**3GPP TSG-2 Meeting #R2-2203710**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **1** | **CR** | **draft** | **rev** |  | **Current version:** | **0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:***  | Introduction of NavIC for broadcast support |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_pos\_enh-Core |  | ***Date:*** | 18 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | As part of NR Rel-17 WID; (NAVigation with Indian Constellation) NavIC support is to be added in NR. In order to support the broadcast of NavIC corrections, the below two SIBs need to be added. Reference below for posSIBs can be seen in TS 37.355.

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

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| ***Summary of change:*** | * posSIB for NavIC has been added to support RRC broadcast and On-Demand SIB request
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|  |  |
| ***Consequences if not approved:*** | Broadcast of NavIC will not be supported |
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| ***Clauses affected:*** | 6.2.2, 6.3.1a |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

*Beginning of Changes*

### 6.2.2 Message definitions

#### – *CounterCheck*

The *CounterCheck* message is used by the network to indicate the current COUNT MSB values associated to each DRB and to request the UE to compare these to its COUNT MSB values and to report the comparison results to the network.

Signalling radio bearer: SRB1

RLC-SAP: AM

Logical channel: DCCH

Direction: Network to UE

<skip unmodified changes>

#### – *DedicatedSIBRequest*

The *DedicatedSIBRequest* message is used to request SIB(s) required by the UE in RRC\_CONNECTED as specified in clause 5.2.2.3.5.

Signalling radio bearer: SRB1

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to Network

*DedicatedSIBRequest message*

-- ASN1START

-- TAG-DEDICATEDSIBREQUEST-START

DedicatedSIBRequest-r16 ::= SEQUENCE {

 criticalExtensions CHOICE {

 dedicatedSIBRequest-r16 DedicatedSIBRequest-r16-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

}

DedicatedSIBRequest-r16-IEs ::= SEQUENCE {

 onDemandSIB-RequestList-r16 SEQUENCE {

 requestedSIB-List-r16 SEQUENCE (SIZE (1..maxOnDemandSIB-r16)) OF SIB-ReqInfo-r16 OPTIONAL,

 requestedPosSIB-List-r16 SEQUENCE (SIZE (1..maxOnDemandPosSIB-r16)) OF PosSIB-ReqInfo-r16 OPTIONAL

 } OPTIONAL,

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

SIB-ReqInfo-r16 ::= ENUMERATED { sib12, sib13, sib14, spare5, spare4, spare3, spare2, spare1 }

PosSIB-ReqInfo-r16 ::= SEQUENCE {

 gnss-id-r16 GNSS-ID-r16 OPTIONAL,

 sbas-id-r16 SBAS-ID-r16 OPTIONAL,

 posSibType-r16 ENUMERATED { posSibType1-1, posSibType1-2, posSibType1-3, posSibType1-4, posSibType1-5, posSibType1-6,

 posSibType1-7, posSibType1-8, posSibType2-1, posSibType2-2, posSibType2-3, posSibType2-4,

 posSibType2-5, posSibType2-6, posSibType2-7, posSibType2-8, posSibType2-9, posSibType2-10,

 posSibType2-11, posSibType2-12, posSibType2-13, posSibType2-14, posSibType2-15,

 posSibType2-16, posSibType2-17, posSibType2-18, posSibType2-19, posSibType2-20,

 posSibType2-21, posSibType2-22, posSibType2-23, posSibType3-1, posSibType4-1,

 posSibType5-1, posSibType6-1, posSibType6-2, posSibType6-3,..., posSibType2-24-v17xy,

 posSibType2-25-v17xy }

}

-- TAG-DEDICATEDSIBREQUEST-STOP

-- ASN1STOP

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| --- |
| *DedicatedSIBRequest field descriptions* |
| ***requestedSIB-List***Contains a list of SIB(s) the UE requests while in RRC\_CONNECTED. |
| ***requestedPosSIB-List***Contains a list of posSIB(s) the UE requests while in RRC\_CONNECTED. |

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| *PosSIB-ReqInfo* field descriptions |
| ***gnss-id***The presence of this field indicates that the request positioning SIB type is for a specific GNSS. Indicates a specific GNSS (see also TS 37.355 [49]) |
| ***sbas-id***The presence of this field indicates that the request positioning SIB type is for a specific SBAS. Indicates a specific SBAS (see also TS 37.355 [49]). |

