

Source: SA5 (Telecom Management)
Title: 3 Rel-6 CR 32.642/43/45 Add support for Remote control of Electrical Tilting (RET) antenna
Document for: Approval
Agenda Item: 7.5.3

Doc-1 st -Level	Doc-2 nd -Level	Spec	CR	Rev	Phase	Subject	Cat	Ver-Cur	Wi
SP-040587	S5-048745	32.642	027	--	Rel-6	Add support for Remote control of Electrical Tilting (RET) antenna	B	6.1.0	OAM-NIM
SP-040587	S5-048756	32.643	016	--	Rel-6	Add support for Remote control of Electrical Tilting (RET) antenna to CORBA IDL and Add Inheritance	B	6.1.0	OAM-NIM
SP-040587	S5-048750	32.645	015	--	Rel-6	Add support for Remote control of Electrical Tilting (RET) antenna to the Bulk CM XSD file	B	6.0.0	OAM-NIM

CHANGE REQUEST

⌘ **32.642 CR 027** ⌘ rev - ⌘ Current version: **6.1.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: | UICC apps ⌘ ME Radio Access Network Core Network

Title:	⌘ Add support for Remote control of Electrical Tilting (RET) antenna		
Source:	⌘ SA5 (islip@lucent.com)		
Work item code:	⌘ OAM-NIM	Date:	⌘ 20/08/2004
Category:	⌘ B	Release:	⌘ Rel-6
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction 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 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ Inclusion of RET for release 6.		
Summary of change:	⌘ <ul style="list-style-type: none"> Additional references to TR32.804 and TS 32.652. New definition of Antenna. Add imported classes to align with TS 32.151. Amended class diagram [cardinality 1..* (not 1..n)] and filled in diamonds to align with TS 32.152 and also to add a new antenna class plus relationships. Removal of statement that vsDataConatiner is only appropriate to bulk CM Amendment to phrasing of the title Addition of a referential attribute in utranCell to indicate the zero, one or more antennae supporting the cell. New clause 6.3.7 for Antenna class , and attribute definitions and notifications table. Additional attribute and legal value definitions. A new Annex B describing the antenna class in more detail. 		
Consequences if not approved:	⌘ The remote electrical tilt control will not be possible.		

Clauses affected:	⌘ 2, 3.1, 6.1, 6.2.1, 6.2.2, 6.3.3.2, 6.3.7 (New), 6.5.1, Annex B (New), Annex C						
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications	Y	N	⌘	X	⌘	
Y	N						
⌘	X						
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px;">X</td> </tr> </table> Test specifications	X	⌘				
X							
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px;">X</td> </tr> </table> O&M Specifications	X	⌘				
X							
Other comments:	⌘ Parent to CRs 32.643/645 in S5-048756/750.						

How to create CRs using this form:

Change in Clause 2

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 TS 32.101: "Telecommunication management; Principles and high level requirements".
- [2] 3GPP TS 32.102: "Telecommunication management; Architecture".
- [3] 3GPP TS 23.003: "Numbering, addressing and identification".
- [4] 3GPP TS 25.401: "UTRAN Overall Description".
- [5] 3GPP TS 25.433: "UTRAN Iub Interface NBAP Signalling".
- [6] [3GPP TR 32.804: "Telecommunication management; Control of Remote Electrical Tilting \(RET\) antennas; Requirements"](#). ~~Void.~~
- [7] [3GPP TS 32.652: "Telecommunication management; Configuration Management \(CM\); GERAN network resources Integration Reference Point \(IRP\): Network Resource Model \(NRM\)"](#). ~~Void.~~
- [8] 3GPP TS 32.672: "Telecommunication management; Configuration Management (CM); State Management Integration Reference Point (IRP): Information Service (IS)".
- [9] 3GPP TS 25.331: "Radio Resource Control (RRC) protocol specification".
- [10] Void.
- [11] 3GPP TS 32.111-2: "Telecommunication management; Fault Management; Part 2: Alarm Integration Reference Point (IRP): Information Service (IS)".
- [12] Void.
- [13] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".
- [14] 3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".
- [15] 3GPP TS 23.002: "Network Architecture".
- [16] 3GPP TS 32.622: "Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Network Resource Model (NRM)".
- [17] 3GPP TS 32.602: "Telecommunication management; Configuration Management (CM); Basic CM Integration Reference Point (IRP) Information Service (IS)".
- [18] 3GPP TS 32.612: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP): Information Service (IS)".

End of Change in Clause 2

Change in Clause 3.1

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply. For terms and definitions not found here, please refer to 3GPP TS 32.101 [1], 3GPP TS 32.102 [2] and 3GPP TS 32.600 [14].

Association: In general it is used to model relationships between Managed Objects. Associations can be implemented in several ways, such as:

- (1) name bindings,
- (2) reference attributes, and
- (3) association objects.

This IRP stipulates that containment associations shall be expressed through name bindings, but it does not stipulate the implementation for other types of associations as a general rule. These are specified as separate entities in the object models (UML diagrams).

Managed Element (ME): An instance of the Managed Object Class ManagedElement defined in [16].

Managed Object (MO): In the context of the present document, a Managed Object (MO) is a software object that encapsulates the manageable characteristics and behaviour of a particular Network Resource. The MO is instance of a MO class defined in a MIM/NRM. This class, called **Information Object Class (IOC)** has attributes that provide information used to characterize the objects that belong to the class (the term "attribute" is taken from TMN and corresponds to a "property" according to CIM). Furthermore, the IOC can have operations that represent the behaviour relevant for that class (the term "operation" is taken from TMN and corresponds to a "method" according to CIM). The IOC may support the emission of notifications that provide information about an event occurrence within a network resource.

Management Information Model (MIM): Also referred to as NRM ñ see the definition below.

Network Resource Model (NRM): A model representing the actual managed telecommunications network resources that a System is providing through the subject IRP. An NRM identifies and describes the IOCs, their associations, attributes and operations. The NRM is also referred to as "MIM" (see above), which originates from the ITU-T TMN.

Node B: A logical node responsible for radio transmission/reception in one or more cells to/from the User Equipment. It terminates the Iub interface towards the RNC.

[Antenna:](#) An Antenna is the set of radiating elements involved in the transmission and reception of Radio Frequency energy. Please refer to Annex B for a more detailed explanation.

End of change in Clause 3.1

Change in Clause 6.1

6.1 Information entities imported and local labels

<u>Label reference</u>	<u>Local label</u>
3GPP TS 32.622 [16], information object class, Top	Top
3GPP TS 32.652 [7], information object class, ExternalGsmCell	ExternalGsmCell
3GPP TS 32.652 [7], information object class, GsmCell	GsmCell
3GPP TS 32.652 [7], information object class, GsmRelation	GsmRelation
3GPP TS 32.622 [16], information object class, MeContext	MeContext
3GPP TS 32.622 [16], information object class, Managed Element	Managed Element
3GPP TS 32.622 [16], information object class, Managed Function	Managed Function
3GPP TS 32.622 [16], information object class, MeContext	MeContext
3GPP TS 32.622 [16], information object class, Subnetwork	Subnetwork

