# The future of communications

#### February 10, 2006

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Member of the Infineon Management Board Business Group Communication Solutions



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# Four Hot Topics in the Wireless Communication Market – Infineon Drives Them All



HSDPA

 HSDPA enabled mobile phones to increase from 10 million in 2007 to more than 300 million by 2010\*

#### Cellular ULC

 ULC ("Ultra-Low-Cost") phones to represent 12% of worldwide mobile phone sales by 2010 compared to 1% in 2005\*



#### Connectivity

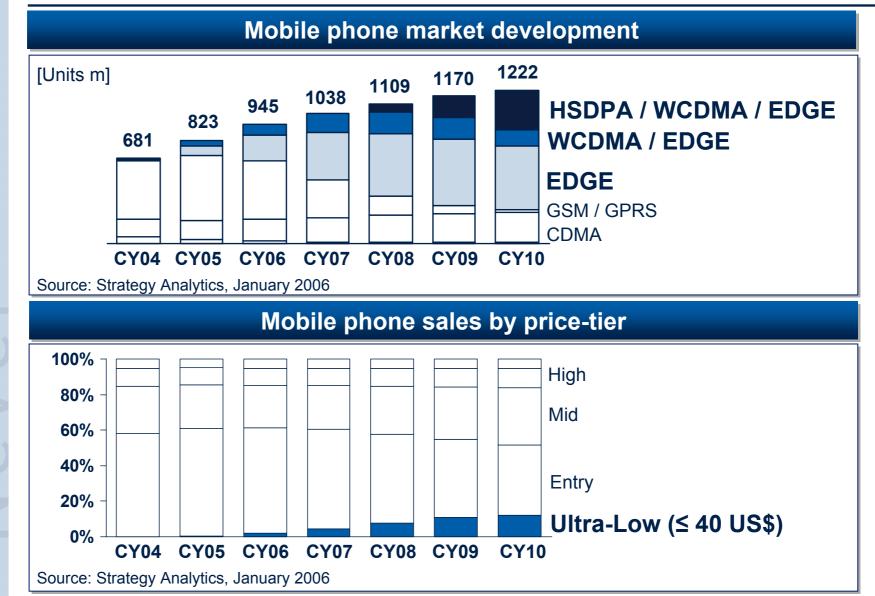
- Bluetooth penetration will increase to more than 50% by 2008\*
- WLAN and GPS to move into smart phones

#### **Mobile TV**

- Mobile TV service (DMB) has started from May 2005 in Korea
- Portable receivers emerging



# Growth Drivers: HSDPA, WCDMA, EDGE and ULC





# 3GSM 2006:

Infineon Provides All Key Elements of HSDPA Solution

#### HSDPA multimedia baseband S-GOLD 3H

- One-chip HSDPA / WCDMA / EDGE solution
  - 7.2 Mbit/s baseband
- Video telephony and streaming without companion
- Status: Sampling

#### HSDPA RF CMOS transceiver SMARTi 3GE



- World's first one-chip six-band WCDMA and quad-band EDGE transceiver
- Offers data rates up to 7.2Mbit/s
- Status: Sampling

#### **HSDPA** protocol stack

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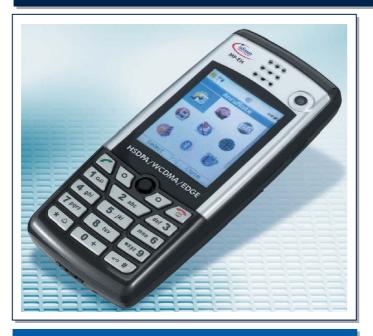
- 3GPP WCDMA FDD multimode type II protocol stack
  - Full support of 3GPP release 5 HSDPA
  - Supports GSM, GPRS and EDGE up to Class 12
  - Status: Delivery to first customer in Q1 CY06

#### Power management and connectivity solutions



# Infineon Introduces HSDPA Platform

#### HSDPA multimedia platform



#### HSDPA market development



#### HSDPA data rates up to 7.2 Mbit/s

- Enabling broadband multimedia applications:
  - Video streaming
  - High-speed audio/video download
- Infineon provides complete solution:
  - All key hardware components
  - 🗸 Reference design
  - Protocol stack and application software
- Reference design expected to be available mid CY06