*Next Change*

6.3.1a Positioning System information blocks

– *PosSystemInformation-r16-IEs*

-- ASN1START

-- TAG-POSSYSTEMINFORMATION-R16-IES-START

PosSystemInformation-r16-IEs ::= SEQUENCE {

 posSIB-TypeAndInfo-r16 SEQUENCE (SIZE (1..maxSIB)) OF CHOICE {

 posSib1-1-r16 SIBpos-r16,

 posSib1-2-r16 SIBpos-r16,

 posSib1-3-r16 SIBpos-r16,

 posSib1-4-r16 SIBpos-r16,

 posSib1-5-r16 SIBpos-r16,

 posSib1-6-r16 SIBpos-r16,

 posSib1-7-r16 SIBpos-r16,

 posSib1-8-r16 SIBpos-r16,

 posSib2-1-r16 SIBpos-r16,

 posSib2-2-r16 SIBpos-r16,

 posSib2-3-r16 SIBpos-r16,

 posSib2-4-r16 SIBpos-r16,

 posSib2-5-r16 SIBpos-r16,

 posSib2-6-r16 SIBpos-r16,

 posSib2-7-r16 SIBpos-r16,

 posSib2-8-r16 SIBpos-r16,

 posSib2-9-r16 SIBpos-r16,

 posSib2-10-r16 SIBpos-r16,

 posSib2-11-r16 SIBpos-r16,

 posSib2-12-r16 SIBpos-r16,

 posSib2-13-r16 SIBpos-r16,

 posSib2-14-r16 SIBpos-r16,

 posSib2-15-r16 SIBpos-r16,

 posSib2-16-r16 SIBpos-r16,

 posSib2-17-r16 SIBpos-r16,

 posSib2-18-r16 SIBpos-r16,

 posSib2-19-r16 SIBpos-r16,

 posSib2-20-r16 SIBpos-r16,

 posSib2-21-r16 SIBpos-r16,

 posSib2-22-r16 SIBpos-r16,

 posSib2-23-r16 SIBpos-r16,

 posSib3-1-r16 SIBpos-r16,

 posSib4-1-r16 SIBpos-r16,

 posSib5-1-r16 SIBpos-r16,

 posSib6-1-r16 SIBpos-r16,

 posSib6-2-r16 SIBpos-r16,

 posSib6-3-r16 SIBpos-r16,

 ...,

 [[

 posSib2-24-v17xy SIBpos-r16,

 posSib2-25-v17xy SIBpos-r16

 ]]

 },

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

-- TAG-POSSYSTEMINFORMATION-R16-IES-STOP

-- ASN1STOP

– *PosSI-SchedulingInfo*

-- ASN1START

-- TAG-POSSI-SCHEDULINGINFO-START

PosSI-SchedulingInfo-r16 ::= SEQUENCE {

 posSchedulingInfoList-r16 SEQUENCE (SIZE (1..maxSI-Message)) OF PosSchedulingInfo-r16,

 posSI-RequestConfig-r16 SI-RequestConfig OPTIONAL, -- Cond MSG-1

 posSI-RequestConfigSUL-r16 SI-RequestConfig OPTIONAL, -- Cond SUL-MSG-1

 ...

}

PosSchedulingInfo-r16 ::= SEQUENCE {

 offsetToSI-Used-r16 ENUMERATED {true} OPTIONAL, -- Need R

 posSI-Periodicity-r16 ENUMERATED {rf8, rf16, rf32, rf64, rf128, rf256, rf512},

 posSI-BroadcastStatus-r16 ENUMERATED {broadcasting, notBroadcasting},

 posSIB-MappingInfo-r16 PosSIB-MappingInfo-r16,

 ...

