**3GPP TSG- Meeting #**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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 can be 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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | There are 5G requirements related to sector equipment and antenna support which are not currently met by the NR NRM. These IOCs are defined in 28.662 and need to updated for NR as 28.541 imports SectorEquipmentFunction from it. S5-244303 proposed several solutions to address this and the endorsed recommendation is reflected in this CR. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Update 28.622 to apply to NR NRM.  Update SectorEquipmentFunction and AntennaFunction IOC definitions to support 4G, 5G, and mixed deployments consistently. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Unmet requirements and misalignment between 4G and 5G NRM definitions that would complicate mixed deployments. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 4.3.1.1, 4.3.1.2, 4.4.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

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| --- |
| **1st Change** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that documentin the same Release as the present document.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

[3] 3GPP TS 32.102: "Telecommunication management; Architecture".

[4] 3GPP TS 32.150: "Telecommunication management; Integration Reference Point (IRP) Concept and definitions".

[5] 3GPP TS 32.602: "Telecommunication management; Configuration Management (CM); Basic CM Integration Reference Point (IRP); Information Service (IS)".

[6] Void.

[7] 3GPP TS 36.104: "Evolved Universal Terrestrial Radio Access (E\_UTRA); Base Station (BS) radio transmission and reception".

[8] Void.

[9] Void.

[10] 3GPP TS 28.661: "Telecommunication management; Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements".

[11] 3GPP TS 32.111-2: "Telecommunication management; Fault Management; Part 2: Alarm Integration Reference Point (IRP): Information Service (IS)".

[12] 3GPP TS 28.652: "Telecommunication management; Universal Terrestrial Radio Access Network (UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[13] 3GPP TS 28.658: "Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[14] 3GPP TS 28.655:"Telecommunication management; GSM/EDGE Radio Access Network (GERAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[15] 3GPP TS 28.622: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[16] 3GPP TS 32.302: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Information Service (IS)".

[17] 3GPP TS 32.662: "Telecommunication management; Configuration Management (CM); Kernel CM Information Service (IS)".

[18] 3GPP TS 25.106: "Technical Specification Group Radio Access Network; UTRA repeater radio transmission and reception".

[19] 3GPP TS 45.005: "Radio transmission and reception".

[20] 3GPP TS 45.010: "Radio subsystem synchronization".

[21] 3GPP TS 25.104: "Base Station (BS) radio transmission and reception (FDD)".

[22] 3GPP TS 25.105: "Base Station (BS) radio transmission and reception (TDD)".

[23] 3GPP TS 38.104: "NR; Base Station (BS) radio transmission and reception".

[24] 3GPP TS 28.541: "NR and NG-RAN Network Resource Model (NRM) stage 2 and stage 3".

[25] 3GPP TS 28.652: "UTRAN Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[26] 3GPP TS 37.466: "Iuant Interface: Application Part".

[x] 3GPP TS 28.532: “Management and Orchestration: Generic Management Services”.

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| **2nd Change** |

4.3.1 SectorEquipmentFunction

4.3.1.1 Definition

This IOC represents a set of cells within a geographical area that has common functions relating to AntennaFunction, TMAFunction and supporting equipment, such as power amplifier.

This IOC is required as part of the capability to satisfy the Requirements statement identified below.

|  |  |  |
| --- | --- | --- |
| **Referenced TS** | **Requirement label** | **Comment** |
| 3GPP TS 28.661 [10] | REQ-GRAN\_NRM-CON-001 |  |
| 3GPP TS 28.661 [10] | REQ-GRAN\_NRM-CON-002 |  |

4.3.1.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Support Qualifier** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| CHOICE 2.3 fqBand | CM | T | F | F | T |
| CHOICE\_1.1 frequencyBands | CM | T | F | F | T |
| CHOICE\_2.1 eUTRANFqBands | CM | T | F | F | T |
| CHOICE\_2.2 nRFqBands | CM | T | F | F | T |
| uTRANFDDFqBands | CM | T | F | F | T |
| uTRANTDDFqBands | CM | T | F | F | T |
| confOutputPower | O | T | T | F | F |
| **Attribute related to role** |  |  |  |  |  |
| theTMAList | CM | T | F | F | T |
| theAntennaList | CM | T | F | F | T |
| theCellList | CM | T | F | F | T |
| theNRSectorCarrierList | O | T | F | F | T |
| referencedBy | M | T | F | F | T |