End of change in Clause 6.1

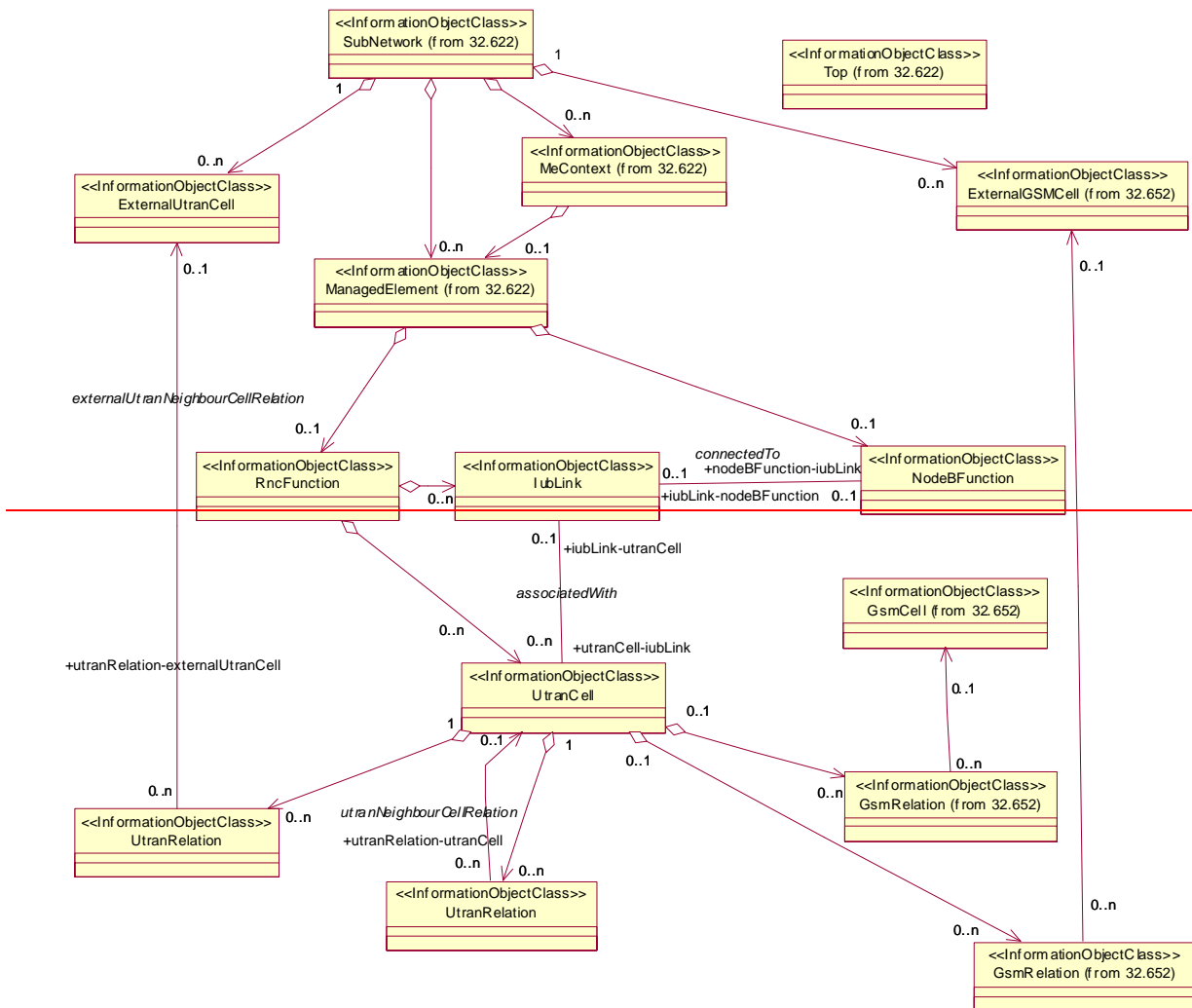
Change in Clause 6.2.1

6.2.1 Attributes and relationships

This clause depicts the set of IOCs that encapsulate information relevant for this service. This clause provides the overview of all information object classes in UML. Subsequent clauses provide more detailed specification of various aspects of these information object classes.

Figure 6.1 show the name-containment relation and other types of relations of the UTRAN NRM.

NOTE: The name-containment relations between IOCs are indicated by UML "unidirectional [composition aggregation by reference](#)" ("[filled in hollow](#) diamonds").



NOTE 1: The listed cardinality numbers represent transient as well as steady state numbers, and reflect all managed object creation and deletion scenarios.

NOTE 2: The relation between GsmRelation and GsmCell is optional. It may be present if both the UtranCell and the GsmCell are managed by the same management node.

NOTE 3: The UtranRelation and GsmRelation can be name-contained under IOCs defined in other NRMs.

NOTE 4: [For a description and clarification of the Antenna class, please refer to Annex B.](#)

Figure 6.1: UTRAN NRM Containment/Naming and Association diagram

Each IOC is identified with a Distinguished Name (DN) according to 3GPP TS 32.300 [13] that expresses its containment hierarchy. As an example, the DN of an IOC representing a cell could have a format like:

SubNetwork=Sweden,MeContext=MEC-Gbg-1,ManagedElement=RNC-Gbg-1, RncFunction=RF-1,UtranCell=Gbg-1.

End of change in Clause 6.2.1

Change in Clause 6.2.2

6.2.2 Inheritance

This clause depicts the inheritance relationships that exist between IOCs.

Figure 6.2 shows the inheritance hierarchy for the UTRAN NRM.

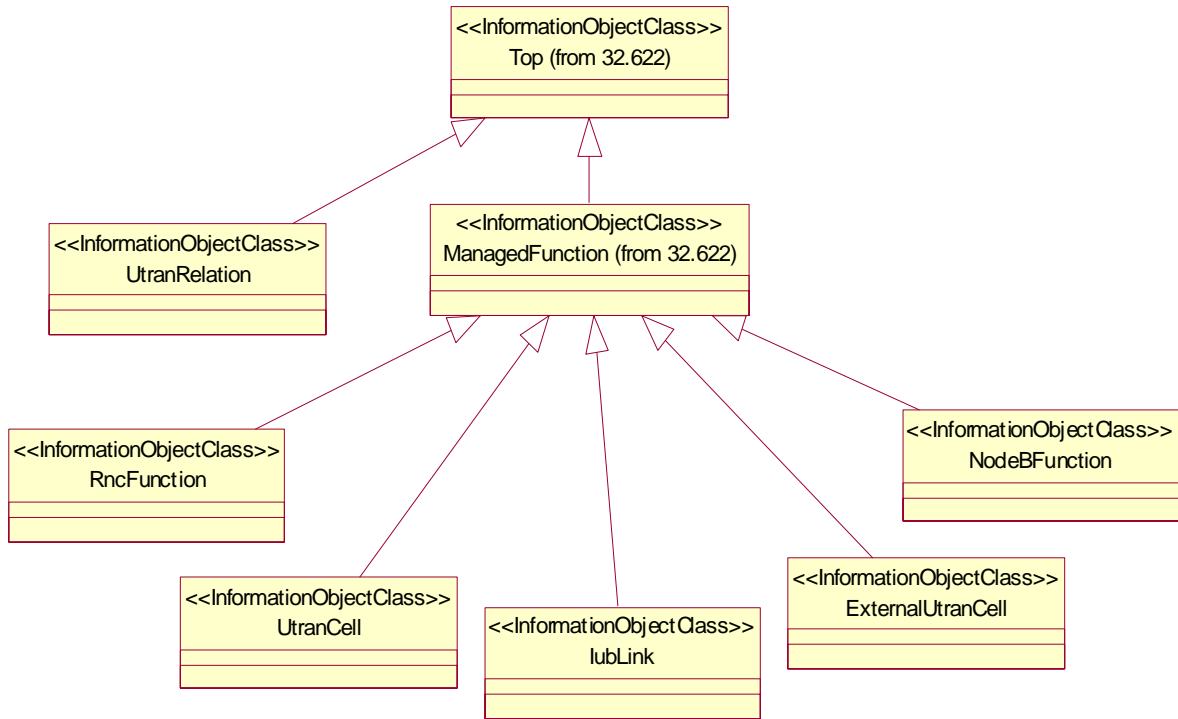
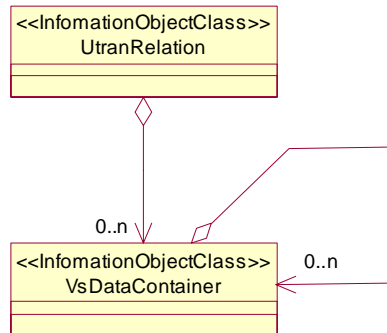


Figure 6.2: UTRAN NRM Inheritance Hierarchy



NOTE 1: The listed cardinality numbers represent transient as well as steady state numbers, and reflect all managed object creation and deletion scenarios.

NOTE 2: Each instance of the vsDataContainer shall only be contained under one IOC. The vsDataContainer can be contained under IOCs defined in other NRMs.

