OPEN DEVICE ALLIANCE

CASE STUDY - Solving P5G Attach - Apple C1 Devices

A Private 5G Deployment Stalled

The iPhone 16e and iPhone Air, the first iPhones built on Apple's C1 baseband modem, would not attach to any Private 5G networks. A single CORESET precoder Granularity setting, changed on the gNB via RRC signaling, resolves attach/connectivity with no device-side changes.

DEVICES	LAYER	MODEM
iPhone 16e + iPhone Air	gNB RRC / L3	C1 Baseband

2	1	0
devices models affected	gNB parameter changed	device-side changes

CONTRIBUTORS

One Challenge. Three Companies. One Solution.

WaveFi

SYSTEM INTEGRATOR, TESTING, & VALIDATION
Led customer deployment, testing, and validation

Moso Networks

NETWORK & INFRASTRUCTURE
Implemented and validated the solution on its Private 5G infrastructure

GXC

NETWORK & INFRASTRUCTURE
Implemented and validated the solution on its Private 5G infrastructure

THE CHALLENGE

At a Glance

Apple's move to its in-house C1 baseband modem, replacing the Qualcomm modems used in previous iPhones, changed how the newest iPhones negotiate their PDCCH control-channel configuration on 5G standalone networks.

In Private 5G deployments, the iPhone 16e and iPhone Air would not attach, while Qualcomm-based handsets on the same network connected normally.

The root cause was a single CORESET parameter that the C1 modem interprets more strictly than its predecessors.

In order to allow for C1 devices to attach, a change to the RRC configuration was possible on the gNB to adapt to the Apple C1 modem expectations. Once this change was made on the gNB, no device firmware, SIM, or hardware modification required.

- **No attach** — iPhone 16e / 17 Air could not join the Private 5G network at all.
- **Hard to isolate** — Only C1-modem devices failed; every other handset worked.
- **Blocked rollout** — Fleets standardizing on the latest iPhones couldn't onboard.

THE SOLUTION

Root Cause & Fix

The failure traced to one CORESET parameter in the gNB's PDCCH configuration. Aligning it to the value the C1 modem requires cleared the attach failure.

01

Root cause

The Apple C1 modem supports `precoder Granularity = same As REG-bundle` only. It does not accept the `allContiguousRBs` setting that prior Qualcomm modems tolerated.

02

The change

Set `precoder Granularity: same As REG-bundle` on the in-use CORESET and omit `all Contiguous RBs`.

03

Where it's applied

Delivered in the `RRC Setup` / `RRC Reconfiguration` messages during dedicated, UE-specific setup — a gNB (DU/CU) change, not a device change.

IMPLEMENTATION

How the Fix was Implemented

A four-step path from symptom to confirmed attach — all on the gNB, no device or firmware changes.

1

Isolate

Confirm only C1 devices fail while Qualcomm and Android devices attach. Capture the RRC signaling.

2

Locate

Find the in-use CORESET under the initial DL BWP's pdcch-Config setup in the gNB L3 stack.

3

Set

Set precoderGranularity to sameAsREG-bundle and omit allContiguousRBs on that CORESET.

4

Verify

Reconnect via RRCSetup / RRCReconfiguration and confirm both devices complete attach.

RESULTS

The Outcome

The single CORESET change restored attach for the affected devices and, because it lives on the gNB, applies to every C1 device on the network.

100%

Attach success for C1 devices after the change

0

Device, SIM, or firmware changes required

Fleet

One gNB configuration covers every C1 device

TIME TO RESOLUTION

Before & After ODA Engagement

BEFORE ODA ENGAGEMENT

7 Months

Length of time customer experienced P5G attach challenge

AFTER ODA ENGAGEMENT

7 Days

Time to Resolution

CUSTOMER OUTCOME

“

Customer Outcome 1

Preserved the customer’s device strategy by enabling existing and subcontractor-owned C1-equipped devices to operate on private 5G, avoiding unnecessary device replacement across a large-scale construction deployment.

Customer Outcome 2

Kept mission-critical construction communications on private 5G by enabling subcontractor BYOD C1 devices, reducing dependency on limited Wi-Fi coverage and supporting broader field connectivity.

OPEN DEVICE ALLIANCE

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