3GPP TSG-RAN WG2 Meeting #116bis-e R2-220xxxx

Online Meeting, Jan 17th – 25th, 2022

**Agenda item: 8.11.6**

**Source: CATT**

**Title: [AT116bis-e][613][POS] BDS and NavIC CRs (CATT)**

**WID/SID: NR\_pos\_enh-Core - Release 17**

**Document for: Discussion and Agreement**

# 1 Introduction

This document is to kick off the following email discussion:

 [AT116bis-e][613][POS] BDS and NavIC CRs (CATT)

      Scope: Review the draft CRs in R2-2200298/R2-2201070/R2-2200433, collect any comments, and revise the CRs if needed.

      Intended outcome: Endorsed draft CRs (without CB)

      Deadline:  Friday 2022-01-21 1600 UTC

In this email discussion the following contributions related with A-GNSS enhancements, i.e., including support of BDS B2a signal, BDS B3I signal and support of NavIC are discussed to decide if these contributions or proposals in the contributions can be agreed.

1. [R2-2200298](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105143.zip) B2a and B3I signal in BDS system in A-GNSS CATT, CAICT draftCR Rel-17 37.355 16.7.0 B NR\_pos\_enh-Core
2. [R2-2201070](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105972.zip) Impacts of NavIC in NR RRC Ericsson discussion Rel-17
3. [R2-2200433](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105143.zip) Draft running CR for stage2 spec for NavIC in R17 positioning Huawei, Hisilicon draftCR Rel-17 38.305 16.6.0 B NR\_pos\_enh-Core

# 2 Contact Information

Respondents to the email discussion are kindly asked to fill in the following table.

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| --- | --- |
| Company | Contact: Name (E-mail) |
| CATT | Jianxiang Li (lijianxiang@catt.cn) |
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# 3 Discussion

## 3.1 Impacts of BDS B2a signal and B3I signal in TS 37.355

[R2-2200298](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105143.zip) introduces the global B2a signal and B3I signal in the network-assisted BDS System, as part of A-GNSS positioning methods in LTE and NR to support higher accuracy multiple-frequency global positioning service. At the RAN2#116 meeting, R2-2109487 which introduced B2a signal in BDS system in A-GNSS, and R2-2109488 which introduced B3I signal in BDS system in A-GNSS were both endorsed.

R[2-2111504](file:///E%3A%5CWORK%5C1%203GPP%5CMeeting%5CRAN2%20116-e%5C2%20During%5CDocs%5CR2-2111504.zip) Introduction of B2a signal in BDS system in A-GNSS CATT, CAICT draftCR Rel-17 37.355 16.6.0 B NR\_pos\_enh-Core R2-2107140

* Endorsed

R[2-2109488](file:///E%3A%5CWORK%5C1%203GPP%5CMeeting%5CRAN2%20116-e%5C2%20During%5CDocs%5CR2-2109488.zip) Introduction of B3I signal in BDS system in A-GNSS CATT, CAICT draftCR Rel-17 37.355 16.6.0 B NR\_pos\_enh-Core R2-2107141

* Endorsed

[R2-2200298](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105143.zip) merged the changes affected by introduction of B3I signal and B2a signal based on the latest version of spec TS 37.355.

**Rapporteur’s comments**: This is an essential correction for the introduction of BDS B2a and B3I signal in the TS 37.355. Network-assisted BDS positioning method provides assistant data to support a higher accuracy multiple-frequency global positioning service.

**Question 1**: Please provide comments below regarding the merged changes affected by introduction of B3I signal and B2a signal.

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| Company | Comments |
| CATT  | Agree the merged changes. |
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**Summary:**

**To be updated: Proposal 1: RAN2 to agree the essential corrections for the introduction of BDS B2a and B3I signal in the TS 37.355 in Rel-17.**

## 3.2 Impacts of NavIC in NR RRC

[R2-2201070](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105972.zip) provides the solution related with the support of NavIC in NR RRC protocol. The following two SIBs are suggested to be added in the PosSystemInformation-r16-IEs, PosSI-SchedulingInfo and DedicatedSIBRequest:

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| --- | --- |
| *posSibType2-24* | *NavIC-DifferentialCorrections* |
| *posSibType2-25* | *NavIC-GridModelParameter* |

**Rapporteur’s comments**:

The changes impacting RRC is primarily to add the NavIC SIBs for broadcast.

