**3GPP TSG-SA5 Meeting #140-e *S5-216392***

**Online, , 15th Nov 2021 - 24th Nov 2021**

|  |
| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **28.663** | **CR** | **0022** | **rev** | **1** | **Current version:** | **16.0.0** |  |
|  |
| *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)*.* |
|  |

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

|  |
| --- |
|  |
| ***Title:***  | YANG Solution Set for Generic Radio Access Network NRM |
|  |  |
| ***Source to WG:*** | Ericsson Hungary Ltd |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | NSA\_SBMA |  | ***Date:*** | 2021-11-05 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | A YANG solution set is needed for Generic Radio Access Network NRM. Currently only an XML and a CORBA solution is available. These solution set were deprecated/removed from other parts of Rel-17. |
|  |  |
| ***Summary of change:*** | A YANG solution set is provided for Generic Radio Access Network NRM. The YANG solution set is a mapping of the existing stage 2 in 28.662.IOCs, attributes related to GSM or UTRAN are out of scope, thus YANG definition hve not been provided for the following elements:• IOC GSMCellPart• Attributes uTRANFDDFqBands and uTRANTDDFqBands of IOC SectorEquipmentFunction  |
|  |  |
| ***Consequences if not approved:*** | No usable solution set for Generic Radio Access Network NRM. |
|  |  |
| ***Clauses affected:*** | 2, 4, X, X.1, X.2, X.2.1, X.2.2 X .2.3, X.2.4, X.2.5 |
|  |  |
|  | **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:*** | Forge link : <https://forge.3gpp.org/rep/sa5/MnS/tree/S5-215110_Rel-17_CR_28.663_YANG_Solution_Set_for_Inventory_Management>Resumbitted based on the October rapportears call. |
|  |  |
| ***This CR's revision history:*** |  |

***First 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 document *in the same Release as the present document*.

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

[2] Void

[3] 3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".

[4] 3GPP TS 28.662: "Generic Radio Access Network (RAN) Network Resource Model (NRM); Integration Reference Point (IRP); Information Service (IS)”.

[5] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[6] 3GPP TS 32.606: "Telecommunication management; Configuration Management (CM); Basic CM Integration Reference Point (IRP); Solution Set (SS) definitions".

[7] 3GPP TS 32.616: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP); Solution Set (SS) definitions".

[8] W3C REC-xml11-20060816: "Extensible Markup Language (XML) 1.1 (Second Edition)".

[9] Void.

[10] W3C XML Schema Definition Language (XSD) 1.1 Part 1: Structures.

[11] W3C XML Schema Definition Language (XSD) 1.1 Part 2: Datatypes.

[12] W3C REC-xml-names-20060816: "Namespaces in XML 1.1 (Second Edition)".

[13] 3GPP TS 28.623: "Generic network resources Integration Reference Point (IRP); Solution Set (SS) definition".

[14] 3GPP TS 28.622: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[15] 3GPP TS 32.160: "Management and orchestration; Management Service Template".

***Next change***

4 Solution Set (SS) definition

This specification defines the following 3GPP Generic RAN NRM IRP Solution Set Definitions:

- 3GPP Generic RAN NRM IRP CORBA SS (Annex A)

- 3GPP Generic RAN NRM IRP XML Definitions (Annex B)

- 3GPP Generic RAN NRM YANG based definitions (Annex X)

***Next change***

Annex X (normative):
YANG definitions

X.1 General

This annex contains the YANG definitions for Inventory Management NRM, in accordance with information model definitions specified 3GPP TS 28.632 [1]. The mapping follows 3GPP TS 32.160 [12] clause 6.2.

