



QUALCOMM®



EV-DO Rev. B

October 2011



EV-DO Rev. B: Natural Evolution from Rev. A

E
V
D
O

R
e
v

B

Multicarrier Enhances Broadband Experience

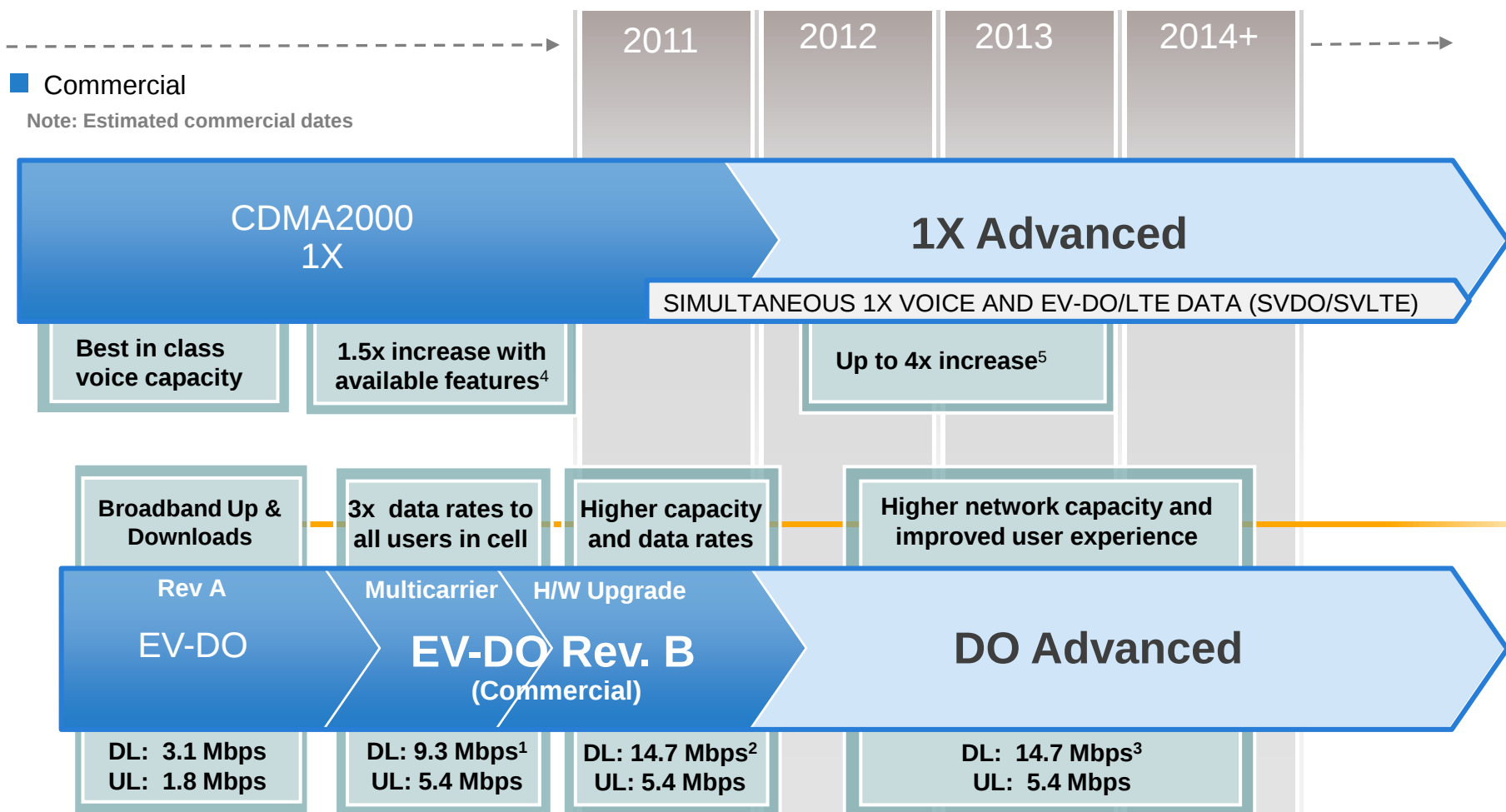
Higher data rates and lower latency for all users in the cell

Multicarrier Doubles Capacity for Bursty Applications

Cost-Effective Software Upgrade to Multicarrier

Even Higher Capacity & Data Rates with CSM6850 Upgrade

1X and EV-DO Have Strong Evolution Paths



¹Peak rate for 3 EV-DO carriers supported by initial implementation.

²Peak rate for 3 EV-DO carriers with 64QAM in the DL. Rev. B standard supports up to 15 aggregated Rev. A carriers.

