ETSI TS 132 792 V10.1.0 (2012-10)

Digital cellular telecommunications system (Phase 2+);
Universal Mobile Telecommunications System (UMTS);
LTE;
Telecommunication management;
Generic Radio Access Network (RAN)
Network Resource Model (NRM)
Integration Reference Point (IRP);
Information Service (IS)
(3GPP TS 32.792 version 10.1.0 Release 10)

Reference
RTS/TSGS-0532792va10

Keywords
GSM,LTE,UMTS

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Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

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- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

The present document is part of a TS-family covering the 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; as identified below:

32.791	Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP): Requirements
32.792	**Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)**
32.796	Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP): Solution Set (SS) definitions

1 Scope

The present document specifies the Generic Radio Access Network (RAN) network resource information that can be communicated between an IRPAgent and one or several IRPManagers for network management purposes.

This document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

This document specifies equipment that may be shared between BSS in GSM, UTRAN and E-UTRAN.

In order to access the information defined by this NRM, an Interface IRP such as the "Basic CM IRP" is needed (3GPP TS 32.602 [5]). However, which Interface IRP is applicable is outside the scope of the present document.

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 document *in 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: " Technical Specification Group Services and System Aspects; 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] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[7] 3GPP TS 36.104: 'Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E_UTRA); Base Station (BS) radio transmission and reception'

[8] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

[9] GPP TS 25.466: "UTRAN Iuant interface: Application Part".

[10] 3GPP TS 32.791: "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 32.642 UTRAN network resources IRP, NRM

[13] 3GPP TS 32.762 E-UTRAN NRM IRP, IS

[14] 3GPP TS 32.652 GERAN network resources IRP; NRM

[15] 3GPP TS 32.622: "Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[16] 3GPP TS 25.104: "Base Station (BS) radio transmission and reception (FDD)".

[17] 3GPP TS 25.105: "Base Station (BS) radio transmission and reception (TDD)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1], TS 32.150 [4], TS 32.101 [2], TS 32.102 [3] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TS 32.150 [4], TS 32.101 [2], TS 32.102 [3] and TR 21.905 [1], in that order.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

BS	Base Station
BSS	Base Station Subsystem
CM	Configuration Management
DN	Distinguished Name
E-UTRAN	Evolved UTRAN
GSM	Global System for Mobile communications
HW	Hardware
IRP	Integration Reference Point
IOC	Information Object Class
IS	Information Service
NE	Network Element
NRM	Network Resource Model
RAN	Radio Access Network
RDN	Relative Distinguished Name
RF	Radio Frequency
SS	Solution Set
TMA	Tower Mounted Amplifier
UTRA	Universal Terrestrial Radio Access
UTRAN	Universal Terrestrial Radio Access Network

4 Information Object Classes

4.1 Imported information entities and local labels

Label reference	Local label
3GPP TS 32.622 [15], IOC, `ManagedFunction`	`ManagedFunction`
3GPP TS 32.642 [12], IOC, `UtranGenericCell`	`UtranGenericCell`
3GPP TS 32.762 [13], IOC, `EUtranGenericCell`	`EUtranGenericCell`
3GPP TS 32.652 [14], IOC, `GSMCell`	`GSMCell`