X.2 Modules

X.2.1 module \_3gpp-rancom-sectoreqfunction.yang

<CODE BEGINS>

module \_3gpp-rancom-sectoreqfunction {

 yang-version 1.1;

 namespace "urn:3gpp:sa5:\_3gpp-rancom-sectoreqfunction";

 prefix "sef3gpp";

 import \_3gpp-common-yang-types { prefix types3gpp; }

 import \_3gpp-common-top { prefix top3gpp; }

 import \_3gpp-common-managed-element { prefix me3gpp; }

 import \_3gpp-common-managed-function { prefix mf3gpp; }

 organization "3GPP SA5";

 contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

 description "Defines IOC for sector equipment function.";

 reference "3GPP TS 28.663

 Generic Radio Access Network (RAN)

 Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Solution Set (SS) definitions

 3GPP TS 28.662

 Generic Radio Access Network (RAN)

 Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Information Service (IS)";

 revision 2021-10-01 { reference CR-0022; }

 grouping SectorEquipmentFunctionGrp {

 description "Represents the SectorEquipmentFunction IOC.";

 uses mf3gpp:ManagedFunctionGrp;

 leaf fqBand {

 description "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.";

 reference "Valid frequency band values are specified in clause 5 Table

 5.2-1 'E-UTRA frequency band' of 3GPP TS 36.104";

 type uint32;

 config false;

 }

 leaf-list eUTRANFqBands {

 description "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.";

 reference "Valid frequency band values are specified in sub-clause 5.7.3

 in 3GPP TS 36.104";

 type string;

 config false;

 }

 leaf-list nRFqBands {

 description "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.";

 reference "Valid frequency band values are specified in sub-clause 5.4.2

 in 3GPP TS 38.104";

 type string;

 config false;

 }

 leaf confOutputPower {

 description "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.";

 type uint32;

 units watt ;

 }

 leaf-list theTMAList {

 description "Contains the DNs of one or more TMAFunction.";

 type types3gpp:DistinguishedName;

 config false;

 }

 leaf-list theAntennaList {

 description "Contains the DNs of one or more AntennaFunction.";

 type types3gpp:DistinguishedName;

 config false;

 }

 leaf-list theCellList {

 description "Contains the DNs of EUtranGenericCell or UtranGenericCell

 if associations between them exist.";

 type types3gpp:DistinguishedName;

 config false;

 }

 leaf-list theNRSectorCarrierList {

 description "Contains the DNs of one or more NRSectorCarrier.";

 type types3gpp:DistinguishedName;

 config false;

 }

 }

 augment "/me3gpp:ManagedElement" {

 list SectorEquipmentFunction {

 description "Represents a set of cells within a geographical area that

 has common functions relating to AntennaFunction, TMAFunction and

 supporting equipment, such as power amplifier.";

 uses top3gpp:Top\_Grp;

 key id;

 container attributes {

 uses SectorEquipmentFunctionGrp;

 }

 uses mf3gpp:ManagedFunctionContainedClasses;

 }

 }

}

<CODE ENDS>

X.2.2 module \_3gpp-rancom-antennafunction.yang

<CODE BEGINS>

module \_3gpp-rancom-antennafunction {

 yang-version 1.1;

 namespace "urn:3gpp:sa5:\_3gpp-rancom-antennafunction";

 prefix "ant3gpp";

 import \_3gpp-common-yang-types { prefix types3gpp; }

 import \_3gpp-common-top { prefix top3gpp; }

 import \_3gpp-common-managed-element { prefix me3gpp; }

 import \_3gpp-common-managed-function { prefix mf3gpp; }

 organization "3GPP SA5";

 contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

 description "Defines IOC for antenna function.";

 reference "3GPP TS 28.663

 Generic Radio Access Network (RAN)

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 Solution Set (SS) definitions

 3GPP TS 28.662

 Generic Radio Access Network (RAN)

 Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Information Service (IS)";

 revision 2021-10-01 { reference CR-0022; }

 grouping AntennaFunctionGrp {

 description "Represents the AntennaFunction IOC.";

 uses mf3gpp:ManagedFunctionGrp;

 leaf retTiltValue {

 description "The electrical tilt setting of the antenna. The tilt value

 is 10 times the antenna electrical tilt angle in degrees.";

 reference "See 'Tilt value' in Ref. 3GPP TS 37.466";

 type types3gpp:TenthOfDegrees;

 }

 leaf bearing {

 description "The bearing in degrees that the antenna is pointing in,

 expressed as bearing value times 10.";

 reference "See 'Antenna bearing' in 3GPP TS 37.463";

 type types3gpp:TenthOfDegrees;

 }

 leaf retGroupName {

 description "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.";

 type string { length "0..80"; }

 }

 leaf height {

 description "The height of an antenna above sea level. An integral value

 representing a number of meters in 0.1 meter increments.

