



# LTE Advanced

NATE Feb 2014



# LTE Advanced

**Carrier Aggregation**

**Multiple Input Multiple Output**

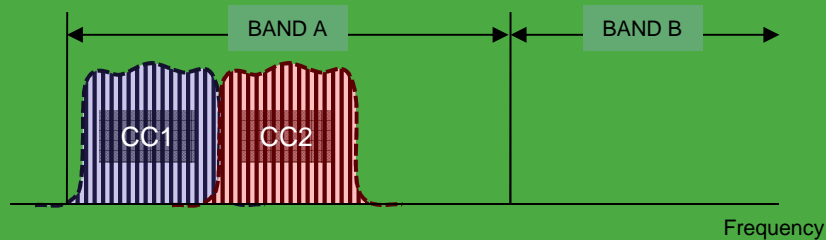
**Self Organizing Networks**

# LTE Advanced

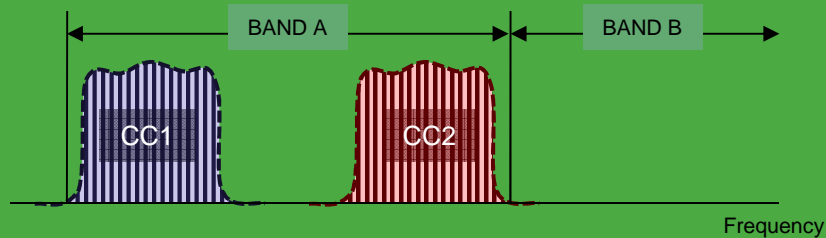
## Carrier Aggregation (CA)

CA is the aggregation of two or more component carriers (CC) in order to support wider transmission bandwidths.

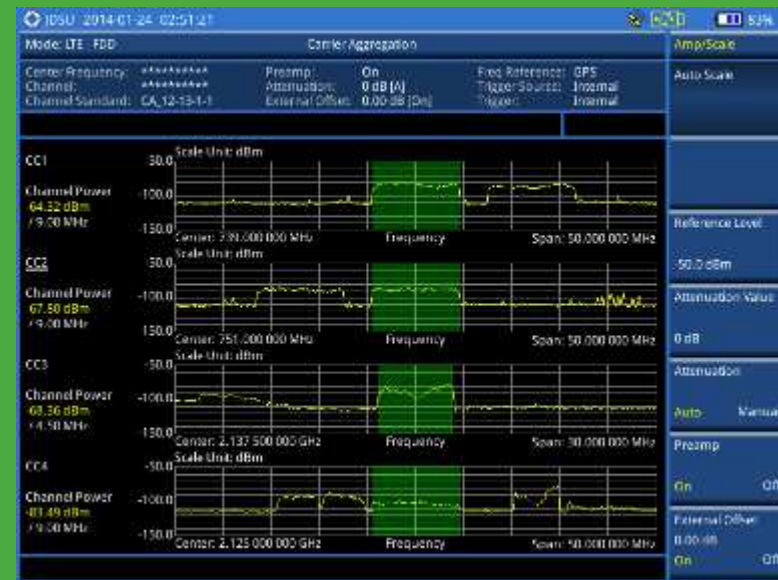
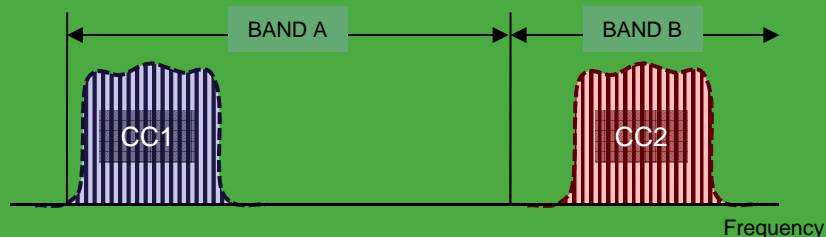
- Intra-Band Contiguous CA:



- Intra-Band Non-Contiguous CA:



- Inter-Band CA:



