TD-LTE Industry Briefing

April 10, 2015| No. 24

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April 10, 2015

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GTI Successfully Held GTI Summit in Barcelona

GTI Summit 2015, hosted by Global TD-LTE Initiative (GTI), supported by GSMA, was held on March 3rd, during the World Mobile Congress 2015, Barcelona. This summit attracted more than 500 executives globally from leading operators, vendors, service providers, media and consulting companies.

Executives from the Government and the World's Leading Organization Shared Their Views on The Trend of Global Mobile Broadband Development

Mr. Zhao Houlin, Secretary-General of ITU

'TD-LTE has shown its great advantages with its unpaired spectrum with flexibility. Lots of advantages should be promoted and used in much wider range of our communities.' He encouraged GTI to continue promoting TD-LTE and 5G in the future.

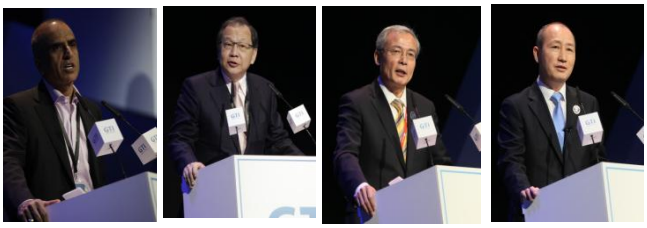
Mr. Li Li, Deputy Director General of MIIT

'Chinese government is committed to further facilitate the fast development of 4G: further promote VoLTE & RCS and TDD/FDD convergence, allocate more spectrum resources for 4G development and form a favorable environment for 4.5G and 5G development.'

Mr. Jon Fredrik Baksaas, Chairman of GSMA

'Up to now over 400 networks have been launched with more than 600 million connections. Most of these growth are coming from TDD markets. GSMA is anticipating in continuing the collaboration with GTI on VoLTE and RCS.'

Executives from Top-notch Global Operators Showed Their Progresses and Plans on Converged LTE TDD/FDD Network, VoLTE and RCS



Mr. Sunil Bharti Mittal, Chairman of Bharti Airtel

'TD-LTE has developed a very wide ecosystem. There are needs for carrier aggregation between TDD and FDD and more devices should support that. There is no doubt that India is committed to TD-LTE, we are committed to GTI.'

Dr. Rick L. Tsai, Chairman & CEO of Chunghwa Telecom

'Chunghwa Telecom has conducted the 1st FDD and TDD Converged Field trial in Taiwan last year. NCC, Taiwan regulatory agency will auction new 2.6GHz spectrum, which will enable TDD technology deployment in Taiwan.'

Mr. Sha Yuejia, Executive Vice President of China Mobile

'China Mobile has deployed the world's largest 4G network within one year. The number of 4G base stations has exceeded 700,000, and 4G subscribers have reached 100 million.'

Mr. Seong-Mok Oh, SEVP of KT

'KT is moving towards a converged FDD and TDD operator. In order to meet key requirements of upcoming 5G technology, the evolution to convergence of FDD/TDD technology is necessary.'

GTI Successfully Held GTI Summit in Barcelona

Top Vendors Expressed Their Support to TDD Development and TDD/FDD Convergence

Mr. Hans Vestberg, President and CEO of Ericsson

'LTE TDD has been successfully deployed by many operators, the convergence of LTE FDD and TDD generates new synergies which benefit both FDD and TDD and further unlocks the power of the networks.'

Mr. Paul Jacobs, Executive Chairman of Qualcomm

'LTE TDD/FDD multimode chipsets help unlock economies of scale. Qualcomm supports for LTE TDD/FDD across a range of Qualcomm® Snapdragon™ processors and modems.'

Mr. JK Shin, President and CEO of IT & Mobile Communications Division of Samsung Electronics

'Samsung has incorporated as many bands as possible with our devices for seamless global roaming between LTE FDD and TDD. For operators who have both LTE FDD and TDD networks, Samsung plans to support TDD-FDD Carrier Aggregation.'

GTI Operators and Industry Partners Officially Released The 4G Innovative Products

Release of 5-mode Low Cost Device Solutions

China Mobile, together with 5 chip vendors including Qualcomm, Marvell, MediaTek, Leadcore, Spreadtrum, officially launched €50 5-mode terminal solution, further promoting the large-scale development of 4G and accelerate the development of the global roaming with multi-mode multi-band Global Phone.

Release of Native RCS Devices

China Mobile, Samsung, HTC, Coolpad, Qualcomm, K-Touch jointly released converged communication products and solutions, which will bring fresh experience by three native icons: New Calls, New Messages, and New Contacts. In the future, the industry partners will have all the platform planted with RCS inside.

Release of TD-LTE Internet of Vehicles

China Mobile and GM OnStar jointly released the industrial cooperation in 4G Vehicle Networking. People can enjoy the 4G network data service, VoLTE service, online navigation, remote rescue and other car services when they are driving by using 4G Vehicle Networking product.