 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.";

 type uint32;

 units decimeter;

 }

 leaf maxAzimuthValue {

 description "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 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.";

 type types3gpp:TenthOfDegrees;

 }

 leaf minAzimuthValue {

 description "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 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.";

 type types3gpp:TenthOfDegrees;

 }

 leaf horizBeamwidth {

 description "The 3 dB power beamwidth of the antenna pattern in the

 horizontal plane. A single integral value corresponding to an angle

 in degrees between 0 and 360. 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 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.";

 type uint32 { range 0..360; }

 }

 leaf vertBeamwidth {

 description "The 3 dB power beamwidth of the antenna pattern in the

 vertical plane. A single integral value corresponding to an angle

 in degrees between 0 and 180.

 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.";

 type uint32 { range 0..180; }

 }

 leaf-list theCellList {

 description "Contains the DNs of EUtranGenericCell or UtranGenericCell

 if associations between them exist.";

 config false;

 type types3gpp:DistinguishedName;

 }

 }

 augment "/me3gpp:ManagedElement" {

 list AntennaFunction {

 description "Represents an array of radiating elements that may be

 tilted to adjust the RF coverage of a cell(s).";

 uses top3gpp:Top\_Grp;

 key id;

 container attributes {

 uses AntennaFunctionGrp;

 }

 uses mf3gpp:ManagedFunctionContainedClasses;

 }

 }

}

<CODE ENDS>

X.2.3 module \_3gpp-rancom-commonbsfunction.yang

<CODE BEGINS>

module \_3gpp-rancom-commonbsfunction {

 yang-version 1.1;

 namespace "urn:3gpp:sa5:\_3gpp-rancom-commonbsfunction";

 prefix "combs3gpp";

 import \_3gpp-common-yang-types { prefix types3gpp; }

 import \_3gpp-common-top { prefix top3gpp; }

 import \_3gpp-common-managed-element { prefix me3gpp; }

 import \_3gpp-common-managed-function { prefix mf3gpp; }

 organization "3GPP SA5";

 contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

 description "Defines IOC for common base station functionality.";

 reference "3GPP TS 28.663

 Generic Radio Access Network (RAN)

 Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Solution Set (SS) definitions

 3GPP TS 28.662

 Generic Radio Access Network (RAN)

 Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Information Service (IS)";

 revision 2021-10-01 { reference CR-0022; }

 grouping CommonBsFunctionGrp {

 description "Represents the CommonBsFunction IOC.";

 uses mf3gpp:ManagedFunctionGrp;

 leaf-list sharedTechnologies {

 description "Defines the radio access technologies sharing the common

 functionalities of a Base Station (BS).";

 type enumeration {

 enum GSM;

 enum UMTS;

 enum LTE;

 enum NR;

 }

 }

 leaf-list theProxyBsList {

 description "A CommonBsFunction instance serves a number of

 ProxyBsFunction instances. This CommonBsFunction role-attribute

 contains a list of DNs of ENBFunction (3GPP TS 28.658), NodeBFunction

 (3GPP TS 28.652) and BssFunction (3GPP TS 28.655) that it serves.";

 reference "3GPP TS 28.652, 3GPP TS 28.655, 3GPP TS 28.658";

 type types3gpp:DistinguishedName;

 config false;

 }

 }

 augment "/me3gpp:ManagedElement" {

 list CommonBsFunction {

 description "Represents common aspects of Base Station (BS) functionality

 shared by several radio access technologies.";

 uses top3gpp:Top\_Grp;

 key id;

 container attributes {

 uses CommonBsFunctionGrp;

 }

 uses mf3gpp:ManagedFunctionContainedClasses;