## Panasonic and Vodafone Selected Infineon's 3G Platform

#### Infineon's 3G platform

- Ramp-up expected 2H CY06
- Infineon provides multimedia baseband, RF transceiver, power management, connectivity solutions, reference design and software
- < 200 electronic components</p>
- Low eBoM

# 3G market development Design win [Units m] Panasonic CY04 CY10 Source: Strategy Analytics, January 2006 Vodafone

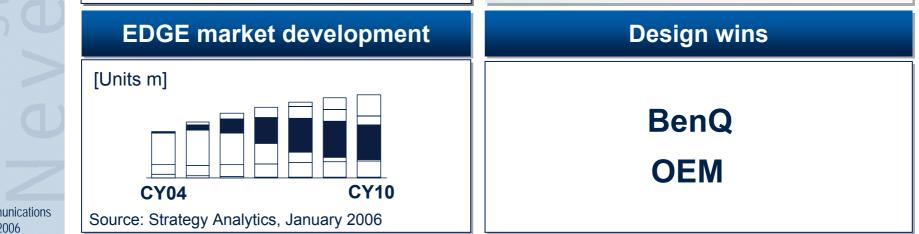


## Several OEMs Selected Infineon's EDGE Platform

#### Infineon's EDGE platform

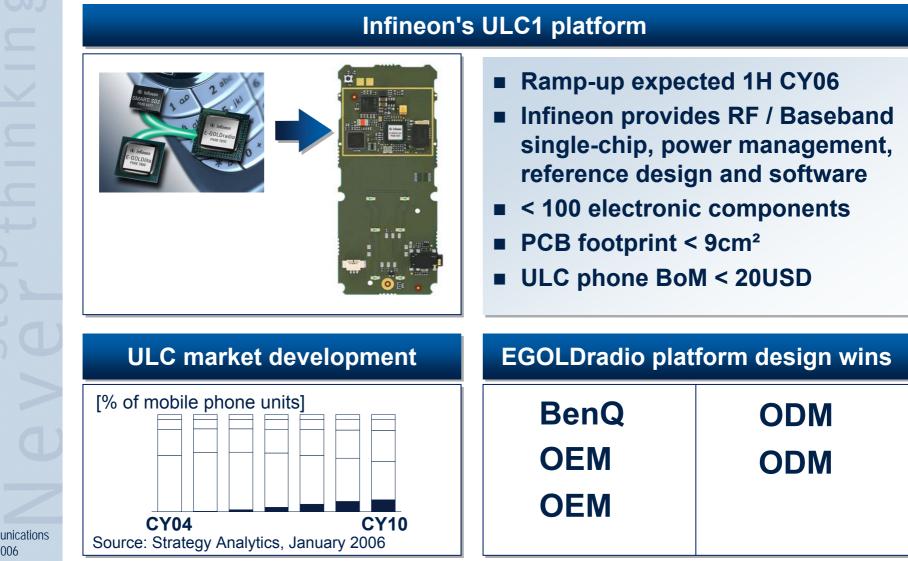
- Ramp-up expected 2H CY06
- Infineon provides multimedia baseband, RF transceiver, power management, connectivity solutions, reference design and software
- PCB footprint < 12.5cm<sup>2</sup>

Low eBoM





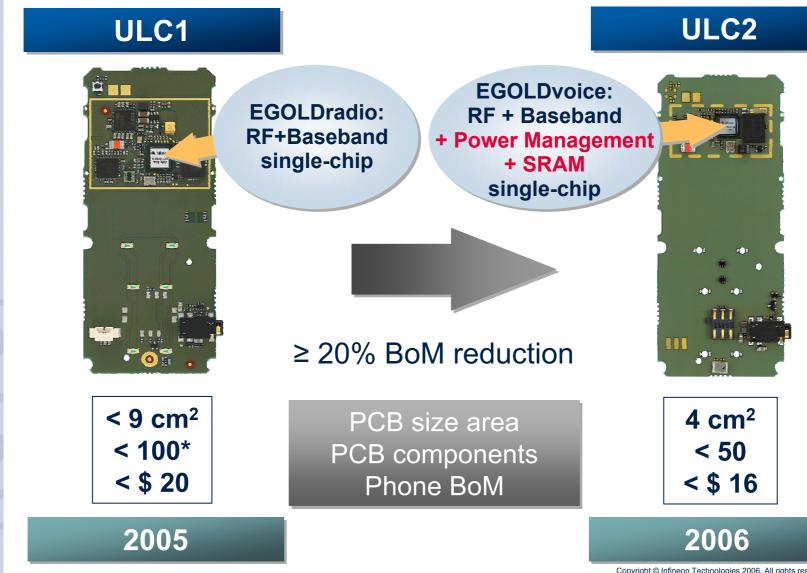
# Several Design Wins for RF / Baseband Single-Chip "EGOLDradio"