12th GTI Workshop Held in Barcelona Looking Towards 2015

The 12th GTI (Global TD-LTE Initiative) Workshop took place during Feb. 26-27, 2015 in Barcelona, Spain, gathering more than 120 industrial leaders and experts from 32 operators and 27 industrial partners and organizations to share latest progress and discuss key issues about TD-LTE commercialization.

- This time, aside from the regular plenary, the GTI workshop was reshaped into a topic-oriented structure with joint sessions focusing on LTE-A, Roaming, VoLTE (voice over LTE), 3.5GHz, RCS (rich communication suite), and business models and funding, putting stress on end-to-end subjects and issues.
- Operators were sharing updates and progress on LTE TDD/FDD convergence, carrier aggregation, and end-to-end requirements to deliver eMBMS (evolved multimedia broadcast multicast service), communicating with industrial partners about VoLTE and RCS technical and business considerations, and addressing key issues regarding 3.5GHz ecosystem and devices, multi antenna CPE, and revenue models and funding for TDD operators.
- A white paper of Business Models and Funding was also introduced at the workshop. In addition, working groups discussed and jointly drew up work plans for the year of 2015.

After the workshop, work summary and plan were reported to and approved by the GTI Steering Committee who recognized the great achievements in solving critical issues for the commercialization of TD-LTE and expected the realization of goals set for 2015.

GTI Awards 2014 Presented during MWC in Barcelona

The Global TD-LTE Initiative (GTI) Awards 2014 presentation ceremony was held on March 3rd, 2015 during the MWC in Barcelona. Awards fall into three categories including innovative technical product, innovative solution and application, and market development.

Qualcomm, Huawei and Nokia won the awards of outstanding contribution on innovative technical product, innovative solution and application, and market development respectively, due to their significant accomplishments in driving the industry. Besides, another 9 companies were granted the awards of excellence for their prominent contribution on global development of TD-LTE and LTE TDD/FDD.

Founded in 2012, the GTI Awards program aims to acknowledge achievements and success of industry players in TD-LTE ecosystem across a wide range of market segments. The GTI Awards 2014 intends to recognize outstanding contributions in LTE industry and encourage the development of innovative products, solutions and applications that address challenges faced by GTI operators.

Innovative Technical Product	Outstanding Contribution	Qualcomm
	Excellence Award	Marvell
		Rohde & Schwarz
		Skyworks
Innovative Solution and Application	Outstanding Contribution	Huawei
	Excellence Award	Ericsson
		Samsung
		ZTE
Market Development	Outstanding Contribution	Nokia
	Excellence Award	ITRI
		On Telecom
		PT Internux

3.5GHz – The Next Gold Mine of TD-LTE

-- GTI Successfully Held 3.5GHz TD-LTE Operator Session

Overview

3.5GHz TD-LTE Operator Session demonstrated the adoption of this band for TD-LTE is growing all the time. There are now 9 3.5GHz TD-LTE commercial networks and 28 3.5GHz TD-LTE networks in progress. More and more operators are transiting from WiMAX to LTE.

Keynotes

GTI: There are 9 3.5GHz TD-LTE commercial networks and 28 3.5GHz TD-LTE networks in progress.
China Mobile: China plans to assign 3.4-3.6GHz band (TDD) in 2015. It can be proven that TDD can make the 3.5GHz network competitive with high spectrum usage efficiency and 1Gbps high throughput.
SoftBank: Network rollout has begun in Japan following the award of 3.5GHz TDD spectrum to three operators.
UK Broadband: Relish's core wireless offering provides fast broadband without the hassle of installation delays, landlines or engineer visits.
Imagine: Using TD-LTE for replacing WiMAX to provide fixed line services that Imagines FWA footprint can also provide a high capacity off-load for mobile in each town or village where it is deployed.
NetSet: NetSet shared their experience about migration to TD-LTE, from existing WiMAX only, to WiMAX/TD-LTE dual mode, finally to TD-LTE only.

Panel Presentations & Discussion

Device and chipset manufacturers indicated over 30 CPE devices had existed already and that the band would be widely available in handset terminals from 2016 with a couple appearing in 2015. Demand was growing for the ecosystem to develop more rapidly and operators hoped that prices would come down further.

2015 will be the year of 3.5GHz TD-LTE, which means that anyone planning a roll-out today can be pretty confident on a rich choice of CPE devices and handsets by the time their network is ready for service!

Optus' 4 carriers (3 TDD＋1 FDD) CA Trials Achieve 480Mbps on Live Network

Optus, Australia, recently announced download speeds of 480 megabits per second (Mbps) were achieved in its live network by aggregating four separate 4G carriers – three TDD carriers and one FDD carrier – to a single user device.

