



HSPA+ R8 Multicarrier Technology Demonstration

March 2009



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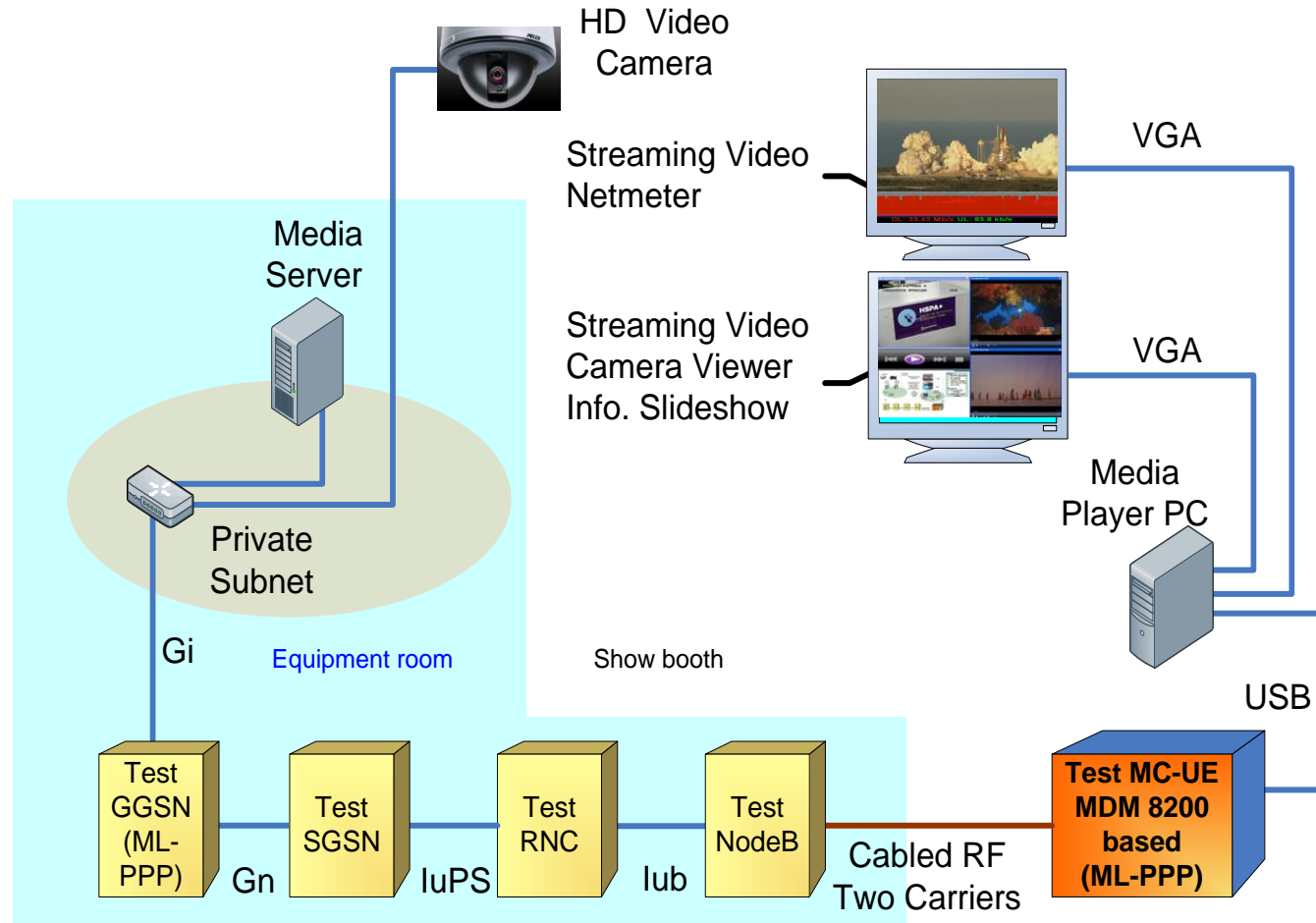
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HSPA+ R8 Multicarrier Demonstration

- Showcases HSPA+ Multicarrier's higher data rates and enhanced user experience
- Aggregates two 5 MHz HSPA+ carriers with 64 QAM to achieve a sustained data rate of ~40 Mbps
 - Data rates showcased through HD video streams and live camera feed.
- Features MDM8200 - Qualcomm's commercial HSPA+ chipset.