**Question 2**: Please provide your views on adding the above NavIC posSIBs in RRC protocol.

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| Company | Comments |
| CATT | Some comments on the ASN.1 format: [[ posSib2-24-r17 SIBpos-r16, posSib2-25-r17 SIBpos-r16 ]] },For IE PosSystemInformation-r16-IEs, in the ASN.1, the tabulator key should be used instead of the space bar at the beginning of each line. The new added IE posSib2-24-r17 and posSib2-24-r17 should be aligned with other posSIBs. posSibType5-1,posSibType6-1, posSibType6-2, posSibType6-3,... posSib2-24, posSib2-25 },For IE PosSI-SchedulingInfo and DedicatedSIBRequest, a comma should be added before posSib2-24. The name of posSib2-24 and posSib2-25 should be corrected to posSibType2-24 and posSibType2-24 following the naming conventions. |
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**Summary:**

**To be updated: Proposal 2: RAN2 to agree to capture NavIC posSIB additions in running RRC CR TS 38.331.**

## 3.3 Impacts of NavIC in TS 38.305

[R2-2200433](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105972.zip) provides the solution related with the support of NavIC in TS 38.305. The contribution captures the following spec impacts:

1. IRNSS Signal-In-Space (SPS) Interface Control Document (ICD) for standard positioning service version 1.1 as the reference file is added into section 2 as reference.
2. The abbreviation of NavIC is added into section 3.2.
3. NavIC is included into Regional navigation satellite systems for GNSS positioning methods. The following sections that are affected by the introduction of NavIC are pointed out and the summarized modified part:

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| Section name | Impact description |
| 4.3.2 Network-assisted GNSS methods | Navigation with Indian Constellation (NavIC) is added as one of the regional navigation satellite systems. |
| 8.1.1 General | NavIC is added as one of the supported GNSSs of the TS 38.305. |
| 8.1.2.1.3 Ionospheric Models | NavIC is added as one of the GNSSs which need Ionospheric Model assistance. |
| 8.1.2.1.5 GNSS-GNSS Time Offsets | NavIC is added as one of the GNSSs which need GNSS-GNSS Time Offsets assistance. |
| 8.1.3.3.1 LMF initiated Location Information Transfer Procedure | NavIC is added as one of the positioning methods. |

**Rapporteur’s comments**:

The changes impacting stage 2 spec is primarily to support NavIC in Rel-17 positioning.

**Question 3**: Please provide your views on adding the above NavIC impacted corrections in TS 38.305.

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| Company | Comments |
| CATT | [35] 3GPP TS 23.273: "5G System (5GS) Location Services (LCS); Stage 2".[xx] IRNSS Signal-In-Space (SPS) Interface Control Document (ICD) for standard positioning service version 1.1, August 2017.[36] IS-QZSS-L6-001, Quasi-Zenith Satellite System Interface Specification – Centimetre Level Augmentation Service, Cabinet Office, November 5, 2018.The reference file for NavIC should not be inserted between sequence number 35 and 36. It should be added as [XX].as the last reference file. |
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**Summary:**

**To be updated: Proposal 3: RAN2 to agree the essential corrections for the introduction of NavIC in the TS 38.305 in Rel-17.**

## 3.4 Any other comments

**Question 4**: please provide any additional comment; e.g. any additional impacts foreseen

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| Company | Comments |
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**Summary:**

# 4 Conclusion

Companies discussed the draft CR in R2-2105143 and impact analysis in R2-2105972 in the email discussion, here is the proposals:

**To be updated: Proposal 1: RAN2 to agree the essential corrections for the introduction of BDS B2a and B3I signal in the TS 37.355 in Rel-17.**

**To be updated: Proposal 2: RAN2 to agree to capture NavIC posSIB additions in running RRC CR TS 38.331.**

**To be updated: Proposal 3: RAN2 to agree the essential corrections for the introduction of NavIC in the TS 38.305 in Rel-17.**