Figure 6.3: vsDataContainer Containment/Naming and Association in UTRAN NRM diagram

~~The vsDataContainer is only used for the Bulk CM IRP.~~

**End of change in Clause 6.2.2
Change in Clause 6.3.3.2**

6.3.3.2 Attributes

Table 6.5: Attributes of UtranCell

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
utranCellId	+	M	M	-
userLabel	+	M	M	M
cld	+	M	M	M
localCellId	+	M	M	M
uarfcnUI	+	O	M	M
uarfcnDI	+	O	M	M
primaryScramblingCode	+	O	M	M
primaryCpichPower	+	O	M	M
maximumTransmissionPower	+	M	M	M
primarySchPower	+	O	M	M
retAntennaList	±	O	M	M
secondarySchPower	+	O	M	M
bchPower	+	O	M	M
cellMode	+	M	M	-
uarfcn	+	O	M	M
cellParameterId	+	O	M	M
primaryCcpchPower	+	O	M	M
dwPchPower	+	O	M	M
timeSlotList	+	O	M	M
schPower	+	O	M	M
lac	+	M	M	M
rac	+	M	M	M
rac	+	M	M	M
uraList	+	M	M	M
utranCell-lubLink	+	M	M	-

Table 6.6: Additional attributes of UtranCell for the support of the State Management IRP

Attribute Name	Support Qualifier	READ	WRITE
operationalState	O	M	-

NOTE: No state propagation shall be implied.

Table 6.7: Notifications of UtranCell

Name	Qualifier	Notes
notifyAckStateChanged	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyAttributeValueChange	O	
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])	
notifyObjectCreation	O	
notifyObjectDeletion	O	
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])	

End change in Clause 6.3.3.2

Change in clause 6.3.7 (NEW SECTION)

6.3.7 Antenna

6.3.7.1 Definition

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

6.3.7.2 Attributes

Table 6.14: Attributes of Antenna

<u>Attribute name</u>	<u>Visibility</u>	<u>Support Qualifier</u>	<u>Read Qualifier</u>	<u>Write Qualifier</u>
antennaId	+	O	M	-
retUtranCellList		O	M	M
retTiltValue	+	O	M	M
compassDirection	+	O	M	M
maxTiltValue	+	O	M	M
minTiltValue	+	O	M	M
mechanicalOffset	+	O	M	M
retGroupName	+	O	M	M
height	+	O	M	M

Table 6.15: Notifications of Antenna

<u>Name</u>	<u>Qualifier</u>	<u>Notes</u>
notifyAckStateChanged	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyAttributeValueChange	O	
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])	
notifyObjectCreation	O	
notifyObjectDeletion	O	
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])	

End of change in clause 6.3.7

Change in Clause 6.5.1

6.5.1 Definition and legal values

Table 6.18 defines the attributes that are present in several Information Object Classes (IOCs) of the present document.

Table 6.18: Attributes

Attribute Name	Definition	Legal Values
adjacentCell	It carries the DN of the UtranCell or the ExternalUtranCell.	
antennaId	An attribute whose "name+value" can be used as an RDN (according to the rules in TS 32.300 [13]) when naming an instance of the object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance	
bchPower	The power of the broadcast channel in the FDD mode cell (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-35..+15 dB) Steps of 0.1dB
cellMode	An attribute that identifies the cell mode.	Type: Enumerated value Range: (fDD mode, 1.28McpsTDD mode, 3.84McpsTDD mode)
cellParameterId	For IOCs UtranCell and ExternalUtranCell , this attribute identifies unambiguously the TDD mode cell (see ref. TS 25.433 [5]): <ul style="list-style-type: none"> • 3.84 Mcps TDD - Code Groups, Scrambling Codes, Midambles and Toffset • 1.28 Mcps TDD - SYNC-DL and SYNC-UL sequences, the scrambling codes and the midamble codes For IOC UtranRelation , this parameter will be broadcast in the system information of associated cell. The associated cell can be: <ul style="list-style-type: none"> • another UTRAN TDD cell (1.28 Mcps TDD or 3.84 Mcps TDD) • the external UTRAN TDD cell (1.28 Mcps TDD or 3.84 Mcps TDD). 	Type: Integral numeric value Range: (0Ö 127)
compassDirection	The compass direction in degrees (magnetic) that the antenna is pointing in. This attribute is used mainly for planning purposes. The value of this attribute, when combined with a few others, helps in plotting a coverage map on planning tools for the particular utranCell(s). When the coverage needs to be changed, the tilt value is adjusted. Also, when a cell site fails, it becomes much easier to determine the area where there is a loss of service.	A single integral value corresponding to an angle in degrees between 0 and 360.
cid	The attribute is the identifier of a cell in one RNC (Ref. 3GPP TS 25.401 [4]), 3GPP TS 25.433 [5]).	Type: Integral numeric value Range: (0Ö 65535)
dwPchPower	DwPCH Power is the power that shall be used for transmitting the DwPCH in a 1.28 Mcps TDD cell. (Ref. 3 GPP TS 25.433 [5]).	Type: Numeric value Range: (-15Ö +40 dBm) Steps of 0.1dB
externalUtranCellId	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.	
height	The height of an antenna above sea level. Planning permission (for a cell site) is normally granted on the antenna height. This parameter also determines the site coverage and feeds into the planning tool.	An integral value representing a number of whole metres
iubLinkId	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.	
lac	IOCs UtranCell and ExternalUtranCell : Location Area Code, LAC (Ref. 3GPP TS 23.003 [3]). IOC UtranRelation : Location Area Code, LAC (Ref. 3GPP TS 23.003 [3]), for another UTRAN cell or the external UTRAN Cell that is broadcast in the system information in the Cell.	Type: Integral numeric value Range: (1.. 65533, 65535)
localCellId	Local Cell id is used to uniquely identify the set of resources defined in a Node B to support a cell (as defined by a Cid Ref. 3GPP TS 25.401 [4]), 3GPP TS 25.433 [5]). It must be unique in Node B at a minimum, but may be unique in UTRAN. It can be used to tie the cell in the RNC to a specific set of resources in the Node B.	Type: Integral numeric value Range: (0Ö 268435455)

maximumTransmissionPower	The maximum transmission power of a cell. It is the maximum power for all downlink channels added together, that is allowed to be used simultaneously in a cell. (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (0..50 dBm) Steps of 0.1 dB
maxTiltValue	The maximum amount of tilt the RET system can support. This helps in preventing the user from entering any unrealistic value for #etTiltValue and hence prevents the motors on the RET unit from getting jammed / burnt out.	A single integral value corresponding to an angle in degrees between 0 and 360 In 0.1 degree increments (see section 7.7.5.11 RET TR.25.802
mcc	Mobile Country Code, MCC (part of the PLMN Id, Ref. 3GPP TS 23.003 [3]).	
mechanicalOffset	This is a value representing a non-adjustable tilt value, which is imparted to the antenna due to the physical installation. The actual tilt at any point in time is the summation of "mechanicalOffset" and "retTiltValue"	A single integral value corresponding to an angle in degrees between 0 and 360 with a resolution of 0.1 degrees, see note 1.
minTiltValue	The minimum amount of tilt the RET system can support. This helps in preventing the user from entering any unrealistic value for #etTiltValue and hence prevents the motors on the RET unit from getting jammed / burnt out.	A single integral value corresponding to an angle in degrees between 0 and 360 with a resolution of 0.1 degrees, see note 1. (also see section 7.7.5.11 RET TR.25.802 Note 1
mnc	Mobile Network Code, MNC (part of the PLMN Id, Ref. 3GPP TS 23.003 [3]).	
primaryCcpchPower	IOCs UtranCell and ExternalUtranCell : The power of the primary CCPCH channel in the TDD cell (Ref. 3GPP TS 25.433 [5]). IOC UtranRelation : The power of the primary CCPCH channel in the TDD cell (Ref. 3GPP TS 25.433 [5]), for another UTRAN TDD cell or the external UTRAN TDD Cell that is broadcast in the system information in the Cell.	Type: Numeric value Range: (-15Ö+40 dBmÖ) Steps of 0.1dB
nodeBFunctionId	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.	
primaryCpichPower	IOCs UtranCell and ExternalUtranCell : The power of the primary CPICH channel in the FDD mode cell (Ref. 3GPP TS 25.433 [5]). IOC UtranRelation : The power of the primary CPICH channel in the FDD mode cell (Ref. 3GPP TS 25.433 [5]), for another UTRAN FDD mode cell or the external UTRAN FDD mode cell that is broadcast in the system information in the cell.	Type: Numeric value Range: (-10,..,50 dBm) Steps of 0.1 dB
primarySschPower	The power of the primary synchronisation channel in the FDD mode cell, DL Power (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-35..+15 dB) Steps of 0.1dB
primaryScramblingCode	IOCs UtranCell and ExternalUtranCell : The primary DL scrambling code used by the FDD mode cell (Ref. 3GPP TS 25.433 [5]). IOC UtranRelation : The primary DL scrambling code used by the FDD mode cell (Ref. 3GPP TS 25.433 [5]), for another UTRAN FDD mode cell or the external UTRAN FDD mode cell that is broadcast in the system information in the cell.	Type: Integral numeric value Range: (0 ñ 511)
rac	Routing Area Code, RAC (Ref. 3GPP TS 23.003 [3]).	Type: Integral numeric value Range: (0..255)
retAntennaList	This is a referential attribute to list the DNs of Antennas that support the UtranCell.	A list of DNs
retGroupName	The group name is a textual, alphanumeric string to define a logical grouping of antennas that 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 ltf-N.	Type: string bounded to 80 characters.

