**Background and analysis for the “famous sentence” in 38.101-3**

**Background**

**Phase 1:**

The “famous sentence”, come from the intention that UE do not equip a full-power PA may declare PC2 for SA NR by means of TxD. Vendors want to keep the possibility of non-full power PA implementation for PC2 in Rel-15 (This point itself may also controversial). However, since there is no separate capability for NR within ENDC for Rel-15, without further clarification, one can only assume same power class between NR SA and NR within EN-DC. Then it comes the “famous sentence”, to provide UE this flexibility. However, the descriptions were very indirect and involves many parameters, since there is no sign/capability of architecture.

**Phase 2:**

After a while, and the “famous sentence” was stable. Ericsson raise the proposal to revise Pcmax related parameters to achieve more precise PHR reporting, to better adapt the general part “famous sentence”. Later Huawei has slightly different ones that always assumes a “relaxation” for lower power class. However, none of them could be agreed yet. In fact, Ericsson’s proposal is always slightly more popular because of accuracy.

**Phase 3:**

In RAN4#99, with newly introduced TxD capability used by Rel-15, there is a possible new way to signal architecture by vivo, that is: A UE without TxD capability has to have a full power PA for Rel-15. This was also means TxD capability UE may not have full-power PA. This is the first time that this no-full power PA architecture can be implicitly signaled. To utilize this, the original refinement is the applicability of this “famous sentence” can be greatly reduced, while keeping the implementation flexiblity. This is the way vivo clarify this and it comes original endorsed CR in last meeting.(same as 3013)

**Phase 4:**

In RAN4#100e, Huawei(4513) and Ericsson(2829) adapt their CRs with endorsed CR 3013 in different ways.

Ericsson(2829) is still depended general part (3013) description. It would still depend on the UE declaration of its achievable power class to calculate Pcmax, and does not use TxD capability in the Pcmax part. This is more precise and wouldn’t cause overkill for TxD enabled UE, because txD enable UE can also have full power PA. This option has to be combined with 3013.

Huawei(4513) is also revising similar part to Ericsson, but it directly utilized the TxD capability as a reference to the architecture restriction. After second thoughts, this may be able to by pass the more complicated general description, with a price of some more over kill. In another word, 4513 would assume any UE with TxD capability also do not have full power PA, and only can be configured to PC3 for NR within EN-DC even it declared itself as PC2 for NR. This in fact involves more overkill compared to 3013+2829, which still keeps the possibility of configured to PC2 if full power PA is still equipped.

**Analysis for RAN4#100e:**

Even if Huawei(4513) seems not precise, it do have the potential to bring further simplification or even replace the complicated conditions in general part, because now it directly use TxD signaling as a sign for architecture in Pcmax part. The overall scheme may be more simplified. Furthermore, since there supposed to be not too many Rel-15 UE’s would support TxD, the actual degradation may be very small.

The ZTE’s discussion (2318) is also involves similar compromise discussion, though the proposals not precisely the same. (e.g. Still keep the general part with modified wording).

Conclusion:

Qualcomm’s proposal is totally remove the “famous sentence” and accept Huawei(4513), this may be the best way in current situation.