³ Same peak rates as Rev. B, but with new dimension of enhancements

⁴Capacity increase possible with new codec (EVR-C-B) and handset interference cancellation (QLIC). ⁵4x increase with receive diversity; 3x without

EV-DO Rev. B is Growing

GROWING OPERATOR COMMITMENT

10

LAUNCHES

10

COMMITMENTS

DEVICES ACROSS ALL SEGMENTS

~30

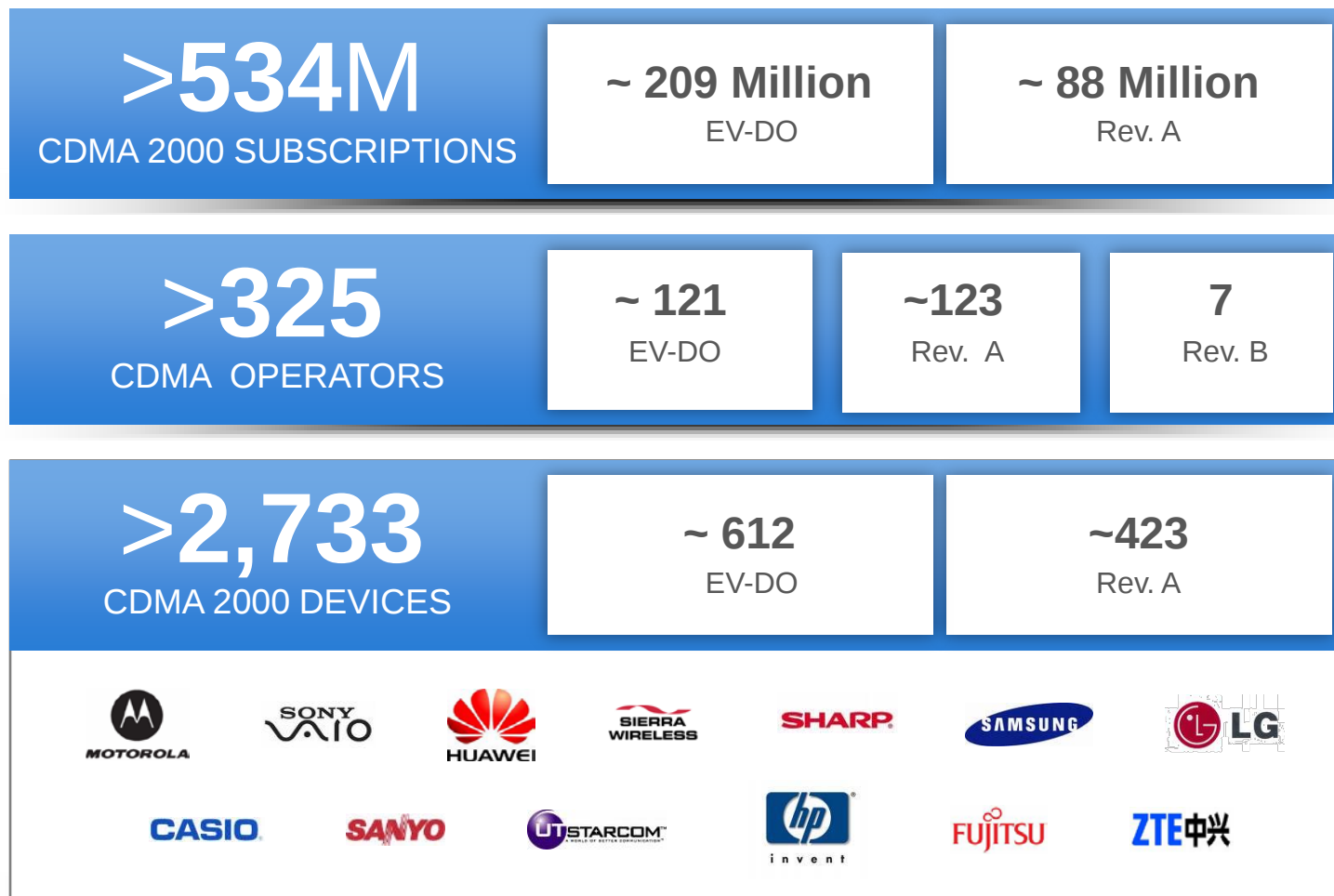
DEVICES

~15

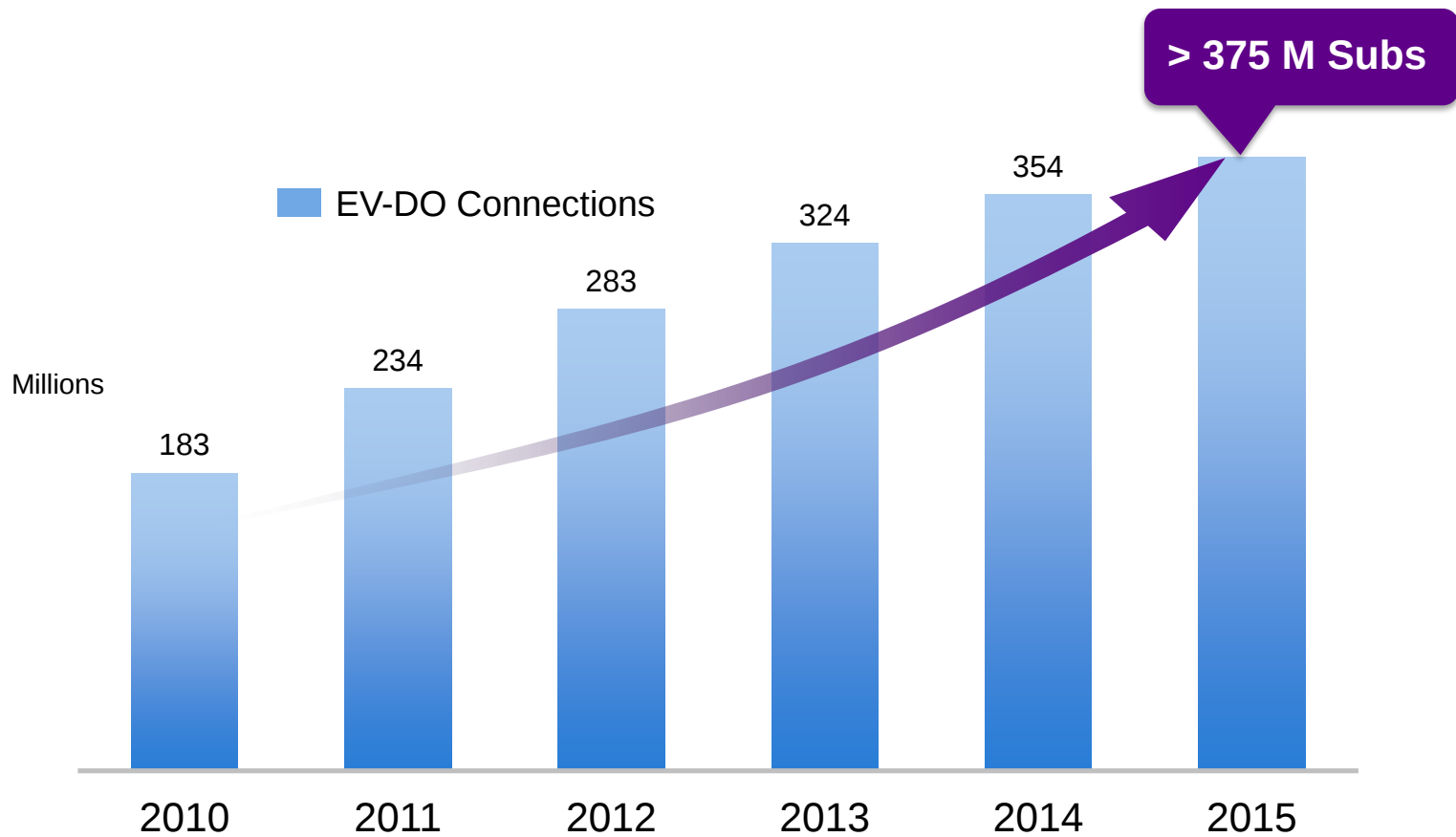
VENDORS

ALL MAJOR EV-DO INFRA VENDORS
SUPPORT REV. B

Expanding EV-DO Ecosystem



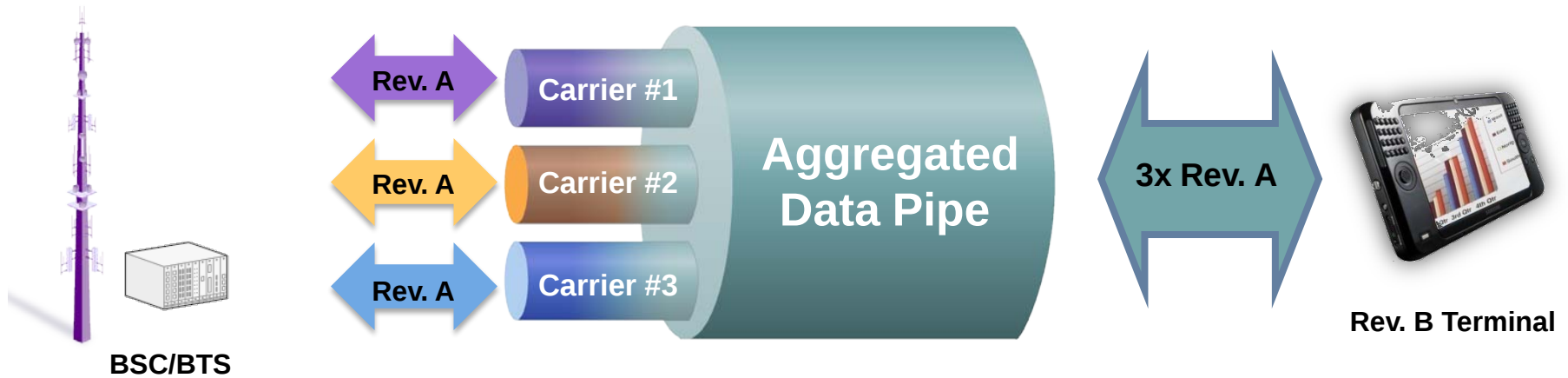
EV-DO's Strong Growth Continues



EV-DO Supports Entire Range of IP Services



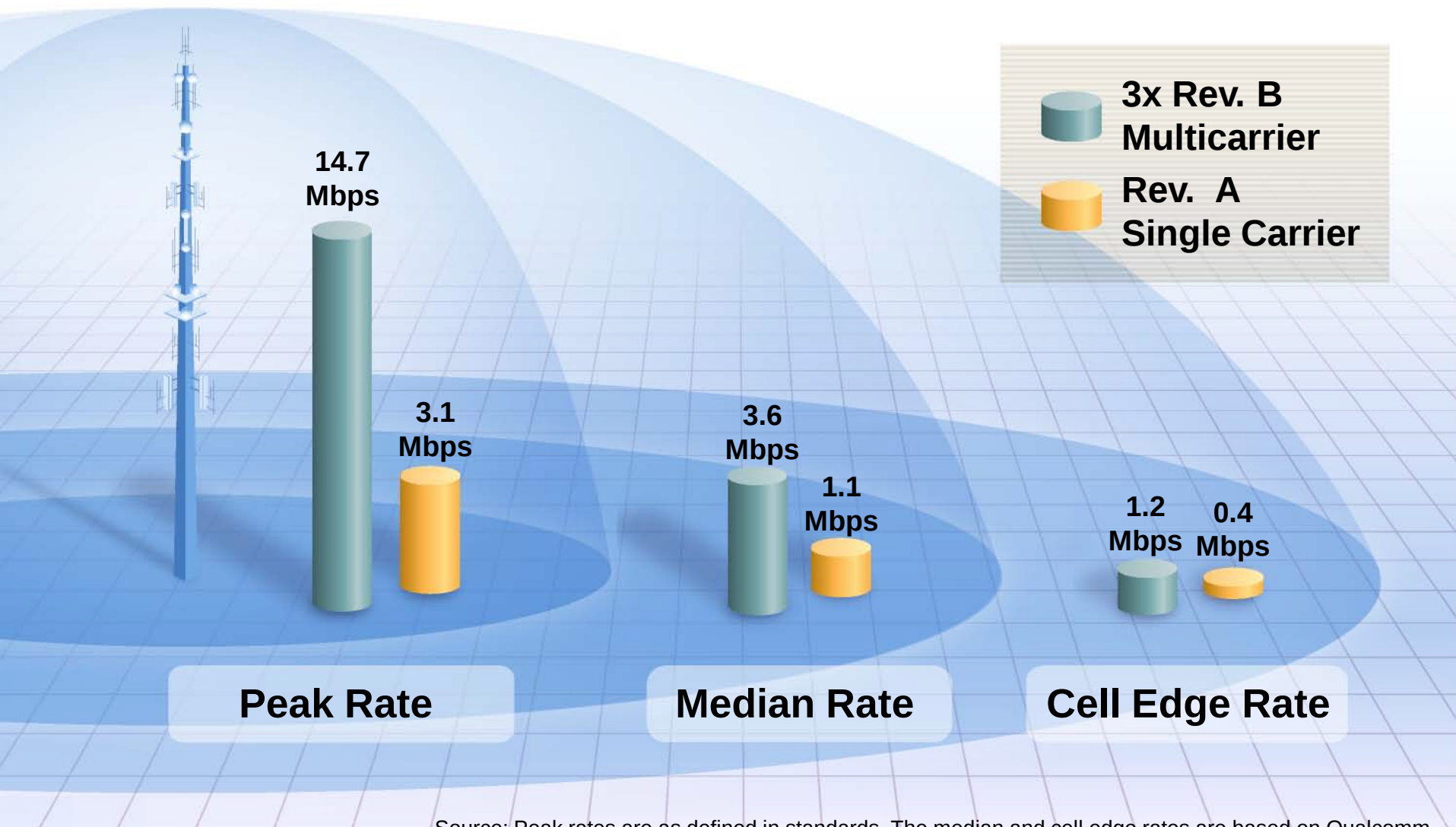
Multicarrier Enhances Broadband Experience