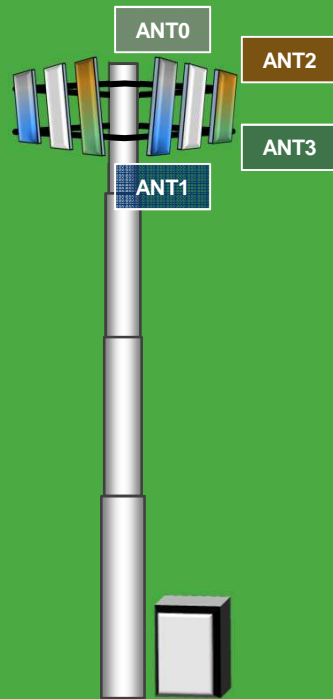
LTE-A Channel Power

# LTE Advanced

## Over The Air Performance

### LTE Over The Air (OTA) Performance

- MIMO 4x Power Balance and Modulation Quality
- Multipath Performance



LTE-A OTA MIMO



LTE-A OTA Multipath

# LTE Advanced

## SON Overview

### ■ Self Configuration

- The eNB will initialize the S1 and X1 interfaces and will self configure the Physical Cell Identity, transmission frequency and power, leading to faster cell planning and rollout.

### ■ Self Optimization

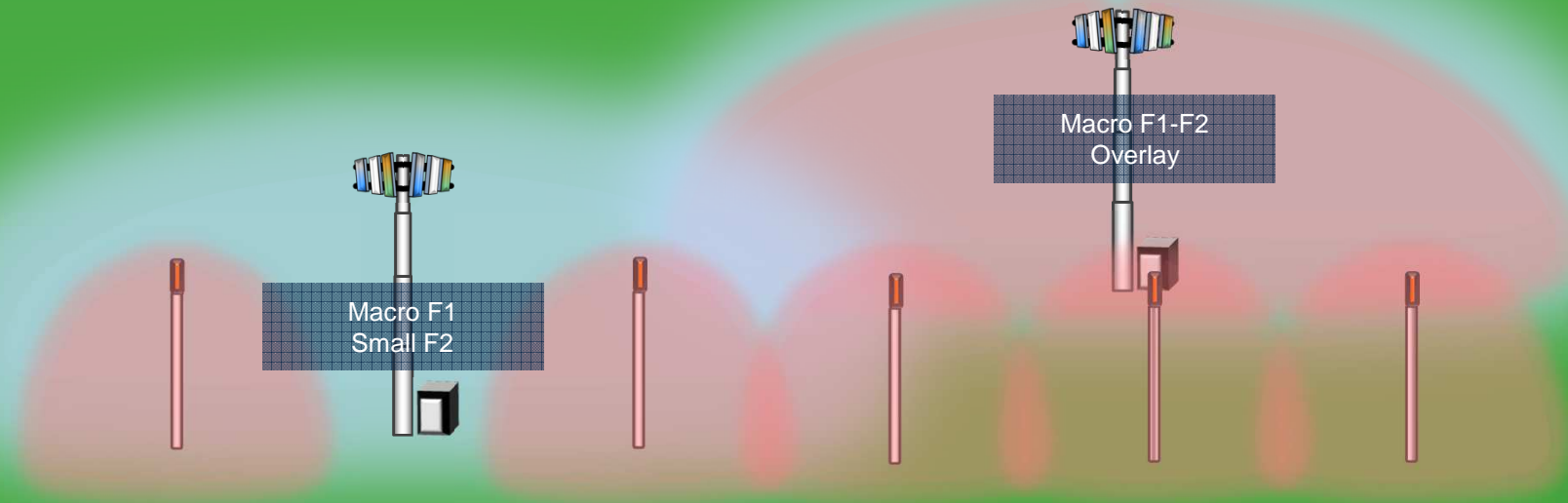
- Mobility Load Balancing (MLB) sharing loads between cells. Load transfer can be used between different technologies.
- Mobility Robustness Optimization (MRO) detection and correction of configuration errors, including handover treatment.

### ■ Self Healing

- Coverage and Capacity Optimization (CCO) solving seasonal capacity issues, including Interference reduction.
- Minimization of Drive Tests (MDT) enabling normal mobiles to provide network metrics.

# LTE Advanced

## Inter-Cell Interference Coordination



- Spatial Multiplexing MIMO 4x, 8x
- UE Ping-Pong Behavior
- Pilot Pollution
- External Interference (Passive Intermodulation)
- Multipath Effects



**Thank you!**

Eduardo.Inzunza@jdsu.com