Optus also tested TDD carrier aggregation in conjunction with "4x4 MIMO", achieving a peak download speed of 415Mbps to a single device using just 40MHz of spectrum.

The capability was achieved on Optus' 'Gigasites' – among the world's biggest and fastest live network sites. Last year, Optus created a world record total site throughput of 2.3Gbps on one of its 'Gigasites' to demonstrate the total capacity of all of Optus' spectrum assets from 700MHz to 3500MHz.

Live Network Tests – Aggregation of 4 Carriers

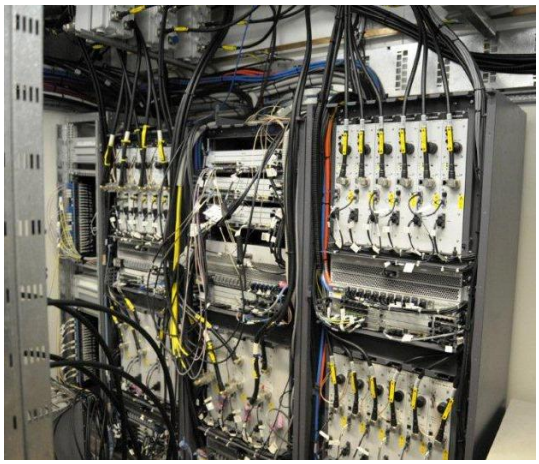
The 480Mbps speed was achieved using a prototype 'Category 8' 4G user device at an indoor live network site at Optus' headquarters in Sydney. The spectrum combination comprised three 20MHz TDD channels (2300MHz) and one 20MHz paired FDD channel (2600MHz).

To further prove the 'real world' capability of this technology, Optus repeated the tests outdoors using its 'Gigasite' in Newcastle (about 160km north of Sydney). The peak download speed achieved outdoors was 478Mbps with typical speeds ranging from 350 to 450Mbps at various locations around the base station.

'Gigasite' at Lambton, north of Sydney

Live Network Tests – Aggregation of Two "4x4 MIMO" Carriers

Optus also tested the aggregation of two TDD 2300MHz carriers where both carriers used '4x4 MIMO' technology, which approximately doubles the peak speed and capacity of a single 4G channel. By coupling this with the aggregation of two carriers, peak speeds are increased by up to a factor of four compared to a single 2×2 MIMO 4G channel.



Indoors at the Optus headquarter' site, a peak download speed of 415Mbps was achieved, which is close to the theoretical peak possible with this technology. At Optus' 'Gigasite' in Newcastle, a peak speed of 350Mbps was achieved to a single user device, with speeds averaging 320Mbps close to the base station, using only 40MHz of spectrum.

Optus worked with its vendor partner Huawei to conduct both tests.

Huawei 'Gigasite' Equipment

Nokia, China Mobile, Qualcomm Triple TD-LTE Throughput @ MWC 2015

At Mobile World Congress 2015, Nokia and China Mobile jointly demonstrated live TD-LTE-Advanced downlink 3 component carrier (CC) carrier aggregation on a commercial Qualcomm chipset to deliver 330Mbps peak throughput - 3 times more throughput than typical TD-LTE networks of today.

Imagine you want to download your favorite TV show when you are stuck in a train or at the airport. Imagine that you don't have to search for WiFi hotspot for downloading that important email with large presentation. Imagine your speed increased 3 times.

Offering more gigabytes/month/subscriber is one way to make LTE investment profitable. Delivering more throughput per device not only enables more usage but it also makes subscribers happy.

'Consumers will get three times more throughput from the progress of 3 carrier aggregation and 60MHz TDD spectrum,' said Huang Yuhong, Vice President of China Mobile Research Institute. 'Our existing network infrastructure has been enabled to support this in Band 41 and it will be introduced with a software upgrade.'

3-Carrier Aggregation = 330Mbps

Nokia and China Mobile achieved just that with 3-carrier aggregation and a commercial chipset from Qualcomm. Today's typical TD-LTE networks featuring a '3GPP configuration 2' can deliver peak throughput of 110Mbps. With 3 carrier aggregation, the same TD-LTE-Advanced network can deliver a peak throughput of 330Mbps.

Nokia and China Mobile used 60MHz of TDD Band 41 (2.6GHz) spectrum. With 330Mbps peak download throughput, subscribers no longer have to find a WiFi hotspot to meet their downloading needs. In fact, we hear that many WiFi hotspot owners currently use China Mobile's TD-LTE for backhaul, which means in the future they'll benefit also.