retTiltValue	Gives you the tilt value of the antenna that has been made using electrical means (i.e. using RET). This attribute gives the operator an indication of the current setting of the antenna and is at the centre of the RET feature.	A single integral value corresponding to an angle in degrees between 0 and 360 In 0.1 degree increments (see section 7.7.5.11 RET TR.25.802
retUtranCellList	This is a list of utranCell DNs to record the relationship between the antenna instance and the utran cells which are supported by the antenna.	A list of DNs
mncFunctionId	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.	
rnclId	IOC ExternalUtranCell: Unique RNC ID for the associated RNC (Ref. 3GPP TS 23.003 [3]). IOC RncFunction: Unique RNC ID (Ref. 3GPP TS 23.003 [3]).	
sac	Service Area Code, SAC (Ref. 3GPP TS 23.003 [3]).	Type: Integral numeric value Range: (0.. 65535)
schPower	The power of the synchronisation channel in 3.84 Mcps TDD cell (Ref. 3GPP TS 25.433 [5]).	Type: Numeric Value Range: (-35Ö 15 dB) Steps of 0.1dB
secondarySchPower	The power of the secondary synchronisation channel in the cell, DL Power (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-35..+15 dB) Steps of 0.1dB
timeSlotList	This attribute defines the time slot configuration information in the TDD cell. It is a list which contains 7 (for 1.28 Mcps TDD cell) or 15 (for 3.84 Mcps TDD cell) items. Within each item there are three parts: timeSlotId, timeSlotDirection, timeSlotStatus (Ref. 3GPP TS 25.433 [5]).	timeSlotId: when applied to 1.28 Mcps TDD cell: Type: Integral numeric value Range: (0Ö 6); when applied to 3.84 Mcps TDD cell: Type: Integral numeric value Range: (0Ö 14); timeSlotDirection: Type: Enumerated value Range: (UL, DL); timeSlotStatus: Type: Enumerated value Range: (Active, Not active)
uarfcn	IOCs UtranCell and ExternalUtranCell: The UTRA absolute Radio Frequency Channel number for TDD mode cell, UARFCN (ref. 3 GPP TS 25.433 [5]). IOC UtranRelation: The UTRA absolute Radio Frequency Channel number for TDD mode cell, UARFCN (ref. 3 GPP TS 25.433 [5]), for another UTRAN TDD mode cell or the external UTRAN TDD mode Cell that is broadcast in the system information in the Cell.	Type : Integral numeric Value (0 - 16383)
uarfcnDl	IOCs UtranCell and ExternalUtranCell: The DL UTRA absolute Radio Frequency Channel number for FDD mode cell, UARFCN (Ref. 3GPP TS 25.433 [5]). IOC UtranRelation: The DL UTRA absolute Radio Frequency Channel number for FDD mode cell, UARFCN (Ref. 3GPP TS 25.433 [5]), for another UTRAN FDD mode cell or the external UTRAN FDD mode cell that is broadcast in the system information in the Cell.	Type: Integral numeric value Range: (0 - 16383)
uarfcnUl	IOCs UtranCell and ExternalUtranCell: The UL UTRA absolute Radio Frequency Channel number for FDD mode cell, UARFCN (Ref. 3GPP TS 25.433 [5]). IOC UtranRelation: The UL UTRA absolute Radio Frequency Channel number for FDD mode cell, UARFCN (Ref. 3GPP TS 25.433 [5]) for another UTRAN FDD mode cell or the external UTRAN FDD mode cell, that is broadcast in the system information in the Cell.	Type: Integral numeric value Range: (0 - 16383)

uraList	A list of UTRAN Registration Area, URA (Ref. 3GPP TS 25.331 (subclause 10.3.10)[9]), that a UtranCell can belong to.	Type: A list of Integral numeric values Range: (0..65535) for each integral numeric value.
userLabel	A user-friendly (and user assigned) name of the associated object. Inherited from ManagedFunction.	
utranCellId	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.	
utranRelationId	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.	
Note 1.	If an antenna vendor can only support a granularity of tilt value in 5 degree increments, it means that the value of tilt over the Itf-N would be 0, 50, 100, 150 etc, corresponding to an integral number of 0.1 degree values.	

End of Change in Clause 6.5.1

Change in Clause Annex B (NEW ANNEX)

**[Annex B \(informative\):
RET Control Architecture](#)**

[The Itf-N provides an abstraction of resources to allow the monitor and control of physical resource from the network level management systems. For RET, the Antenna tilt is controlled via a control unit which is located within the NodeB \(from a management perspective\). The control unit sends ASIG commands to actuators located at the tower top, in order to read, and to adjust antenna tilt values.](#)

[The Antenna class will report failures and malfunctions of either the control unit, or the tilt. The full set of notifications is as defined in table 6.1.5. There are several configurations of antennae. Some support the transmission of several frequencies from a single radome while others are deployed as an array in order to provide effective coverage.](#)

[Hence in the UTRAN model there is an N:M relationship between utranCell's and the Antenna class, permitting the model to support all possibilities. The figure B.1 below illustrates the RET architecture](#)

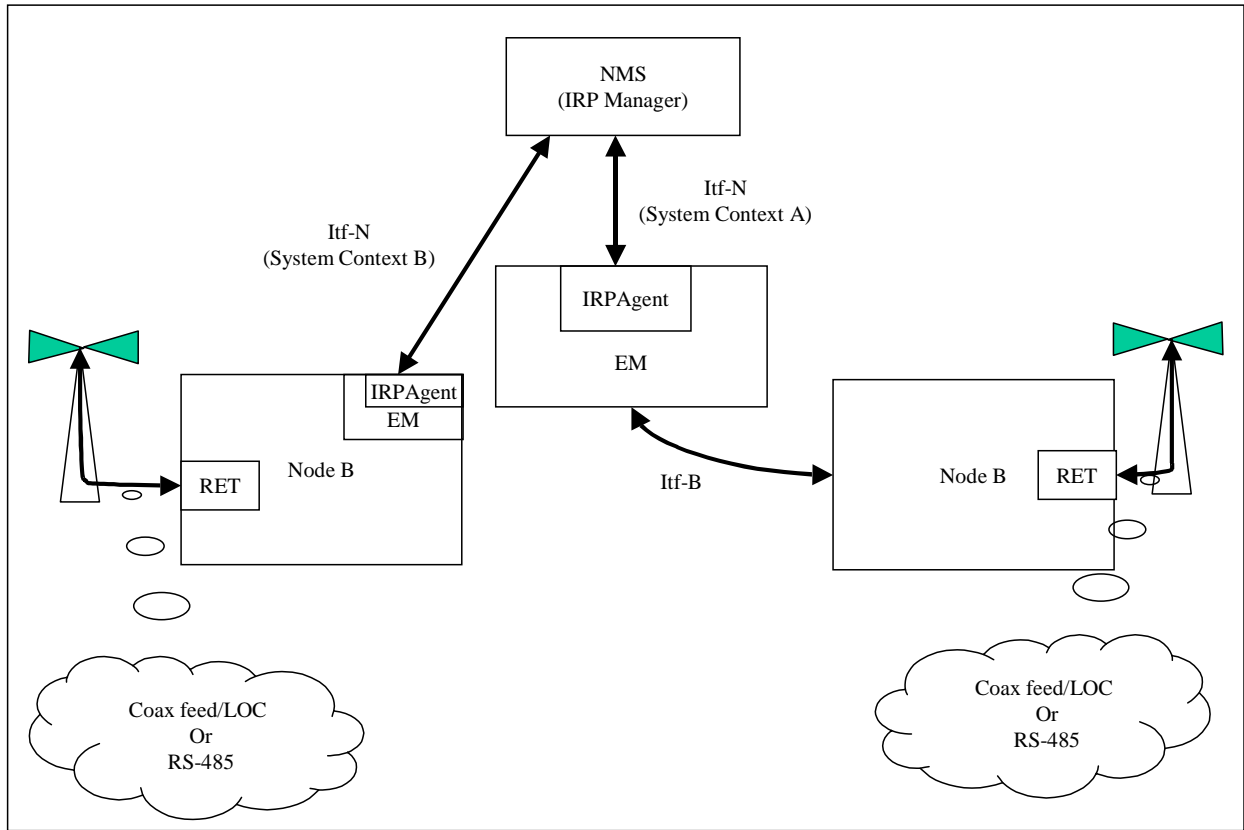


Figure B.1 Overall RET architecture

End of Change in Annex B (NEW ANNEX)