 }

 }

}

<CODE ENDS>

X.2.4 module \_3gpp-rancom-repeaterfunction.yang

<CODE BEGINS>

module \_3gpp-rancom-repeaterfunction {

 yang-version 1.1;

 namespace "urn:3gpp:sa5:\_3gpp-rancom-repeaterfunction";

 prefix "rep3gpp";

 import \_3gpp-common-yang-types { prefix types3gpp; }

 import \_3gpp-common-top { prefix top3gpp; }

 import \_3gpp-common-managed-element { prefix me3gpp; }

 import \_3gpp-common-managed-function { prefix mf3gpp; }

 organization "3GPP SA5";

 contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

 description "Defines IOC for Tower Mounted Amplifier (TMA).";

 reference "3GPP TS 28.663

 Generic Radio Access Network (RAN)

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 Generic Radio Access Network (RAN)

 Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Information Service (IS)";

 revision 2021-10-01 { reference CR-0022; }

 grouping RepeaterFunctionGrp {

 description "Represents the RepeaterFunction IOC.";

 uses mf3gpp:ManagedFunctionGrp;

 leaf priority {

 description "The priority of a repeater decided by an operator.";

 type uint32;

 }

 leaf latitude {

 description "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.";

 type types3gpp:Latitude;

 config false;

 }

 leaf longitude {

 description "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.";

 type types3gpp:Longitude;

 config false;

 }

 leaf ctrlConnMode {

 description "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.";

 type enumeration {

 enum GSM\_SMS;

 enum WCDMA\_SMS;

 enum CIRCLE\_SWITCH\_DATA\_CSD;

 enum PACKAGE\_SWITCH\_DAT\_IP;

 enum SERIAL\_PORT;

 }

 }

 leaf environmentInfo {

 description "The repeater device is located either in the building or

 out of the building.";

 type string;

 config false;

 }

 leaf powerSwitch {

 description "Power switch of device which has two status: ON/OFF.";

 type types3gpp:OnOff;

 }

 leaf ulAttenuation {

 description "Uplink signal attenuation of the device to change uplink

 gain.";

 type uint32;

 }

 leaf dlAttenuation {

 description "Downlink signal attenuation of the device to change

 downlink gain.";

 type uint32;

 }

 leaf firmwareVer {

 description "Version of the device firmware.";

 type string;

 config false;

 }

 leaf repeaterType {

 description "The repeater type defined by operator, such as wide band,

 frequency selective, indoor and fiber optic.";

 type enumeration {

 enum WIDE\_BAND\_REPT\_FUNCTION;

 enum FREQ\_SEL\_REPT\_FUNCTION;

 enum FIBER\_REPT\_FUNCTION;

 enum INDOOR\_REPT\_FUNCTION;

 enum FREQ\_SHIFT\_REPT\_FUNCTION;

 }

 config false;

 }

 }

 augment "/me3gpp:ManagedElement" {

 list RepeaterFunction {

 description "Represents the management aspect of a repeater.";

 reference "3GPP TS 28.663, 3GPP TS 25.106";

 key id;

 uses top3gpp:Top\_Grp;

 container attributes {

 uses RepeaterFunctionGrp;

 }

 uses mf3gpp:ManagedFunctionContainedClasses;

 }

 }

}

<CODE ENDS>

X.2.5 module \_3gpp-rancom-tmafunction.yang

<CODE BEGINS>

module \_3gpp-rancom-tmafunction {

 yang-version 1.1;

 namespace "urn:3gpp:sa5:\_3gpp-rancom-tmafunction";

 prefix "tma3gpp";

 import \_3gpp-common-yang-types { prefix types3gpp; }

 import \_3gpp-common-top { prefix top3gpp; }

 import \_3gpp-common-managed-element { prefix me3gpp; }

 import \_3gpp-common-managed-function { prefix mf3gpp; }

 organization "3GPP SA5";

 contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

 description "Defines IOC for Tower Mounted Amplifier (TMA).";

 reference "3GPP TS 28.663

 Generic Radio Access Network (RAN)

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 Solution Set (SS) definitions

 3GPP TS 28.662

 Generic Radio Access Network (RAN)

 Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Information Service (IS)";

 revision 2021-10-01 { reference CR-0022; }

 grouping TmaFunctionGrp {

 description "Represents the TMAFunction IOC.";

 reference "3GPP TS 28.663";

 uses mf3gpp:ManagedFunctionGrp;

 leaf tmaSubunitNumber {

 description "TMA subunit number. TMA subunits shall be numbered starting

 with 1 and proceeding upwards.";

 reference "Defined in 3GPP TS 37.466";

 type uint32 { range "1..max"; }

 }

 leaf tmaStateFlag {

 description "The mode state flag indicating whether the TMA subunit is

 in normal mode or in bypass mode. TMA subunits which do not support

 bypass mode shall return Normal mode.