4.3.1.3 Attribute constraints

|  |  |
| --- | --- |
| **Name** | **Definition** |
| fqBand CM Support Qualifier | Condition: EUTRAN is supported, and only one EUTRAN frequency band is supported, and eUTRANFqBands is not used. |
| eUTRANFqBands CM Support Qualifier | Condition: EUTRAN is supported, and fqBand is not used. |
| nRFqBands CM Support Qualifier | Condition: NR is supported. |
| uTRANFDDFqBands CM Support Qualifier | Condition: UTRAN FDD is supported. |
| uTRANTDDFqBands CM Support Qualifier | Condition: UTRAN TDD is supported. |
| theTMAList CM Support Qualifier | Condition: UTRAN/E-UTRAN sharing/non-sharing or is GERAN sharing case is supported. |
| theAntennaList CM Support Qualifier | Condition: UTRAN/E-UTRAN sharing/non-sharing or GERAN sharing case is supported. |
| theCellList CM Support Qualifier | Condition: UTRAN/E-UTRAN sharing/non-sharing or GERAN sharing case is supported. |

4.3.1.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

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| **3rd Change** |

4.3.2 AntennaFunction

4.3.2.1 Definition

This IOC represents an array of radiating elements that may be tilted to adjust the RF coverage of a cell(s).

This IOC is required as part of the capability to satisfy the Requirements statement identified below.

|  |  |  |
| --- | --- | --- |
| **Referenced TS** | **Requirement label** | **Comment** |
| 3GPP TS 28.661 [10] | REQ-GRAN\_NRM-CON-001 |  |
| 3GPP TS 28.661 [10] | REQ-GRAN\_NRM-CON-002 |  |

4.3.2.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Support Qualifier** | **isReadable** | **isWritable** | **isInvariant** | **IsNotifyable** |
| beamTilt | O | T | T | F | T |
| elevation | O | T | T | F | T |
| retTiltValue | O | T | T | F | T |
| bearing | O | T | T | F | T |
| retGroupName | O | T | T | F | T |
| height | O | T | T | F | T |
| maxAzimuthValue | O | T | T | F | T |
| minAzimuthValue | O | T | T | F | T |
| horizBeamwidth | O | T | T | F | T |
| vertBeamwidth | O | T | T | F | T |
| latitude | M | T | F | F | T |
| longitude | M | T | F | F | T |
| **Attribute related to role** |  |  |  |  |  |
|  |  |  |  |  |  |
| referencedBy | M | T | F | F | T |

4.3.2.3 Attribute constraints

None.



4.3.2.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.3 TMAFunction

4.3.3.1 Definition

This IOC represents a Tower Mounted Amplifier or a number of TMA subunits within one TMA, each separately addressable by a specific index at the application layer.

This IOC is required as part of the capability to satisfy the Requirements statement identified below.

|  |  |  |
| --- | --- | --- |
| **Referenced TS** | **Requirement label** | **Comment** |
| 3GPP TS 28.661 [10] | REQ-GRAN\_NRM-CON-001 |  |
| 3GPP TS 28.661 [10] | REQ-GRAN\_NRM-CON-002 |  |

4.3.3.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Support Qualifier** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| tmaSubunitNumber | M | T | T | F | T |
| tmaStateFlag | M | T | O | F | T |
| tmaFunctionFlag | M | T | T | F | T |
| tmaMinGain | M | T | F | F | T |
| tmaMaxGain | M | T | F | F | T |
| tmaResolution | M | T | F | F | T |
| tmaGainFigure | M | T | O | F | T |
| tmaNumberOfSubunits | M | T | F | F | T |
| tmaBaseStationId | CO | T | CO | F | T |
| tmaSectorId | CO | T | CO | F | T |
| tmaAntennaBearing | CO | T | CO | F | T |
| tmaInstalledMechanicalTilt | CO | T | CO | F | T |
| tmaSubunitType | CO | T | CO | F | T |
| tmaSubunitRxFrequencyBand | CO | T | CO | F | T |
| tmaSubunitTxFrequencyBand | CO | T | CO | F | T |
| tmaGainResolution | CO | T | CO | F | T |
| **Attribute related to role** |  |  |  |  |  |
| theCellList | CM | T | F | F | T |