**Annex ~~B~~C (informative):
Change history**

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Dec 2003	S_22	SP-030641	017	--	Add missing notification notifyPotentialFaultyAlarmlist	5.2.0	5.3.0
Dec 2003	S_22	SP-030643	018	--	Remove redundant VsDataContainer Containment UML - Now covered by 32.622	5.2.0	5.3.0
Mar 2004	S_23	SP-040129	019	--	Addition of new attributes for support of both FDD and TDD modes	5.3.0	6.0.0
Jun 2004	S_24	SP-040254	021	--	Correction of the supported UMTS frequencies	6.0.0	6.1.0

CHANGE REQUEST

⌘ **32.643 CR 016** ⌘ rev - ⌘ Current version: **6.1.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: | UICC apps ME Radio Access Network Core Network

Title:	⌘ Add support for Remote control of Electrical Tilting (RET) antenna to CORBA IDL and Add Inheritance		
Source:	⌘ SA5 (islip@lucent.com)		
Work item code:	⌘ OAM-NIM	Date:	⌘ 20/08/2004
Category:	⌘ B	Release:	⌘ Rel-6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ Inclusion of RET for release 6 to align with new additions to UTRAN NRM TS 32.642. In addition, IDL inheritance to reflect the IOC inheritance specified by the corresponding IRP IS is missing. In subclause 'General mappings', one statement about DN mapping is wrong and one statement about AttributeValueChange notifications is redundant/misplaced.
Summary of change:	⌘ Add IDL inheritance to reflect the IOC inheritance specified by the corresponding IRP IS. In subclause 'General mappings', delete the statement about DN mapping and AttributeValueChange notifications, plus the addition of antenna class and associated attributes for RET.
Consequences if not approved:	⌘ The MOC IDL definitions copy and paste what they have 'inherited', and that is an incorrect way of defining these items which is error-prone and does not follow common O-O practices. The remote control of electrical downtilt control is not possible.

Clauses affected:	⌘ 5.1, 5.2.2, New clause 5.2.7, Annex A1		
Other specs affected:	⌘	Y	N
	⌘	X	Other core specifications
	⌘	X	Test specifications
	⌘	X	O&M Specifications
Other comments:	⌘ Parent CR 32.642 in S5-048745. Related CRs 32.623/33/53 (Add Inheritance in CORBA IDL) in S5-048738/53/55.		

How to create CRs using this form:

Change in 5.1

5.1 General mappings

~~The IS parameter name managedObjectInstance is mapped into DN.~~

Attributes modelling associations as defined in the NRM (here also called "reference attributes") are in this SS mapped to attributes. The names of the reference attributes in the NRM are mapped to the corresponding attribute names in the MOC. When the cardinality for an association is 0..1 or 1..1 the datatype for the reference attribute is defined as an MOReference. The value of an MO reference contains the distinguished name of the associated MO. When the cardinality for an association allows more than one referred MO, the reference attribute will be of type MOReferenceSet, which contains a sequence of MO references.

~~If a reference attribute is changed, an AttributeValueChange notification is emitted.~~

End of Change in 5.1

Change in Clause 5.2.2

5.2.2 IOC UtranCell

Table 5.2: Mapping from NRM IOC UtranCell attributes and associations to SS equivalent MOC UtranCell attributes

NRM Associations/Attributes of IOC UtranCell in 3GPP TS 32.642 [4]	SS Attributes	SS Type	Support Qualifier	Read	Write
utranCellId	utranCellId	string	M	M	_
userLabel	userLabel	string	M	M	M
cld	cld	long	M	M	M
localCellId	localCellId	long	M	M	M
uarfcnUI	uarfcnUI	long	O	M	M
uarfcnDI	uarfcnDI	long	O	M	M
primaryScramblingCode	primaryScramblingCode	long	O	M	M
primaryCpichPower	primaryCpichPower	long	O	M	M
maximumTransmissionPower	maximumTransmissionPower	long	M	M	M
retAntennaList	retAntennaList	GenericNetworkResourcesIRPSystem::AttributeTypesStringSet	<u>O</u>	<u>M</u>	-
primarySchPower	primarySchPower	long	O	M	M
secondarySchPower	secondarySchPower	long	O	M	M
bchPower	bchPower	long	O	M	M
lac	lac	long	M	M	M
rac	rac	long	M	M	M
sac	sac	long	M	M	M
uraList	uraList	List of long	M	M	M
AssociatedWith/ utranCell-lubLink	utranCelllubLink	GenericNRIRPSystem::AttributeTypes::MOReference	M	M	-
cellMode	cellMode	GenericNRMAAttributeTypes::cellModeEnumType	M	M	-
uarfcn	uarfcn	long	O	M	M
cellParameterId	cellParameterId	long	O	M	M
primaryCpchPower	primaryCpchPower	long	O	M	M
dwPchPower	dwPchPower	long	O	M	M
timeSlotList	timeSlotList	TDDNRMAAttributeTypes::TimeSlotListConfigStructType	O	M	M
schPower	schPower	long	O	M	M

NOTE: For all support qualifiers with the value iOi, see attribute constraints in 3GPP TS 32.642 [4].

End of Change in Clause 5.2.2

Change Clause 5.2.7 (new)

5.2.7 IOC Antenna

<u>NRM Attributes of IOC</u> <u>ExternalUtranCell in 3GPP TS 32.642 [4]</u>	<u>SS Attributes</u>	<u>SS Type</u>	<u>Support Qualifier</u>	<u>Read</u>	<u>Write</u>
<u>antennaId</u>	<u>antennaId</u>	<u>string</u>	<u>O</u>	<u>M</u>	<u>-</u>
<u>retUtranCellList</u>	<u>retUtranCellList</u>	<u>GenericNetworkResourcesIRPSsystem::AttributeTypesStringSet</u>	<u>O</u>	<u>M</u>	<u>M</u>
<u>RetTiltValue</u>	<u>retTiltValue</u>	<u>integer</u>	<u>O</u>	<u>M</u>	<u>M</u>
<u>compassDirection</u>	<u>compassDirection</u>	<u>integer</u>	<u>O</u>	<u>M</u>	<u>M</u>
<u>MaxTiltValue</u>	<u>maxTiltValue</u>	<u>integer</u>	<u>O</u>	<u>M</u>	<u>M</u>
<u>MinTiltValue</u>	<u>minTiltValue</u>	<u>integer</u>	<u>O</u>	<u>M</u>	<u>M</u>
<u>mechanicalOffset</u>	<u>mechanicalOffset</u>	<u>integer</u>	<u>O</u>	<u>M</u>	<u>M</u>
<u>retGroupName</u>	<u>retGroupName</u>	<u>string</u>	<u>O</u>	<u>M</u>	<u>M</u>
<u>height</u>	<u>height</u>	<u>integer</u>	<u>O</u>	<u>M</u>	<u>M</u>

NOTE: For all support qualifiers with the value iO!, see attribute constraints in 3GPP TS 32.642 [4].

