



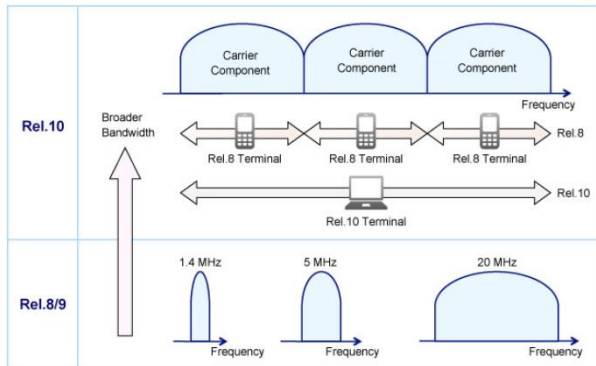
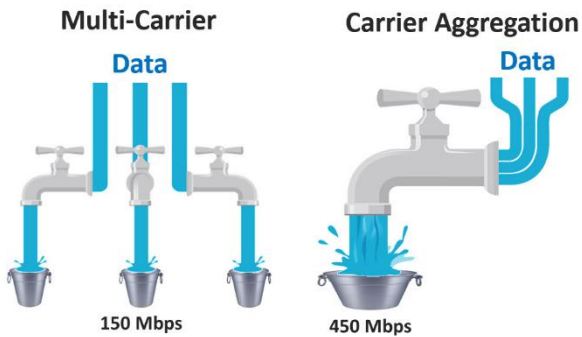
LTE-A Carrier Aggregation. 2CC

Mihail Mihaylov

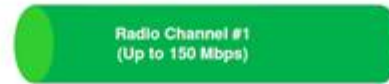
1.Introduction.

- LTE –A Carrier Aggregation is defined by 3GPP R8/R9 onwards.
- Aggregates several bands for achieving higher data throughputs.
- Higher Spectral Efficiency and radio frequency utilization.

2. Explanation.

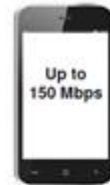


Conventional LTE Network: Single channel approach to data transfer



Second LTE radio channel is idle when device receives on the other channel

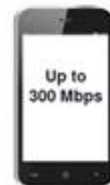
LTE device receives only on one radio channel with maximum data speed limited by Radio channel bandwidth.



LTE Advanced Network: Carrier Aggregation effectively doubles data rates



LTE advanced device simultaneously receives on two radio channels which increases user data rates.



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Setup.

- Combining Band 1 and Band 3 in LTE.
- 5MHz (EARFCN 325) 50 PRB's on 2100MHz + 15 MHz(EARFCN 1275) and 150 PRBs on 1800MHz.
- ~ 20 eNodeB Upgraded to the LTE-A.

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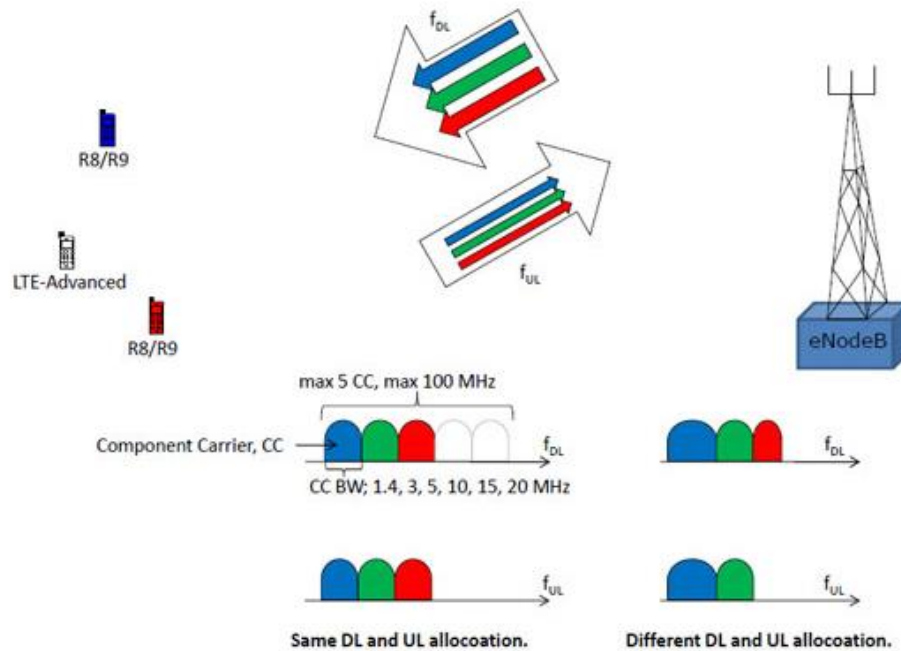
Setup

