




Wireless Broadband For Rural Communication
- EV-DO in 450M

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CONTENT

- ➔ **Why EV-DO450**
- ➔ **Case study - EV-DO450 in Argentina**

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New Challenge of Universal Service



Mountain



Island



Sights



Village



- Universal service means not only voice service, but also data service. Wherever, one can afford the telecom service by the similar QoS and charging
- Quickly popularized broadband service lead to new digital divide between city and rural area.



Main Problems of Rural Broadband Communication

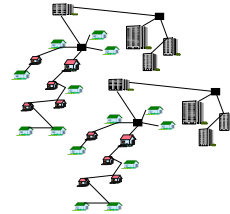
- **No profit, negative profit**
 - Low population density yet broad area or tough terrain
 - Less traffic per user and Low ARPU
 - Maintenance cost might be even higher than revenue
- **High investment, long term Return Of Investment**
 - High cost to build up sites and auxiliary in these area.
- **Hard to maintain, high operation expenditure**
 - Tough geographic terrain: Mountains, Rivers, Deserts, Gobi, etc.
 - Hard for maintenance, more engineers involved



Ever-used Technology for Rural Communication

Solution 1: Wireline system

- Special landform, mountainous, sparse populated, always several subscribers one village
- Expensive pavement and maintenance cost



Solution 2: Microwave system

- Relay site on top of mountain
- Difficult to access power supply
- Difficult to maintenance
- Limited capacity
- Existed system almost be abandoned

Ever-used Technology for Rural Communication(Continue)

Solution 3: VSAT Satellite system

- Expensive investment, high rent fee for link
- Limited capacity, limited span
- Key factor of universe service is low cost for most subscribers



Solution 4: GSM system

- 900/1800M frequency band, with medium coverage and limited data capacity

These technologies are not suitable for rural broadband construction

Ideal Rural Broadband Network Should Be...

- *Economical*
- *Quick deployment*
- *A international standard technology*
- *Well proven*
- *Has a mature industry chain*

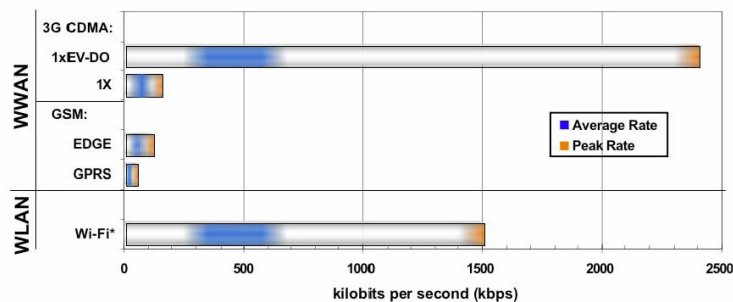


EV-DO450, new choice for rural communication



Why EV-DO450?

High Performance Wireless Broadband Technology



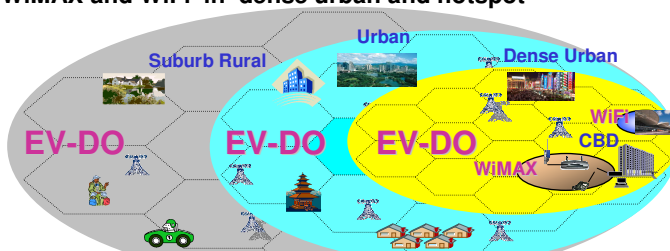
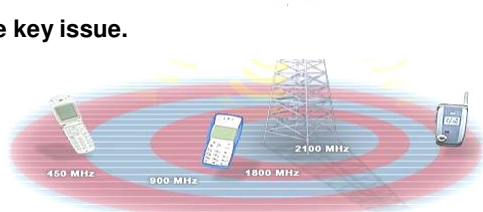
- Single user peak data rate: forward **2.4Mbps**, reverse **153.6kbps**
- Average data throughput: **650kbps**



Why EV-DO450?