4.3.3.3 Attribute Constraints

|  |  |
| --- | --- |
| **Name** | **Definition** |
| theCellList CM Support Qualifier | Condition: Association between SectorEquipmentFunction and ProxyCellList is absent; and association between SectorEquipmentFunction and NRSectorCarrier is absent. |

| **Name** | **Definition** |
| --- | --- |
| The CO support qualifier of the attributes tmaBaseStationId through tmaGainResolution | Condition: The TMA subunit supports the read operation in 3GPP TS 37.466 [26] |
| The CO write qualifier of the attributes tmaBaseStationId through tmaGainResolution | Condition: The TMA subunit supports the write operation in 3GPP TS 37.466 [26] |

4.3.3.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

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| **4th Change** |

4.4 Attribute definitions

4.4.1 Attribute properties

| **Attribute Name** | **Documentation and Allowed Values** | **Properties** |
| --- | --- | --- |
| aRFCN | This attribute (Absolute Radio Frequency Channel Number) defines a pair of Radio Frequency (RF) channel frequencies for uplink and downlink use.  See 3GPP TS 45.005 [19] clause 2 for the ARFCN for GSM. ARFCN are based on a 200 kHz channel raster.  allowedValues: See 3GPP TS 45.005 [19] clause 2 | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| aTA | This attribute (allowed Timing Advance) defines the signal sent by the BTS to the MS which the MS uses to advance its timings of transmissions to the BTS so as to compensate for propagation delay.  allowedValues: See 3GPP TS 45.010 [20] | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| bearing | The bearing in degrees that the antenna is pointing in. Antenna bearing" in Ref. 3GPP TS 25.463 [8].  allowedValues: See "Antenna bearing" in 3GPP TS 25.463 [8]. | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| confOutputPower | It defines the allowed total power to use for all cells together in this sector. It may be set by the operator and/or set to a value limited by HW limitation or licensed power, e.g.: 20, 40, 60, 80,120 watts  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| ctrlConnMode | Remote communication mode used by a repeater to send and receive control message, such as GSM SMS, WCDMA SMS, Circle Switch Data-CSD, Package Switch Dat-IP, Serial port.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| dlAttenuation | Downlink signal attenuation of the device to change downlink gain.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| environmentInfo | The repeater device is located either in the building or out of the building.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| eUTRANFqBands | This is the list of LTE frequency bands supported by the hardware associated with the SectorEquipmentFunction.  The earfcnDl and earfcnUl or earfcn of LTE cells associated with the SectorEquipmentFunction must be assigned with value within one of the specified eUTRANFqBands values.  allowedValues: A list of frequency bands expressed as strings.  Valid frequency band values are specified in sub-clause 5.7.3 in 36.104 [7].  For HW not supporting LTE frequency bands, the list shall be empty. | type: String  multiplicity: 0..\*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: True |
| firmwareVer | Version of the device firmware.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| fqBand | This is the LTE frequency band supported by the hardware associated with the SectorEquipmentFunction. The earfcnDl and earfcnUl of cells associated with the SectorEquipmentFunction must be assigned with value within this fqBand value.  allowedValues: See clause 5 Table 5.2-1 “E-UTRA frequency band” of 3GPP TS 36.104 [7]. | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| nRFqBands | This is the list of NR frequency bands supported by the hardware associated with the SectorEquipmentFunction.  The arfcnDl and arfcnUl of the NRSectorCarrier must be assigned with value within one of the specified nRFqBands values – if the attributes on NRSectorCarriers are set.  The arfcnDl and arfcnUl of the NRCellDU associated with the NRSectorCarrier must be assigned with value within one of the specified nRFqBands values – if there is a NRCellDU associated with the NRSectorCarrier.  allowedValues:  A list of frequency bands expressed as strings.  Valid frequency band values are specified in sub-clause 5.4.2 in 3GPP TS 38.104 [23].  For HW not supporting NR frequency bands, the list shall be empty. | type: String  multiplicity: 0..\*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| frequencyBands | The list of frequency bands supported by the hardware associated with the SectorEquipmentFunction.  The earfcnDl, earfcnUl, arfcnDL and arfcnUL of cells associated with the SectorEquipmentFunction. The values must be within one of the specified frequencyBand values.  allowedValues: N/A | type: Integer  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| Elevation | The elevation the antenna function should have, based on World Geodetic System (1984 version) global reference frame (WGS 84).  allowedValues: Positive values correspond to meters above sea level. Negative values correspond to meters below sea level. If empty, value is not defined. | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| Height | The height of an antenna above sea level.  