- Aggregating multiple Rev. A carriers creates a bigger data pipe
- Up to 3x user data rates and lower latency throughout the cell
- Dynamic bandwidth allocation

Cost-effective software upgrade to multicarrier

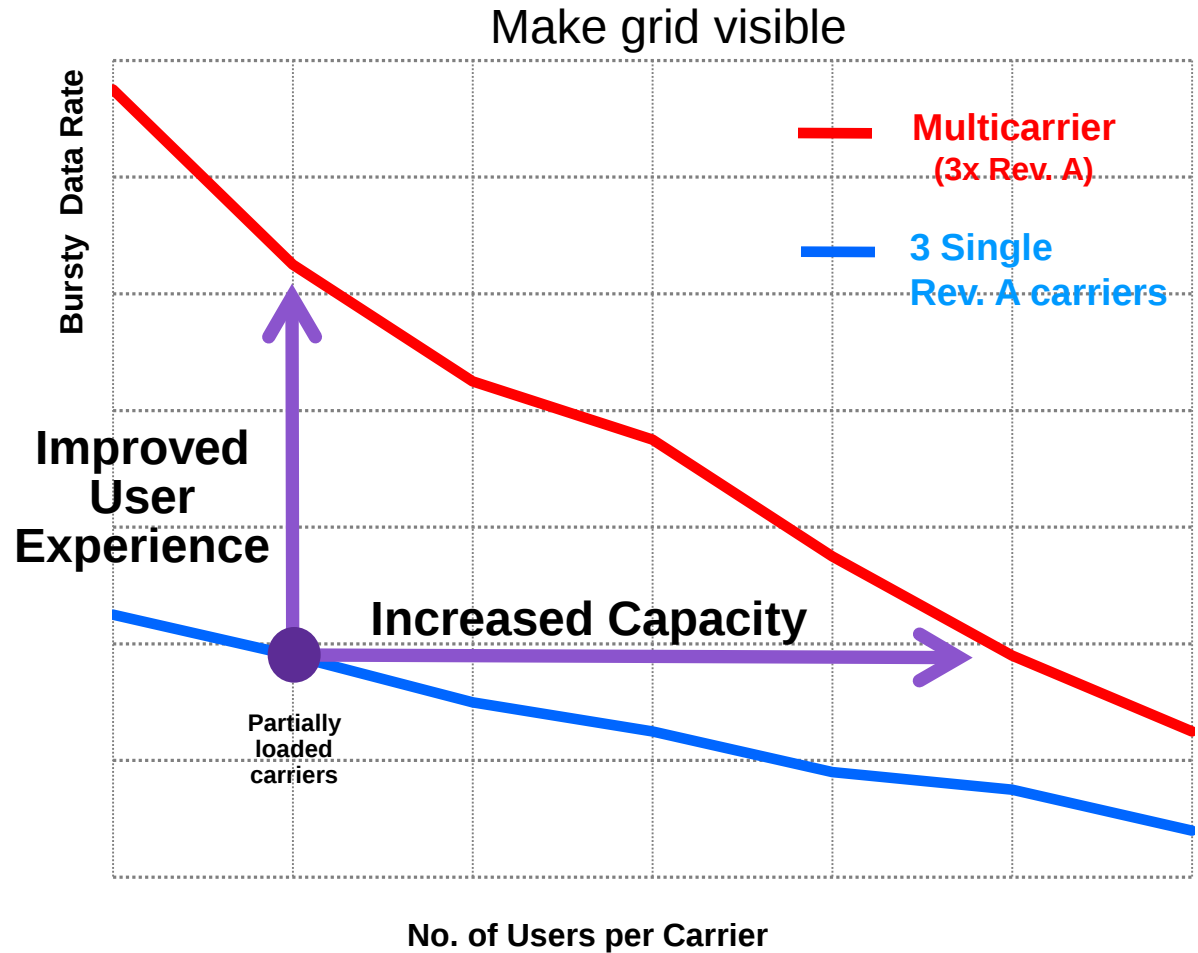
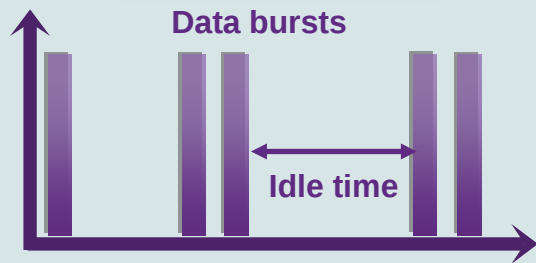
Multicarrier Triples Data Rates to *All* Users