End of Change for new Clause 5.2.7

Annex A (normative): CORBA IDL, NRM definitions

Change for new Annex A1

A.1 IDL specification (file name "UtranNetworkResourcesNRMDefs.idl")

```
#ifndef UtranNetworkResourcesNRMDefs_idl
#define UtranNetworkResourcesNRMDefs_idl
#include "GenericNetworkResourcesNRMDefs.idl"
#pragma prefix "3gppsa5.org"

/**
 * This module defines constants for each MO class name and
 * the attribute names for each defined MO class.
 */
module UtranNetworkResourcesNRMDefs
{

    /**
     * Definitions for MO class RncFunction
     */
    interface RncFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
    {
        const string CLASS = "RncFunction";
    }
}
```

```

// Attribute Names
//
const string rncFunctionId = "rncFunctionId";
const string userLabel = "userLabel";
const string mcc= "mcc";
const string mnc= "mnc";
const string rncId= "rncId";
};

/**
 * Definitions for MO class UtranCell
 */
interface UtranCell : GenericNetworkResourcesNRMDefs::ManagedFunction
{
    const string CLASS = "UtranCell";

    // Attribute Names
    //
const string utranCellId = "utranCellId";
const string userLabel = "userLabel";
const string utranCellIubLink = "utranCellIubLink";
const string cId= "cId";
const string localCellId= "localCellId";
const string uarfcnUl= "uarfcnUl";
const string uarfcnDl= "uarfcnDl";
const string primaryScramblingCode= "primaryScramblingCode";
const string primaryCpichPower= "primaryCpichPower";
const string maximumTransmissionPower= "maximumTransmissionPower";
const string retAntennaList= "retAntennaList";
const string primarySchPower= "primarySchPower";
const string secondarySchPower= "secondarySchPower";
const string bchPower= "bchPower";
const string cellMode = "cellMode";
const string uarfcn= "uarfcn";
const string cellParameterId= "cellParameterId";
const string primaryCcpchPower= "primaryCcpchPower";
const string dwPchPower= "dwPchPower";
const string timeSlotList= "timeSlotList";
const string schPower= "schPower";
const string lac= "lac";
const string rac= "rac";
const string sac= "sac";
const string uraList= "uraList";

};

```

```

interface Antenna : GenericNetworkResourcesNRMDefs::ManagedFunction
{
    const string CLASS= "Antenna";

    // Attribute Names
    //
const string antennaId= "antennaId";
const string retUtranCellList= "retUtranCellList";
const string retTiltValue= "retTiltValue";
const string compassDirection= "compassDirection";
const string maxTiltValue= "maxTiltValue";
const string minTiltValue= "minTiltValue";
const string mechanicalOffset= "mechanicalOffset";
const string retGroupName= "retGroupName";
const string height= "height";
};

```

```

/**

```

```

    * Definitions for MO class NodeBFunction
    */
interface NodeBFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
    const string CLASS = "NodeBFunction";

    // Attribute Names
    //
    const string nodeBFunctionId = "nodeBFunctionId";
const string userLabel = "userLabel";
    const string nodeBFunctionIubLink = "nodeBFunctionIubLink";
};

/**
 * Definitions for MO class IubLink
 */
interface IubLink : GenericNetworkResourcesNRMDefs::ManagedFunction
{
    const string CLASS = "IubLink";

    // Attribute Names
    //
    const string iubLinkId = "iubLinkId";
const string userLabel = "userLabel";
    const string iubLinkNodeBFunction = "iubLinkNodeBFunction";
    const string iubLinkUtranCell = "iubLinkUtranCell";

};

};

/**
 * Definitions for MO class UtranRelation
 */
interface UtranRelation : Top
{
    const string CLASS = "UtranRelation";

    // Attribute Names
    //
    const string utranRelationId = "utranRelationId";
    const string adjacentCell = "adjacentCell";
    const string uarfcnUl= "uarfcnUl";
    const string uarfcnDl= "uarfcnDl";
    const string primaryScramblingCode= "primaryScramblingCode";
    const string primaryCpichPower= "primaryCpichPower";
    const string cellMode = "cellMode";
    const string uarfcn= "uarfcn";
    const string cellParameterId= "cellParameterId";
    const string primaryCcpchPower= "primaryCcpchPower";
    const string lac= "lac";

};

/**
 * Definitions for MO class ExternalUtranCell
 */
interface ExternalUtranCell : GenericNetworkResourcesNRMDefs::ManagedFunction
{
    const string CLASS = "ExternalUtranCell";

    // Attribute Names
    //

```

```

const string externalUtranCellId = "externalUtranCellId";
const string userLabel = "userLabel";
const string cId= "cId";
const string mcc= "mcc";
const string mnc= "mnc";
const string rncId= "rncId";
const string uarfcnUl= "uarfcnUl";
const string uarfcnDl= "uarfcnDl";
const string primaryScramblingCode= "primaryScramblingCode";
const string primaryCpichPower= "primaryCpichPower";
const string cellMode = "cellMode";
const string uarfcn= "uarfcn";
const string cellParameterId= "cellParameterId";
const string primaryCcpchPower= "primaryCcpchPower";
const string lac= "lac";
const string rac= "rac";

};

/**
 * This module adds datatype definitions for both FDD and TDD mode
 * attributes used in the NRM which are not the basic datatypes
 * already defined in CORBA.
 */
module GenericNRMAAttributeTypes
{
    enum CellModeEnumType
    {
        FDDMode,
        3-84McpsTDDMode,
        1-28McpsTDDMode
    };
}

/**
 * This module adds datatype definitions for TDD mode attributes
 * used in the NRM which are not the basic datatypes already defined
 * in CORBA.
 */
module TDDNRMAAttributeTypes
{
    enum TimeSlotDirectionType
    {
        UL,
        DL
    };

    enum TimeSlotStatusType
    {
        Active,
        Not-Active
    };

    struct TimeSlotConfigStructType
    {
        short timeSlotId;
        TimeSlotDirectionType timeSlotDirection;
        TimeSlotStatusType timeSlotStatus;
    };

    typedef sequence<TimeSlotConfigStructType> TimeSlotListConfigStructType;
};

```

#endif

End Change for Annex A1
End of document

Annex B (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Jun 2001	S_12	SP-010283	--	--	Approved at TSG SA #12 and placed under Change Control	2.0.0	4.0.0
Dec 2001	S_14	SP-010646	001	--	Change type "integer" to "long" in the UTRAN Network Resources IRP: CORBA SS	4.0.0	4.1.0
Sep 2002	S_17	SP-020493	002	--	Upgrade to Rel-5	4.1.0	5.0.0
Jun 2003	S_20	SP-030283	004	--	Deletion of UTRAN attribute relationType from CORBA SS.	5.0.0	5.1.0
Dec 2003	S_22	SP-030646	006	--	Correction of the number of possible URAs from 1 to 8	5.1.0	5.2.0
Mar 2004	S_23	SP-040129	007	--	Enhancement of CORBA SS for support of both FDD and TDD modes	5.2.0	6.0.0
Jun 2004	S_24	SP-040254	009	--	The specification does not support all UMTS frequency bands	6.0.0	6.1.0

CHANGE REQUEST

⌘ **32.645 CR 015** ⌘ rev - ⌘ Current version: **6.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: | UICC apps ME Radio Access Network Core Network

Title:	⌘ Add support for Remote control of Electrical Tilting (RET) antenna to the Bulk CM XSD file		
Source:	⌘ SA5 (mohanr@lucent.com)		
Work item code:	⌘ OAM-NIM	Date:	⌘ 20/08/2004
Category:	⌘ B	Release:	⌘ Rel-6
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction 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 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ The update of UTRAN NRM to include a new Antenna class requires that the Bulk CM schema file be updated as well. This will ensure that the new RET functionality is supported.
Summary of change:	⌘ <ul style="list-style-type: none"> Declaration of attributes for IOC Antenna. New attribute in utranCell. Declaration of IOC Antenna.
Consequences if not approved:	⌘ The remote electrical tilt control functionality will remain incomplete.

Clauses affected:	⌘ Annex A										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td style="width: 20px;"> </td> <td style="width: 20px;">X</td> </tr> <tr> <td style="width: 20px;"> </td> <td style="width: 20px;">X</td> </tr> <tr> <td style="width: 20px;"> </td> <td style="width: 20px;">X</td> </tr> </table>	Y	N		X		X		X	Other core specifications Test specifications O&M Specifications	⌘
Y	N										
	X										
	X										
	X										
Other comments:	⌘ Parent CR 32.642 in S5-048745.										