Note: The value of this attribute has no operational impact on the network, e.g. the NE behavior is not affected by the value setting of this attribute. Note as well that this attribute is not supported over the Iuant interface according to Ref. 3GPP TS 37.466 [26].  An integral value representing a number of meters in 0.1 meter increments.  lifecycleStatus: Deprecated. Use “elevation”.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| horizBeamwidth | The 3 dB power beamwidth of the antenna pattern in the horizontal plane. A value of 360 indicates an omni-directional antenna.  Note: The value of this attribute has no operational impact on the network, e.g. the NE behaviour is not affected by the value setting of this attribute. Note as well that this attribute is not supported over the Iuant interface according to Ref. 3GPP TS37.466 [26].  A single integral value corresponding to an angle in degrees between 0 and 360.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| latitude | The latitude of the antenna location based on World Geodetic System (1984 version) global reference frame (WGS 84). Positive values correspond to the northern hemisphere.  allowedValues: -90.0000 to +90.0000 | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| longitude | The longitude of the antenna location based on World Geodetic System (1984 version) global reference frame (WGS 84). Positive values correspond to degrees east of 0 degrees longitude.  allowedValues: -180.0000 to +180.0000 | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| maxAzimuthValue | The maximum amount of change of azimuth the RET system can support. This is the change in degrees clockwise from bearing.  Note: The value of this attribute has no operational impact on the network, e.g. the NE behaviour is not affected by the value setting of this attribute. Note as well that this attribute is not supported over the Iuant interface according to Ref. 3GPP TS 37.466 [26].  A single integral value corresponding to an angle in degrees between 0 and 360 with a resolution of 0.1 degrees.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| minAzimuthValue | The minimum amount of change of azimuth the RET system can support. This is the change in degrees counter-clockwise from bearing.  Note: The value of this attribute has no operational impact on the network, e.g. the NE behaviour is not affected by the value setting of this attribute. Note as well that this attribute is not supported over the Iuant interface according to Ref. 3GPP TS 25.466 [9].  A single integral value corresponding to an angle in degrees between 0 and 360 with a resolution of 0.1 degrees.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| priority | The priority of a repeater decided by an operator.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| powerSwitch | Power switch of device which has two status: ON/OFF.  allowedValues: ON, OFF | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| relatedAntennaList | This attribute contains the DNs of one or more AntennaFunction**.**  allowedValues: N/A | type: DN  multiplicity: 1..\*  isOrdered: N/A  isUnique: T  defaultValue: None  isNullable: True |
| relatedSectorEquipment | This attribute contains the DN of one SectorEquipmentFunction.  allowedValues: N/A | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| relatedTMAList | This attribute contains the DNs of one or more TmaFunction.  allowedValues: N/A | type: DN  multiplicity: 1..\*  isOrdered: N/A  isUnique: T  defaultValue: None  isNullable: True |
| repeaterType | The repeater type defined by operator, such as wide band, frequency selective, indoor and fiber optic.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| retGroupName | The group name is a textual, alpha-numeric string to define a logical grouping of antennas which may be in different cells.  This attribute permits the definition of a logical grouping of the antennas. This may be defined either at installation time, or by management activity to provisioning the group name via the Itf-N.  allowedValues: N/A (String size is bounded to 80 characters.) | type: String  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| retTiltValue | The electrical tilt setting of the antenna, "Tilt value" in Ref. 3GPP TS 37.466 [26].  allowedValues: See "Tilt value" in Ref. 3GPP TS 37.466 [26]. | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| beamTilt | The beam tilt of the wanted antenna beam in the vertical plane. A positive value on the beamtilt indicates an antenna beam direction below the vertical plane." | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| sharedTechnologies | This attribute defines the radio access technologies sharing the common functionalities of a Base Station (BS).  allowedValues: GSM, UMTS, LTE, or any combination thereof | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaAntennaBearing | A data field defined in Table B.3 of 3GPP TS 37.466 [26].  See definition in 3GPP TS 37.466 [26].  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaBaseStationId | A data field defined in Table B.3 of 3GPP TS 37.466 [26]  allowedValues: N/A | type: String  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaFunctionFlag | Defined in 3GPP TS 37.466 [26]  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaGainFigure | Defined in 3GPP TS 37.466 [26]  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaGainResolution | A data field defined in Table B.3 of 3GPP TS 37.466 [26]  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaInstalledMechanicalTilt | A data field defined in Table B.3 of 3GPP TS 37.466 [26]  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaMaxGain | Defined in 3GPP TS 37.466 [26]  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaMinGain | Defined in 3GPP TS 37.466 [26]  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaNumberOfSubunits | Defined in 3GPP TS 37.466 [26]  allowedValues: -- | Defined in 3GPP TS 37.466 [26]  type: --  multiplicity: --  isOrdered: --  isUnique: --  defaultValue: --  isNullable: -- |