Source: Peak rates are as defined in standards. The median and cell edge rates are based on Qualcomm simulations, using mixed channel model with Rev. B Phase-II devices supporting 64 QAM

Multicarrier More Than Doubles Capacity for Bursty Applications

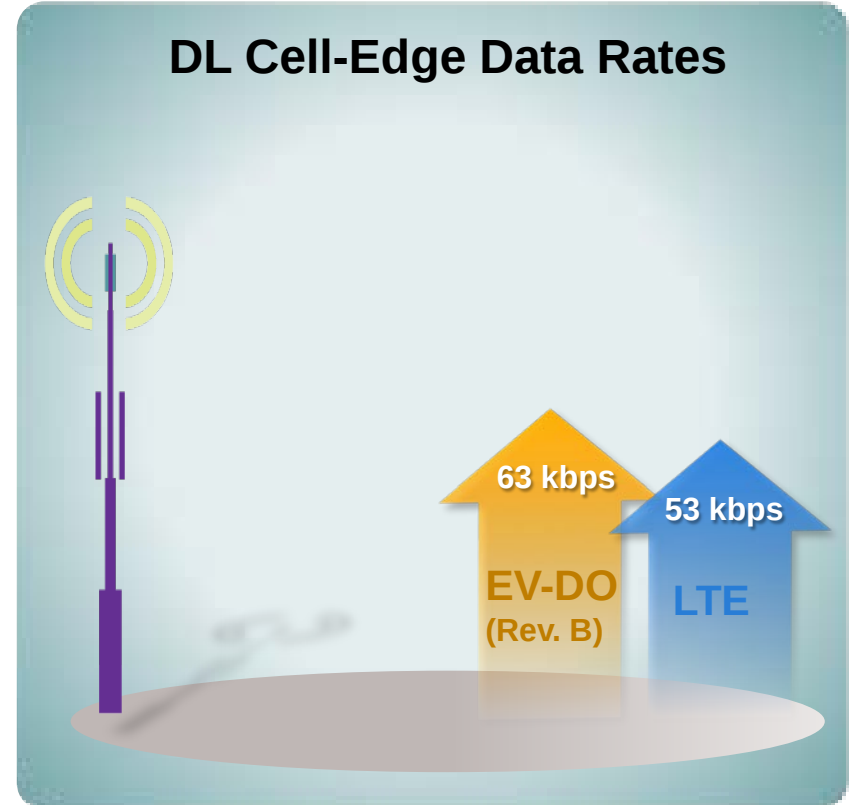
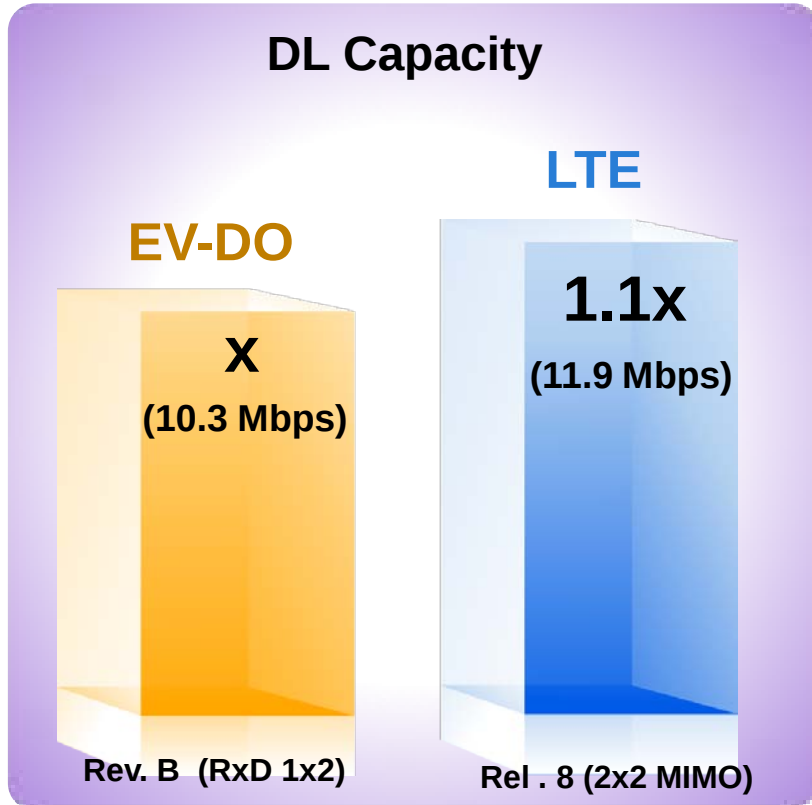
Bursty Data Application (e.g. browsing)