How to create CRs using this form:

Annex A (normative): Configuration data file NRM-specific XML schema (file name "utranNrm.xsd")

The following XML schema `utranNrm.xsd` is the NRM-specific schema for the UTRAN Network Resources IRP NRM defined in 3GPP TS 32.642 [1]:

```
<?xml version="1.0" encoding="UTF-8"?>

<!--
  3GPP TS 32.645 UTRAN Network Resources IRP
  Bulk CM Configuration data file NRM-specific XML schema
  utranNrm.xsd
-->

<schema
  targetNamespace=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.645#utranNrm"
  elementFormDefault="qualified"
  xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:xn=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.625#genericNrm"
  xmlns:un=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.645#utranNrm"
  xmlns:gn=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.655#geranNrm"
>

  <import
    namespace=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.625#genericNrm"
    />
  <import
    namespace=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.655#geranNrm"

  <!-- UTRAN Network Resources IRP NRM attribute related XML types -->

  <simpleType name="localCellId">
    <restriction base="integer">
      <minInclusive value="0"/>
      <maxInclusive value="268435455"/>
    </restriction>
  </simpleType>

  <simpleType name="cId">
    <restriction base="integer">
      <minInclusive value="0"/>
      <maxInclusive value="65535"/>
    </restriction>
  </simpleType>

  <simpleType name="uarfcnAnyMode">
    <restriction base="integer">
      <minInclusive value="0"/>
      <maxInclusive value="16383"/>
    </restriction>
  </simpleType>

  <simpleType name="primaryScramblingCode">
    <restriction base="integer">
      <minInclusive value="0"/>
      <maxInclusive value="511"/>
    </restriction>
  </simpleType>

  <simpleType name="primaryCpichTxPower">
```

```

    <restriction base="decimal">
      <fractionDigits value="1"/>
      <minInclusive value="-10"/>
      <maxInclusive value="+50"/>
    </restriction>
  </simpleType>

  <simpleType name="maximumTransmissionPower">
    <restriction base="decimal">
      <fractionDigits value="1"/>
      <minInclusive value="0"/>
      <maxInclusive value="50"/>
    </restriction>
  </simpleType>

  <simpleType name="primarySchPower">
    <restriction base="decimal">
      <fractionDigits value="1"/>
      <minInclusive value="-35"/>
      <maxInclusive value="+15"/>
    </restriction>
  </simpleType>

  <simpleType name="secondarySchPower">
    <restriction base="decimal">
      <fractionDigits value="1"/>
      <minInclusive value="-35"/>
      <maxInclusive value="+15"/>
    </restriction>
  </simpleType>

  <simpleType name="bchPower">
    <restriction base="decimal">
      <fractionDigits value="1"/>
      <minInclusive value="-35"/>
      <maxInclusive value="+15"/>
    </restriction>
  </simpleType>

  <simpleType name="lac">
    <union>
      <simpleType>
        <restriction base="integer">
          <minInclusive value="1"/>
          <maxInclusive value="65533"/>
        </restriction>
      </simpleType>
      <simpleType>
        <restriction base="integer">
          <minInclusive value="65535"/>
          <maxInclusive value="65535"/>
        </restriction>
      </simpleType>
    </union>
  </simpleType>

  <simpleType name="rac">
    <restriction base="integer">
      <minInclusive value="0"/>
      <maxInclusive value="255"/>
    </restriction>
  </simpleType>

  <simpleType name="sac">
    <restriction base="integer">
      <minInclusive value="0"/>
      <maxInclusive value="65535"/>
    </restriction>
  </simpleType>

  <complexType name="uraList">
    <sequence>
      <element name="ura" minOccurs="1" maxOccurs="8">
        <simpleType>
          <restriction base="integer">
            <minInclusive value="0"/>
            <maxInclusive value="65535"/>
          </restriction>
        </simpleType>
      </element>
    </sequence>
  </complexType>

```

```

        </simpleType>
    </element>
</sequence>
</complexType>

<simpleType name="cellMode">
    <restriction base="string">
        <enumeration value="FDDMode"/>
        <enumeration value="3-84McpsTDDMode"/>
        <enumeration value="1-28McpsTDDMode"/>
    </restriction>
</simpleType>

<simpleType name="cellParameterId">
    <restriction base="integer">
        <minInclusive value="0"/>
        <maxInclusive value="127"/>
    </restriction>
</simpleType>

<simpleType name="primaryCcpchPower">
    <restriction base="decimal">
        <fractionDigits value="1"/>
        <minInclusive value="-15"/>
        <maxInclusive value="+40"/>
    </restriction>
</simpleType>

<simpleType name="dwPchPower">
    <restriction base="decimal">
        <fractionDigits value="1"/>
        <minInclusive value="-15"/>
        <maxInclusive value="+40"/>
    </restriction>
</simpleType>

<simpleType name="schPower">
    <restriction base="decimal">
        <fractionDigits value="1"/>
        <minInclusive value="-35"/>
        <maxInclusive value="+15"/>
    </restriction>
</simpleType>

<complexType name="timeSlotList">
    <sequence>
        <element name="timeSlot" maxOccurs="15">
            <complexType>
                <all>
                    <element name="timeSlotId" minOccurs="1">
                        <simpleType>
                            <restriction base="integer">
                                <minInclusive value="0"/>
                                <maxInclusive value="14"/>
                            </restriction>
                        </simpleType>
                    </element>
                    <element name="timeSlotDirection" minOccurs="1">
                        <simpleType>
                            <restriction base="string">
                                <enumeration value="UL"/>
                                <enumeration value="DL"/>
                            </restriction>
                        </simpleType>
                    </element>
                    <element name="timeSlotStatus" minOccurs="1">
                        <simpleType>
                            <restriction base="string">
                                <enumeration value="Active"/>
                                <enumeration value="Not-Active"/>
                            </restriction>
                        </simpleType>
                    </element>
                </all>
            </complexType>
        </element>
    </sequence>
</complexType>

```

```

<simpleType name="antennaId">
  <restriction base="integer">
    <minInclusive value="0"/>
    <maxInclusive value="268435455"/>
  </restriction>
</simpleType>

<simpleType name="retTiltValue">
  <restriction base="decimal">
    <fractionDigits value="1"/>
    <minInclusive value="0"/>
    <maxInclusive value="360"/>
  </restriction>
</simpleType>

<complexType name="retUtranCellList">
  <sequence>
    <element name="utranCell">
      <simpleType>
        <restriction base="string">
          <minInclusive value="0"/>
          <maxInclusive value="268435455"/>
        </restriction>
      </simpleType>
    </element>
  </sequence>
</complexType>

<simpleType name="compassDirection">
  <restriction base="integer">
    <minInclusive value="0"/>
    <maxInclusive value="360"/>
  </restriction>
</simpleType>

<simpleType name="maxTiltValue">
  <restriction base="decimal">
    <fractionDigits value="1"/>
    <minInclusive value="0"/>
    <maxInclusive value="360"/>
  </restriction>
</simpleType>

<simpleType name="minTiltValue">
  <restriction base="decimal">
    <fractionDigits value="1"/>
    <minInclusive value="0"/>
    <maxInclusive value="360"/>
  </restriction>
</simpleType>

<simpleType name="mechanicalOffset">
  <restriction base="decimal">
    <fractionDigits value="1"/>
    <minInclusive value="0"/>
    <maxInclusive value="360"/>
  </restriction>
</simpleType>

<simpleType name="retGroupName">
  <restriction base="string">
    <minInclusive value="0"/>
    <maxInclusive value="80"/>
  </restriction>
</simpleType>

<simpleType name="height">
  <restriction base="integer">
    <minInclusive value="0"/>
    <maxInclusive value="36000000"/>
  </restriction>
</simpleType>

<!-- UTRAN Network Resources IRP NRM class associated XML elements -->

<element
  name="RncFunction"
  substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass"

```

```

>
<complexType>
  <complexContent>
    <extension base="xn:NrmClass">
      <sequence>
        <element name="attributes" minOccurs="0">
          <complexType>
            <all>
              <element name="userLabel" minOccurs="0"/>
              <element name="mcc" minOccurs="0"/>
              <element name="mnc" minOccurs="0"/>
              <element name="rncId" minOccurs="0"/>
            </all>
          </complexType>
        </element>
        <choice minOccurs="0" maxOccurs="unbounded">
          <element ref="un:UtranCell"/>
          <element ref="un:TubLink"/>
          <element ref="xn:VsDataContainer"/>
        </choice>
      </sequence>
    </extension>
  </complexContent>
</complexType>
</element>

<element
  name="NodeBFunction"
  substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass"
  >
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element name="nodeBFunctionTubLink" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="UtranCell">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element name="cId" type="un:cId" minOccurs="0"/>
                <element
                  name="localCellId"
                  type="un:localCellId"
                  minOccurs="0"
                />
                <element
                  name="uarfcnUl"
                  type="un:uarfcnAnyMode"
                  minOccurs="0"
                />
                <element
                  name="uarfcnDl"
                  type="un:uarfcnAnyMode"
                  minOccurs="0"
                />
                <element
                  name="primaryScramblingCode"