 Mode state flag = 0 represents Normal mode.

 Mode state flag = 1 represents Bypass mode.";

 reference "Defined in 3GPP TS 37.466";

 type uint32 { range "0..1"; }

 }

 leaf tmaFunctionFlag {

 description "The function flags and parameters indicating the supported

 functionality of the addressed TMA subunit";

 reference "Defined in 3GPP TS 37.466";

 type uint32 { range "0..1"; }

 }

 leaf tmaMinGain {

 description "Minimum supported gain given as gain figure expressed in

 dB/4.";

 reference "Defined in 3GPP TS 37.466";

 type uint32;

 config false;

 }

 leaf tmaMaxGain {

 description "Maximum supported gain given as gain figure expressed in

 dB/4.";

 reference "Defined in 3GPP TS 37.466";

 type uint32;

 config false;

 }

 leaf tmaResolution {

 description "Gain resolution given as the gain resolution figure

 expressed in dB/4.";

 reference "Defined in 3GPP TS 37.466";

 type uint32;

 config false;

 }

 leaf tmaGainFigure {

 description "TMA gain figure, calculated as 4 times the required gain

 expressed in dB.";

 reference "Defined in 3GPP TS 37.466";

 type uint32;

 }

 leaf tmaNumberOfSubunits {

 description "The number of subunits controlled by the secondary device.";

 reference "Defined in 3GPP TS 37.466";

 type uint32;

 config false;

 }

 leaf tmaBaseStationId {

 description "Base station ID.";

 reference "Data field defined in Table B.3 of 3GPP TS 37.466";

 type string;

 }

 leaf tmaSectorId {

 description "Sector ID.";

 reference "Data field defined in Table B.3 of 3GPP TS 37.466";

 type string;

 }

 leaf tmaAntennaBearing {

 description "Antenna bearing.";

 reference "Data field defined in Table B.3 of 3GPP TS 37.466";

 type uint16;

 }

 leaf tmaInstalledMechanicalTilt {

 description "Installed mechanical tilt (degrees \* 10).";

 reference "Data field defined in Table B.3 of 3GPP TS 37.466";

 type types3gpp:TenthOfDegrees;

 }

 leaf tmaSubunitType {

 description "TMA subunit type.";

 reference "Data field defined in Table B.3 of 3GPP TS 37.466";

 type uint32;

 }

 leaf-list tmaSubunitRxFrequencyBand {

 description "TMA subunit receive frequency band.";

 reference "Data field defined in Table B.3 of 3GPP TS 37.466";

 type uint16;

 min-elements 2;

 max-elements 2;

 }

 leaf-list tmaSubunitTxFrequencyBand {

 description "TMA subunit transmit frequency band.";

 reference "Data field defined in Table B.3 of 3GPP TS 37.466";

 type uint16;

 min-elements 2;

 max-elements 2;

 }

 leaf tmaGainResolution {

 description "Gain resolution given as the gain resolution figure

 expressed in dB/4.";

 reference "Data field defined in Table B.3 of 3GPP TS 37.466";

 type uint32;

 }

 leaf-list theCellList {

 description "Contains the DNs of EUtranGenericCell or UtranGenericCell

 if associations between them exist.";

 config false;

 type types3gpp:DistinguishedName;

 }

 }

 augment "/me3gpp:ManagedElement" {

 list TmaFunction {

 description "Represents a Tower Mounted Amplifier (TMA) or a number of

 TMA subunits within one TMA, each separately addressable by a specific

 index at the application layer.";

 uses top3gpp:Top\_Grp;

 key id;

 container attributes {

 uses TmaFunctionGrp;

 }

 uses mf3gpp:ManagedFunctionContainedClasses;

 }

 }

}

<CODE ENDS>

***End of changes***