Note: Based on lab measurements using realistic traffic models from the web. The average burst download time (over the air) is reduced ~ 66%. The capacity gain depends on the sector load which in this case is typical for a EV-DO Rev. A system.

Similar Rev. B and LTE Cell Edge Performance using Fair Comparison

When using same amount of spectrum



Cell edge performance can be traded for even higher cell capacity at the expense of fairness

Even Higher Capacity and Data Rates with CSM6850 Upgrade



BTS Channel Card upgrade
with Interference Cancellation.
No device impact

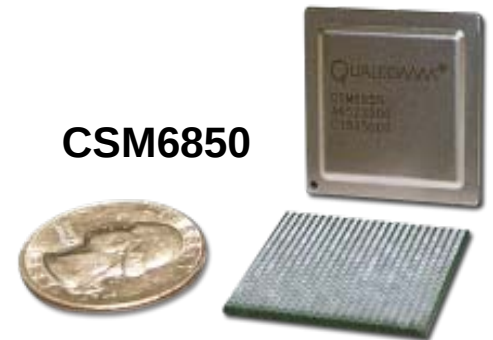
Up to 14.7 Mbps forward link peak data rates¹

~ 65% higher uplink data capacity²

~ 45% higher VoIP capacity³

- Cost-Effective – Supports 4 carriers on a single card
- Provides gains for multicarrier or single carrier Rev. A/B networks
- First commercial chipset to support total interference cancellation²
 - Traffic, Overhead and Pilot IC

CSM6850



CSM6850 is Commercial

¹Peak rate increased through Higher order modulation (64QAM). ²Through total Interference Cancellation, also benefits existing devices, CSM6800 with Pilot IC is already commercial ^{2,3} Gain compared to CSM6800 without IC.

Standardized Femtocell Support— Cost-effectively Enhance Coverage and Capacity

Operator Benefits:

Enhanced Coverage and Capacity

Bring network to user—offload macro network

Reduced Churn and Cost

Indoor coverage main churn reason. Reduce backhaul, site cost

New Revenue and Services

Additional ARPU—home tariffs, bundles, home zone services



End-User Benefits:

Enhanced User Experience

Better voice quality and higher data rates with existing devices

Attractive Home Zone Plans and Bundles

Wireless substitution, one gateway for all home entertainment

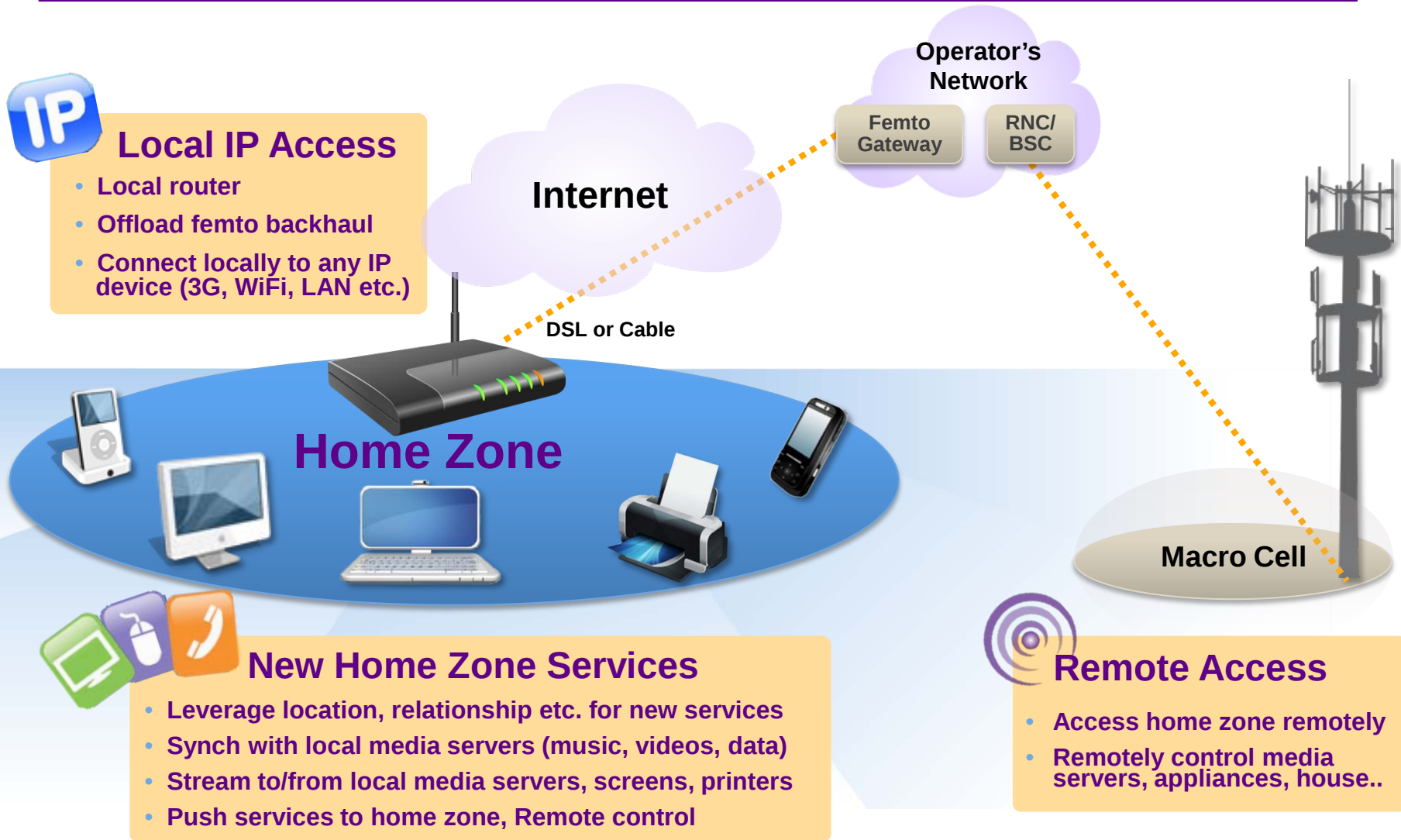
New Home Zone Services

Based on location, interaction with home media, etc...