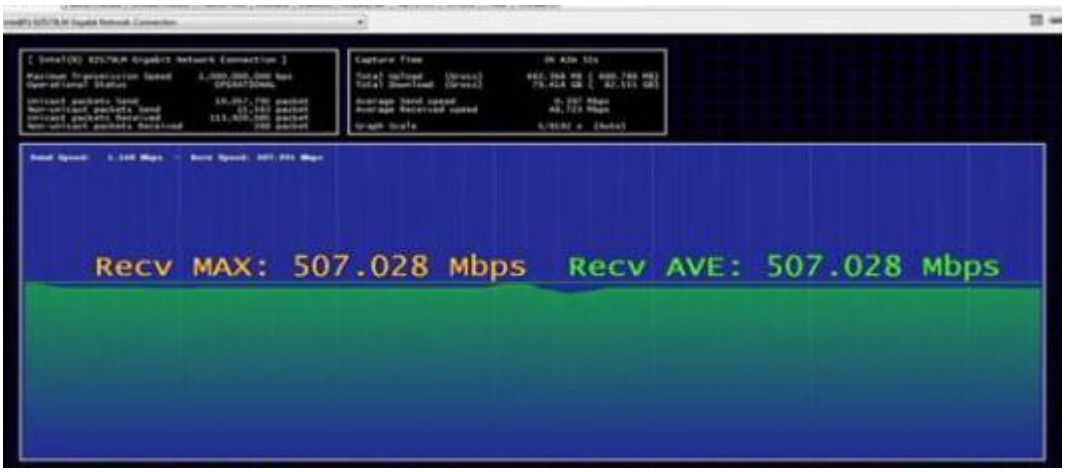
The use of commercial chipset from Qualcomm suggests that smart phones with TD-LTE-Advanced 3-Carrier Aggregation are now on the horizon. This also gives a green light to app developers who've been waiting for high download speeds to appear as well as to businesses that want to use speed as a differentiator.

Ukko Networks Demonstrates TDD LTE-A in Helsinki, Aiming to Build the Fastest Network in Europe

Ukko Networks, a mobile data operator in Finland, announced the successful completion of a TDD LTE-A demonstration in their Helsinki lab based on a 2.6GHz band. The demonstration showed a peak throughput of over 507Mbps, which is currently the fastest in Europe.

The event included a demonstration of throughput of 507Mbps with a 2*20MHz carrier aggregation, as well as several application services such as a video surveillance solution, which will develop the enterprise market using the TDD spectrum. Moreover, Huawei showcased its Mate7 smart phone which is capable of handling a throughput of 200Mbps. Ukko Networks also showed this cutting edge technology to their own customers.

Last month, Ukko Networks launched the world's first LTE 450MHz network in Finland. The network covers an astounding 99.98% of the country's population, effectively providing the largest LTE coverage in Finland. Moreover, Ukko Networks also plans to utilize the 50MHz LTE TDD frequency resource on the 2.6GHz band. Along with LTE-A technology, like CA and 4*4 MIMO, the LTE TDD network can provide a peak throughput of 507Mbps to a single user. By using a 450MHz and 2.6GHz LTE network, Ukko Networks will provide the widest LTE coverage and highest LTE throughput of any LTE network in Europe.

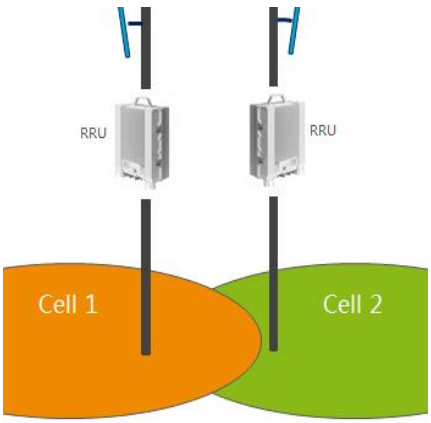


'Ukko Networks is clearly in a great position in the Finnish mobile market landscape, especially from a frequency resources point of view. After launching the best coverage network using LTE 450MHz technology, we will launch the LTE TDD 2.6GHz network, which aims to be the fastest network in Europe. It gives us high capacity and new added-value for this frequency in the use of mobile data. ' said Antti Pellinen, CEO of Ukko Networks.

China Mobile and Ericsson have Successfully Completed LTE-Advanced TDD Trial in 3.5GHz Band in China

China Mobile and Ericsson have successfully used the 3.5GHz frequency band for testing data speeds, mobility and TDD carrier aggregation. This LTE-Advanced TDD trial, which was jointly carried out in January 2015 in China, is using Ericsson's equipment.

The first phase of the trials was performed at Ericsson's lab in Beijing. *Speeds of DL 223Mbps* were achieved by using carrier aggregation (20MHz@3.5GHz band and 20MHz@2.6GHz band), thereby confirming the potential of 3.5GHz TDD technology to increase mobile broadband capacity. Handover was also successfully performed during the test, thus confirming the mobility capability and potential performance credibility. The second phase is the field trial which has been carried out in February 2015 using China Mobile's live mobile network and based on Ericsson's 3.5GHz TDD radio equipment.