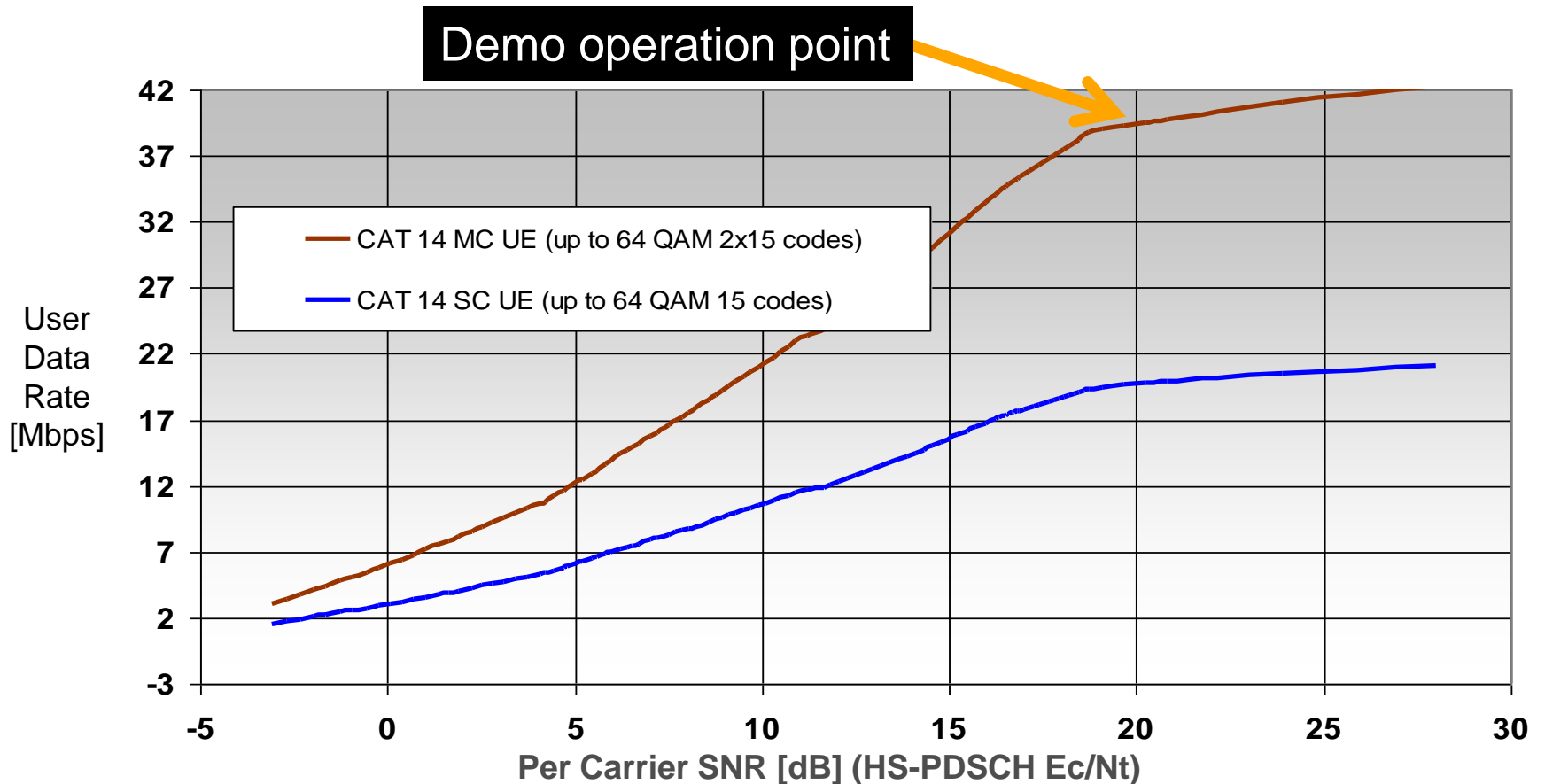
HSPA+ R8 Multicarrier - Commercial in 2010

HSPA+ R8 Multicarrier Demo Set-up



Features Qualcomm's commercial HSPA+ chipset (MDM 8200)

HSPA+ R8 Multicarrier—42 Mbps Peak Rate



Higher data rates and enhanced user experience to all users

HSPA+ R8 Multicarrier Demo Set-up Details

HSPA+ configuration:

- **Two paired HSPA carriers (UL and DL) in IMT-2000 band (cabled)**
- **Downlink: HSDPA category 14 (64 QAM, peak rate ~ 21 Mbps / carrier)**
- **Full Release 7 protocol stack at the UTRAN and the UE**

~38 Mbps Application Layer Data Rates

- **HD Video Streaming—three streams ~36 Mbps**
 - **Two streams of 8 Mbps each**
 - **Single stream of ~20 Mbps (not used for single carrier case)**
- **Live Camera Feed - Max 2 Mbps**
- **Switches between single carrier (18 Mbps) and multicarrier (38 Mbps)**

Demo: Physical Layer ~ 40 Mbps; Appl. Layer ~ 38 Mbps