}

PosSIB-MappingInfo-r16 ::= SEQUENCE (SIZE (1..maxSIB)) OF PosSIB-Type-r16

PosSIB-Type-r16 ::= SEQUENCE {

 encrypted-r16 ENUMERATED { true } OPTIONAL, -- Need R

 gnss-id-r16 GNSS-ID-r16 OPTIONAL, -- Need R

 sbas-id-r16 SBAS-ID-r16 OPTIONAL, -- Need R

 posSibType-r16 ENUMERATED { posSibType1-1, posSibType1-2, posSibType1-3, posSibType1-4, posSibType1-5, posSibType1-6,

 posSibType1-7, posSibType1-8, posSibType2-1, posSibType2-2, posSibType2-3, posSibType2-4,

 posSibType2-5, posSibType2-6, posSibType2-7, posSibType2-8, posSibType2-9, posSibType2-10,

 posSibType2-11, posSibType2-12, posSibType2-13, posSibType2-14, posSibType2-15,

 posSibType2-16, posSibType2-17, posSibType2-18, posSibType2-19, posSibType2-20,

 posSibType2-21, posSibType2-22, posSibType2-23, posSibType3-1, posSibType4-1,

 posSibType5-1,posSibType6-1, posSibType6-2, posSibType6-3,..., posSibType2-24-v17xy,

 posSibType2-25-v17xy },

 areaScope-r16 ENUMERATED {true} OPTIONAL -- Need S

}

GNSS-ID-r16 ::= SEQUENCE {

 gnss-id-r16 ENUMERATED{gps, sbas, qzss, galileo, glonass, bds, ...},

 ...

}

SBAS-ID-r16 ::= SEQUENCE {

 sbas-id-r16 ENUMERATED { waas, egnos, msas, gagan, ...},

 ...

}

-- TAG-POSSI-SCHEDULINGINFO-STOP

-- ASN1STOP

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| ***PosSI-SchedulingInfo* field descriptions** |
| ***areaScope***Indicates that a posSIB is area specific. If the field is absent, the posSIB is cell specific. |
| ***encrypted***The presence of this field indicates that the *pos-sib-type* is encrypted as specified in TS 37.355 [49]. |
| ***gnss-id***The presence of this field indicates that the positioning SIB type is for a specific GNSS. Indicates a specific GNSS (see also TS 37.355 [49]) |
| ***posSI-BroadcastStatus***Indicates if the SI message is being broadcasted or not. Change of *posSI-BroadcastStat*us should not result in system information change notifications in Short Message transmitted with P-RNTI over DCI (see clause 6.5). The value of the indication is valid until the end of the BCCH modification period when set to *broadcasting*. |
| ***posSI-RequestConfig***Configuration of Msg1 resources that the UE uses for requesting SI-messages for which *posSI-BroadcastStatus* is set to notBroadcasting. |
| ***posSI-RequestConfigSUL***Configuration of Msg1 resources that the UE uses for requesting SI-messages for which *posSI-BroadcastStatus* is set to notBroadcasting. |
| ***posSIB-MappingInfo***List of the posSIBs mapped to this *SystemInformation* message. |
| ***posSibType***The positioning SIB type is defined in TS 37.355 [49]. |
| ***posSI-Periodicity***Periodicity of the SI-message in radio frames, such that rf8 denotes 8 radio frames, rf16 denotes 16 radio frames, and so on. If the *offsetToSI-Used* is configured, the *posSI-Periodicity* of rf8 cannot be used. |
| ***offsetToSI-Used***This field, if present indicates that all the SI messages in *posSchedulingInfoList* are scheduled with an offset of 8 radio frames compared to SI messages in *schedulingInfoList*. *offsetToSI-Used* may be present only if the shortest configured SI message periodicity for SI messages in *schedulingInfoList* is 80ms. If SI offset is used, this field is present in each of the SI messages in the *posSchedulingInfoList*. |
| ***sbas-id***The presence of this field indicates that the positioning SIB type is for a specific SBAS. Indicates a specific SBAS (see also TS 37.355 [49]). |

| **Conditional presence** | **Explanation** |
| --- | --- |
| *MSG-1* | The field is optionally present, Need R, if *posSI-BroadcastStatus* is set to *notBroadcasting* for any SI-message included in *PosSchedulingInfo*. It is absent otherwise. |
| *SUL-MSG-1* | The field is optionally present, Need R, if *supplementaryUplink* is configured in *ServingCellConfigCommonSIB* and if *posSI-BroadcastStatus* is set to *notBroadcasting* for any SI-message included in *PosSchedulingInfo*. It is absent otherwise. |

*End of Changes*