Seamless Coverage Wireless Broadband Network

- In Rural areas, Coverage is the key issue.
 - EV-DO 450 coverage is 16 times than 2.1G
 - BTS number is 1/16 of 2.1G or 1/12 of 1800MHz
- 1xEV-DO in **Everywhere** for wireless broadband access
- WiMAX and WiFi in dense urban and hotspot



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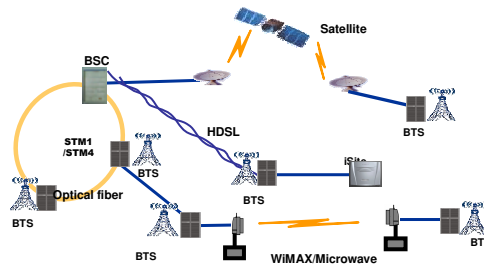
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Why EV-DO450?

Flexible and Quick Deployment



- Outdoor macro BTS, mini BTS suit for various environment
- No need equipment rooms & air-conditioners
- Powerful adaptability: Satellite, Microwave, HDSL, WiMAX, Optical ,etc.

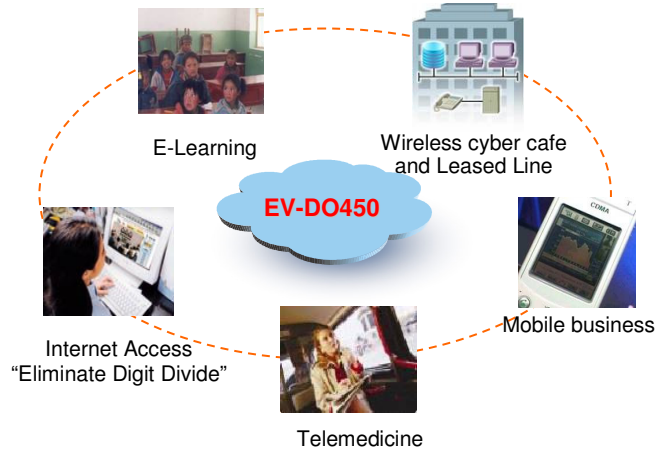


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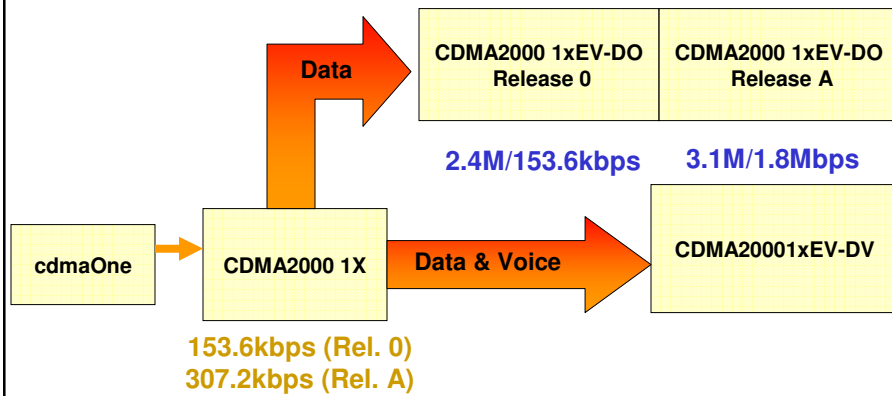
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Why EV-DO45? Rich Data Services



Why EV-DO45? Future-oriented and Smooth Evolution



True 3G technology, smooth evolve to 3G network

Why EV-DO450? Mature Industry Chain

EV-DO industry chain: Large subscriber group, Successful Operators, Vendors, Various terminals, Abundant VAS, Chipsets, Organizations...



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Why EV-DO450? Mass Application

Up to 2005/2/1 there are 24 1xEV-DO commercial applications in Asia, America and Europe. Users have exceed 10million. There will be 18 new EV-DO applications this year.

	2002Q1	
	2002Q2	
	2003Q4	
	2003Q3	
	2003Q2	
	2004Q3	
	2004Q3(Inquam)	
	2005(CAT)	
	2005(TT)	

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EV-DO450 for CITELE 2004



First EV-DO service in Tigre, in Argentina



CDG, IA450, CNC, TELECOM, Huawei
CDMA450 EV-DO meeting in Boat

Environment: Moving Boat in River with Trees and illegal noise interference.

