growing demand in high-speed services, it was important for du to make the most out of its wide 200 MHz contiguous spectrum allocation in the 3.5 GHz TDD band.

The key locations where du set out to improve 5G performance together with Nokia included Abu Dhabi city, in particular the Galleria Mall and the Al-Wahda Mall with its extension, as well as Etihad Arena on Yas Island, where international mega events take place.

Solution: 5G Carrier Aggregation with uncompromised bandwidth

To ensure excellent 5G performance both in indoor and outdoor locations, du selected Nokia's 5G Carrier Aggregation software and AirScale radio access products.

For fast introduction of Multi-Gigabit data rates in Abu Dhabi, it was essential that Nokia's Carrier Aggregation software allowed for fast and easy upgrade and use of common software providing the same throughput in both indoor and outdoor deployments.

For the indoor locations, Nokia provided its **AirScale Indoor Radio (ASiR) 5G solution**, which is quick and easy

to deploy for in-building deployments, providing targeted capacity for mobile users accessing bandwidth-hungry services and support for 200 MHz of bandwidth.

The key indoor locations included Galleria Mall, which covers a total area of 33,000 square meters, and the Al-Wahda Mall with its extension, an iconic landmark that attracts over 20 million visitors annually, spanning across 3.3 million square feet.



At Galleria mall, AirScale access points were installed at the main halls where most visitors gather. The Al-Wahda Mall and its extension consist of high-rise towers and a large 3-floor building covering a very wide area. Over 350 access points were installed to provide capacity for the visitors of this mall.

The next step is extending the solution to other malls in Abu Dhabi.

The outdoor coverage areas also included Etihad Arena, the region's largest open-air concert venue located on Yas Island, which can hold 35,000 people.

Nokia provided its **AirScale Osprey 64**, a massive MIMO unit with 64 TRX paths, powered by Nokia's unique ReefShark System-on-Chip to provide the huge capacity that the mega events require, and with the capability to support du's entire aggregated 200 MHz bandwidth.

Nokia implemented baseband processing with AirScale System Module that provides in-node scalability, fitting up to six capacity plug-in cards into one node, making the solution ready for du's multi-carrier 5G evolution.





Two component **Carrier Aggregation** is supported since 2021 by the commercial smartphone ecosystem

Result: Multi-Gigabit 5G data rates in indoor and outdoor locations with high traffic volumes

Nokia's 5G Carrier Aggregation solution was the key to maximizing the user data rates achievable with du's mid-band 5G carriers.

The solution enabled peak data rates exceeding 2.4 Gbps both indoors and outdoors, more than double the

throughput available before implementing 5G Carrier Aggregation.

With the reliable throughput speeds available across the network, du is able to offer unlimited 5G data packages to its subscribers.

5G

2.4
Gbps

Peak data rates

Carrier Aggregation is the key to 5G evolution

Many operators are relying on the mid band frequencies and in particular the 3.5 GHz band for higher 5G data rates, similarly to du in the UAE.

In many markets, up to 80% of all mobile traffic originates indoors, so it is essential for operators to implement radio network solutions that enable seamless indoor and outdoor coverage.

Nokia's solution described in this case study helped du achieve high performance with the combination of 5G Carrier Aggregation software and AirScale radio access portfolio including massive MIMO outdoor antennas, which can also penetrate buildings to complement the coverage of indoor deployments.

This ensured seamless 5G performance also in locations such as malls, concert venues and stadiums where many mobile users are active at the same time.

The TDD intra-band Carrier Aggregation solution and the AirScale radio access products discussed in this case study are commercially available for operators throughout the world.

Two component Carrier Aggregation provides excellent data rates already today and is a major stepping stone for reaching higher throughput with additional carriers, as Nokia and du have shown with a demonstration of 4.5 Gbps data rates with three aggregated component carriers.



Visit [Carrier Aggregation webpage](#) to learn more

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At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering the future where networks meet cloud to realize the full potential of digital in every industry.

Through networks that sense, think and act, we work with our customers and partners to create the digital services and applications of the future.

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