- Only one eNodeB number needed per CA site.
- Same PCI per sector.
- Each cell needs a unique Cell ID .
- Corresponding sectors (L1&L6..) are combined /
- Activation of DL CA set to true
- Create CRel Object on each LNCel (S1 -> S6)
- Set additional parameters (See Acceptance report)

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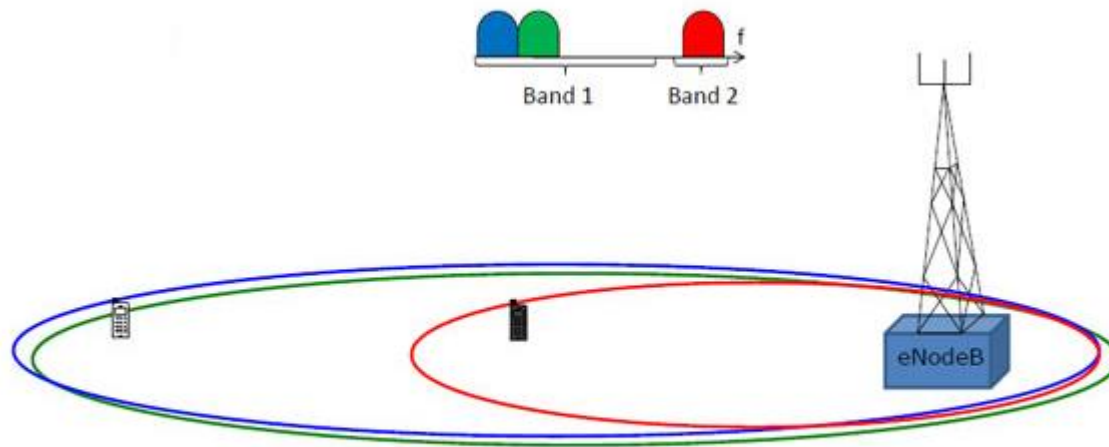


Radio interface setup.



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Radio Interface Setup.



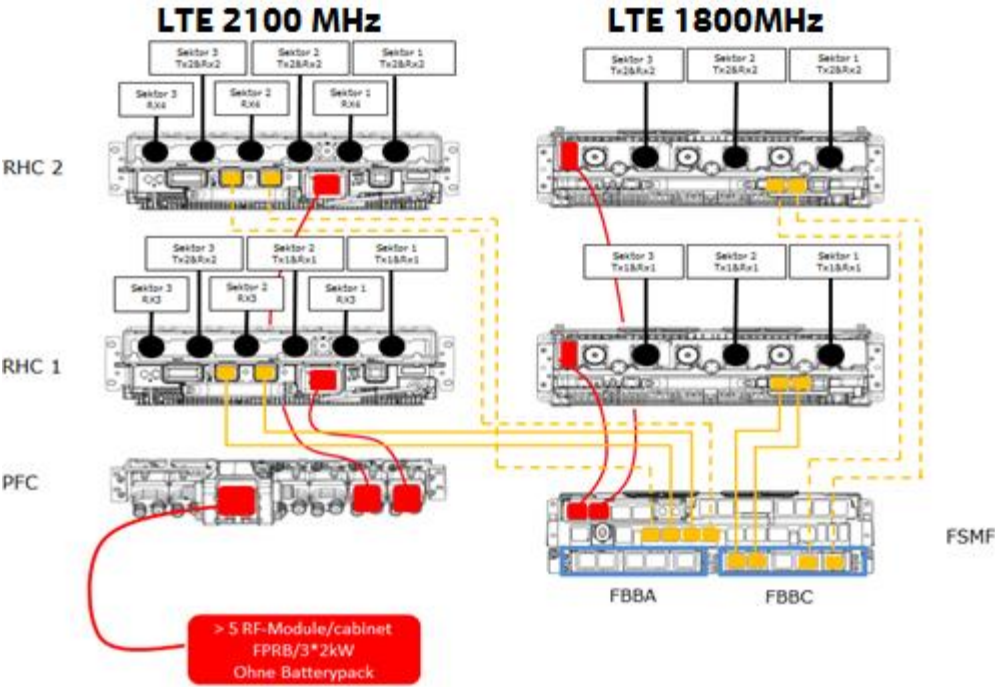
Primary Serving Cell (PSC), Primary Component Carrier (PCC), RRC connection and data

Secondary Serving Cell (SSC), Secondary Component Carrier (SCC), user data

Secondary Serving Cell (SSC), Secondary Component Carrier (SCC), user data

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Configuration.



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Configuration.

Used Hardware

- FSMF (System Module/ Baseband and System Processing).
- FBBA (4RX-Diversity).
- FBBC (Baseband, additional optical IF).
- FXED (LTE 1800MHz RF-Module).
- FRGT (LTE 2100MHz RF-Module).
- FPFC (Power Distribution Unit).
- Apple Iphone 8 / Samsung Galaxy Alpha.



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Conclusion.



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Thank you