Service: FTP downloading, MTV on demand, MP3 on demand, WWW, Email...

Highest Data Rate: 2.1Mbps

Huawei launched patent ANF technology to ensure CITELE EV-DO show successful !

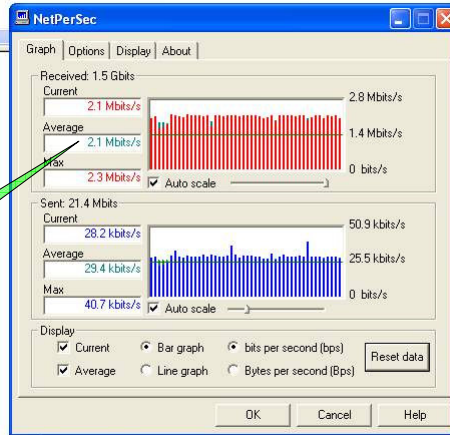


Tests Result – Data Service of EV-DO

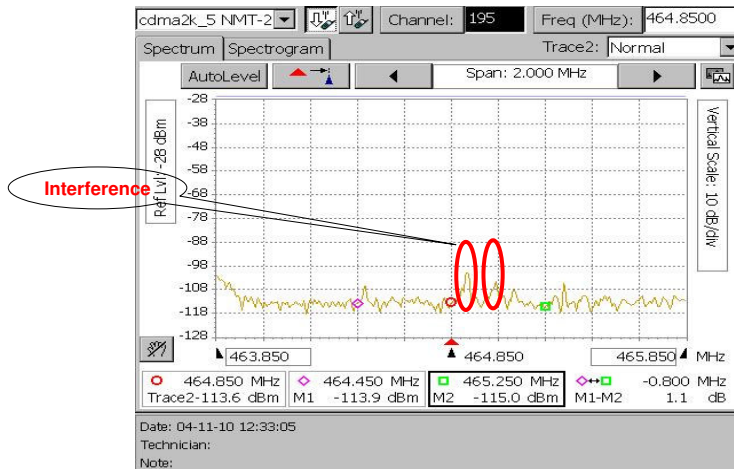


Test 2 in Boat
High-speed: 2.1 Mbps

Test 1 in Room
High-speed: 2.2Mbps



Anti-interference – Existing Interference



The interference in 450MHz in Tigre City.

Good Performance Call Successful Ratio

ORIG LINE	TERM ATMP	DISPLAY NO	ALERT
TTL	10708	10705	3
001	2576	0	0
002	2699	0	0
003	2711	0	1
004	2722	0	1
005	0	0	0
006	0	0	0
007	0	0	0
008	0	0	0
009	0	2575	0
010	0	2699	0
011	0	2710	0

Huawei RAC with TELECOM LE via V5.2

Call Successful rate > 99.9%

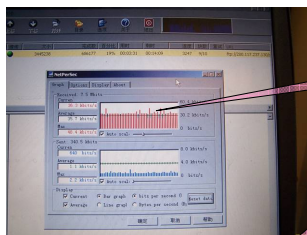
10705/10708 = 99.972%

*>98% required by customer



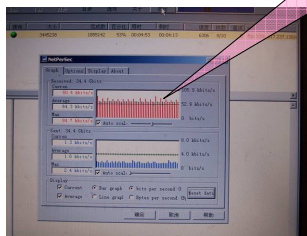
Tailored Function- Packet Data Rate Controlled

System can assign different user with different packet data speed controlled (such as: 4X, 8X, 16X), according to the different user's level that he registered in TELECOM.



Low speed: 4X SCH, 35.7Kbps

Mid speed: 8X SCH, 64.3Kbps



If the user has the high speed packet data service potency, the default download speed is 16X(153.6Kbps). System can control the user download speed to different level,
 Low(38.4Kbps) Mid(76.8Kbps),
 High(153.6Kbps) VIP(153.6Kbps VPN)

Huawei already developed this new function for TELECOM in 2 months and passed the test successfully.





Thanks

**Technology Changes
Communication Lasts**