```

```

        type="un:primaryScramblingCode"
        minOccurs="0"
    />
    <element
        name="primaryCpichTxPower"
        type="un:primaryCpichTxPower"
        minOccurs="0"
    />
    <element
        name="maximumTransmissionPower"
        type="un:maximumTransmissionPower"
        minOccurs="0"
    />
    <element
        name="primarySchPower"
        type="un:primarySchPower"
        minOccurs="0"
    />
    <element
        name="secondarySchPower"
        type="un:secondarySchPower"
        minOccurs="0"
    />
    <element name="bchPower" type="un:bchPower" minOccurs="0"/>
    <element name="cellMode" type="un:cellMode" minOccurs="0"/>
    <element name="uarfcn" type="un:uarfcnAnyMode" minOccurs="0"/>
    <element
        name="cellParameterId"
        type="un:cellParameterId"
        minOccurs="0"
    />
    <element
        name="primaryCcpchPower"
        type="un:primaryCcpchPower"
        minOccurs="0"
    />
    <element
        name="dwPchPower"
        type="un:dwPchPower"
        minOccurs="0"
    />
    <element
        name="timeSlotList"
        type="un:timeSlotList"
        minOccurs="0"
    />
    <element name="schPower" type="un:schPower" minOccurs="0"/>
    <element name="lac" type="un:lac" minOccurs="0"/>
    <element name="rac" type="un:rac" minOccurs="0"/>
    <element name="sac" type="un:sac" minOccurs="0"/>
    <element name="uraList" type="un:uraList" minOccurs="0"/>
    <element name="utranCellIubLink" minOccurs="0"/>
    <element name="retAntennaList" type="un:retAntennaList" minOccurs="0"/>
    </all>
</complexType>
</element>
<choice minOccurs="0" maxOccurs="unbounded">
    <element ref="un:UtranRelation"/>
    <element ref="gn:GsmRelation"/>
    <element ref="xn:VsDataContainer"/>
</choice>
</sequence>
</extension>
</complexContent>
</complexType>
</element>
<element name="IubLink">
    <complexType>
        <complexContent>
            <extension base="xn:NrmClass">
                <sequence>
                    <element name="attributes" minOccurs="0">
                        <complexType>
                            <all>
                                <element name="userLabel" minOccurs="0"/>
                                <element name="iubLinkUtranCell" minOccurs="0"/>
                                <element name="iubLinkNodeBFunction" minOccurs="0"/>
                            </all>
                        </complexType>
                    </element>
                </sequence>
            </extension>
        </complexContent>
    </complexType>
</element>

```

```

        </all>
      </complexType>
    </element>
    <choice minOccurs="0" maxOccurs="unbounded">
      <element ref="xn:VsDataContainer" />
    </choice>
  </sequence>
</extension>
</complexContent>
</complexType>
</element>

<element name="UtranRelation">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="adjacentCell" minOccurs="0"/>
                <element name="cellMode" type="un:cellMode" minOccurs="0"/>
                <element
                  name="uarfcnUl"
                  type="un:uarfcnAnyMode"
                  minOccurs="0"
                />
                <element
                  name="uarfcnDl"
                  type="un:uarfcnAnyMode"
                  minOccurs="0"
                />
                <element
                  name="primaryScramblingCode"
                  type="un:primaryScramblingCode"
                  minOccurs="0"
                />
                <element
                  name="primaryCpichTxPower"
                  type="un:primaryCpichTxPower"
                  minOccurs="0"
                />
                <element name="lac" type="un:lac" minOccurs="0"/>
                <element name="uarfcn" type="un:uarfcnAnyMode" minOccurs="0"/>
                <element
                  name="cellParameterId"
                  type="un:cellParameterId"
                  minOccurs="0"
                />
                <element
                  name="primaryCcpchPower"
                  type="un:primaryCcpchPower"
                  minOccurs="0"
                />
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="xn:VsDataContainer" />
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element
  name="ExternalUtranCell"
  substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass"
>
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

```

```

<element name="cId" type="un:cId" minOccurs="0"/>
<element name="mcc" minOccurs="0"/>
<element name="mnc" minOccurs="0"/>
<element name="rncId" minOccurs="0"/>
<element name="cellMode" type="un:cellMode" minOccurs="0"/>
<element
  name="uarfcnUl"
  type="un:uarfcnAnyMode"
  minOccurs="0"
/>
<element
  name="uarfcnDl"
  type="un:uarfcnAnyMode"
  minOccurs="0"
/>
<element
  name="primaryScramblingCode"
  type="un:primaryScramblingCode"
  minOccurs="0"
/>
<element
  name="primaryCpichTxPower"
  type="un:primaryCpichTxPower"
  minOccurs="0"
/>
<element name="uarfcn" type="un:uarfcnAnyMode" minOccurs="0"/>
<element
  name="cellParameterId"
  type="un:cellParameterId"
  minOccurs="0"
/>
<element
  name="primaryCcpchPower"
  type="un:primaryCcpchPower"
  minOccurs="0"
/>
<element name="lac" type="un:lac" minOccurs="0"/>
<element name="rac" type="un:rac" minOccurs="0"/>
</all>
</complexType>
</element>
<choice minOccurs="0" maxOccurs="unbounded">
  <element ref="xn:VsDataContainer"/>
</choice>
</sequence>
</extension>
</complexContent>
</complexType>
</element>

```

```

<element
  name="Antenna"
  substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass"
  >
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="antennaId" type="un:antennaId" minOccurs="0"/>
                <element name="retUtranCellList" type="un:retUtranCellList" minOccurs="0"/>
                <element name="retTiltValue" type="un:retTiltValue" minOccurs="0"/>
                <element name="compassDirection" type="un:compassDirection" minOccurs="0"/>
                <element name="maxTiltValue" type="un:maxTiltValue" minOccurs="0"/>
                <element name="minTiltValue" type="un:minTiltValue" minOccurs="0"/>
                <element name="mechanicalOffset" type="un:mechanicalOffset" minOccurs="0"/>
                <element name="retGroupName" type="un:retGroupName" minOccurs="0"/>
                <element name="height" type="un:height" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>

```


</complexContent>
 </complexType>
 </element>
 </schema>

End of Change in Annex A
End of Document

Annex C (informative):
Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Jun 2002	S_16	SP-020298	--	--	Submitted to TSG SA #16 for Information	1.0.0	
Sep 2002	S_17	SP-020462	--	--	Submitted to TSG SA #17 for Approval	2.0.0	5.0.0
Jun 2003	S_20	SP-030283	001	--	Deletion of UTRAN attribute relationType in XML Schema	5.0.0	5.1.0
Jun 2003	S_20	SP-030287	002	--	Correction of UTRAN NRM XML schema namespace URIs	5.0.0	5.1.0
Jun 2003	S_20	SP-030288	003	--	Generic NRM XML schema dependencies removal	5.0.0	5.1.0
Jun 2003	S_20	SP-030285	004	--	Remove UTRAN NRM XML schema duplicate MOC attribute XML declarations	5.0.0	5.1.0
Sep 2003	S_21	SP-030418	005	--	Inclusion of External BSS Function in GERAN XML Schema ñ impacts on 32.645 (UTRAN XML Schema) - Alignment with 32.652/655	5.1.0	5.2.0
Oct 2003	--	--	--	--	Attached to this TS the normative XML schema electronic files corresponding to Sept 2003 TS 32.645	5.2.0	5.2.1
Dec 2003	S_22	SP-030646	006	--	Correction of the number of possible URAs from 1 to 8	5.2.1	5.3.0
Mar 2004	S_23	SP-040131	007	--	Add the capability to contain instances of VsDataContainer to some MOs - Align with the IS 32.642	5.3.0	5.4.0
Jun 2004	S_24	SP-040259	008	--	Removal of XML schema URI dependencies	5.4.0	5.5.0
Jun 2004	S_24	SP-040258	009	--	Correction of the annex related to XML schema electronic files publication	5.4.0	5.5.0
Jun 2004	S_24	SP-040254	010	--	The specification does not support all UMTS frequency bands	5.4.0	5.5.0
Jun 2004	S_24	SP-040256	011	--	Add XML definitions for support of TDD modes	5.5.0	6.0.0