

Title: Liaison on proposal of Supplemental Downlink for TD-LTE
Source: Global TD-LTE Initiative (GTI)
To: 3GPP TSG RAN
Contact: GTI Secretariat: gti_secretariat_list@lte-tdd.org;

A proposal utilizing a TDD band (e.g. 3.5GHz) only for Supplemental Downlink traffic had been presented at last RAN#63 meeting, aiming to resolve extremely heavy downlink traffic case in some region on traditional FDD network with relaxing network synchronization [1]. However, the consequences of introducing TDD band with downlink only will actually damage the healthy developing TD-LTE ecosystem and impact the legacy TD-LTE network development. As mentioned in [2], at the Mobile World Congress, held in Barcelona on 24-27 February 2014, mobile operators highlighted an interesting dichotomy for LTE as a solution – the flexibility of the technology creates a wide range of hardware deployment options, but the unprecedented ability of LTE to manage spectrum threatens to maintain fair competition and create barriers to worldwide implementation and roaming.

GTI would like to convey the views to 3GPP on Supplemental Downlink applications for TD-LTE:

- Supplemental Downlink will lead to unfair competition on deployment choice, which restricts the industrial development and also impacts on inter-operator coexistence in the same TDD band. Based on analyses, TD-LTE deployment flexibility may be greatly reduced due to inter-operator coexistence issue caused by Supplemental Downlink.
- Since only CA could be used if 10:0 introduced, and FDD/TDD have to be closely integrated together, the flexibility for utilizing TDD spectrum, e.g. for macro and small cell deployment with non-ideal backhaul, is restricted. Furthermore, some other features with TDD channel reciprocity will also be lost.
- Supplemental Downlink operation does not support standalone deployments which will cause the backward compatibility issue to those legacy non-CA capable UEs and increase the cost for CA capability. Furthermore, considering CA-capable UEs have different band combination capabilities in different regions, even CA-capable UEs potentially have the roaming issue as well.

TDD spectrum allocation with wider bandwidth (e.g. in the 3.5GHz) is beneficial for improving mobile broadband experience and enlarging the global market scale. TDD technology has advantages of flexible spectrum utilization, adaptive UL/DL configuration, advanced multi-antenna technologies with good and robust performance with less feedback, etc.

GTI shares the statement in [2] that mobile network operators can use the flexibility of LTE to manage and utilise spectrum to solve coverage, capacity and density problems in ways never presented before. The potential gain of the DL only configuration in terms the number of resources available for downlink transmission is limited compared to the existing TDD UL-DL configurations, and the ability of TD-LTE to alter UL-DL resource allocations with existing UL-DL configurations to adapt to non-symmetrical data flows has already been a tool in the operator's kit.

Based on above, a clear majority of GTI operators* strongly recommend 3GPP will not introduce such kind of configurations, e.g. 10:0, for TD-LTE system at this stage.

Note: Vodafone's view is different to those in this document and Vodafone will give their response in 3GPP separately.

References

- [1] RP-140213, New Work Item Description: Supplemental Downlink for TD-LTE, NTT DOCOMO, INC, RAN #63, Mar. 2014.
- [2] See Analysys Mason's: LTE's Supplemental Downlink capability solves one problem, but could create others. Available at <http://www.analysismason.com/Research/Content/Comments/LTE-Supplemental-Downlink-Mar2014-RDTN0/>

Appendix**About GTI:**

GTI is a virtual open platform to advocate cooperation among global operators to promote TD-LTE. It was kicked off in February 2011 by Bhati Airtel, China Mobile, Sprint (Clearwire), SoftBank Mobile, and Vodafone. By the end of April 2014, GTI has 108 global operator members and 86 partners.

GTI Website: <http://lte-tdd.org/>

Status of Global TD-LTE Market:

As for May 2014, there are 37 commercial TD-LTE networks from 23 countries, over 40 networks are in trial status and over 400 terminals available from 73 vendors. According to GTI estimation, there will be more than 800,000 TD-LTE base stations covering 3,000,000,000 global population, and the shipment of TD-LTE terminal will be 150,000,000 by the end of 2014.