This TDD testing demonstrated that the 3.5GHz band can be successfully used both in stand-alone mode and in aggregation with existing commercial spectrum band to provide advanced mobile broadband services using a TDD access scheme for high peak data rate applications to enhance the user experience and operator's competitiveness.

This project has provided an opportunity to gather essential experience on the ways that future multi-frequency networks could be optimized from cost and performance perspectives. One of the most rewarding results of the first step of this trial is the confirmation that the existing, lower-band network resources can further utilize 3.5GHz as addition to the legacy network.

This TDD trial also demonstrated that the 3.5GHz spectrum provides a good solution for MBB end user performance improvements and capacity expansion, which can satisfy future consumer needs. Ericsson is eager to support China Mobile on the trials in the future and jointly push for the TDD industry eco-system development.

The successful testing results re-confirm that the TDD access scheme is a promising solution for the 3.5GHz band to provide mobile operators with the capability for advanced services and applications. 3.5GHz coverage can also be improved with carrier aggregation of lower frequency bands. The maturity of the 3.5GHz LTE-Advanced TDD ecosystem can address the need for increases in spectrum and promote the development of mobile broadband.

3.5GHz TD-LTE is Driving the Need for More Advanced Antenna Technologies

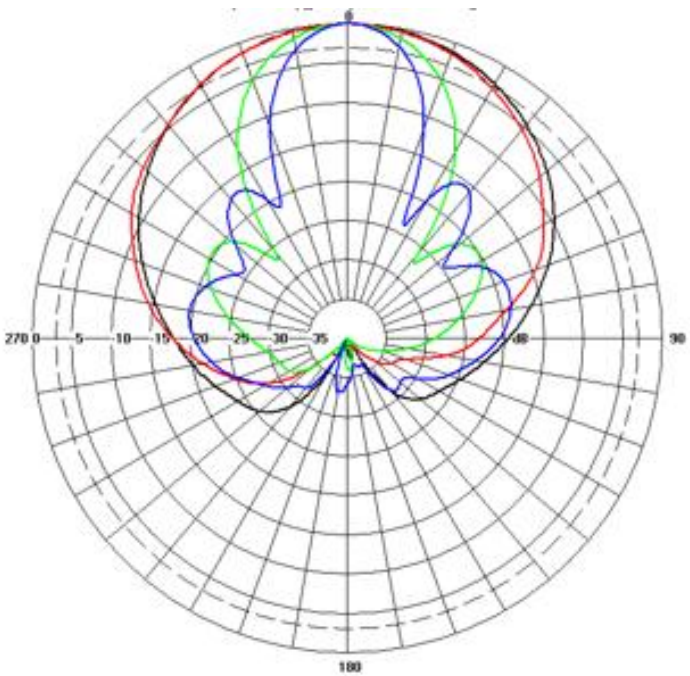
The use of the 3.5GHz band for TD-LTE is now gathering pace, both as a stand-alone frequency, and in aggregation with existing commercial spectrum including 2.5GHz.

Providing 200MHz of spectrum, 3.5GHz addresses more than 50% of TDD licensees, and is expected to pay a key role in meeting future traffic demands and in improving the overall user experience.

With targets of >1Gbps this is driving the need for more advanced antenna technologies.

Recently launched by Alpha Wireless is a portfolio of products of Ultra Wide Band antennas for macro cell applications which support the entire frequency band from 2300-3800MHz in a single antenna package. This makes it ideal for operators who already use 2.5GHz, and are now adding 3.5GHz.

2300-3800MHz Antenna



Antenna Patterns

Providing the following features:

- 2300-3800MHz
- 16-port with 8x8 MIMO per band or 8-port with 4x4 MIMO per band
- Independent variable tilt for 2.5GHz and 3.5GHz bands
- Optimized side lobe suppression (>20dB) to minimize overall network interference
- 10° of variable electrical down tilt within 0° -25° range
- Smallest form factor to simplify existing antenna replacement
- Beam widths of 30° or 65° (two models)

ALPHA WIRELESS

Huawei Released 3.5GHz TDD LTE-A Device

Huawei released 3.5GHz LTE-A device at the 3.5GHz LTE TDD Roundtable @ MWC 2015.

The 3.5GHz TDD LTE-A device was showcased @ MWC 2015

The device, supporting 2-carrier aggregation with total downlink speed of over 220Mbps, represents the end-to-end commercialization of LTE-A at the 3.5GHz band.

3.5GHz spectrum is defined by 3GPP as TDD Band 42 and Band 43 with 400MHz of bandwidth from 3400~3800MHz. In relation to the constant growth in mobile data traffic, the value of 3.5GHz spectrum is increasingly being recognized worldwide. In Japan, the top 3 operators were each recently awarded 40MHz of spectrum towards their respective TDD LTE-A deployments last December.