4.2 Class diagram

4.2.1 Attributes and relationships

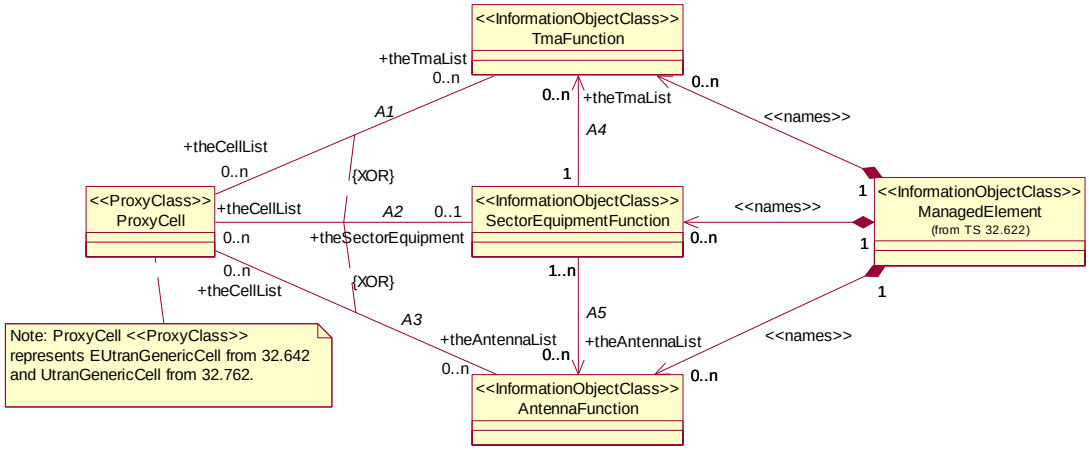

Figure4.2.1.1: UTRAN and E-UTRAN sharing

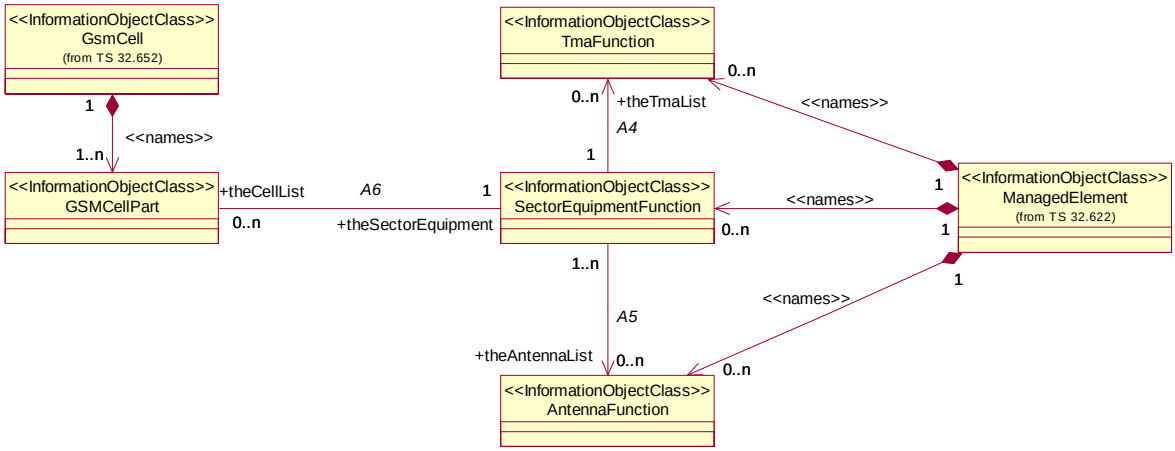

Figure 4.2.1.2: GERAN sharing

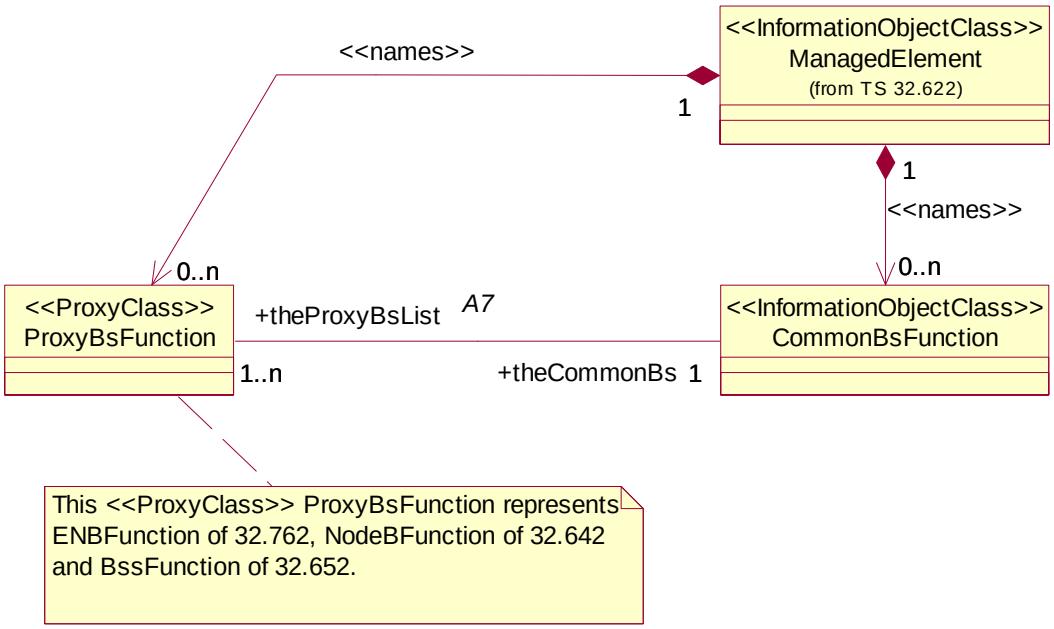

Figure 4.2.1.3: CommonBsFunction

Editor"s Note: Correct Role Names & Relationship Names are to be discussed further.

4.2.2 Inheritance

This clause depicts the IOCs" inheritance relationships.

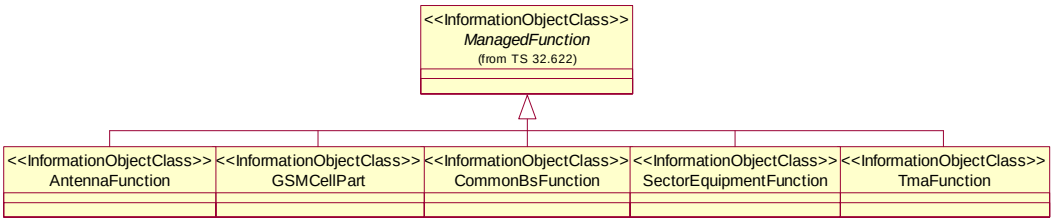

Figure 4.2.2.1: CommonBsFunction

4.3 Information Object Class (IOC) definitions

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 32.791 [10]	REQ-GRAN_NRM-CON-001	
3GPP TS 32.791 [10]	REQ-GRAN_NRM- CON-002	

4.3.1.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
id	M	M	-
fqBand	CM	M	--
eUTRANFqBands	M	M	-
uTRANFDDFqBands	M	M	-
uTRANTDDFqBands	M	M	-
confOutputPower	M	M	M
theTmaList	M	M	-
theAntennaList	M	M	-
theCellList	M	M	-

Editor"s note: The attributes the`TmaList, theCellList` and the`AntennaList` may need to be removed (not necessary to be explicitly mentioned in Table Attributes since such requirement is already specified in UML diagram).

4.3.1.3 Attribute constraints

Name	Qualifier	Notes
The Conditional/Mandatory (CM) support qualifier of the attribute `fqBand`	CM	This attribute is used if the attribute eUTRANFqBands contains an empty list.

4.3.1.4 Notifications

The common notifications defined in subclause 4.6 are valid for this IOC, without exceptions or additions.

