

# **TD-LTE Industry Support for Global Markets**

# **TD Industry Alliance**

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### **Organization Structure of TDIA**



#### Vision

Based on TDD technology innovation, make TDIA one of the most important industrial associations that push the development of mobile communication technologies and industry all over the world.

# Alliance TDD Innovation & Standardization



- RAN1 : Physical Layer
- RAN2 : L2 & RRC
- RAN3 : L1 & Transport, S1/X2 AP
- RAN4 : UE & eNB Tx/Rx, RRM core, RRM test, eNB test
- RAN5 : Common env., Signaling, RF Tx/Rx, RF RRM



#### TD Industry A I I i a n c e Conformance Testing of TDD Terminals



- **Development of TD-LTE TTCN Test Suite keep the same pace with FDD**
- □ Verification of TD-LTE TTCN Test Code :
  - P1/P2/P3 Test Cases :100% , P4 Test Cases: 93%
- **GCF P1/P2: 100%**, P3: 97%, P4: 80%



## **Development of TD Industry**

#### 2013~2014

TD-SCDMA 400,000+ BS 300,000,000+ Users

TD-LTE 400,000+ BS 80+ commercial/Trial

10+ Infrastructure Vendors
18+ Chipset Vendors
10+ Test Equipment Vendors
50+ UE Vendors



2012 12 commercial TD-LTE network launched (October 2012) TD-SCDMA 300,000+ BS TD-LTE 20,000 +BS



2011 TD-LTE trial in china TD-LTE trial abroad 90 members in TDIA

2009~2010 TD-SCDMA commercialization, market developed rapidly TD-LTE industrialization

2003~2008, TD-SCDMA trial / TD-LTE standardization , Industry chain set up

2002, TD-SCDMA industrialization, TDIA established with 8 members



#### **Opportunities and Challenges of TD-LTE Industry Chain**



#### TD Industry Alliance TD-LTE Large Scale Trial Goes Smoothly

Multi-Vendor Environment : International VS Domestic Enterprises
Multi-Mode Multi-Band : GSM/TD-SCDMA/ WCDMA/ TD-LTE/LTE FDD
Polymorphic Terminal : MiFi/CPE/USB Dongle

Technical Trial

Phase2 of Scale
Trial Finished
Cities in

Cities in
Expanded Trial
Increase to 13
Bidding Work
for TD-LTE
Terminals has
begun





#### Internationalization Process of TD-LTE Continues to Accelerate

# **12** commercial TD-LTE network launched (September 2012):

Saudi Arabia : Mobily Saudi Arabia: STC Denmark/Sweden:Hi3G India: Bharti Airtel Australia: NBN Japan: Softbank Mobile Brazil: Sky TV UK: UK Broadband Poland: AERO2 Oman: Omantel Russia: MTS

**29+ operators have TD-LTE** commercial deployment plan (September 2012)

**53** Trial Networks (September 2012)

#### Global Distribution of TD-LTE Network





- Harmonized spectrum is necessary for IMT to achieve economy of scale.
- Band 41 is a very promising band that can provide global roaming capability for TD-LTE.
- Frequency below 1GHz is recommended for seamless TD-LTE coverage.





#### 2.6GHz band Allocation for Global Roaming



	Asla -	Pacillo	
Country / Region	Operators	Band (MHz)	Frequency range
Taman	Softbank	30	2545-2575 MHz
Japan	UQ Com 30	30	2595-2625 MHz
New Zealand	Vodafone Mobile NZ Ltd	30	2540-2575 MHz
	Blue Reach Ltd	30	2660-2690 MHz
Singapore	StarHub	12	2576–2588 MHz
	Pacific Internet	30	2600-2672MHz
			2678-2696MHz
Tu dia	Bharti	40	2332.5-2352.5MHz
muia			2305-2325MHz
	Fitel	30	2565-2595MHz
	Global On Corporation	30	2595-2625MHz
Taiwan,China	Vmax Telecom	30	2660-2690MHz
	FET	30	2565-2595MHz
	Tatung Telecom	30	2595-2625MHz
Hong Kong	21 ViaNet Group	30	2300-2330MHz
China	CMCC	30	2330-2360MHz
Cinina	Hutchison	30	2360-2390MHz



#### Whole TDD Scheme of 2.6GHz in China

#### China has decided to adopt the full TDD band plan on 2.6GHz



•Exploring significant benefits of precious spectrum resource

**Reducing management complexity** 

Reducing complexity of management, interference coordination and network deployment
Improving the usability of spectrum

#### **Considering global roaming and ecosystem**

•Band 41 is one of the 3GPP standard bands, on which some operators have deployed TD-LTE

•Considering the layout of global main telecommunication markets

•Enlarging the industry scale



# **TD-LTE Chipset & UE Develop Rapidly**



#### **TD Industry** Alliance Development of TD-LTE Terminals

- **2012Q4-2013Q1, data terminals, especially MiFi is the focal point**
- Considering different using occasions, requirements of TD-LTE MMMB smart phones should be defined by 2012
- Definite voice solution will give a rise to the development of MMMB chipsets and terminals



# TD Industry

# **Roadmap of TD-LTE Voice Solution**



# **TD Industry** Roadmap of TD-LTE Terminal Instrument





#### **Roadmap of Antenna**

_	2012H1	2012H	H2 2	2013H1	2013H2
Broadband Antenna	LTE 8 channel b antenna in trial	proadband	LTE 8 cl antenna large sca	hannel broadban available in a ale	d
	Band38/39/40/34/1/2/3/4 Asymmetrical half-wave dipole		TD-SCD 1880-269	90MHz	
Miniaturized Antenna	LTE miniatur antenna progr	ized ram determined	Practical miniaturi In trial	LTE ized antenna	LTE miniaturized antenna available in a large scale
	Physical size r Technical Ind Efficiency imp	reduced icators ensured proved	Height ro Thickness 58% Gain red	educed : 50% s reduced : luced : 1.5dB	Height reduced : 50% Thickness reduced : 60% Indicators meet demands
Active Integrated Antenna		Active i program Active i unit con Transm Covera	Active integrated antenna program determined Active modules & radiation unit connected Transmission loss minimized Coverage dynamically adjusted		Key components designed 1880-1920/2010-2015MHz Cost reduced: 30%-50% Gain improved: 0.3dB
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## **TD-LTE Solutions for Operators**

Traditional Operators	Wimax Operators	Newly Developing Operators
CMCC,Vodafone, Bharti , Softbank, UK Broadband, Hi3G, DOCOMO, Deutsche Telekom, France Telecom, SaudiTelecom, FETnet, SKT, etc.	Clearwire, Yota, Witribe, etc.	RosTelecom, Antares, Devas, Vivid, Solorz, MVS, Austar, etc.
<ul> <li>Existed TDD bands</li> <li>Decrease operation cost, increase system capacity</li> <li>Evolve from CSFB to SRVCC</li> <li>Evolve from data card to handset</li> <li>TDD/FDD convergence is a trend</li> </ul>	<ul> <li>Existed TDD bands and subscribers</li> <li>Rich experience in TDD network deployment and operation</li> <li>Available TD-LTE and Wimax convergence solution</li> <li>Voice service over handsets</li> </ul>	<ul> <li>Easily get TDD bands with low cost</li> <li>Data cards for transition, or handsets directly</li> <li>SRVCC for voice solution directly</li> <li>Flexible business model, target on new market, such as VPN and smart city</li> </ul>



# Thank you!

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