In the Americas, operators in Canada, Argentina and Peru are currently rolling out networks in their areas. While operators in Italy, Spain and Norway have all expressed interest in using TDD LTE-A to provide fiber-like wireless broadband access in suburban and rural areas. In Asia Pacific, the world's largest 3.5GHz LTE network is being deployed in the Philippines. And in Bahrain, the world's first nationwide 3.5GHz commercial network is being built.

Datang Mobile Released Pre-Commercial TDD LTE-Hi Small Cell in 3.5GHz

Datang Mobile released the TDD LTE-Hi small cell in 3.5GHz jointly with China Mobile, in Beijing, January 12th 2015.

The release of LTE-Hi small cell based on TD-LTE shows advanced features, including dynamic TDD, synchronization with radio interface, inter/intra-frequency handover, peak data rate with single/dual carriers, etc..

With dynamic TDD, it allows to dynamically adjust the sub-frame structure configuration, i.e. TDD uplink-downlink configuration, which improves the spectrum efficiency and reduces the power consumption evidently. For example, the initial configuration of timeslot is 2U2D. When only downlink download is requested, the dynamic TDD adjusts the timeslot configuration to 1U3D, which ensures better subscriber experience, and the peak rate with single carrier to 110Mbps, that with dual carriers over 200Mbps. Besides, LTE-Hi supports the multi-hop radio interface-based synchronization, which improves the reliability and flexibility of network deployment. The LTE-Hi also supports the inter/intra-frequency handover, which guarantees the consistent service.

The demonstration shows the progress on the TDD LTE-Hi industrialization, and promises the application of LTE-Hi based on TD-LTE to indoor and hotspot coverage in the future wireless communication systems.

Huawei Announces The Commercialization of Fiber-like Wireless Solutions WTTx

Huawei announces the commercialization of its WTTx (Wireless Fiber to the X) solution based on LTE TDD technology @ Mobile World Congress 2015 in Barcelona.

WTTx, as is FTTx, is a broadband access solution using LTE TDD technology. As for WTTx, Huawei will commercialize 4*4MIMO (multiple input multiple output) and 2CC Carrier Aggregation to offer peak cell rates of over 400Mbps. Furthermore, with its multi-antenna technology and high gain CPE, WTTx offers a larger coverage radius, making the radius of 3.5GHz band comparable to that of 3G at 2.1GHz. WTTx also enables a wide range of services such as video broadcasting, VoIP, and VPN (virtual private network), enhancing an operator's ARPU (average revenue per user).

WTTx features quick deployment and enables easy plug-and-play installation. For instance, an end user can purchase a CPE device at an operator's business center, and access high speed internet simply by powering-up the device at home, making the buying experience quick and easy while reducing operational costs. By using an array of LTE-A technologies, WTTx reduces per-bit data cost, making the wireless broadband business much more profitable. The WTTx solution has now attracted interest for commercial deployment from fixed operators, mobile operators as well as from greenfield operators worldwide.

Huawei will provide devices supporting both downlink 4*4MIMO and 2CC carrier aggregation in the 2nd half of 2015 for over 400Mbps. Additional 4.5G technologies, such as downlink 8*8MIMO, 4-carrier aggregation as well as 256QAM (Quadrature Amplitude Modulation) will also be introduced to WTTx soon. This series of new technologies are expected to bring 250% spectrum efficiency gain, and provide a peak connecting rate of up to 1Gbps.

Progress of TD-LTE Terminal Test Standard

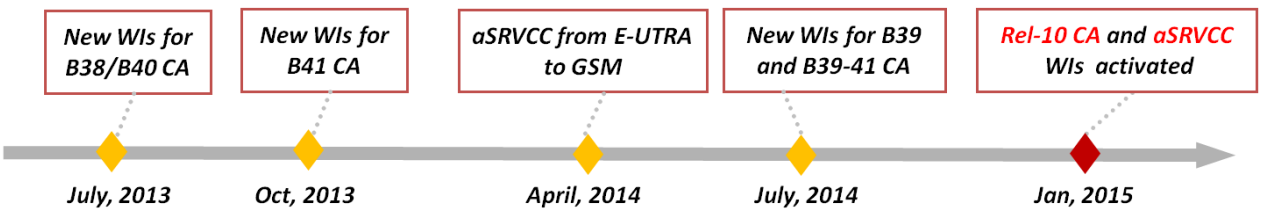
GCF (Global Certification Forum)

TD-LTE Rel-10 Work Items made significant progress

7 TD-LTE Carrier Aggregation and VoLTE WIs *were activated in GCF*

The main progress till CAG#41 meeting:

- Rel-10 E-UTRA Carrier Aggregation Work Items for B40, B41 Intra-band Contiguous CA and B39-B41 Inter-band CA were activated, as a big step for TD-LTE CA testing.
- Work Items of Single Radio Voice Call Continuity in alerting phase (aSRVCC) from TD-LTE to GSM were activated, a key feature for VoLTE device to support.
- Validations for more Rel-10/11 Work Items, i.e. Rel-10 LTE Enhancements (WI-177), TDD additional special sub-frame configuration for LTE Rel-11 (WI-191) are ongoing.



