**[100b-e-NR-5G\_V2X\_NRSL-SYNC-04]**

**Email discussion/approval related to sync timing**

[100b-e-NR-5G\_V2X\_NRSL-SYNC-04] Email discussion/approval related to

* Slot number/sidelink timing derived from GNSS
* Resource sets for S-SSB transmission
* Timing determination of S-SSB

(a,k.a. issues 5,6,7) by 4/24, with potential TPs by 4/29 (CATT, Teng)

**Issue 5 Slot number/sidelink timing derived from GNSS**

***Proposal 7: When UE selects GNSS as the synchronization reference and offsetDFN is provided, the following TP is supported.***

**------------------------------------------------------ Start of Draft TP of 38.331--------------------------------------------------**

**5.8.12 DFN derivation form GNSS**

When the UE selects GNSS as the synchronization reference source, the DFN used for NR sidelink communication is derived from the current UTC time, by the following formulae:

*DFN*= Floor (0.1\*0.001\* (*Tcurrent* – *Tref – offsetDFN*)) mod 1024

*SubframeNumber*= Floor (0.001\*(*Tcurrent* –*Tref – offsetDFN)*) mod 10

*SlotNumber=* Floor (0.001\*(*Tcurrent – Tref – OffsetDFN*)\*2μ) mod 2μ

Where:

***Tcurrent*** is the current UTC time that obtained from GNSS. This value is expressed in ~~milliseconds~~ microseconds;

***Tref*** is the reference UTC time 00:00:00 on Gregorian calendar date 1 January, 1900 (midnight between Thursday, December 31, 1899 and Friday, January 1, 1900). This value is expressed in ~~milliseconds~~ microseconds;

***OffsetDFN*** is the value *sl-OffsetDFN* if configured, otherwise it is zero. This value is expressed in ~~milliseconds~~ microseconds;

μ=0/1/2/3 corresponding to the 15/30/60/120 khz SCS for SL respectively.

**-------------------------------------------------------- End of Draft TP of 38.331-------------------------------------------------**

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| **Company** | **Views** |
| Sharp | The unit of Tcurrent/Tref/offsetDFN should be millisecond (i.e. same as in LTE V2X) rather than microsecond. The reason is that Tcurrent, Tref and offsetDFN are decimal values in LTE V2X, with offsetDFN corresponding to values from {0, 0.001, 0.002, …} (and these offsetDFN values would have make no difference to the calculation and thus make no sense if Tcurrent and Tref would have only taken integer values). Therefore, changing the unit to microsecond and multiplying 0.001 does not make the calculation any more precise. Another reason not to change the unit is to maintain the compatibility with LTE V2X, e.g. a UE obtaining the “offsetDFN” parameter from either a gNB or an eNB should be able to derive the timing with the same formulae. |
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**Issue 7 Resource sets for S-SSB transmission**

***Proposal 9: The number of synchronization resource set is same as LTE-V2X. How to use the sync resource set follows the same mechanism as LTE-V2X.***

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| **Company** | **Views** |
| Sharp | Fine with the proposal. |
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**Issue 8 Timing determination of S-SSB**

Description: A UE should be able to determine the frame timing, slot timing, and symbol timing from a received S-SSB, and the specification reflecting this aspect is still not complete.

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| **Company** | **Views** |
| Sharp | We don’t think there is any unsolved issue here. The SFN and slot index are already carried in MIBSL, and with these two parameters the UE can derive the slot index (denoted by $x$ here) within the S-SSB period containing the received S-SSB, and then determines $i\_{S-SSB}$ according to $x=N\_{offset}^{S-SSB}+N\_{interval}^{S-SSB}⋅i\_{S-SSB}$. The proposed equation for $i\_{S-SSB}$ is redundant and unnecessary. |
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