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 32.791 [10]	REQ-GRAN_NRM-CON-001	
3GPP TS 32.791 [10]	REQ-GRAN_NRM- CON-002	

4.3.2.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
id	M	M	-
retTiltValue	O	M	M
bearing	O	M	M
retGroupName	O	M	M
height	O	M	M
maxAzimuthValue	O	M	M
minAzimuthValue	O	M	M
horizBeamwidth	O	M	M
vertBeamwidth	O	M	M
theCellList	M	M	-

Editor"s note: The attribute attributes `theCellList` may need to be removed (not necessary to be explicitly mentioned in Table Attributes since such requirement is already specified in UML diagram).
We need to examine the need of `retGroupName`.
The attributes `horizBeamwidth` and `vertBeamwidth` are to be checked if they should be moved to inventory.

4.3.2.3 Attribute constraints

None.

4.3.2.4 Notifications

The common notifications defined in subclause 4.6 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 32.791 [10]	REQ-GRAN_NRM-CON-001	
3GPP TS 32.791 [10]	REQ-GRAN_NRM- CON-002	

4.3.3.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
id	M	M	-
tmaSubunitNumber	M	M	M
tmaStateFlag	M	M	O
tmaFunctionFlag	M	M	M
tmaMinGain	M	M	-
tmaMaxGain	M	M	-
tmaResolution	M	M	-
tmaGainFigure	M	M	O
tmaNumberOfSubunits	M	M	-
tmaBaseStationId	CO	M	CO
tmaSectorId	CO	M	CO
tmaAntennaBearing	CO	M	CO
tmaInstalledMechanicalTilt	CO	M	CO
tmaSubunitType	CO	M	CO
tmaSubunitRxFrequencyBand	CO	M	CO
tmaSubunitTxFrequencyBand	CO	M	CO
tmaGainResolution	CO	M	CO
theCellList	M	M	-