| tmaResolution | Defined in 3GPP TS 37.466 [26]  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaSectorId | A data field defined in Table B.3 of 3GPP TS 37.466 [26]  allowedValues: N/A | type: String  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaStateFlag | Defined in 3GPP TS 37.466 [26]  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaSubunitNumber | Defined in 3GPP TS 37.466 [26]  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaSubunitRxFrequencyBand | A data field defined in Table B.3 of 3GPP TS 37.466 [26]  allowedValues: See 3GPP TS 37.466 [26]. | type: Integer  multiplicity: 2  isOrdered: True  isUnique: True  defaultValue: None  isNullable: False |
| tmaSubunitType | A data field defined in Table B.3 of 3GPP TS 37.466 [26]  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tmaSubunitTxFrequencyBand | A data field defined in Table B.3 of 3GPP TS 37.466 [26]  allowedValues: See 3GPP TS 37.466 [26]. | type: Integer  multiplicity: 2  isOrdered: True  isUnique: True  defaultValue: None  isNullable: False |
| tsc | This attribute has the same definition as the one used in GsmCell IOC. The presence of GSMCellPart means the tsc attribute in GsmCell IOC instance is irrelevant (not applicable).  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| ulAttenuation | Uplink signal attenuation of the device to change uplink gain.  allowedValues: N/A | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| uTRANFDDFqBands | This is the list of UTRAN FDD frequency bands supported by the hardware associated with the SectorEquipmentFunction.  The arfcnDl and arfcnUl of UTRAN FDD cells associated with the SectorEquipmentFunction must be assigned with value within one of the specified uTRANFDDFqBands values.  allowedValues: A list of frequency bands expressed as strings.  Valid frequency band values are specified in sub-clause 5.2 of 3GPP TS 25.104 [21]. | type: String  multiplicity: 1..\*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| uTRANTDDFqBands | This is the list of UTRAN TDD frequency bands supported by the hardware associated with the SectorEquipmentFunction.  The earfcn of UTRAN TDD cells associated with the SectorEquipmentFunction must be assigned with value within one of the specified uTRANTDDFqBands values.  allowedValues: A list of frequency bands expressed as strings.  Valid frequency band values are specified in sub-clause 5.2 of 3GPP TS 25.105 [22]. | type: String  multiplicity: 1..\*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| vertBeamwidth | The 3 dB power beamwidth of the antenna pattern in the vertical plane.  The value of this attribute has no operational impact on the network, e.g. the NE behaviour is not affected by the value setting of this attribute.  This attribute is not supported over the Iuant interface according to Ref. 3GPP TS 37.466 [26].  allowedValues: A single integral value corresponding to an angle in degrees between 0 and 180. | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| **Attribute related to role** |  |  |
| externalUTRANCell | This role (when present) represents RepeaterFunction capability to identify one ExternalUtranCell.  When present, it shall contain one ExternalUtranCell DN.  allowedValues: N/A | type: DN  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| theAntennaList | This attribute contains the DNs of one or more AntennaFunction.  allowedValues: N/A | type: DN  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| theCellList | This attribute contains the DNs of EUtranGenericCell or UtranGenericCell if associations between them exist.  This attribute contains the DNs of GSMCellPart if association between them exist.  allowedValues: N/A | type: DN  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| theProxyBsList | A CommonBsFunction instance serves a number of ProxyBsFunction instances. This CommonBsFunction role-attribute contains a list of DNs of ENBFunction (3GPP TS 28.658 [13]), NodeBFunction (3GPP TS 28.652 [12]) and BssFunction (3GPP TS 28.655 [14]) that it serves.  allowedValues: N/A | type: DN  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: True |
| theTMAList | This attribute contains the DNs of one or more TMAFunction.  allowedValues: N/A | type: DN  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| theNRSectorCarrierList | This attribute contains the distinguished names of the  NRSectorCarrier.  lifeCycleStatus: Deprecated. Use “referencedBy”. | type: DN  multiplicity: 0.. \*  isOrdered: N/A  isUnique: T  defaultValue: None  isNullable: True |
| referencedBy | This attribute contains the DNs of one or more objects (e.g. SectorEquipmentFunction, cells, sector carrier) if associations between them exist.  allowedValues: N/A | type: DN  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: True |