Up to now 34 TD-LTE Work Items *activated till CAG#41 meeting.*

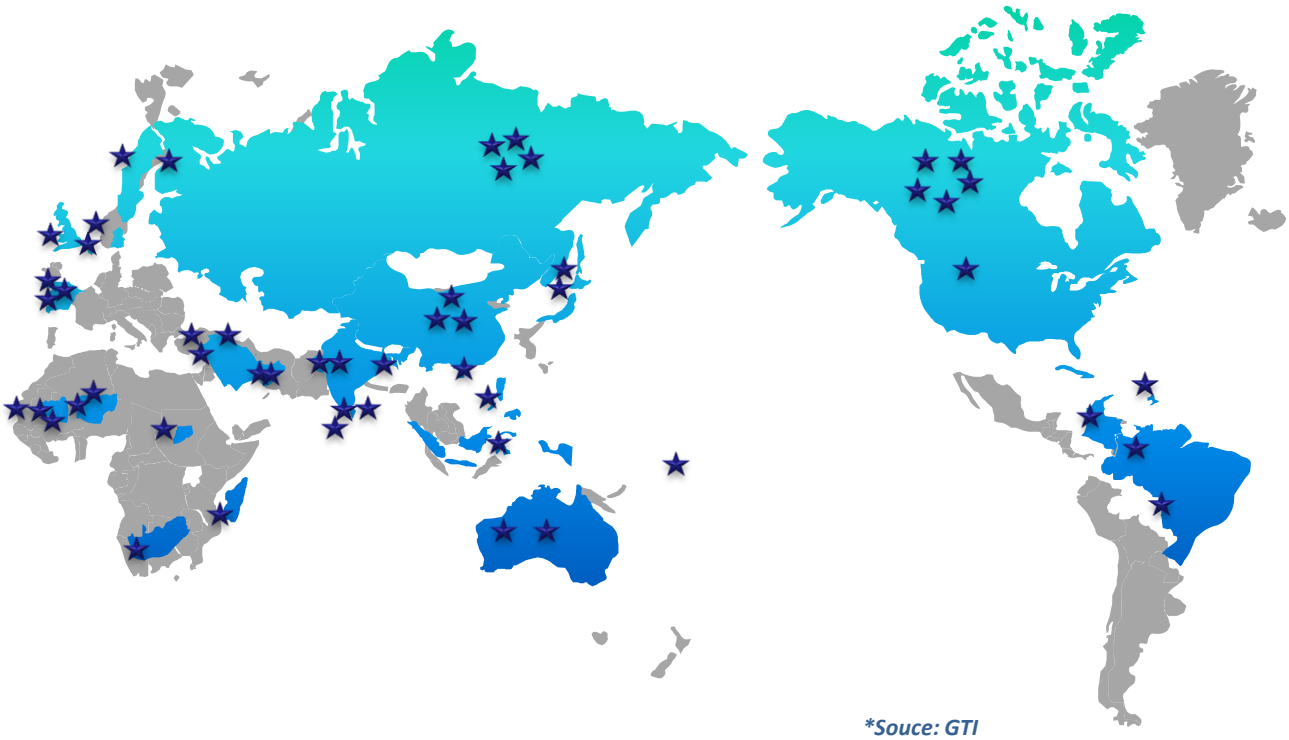
WI-090-38	WI-090-39	WI-090-40	WI-090-41
WI-091-38	WI-091-39	WI-091-40	WI-091-41
WI-092-38	WI-092-39	WI-092-40	WI-092-41
WI-095	WI-096	WI-097	WI-099
WI-139	WI-150-38	WI-150-39	WI-150-40
WI-150-41	WI-151-40	WI-151-41	WI-156
WI-169	WI-173	WI-174	WI-162-CA_40C
WI-162-CA_41C	WI-162-CA _39A-41A	WI-172-38	WI-172-39
WI-172-40	WI-172-41	……	

TD-LTE Global Market Overview

Global Deployment as the Mainstream Mobile Broadband Technology

***52** TD-LTE commercial networks have been launched*

Additionally, over 83 TD-LTE commercial networks are in progress or planned



**Souce: GTI*

** By the end of 2014*

LTE Multi-mode Multi-band Terminals Have Reached Full Maturity

230+ suppliers have launched 1387+ TD-LTE terminals, including 892+ TD-LTE Smartphones.