Editor"s note: The attributes `theCellList` may need to be removed (not necessary to be explicitly mentioned in Table Attributes since such requirement is already specified in UML diagram)., We need to examine the need of `tmaBaseStationId` and `tmaSectorId`
The attributes `tmaSubunitType, tmaSubunitRxFrequencyBand, tmaSubunitTxFrequencyBand, tmaGainResolution, tmaBaseStationId` and `tmaSectorId` are to be checked if they should be moved to inventory.

4.3.3.3 Attribute Constraints

Name	Qualifier	Notes
The Conditional/Optional (CO) support qualifier of the attributes `tmaAdditionalDataFieldNumber` through `tmaGainResolution`	CO	The TMA subunit supports the read operation in 3GPP TS 25.466 [9]
The conditional/optional (CO) write qualifier of the attributes `tmaAdditionalDataFieldNumber` through `tmaGainResolution`	CO	The TMA subunit supports the write operation in 3GPP TS 25.466 [9]

4.3.3.4 Notifications

The common notifications defined in subclause 4.6 are valid for this IOC, without exceptions or additions.

4.3.4 GSMCellPart

4.3.4.1 Definition

A GSM cell can consist of a number of carriers. These carriers can be configured in a number of ways, for example, the carriers can have different propagation properties which are sent with different antenna tilt, with different RF power, different radio band and even possibly different antenna.

The various `GSMCellPart` instances capture different radio propagation properties allowing different frequency planning schemes, e.g. some `GSMCellPart` instances can use frequency groups planned for tighter frequency reuse.

Hence, a GSM cell can, and in some cases must, be distributed on more than one `SectorEquipmentFunction`.

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

Referenced TS	Requirement label	Comment
3GPP TS 32.791 [10]	REQ-GRAN_NRM-CON-01	
3GPP TS 32.791 [10]	REQ-GRAN_NRM-CON-02	

4.3.4.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
id	M	M	-
aRFCN	M	M	M
tsc	M	M	M
aTA	M	M	M
theSectorEquipment	M	M	-

4.3.4.3 Attribute constraints

None.

4.3.4.4 Notifications

The common notifications defined in subclause 4.6 are valid for this IOC, without exceptions or additions.

4.3.5 CommonBsFunction

4.3.5.1 Definition

This IOC represents common aspects of Base Station (BS) functionality shared by several radio access technologies.

Referenced TS	Requirement label	Comment
3GPP TS 32.791 [10]	REQ-GRAN_NRM-CON-001	
3GPP TS 32.791 [10]	REQ-GRAN_NRM- CON-002	

4.3.5.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
id	M	M	-
sharedTechnologies	M	M	O

4.4 Information relationship definitions

4.4.1 A1 (CO)

4.4.1.1 Definition

This association represents the bidirectional relation between TmaFunction and ProxyCell.

4.4.1.2 Roles

Name	Definition
theCellList	This role represents the associated ProxyCell instances of a TmaFunction instance.
theTmaList	This role represents the associated TmaFunction instances of a ProxyCell instance.

4.4.1.3 Constraints

Condition: Association A2 is absent.

4.4.2 A2 (CM)

4.4.2.1 Definition

This association represents the bidirectional relation between `SectorEquipmentFunction` and `ProxyCell` used in UTRAN and E-UTRAN sharing (and non-sharing) cases.

4.4.2.2 Roles

Name	Definition
`theCellList`	This role represents the associated `ProxyCell` instances of a `SectorEquipmentFunction` instance.
`theSectorEquipment`	This role represents the associated `SectorEquipmentFunction` instance of a `ProxyCell` instance.

4.4.2.3 Constraints

Condition: `SectorEquipmentFunction` instance is present and supporting UTRAN and E-UTRAN sharing (and non-sharing) cases. In these cases, at least one instance represented by the associated `ProxyCell` must be present.

4.4.3 A3 (CO)

4.4.3.1 Definition

This association represents the bidirectional relation between `AntennaFunction` and `ProxyCell`.

