

# Advanced Carrier Aggregation

## Commercial Product Description

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# 1 Advanced Carrier Aggregation Identity

Value Package Identity:	FAJ 801 0564
Introduced in:	L17.Q1



## 2 Benefits of Advanced Carrier Aggregation

Carrier Aggregation provides significantly increased peak UE throughput, because it can provide a peak throughput equivalent to a contiguous carrier of the same bandwidth as the aggregate of the individual carriers.

Advanced Carrier Aggregation enhances the functionality with smart placement of terminals across carriers to provide maximum potential bandwidth and user data speeds. It also enables the use of Carrier Aggregation between carriers belonging to different eNBs, increasing the likelihood of CA capable terminals actually getting use of the aggregation of carriers.

### **Optimized End-user Speed**

Advanced Carrier Aggregation maximizes the used bandwidth across carriers to provide maximum data speed to the end-user.

### **Increased use of Carrier Aggregation**

Inter-eNB Carrier Aggregation increases the possibility that CA devices can get more than one carrier allocated

With Inter-eNB Carrier Aggregation, a CA capable device can aggregate downlink carriers that belong to another eNB. This has a large benefit in situations where macro sites do not contain all carriers. If small cells are deployed in the coverage area of the macro, and the small cells do not contain all macro carriers, this enables increased bitrates to the end-users, thanks to aggregation between macro and small cells.



## 3 Included Functions

### 3.1 Carrier Aggregation-Aware IFLB Overview

Access Type:	LTE
Feature Identity:	FAJ 121 3075
Value Package Name:	Advanced Carrier Aggregation
Value Package Identity:	FAJ 801 0564
Node Type:	Baseband Radio Node DU Radio Node
Licensing:	Licensed feature. One license per node.

#### Summary

The Carrier Aggregation-Aware IFLB feature aims to improve average system throughput by efficient distribution of Carrier Aggregation-capable UEs to cells where the carrier aggregation capability can be utilized, or utilized in a better way. This leads to better throughput for Carrier Aggregation-capable UEs.

#### Additional Information

More information about this feature and related topics can be found in the following documentation:

- *3GPP TS 36.300 rev 11.11, Overall description, Stage 2*
- *3GPP TS 36.331, Radio Resource Control (RRC), Protocol Specification*
- *3GPP TS 36.423, X2 Application Protocol (X2AP)*
- Automated Cell Capacity Estimation
- Best Neighbor Relations for Intra-LTE Load Management
- Best Neighbor Relations for WCDMA IRAT Offload
- Coverage-Triggered Inter-Frequency Handover
- Coverage-Triggered Inter-Frequency Session Continuity
- Dynamic GBR Admission Control



- Idle Mode Support
- Inter-Frequency Offload
- Inter-RAT Offload to WCDMA
- Radio Bearer Service
- Service Triggered Mobility
- Shared LTE RAN
- Service Specific Load Management
- Inter-Frequency Load Balancing
- Subscriber Triggered Mobility
- Limited-Uplink-Aware IFLB
- Multiple Frequency Band Indicators
- Inter-eNodeB Carrier Aggregation
- Elastic RAN

### 3.2 Configurable SCell Priority Overview

Access Type:	LTE
Feature Identity:	FAJ 121 4701
Value Package Name:	Advanced Carrier Aggregation
Value Package Identity:	FAJ 801 0564
Node Type:	Baseband Radio Node DU Radio Node
Licensing:	Licensed feature. One license required per node.

#### Summary

The Configurable SCell Priority feature provides an enhanced method for Carrier Aggregation (CA) dynamic SCell selection which includes:

- Prioritization of carrier frequencies eligible for SCell selection and prioritization of SCells to be selected for carrier aggregation within a carrier frequency.





- A method for distributing the SCell utilization among carrier frequencies.
- A bandwidth and layer-aware SCell selection.

#### Additional Information

More information about this feature, and related topics, can be found in the following documentation:

- *3GPP TS 36.331*
- *3GPP TS 36.306*
- *3GPP TS 36.101*
- *3GPP TS 36.133*
- Carrier Aggregation
- Dynamic SCell Selection for Carrier Aggregation
- Uplink Carrier Aggregation

## 3.3 Inter-eNodeB Carrier Aggregation Overview

#### Feature identity:

FAJ 121 4469

#### Licensing

Licensed feature. One license required for each node.

#### Introduced in:

Baseband: L17.Q1

DU: L16B

#### Replaces:

N/A

#### Summary

The purpose of the Inter-eNodeB Carrier Aggregation feature is to enable downlink (DL) carrier aggregation (CA) between cells not located on the same eNodeB.

The main benefits of the feature are:

- The set of cells considered for use as secondary cells is expanded across multiple eNodeBs. As a result, UEs can find a more nearly optimal set of cells with which to perform carrier aggregation, leading to an increase in overall throughput.



- Allows for an increased utilization of eNodeBs in the network.