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# Infineon's New Single-Chip Generation Drives Further **BoM Reduction**



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# Competitive Mobile Phone Platform Offering Leads to Several Design Wins

Complete offering from 2G to 3.5G			Design wins		
Soft	ware	Customer	Platform	Ramp- up	
APOXI reference MMI	Applications	OEM	GSM ULC	1H CY0	
APOXI fran	ol stack				
Hardware driver	Realtime operating	OEM	GSM ULC	2H CY0	
raidware driver system		ODM	GSM ULC	2H CYC	
Reference		ODM	GSM ULC	2H CYC	
Design Hardy	Nare	BenQ	GSM/GPRS entry phones	2H CYC	
		BenQ	EDGE Multimedia	2H CYC	
Baseband RF tran	sceiver Power management	OEM	2x EDGE Multimedia	2H CYC	
	S, WLAN single-chip	Panasonic	3G Multimedia	2H CYC	



# Expanding RF Customer Base Through RF CMOS Leadership

- No. 1 in RF with approximately 200 million RF chips sold in CY05
- Several 3G and EDGE mobile phone platforms ramping up in 2H CY06 will be based on our CMOS transceivers

#### SMARTI 3GE HSDPA / WCDMA / EDGE

#### SMARTI 3G HSDPA / WCDMA

Infineon SMARTI3G SMARTI PM EDGE



World's first CMOS onechip 6-band WCDMA and 4-band EDGE transceiver World's first CMOS single-chip 6-band transceiver



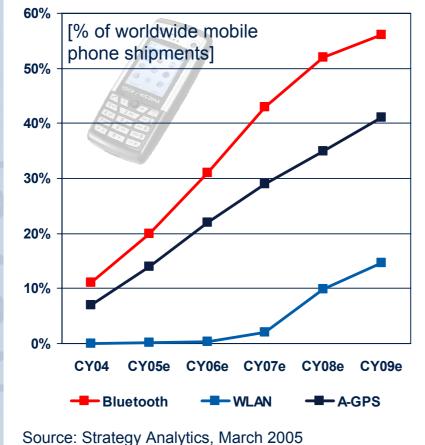
World's first CMOS EDGE single-chip transceiver



# Growth Driver: Connectivity

#### **Growth driver**

# Increasing demand for connectivity in mobile phones:



#### Infineon's position

#### Bluetooth

- Customers: BenQ, Panasonic
- Bluetooth 2.0 + EDR solution sampling since early 2005
- Design win at OEM

#### A-GPS

- World's first RF / BB single-chip solution sampling since early 2005
- Design-wins at 2 mobile phone platforms

#### WLAN

- 802.11 a/g single-chip for mobile phones available in 2006
- VoIP functionality integrated
- UMA support

#### UWB

Single-chip in development



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# Growth Driver: Digital Terrestrial TV and Mobile TV

#### **Digital terrestrial TV**

#### **Growth Drivers:**

- Introduction of digital terrestrial TV in many regions
- Analog terrestrial TV to be switched off by 2015



#### **Infineon's Position:**

- Leading share worldwide in tuners for digital terrestrial TV
- Infineon tuners are fully compliant to DVB-T, DVB-C, ISDB-T, ATSC

#### Mobile TV

#### **Growth Drivers:**

- World's first roll-out took place in South Korea in May 2005
- Field trials in many regions all over the world



#### **Infineon's Position:**

- Volume shipments of portable TV tuners since end 2005
- DVB-H frontend solution demo at 3GSM '06