4.4.3.2 Roles

Name	Definition
`theCellList`	This role represents the associated `ProxyCell` instances of an `AntennaFunction` instance.
`theAntennaList`	This role represents the associated `AntennaFunction` instances of a `ProxyCell` instance.

4.4.3.3 Constraints

Condition: Association A2 is absent.

4.4.4 A4 (CM)

4.4.4.1 Definition

This association represents the unidirectional relation from `SectorEquipmentFunction` to `TmaFunction`.

4.4.4.2 Roles

Name	Definition
`theTmaList`	This role represents the associated `TmaFunction` instances of a `SectorEquipmentFunction` instance.

4.4.4.3 Constraints

Condition: `SectorEquipmentFunction` instance is present AND is supporting the UTRAN and E-UTRAN sharing (and non-sharing) cases AND `A5` is absent. In this case, at least one `TmaFunction` is present.

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4.4.5 A5 (CM)

4.4.5.1 Definition

This association represents the unidirectional relation from `SectorEquipmentFunction` to `AntennaFunction`.

4.4.5.2 Roles

Name	Definition
`theAntennaList`	This role represents the associated `AntennaFunction` instances of a `SectorEquipmentFunction` instance.

4.4.5.3 Constraints

Condition: `SectorEquipmentFunction` instance is present AND is supporting the UTRAN and E-UTRAN sharing (and non-sharing) cases AND `A4` is absent. In this case, at least one `AntennaFunction` is present.

4.4.6 A6 (CM)

4.4.6.1 Definition

This association represents the bidirectional relation between `SectorEquipmentFunction` and `GSMCellPart`.

4.4.6.2 Roles

Name	Definition
`theCellPartList`	This role represents the associated `GSMCellPart` instances of a `SectorEquipmentFunction` instance.
`theSectorEquipment`	This role represents the associated `SectorEquipmentFunction` instance of a `GSMCellPart` instance.

4.4.6.3 Constraints

Condition: `SectorEquipmentFunction` instance is present and is supporting the GERAN sharing case. In this case, there shall be at least one `GSMCellPart` present at one end of this association.

4.4.7 A7 (M)

[Editors Note]: Correct Role Names & Relationship Names are to be discussed further.

4.4.7.1 Definition

This association represents the association between a `ProxyBsFunction` and its related `CommonBsFunction`, as well as between a `SCommonBsFunction` and the `ProxyBsFunctions` it serves.

4.4.7.2 Roles

Name	Definition
`theCommonBs`	This role represents the `CommonBsFunction` that is associated with a `ProxyBsFunction`.
`theProxyBsList`	This role represents the `ProxyBsFunctions` that are associated with a `CommonBsFunction`.

4.4.7.3 Constraints

Name	Definition
`ProxyBsCommonBsConstraint`	The `ProxyBsFunction` has an association with a `CommonBsFunction`.

4.5 Information attribute definitions

4.5.1 Definition and Legal Values

Attribute Name	Definition	Legal Values
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 Section 2 for the ARFCN for GSM. ARFCN are based on a 200 kHz channel raster.
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.	See 3GPP TS 45.010
bearing	The bearing in degrees that the antenna is pointing in. Antenna bearing" in Ref. 3GPP TS 25.463 [8].	See "Antenna bearing" in3GPP TS 25.463 [8].
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 limited by HW limitation or licensed power, e.g.: 20, 40, 60, 80,120 watts	
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.	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.
fqBand	This is the LTE frequency band supported by the hardware associated with the SectorEquipmentFunction, for the case when only one frequency band is supported. The earfcnDl and earfcnUl of cells associated with the SectorEquipmentFunction must be assigned with value within this fqBand value.	See section 5 .7.3 of TS 36.104 [7].
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 25.466 [9].	An integral value representing a number of metres in 0.1 meter increments.
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 TS 25.466 [9].	A single integral value corresponding to an angle in degrees between 0 and 360.
id	An attribute whose "name+value" can be used as an RDN when naming an instance of the object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance	
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 25.466 [9].	A single integral value corresponding to an angle in degrees between 0 and 360 with a resolution of 0.1 degrees, see Note.
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.
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.	String size is bounded to 80 characters.
retTiltValue	The electrical tilt setting of the antenna, "Tilt value" in Ref. 3GPP TS 25.466 [9].	See "Tilt value" in Ref. 3GPP TS 25.466 [9].
sharedTechnologies	This attribute defines the radio access technologies sharing the common functionalities of a Base Station (BS)	Legal Values: GSM, UMTS, LTE, or any combination thereof
theAntennaList	**This attribute contains the DNs of one or more AntennaFunction**	
theCellList	This attribute contains the DNs of cells (derivates of EUtranGenericCell or UtranGenericCell) if association A2 is used. **This attribute contains the DNs of GSMCellPart if association A6 is used.**	