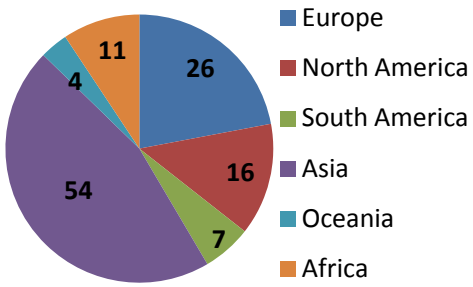
TD-LTE Device Type	Quantity	TD-LTE Device Type	Quantity
USB modems	89	*Smartphones*	892+
MiFi/CPE	326	*Mobile Tablets*	33

**Source: GTI, GSA, TDIA*

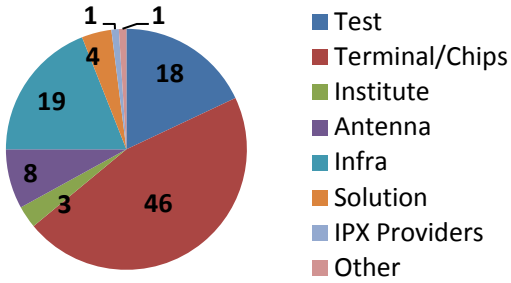
GTI Development Overview

118 Operators and 100 Partners Joined GTI by March 2015

118 Operators



100 Industry Partners



GTI Established 4 Working Groups, 1 Interest Group Covering 12 Task Forces and 1 Core Team

GTI Technical & Product Work

- **Network WG** — Chair: Adam Pollard (VF)
  - HetNet
  - Converged LTE TDD/FDD
  - Network Performance
  - VoLTE
- **Terminal WG** — Chair: Jiang Haitao (CMCC), Co-Chair: Herkole Sava (Sprint)
  - MMMB
  - Voice Solution
  - IOT & Testing
  - Inter-Mode Mobility
- **Spectrum Group** — Chair: Liu Guangyi (CMCC)
  - Spectrum Consulting
- **3.5GHz Interest Group** — Chair: Paul Berriman (PCCW)
  - 3.5GHz Terminal
- **Business & Service WG** — Chair: Kathleen Leach (Sprint), Co-Chair: Satoshi Fujii (SBM)
  - Business Models and Funding for TDD perators
  - Global Roaming Core Team
  - Innovative Industry Application and Enterprise Business

GTI Activities

2015	Feb/Mar	Apr/May	Jun/Jul	Oct/Nov
Summit (2)	Mar. 3 (MWC) Barcelona, Spain **GTI Summit**		Jul. (MWC) Shanghai, China **GTI Asia Conference**	
Workshop (4)	Feb. 26-27 Barcelona, Spain **The 12th GTI Workshop**		Jul. 13-14 (MWC) Shanghai, China **The 13th GTI Workshop**	Oct. (ITU Telecom World) Budapest, Hungary **The 14th GTI Workshop** **5th TD-LTE Technology & Spectrum Workshop**
Training (1)			Jul. China **The 1st GTI Training Club**	
Exhibition (3)	Mar. 2-5 (MWC) **Barcelona, Spain**		Jul. 15-17 (MWC) **Shanghai, China**	Oct. 12-15 (ITU Telecom World) **Budapest, Hungary**

Appendix 1 –Welcome to Join GTI (to operators)

More Information about GTI

To find out more information about GTI, please visit www.lte-tdd.org or email us.

How to Join GTI

GTI Operators (with TDD Spectrum)

1. Fill out the application form (download from http://www.lte-tdd.org/joinUs.html), and return to GTI Secretariat: GTI_Secretariat_list@lte-tdd.org and/or GTI@lte-tdd.org;

2. Sign the Accession Form and return the signed copy to 5 initiators;

3. Once the participation process finishes, a GTI website account and associated password will be assigned to the new participant.

GTI Observers (without TDD Spectrum)

1. Fill out the application form (download from http://www.lte-tdd.org/joinUs.html), and return to GTI Secretariat: GTI_Secretariat_list@lte-tdd.org and/or GTI@lte-tdd.org;

2. Sign the declaration form and return the hard copy to GTI Secretariat;

3. Once the participation process finishes, a GTI website account and associated password will be assigned to the new participant.

Appendix 2 –Welcome to Join GTI Partner Forum(to non-operators)

More Information about GTI Partner Forum

To find out more information about GTI and GTI Partner Forum, please visit www.lte-tdd.org or email us.

How to Join GTI Partner Forum

1. Fill out the application form (download from http://www.lte-tdd.org/joinUs.html), and return to GTI Secretariat:
GTI_Secretariat_list@lte-tdd.org and/or GTI@lte-tdd.org; GTI Secretariat and Working Group Chairmen will review;

2. Sign the Declaration Form and return the signed hard copy to GTI Secretariat;

3. Once the participation process finishes, a GTI website account and associated password will be assigned to the new participant.

CONTACT GTI:

If you have any questions, comments, suggestions regarding TD-LTE or general enquiries regarding GTI, please contact:

GTI@lte-tdd.org