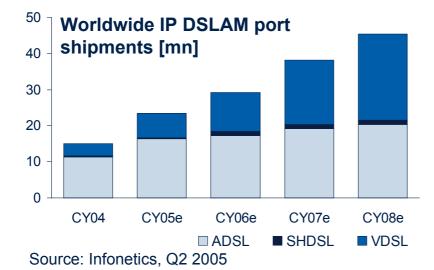
# Growth Driver: DSL

#### **DSL** market development

# Triple play services and network replacement drive DSL demand

For example:

- Deutsche Telekom intends to provide Germany's 50 largest cities with up to 50Mbit/s broadband lines by 2007
- By mid-2006, already 2.9 million households can use the new technology



#### Infineon's position

#### **VDSL2** leadership

- We offer the first fully standard compliant VDSL2 chip solution
- Several major OEMs decided to start VDSL2 designs based on our chipset
- First VDSL2 revenues already achieved in Q4 CY05

#### New customers in ADSL2/2+

 Design-wins at several new major OEMs during CY05



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#### Early availability

- VINAX: 1st fully standard compliant VDSL2 chip solution
- IFX: Sole company meeting all regional requirements

#### Experience

- More than 4 million VDSL1 lines powered by Infineon chip solutions
- Fully ADSL backwards compatible



#### Complete solution

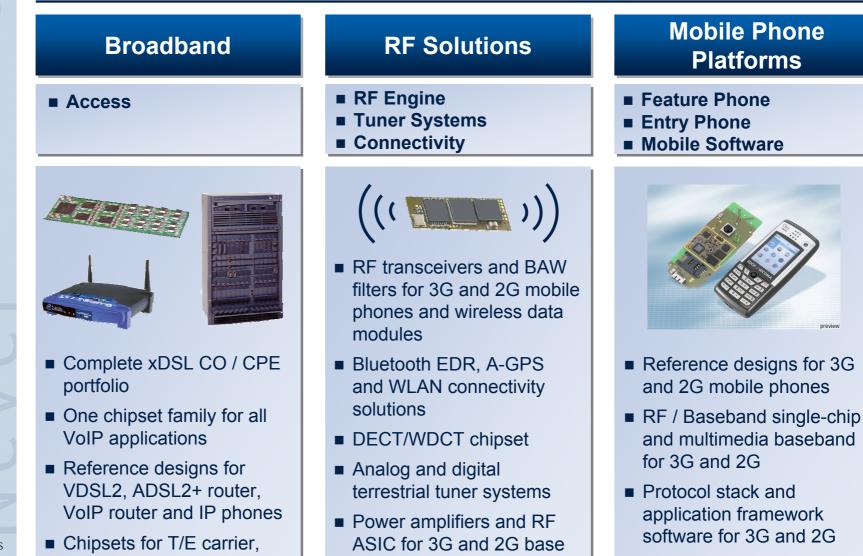
 Extensive line-card and CPE solutions portfolio including: DSL, Communications Processors, VoIP, WLAN, switch/PHYs



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Infineon Communication Solutions Drive the Convergence of Communication Technologies



stations

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analog linecards and ISDN



# Infineon Successfully Produced First 65nm Samples

infineon

- Successfully produced first sample chips in our 65nm technology
- Leveraging results of 65nm / 45nm ICIS alliance

5 Chartered

Wafer production was done at multiple fabs

- Volume production intended to start in Q4 CY06 at Chartered
- 65nm technology is expected to further strengthen our leading position in baseband and RF CMOS single-chip integration



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# Infineon's Advanced Logic Manufacturing Strategy

	Strategy		Advantage
130nm	<ul> <li>Use existing in-house capacity to 100%</li> <li>Surplus volume in foundry</li> </ul>		<ul> <li>Proven and low cost manufacturing technology</li> </ul>
90nm	<ul> <li>First ramp of technology in foundry, then, transfer to in-house manufacturing as second step</li> <li>Only limited in-house capacity; major volume share stays in foundry</li> </ul>		<ul> <li>Limited investment in own fabs</li> <li>Nevertheless, staying abreast of technology development</li> </ul>
65nm	<ul> <li>Development of 65nm / 45nm CMOS technology within ICIS alliance (IBM, Chartered, Infineon, Samsung)</li> <li>Manufacturing cooperation between Chartered and Infineon</li> </ul>		<ul> <li>Pooling of intellectual capital</li> <li>Sharing of R&amp;D expenditures</li> <li>Maintaining process technology and design system expertise</li> </ul>
		Υ.Υ.	

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