Attribute Name	Definition	Legal Values
theSectorEquipment	**This attribute contains the DN of one SectorEquipmentFunction.**	
theTmaList	**This attribute contains the DNs of one or more TmaFunction**	A list of DNs as defined in TS 32.300 [6].
tmaAntennaBearing	A data field defined in Table B.3 of 3GPP TS 25.466 [9].	Defined in TS 25.466 [9]
tmaBaseStationId	A data field defined in Table B.3 of 3GPP TS 25.466 [9]	Defined in TS 25.466 [9]
tmaFunctionFlag	Defined in 3GPP TS 25.466 [9]	Defined in TS 25.466 [9]
tmaGainFigure	Defined in 3GPP TS 25.466 [9]	Defined in TS 25.466 [9]
tmaGainResolution	A data field defined in Table B.3 of 3GPP TS 25.466 [9].	Defined in TS 25.466 [9]
tmaInstalledMechanicalTilt	A data field defined in Table B.3 of 3GPP TS 25.466 [9].	Defined in TS 25.466 [9]
tmaMaxGain	Defined in 3GPP TS 25.466 [9]	Defined in TS 25.466 [9]
tmaMinGain	Defined in 3GPP TS 25.466 [9]	Defined in TS 25.466 [9]
tmaNumberOfSubunits	Defined in 3GPP TS 25.466 [9]	Defined in TS 25.466 [9]
tmaResolution	Defined in 3GPP TS 25.466 [9]	Defined in TS 25.466 [9]
tmaSectorId	A data field defined in Table B.3 of 3GPP TS 25.466 [9].	Defined in TS 25.466 [9]
tmaStateFlag	Defined in 3GPP TS 25.466 [9]	Defined in TS 25.466 [9]
tmaSubunitNumber	Defined in 3GPP TS 25.466 [9]	Defined in TS 25.466 [9]
tmaSubunitType	A data field defined in Table B.3 of 3GPP TS 25.466 [9].	Defined in TS 25.466 [9]
tmaSubunitRxFrequencyBand	A data field defined in Table B.3 of 3GPP TS 25.466 [9].	Defined in TS 25.466 [9]
tmaSubunitTxFrequencyBand	A data field defined in Table B.3 of 3GPP TS 25.466 [9].	Defined in TS 25.466 [9]
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).	
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.	A list of frequency bands expressed as strings. Valid frequency band values are specified in sub-clause 5.2 of TS 25.104 [16].
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.	A list of frequency bands expressed as strings. Valid frequency band values are specified in sub-clause 5.2 of TS 25.105 [16].
vertBeamwidth	The 3 dB power beamwidth of the antenna pattern in the vertical plane. 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 180.

Editor"s note: Relation attributes (e.g. theAntenna) may need to be removed (not necessary to be explicitly mentioned in Table Attributes since such requirement is already specified in UML diagram).

4.6 Common Notifications

Name	Qualifier	Notes
notifyAckStateChanged	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyChangedAlarm	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyClearedAlarm	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyNewAlarm	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyComments	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyAlarmListRebuilt	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyPotentialFaultyAlarmList	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyAttributeValueChange	O	
notifyObjectCreation	O	
notifyObjectDeletion	O	

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
2011-03	SP-51	SP-110118	--	--	Presentation to SA for Information	---	1.0.0
2011-05	SP-52	SP-110273	--	--	Presentation to SA for Approval	1.0.0	2.0.0
2011-06	SP-52	---	--	--	Publication	2.0.0	10.0.0
2012-09	SP-57	SP-120563	001	--	Add/Correct support for multi frequency HW	10.0.0	10.1.0

History

Document history		
V10.0.0	July 2011	Publication
V10.1.0	October 2012	Publication