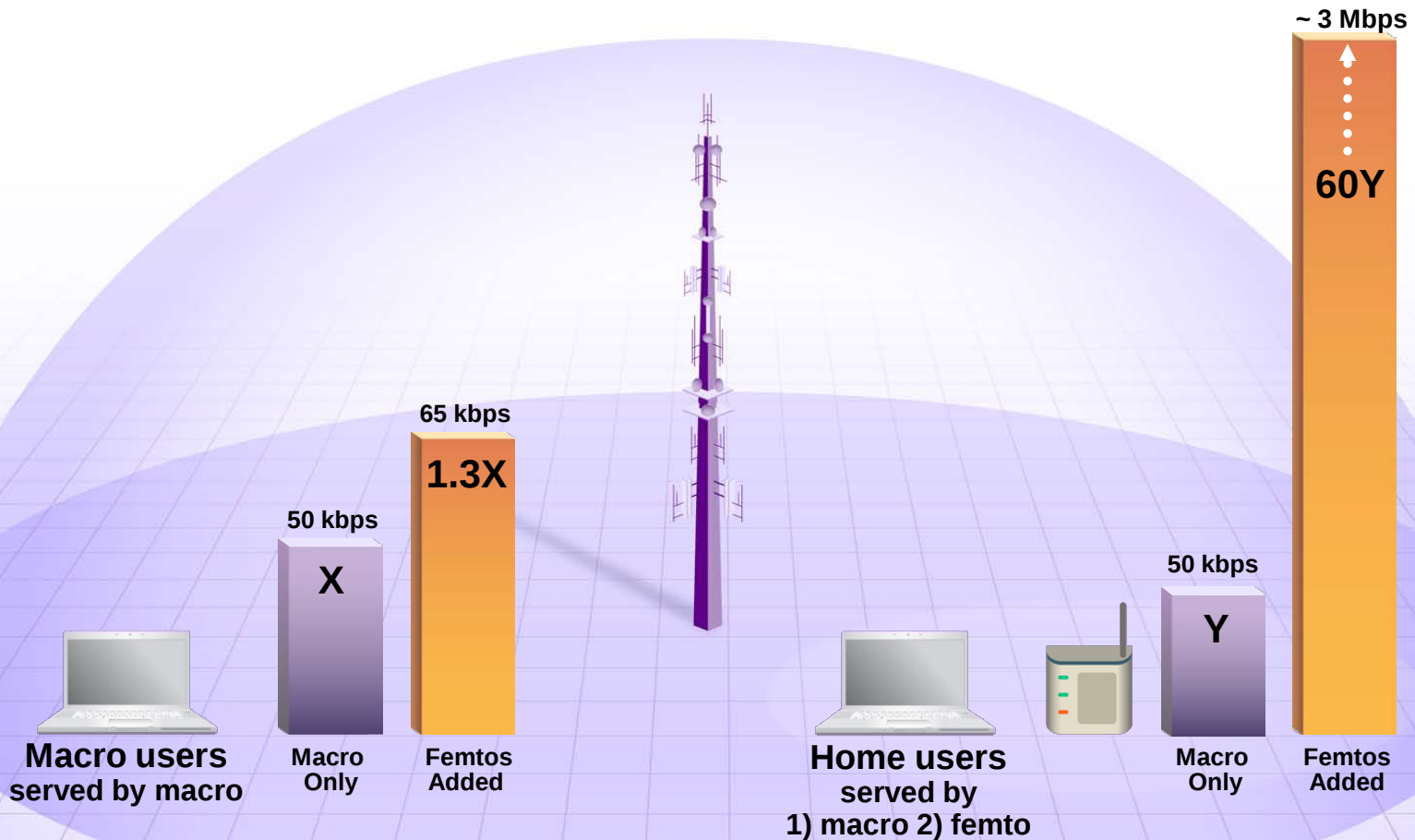
Femtocell
Your personal
3G access

New Femtocell Home Zone Services —Access Locally or Remotely



Bring Network to User—Femtocells Can Provide Next Significant Performance Leap

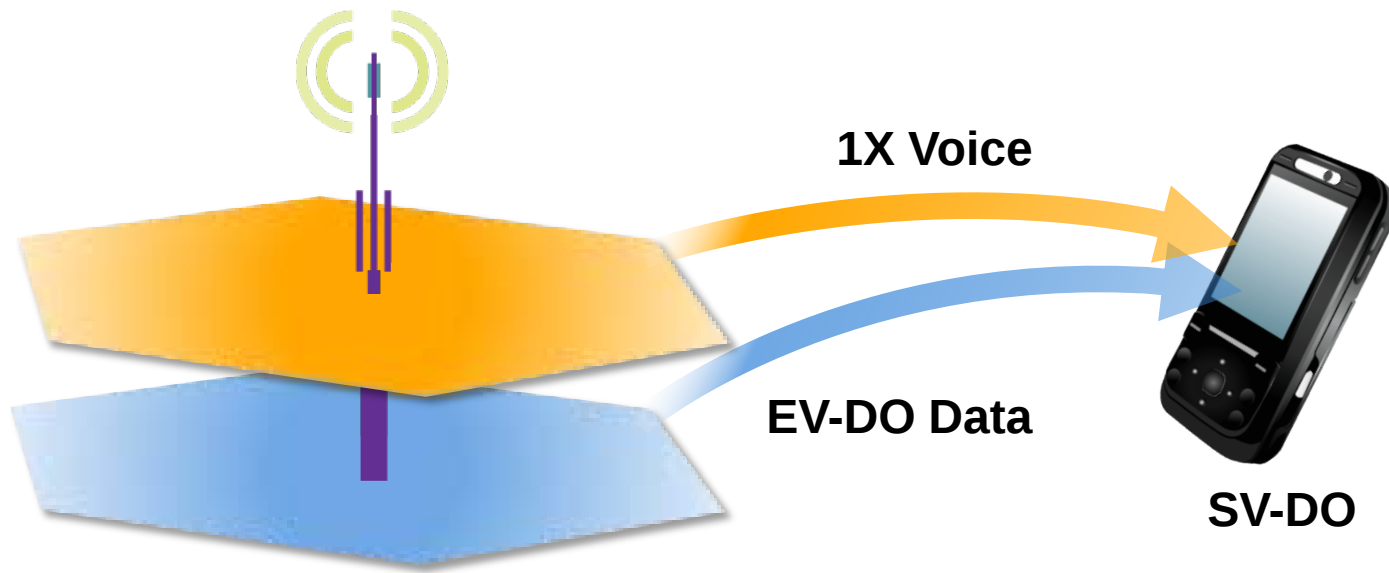
All users improved—home user served by near peak data rates



Macro Network Offloaded—Capacity Gain Can Exceed 10x

Assumptions: Dense urban system EV-DO Rev. A simulation. 22 Users per cell (10 macro users + 12 home users served either by macrocell or added femto cells). Rx diversity and MMSE Equalizer used. The median user data rates are shown.

Simultaneous 1X Voice and EV-DO Data



- Handset feature with no network impact
- Independent of the air link standard
 - Voice using 1X or 1X Advanced
 - EV-DO Rev. A or Rev. B
- Commercial in 2011

1X Advanced and Rev. B: Strong Chipset Support

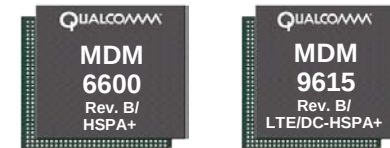
SMARTPHONES/ TABLETS



FEATURE PHONES



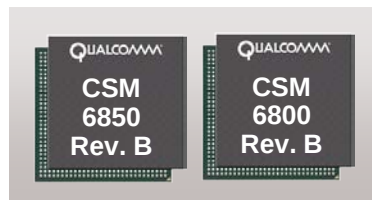
MODEMS AND DATA CARDS/DONGELS/ HOTSPOTS



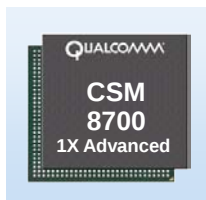
IMPROVING PERFORMANCE OF EXISTING INFRASTRUCTURE



Macro BTS



DO Advanced
(S/W Upgrade)



1X Advanced

ENABLING FEMTO SOLUTIONS

*Incorporating UltraSON™ Interference
Management Techniques*



Pico/Femto



EV-DO Rev. B: Natural Evolution from Rev. A

E
V
D
O

R
e
v

B

Multicarrier Enhances Broadband Experience

Higher data rates and lower latency for all users in the cell

Multicarrier Doubles Capacity for Bursty Applications

Cost-Effective Software Upgrade to Multicarrier

Even Higher Capacity & Data Rates with CSM6850 Upgrade

Questions? Connect with Us



www.qualcomm.com/technology



@qualcomm_tech



m.qualcomm.com/technology



<http://www.qualcomm.com/blog/contributors/prakash-sangam>



Thank You